N45-N67 TIER 4B/STAGE IV PIVOT FAILURE & REACTION

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FPT
POWERTRAIN TECHNOLOGIES

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AFCResetrLvl1	Air FIlter Clogging first level warning	4B84-1F	Air FIlter	Air FIlter Clogging is detected via a FIlter Clogging Switch connected via Hardware pin. Two warning level are forseen, second level interveens if no action is taken after first level warning, normally reducing engine torque. The measure channel AFCSwt_stDebVal_mp contains the status of the Air filter.	Air filter is clogged	Clean or replace air filter	Frequency: no lamp Lamp: no lamp	19332-31
AFCResetrLvl2	Air FIlter Clogging second level warning	4C84-1F	Air FIlter	Air FIlter Clogging is detected via a FIlter Clogging Switch connected via Hardware pin. Two warning level are forseen, second level interveens if no action is taken after first level warning, normally reducing engine torque. The measure channel AFCSwt_stDebVal_mp contains the status of the Air filter.	Air filter is clogged	Clean or replace air filter	Frequency: no lamp Lamp: no lamp	19588-31
AFCResetrPlaus	Air FIlter Clogging sensor switch implausible	4D84-1F	Air Filter Pressure Sensor	Air FIlter Clogging is detected via a FIlter Clogging Switch connected via Hardware pin. Two warning level are forseen, second level interveens if no action is taken after first level warning, normally reducing engine torque. A plausibility check for clogging switch is also forseen. The measure channel AFCSwt_stDebVal_mp contains the status of the Air filter.	Air filter clogging switch is not plausible, clogging is detected with no air flow (engine is stopped)	Check and under e clogging filter switch	Frequency: no lamp Lamp: no lamp	19844-31
AFSDrftAdjPlausMax	Air flow meter: Plausibility check of correction factors (absolute)	3324-1F	Air flow meter	The Air Flow Meter is subject to drift over its lifetime due to possible contaminations. A drift compensation is provided once per driving cycle if following conditions are met: Function not inhibited by FID_AFSAdjRIs due to another failure Air Temperature between -2458,30° C and under 30° C Ambient temperature between -2448,30° C and under 30° C Ambient pressure > 1,20bar Engine running longer than 20,00s The adaptation is based on correction factor at idle, i.e. Relative Boost pressure < 100,00hPa Injection quantity between 5,00mg/hub and under mg/hub engine speed between 500,00rpm and under rpm and under overrun conditions i.e. Vehicle speed > 60,00km/h and under ration between -1,00m/s^2 and under s^2 Engine speed between 1500,00rpm and under 0rpm Fuel quantity = 0 Engaged gear > 4,00- Brake and under pedals not pressed If these conditions are fulfilled during 200,00ms the EGR valve is closed for 500,00ms (idle) resp. 500,00ms (high load) and he difference between measured and under ated air flow (from boost temperature, Boost pressure and under speed) determined. For all the other points a linear interpolated correction is calculated. The correction factors are monitored and under not exceed applied limits.	Fouling or blockage of the air mass sensor, inaccurate sensor due to ageing, leakage or obstruction in the intake duct, jammed EGR actuator, defective VTG/-WG	Clean sensor and under intake system, replace air mass sensor if necessary, check EGR actuators and under pressure actuator. Reinitialize drift compensation values using UDS service Routine Control (Id $0242)	Frequency: no lamp Lamp: no lamp	13092-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AFSDrftAdjPlausNPL	Air flow meter: Plausibility check of correction factors (relative)	3424-1F	Air flow meter	The Air Flow Meter is subject to drift over its lifetime due to possible contaminations. A drift compensation is provided once per driving cycle if following conditions are met: Function not inhibited by FID_AFSAdjRls due to another failure Air Temperature between -2458,30° C and under 30° C Ambient temperature between -2448,30° C and under 30° C Ambient pressure > 1,20bar Engine running longer than 20,00s The adaptation is based on correction factor at idle, i.e. Relative Boost pressure < 100,00hPa Injection quantity between 5,00mg/hub and under mg/hub engine speed between 500,00rpm and under rpm and under overrun conditions i.e. Vehicle speed > 60,00km/h and under ration between -1,00m/s^2 and under s^2 Engine speed between 1500,00rpm and under 0rpm Fuel quantity = 0 Engaged gear > 4,00- Brake and under pedals not pressed If these conditions are fulfilled during 200,00ms the EGR valve is closed for 500,00ms (idle) resp. 500,00ms (high load) and he difference between measured and under ated air flow (from boost temperature, Bosst pressure and under speed) determined. For all the other points a linear interpolated correction is calculated. The correction factors are monitored and under not exceed applied limits.	Fouling or blockage of the air mass sensor, inaccurate sensor due to ageing, leakage or obstruction in the intake duct, jammed EGR actuator, defective VTG/-WG	Clean sensor and under intake system, replace air mass sensor if necessary, check EGR actuators and under pressure actuator. Reinitialize drift compensation values using UDS service Routine Control (Id $0242).	Frequency: no lamp Lamp: no lamp	13348-31
AFSDrftIdlAdjValMax	Air flow meter: AFS correction at low idle exceeding the maximum drift limit	1524-1F	Air flow meter	The Air Flow Meter is subject to drift over its lifetime due to possible contaminations. A drift compensation is provided once per driving cycle if following conditions are met: Function not inhibited by FID_AFSAdjRls due to another failure Air Temperature between -2458,30° C and under 30° C Ambient temperature between -2448,30° C and under 30° C Ambient pressure > 1,20bar Engine running longer than 20,00s The adaptation is based on correction factor at idle, i.e. Relative Boost pressure < 100,00hPa Injection quantity between 5,00mg/hub and under mg/hub engine speed between 500,00rpm and under rpm and under overrun conditions i.e. Vehicle speed > 60,00km/h and under ration between -1,00m/s^2 and under s^2 Engine speed between 1500,00rpm and under 0rpm Fuel quantity = 0 Engaged gear > 4,00- Brake and under pedals not pressed If these conditions are fulfilled during 200,00ms the EGR valve is closed for 500,00ms (idle) resp. 500,00ms (high load) and he difference between measured and under ated air flow (from boost temperature, Bosst pressure and under speed) determined. For all the other points a linear interpolated correction is calculated. The correction factors are monitored and under not exceed applied limits.	Fouling or blockage of the air mass sensor, inaccurate sensor due to ageing, leakage or obstruction in the intake duct, jammed EGR actuator, defective VTG/-WG	Clean sensor and under intake system, replace air mass sensor if necessary, check EGR actuators and under pressure actuator. Reinitialize drift compensation values using UDS service Routine Control (Id $0242)	Frequency: no lamp Lamp: no lamp	5412-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AFSDrftIdlAdjValMin	Air flow meter: AFS correction at low idle lower than minimum drift limit	2624-1F	Air flow meter	The Air Flow Meter is subject to drift over its lifetime due to possible contaminations. A drift compensation is provided once per driving cycle if following conditions are met: Function not inhibited by FID_AFSAdjRls due to another failure Air Temperature between -2458,30° C and under 30° C Ambient temperature between -2448,30° C and under 30° C Ambient pressure > 1,20bar Engine running longer than 20,00s The adaptation is based on correction factor at idle, i.e. Relative Boost pressure < 100,00hPa Injection quantity between 5,00mg/hub and under mg/hub engine speed between 500,00rpm and under rpm and under overrun conditions i.e. Vehicle speed > 60,00km/h and under ration between -1,00m/s^2 and under s^2 Engine speed between 1500,00rpm and under 0rpm Fuel quantity = 0 Engaged gear > 4,00- Brake and under pedals not pressed If these conditions are fulfilled during 200,00ms the EGR valve is closed for 500,00ms (idle) resp. 500,00ms (high load) and he difference between measured and under ated air flow (from boost temperature, Boost pressure and under speed) determined. For all the other points a linear interpolated correction is calculated. The correction factors are monitored and under not exceed applied limits.	Fouling or blockage of the air mass sensor, inaccurate sensor due to ageing, leakage or obstruction in the intake duct, jammed EGR actuator, defective VTG/-WG	Clean sensor and under intake system, replace air mass sensor if necessary, check EGR actuators and under pressure actuator Reinitialize drift compensation values using UDS service Routine Control (Id $0242)	Frequency: no lamp Lamp: no lamp	9764-31
AFSDrftLdAdjValMax	Air flow meter: AFS correction at load point exceeding the maximum drift limit	1724-1F	Air flow meter	The Air Flow Meter is subject to drift over its lifetime due to possible contaminations. A drift compensation is provided once per driving cycle if following conditions are met: Function not inhibited by FID_AFSAdjRls due to another failure Air Temperature between -2458,30° C and under 30° C Ambient temperature between -2448,30° C and under 30° C Ambient pressure > 1,20bar Engine running longer than 20,00s The adaptation is based on correction factor at idle, i.e. Relative Boost pressure < 100,00hPa Injection quantity between 5,00mg/hub and under mg/hub engine speed between 500,00rpm and under rpm and under overrun conditions i.e. Vehicle speed > 60,00km/h and under ration between -1,00m/s^2 and under s^2 Engine speed between 1500,00rpm and under 0rpm Fuel quantity = 0 Engaged gear > 4,00- Brake and under pedals not pressed If these conditions are fulfilled during 200,00ms the EGR valve is closed for 500,00ms (idle) resp. 500,00ms (high load) and he difference between measured and under ated air flow (from boost temperature, Bosst pressure and under speed) determined. For all the other points a linear interpolated correction is calculated. The correction factors are monitored and under not exceed applied limits.	Fouling or blockage of the air mass sensor, inaccurate sensor due to ageing, leakage or obstruction in the intake duct, jammed EGR actuator, defective VTG/-WG	Clean sensor and under intake system, replace air mass sensor if necessary, check EGR actuators and under pressure actuator. Reinitialize drift compensation values using UDS service Routine Control (Id $0242)	Frequency: no lamp Lamp: no lamp	5924-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AFSDrftLdAdjValMin	Air flow meter: AFS correction at load point lower than the minimum drift limit	2824-1F	Air flow meter	The Air Flow Meter is subject to drift over its lifetime due to possible contaminations. A drift compensation is provided once per driving cycle if following conditions are met: Function not inhibited by FID_AFSAdjRls due to another failure Air Temperature between -2458,30° C and under 30° C Ambient temperature between -2448,30° C and under 30° C Ambient pressure > 1,20bar Engine running longer than 20,00s The adaptation is based on correction factor at idle, i.e. Relative Boost pressure < 100,00hPa Injection quantity between 5,00mg/hub and under mg/hub engine speed between 500,00rpm and under rpm between -1,00m/s^2 and under s^2 Engine speed between 1500,00rpm and under 0rpm Fuel quantity = 0 Engaged gear > 4,00- Brake and under pedals not pressed If these conditions are fulfilled during 200,00ms the EGR valve is closed for 500,00ms (idle) resp. 500,00ms (high load) and he difference between measured and under ated air flow (from boost temperature, Bosst pressure and under speed) determined. For all the other points a linear interpolated correction is calculated. The correction factors are monitored and under not exceed applied limits.	Fouling or blockage of the air mass sensor, inaccurate sensor due to ageing, leakage or obstruction in the intake duct, jammed EGR actuator, defective VTG/-WG	Clean sensor and under intake system, replace air mass sensor if necessary, check EGR actuators and under pressure actuator. Reinitialize drift compensation values using UDS service Routine Control (Id $0242)	Frequency: no lamp Lamp: no lamp	10276-31
AFSDrftOvrRunAdjValMax	Air flow meter: AFS correction at overrun higher than the maximum drift limit	1924-1F	Air flow meter	The Air Flow Meter is subject to drift over its lifetime due to possible contaminations. A drift compensation is provided once per driving cycle if following conditions are met: Function not inhibited by FID_AFSAdjRls due to another failure Air Temperature between -2458,30° C and under 30° C Ambient temperature between -2448,30° C and under 30° C Ambient pressure > 1,20bar Engine running longer than 20,00s The adaptation is based on correction factor at idle, i.e. Relative Boost pressure < 100,00hPa Injection quantity between 5,00mg/hub and under mg/hub engine speed between 500,00rpm and under rpm and under overrun conditions i.e. Vehicle speed > 60,00km/h and under ration between -1,00m/s^2 and under s^2 Engine speed between 1500,00rpm and under 0rpm Fuel quantity = 0 Engaged gear > 4,00- Brake and under pedals not pressed If these conditions are fulfilled during 200,00ms the EGR valve is closed for 500,00ms (idle) resp. 500,00ms (high load) and he difference between measured and under ated air flow (from boost temperature, Bosst pressure and under speed) determined. For all the other points a linear interpolated correction is calculated. The correction factors are monitored and under not exceed applied limits.	Fouling or blockage of the air mass sensor, inaccurate sensor due to ageing, leakage or obstruction in the intake duct, jammed EGR actuator, defective VTG/-WG	Clean sensor and under intake system, replace air mass sensor if necessary, check EGR actuators and under pressure actuator. Reinitialize drift compensation values using UDS service Routine Control (Id $0242)	Frequency: no lamp Lamp: no lamp	6436-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AFSDrftOvrRunAdjValMin	Air flow meter: AFS correction at overrun lower than the minimum drift limit	2A24-1F	Air flow meter	The Air Flow Meter is subject to drift over its lifetime due to possible contaminations. A drift compensation is provided once per driving cycle if following conditions are met: Function not inhibited by FID_AFSAdjRls due to another failure and under overrun conditions i.e. Vehicle speed > 60,00km/h and under ration between -1,00m/s^2 and under s^2 Engine speed between 1500,00rpm and under 0rpm Fuel quantity = 0 Engaged gear > 4,00- Brake and under pedals not pressed If these conditions are fulfilled during 200,00ms the EGR valve is closed for 500,00ms (idle) resp. 500,00ms (high load) and he difference between measured and under ated air flow (from boost temperature, Bosst pressure and under speed) determined. For all the other points a linear interpolated correction is calculated. The correction factors are monitored and under not exceed applied limits.	Fouling or blockage of the air mass sensor, inaccurate sensor due to ageing, leakage or obstruction in the intake duct, jammed EGR actuator, defective VTG/-WG	Clean sensor and under intake system, replace air mass sensor if necessary, check EGR actuators and under pressure actuator. Reinitialize drift compensation values using UDS service Routine Control (Id $0242)	Frequency: no lamp Lamp: no lamp	10788-31
AFSOffsDrftMax	Air flow meter: Offset drift high error for HFM sensor at engine stand till	1B24-1F	and under meter	The HFM sensors should measure an air mass quantity close to zero after the engine is stopped during the ECM after-run phase, which corresponds to a periodic signal between 10,00us and under us. The physical value for air mass flow is coded in the time period measured by HFM sensor, a time period of 550us corresponds to zero mass flow. 900,00Kg/h at 99,70us 625,00Kg/h at 112,90us 350,00Kg/h at 139,60us 170,00Kg/h at 185,10us 90,00Kg/h at 242,10us 40,00Kg/h at 350,80us	Inaccurate or defective air mass sensor, or defect in the wiring of the HFM sensor.	Check wiring and he accuracy of the air mass sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	6948-31
AFSOffsDrftMin	Air flow meter: Offset drift low error for HFM sensor at engine stand till	2C24-1F	and under meter	The HFM sensors should measure an air mass quantity close to zero after the engine is stopped during the ECM after-run phase, which corresponds to a periodic signal between 10,00us and under us. The physical value for air mass flow is coded in the time period measured by HFM sensor, a time period of 550us corresponds to zero mass flow. 900,00Kg/h at 99,70us 625,00Kg/h at 112,90us 350,00Kg/h at 139,60us 170,00Kg/h at 185,10us 90,00Kg/h at 242,10us 40,00Kg/h at 350,80us	Inaccurate or defective air mass sensor, or defect in the wiring of the HFM sensor.	Check wiring and he accuracy of the air mass sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	11300-31
AFSPhysRngHi	Air flow meter: Physical Range Check high for air mass flow sensor	1124-1F	Air flow meter	The air mass flow measured by HFM sensor should lie in a range between 5,00Kg/h and under Kg/h during engine running. If it is outside,system is running under abnormal condition.	Increased air flow is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary,	Frequency: no lamp Lamp: no lamp	4388-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AFSPhysRngLo	Air flow meter: Physical Range Check low for air mass flow sensor	2224-1F	Air flow meter	The air mass flow measured by HFM sensor should lie in a range between 5,00Kg/h and under Kg/h during engine running. If it is outside,system is running under abnormal condition.	Reduced air flow is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary,	Frequency: no lamp Lamp: no lamp	8740-31
AFSSetyDrftMax	Sensitivity drift high error for HFM sensor	1D24-1F	Air flow meter	The HFM signal is drift compensated and lso monitored by comparing the measured air flow and he calculated one by boost pressure, boost temperature and under speed. This comparison is only possible if the EGR valve is closed. Therefore the drift compensation requests the EGR closing, if all other release conditions are fulfilled. As closed EGR increases the NOx emission remarkably, the drift compensation is limited to 2 times each driving cycle: once at low speed and nce at high speed. The drift compensated HFM measuring value is then also checked for the remaining deviation to the calculated air flow (still depending on boost temperature, boost pressure and under speed). But also for this check the EGR must be closed. Normally this is only the case during the drift compensation itself (as here the EGR valve is forced to be closed), i.e. the test will be executed manly only twice each driving cycle.	Defect in wiring, inaccurate or defective air mass sensor, leakage or obstruction in the intake duct, defective VTG/WG	Check wiring of the intake air mass sensor and ts accuracy and under e it if necessary, check intake duct and under pressure actuator. Reset HFM learning drift correction factors using UDS service Routine Control (Id $0242)	Frequency: no lamp Lamp: no lamp	7460-31
AFSSetyDrftMin	Air flow meter: Sensitivity drift error low for HFM sensor	2E24-1F	Air flow meter	The HFM signal is drift compensated and lso monitored by comparing the measured air flow and he calculated one by boost pressure, boost temperature and under speed. This comparison is only possible if the EGR valve is closed. Therefore the drift compensation requests the EGR closing, if all other release conditions are fulfilled. As closed EGR increases the NOx emission remarkably, the drift compensation is limited to 2 times each driving cycle: once at low speed and nce at high speed. The drift compensated HFM measuring value is then also checked for the remaining deviation to the calculated air flow (still depending on boost temperature, boost pressure and under speed). But also for this check the EGR must be closed. Normally this is only the case during the drift compensation itself (as here the EGR valve is forced to be closed), i.e. the test will be executed manly only twice each driving cycle.	Defect in wiring, inaccurate or defective air mass sensor, leakage or obstruction in the intake duct, jammed EGR actuator, defective VTG/WG	Check wiring of the intake air mass sensor and ts accuracy and under e it if necessary, check intake duct, EGR actuators and under pressure actuator. Reset HFM learning drift correction factors using UDS service Routine Control (Id $0242)	Frequency: no lamp Lamp: no lamp	11812-31
AFSSigErr	Air flow meter: Hardware error detection for HFM sensor	6134-1F	Air flow meter	Signal from the HFM sensor is monitored by the ECM Hardware for no data update or too long period. This evaluation results in a internal message (AFS_PwmResult.Pwmin_stSignal), to which some bit are set, if the ECM Hardware detects a problem. If this message differs from 0, this means there is a problem.	Defect in wiring or defective air mass sensor	Check wiring of the intake air mass sensor, replace air mass sensor	Frequency: no lamp Lamp: no lamp	24884-31
AFSSRCCorMax	Air flow meter: SRC high error for corrected value in HFM6 sensor	1234-1F	Air flow meter	The raw signal of HFM6 sensor is based on a periodical signal, which length is evaluated. The period duration is corrected by multiplication factor (1,00- or by a temperature dependant factor. This corrected period must be in the range between 500,00us and under us, which corresponds to a physical air flow of: 900,00Kg/h at 99,70us 625,00Kg/h at 112,90us 350,00Kg/h at 139,60us 170,00Kg/h at 185,10us 90,00Kg/h at 242,10us 40,00Kg/h at 350,80us	Defect in wiring, defective air mass sensor and/or the temperature sensor unit	Check wiring of the air mass sensor, replace air mass sensor	Frequency: no lamp Lamp: no lamp	4660-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AFSSRCCorMin	Air flow meter: SRC low error for corrected value in HFM6 sensor	2334-1F	Air flow meter	The raw signal of HFM6 sensor is based on a periodical signal, which length is evaluated. The period duration is corrected by multiplication factor (1,00- or by a temperature dependant factor. This corrected period must be in the range between 500,00us and under us, which corresponds to a physical air flow of: 900,00Kg/h at 99,70us 625,00Kg/h at 112,90us 350,00Kg/h at 139,60us 170,00Kg/h at 185,10us 90,00Kg/h at 242,10us 40,00Kg/h at 350,80us	Defect in wiring, defective air mass sensor and/or the temperature sensor unit	Check wiring of the air mass sensor, replace air mass sensor	Frequency: no lamp Lamp: no lamp	9012-31
AFSSRCRawMax	Air flow meter: SRC high error for raw value in HFM6 sensor	1434-1F	Air flow meter	The raw signal of HFM6 sensor is based on a periodical signal, which length is evaluated. The period duration is corrected by multiplication factor (1,00- or by a temperature dependant factor. The uncorrected values must be in the range between 500,00us and under us (the corrected one between 500,00us and under us). In case of corrected signal this corresponds to: 900,00Kg/h at 99,70us 625,00Kg/h at 112,90us 350,00Kg/h at 139,60us 170,00Kg/h at 185,10us 90,00Kg/h at 242,10us 40,00Kg/h at 350,80us	Defect in wiring, defective air mass sensor	Check wiring of the air mass sensor, replace air mass sensor	Frequency: no lamp Lamp: no lamp	5172-31
AFSSRCRawMin	Air flow meter: SRC low error for raw value in HFM6 sensor	2534-1F	Air flow meter	The raw signal of HFM6 sensor is based on a periodical signal, which length is evaluated. The period duration is corrected by multiplication factor (1,00- or by a temperature dependant factor. The uncorrected values must be in the range between 500,00us and under us (the corrected one between 500,00us and under us). In case of corrected signal this corresponds to: 900,00Kg/h at 99,70us 625,00Kg/h at 112,90us 350,00Kg/h at 139,60us 170,00Kg/h at 185,10us 90,00Kg/h at 242,10us 40,00Kg/h at 350,80us	Defect in wiring, defective air mass sensor	Check wiring of the air mass sensor, replace air mass sensor	Frequency: no lamp Lamp: no lamp	9524-31
AirCACDsPErr_0	Info: Charged Air Cooler pressure too high (odd detection)	F1CF-1F	None	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Charged air cooler downstream pressure is monitored, if it is exceeding a defined threshold event is detected. Two failure path are available, the first register odd detections (1st,3rd,5th,....), the second one even detections (2nd,4th,6th,.....)	Event detection, charged air cooler pressure too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	61903-31
AirCACDsPErr_1	Info: Charged Air Cooler pressure too high (even detection)	F2CF-1F	None	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Charged air cooler downstream pressure is monitored, if it is exceeding a defined threshold event is detected. Two failure path are available, the first register odd detections (1st,3rd,5th,....), the second one even detections (2nd,4th,6th,.....)	Event detection	No intervention necessary	Frequency: no lamp Lamp: no lamp	62159-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AirCCIntPAnaSRCMax	Air conditioner: SRC high for AC coolant pressure (Analogic Signal)	1711-1F	Air conditioner	The air conditioning coolant pressure sensor analogic signal is monitored. The raw voltage measured by sensor is converted by ADC and under ormed into physical value AirC_pAnaClnt. Signal range check is performed.	Sensor defective or wiring short circuit to external source	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	5905-31
AirCCIntPAnaSRCMin	Air conditioner: SRC low for AC coolant pressure (Analogic Signal)	2811-1F	Air conditioner	The air conditioning coolant pressure sensor analogic signal is monitored. The raw voltage measured by sensor is converted by ADC and under ormed into physical value AirC_pAnaClnt. Signal range check is performed.	Sensor defective or wiring short circuit to ground	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	10257-31
AirCCIntPdcycSRCMax	Air conditioner: SRC high for AC coolant pressure (Duty Cycle error, PWM Signal)	1911-1F	Air conditioner	The air conditioning coolant pressure sensor analogic signal is monitored. The raw voltage measured by sensor is converted by ADC and under ormed into physical value AirC_pAnaClnt. Signal range check is performed.	Defective sensor or wiring prblem	Check sensor and under	Frequency: no lamp Lamp: no lamp	6417-31
AirCCIntPdcycSRCMin	Air conditioner: SRC low for AC coolant pressure (Duty Cycle error, PWM Signal)	2611-1F	Air conditioner	The air conditioning coolant pressure sensor analogic signal is monitored. The raw voltage measured by sensor is converted by ADC and under ormed into physical value AirC_pAnaClnt. Signal range check is performed.	Defective sensor or wiring prblem	Check sensor and under	Frequency: no lamp Lamp: no lamp	9745-31
AirCCIntPPerSRCMax	Air conditioner: SRC high for AC coolant pressure (Period error, PWM Signal)	1511-1F	Air conditioner	The air conditioning coolant pressure sensor analogic signal is monitored. The raw voltage measured by sensor is converted by ADC and under ormed into physical value AirC_pAnaClnt. Signal range check is performed.	Defective sensor or wiring prblem	Check sensor and under	Frequency: no lamp Lamp: no lamp	5393-31
AirCCIntPPerSRCMin	Air conditioner: SRC low for AC coolant pressure (Period error, PWM Signal)	2A11-1F	Air conditioner	The air conditioning coolant pressure sensor analogic signal is monitored. The raw voltage measured by sensor is converted by ADC and under ormed into physical value AirC_pAnaClnt. Signal range check is performed.	Defective sensor or wiring prblem	Check sensor and under	Frequency: no lamp Lamp: no lamp	10769-31
AirCCmprOL	Air conditioner compressor: No load error on power stage for the compressor	5121-1F	Air conditioner compressor	The Power stage of AC compressor actuator is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective relay	Check of wiring or replacement of relay	Frequency: no lamp Lamp: no lamp	20769-31
AirCCmprOvrTemp	Air conditioner compressor: Over Temperature of the power stage for AC compressor.	8221-1F	Air conditioner compressor	The Power stage of AC compressor actuator is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	33313-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AirCCmprRedTrqOL	Air conditioner compressor: No load error on power stage for the reduce torque instruction	5411-1F	Air conditioner compressor	The Power stage of AC compressor actuator is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective relay	Check of wiring or replacement of relay	Frequency: no lamp Lamp: no lamp	21521-31
AirCCmprRedTrqOvrTemp	Air conditioner compressor: Over Temperature on the power stage for reduce torque instruction output.	8311-1F	Air conditioner compressor	The Power stage of AC compressor actuator is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	33553-31
AirCCmprRedTrqSCB	Air conditioner compressor: Short circuit to battery error on power stage for the reduce torque instruction	6111-1F	Air conditioner compressor	The Power stage of AC compressor actuator is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside relay	Check of wiring or replacement of relay	Frequency: no lamp Lamp: no lamp	24849-31
AirCCmprRedTrqSCG	Air conditioner compressor: Short circuit to ground error on power stage for the reduce torque instruction	7211-1F	Air conditioner compressor	The Power stage of AC compressor actuator is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside relay	Check of wiring or replacement of relay	Frequency: no lamp Lamp: no lamp	29201-31
AirCCmprSCB	Air conditioner compressor: Short circuit to battery error on power stage for the compressor	6321-1F	Air conditioner compressor	The Power stage of AC compressor actuator is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside relay	Check of wiring or replacement of relay	Frequency: no lamp Lamp: no lamp	25377-31
AirCCmprSCG	Air conditioner compressor: Short circuit to ground error on power stage for the compressor	7421-1F	Air conditioner compressor	The Power stage of AC compressor actuator is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside relay	Check of wiring or replacement of relay	Frequency: no lamp Lamp: no lamp	29729-31
AirCPresMax	Air conditioner: Coolant pressure too high	1574-1F	Air conditioner	The air conditioning coolant pressure is monitored, when AC is activated, pressure value should lie in a defined range	AC fluid expansion valve blocked? Pressure measurement not OK	Check AC coolant circuit, check pressure sensor	Frequency: no lamp Lamp: no lamp	5492-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AirCPresMin	Air conditioner: Coolant pressure too low	2674-1F	Air conditioner	The air conditioning coolant pressure is monitored, when AC is activated, pressure value should lie in a defined range	AC fluid expansion valve blocked open? AC compressor defective? Pressure measurement not OK	Check AC coolant circuit, check pressure sensor	Frequency: no lamp Lamp: no lamp	9844-31
AirCPresNpl	Air conditioner: Coolant pressure value not plausible	3774-1F	Air conditioner	The air conditioning coolant pressure plausibility is monitored, when AC is not activated, pressure value should not exceed a defined value	AC Compressor not correctly shut off, pressure measurement incorrect	Check AC compressor, check pressure sensor	Frequency: no lamp Lamp: no lamp	14196-31
AirCSwtNpl	Air conditioner: Plausibility error for CAN input	3B11-1F	Air conditioner	The value of Air Conditioner main switch is acquired via digital input pin. No signal check performed	CAN Timeout in message Com_stAC, A/C supply defective, CAN connection problem	Check presence and under t connection of the A/C, check A/C voltage supply, check wiring	Frequency: no lamp Lamp: no lamp	15121-31
AirCSwtSig	Air conditioner: Signal error for CAN input	4C11-1F	Air conditioner	The value of Air Conditioner main switch is acquired via digital input pin. No signal check performed	A/C defective, A/C supply defective	Check A/C supply, check A/C module	Frequency: no lamp Lamp: no lamp	19473-31
AirFilMonClogDetn	Alr FIlter clogged, dP Pressure above first threshold	1184-1F	Air FIlter	The Air filter located in the intake manifold ,could get clogged and under ct the air flow into the engine or be broken or removed letting unfiltered air into engine intake. This module monitors the differential pressure level over the filter determining air filter status.	Alr filter is clogged	Check air filter for clogging or restriction, clean it or replace it	Frequency: no lamp Lamp: no lamp	4484-31
AirFilMonClogDetnlmdt	Air FIlter clogged , dP Pressure above second threshold (critical)	1284-1F	Air FIlter	The Air filter located in the intake manifold ,could get clogged and under ct the air flow into the engine or be broken or removed letting unfiltered air into engine intake. This module monitors the differential pressure level over the filter determining air filter status.	Air filter level of clogging critical	Check air filter for clogging or restriction, clean it or replace it	Frequency: no lamp Lamp: no lamp	4740-31
AirFilMonMnplDetd	Abnormal air pressure variation at filter, possible filter tampering	3384-1F	Air FIlter	The Air filter located in the intake manifold ,could get clogged and under ct the air flow into the engine or be broken or removed letting unfiltered air into engine intake. This module monitors the differential pressure level over the filter determining air filter status.	Sudden breach in filter, or failed repair shop intervention for solving clogging problem: filter removed or incorrectly remounted.	CHeck presence and under t mounting of the air filter, check air intake integrity	Frequency: no lamp Lamp: no lamp	13188-31
AirFilMonPDifMin	Air Filter resistance too low (Filter breached or incorrectly mounted)	2484-1F	Air FIlter	The Air filter located in the intake manifold ,could get clogged and under ct the air flow into the engine or be broken or removed letting unfiltered air into engine intake. This module monitors the differential pressure level over the filter determining air filter status.	Air filter breached, or missing or incorrectly mounted	Check air filter mounting and under ity, check air intake integrity	Frequency: no lamp Lamp: no lamp	9348-31
AirHt_TstOffHi	Air heater: DFC to SRC High error when heater is Off	1114-1F	Air heater	Air heater control manage a grid heater activation in case of engine start at low temperatures. If the control detects a preliminary failure, meaning that the expected voltage difference at grid heater switch ON/OFF, it starts a air heater test to verify heater functionality.	Short circuit of wiring to external source or defective air heater	Check wiring, check air heater	Frequency: no lamp Lamp: no lamp	4372-31
AirHt_TstOffLo	Air heater: DFC to SRC Low error when heater is Off	2214-1F	Air heater	Air heater control manage a grid heater activation in case of engine start at low temperatures. If the control detects a preliminary failure, meaning that the expected voltage difference at grid heater switch ON/OFF, it starts a air heater test to verify heater functionality.	Short circuit of wiring to ground or defective air heater	Check wiring, check air heater	Frequency: no lamp Lamp: no lamp	8724-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AirHt_TstOnHi	Air heater: DFC to SRC High error when heater is On	1314-1F	Air heater	Air heater control manage a grid heater activation in case of engine start at low temperatures. If the control detects a preliminary failure, meaning that the expected voltage difference at grid heater switch ON/OFF, it starts a air heater test to verify heater functionality.	Short circuit of wiring to external source or defective air heater	Check wiring, check air heater	Frequency: no lamp Lamp: no lamp	4884-31
AirHt_TstOnLo	Air heater: DFC to SRC Low error when heater is On	2414-1F	Air heater	Air heater control manage a grid heater activation in case of engine start at low temperatures. If the control detects a preliminary failure, meaning that the expected voltage difference at grid heater switch ON/OFF, it starts a air heater test to verify heater functionality.	Short circuit of wiring to ground or defective air heater	Check wiring, check air heater	Frequency: no lamp Lamp: no lamp	9236-31
AirHtFdbkClsd	Grid Heater: Heater feedback ON when commanded OFF	3194-1F	Air heater	Air heater control manage a grid heater activation in case of engine start at low temperatures. Two types of heater are used: PTC: characterized by a particular Resistance vs Temperature characteristic, that disables the current flow at a certain temperature level (230-240°C), stopping heating (self-protecting); Linear: allows an higher air flow and under temperature (>800°C) for deposits burning but needs an external startegy for protecting the heater from uncontrolled activation in case of electrical problem. For the linear heater a new architecture using two serial installed relays and feedback signal was developped, both relays must be closed to activate the grid heater and under ck signal is checked in accordance to requested heater activation request.	Feedback signal or grid heater shorted to battery	Check Grid Heater	Frequency: no lamp Lamp: no lamp	12692-31
AirHtFdbkOpen	Grid Heater: Heater feedback OFF when commanded ON	5294-1F	Air heater	Air heater control manage a grid heater activation in case of engine start at low temperatures. Two types of heater are used: PTC: characterized by a particular Resistance vs Temperature characteristic, that disables the current flow at a certain temperature level (230-240°C), stopping heating (self-protecting); Linear: allows an higher air flow and under temperature (>800°C) for deposits burning but needs an external startegy for protecting the heater from uncontrolled activation in case of electrical problem. For the linear heater a new architecture using two serial installed relays and feedback signal was developped, both relays must be closed to activate the grid heater and under ck signal is checked in accordance to requested heater activation request.	Feedback signal or grid heater shorted to ground or open loaded	Check Grid Heater	Frequency: no lamp Lamp: no lamp	21140-31
AirHtHtr1Clsd	Grid Heater: Relay 1 stuck closed	3394-1F	Air heater	Air heater control manage a grid heater activation in case of engine start at low temperatures. Two types of heater are used: PTC: characterized by a particular Resistance vs Temperature characteristic, that disables the current flow at a certain temperature level (230-240°C), stopping heating (self-protecting); Linear: allows an higher air flow and under temperature (>800°C) for deposits burning but needs an external startegy for protecting the heater from uncontrolled activation in case of electrical problem. For the linear heater a new architecture using two serial installed relays and feedback signal was developped, both relays must be closed to activate the grid heater and under ck signal is checked in accordance to requested heater activation request.	Relay 1 is blocked closed	Check and under e relay 1	Frequency: no lamp Lamp: no lamp	13204-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AirHtHtr2Clsd	Grid Heater: Relay 2 stuck closed	3494-1F	Air heater	Air heater control manage a grid heater activation in case of engine start at low temperatures. Two types of heater are used: PTC: characterized by a particular Resistance vs Temperature characteristic, that disables the current flow at a certain temperature level (230-240°C), stopping heating (self-protecting); Linear: allows an higher air flow and under temperature (>800°C) for deposits burning but needs an external startegy for protecting the heater from uncontrolled activation in case of electrical problem. For the linear heater a new architecture using two serial installed relays and feedback signal was developped, both relays must be closed to activate the grid heater and under ck signal is checked in accordance to requested heater activation request.	Relay 2 is blocked closed	Check and under e relay 2	Frequency: no lamp Lamp: no lamp	13460-31
AirHtStickOn	Air heater: Grid Heater always switched on	A514-1F	Air heater	Air heater control manage a grid heater activation in case of engine start at low temperatures. If the control detects a preliminary failure, meaning that the expected voltage difference at grid heater switch ON/OFF, it starts a air heater test to verify heater functionality.	Short Circuit to Ground in wiring or Grid Heater	Check wiring and rid Heater	Frequency: no lamp Lamp: no lamp	42260-31
AirMonEGRRed	EGR mass flow reduced due to sooting	F127-1F	EGR Control	This function detects a reduced EGR mass flow due to sooting in the EGR pipe. At operating points with a high EGR mass flow and under closed-loop control, this can cause the need for stronger throttling in order to achieve the required exhaust-gas mass flow or air mass flow.	Sooted EGR pipes	EGR system should be cleaned	Frequency: no lamp Lamp: no lamp	61735-31
AirTMonPlaus_0	Selected Temperature sensor 1 delivering implausible value (check description for detail)	3154-1F	Temperature Sensor	Up to five temperature sensors can be monitored for mutual plausibility. If the sensor assigned to position 1 of plausibility check is clearly identified as delivering a non plausible temperature value, this fault is set. Environmental temperature sensor (EnvT_t) is monitored here	The temperature sensor is drifted	Check temperature sensor	Frequency: no lamp Lamp: no lamp	12628-31
AirTMonPlaus_1	Selected Temperature sensor 2 delivering implausible value (check description for detail)	3254-1F	Temperature Sensor	Up to five temperature sensors can be monitored for mutual plausibility. If the sensor assigned to position 2 of plausibility check is clearly identified as delivering a non plausible temperature value, this fault is set. Coolant temperature sensor (CEngDsT_t) is monitored here	The temperature sensor is drifted	Check temperature sensor	Frequency: no lamp Lamp: no lamp	12884-31
AirTMonPlaus_2	Selected Temperature sensor 3 delivering implausible value (check description for detail)	3354-1F	Temperature Sensor	Up to five temperature sensors can be monitored for mutual plausibility. If the sensor assigned to position 3 of plausibility check is clearly identified as delivering a non plausible temperature value, this fault is set. Turbine upstream temperature sensor (Exh_tTrbnUs) is monitored here	The temperature sensor is drifted	Check temperature sensor	Frequency: no lamp Lamp: no lamp	13140-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
AirTMonPlaus_3	Selected Temperature sensor 4 delivering implausible value (check description for detail)	3454-1F	Temperature Sensor	Up to five temperature sensors can be monitored for mutual plausibility. If the sensor assigned to position 4 of plausibility check is clearly identified as delivering a non plausible temperature value, this fault is set. Turbine upstream temperature sensor (Exh_tTrbnUs) is monitored here	The temperature sensor is drifted	Check temperature sensor	Frequency: no lamp Lamp: no lamp	13396-31
AirTMonPlaus_4	Selected Temperature sensor 5 delivering implausible value (check description for detail)	3554-1F	Temperature Sensor	Up to five temperature sensors can be monitored for mutual plausibility. If the sensor assigned to position 5 of plausibility check is clearly identified as delivering a non plausible temperature value, this fault is set. Turbine upstream temperature sensor (Exh_tTrbnUs) is monitored here	The temperature sensor is drifted	Check temperature sensor	Frequency: no lamp Lamp: no lamp	13652-31
AirTMonPlausTot	Two or more Selected Temperature sensors deliver implausible values	3654-1F	Temperature Sensor	Up to five temperature sensors can be monitored for mutual plausibility. If more than one sensor is deviating and t cannot be clearly identified which one is indicating a wrong value, this generic fault is set. The involved sensor for the plausibility check are indicated in the activated failure paths AirTMonPlaus_0 up to 5.	More than one temperature sensor considered for enhanced plausibility check is drifted	Check all involved temperature sensor	Frequency: no lamp Lamp: no lamp	13908-31
AltECUECMFbTO	LIN Bus: Timeout of Alternator feedback frame	91E2-1F	LIN-Bus	Communication frames of Smart alternator connected via Lin-Bus are monitored for time out. The feedback frame of smart alternatori carries information about alternator faults, duty cycle value, field current and ode operation status.	Lin Bus disturbance or smart alternator configuration problem	Check Lin-Bus, check Intelligent Alternator configuration	Frequency: no lamp Lamp: no lamp	37346-31
AltECUIAMStTO	LIN Bus: Timeout of Alternator status frame	92E2-1F	LIN-Bus	Communication frames of Smart alternator connected via Lin-Bus are monitored for time out. The IAMSt frame of Intelligent Alternator Module carries identifiers for alternator supplier, generator supplier and hip supplier.	Lin Bus disturbance or smart alternator configuration problem	Check Lin-Bus, check Intelligent Alternator configuration	Frequency: no lamp Lamp: no lamp	37602-31
AltECUTO	Lin Bus: Timeout of all Alternator frames	93E2-1F	LIN-Bus	Communication frames of Smart alternator connected via Lin-Bus are monitored for time out. The receive frames of Intelligent Alternator Module status and under ck are both in time out.	Lin Bus disturbance or smart alternator configuration problem	Check Lin-Bus, check Intelligent Alternator configuration	Frequency: no lamp Lamp: no lamp	37858-31
Appdesc_EEP_ERR_CB	ECM problem: EEPROM values for baud rate cannot be read	E16D-1F	ECU EEPROM	Calibrated parameters for baud rate cannot be read from EEPROM	Wrong programming? EEPROM defective?	Reprogram ECM, replace ECM	Frequency: no lamp Lamp: no lamp	57709-31
APPPlausBrk	Implausibility between brake and under rator pedal is checked	45C1-1F	Accelerator Pedal	The plausibility between brake and under rator pedal is checked	Pedal state recognigtion defective or driver is pressing brake and under rator at the same time	Check brake pedal switch	Frequency: no lamp Lamp: no lamp	17857-31
ARlyExtRlyLS1OL	External Actuator Relay 1: Open Load error at low side power stage	5D7D-1F	Actuator Relay	The Power stage of External Actuator Relay 1 is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Actuator at Low Side connected to External Actuator Relay 1	Check of wiring or replacement of Actuator connected to External Actuator Relay 1	Frequency: ON Lamp: Amber (SVS)	23933-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ARlyExtRlyLS1OT	External Actuator Relay 1: Over temperature error at low side power stage	8E7D-1F	Actuator Relay	The Power stage of External Actuator Relay 1 is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside connected actuator	Check battery voltage, wiring, power stage and under ted Actuator	Frequency: no lamp Lamp: no lamp	36477-31
ARlyExtRlyLS1SCB	External Actuator Relay 1: Short circuit to battery at low side power stage	6B7D-1F	Actuator Relay	The Power stage of External Actuator Relay 1 is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside connected actuator	Check of wiring or replacement of connected actuator	Frequency: no lamp Lamp: no lamp	27517-31
ARlyExtRlyLS1SCG	External Actuator Relay 1: Short circuit to ground at low side power stage	7C7D-1F	Actuator Relay	The Power stage of External Actuator Relay 1 is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside connected actuator	Check of wiring or replacement of connected actuator	Frequency: no lamp Lamp: no lamp	31869-31
ARlySCB_0	Short circuit to battery error at high side actuator relay with index x = 0	647D-1F	Actuator Relay	The power stage of relay actuator 0 is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside connected actuator	Check of wiring or replacement of connected actuator	Frequency: no lamp Lamp: no lamp	25725-31
ARlySCB_1	Short circuit to battery error at high side actuator relay with index x = 1	667D-1F	Actuator Relay	The power stage of relay actuator 1 is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside connected actuator	Check of wiring or replacement of connected actuator	Frequency: no lamp Lamp: no lamp	26237-31
ARlySCB_2	Short circuit to battery error at high side actuator relay with index x = 2	687D-1F	Actuator Relay	The power stage of relay actuator 2 is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside connected actuator	Check of wiring or replacement of connected actuator	Frequency: no lamp Lamp: no lamp	26749-31
ARlySCB_3	Short circuit to battery error at high side actuator relay with index x = 3	6A7D-1F	Actuator Relay	The power stage of relay actuator 3 is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside connected actuator	Check of wiring or replacement of connected actuator	Frequency: no lamp Lamp: no lamp	27261-31
ARlySCG_0	Short circuit to ground error at high side actuator relay with index x = 0	757D-1F	Actuator Relay	The power stage of Actuator Relay 0 is monitored by Hardware for electric failures.The monitoring for the short circuit to ground is done permanently for CY141 power stages only when the actuator relay is activated.	Short circuit of wiring to ground or inside connected actuator	Check of wiring or replacement of connected actuator	Frequency: ON Lamp: Amber (SVS)	30077-31
ARlySCG_1	Short circuit to ground error at high side actuator relay with index x = 1	777D-1F	Actuator Relay	The power stage of Actuator Relay 0 is monitored by Hardware for electric failures.The monitoring for the short circuit to ground is done permanently for CY141 power stages only when the actuator relay is activated.	Short circuit of wiring to ground or inside connected actuator	Check of wiring or replacement of connected actuator	Frequency: no lamp Lamp: no lamp	30589-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ARlySCG_2	Short circuit to ground error at high side actuator relay with index x = 2	797D-1F	Actuator Relay	The power stage of Actuator Relay 0 is monitored by Hardware for electric failures.The monitoring for the short circuit to ground is done permanently for CY141 power stages only when the actuator relay is activated.	Short circuit of wiring to ground or inside connected actuator	Check of wiring or replacement of connected actuator	Frequency: ON Lamp: Amber (SVS)	31101-31
ASModHardNOxMon	EGR: Too High NOx emission: Hard limits of the NOx monitoring	3DEC-1F	EGR: Too High NOx emission	The NOx emissions of an engine with EGR are mainly dependant on the EGR rate, which can be validated by the air fuel ratio. The EGR rate can be wrong, if the measured air flow AND/OR the introduced fuel quantity are not corresponding to the theoretical ones. Therefore the real air fuel ratio is monitored using the Oxygen sensor. If the measured air/fuel ratio (calculated through the Oxygen content in the exhaust gas) is higher than an engine speed and oad dependant value, a failure is reported. For European HDT OBD legislation, this failure is used to "activate" the storage of long time failures (which can not be erased before 400,00d days) - see failures "OBDGenFaultClct%" and o control the OBD performance limitation	Inaccurate lambda sensor, problem with EGR control or another emission reduction device, problem with injectors (wrong quantity)	Check lambda sensor for accuracy, check injectors, check EGR control and under emission reduction devices	Frequency: no lamp Lamp: no lamp	15852-31
ASModIntMnfTUsErr	Info: Intake manifold upstream temperature too high	F3CF-1F	None	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Intake manifold upstream temperature is monitored, if it is exceeding a defined threshold event is detected.	Event detection, Intake manifold upstream temperature too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	62415-31
ASModSoftNOxMon	EGR: Too High NOx emission: Soft limits of the NOx monitoring	3CEC-1F	EGR: Too High NOx emission	The NOx emissions of an engine with EGR are mainly dependant on the EGR rate, which can be validated by the air fuel ratio. The EGR rate can be wrong, if the measured air flow AND/OR the introduced fuel quantity are not corresponding to the theoretical ones. Therefore the real air fuel ratio is monitored using the Oxygen sensor. If the measured air/fuel ratio (calculated through the Oxygen content in the exhaust gas) is higher than an engine speed and oad dependant value, a failure is reported. For European HDT OBD legislation, this failure is used to "activate" the storage of long time failures (which can not be erased before 400,00d days) - see failures "OBDGenFaultClct%".	Inaccurate lambda sensor, problem with EGR control or another emission reduction device, problem with injectors (wrong quantity)	Check lambda sensor for accuracy, check injectors, check EGR control and under emission reduction devices	Frequency: no lamp Lamp: no lamp	15596-31
AuxBrkCut	Exhaust Flap actuator: Engine break active at vehicle stand till	389C-1F	Exhaust Flap actuator	Normally the Engine brake is not used at vehicle stand under Therefore the Exhaust brake request is not plausible, if it is active at a vehicle speed below 0,00km/h.	Short circuit in the Exhaust brake request switch (permanent Exhaust brake request) Short circuit in the wiring harness of exhaust brake switch (permanent Exhaust brake request)	Check Exhaust brake switch Check Wiring harness of exhaust brake switch	Frequency: no lamp Lamp: no lamp	14492-31
BattUHi	Battery voltage: SRC high for battery voltage sensor	1161-1F	Battery voltage	Static monitoring (signal range check) of the battery voltage.	Alternator voltage governor defect	Replace alternator governor device or alternator	Frequency: ON Lamp: Amber (SVS)	4449-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
BattUL o	Battery voltage: SRC low for battery voltage sensor	2261-1F	Battery voltage	Static monitoring (signal range check) of the battery voltage.	Battery defect, alternator defect, wiring problems (too high resistance) or ECU defect. Occurence possible during cold start.	Replace battery or alternator. Check ECU and under .	Frequency: ON Lamp: Amber (SVS)	8801-31
BattUS RCMax	Battery voltage: SRC high for battery voltage sensor	1361-1F	Battery voltage	Static monitoring (signal range check) of the battery voltage.	Alternator voltage gov-ernor defect	Replace alternator governor device or alternator	Frequency: ON Lamp: Amber (SVS)	4961-31
BattUS RCMin	Battery voltage: SRC low for battery voltage sensor	2461-1F	Battery voltage	Static monitoring (signal range check) of the battery voltage.	Battery defect, alternator defect, wiring problems (too high resistance) or ECU defect. Occurrence possible during cold start.	Replace battery or alternator. Check ECU and under .	Frequency: ON Lamp: Amber (SVS)	9313-31
BlByVlv EmgyO pen	Info: Main relay is ARly shut off to allow open of blow-by valve	56B3-1F	Blow by valve	When blow-by valve is configured to open if not energized, and Short Circuit to Ground failure is present, the only way to open blow-by is to open main relay (ARly). This situation is is showed by this failure detection	Short Circuit to Ground is detected on Blow-By valve	Check Blow-By valve and under	Frequency: no lamp Lamp: no lamp	22195-31
BlByVlv OL	Blow By 3-way valve: power stage output open load error	53B3-1F	Blow by valve	The Power stage of Blow By Valve is monitored by Hardware for electric fail-ures.	Broken or disconnected wiring or defective Blow By Valve	Check of wiring or replacement of Blow By Valve	Frequency: no lamp Lamp: no lamp	21427-31
BlByVlv OT	Diagnostic Fault Check for Blow By 3-way valve power stage output excess temperature er	84B3-1F	Blow by valve	The Power stage of Blow By Valve is monitored by Hardware for electric fail-ures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside Blow By Valve	Check battery voltage, wiring, power stage Blow By Valve	Frequency: no lamp Lamp: no lamp	33971-31
BlByVlv SCB	Blow By 3-way valve: Power stage output short circuit to battery	61B3-1F	Blow by valve	The Power stage of Blow By 3-way valve is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside Blow By Valve	Check of wiring or replacement of Blow By Valve	Frequency: no lamp Lamp: no lamp	25011-31
BlByVlv SCG	Diagnostic Fault Check for Blow By 3-way valve power stage short circuit to ground	72B3-1F	Blow by valve	The Power stage of Blow By Valve is monitored by Hardware for electric fail-ures.	Short circuit of wiring to ground or inside Blow By Valve	Check of wiring or replacement of Blow By Valve	Frequency: no lamp Lamp: no lamp	29363-31
BPAC OCurr OutRng Max	Turbocharger position gov-ernor: Excessive current adap-tion value	1198-1F	Turbochar-ger control	The adaptive current control for turbocharger is monitored by comparing calcu-lated ratio between turbocharger set point (TrbCh_iDesVal_mp) and under value (TrbCh_iGovActVal). Failure is set if ratio TrbCh_rCorrFactor_mp lies out of defined range	Drifted turbocharger actu-ator	Replace Turbocharger?	Frequency: no lamp Lamp: no lamp	4504-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
BPAEV GTOfs Max	EVGT: Actuator offset detected	2298-1F	Turbocharger control	If, within a certain engine operating range (medium speed, high load) and under specific environment conditions the Turbocharger position is permanently close to Maximum or Minimum Position, this can be an indication for an offset in actuator displacement (reference lost).	Drifted actuator	Recalibrate actuator, check position, replace turbocharger	Frequency: no lamp Lamp: no lamp	8856-31
BrkNpl	Brake Actuation: Main and under ant brake switch state different	31B1-1F	Break Actuation	The brake signal acquires and under ses the information of brake contact sensor and he redundant brake contact sensor. Both digital inputs are checked for plausibility, i.e. they must show both same state (i.e. braking or not).	- The adjustment of the brake switches is not good enough. - One of the brake switches has a short circuit. - The circuit has an open lead.	- Check the adjustment of the brake switches - Check the brake switches for short circuit - Check the wiring and he brake switches for open lead	Frequency: no lamp Lamp: no lamp	12721-31
BrkNpl 01	Brake switch implausible (main brake not pressed, redundant brake pressed)	31C1-1F	Break Actuation	The brake signal acquires and under ses the information of brake contact sensor and he redundant brake contact sensor. Both digital inputs are checked for plausibility, i.e. they must show both same state (i.e. braking or not). Main break switch not present	Defective brake switch	Check and under e brake switch	Frequency: no lamp Lamp: no lamp	12737-31
BrkNpl 01NoC anPlaus	Brake switch implausible (main brake not pressed, redundant brake pressed) not confirmed by main break switch over CAN	32C1-1F	Break Actuation	The brake signal acquires and under ses the information of brake contact sensor and he redundant brake contact sensor. Both digital inputs are checked for plausibility, i.e. they must show both same state (i.e. braking or not). Main break switch not present	Defective brake switch	Check and under e brake switch	Frequency: no lamp Lamp: no lamp	12993-31
BrkNpl 10	Brake switch implausible (main brake pressed, redundant brake not pressed status)	33C1-1F	Break Actuation	The brake signal acquires and under ses the information of brake contact sensor and he redundant brake contact sensor. Both digital inputs are checked for plausibility, i.e. they must show both same state (i.e. braking or not). Main break switch not present	Defective brake switch	Check and under e brake switch	Frequency: no lamp Lamp: no lamp	13249-31
BrkNpl 10NoC anPlaus	Brake switch implausible (main brake pressed, redundant brake not pressed) not confirmed by main break switch over CAN	34C1-1F	Break Actuation	The brake signal acquires and under ses the information of brake contact sensor and he redundant brake contact sensor. Both digital inputs are checked for plausibility, i.e. they must show both same state (i.e. braking or not). Main break switch not present	Defective brake switch	Check and under e brake switch	Frequency: no lamp Lamp: no lamp	13505-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
BrkSigMn	Main break sensor: defective signal received from CAN	4DB1-1F	Break Actuation	The brake signal module acquires and under ses the information of brake contact sensor and he redundant brake contact sensor via CAN. This functionality is disabled.	Defect in CAN communication or in main brake sensor	Check the communication system or check and replace the main brake sensor	Frequency: no lamp Lamp: no lamp	19889-31
BrkSigRdnt	Redundant break sensor: defective signal received from CAN	4CB1-1F	Break Actuation	The brake signal module acquires and under ses the information of brake contact sensor and he redundant brake contact sensor via CAN. This functionality is disabled.	Defect in CAN communication or in redundant brake sensor	Check the communication system or check and replace the redundant brake sensor	Frequency: no lamp Lamp: no lamp	19633-31
BusDiagBusOffErrPasNodeA	CAN Bus: Error passive CAN Bus Node A	911B-1F	CAN Bus	The proper functioning of CAN Bus is monitored. If Bus Off state at CAN controller Node A occurs failure is detected.	Wrong configuration of CAN timing (Prescaler, synchronization jump width, sampling, propagation and under segments), bad termination resistors, defective network connection and under ts or defective CAN controller with erroneous messages.	Check timing configuration with hardware compatibility, check termination resistors and under k connection and under ts. Short circuits to external source, ground or CAN High to Low.Monitor CAN communication for erroneous behaviour of a participant.	Frequency: no lamp Lamp: no lamp	37147-31
BusDiagBusOffErrPasNodeB	CAN Bus: Error passive CAN Bus Node B	921B-1F	CAN Bus	The proper functioning of CAN Bus is monitored. If Bus Off state at CAN controller Node B occurs failure is detected.	Wrong configuration of CAN timing (Prescaler, synchronization jump width, sampling, propagation and under segments), bad termination resistors, defective network connection and under ts or defective CAN controller with erroneous messages.	Check timing configuration with hardware compatibility, check termination resistors and under k connection and under ts. Short circuits to external source, ground or CAN High to Low.Monitor CAN communication for erroneous behaviour of a participant.	Frequency: no lamp Lamp: no lamp	37403-31
BusDiagBusOffErrPasNodeC	CAN Bus: Error passive CAN Bus Node C	931B-1F	CAN Bus	The proper functioning of CAN Bus is monitored. If Bus Off state at CAN controller Node C occurs failure is detected.	Wrong configuration of CAN timing (Prescaler, synchronization jump width, sampling, propagation and under segments), bad termination resistors, defective network connection and under ts or defective CAN controller with erroneous messages.	Check timing configuration with hardware compatibility, check termination resistors and under k connection and under ts. Short circuits to external source, ground or CAN High to Low.Monitor CAN communication for erroneous behaviour of a participant.	Frequency: ON Lamp: Amber (SVS)	37659-31
BusDiagBusOffErrPasNodeD	CAN Bus: Error passive CAN Bus Node D	941B-1F	CAN Bus	The proper functioning of CAN Bus is monitored. If Bus Off state at CAN controller Node D occurs failure is detected.	Wrong configuration of CAN timing (Prescaler, synchronization jump width, sampling, propagation and under segments), bad termination resistors, defective network connection and under ts or defective CAN controller with erroneous messages.	Check timing configuration with hardware compatibility, check termination resistors and under k connection and under ts. Short circuits to external source, ground or CAN High to Low.Monitor CAN communication for erroneous behaviour of a participant.	Frequency: no lamp Lamp: no lamp	37915-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
BusDiag BusOff NodeA	CAN Bus: Error CAN Bus Node A	951B-1F	CAN Bus	The proper functioning of CAN Bus is monitored. If Bus Off state at CAN controller Node A occurs failure is detected.	Wrong configuration of CAN timing (Prescaler, synchronization jump width, sampling, propagation and under segments), bad termination resistors, defective network connection and under ts or defective CAN controller with erroneous messages.	Check timing configuration with hardware compatibility, check termination resistors and under k connection and under ts. Short circuits to external source, ground or CAN High to Low.Monitor CAN communication for erroneous behaviour of a participant.	Frequency: ON Lamp: Amber (SVS)	38171-31
BusDiag BusOff NodeB	CAN Bus: Error CAN Bus Node B	961B-1F	CAN Bus	The proper functioning of CAN Bus is monitored. If Bus Off state at CAN controller Node B occurs failure is detected.	Wrong configuration of CAN timing (Prescaler, synchronization jump width, sampling, propagation and under segments), bad termination resistors, defective network connection and under ts or defective CAN controller with erroneous messages.	Check timing configuration with hardware compatibility, check termination resistors and under k connection and under ts. Short circuits to external source, ground or CAN High to Low.Monitor CAN communication for erroneous behaviour of a participant.	Frequency: ON Lamp: Amber (SVS)	38427-31
BusDiag BusOff NodeC	CAN Bus: Error CAN Bus Node C	971B-1F	CAN Bus	The proper functioning of CAN Bus is monitored. If Bus Off state at CAN controller Node C occurs failure is detected.	Wrong configuration of CAN timing (Prescaler, synchronization jump width, sampling, propagation and under segments), bad termination resistors, defective network connection and under ts or defective CAN controller with erroneous messages.	Check timing configuration with hardware compatibility, check termination resistors and under k connection and under ts. Short circuits to external source, ground or CAN High to Low.Monitor CAN communication for erroneous behaviour of a participant.	Frequency: ON Lamp: Amber (SVS)	38683-31
BusDiag BusOff NodeD	CAN Bus: Error CAN Bus Node D	981B-1F	CAN Bus	The proper functioning of CAN Bus is monitored. If Bus Off state at CAN controller Node D occurs failure is detected.	Wrong configuration of CAN timing (Prescaler, synchronization jump width, sampling, propagation and under segments), bad termination resistors, defective network connection and under ts or defective CAN controller with erroneous messages.	Check timing configuration with hardware compatibility, check termination resistors and under k connection and under ts. Short circuits to external source, ground or CAN High to Low.Monitor CAN communication for erroneous behaviour of a participant.	Frequency: no lamp Lamp: no lamp	38939-31
CABVlv OL	Charged Air Bypass (intercooler) Valve: Open load	54D4-1F	None	The Power stage of CAB Valve (Charged Air Bypass) is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective CAB Valve Actuator at Low Side	Check of wiring or replacement of CAB Valve Actuator	Frequency: no lamp Lamp: no lamp	21716-31
CABVlv OvrTemp	Charged Air Bypass (intercooler) Valve: Over Temperature error	83D4-1F	None	The Power stage of CAB Valve (Charged Air Bypass) is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside CAB Valve Actuator	Check battery voltage, wiring, power stage and AB Valve Actuator	Frequency: no lamp Lamp: no lamp	33748-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CABVlv SCB	Charged Air Bypass (inter-cooler) Valve: Short circuit to battery	61D4-1F	None	The Power stage of CAB Valve (Charged Air Bypass) is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside CAB Valve	Check of wiring or replacement of CAB Valve	Frequency: no lamp Lamp: no lamp	25044-31
CABVlv SCG	Charged Air Bypass (inter-cooler) Valve: Short circuit to ground error	72D4-1F	None	The Power stage of CAB Valve (Charged Air Bypass) is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside CAB Valve	Check of wiring or replacement of CAB Valve	Frequency: no lamp Lamp: no lamp	29396-31
CAClgE ta	Charge Air Cooler: effi-ciency too low	A764-1F	None	The operational capability of the charge-air cooler is monitored by calculating the cooler efficiency. An on-board air system model calculates the temperature upstream of the charge-air cooler. The temperature downstream of the cooler and he environmental temperature are measured via sensors. If the efficiency calculated from these temperatures is less than a given threshold value, the charge-air cooler is detected as defective.	Charge air-cooler defective	Check charge-air cooler	Frequency: no lamp Lamp: no lamp	42852-31
CACPla us	Charged air pressure cooler efficiency low	3864-1F	Boost tem-perature	For EGR cooler plausibility monitoring the temperature downstream EGR cooler Air_tEGRClrDs and modelled temperature ASMod_tEGRDs are com-pared. If measured temperature is too high a defective EGR cooler is assumed. This monitoring is not used.	Charged air cooler effi-ciency low	Check charged air cooler	Frequency: no lamp Lamp: no lamp	14436-31
CANA PPUnPl a	Accelerator pedal position: Plausibility against low idle switch	3EB1-1F	Accelerator Pedal	The accelerator pedal detection determines the current pedal position, its error status and under es a suitable substitute value if necessary. The ECM is configured for a potentiometer/switch accelerator pedal. Plausibility check between accelerator pedal input and ow idle switch is per-formed (synchronisation test).	Wiring problem, aged or defective accelerator pedal	Check wiring and under rator pedal	Frequency: no lamp Lamp: no lamp	16049-31
CCAC HpDsT PhysRn gHi	Secondary coolant circut: Coolant circuit temperature too high	1193-1F	Coolant temp sensor	Charge Alr Cooler coolant temperature downstream is monitored	Excessive Charge Alr Cooler coolant temperat-ure downstream is meas-ured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary,	Frequency: no lamp Lamp: no lamp	4499-31
CCAC HpDsT PhysRn gLo	Secondary coolant circut: Coolant circuit temperature too low	2293-1F	Coolant temp sensor	Charge Alr Cooler coolant temperature downstream is monitored	Excessively low Charge Alr Cooler coolant temperat-ure downstream is meas-ured	Check cause for value to fall below min-imum allowed threshold (like environ-mental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	8851-31
CCAC HpDsT Sig	Secondary coolant circut: Coolant circuit temperature invalid signal	4393-1F	Coolant temp sensor	Charge Alr Cooler coolant temperature downstream is monitored	Charge Alr COolant Tem-perature sensor defective	Check sensor and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	17299-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CCACHpDsTSRCMax	Secondary coolant circut: Coolant circuit temperature Signal Range Check error high	1493-1F	Coolant temp sensor	Charge Air Cooler coolant temperature downstream is monitored	Sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	5267-31
CCACHpDsTSRCMin	Secondary coolant circut: Coolant circuit temperature Signal Range Check error low	2593-1F	Coolant temp sensor	Charge Air Cooler coolant temperature downstream is monitored	Sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	9619-31
CCDiaCcpSlFilter	Blow By: Blow By filter filling high	47C3-1F	Crankcase pressure	An increased pressure in the crankcase could damage the engine. Crankcase pressure could be increased because of a clogged blow by filter or if there is a fuel in oil diluition. Different element are examined to discriminate between fuel in oil and under possible problems: - presence of rail errors - crankcase pressure level - oil pressure level	Clogged blow by filter or blow by tubes obstructed	Clean or replace blow by filter, check blow by recirculation system	Frequency: no lamp Lamp: no lamp	18371-31
CCDiaFOCoHiPres	Fuel in Oil detection: High crankcase pressure detected, first time step	48C3-1F	Crankcase pressure	An increased pressure in the crankcase could damage the engine. Crankcase pressure could be increased because of a clogged blow by filter or if there is a fuel in oil diluition. Different element are examined to discriminate between fuel in oil and under possible problems: - presence of rail errors - crankcase pressure level - oil pressure level	Fuel in oil diluition, or piston ring cracked	Check the oil level; if it is increased there is most probably a leakage of fuel system in the oil swamp. Check rail for leakages, replace oil. Check piston rings (engine power output, abnormal smoke,...)	Frequency: no lamp Lamp: no lamp	18627-31
CCDiaFOCoHiPresDelay	Fuel in Oil detection: High crankcase pressure detected , second time step	49C3-1F	Crankcase pressure	An increased pressure in the crankcase could damage the engine. Crankcase pressure could be increased because of a clogged blow by filter or if there is a fuel in oil diluition. Different element are examined to discriminate between fuel in oil and under possible problems: - presence of rail errors - crankcase pressure level - oil pressure level	Fuel in oil diluition, or piston ring cracked	Check the oil level; if it is increased there is most probably a leakage of fuel system in the oil swamp. Check rail for leakages, replace oil. Check piston rings (engine power output, abnormal smoke,...)	Frequency: no lamp Lamp: no lamp	18883-31
CCDiaFOCoOld	Fuel in Oil detection: Fuel in Oil detected since last driving cycle (oil pressure low: low oil viscosity)	4AC3-1F	Crankcase pressure	An increased pressure in the crankcase could damage the engine. Crankcase pressure could be increased because of a clogged blow by filter or if there is a fuel in oil diluition. Different element are examined to discriminate between fuel in oil and under possible problems: - presence of rail errors - crankcase pressure level - oil pressure level	Fuel in oil diluition	Check the oil level; if it is increased there is most probably a leakage of fuel system in the oil swamp. Check rail for leakages, replace oil.	Frequency: no lamp Lamp: no lamp	19139-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CCDiaFOCoPreWarning	Fuel in Oil detection:Pre--Warning: Oil pressure monotnoe increasing	2DC3-1F	Crankcase pressure	An increased pressure in the crankcase could damage the engine. Crankcase pressure could be increased because of a clogged blow by filter or if there is a fuel in oil diluition. Different element are examined to discriminate between fuel in oil and under possible problems: - presence of rail errors - crankcase pressure level - oil pressure level			Frequency: no lamp Lamp: no lamp	11715-31
CCDiaFOCoRail	Fuel in Oil detection: Rail Pressure error and il pressure too low detected	4BC3-1F	Crankcase pressure	An increased pressure in the crankcase could damage the engine. Crankcase pressure could be increased because of a clogged blow by filter or if there is a fuel in oil diluition. Different element are examined to discriminate between fuel in oil and under possible problems: - presence of rail errors - crankcase pressure level - oil pressure level	Fuel in oil diluition, possible rail leakage. Oil pressure drop due to fuel diluition which dramatically reduce oil viscosity.	Check the oil level; if it is increased there is most probably a leakage of fuel system in the oil swamp. Check rail for leakages, replace oil.	Frequency: no lamp Lamp: no lamp	19395-31
CCDiaFOCoWarn	Fuel in Oil detection: Warning: all Symptoms of oil diluition are present (rail error,low oil pressure, high crankcase pressure)	4CC3-1F	Crankcase pressure	An increased pressure in the crankcase could damage the engine. Crankcase pressure could be increased because of a clogged blow by filter or if there is a fuel in oil diluition. Different element are examined to discriminate between fuel in oil and under possible problems: - presence of rail errors - crankcase pressure level - oil pressure level	Fuel in oil diluition, possible rail leakage. Oil pressure drop due to fuel diluition which dramatically reduce oil viscosity.	Check the oil level; if it is increased there is most probably a leakage of fuel system in the oil swamp. Check rail for leakages, replace oil.	Frequency: no lamp Lamp: no lamp	19651-31
CEngDsTAbsTst	Coolant temp sensor: defect fault check for Absolute plausibility test	3613-1F	Coolant temp sensor	The behaviour of physical Coolant temperature signal after engine start is monitored. Depending on engine start temperature and under speed/load condition, the "normal" temperature for warm engine must be reached within a dedicated time. Note: this test can be disabled by data set asking a very low final temperature independant on start temperature (curve CEngDsT_tMinAbsTst), which means always "OK" or by infinite time (curve CEngDsT_tiMaxAbsTst), which means always "not tested"	Very cold ambient conditions and under heater(s) on full power (specially if additional heaters using coolant temperature installed in the vehicle) Additional electrical resistance in the wiring (corroded connector) Inaccurate sensor (although sensor does not exceed its signal range) Engine thermostat blocked in open position	Ensure that engine was not running in extreme ambient conditions. Check wiring and under tors (corrosion) Check accuracy of sensor, replacement of sensor Check Thermostat functionality	Frequency: no lamp Lamp: no lamp	13843-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CEngDsTDynTst	Coolant temp sensor: defect fault check for dynamic plausibility test	3513-1F	Coolant temp sensor	The behaviour of physical Coolant temperature signal is monitored after engine start. Depending on engine start temperature and under speed/load condition, the temperature must rise with a certain velocity.	Very cold ambient conditions and under heater(s) on full power (specially if additional heaters using coolant temperature installed in the vehicle) Additional electrical resistance in the wiring (corroded connector) Inaccurate sensor (although sensor does not exceed its signal range) Engine thermostat blocked in open position	Ensure that engine was not running in extreme ambient conditions. Check wiring and under tors (corrosion) Check accuracy of sensor, replacement of sensor Check Thermostat functionality	Frequency: no lamp Lamp: no lamp	13587-31
CEngDsTMaxErr_0	Info: Engine coolant temperature exceedingly high (1st detection)	F4CF-1F	None	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Engine coolant temperature is monitored, if it is exceeding a defined threshold event is detected. Three failure paths are available which can cyclically collect the event.	Event detection, engine coolant temperature too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	62671-31
CEngDsTMaxErr_1	Info: Engine coolant temperature exceedingly high (2nd detection)	F5CF-1F	None	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Engine coolant temperature is monitored, if it is exceeding a defined threshold event is detected. Three failure paths are available which can cyclically collect the event.	Event detection, engine coolant temperature too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	62927-31
CEngDsTMaxErr_2	Info: Engine coolant temperature exceedingly high (3rd detection)	F6CF-1F	None	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Engine coolant temperature is monitored, if it is exceeding a defined threshold event is detected. Three failure paths are available which can cyclically collect the event.	Event detection, engine coolant temperature too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	63183-31
CEngDsTMinErr	Info: Engine coolant temperature exceedingly low	F7CF-1F	None	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Engine coolant temperature is monitored, if it is below a defined threshold event is detected.	Event detection, engine coolant temperature too low	No intervention necessary	Frequency: no lamp Lamp: no lamp	63439-31
CEngDsTPhysRngHi	Engine Cooling Water Temperature Sensor: Physical Signal above maximum limit	1313-1F	Coolant temp sensor	The value of physical Coolant temperature signal is monitored for plausibility. Measured physical value should lie in a defined range.	Excessive Coolant temperature measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	4883-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CEngDsTPhysRngLo	Engine Cooling Water Temperature Sensor: Physical Signal below minimum limit	2413-1F	Coolant temp sensor	The value of physical Coolant temperature signal is monitored for plausibility. Measured physical value should lie in a defined range.	Excessively low Coolant temperature is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	9235-31
CEngDsTSig	Coolant temp sensor: Error over CAN for Engine coolant temperature(down stream)	4713-1F	Coolant temp sensor	The Coolant Temperature sensor transmits by CAN, that it has detected an error.	Sensor defect, Problems with CAN	Check Sensor Check CAN Wiring	Frequency: ON Lamp: Amber (SVS)	18195-31
CEngDsTSRCMax	Coolant temp sensor: SRC High for Engine coolant temperature(down stream)	1113-1F	Coolant temp sensor	Electrical Signal range check of Coolant temperature sensor	Sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	4371-31
CEngDsTSRCMin	Coolant temp sensor: SRC low for Engine coolant temperature(down stream)	2213-1F	Coolant temp sensor	Electrical Signal range check of Coolant temperature sensor	Sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	8723-31
CEngDsTThermTHT	Thermostat monitor: deviation between measured and under d temperature	1273-1F	Coolant Thermostat	An open blocked thermostat can massive reduce engine coolant temperature delaying or inhibiting the reach of normal engine temperature. Modeled coolant temperature and under ed temperature are compared to establish if thermostat is working correctly	Thermostat is blocked open or closed or coolant flow restricted or coolant temperature sensor negative offset	Check thermostat check cooling system. Check coolant temperature sensor plausibility by comparing to known temperature at 20°C and 0°C.	and under : no lamp Lamp: no lamp	4723-31
CEngDsTVDPlaus	Engine Coolant Temperature: value not plausible compared to reference temp sensor after long stand under time	3813-1F	Coolant temp sensor	The physical value of Coolant temperature signal is monitored for plausibility at ECU start. The value of coolant temperature sensor is compared to Ambient temperature for plausibility	Coolant temperature sensor drifted	Check sensor	Frequency: no lamp Lamp: no lamp	14355-31
CEngPMin	Coolant pressure: Min error detection for coolant pressure state sensor	2A13-1F	Coolant pressure	Coolant pressure level is monitored by a digital switch for minimum level and under bility.	Defective pressure switch, defect in wiring (open circuit), leakage in cooling system, defective cooling pump	Check pressure switch and under , check entire cooling system for leakages, check cooling pump	Frequency: BLINK Lamp: Red (SVS)	10771-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CEngPPlaus	Coolant pressure: NPL error detection for coolant pressure state sensor	3B13-1F	Coolant pressure	Coolant pressure level is monitored by a digital switch for minimum level and under bility.	Defect in wiring (short circuit), defective pressure switch (stuck in closed position)	Check wiring and under re switch for proper functioning, replace pressure switch sensor	Frequency: no lamp Lamp: no lamp	15123-31
ClntLvLo	Coolant level: Low coolant level	4163-1F	Coolant level	Coolant level switch signal is not provided by a sensor, replacement value 0,00- is used.	Coolant level low or switch not working correctly	Check coolant level If OK, check coolant switch.	Frequency: no lamp Lamp: no lamp	16739-31
ClntTLmpOL	Coolant Ctrl Lamp: Indicates No Load Error	5723-1F	Clnt Ctrl Lamp	The Power stage for the control lamp for too high coolant temperature activation is controlled by Hardware for electrical failures	Broken or disconnected wiring or defective Coolant Temperature Warning Lamp	Check of wiring or replacement of Coolant Temperature Warning Lamp	Frequency: no lamp Lamp: no lamp	22307-31
ClntTLmpOvrTemp	Coolant Ctrl Lamp Ctrl Lamp: Indicates Over Temperature Error	8823-1F	Clnt Ctrl Lamp	The Power stage for the control lamp for too high coolant temperature activation is controlled by Hardware for electrical failures	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	34851-31
ClntTLmpSCB	Coolant Ctrl Lamp Ctrl Lamp: Indicates Short Circuit to Battery	6923-1F	Clnt Ctrl Lamp	The Power stage for the control lamp for too high coolant temperature activation is controlled by Hardware for electrical failures	Short circuit of wiring to external source or inside Coolant Temperature Warning Lamp	Check of wiring or replacement of Coolant Temperature Warning Lamp	Frequency: no lamp Lamp: no lamp	26915-31
ClntTLmpSCG	Coolant Ctrl Lamp Ctrl Lamp: Indicates Short Circuit to Ground	7A23-1F	Clnt Ctrl Lamp	The Power stage for the control lamp for too high coolant temperature activation is controlled by Hardware for electrical failures	Short circuit of wiring to ground or inside Coolant Temperature Warning Lamp	Check of wiring or replacement of Coolant Temperature Warning Lamp	Frequency: no lamp Lamp: no lamp	31267-31
ClthNpl	Clutch pedal: Plausibility check for Clutch	33B1-1F	Clutch pedal	The clutch signal acquired both via CAN interface and under re digital input is checked for plausibility.	Clutch switch defective, wiring broken or short circuit to ground, misuse of vehicle (starting engine with engaged gear or change gear without actuating clutch etc)	Check clutch switch, check wiring	Frequency: ON Lamp: Amber (SVS)	13233-31
ClthSig	Clutch pedal: Sig Error for Clutch	44B1-1F	Clutch pedal	The clutch signal acquired via CAN interface is checked for plausibility.	Clutch switch defective or problem on CAN communication with cutch switch	Check clutch switch. Check CAN connection	Frequency: ON Lamp: Amber (SVS)	17585-31
CoEngIdleShDwn	Engine Idle Shut Down	F2AF-1F	None	Failure path is used to trigger a driver information when idle shut down is activated	Idle shut down is active	INFO failure: no intervention necessary	Frequency: no lamp Lamp: no lamp	62127-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CoEngProtnShDwn	Engine Protection Shut Down	FDEF-1F	None				Frequency: no lamp Lamp: no lamp	65007-31
CoETSBstPrtTrqLim	Info: Torque Limitation active: Torque limitation caused by turbo charger protection after start	F1EF-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation due to the VGT protection mainly in high altitude, which was not caused by a failure, but an extreme working condition, which duration is longer than 60,00s. This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does not ask for any action except, to check if another failure concerning the turbocharger is stored in the memory.	Active power reduction > 60,00s due to turbo charger protection	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	61935-31
CoETSEngPrtOvhtClnt	Info: Torque Limitation active: Torque limitation caused by high engine coolant temperature	F3A2-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation due to high coolant temperature, which was not caused by a failure, but an extreme working condition, which duration is longer than 120,00s. This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does not ask for any action except, to check if other failures concerning cooling system are present in the failure memory.	Active power reduction > 120,00s due to high engine coolant temperature	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	62370-31
CoETSEngPrtOvhtEg	Info: Torque Limitation active: Torque limitation caused by high exhaust gas temperature	F4A2-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation due to high Exhaust Gas temperature, which was not caused by a failure, but an extreme working condition, which duration is longer than 120,00s. This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does not ask for any action except, to check if another failure influencing Exhaust system temperature are present in the failure memory.	Active power reduction > 120,00s due to high Exhaust gas temperature	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	62626-31
CoETSEngPrtOvhtFl	Info: Torque Limitation active: Torque limitation caused by high fuel temperature	F5A2-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation due to high fuel temperature, which was not caused by a failure, but an extreme working condition, which duration is longer than 120,00s. This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does not ask for any action except, to check if other failures which could ingluence fuel temperature are present in the failure memory.	Active power reduction > 120,00s due to high fuel temperature	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	62882-31
CoETSEngPrtOvhtIntkAir	Info: Torque Limitation active: Torque limitation caused by high air intake temperature	F6A2-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation due to high air intake temperature, which was not caused by a failure, but an extreme working condition, which duration is longer than 120,00s. This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does not ask for any action except, to check if other failures influencing air intake temperature are present in the failure memory.	Active power reduction > 120,00s due to high air intake temperature	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	63138-31
CoETSEngPrtOvhtOil	Info: Torque Limitation active: Torque limitation caused by high oil temperature	F7A2-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation due to high oil temperature, which was not caused by a failure, but an extreme working condition, which duration is longer than 120,00s. This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does not ask for any action except, to check if other failures influencing oil temperature are present in the failure memory.	Active power reduction > 120,00s due to high oil temperature	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error. If no other error justifies increased oil temperature and under is provided with an oil thermostat, check its correctly functioning.	Frequency: no lamp Lamp: no lamp	63394-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CoETS EngPrt OvhtTr bCh	Info: Torque Limitation active: Torque limitation caused by turbo charger protection	F8A2-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation due to turbocharger protection after start, which was not caused by a failure, but an extreme working condition, which duration is longer than 120,00s. This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does not ask for any action except, to check if another failure influencing turbocharger protection are present in the failure memory. Turbocharger protection after start is a functionality which should prevent to stress the turbo until lubrication is optimal after engine start	Active power reduction > 120,00s due to turbocharger protection after start	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	63650-31
CoETS EngPrtT rqLim	Info: Torque Limitation active: Torque limitation caused by engine protection	F2EF-1F	Info: Torque Limitation active	The engine is protected against too high air intake gas temperature (VGT protection), to high coolant temperature, too high oil temperature and oo high fuel temperature by reducing the torque, if one of the temperatures exceeds the dedicated limit: The maximum engine speed is limited to protect the VGT to run without lube oil after cold start. The Torque is limited depending on the difference between actual engine speed and he allowed speed which depends on engine temperature and ime since start (from 155,00mg/hub at 50,00rpm over 155,00mg/hub at 2000,00rpm to 155,00mg/hub at 6000,00rpm). Torque is reduced depending on oil temperature value according to a calibration curve. Torque is reduced depending on coolant temperature (by factor 1,50- at -2498,30° C over 1,50- at -2478,30° C and under at -2468,30° C and under at -2458,30° C and under at -2448,30° C Torque is reduced depending on fuel temperature (by factor 1,00- at -2498,40° C over 1,00- at -2478,40° C and under at -2468,40° C and under at -2458,40° C and under at -2448,40° C If calculated exhaust temperature exceeds -1728,30° C the torque is reduced dependant on engine speed and under air mass flow. If the reduction is > 0,15% for more than 120,00s, a failure is stored as confirmation that there was an active performance limitation, which was not caused by a failure, but an extreme working condition . This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does not ask for any action except, to check if another failure concerning the engine protection/engine speed is stored in the memory.	Active power reduction > 120,00s due to engine mechanics protection	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	62191-31
CoETSI njSysTr qLim	Info: Torque Limitation active: Torque limitation caused by injection system	F3EF-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation due to the high pressure fuel pump protection against too high fuel temperature, which was not caused by a failure, but an extreme working condition, which duration is longer than 120,00s. This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does not ask for any action except, to check if another failure concerning the injection system/fuel temperature is stored in the memory.	Active power reduction > 120,00s due to high pressure fuel pump protection	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	62447-31
CoETS LimInfo	Info: One or more torque limitations active	FAEF-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation	One or more torque reductions are present	No actions necessary due to this failure alone. If powerreduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	64239-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CoETS NTCTrqLim	Info: Torque Limitation active: Torque limitation caused by engine brake	F4EF-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation after engine brake release, which was not caused by a failure, but an extreme working condition, which duration is longer than 60,00s. This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does not ask for any action except, to check if another failure concerning the engine break is stored in the memory.	Active power reduction > 60,00s due to torque rise limitation after engine brake release.	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	62703-31
CoETS PDiffTrqLim	Info: Torque Limitation active: Torque limitation caused by particulate filter	F5EF-1F	Info: Torque Limitation active	If the particulate filter has collected to high particulate mass (e.g. due to non possible regeneration) the flow resistance increases. The engine torque is limited depending on the back pressure according to a dedicated calibration curve. If the max allowed torque equals to a power reduction > 0,15% longer than 120,00s, a failure is stored as information, that there was really an active performance limitation due to particulate filter protection, which was not caused by a failure, but an extreme working condition. This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does not ask for any action except, to check if another failure concerning the particulate filter is stored in the memory.	Active power reduction > 120,00s due to torque limitation for pressure drop limitation over particulate filter.	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	62959-31
CoETS PrflmTrqLim	Info: Torque Limitation active: Torque limitation caused by OBD performance limiter	F6EF-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation due to OBD legislation, which was caused by too high NOx emissions, which duration is longer than 60,00s. This failure does not ask for any action except, to check if another failure concerning the NOx emissions is stored in the memory (with FID_CoVehPrfmLim%%OBD with %%=11,12,21 or 22)	Active power reduction due to the OBD performance limiter because of too high NOx emissions	No actions necessary due to this failure alone. If powerreduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	63215-31
CoETS SCRPrtTrqLim	Info: Torque Limitation active: Torque limitation caused by SCRCAT protection	F7EF-1F	Info: Torque Limitation active	If the SCR temperature exceeds -1858,30° C > 99998312.68 sec	Active power reduction due to excessive temperatures in the SCR catalyst	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error.	Frequency: no lamp Lamp: no lamp	63471-31
CoETS SmkTrqLim	Info: Torque Limitation active: Torque limitation caused by smoke limitation	F8EF-1F	Info: Torque Limitation active	The torque is limited during acceleration to prevent smoke emissions due to "lean mixture". Therefore the fuel quantity is limited to a minimum air/fuel ratio, depending on the actual engine speed and he actual air flow. This reduction is usual and he duration normally less than 1 sec. If the limitation is > 0,15% for longer than 120,00s a lack of power can be felt by the driver. This failure path is used for information, that there was really an active performance limitation due to smoke limitation, which lasted longer than usually expected. This failure is thought to have a confirmation in case the driver complained a temporary "power lack". This failure does normally not ask for any action except, to check if another failure concerning the EGR or Boost pressure control is stored in the memory or if there is a reason for a "slow" response in air flow increase.	Active power reduction due to smoke limitation with unexpected long duration > 120,00s If no other failure stored concerning EGR or Boost pressure control: operation in extreme high altitude (>1800 m, i.e ambient pressure < 780mbar) sticking of VGT or EGR actuator or engine brake flap (if available) turbocharger with slow response (bad efficiency) wrong signal of HFM (or boost pressure sensor if HFM not available)	No actions necessary due to this failure alone. If power reduction occurred due to actual defect, the failure triggering the torque limitation should also be in the failure memory. Follow troubleshooting of this root error. If no failure stored in memory concerning EGR or Boost pressure control: if failure occurred at high altitude > 1800m (ambient pressure < 780mbar): no action needed. check actuators of EGR, Boost pressure and under t flap control for sticking. Check turbocharger for correct efficiency Check HFM and under pressure sensor for correct measuring values	Frequency: no lamp Lamp: no lamp	63727-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComA1 DOC_ TO	CAN Bus: Timeout Error of CAN-Trans-mit-Frame A1DOC mes-sage	9B99-1F	CAN Bus	The transmitted message A1DOC (Aftertreatment 1 Diesel Oxidation Cata-lyst) contains information about Diesel OxiCat. CAN messages are monitored for timeout.	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wir-ing.	Check the installation and he proper con-nection of the Engine Control Unit and he Instrument Cluster to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	39833-31
ComA1 SCRDSI 1TO	CAN Bus: Timeout Error of CAN-Trans-mit-Frame A1SCRDS11 message	9B4B-1F	CAN Bus	The transmitted message A1SCRDS11 (Aftertreatment 1 SCR Actual Dosing Reagent Quantity) contain information about UREA dosing quantity. CAN messages are monitored for timeout.	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wir-ing.	Check the installation and he proper con-nection of the Engine Control Unit and he Instrument Cluster to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	39755-31
ComA1 SCREG TTO	CAN Bus: Timeout Error of CAN-Trans-mit-Frame A1SCREGT message	9A2B-1F	CAN Bus	The transmitted message A1SCREGT (Aftertreatment 1 SCR Catalyst Intake Temperature) contain information about SCR Catalyst Intake Temperature. CAN messages are monitored for timeout.	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wir-ing.	Check the installation and he proper con-nection of the Engine Control Unit and he Instrument Cluster to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	39467-31
ComA CC2DL C	CAN Bus: Mes-sage data length Error of CAN--Receive-Frame ACC2 from Adaptive Cruise COntrol	BD51-1F	CAN Bus	The function receives and under ses the ACC2 message (Adaptive Cruise Con-trol) from the RADAR interface containing ACC usage demand under ation. Message data length is monitored	Wrong CAN configuration in the RADAR system	Check CAN configuration in the RADAR system	Frequency: no lamp Lamp: no lamp	48465-31
ComA CC2T O	CAN Bus: Timeout Error of CAN--Receive-Frame ACC2 for Adaptive Cruise Control	9E51-1F	CAN Bus	The function receives and under ses the ACC2 message (Adaptive Cruise Con-trol) from the RADAR interface containing ACC usage demand under ation. Received messages are monitored for time out	Defective CAN controller of RADAR, CAN cable dis-connected or broken. Short circuit in wiring.	Check presence and under t connection of RADAR to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40529-31
ComA CKTO	CAN Bus: Timeout Error of CAN-Trans-mit-Frame ACK message	991B-1F	CAN Bus	CAN messages are monitored for timeout.	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wir-ing.	Check the installation and he proper con-nection of the Engine Control Unit and he Instrument Cluster to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	39195-31
ComAl R1TO	CAN Bus: Timeout Error of CAN--Receive-Frame AIR1 from Ser-vice Brake Cir-cuit 1	96C1-1F	CAN Bus	The Receive CAN Message AIR1 contains information about Service Brake Cir-cuit 1 and Air Pressure. CAN Received messages are monitored for time out	Defective CAN controller of Service Brake Unit , under voltage or missing Service Brake Unit, CAN cable connecting the Ser-vice Brake Unit is discon-nected or broken. Short cir-cuit in wiring.	Check presence and under t connection of the Service Brake Unit to the network, check correct functioning of the Service Brake Unit CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	38593-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComAmbConTO	CAN Bus: Timeout Error of CAN-Transmit-Frame Ambient conditions (AmbCon, barometric pressure, ambient temperature)	9DC4-1F	CAN Bus	The transmitted and under ed CAN messages are monitored for timeout This message transmitted by ECU contains ambient pressure and under t temperature (not used by FUSO).	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check the installation and he proper connection of the Engine Control Unit to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	40388-31
ComAT1IG2TO	CAN Bus: Timeout Error of CAN-Transmit-Frame AT1IG2 (Aftertreatment Intake Gas Temperature)	9E29-1F	CAN Bus	Time out for the AT1IG2 CAN frame. This frame is according to SAE J1939, update rate of 10ms. It contains the following information about particulate trap differential pressure: Diesel Particulate Filter Intake Gas Temperature	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check the installation and he proper connection of the Engine Control Unit and he Instrument Cluster to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	40489-31
ComAT1IMGTO	CAN Bus: Timeout Error of CAN-Transmit-Frame AT1IMG	942B-1F	CAN Bus	Time out for the AT1IMG CAN frame. This frame is according to SAE J1939, update rate of 10ms. It contains the following information about particulate trap differential pressure (not used by FUSO)	CAN bus overload, frame could not be send.	Check CAN bus wiring. A defect could cause error frames which lead to high bus load or send the CAN controller to "bus off" state.	Frequency: no lamp Lamp: no lamp	37931-31
ComAT1STO	CAN Bus: Timeout Error of CAN-Transmit-Frame AT1S (Particulate filter soot/-ash load)	9F29-1F	CAN Bus	The transmitted message AT1S (Aftertreatment 1) contain information about particulate filter load (soot and sh load percent). CAN messages are monitored for timeout.	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40745-31
ComBC1MIL	CAN Bus MIL: DFC for MIL LAMP Error	3172-1F	CAN Bus MIL	Monitoring of the status of the MIL visualization which is transmitted via CAN by the body controller to the EDC	Defective MIL/Body Controller or disturbed CAN communication	Check presence and under t connection of the Body Computer to the network, Check correct functioning of the CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	12658-31
ComBC2EDC1DLC	CAN Bus: Message data length Error of CAN--Receive-Frame BC2EDC1 from Body Computer	B46B-1F	CAN Bus	The message BC2EDC1 is received from Body Computer or Vehicle Control Module and under ns following information: - Cruise Control actuation - Engine brake control - Vehicle speed limit - DM11,DM4, Trip recorder - Pin codes - MIL visualisation - CC/PTO activation Message data length is monitored	Wrong CAN configuration in the Body Computer	Check CAN configuration in the Body Computer	Frequency: no lamp Lamp: no lamp	46187-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComBC 2EDC2 DLC	CAN Bus: Message data length Error of CAN--Receive-Frame BC2EDC2 from Body Computer	B66B-1F	CAN Bus	The message BC2EDC2 is received from Body Computer or Vehicle Control Module and under ns following information: Switch or request status for Ignition, Engine Brake, Brake,PTO, Clutch, Transmission neutral, Vehicle speed limitation, Heaters, Engine start, Engine shutdown, Air condition, Cabin tilt, Fan, Oil life monitor Message data length is monitored	Wrong CAN configuration in the Body Computer	Check CAN configuration in the Body Computer	Frequency: no lamp Lamp: no lamp	46699-31
ComBC 2MsgC nt	CAN Bus: Rolling counter logic BC2EDC2	3FB1-1F	CAN Bus	Rolling counter logic is used to identify errors due to intermittently missing can frames. Status of Clutch Message Counter define monitoring about change of rolling counter blocking. A counter shall be increased by one every time current status value will be equal to previous value and under ented by one until zero every time current value will be not equal to previous value.	Wirings or Communication system problems	Check Wirings or check Communication system	Frequency: no lamp Lamp: no lamp	16305-31
ComBC AO1T O	CAN Bus: Timeout Error of CAN--Receive-Frame BCA01 from Air COnditioner COmpressor	9521-1F	CAN Bus	The Receive CAN Message BCA01 contains information about Air Conditioner Compressor Status. CAN Received messages are monitored for time out	Defective CAN controller of Air Conditioner Compressor Unit , under voltage or missing ACC Unit, CAN cable connecting the ACC Unit is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Air Conditioner Compressor Unit to the network, check correct functioning of the ACC Unit CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	38177-31
ComC CSSBC DLC	CAN Bus: Message data length Error of CAN--Receive-Frame CCSSBC (Speed limit from Body Computer)	BF31-1F	CAN Bus	The message CCSSBC (speed limit demand) is received from Body Computer. Message data length is monitored	Wrong CAN configuration in the Body Computer	Check CAN configuration in the Body Computer	Frequency: no lamp Lamp: no lamp	48945-31
ComC CSSBC TO	CAN Bus: Timeout Error of CAN--Receive-Frame CCSSBC (Speed limit from Body Computer)	9D31-1F	CAN Bus	The message CCSSBC (speed limit demand) is received from Body Computer. Received CAN messages are checked for timeout	Defective CAN controller of Body Computer, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Body Computer to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40241-31
ComC CSSTO	CAN Bus: Timeout Error of CAN-Transmit-Frame CCSS (Speed limiter from data from EDC)	9E31-1F	CAN Bus	The transmitted and under ed CAN messages are monitored for timeout This message transmitted by ECU contains current vehicle speed limiter data	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40497-31
ComC CVS2D LC	CAN Bus: Message data length Error of CAN--Receive-Frame CCVS2 from cruise control	B951-1F	CAN Bus	The receive message CCVS2 is used for reading the status/feedback frame transmitted by the cruise control Message data length is monitored	Wrong CAN configuration in the Cruise control	Check CAN configuration of cruise control	Frequency: no lamp Lamp: no lamp	47441-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComC CVS2T O	CAN Bus: Time out Error of CAN-Receive--Frame CCVS2 from cruise control	BA51-1F	CAN Bus	The receive message CCVS2 is used for reading the status/feedback frame transmitted by the cruise control CAN Received messages are monitored for time out	Defective CAN controller of Cruise Control Unit , under voltage or missing Cruise COntrol, CAN cable connecting the Cruise Cntrol Unit is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Cruise Control Unit to the network, check correct functioning of the Cruise Control Unit CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	47697-31
ComC CVS3T O	CAN Bus: Timeout Error of CAN-Transmit-Frame CCVS3	9851-1F	CAN Bus	The transmitted and under ed CAN messages are monitored for timeout The message CCVS3 transports ACC command Adaptive Cruise Control Readiness Status is transmitted, the Cruise Control System Command under the Source Address of Device Disabling Cruise Control , the Source Address of Device Pausing Cruise Control and he Autonomous Emergency Brake System Readiness Status.	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38993-31
ComC M1BC DLC	CAN Bus: Incorrect data length Error of CAN-Receive--Frame CM1BC (from Body Computer)	B26B-1F	CAN Bus	The message CM1BC is received from Body Computer or Vehicle Control Module and under ns: - Demanded Fan percent actuation - Adjustable speed limiter request switch - Second speed limiter request switch - Particulate filter forced request switch - Particulate filter inhibit request switch Message data length is monitored	Wrong CAN configuration in the Body Computer	Check CAN configuration in the Body Computer	Frequency: no lamp Lamp: no lamp	45675-31
ComC M1BCT O	CAN Bus: Timeout Error of CAN--Receive-Frame CM1BC (from Body Computer)	916B-1F	CAN Bus	The message CM1BC is received from Body Computer or Vehicle Control Module and under ns: - Demanded Fan percent actuation - Adjustable speed limiter request switch - Second speed limiter request switch - Particulate filter forced request switch - Particulate filter inhibit request switch Received CAN messages are checked for timeout	Defective CAN controller of Body Computer, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Body Computer to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37227-31
ComC M1TO	CAN Bus: Timeout Error of CAN-Transmit-Frame CM1	92AB-1F	CAN Bus	The transmitted and under ed CAN messages are monitored for timeout This message transports one signal reporting the status of the second and f the adjustable vehicle speed limiter.	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37547-31
ComC NH_FT TO	CAN Bus: Timeout Error of CAN-Transmit-Frame CNH_FT message	BB2B-1F	CAN Bus	The transmitted message CNH_FT (FIlter Information) contains information about Particulate Filter: Soot mass and under tage, Regeneration temperature and under on, number of started and under upted regenerations and flow resistance of Particulate filter. CAN messages are monitored for timeout.	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check the installation and he proper connection of the Engine Control Unit and he Instrument Cluster to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	47915-31
ComC RI1DLC	CAN Bus: Incorrect data length Error of CAN-Receive--Frame CRI1	B9EA-1F	CAN Bus	The message CRI1 contains sensor information about temperature and under tration of the catalyst reagent. Message data length is monitored	Wrong configuration of ESP8	Check ESP8 configuration	Frequency: no lamp Lamp: no lamp	47594-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComC RI1TO	CAN Bus: Timeout Error of CAN--Receive-Frame CRI1 (Catalyst reagent information)	9AEA-1F	SCR Control	Time out for the CRI1 CAN frame. This frame is according to SAE J1939, update rate of 1s. It contains sensor information about temperature and under tration of the catalyst reagent.	CAN bus overload or disturbed, frame could not be received.	Check CAN bus wiring. A defect could cause error frames which lead to high bus load or send the CAN controller to "bus off" state.	Frequency: ON Lamp: Amber (SVS)	39658-31
ComC TLPTO DLC	CAN Bus: Incorrect data length Error of CAN-Receive--Frame CTLPTO	BE7B-1F	CAN Bus	The message CTLPTO is received from PTO controller and under ns: - Engine speed limit request - Low idle increase set point - High idle decrease set point - Max torque limit Received CAN messages are checked for correct data length	Wrong CAN configuration of PTO Controller	Check CAN configuration of PTO Controller	Frequency: no lamp Lamp: no lamp	48763-31
ComC TLPTO TO	CAN Bus: Timeout Error of CAN--Receive-Frame CTLPTO (from PTO Controller)	9D7B-1F	CAN Bus	The message CTLPTOis received from PTO controller contains: - Engine speed limit request - Low idle increase set point - High idle decrease set point - Max torque limit Received CAN messages are checked for timeout	Defective CAN controller of PTO Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the PTO Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40315-31
ComD DDLC	CAN Bus: Incorrect data length Error of CAN-Receive--Frame DD from Dash Display	B8FB-1F	CAN Bus	The message DD is received from Dash Display and under ns Fuel level percentage value Received CAN messages are checked for correct length	Wrong CAN configuration of Dash Display	Check CAN configuration of Dash Display	Frequency: no lamp Lamp: no lamp	47355-31
ComD DTO	CAN Bus: Timeout Error of CAN--Receive-Frame Dashboard (DashDspl: fuel level)	93AB-1F	CAN Bus	Time out for the DD CAN frame (Dash Display). This frame contains information about fuel tank level. Received CAN messages are checked for timeout	Defective CAN controller of Dash DIsplay, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Dash Display to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37803-31
ComD emDP MSAE	CAN Bus: SAEJ1939 signal not in range for HCI dosing quantity (from DPM module)	457C-1F	HC Injection	The error is reported if the SAE J1939 checks fail for Signal not in range or Erroneous signal for HCI dosing quantity. Message PRODPM1 received from DCU.	Defective CAN controller of HCI dosing unit, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the HCI dosing unit to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	17788-31
ComDL CC1T O	CAN Bus: Timeout Error of CAN-Transmit-Frame DLCC1 message (Direct Lamp Control Command)	915B-1F	CAN Bus	and under mitted message DLCC1 (Direct Lamp Control Command) contains information about requested lamp commands CAN messages are monitored for timeout.	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37211-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComDLCD1DLC	CAN Bus: Message data length Error of CAN--Receive-Frame DLCD1 (Direct Lamp Control)	B86B-1F	CAN Bus	DLCD1 CAN message transmitted by IC or VCM. Message contains information about Direct Control Lamp Data The message data length is monitored.	Wrong CAN configuration in IC/VCM	Check CAN configuration of IC/VCM	Frequency: no lamp Lamp: no lamp	47211-31
ComDLCD1MILVis	CAN Bus: Message Implausible CAN-Receive--Frame DLCD1 (Direct Lamp Control)	3B72-1F	CAN Bus	DLCD1 CAN message transmitted by IC or VCM. Message contains information about Direct Control Lamp Data If MIL Control Lamp is implausible (value ==2) a failure is detected			Frequency: no lamp Lamp: no lamp	15218-31
ComDLCD1TO	CAN Bus: Message Timeout Error of CAN--Receive-Frame DLCD1 (Direct Lamp Control)	976B-1F	CAN Bus	DLCD1 CAN message transmitted by IC or VCM. Message contains information about Direct Control Lamp Data Received CAN messages are monitored for timeout	Defective CAN controller of IC/VCM, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the IC/VCM to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38763-31
ComDM1DCUBAMDLC	CAN Bus: Incorrect Data Length Error of CAN-Receive--Frame DM1DCUBAM (DCU errors)	B9FA-1F	CAN Bus	The message DM1DCUBAM is received from Dosing Control Unit (DCU). The message is used to transports: - DCU15 MIL status - DCU15 Amber Warning Status - DCU15 DTCs It is transmitted as single message every 1 second in case of no error or 1 error in the DCU sytsem. Otherwise the Multipacket message is transmitted with the same Tx rate. Received CAN messages are checked for correct length	Dosing Control Unit CAN configuration wrong	Check Dosing Control Unit CAN configuration	Frequency: no lamp Lamp: no lamp	47610-31
ComDM1DCUDLC	CAN Bus: Incorrect Data Length Error of CAN-Receive--Frame DM1DCU (DCU errors)	BAFA-1F	CAN Bus	The message DM1DCU is received from Dosing Control Unit (DCU). The message is used to transports: - DCU15 MIL status - DCU15 Amber Warning Status - DCU15 DTCs It is transmitted as single message every 1 second in case of no error or 1 error in the DCU sytsem. Otherwise the Multipacket message is transmitted with the same Tx rate. Received CAN messages are checked for correct length	Dosing Control Unit CAN configuration wrong	Check Dosing Control Unit CAN configuration	Frequency: no lamp Lamp: no lamp	47866-31
ComDM1DCUPACKDLC	CAN Bus: Incorrect Data Length Error of CAN-Receive--Frame DM1DCUPACK (DCU errors)	BBFA-1F	CAN Bus	The message DM1DCUPACK is received from Dosing Control Unit (DCU). The message is used to transports: - DCU15 MIL status - DCU15 Amber Warning Status - DCU15 DTCs It is transmitted as single message every 1 second in case of no error or 1 error in the DCU sytsem. Otherwise the Multipacket message is transmitted with the same Tx rate. Received CAN messages are checked for correct length	Dosing Control Unit CAN configuration wrong	Check Dosing Control Unit CAN configuration	Frequency: no lamp Lamp: no lamp	48122-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComD M1DC UTO	CAN Bus: Timeout Error of CAN--Receive-Frame DM1DCU (DCU errors)	96FA-1F	CAN Bus	The message DM1DCU is received from Dosing Control Unit (DCU). The message is used to transports: - DCU15 MIL status - DCU15 Amber Warning Status - DCU15 DTCs It is transmitted as single message every 1 second in case of no error or 1 error in the DCU sytsem. Otherwise the Multipacket message is transmitted with the same Tx rate. Received CAN messages are checked for timeout	Defective CAN controller of DCU, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the DCU to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38650-31
ComD M1SPN 1	Info: DCU Error of SPN goup 1 reported via CAN message DM1DCU	31FA-1F	SCR Control	DCU faikures are checked against applicable sets of listed DTCs: in case of matching found in the set number 1, DM1SPN1 DTC is activated.	DCU failure managed as EDC general failure in order to activate the relevant inducement reaction.	DCU failures should be investigated	Frequency: no lamp Lamp: no lamp	12794-31
ComD M1SPN 2	Info: DCU Error of SPN goup 2 reported via CAN message DM1DCU	32FA-1F	SCR Control	DCU faikures are checked against applicable sets of listed DTCs: in case of matching found in the set number 2, DM1SPN1 DTC is activated.		DCU failures should be investigated	Frequency: no lamp Lamp: no lamp	13050-31
ComD M1SPN 3	Info: DCU Error of SPN goup 3 reported via CAN message DM1DCU	33FA-1F	SCR Control	DCU faikures are checked against applicable sets of listed DTCs: in case of matching found in the set number 3, DM1SPN1 DTC is activated.	DCU failure managed as EDC general failure in order to activate the relevant inducement reaction.	DCU failures should be investigated	Frequency: no lamp Lamp: no lamp	13306-31
ComD M1SPN 4	Info: DCU Error of SPN goup 4 reported via CAN message DM1DCU	34FA-1F	SCR Control	DCU faikures are checked against applicable sets of listed DTCs: in case of matching found in the set number 4, DM1SPN1 DTC is activated.	DCU failure managed as EDC general failure in order to activate the relevant inducement reaction.	DCU failures should be investigated	Frequency: no lamp Lamp: no lamp	13562-31
ComD M1SPN 5	Info: DCU Error of SPN goup 5 reported via CAN message DM1DCU	35FA-1F	SCR Control	DCU faikures are checked against applicable sets of listed DTCs: in case of matching found in the set number 5, DM1SPN1 DTC is activated.	DCU failure managed as EDC general failure in order to activate the relevant inducement reaction.	DCU failures should be investigated	Frequency: no lamp Lamp: no lamp	13818-31
ComD PF1SDL C	CAN Bus: Data Length Error of CAN-Receive--Frame DPF1S (Soot mass)	34B9-1F	CAN Bus	DPF1S Message contains information about Diesel Particulate Filter Soot Mass The transmitted message is monitored for correct data length	Wrong CAN configuration in ECM module	Check CAN configuration in ECM Module	Frequency: no lamp Lamp: no lamp	13497-31
ComD PF1ST O	CAN Bus: Timeout Error of CAN--Receive-Frame DPF1S message	95B9-1F	CAN Bus	DPF1S Message contains information about Diesel Particulate Filter Soot Mass Transmitted messages are monitored for time out	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check the installation and he proper connection of the Engine Control Unit and he Instrument Cluster to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	38329-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComDPF1STxTO	CAN Bus: Timeout Error of CAN-Transmit-Frame DPF1STx message	96B9-1F	CAN Bus	DPF1STx Message contains information about Diesel Particulate Filter Soot Mass Transmitted messages are monitored for time out	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check the installation and he proper connection of the Engine Control Unit and he Instrument Cluster to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	38585-31
ComDPFC1TO	CAN Bus: Timeout Error of CAN-Transmit-Frame DPFC1	9169-1F	CAN Bus	The transmitted and under ed CAN messages are monitored for timeout This message transmitted by ECU contains - Status of particulate trap lamp - Status of DPF active regeneration - Status of exhaust temperature lamp - Status of DPF - Status of inhibit regeneration Message transmitted every 50 ms.	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37225-31
ComDSETO	CAN Bus: Timeout Error of CAN-Transmit-Frame DSE	9CFB-1F	CAN Bus	The transmitted and under ed CAN messages are monitored for timeout The DSE message transmitted by ECU contains the high resolution Ambient Pressure value nad the vehicle acceleration value	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40187-31
ComEACTO	CAN Bus: Timeout Error of CAN-Transmit-Frame EAC (Engine Auxiliary Coolant)	922B-1F	CAN Bus	The transmitted and under ed CAN messages are monitored for timeout The EAC message transmitted by ECU contains the Engine Auxiliary Coolant Pressure information	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37419-31
ComEBC1BCDLC	CAN Bus: Data Length error for CAN Receive Message EBC1BC from BC or VCM	B3DB-1F	CAN Bus	The message EBC1BC receives and under ses messages from the "electronic break system(EBS)" and under e system". The message contains: - Brake status - Derate switch status - Engine shutoff demand under - Engine retarder selector demand Message transmitted every 100 ms Message data length is checked	Wrong CAN configuration in Body Computer or Vehicle Controller Module	Check CAN configuration in Body Computer or Vehicle Controller Module.	Frequency: no lamp Lamp: no lamp	46043-31
ComEBC1BCTO	CAN Bus: Timeout Error of CAN--Receive-Frame EBC1BC from BC or VCM	95DB-1F	CAN Bus	The message EBC1 receives and under ses messages from the Body Computer or the Vehicle Control Module The message contains: - Brake status - Derate switch status - Engine shutoff demand under - Engine retarder selector demand Message transmitted every 100 ms Received CAN messages are checked for timeout	Defective CAN controller of EBS, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of EBS to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38363-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComEBC1DLC	CAN Bus: Data Length error for CAN Receive Message EBC1	B6DB-1F	CAN Bus	The message EBC1 receives and under ses messages from ABS/ASR/ESP/EBS The message contains: - Brake status - ABS active status, used to suspend the CC, by calibration - ASR engine active status, used to suspend the CC, by calibration - ASR brake active status, used to suspend the CC, by calibration - Engine shutoff demand under - Driver information signal Message transmitted every 100 ms Message data length is checked	Defective CAN controller of Electronic Brake Controller, wrong configuration of the EBC	Check presence and under t connection of the EBC to the network, Check correct functioning of the CAN controller. Check wiring. Check EBC configuration	Frequency: no lamp Lamp: no lamp	46811-31
ComEBC1RCSCHK	CAN Bus Received frames: Checksum Error of CAN-Receive--Frame Electronic Brake Controller (EBC1RCS)	FDEB-1F	CAN Bus	The message EBC1RCS receives and under ses messages from the ASR/ABS/-EBS and under ary shutdown system The message contains: - ASR switch status - ABS switch status - EBS switch status - Auxiliary engine shut down switch status - ATC/ASR driver information signal Message is provided with checksum and under l counter Message Checksum is verified.	CAN message corrupted or wrongly configurated	Check CAN configuration and under onality of involved actors (ABS,EBS,ASR)	Frequency: no lamp Lamp: no lamp	65003-31
ComEBC1RCSCTR	CAN Bus Received frames: Missed or repeated frame Error of CAN-Receive--Frame Electronic Brake Controller (EBC1RCS)	FEEB-1F	CAN Bus	The message EBC1RCS receives and under ses messages from the ASR/ABS/-EBS and under ary shutdown system The message contains: - ASR switch status - ABS switch status - EBS switch status - Auxiliary engine shut down switch status - ATC/ASR driver information signal Message is provided with checksum and under l counter Message counter is verified, to check frame loss	CAN malfunction, frame lost or repeated	Check CAN connection, bus load or other CAN malfunctions	Frequency: no lamp Lamp: no lamp	65259-31
ComEBC1RCSDLC	CAN Bus Received frames:Data Length Error of CAN-Receive--Frame Electronic Brake Controller (EBC1RCS)	BFEB-1F	CAN Bus	The message EBC1RCS receives and under ses messages from the ASR/ABS/-EBS and under ary shutdown system The message contains: - ASR switch status - ABS switch status - EBS switch status - Auxiliary engine shut down switch status - ATC/ASR driver information signal Message data length is checked	Wrong CAN configuration in ASR,EBS or EBS module	Check CAN configuration of involved actors	Frequency: no lamp Lamp: no lamp	49131-31
ComEBC1RCSTO	CAN Bus Received frames:Timeout Error of CAN--Receive-Frame Electronic Brake Controller (EBC1RCS)	91FB-1F	CAN Bus	The message EBC1RCS receives and under ses messages from the ASR/ABS/-EBS and under ary shutdown system The message contains: - ASR switch status - ABS switch status - EBS switch status - Auxiliary engine shut down switch status - ATC/ASR driver information signal Received messages are monitored for timeout.	Defective CAN controller of EBS, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of EBS to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37371-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComEBC1TO	CAN Bus: Timeout Error of CAN--Receive-Frame Electronic Brake Controller (EBC1: ASR,EBS,ABS, Traction control, retarder)1	94DB-1F	CAN Bus	The message EBC1 is sent by the Brake Controller (ABS / ASR / ESP) as a broadcast message. It contains several information on ABS, ASR, Brakes status: - Status of ASR engine control, used to shut off the Cruise Control, by calibration - Status of ASR brake control, used to shut off the Cruise Control, by calibration - Status of ABS, used to shut off the cruise control, by calibration - Status of brake pedal, used to get the brake pedal status via CAN (NOT MANAGED BY FUSO) - Status of engine shutdown demand, used to shut off the engine via CAN (NOT MANAGED BY FUSO) Received CAN messages are checked for timeout	Defective CAN controller of ABS / ASR / ESP, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the ABS / ASR / ESP to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38107-31
ComEBC1VSDLC	CAN Bus: Data Length error for CAN Receive Message EBC1VS from BC or VCM	B7DB-1F	CAN Bus	The message EBC1VS receives and under ses messages from the IC or VCM The message contains information Electronic Break Controller 1 from "Engine Auxiliary Shutdown Switch". Message data length is checked	Wrong CAN configuration in Body Computer or Vehicle Controller Module	Check CAN configuration in Body Computer or Vehicle Controller Module.	Frequency: no lamp Lamp: no lamp	47067-31
ComEBC1VSTO	CAN Bus: Timeout Error of CAN--Receive-Frame EBC1VS from BC or VCM	98DB-1F	CAN Bus	The message EBC1VS receives and under ses messages from the IC or VCM The message contains information Electronic Break Controller 1 from "Engine Auxiliary Shutdown Switch". Message is monitored for timeout	Defective CAN controller of EBS, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of EBS to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39131-31
ComEBC2DLC	CAN Bus: Data Length error for CAN Receive Message EBC2	BB31-1F	CAN Bus	Receiving Frame EBC2 contains wheel speed information. Message data length is monitored	Wrong wheel speed signal configuration	Check wheel speed signal configuration	Frequency: no lamp Lamp: no lamp	47921-31
ComEBC2TO	CAN Bus: Timeout Error of CAN--Receive-Frame Wheel Speed Information	9C31-1F	Vehicle speed sensor	Receiving Frame EBC2 contains wheel speed information. Message is monitored for timeout.	Wheel speed frame could not be received. Defect of EBC module. CAN bus overload or disturbed, .	Please check EBC and AN bus wiring. If CAN bus is disturbed, frames from other modules could possibly also not received.	Frequency: no lamp Lamp: no lamp	39985-31
ComEDC2EGRTO	CAN Bus: Timeout Error of CAN-Transmit-Frame EDC2EGR	984B-1F	CAN Bus	EDC2EGR message contains position request for EGR actuator. The message is monitored for time out	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38987-31
ComEDC2FLPTO	CAN Bus: Timeout Error of CAN-Transmit-Frame EDC2FLP	994B-1F	CAN Bus	EDC2FLP message contains position request for Exhaust Flap actuator. The message is monitored for time out	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39243-31
ComEDC2HCUTO	CAN Bus: Timeout Error of CAN-Transmit-Frame EDC2HCU	932B-1F	CAN Bus	EDC2HCU message contains Heater Control command or SCR system The message is monitored for time out	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37675-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComE DC2N H3DLC	CAN Bus: Incorrect data length of CAN--Transmit-Frame EDC2NH3	B3EE-1F	CAN Bus	EDC2NH3 message contains information about engine operation point transmitted by EDC to NH3 sensor. The message is monitored for data length	Wrong CAN configuration in ECM module	Check CAN configuration in ECM Module	Frequency: no lamp Lamp: no lamp	46062-31
ComE DC2N H3TO	CAN Bus: Timeout Error of CAN-Transmit-Frame EDC2NH3	94EE-1F	CAN Bus	EDC2NH3 message contains information about engine operation point transmitted by EDC to NH3 sensor. The message is monitored for time out	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38126-31
ComE DC2N OxTO	CAN Bus: Timeout Error of CAN-Transmit-Frame EDC to NOx Sensor (EDC2NOx: Engine operation status, engine speed,Dew point, exhaust temperatures)	94BE-1F	CAN Bus	EDC2NOx message contains information about dew point status transmitted by EDC to NOx sensor. The message is monitored for time out	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38078-31
ComE DC2N OxUsT O	CAN Bus: Timeout Error of CAN-Transmit-Frame EDC to NOx Upstream Sensor (EDC2NOxUS: Engine operation status, engine speed,Dew point, exhaust temperatures)	95BE-1F	CAN Bus	EDC2NOxUs message contains information about dew point status transmitted by EDC to NOx Upstream sensor. The message is monitored for time out	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38334-31
ComE DC2So otTO	CAN Bus: Timeout Error of CAN-Transmit-Frame EDC2Soot (communicate reach of dew point to ssot sensor)	9E2B-1F	CAN Bus	EDC2Soot message contains information about dew point status transmitted by EDC to Soot sensor. The message is monitored for time out	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40491-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComE DC2SR ATO	CAN Bus: Timeout Error of CAN-Trans-mit-Frame EDC to SRA (eVGT actuator status and under ck position)	9A4B-1F	CAN Bus	EDC2SRA message contains information about status / position feedback trans-mitted by EDC to eVGT actuator. The message is monitored for time out	Defective CAN controller of EDC, CAN cable discon-nected or broken. Short cir-cuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39499-31
ComE DC2TV ATO	CAN Bus: Timeout Error of CAN-Trans-mit-Frame EDC to TVA (set point and under d tatus)	9CB4-1F	CAN Bus	EDC2TVA message from EDC to TVA (Throttle Valve Actuator) contains information about requested set point position and under d tatus The message is monitored for time out	Defective CAN controller of EDC, CAN cable discon-nected or broken. Short cir-cuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40116-31
ComE DC2W PCTO	CAN Bus: Timeout Error of CAN-Trans-mit-Frame EDC2WPC to Water Pump Controller	9263-1F	CAN Bus	The transmit frame EDC2WPC is used for commanding the water pump actu-ator. For this purpose two command re sent to the actuator: 1.requested actuator position (percentage value) 2. command under (bit coded value) Transmit messages are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connec-tion of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37475-31
ComEE C1TO	CAN Bus: Timeout Error of CAN-Trans-mit-Frame Elec-tronic Engine Control 1 (EEC1: torque information)	962B-1F	CAN Bus	The proprietary message EEC1 contains the current torque information (Source , Mode and under as well as engine speed and under starter information Transmit messages are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connec-tion of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: ON Lamp: Amber (SVS)	38443-31
ComEE C2TO	CAN Bus: Timeout Error of CAN-Trans-mit-Frame Elec-tronic Engine Control 2 (EEC2: acceler-ator pedal information)	972B-1F	CAN Bus	The proprietary message EEC2 contains the accelerator pedal information (status, percent) Transmit messages are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connec-tion of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38699-31
ComEE C2VDL C	CAN Bus: Data Length error for Receive Frame Electronic Engine Control 2 from vehicle controller (EEC2V: CAN IDs and under teristics)	BEFB-1F	CAN Bus	The message EEC2V is sent by vehicle controller. It contains the accelerator pedal information (status, percent) Received CAN messages are checked for correct length	Wrong CAN configuration of Vehicle controller ,	Check CAN configuration of the Vehicle Controller	Frequency: no lamp Lamp: no lamp	48891-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComEEC2VTO	CAN Bus: Timeout Error of CAN--Receive-Frame Electronic Engine Control 2 from vehicle controller (EEC2V: CAN IDs and under teristics)	94AB-1F	CAN VTO	The message EEC2V is sent by vehicle controller. It contains the accelerator pedal information (status, percent) and he road speed limit status Received CAN messages are checked for timeout	Defective CAN controller of Vehicle controller , undervoltage of VC, missing VC, CAN cable connecting the VC is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Vehicle Controller to the network, check correct functioning of the VC CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	38059-31
ComEEC3TO	CAN Bus: Timeout Error of CAN-Transmit-Frame Electronic Engine Control 3 (EEC3: friction,desired speed, estimated engine parasitic losses)	982B-1F	CAN Bus	The message EEC3 contains the engine friction value, estimated engine parasitic loss, engine desired speed and under t mass flow information Transmit messages are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38955-31
ComEEC3VTO	CAN Bus: Timeout Error of CAN--Receive-Frame EEC3V for Estimated Parasitic Losses	97CB-1F	CAN Bus	The Receive CAN Message EEC3V contains information about Estimated Parasitic Losses - Percent Torque. CAN Received messages are monitored for time out			Frequency: no lamp Lamp: no lamp	38859-31
ComEEC4TO	CAN Bus: Timeout Error of CAN-Transmit-Frame Electronic Engine Control 4 (EEC4: rated speed, rated power information)	992B-1F	CAN Bus	The message EEC4 contains engine rated power and under information. Message is sent on event. Transmit messages are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39211-31
ComEFL_P1TO	CAN Bus: Timeout Error of CAN-Transmit-Frame EFL_P1 frame (Engine Fluid Level/Pressure)	913B-1F	CAN Bus	The message EFL_P1 contains information about engine fluids level and under re: Engine fuel delivery pressure, engine oil level and under re, engine coolant level Transmit messages are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37179-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComEFSTO	CAN Bus: Timeout Error of CAN-Transmit-Frame EFS frame (Engine Fuel or lube systems)	964B-1F	CAN Bus	The message EFS contains information about fuel pre- filter delta pressure: Transmit messages are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38475-31
ComEGF1DLC	CAN Bus: Data Length error for CAN Receive Message EGF1	B2EB-1F	CAN Bus	The message EGF1 receives and under ses EGR Gas Flow Rate values Message data length is checked	Wrong CAN configuration in the EGR sensor	Check CAN configuration in the EGR sensor	Frequency: no lamp Lamp: no lamp	45803-31
ComEGF1HtrMax	EGR Sensor: Signal open circuit reported by sensor	1A37-1F	EGR Dlff.Pressure Sensor	The function receives and under ses the EGR Gas Flow Rate message from differential pressure smart sensor. Sensor sends a special value in case of open circuit error detection.	Defective EGR Sensor signal	Check EGR sensor supply and under	Frequency: no lamp Lamp: no lamp	6711-31
ComEGF1HtrMin	EGR Sensor: Signal short circuit reported by sensor	2B37-1F	EGR Dlff.Pressure Sensor	The function receives and under ses the EGR Gas Flow Rate message from differential pressure smart sensor. Sensor sends a special value in case of short circuit error detection.	Defective EGR flow rate Sensor signal	Check EGR sensor supply and under	Frequency: no lamp Lamp: no lamp	11063-31
ComEGF1HtrNpl	EGR Sensor: Signal not plausible reported by sensor	3C37-1F	EGR Dlff.Pressure Sensor	The function receives and under ses the EGR Gas Flow Rate message from differential pressure smart sensor. Sensor sends a special value in case of non plausible signal error detection.	Defective EGR Sensor signal	Check EGR sensor supply and under	Frequency: no lamp Lamp: no lamp	15415-31
ComEGF1HtrSig	EGR Sensor: Signal not stable reported by sensor	4D37-1F	EGR Dlff.Pressure Sensor	The function receives and under ses the EGR Gas Flow Rate message from differential pressure smart sensor. Sensor sends a special value in case of signal not stable error detection.	Defective EGR Sensor signal	Check EGR sensor supply and under	Frequency: no lamp Lamp: no lamp	19767-31
ComEGF1TO	CAN Bus: Timeout Error of CAN--Receive-Frame for EGR flow rate EGF1	9E37-1F	CAN Bus	The message EGF1 receives and under ses EGR Gas Flow Rate values Received CAN messages are checked for timeout	Defective CAN controller of the EGR Sensor (Exhaust Gas Recirculation) CAN cable disconnected or broken. Short circuit in wiring	Check presence and under t connection of the EGR Sensor(Exhaust Gas Recirculation) to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40503-31
ComEGR2EDCCtrl	EGR smart actuator: Actuator detected a control error	3147-1F	EGR Valve	The receive message EGR2EDC is used for reading the status/feedback frame transmitted by the EGR actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort			Frequency: no lamp Lamp: no lamp	12615-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComEGR2EDCDLC	CAN Bus: Data Length error for CAN Receive Message EGR2EDC from EGR smart actuator	BD47-1F	EGR Valve	The receive message EGR2EDC is used for reading the status/feedback frame transmitted by the EGR actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Wrong CAN configuration in smart EGR actuator	Check CAN configuration in EGR smart actuator	Frequency: no lamp Lamp: no lamp	48455-31
ComEGR2EDCElec	EGR smart actuator: Actuator detected an electrical problem	3247-1F	EGR Valve	The receive message EGR2EDC is used for reading the status/feedback frame transmitted by the EGR actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Electrical problem on EGR actuator	Check and under e EGR actuator	Frequency: no lamp Lamp: no lamp	12871-31
ComEGR2EDCErr	EGR smart actuator: Actuator detected a general error	4347-1F	EGR Valve	The receive message EGR2EDC is used for reading the status/feedback frame transmitted by the EGR actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort			Frequency: no lamp Lamp: no lamp	17223-31
ComEGR2EDCHiEff	EGR smart actuator: EGR, motor effort too high	1447-1F	EGR Valve	The receive message EGR2EDC is used for reading the status/feedback frame transmitted by the EGR actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	EGR actuator mechanically blocked or friction too high	Check EGR actuator	Frequency: no lamp Lamp: no lamp	5191-31
ComEGR2EDCInitCnt	EGR smart actuator: Number of initialisation too high, loose contact on actuator supply	3547-1F	EGR Valve	The electric EGR valve actuator usually initialises once at start-up of the ECU. A loose contact on the actuator power supply may cause sporadic re-initialisations during engine operation. This typically causes temporary malfunction of the engine (stalling). The receive message EGR2EDC is used for reading the status/feedback frame transmitted by the EGR actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Loose contact on the actuator power supply	Check EGR actuator supply and under	Frequency: no lamp Lamp: no lamp	13639-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComEGR2EDC PosDvt Max	EGR smart actuator: Feedback position positive deviation to high (too high EGR)	1517-1F	EGR Valve	The receive message EGR2EDC is used for reading the status/feedback frame transmitted by the EGR actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Sticking EGR valve, increased inner resistance	Check and under e EGR valve actuator	Frequency: no lamp Lamp: no lamp	5399-31
ComEGR2EDC PosDvt Min	EGR smart actuator: Feedback position negative deviation to high (too low EGR)	2617-1F	EGR Valve	The receive message EGR2EDC is used for reading the status/feedback frame transmitted by the EGR actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Sticking EGR valve, increased inner resistance	Check and under e EGR valve actuator	Frequency: no lamp Lamp: no lamp	9751-31
ComEGR2EDC Syst	EGR smart actuator: EGR System failure detected	4647-1F	EGR Valve	The receive message EGR2EDC is used for reading the status/feedback frame transmitted by the EGR actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort			Frequency: no lamp Lamp: no lamp	17991-31
ComEGR2EDC Temp	EGR smart actuator: Actuator over temperature detected	8747-1F	EGR Valve	The receive message EGR2EDC is used for reading the status/feedback frame transmitted by the EGR actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	EGR Valve Actuator overheated, supply problem?, increased resistance	Check EGR Actuator supply, wiring and under on	Frequency: no lamp Lamp: no lamp	34631-31
ComEGR2EDC TO	CAN Bus EGR Rate: Timeout Error of CAN--Receive Frame EGR2EDC from EGR actuator	9C47-1F	CAN Bus	The receive message EGR2EDC is used for reading the status/feedback frame transmitted by the EGR actuator. Message is monitored for timeout	Defective CAN controller of EGR Valve Actuator , undervoltage of ETC, missing ETC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EGR Valve Actuator to the network, check correct functioning of the CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	40007-31
ComEGRIndcTO	CAN Bus: Timeout Error of CAN-Transmit-Frame message EGR_Indc (severity of inducements)	9E47-1F	CAN Bus	Message EGRIndc contains EGR Inducement Severity Indication TRansmitted messages are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40519-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComEMFSignPlaus	NH3 Sensor: Sensor not mounted in correct position (NH3 == 0 constantly)	38CB-1F	NH3 Sensor	The NH3 sensor has 2 cells to detect NH3. The first cell detects NH3 and O2 (voltage signal EMF1) and he second cell detects NO2 (voltage signal EMF2). During engine running a certain dynamic of the signal is expected, if it is not detected the sensor is probably not mounted in its correct position.	NH3 Sensor has been possibly dismounted from its correct position and t is not measuring exhaust values	Check sensor mounting	Frequency: ON Lamp: Amber (SVS)	14539-31
ComEng06aTO	CAN Bus: Timeout Error of CAN-Transmit-Frame message ENG06a (warning provisions for filter clogging and under limitation)	9E4B-1F	CAN Bus	The proprietary message contains different warning provisions for filter clogging, SCR and under limitation: - compliant mode status - acoustic warning (buzzer) - clogged fuel filter - clogged fuel pre filter - clogged air filter - clogged blow by filter - Status torque limit - validation phase restart counter - abnormal reagent dosing - wrong reagent quality - reagent warning levels - emergency restart count down - Inducement strategy level The transmit messages are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40523-31
ComEng07TO	CAN Bus: Timeout Error of CAN-Transmit-Frame message ENG07	9F2B-1F	CAN Bus	The proprietary message contains different warning provisions for EPA10 SCR driver inducement (Emergency restart counters, regulation indication) as well as Low Idle increase desired and under . The transmit messages are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40747-31
ComEngRetCfgBAMTO	CAN Bus: Timeout Error of CAN-Transmit-Frame Engine Retarder Configuration Broadcast Announce Message (EngRefCfgBAM)	9CDB-1F	CAN Bus	The message is a multipacket that contains: - the current negative torque/speed curve - the retarder location - the retarder type - the absolute maximum negative torque (reference torque) The message is transmitted every 5 seconds, or earlier in case the curve changes by more than 10% Transmit messages are monitored for timeout	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40155-31
ComEngRetCfgPACTO	CAN Bus: Timeout Error of CAN-Transmit-Frame Engine Retarder Configuration Package (EngRefCfgPAC: retarder parameters)	9DDB-1F	CAN Bus	The message is a multipacket that contains: - the current negative torque/speed curve - the retarder location - the retarder type - the absolute maximum negative torque (reference torque) The message is transmitted every 5 seconds, or earlier in case the curve changes by more than 10% Transmit messages are monitored for timeout	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40411-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComEngShOffBC2EDC2	CAN Bus VCM: DFC of Auxiliary Engine Shutdown Switch Message	94FB-1F	CAN Bus VCM	This DFC do not describe a failure but an external shut off request. By adding FIds of the engine shut off paths in the inhibit matrix of this DFC, an engine shut off will be caused according to different shut off possibilities.	External shut off request by BC2EDC2 message.	Info failure: No intervention necessary Check failure source for engine shut off (Fid_EngShOff)	Frequency: no lamp Lamp: no lamp	38139-31
ComEngShOffEBC1	Info: Engine shut off request through CAN	FBEF-1F	Info: Engine shut OFF	This failure path record an external engine shut off request by Electronic Brake Controller.	An Engine Shut off request was activated by another failure	Check failure source for engine shut off (Fid_EngShOff)	Frequency: no lamp Lamp: no lamp	64495-31
ComEngShOffEBC1BC	Info: Engine shut off request through CAN	FCEF-1F	Info: Engine shut OFF	This failure path record an external engine shut off request by Electronic Brake Controller.	Engine shut off was requested	Info failure: No intervention necessary	Frequency: no lamp Lamp: no lamp	64751-31
ComEngShOffEBC1RCS	Info: Engine shut off request through CAN	FEEF-1F	Info: Engine shut OFF	This failure path record an external engine shut off request by Electronic Brake Controller.	Engine shut off was requested	Info failure: No intervention necessary	Frequency: no lamp Lamp: no lamp	65263-31
ComEngShOffEBC1VS	Info: Engine shut off request through CAN	B6EB-1F	Info: Engine shut OFF	This failure path record an external engine shut off request by Vehicle controller. It is not a failure, just an event recording.	An Engine Shut off request was activated by another another failure	Info failure: No intervention necessary Check failure source for engine shut off (Fid_EngShOff)	Frequency: no lamp Lamp: no lamp	46827-31
ComEngTempTO	CAN Bus: Timeout Error of CAN-Transmit-Frame ENGTEMP: Engine temperatures (Coolant, Oil,Fuel)	933B-1F	CAN Bus	The message contains the values for different engine temperatures: Engine coolant temperature, Fuel temperature and under oil temperature (not used by FUSO) Transmit message are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37691-31
ComEOITO	CAN Bus: Timeout Error of CAN-Transmit-Frame EOI (Engine Operating Information)	974B-1F	CAN Bus	The message contains Engine Operation Information transmitted by EDC Transmit message are monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38731-31
ComERC1BCDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame ERC1BC	B1DB-1F	CAN Bus	Message ERC1BC (Electronic Retarder Controller) is received from Body Computer and under ns information about retarder enable, brake assist switch signal. Message data length is monitored	Wrong CAN configuration in Body Computer	Check CAN configuration in Body Computer	Frequency: no lamp Lamp: no lamp	45531-31
ComERC1BCTO	CAN Bus: Timeout Error of CAN-Transmit-Frame Retarder information (ERC1)	92DB-1F	CAN Bus	Message ERC1BC (Electronic Retarder Controller) is received from Body Computer and under ns information about retarder enable, brake assist switch signal. Message is monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37595-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComERC1DRDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame ERC1 from Driveline Retarder	BBEA-1F	CAN Bus	The task of this subsystem is to receive and under s the ERC1-DR CAN message (Electronic Retarder Controller #1) from Driveline Retarder. The message contains information about actual retarder percent torque. The data length of message is monitored	Wrong CAN configuration in Electronic Retarder Controller	Check CAN configuration in Electronic Retarder Controller	Frequency: no lamp Lamp: no lamp	48106-31
ComERC1DRTO	CAN Bus: Timeout Error of CAN--Receive-Frame ERC1 from Driveline Retarder	9BDB-1F	CAN Bus	The task of this subsystem is to receive and under s the ERC1-DR CAN message (Electronic Retarder Controller #1) from Driveline Retarder. The message is monitored for timeout.	Defective CAN controller of Driveline Retarder, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of Driveline Retarder to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39899-31
ComETC1DLC	CAN Bus: Incorrect data length of CAN--Receive-Frame ETC1 from Transmission Controller	B28B-1F	CAN Bus	The message ETC1 is sent by the Transmission Controller (AMT) as a broadcast message. It contains several information on Clutch and under ission status: - Status of driveline engaged, used to get the grip status via CAN - Status of torque converter lock up engaged - Status of shift in process, used to get the clutch status via CAN - Output shaft speed - Status of momentary engine overspeed demand, used to increase the max engine speed via CAN (NOT USED BY FUSO) Received CAN messages are checked for timeout	Wrong CAN configuration in Gearbox Control Unit	Check CAN configuration in Gearbox Control Unit	Frequency: no lamp Lamp: no lamp	45707-31
ComETC1TO	CAN Bus: Timeout Error of CAN--Receive-Frame Electronic Transmission Control 1 (ETC1: shift and under ing information)	918B-1F	CAN Bus	The message ETC1 is sent by the Transmission Controller (AMT) as a broadcast message. It contains several information on Clutch and under ission status: - Status of driveline engaged, used to get the grip status via CAN - Status of torque converter lock up engaged - Status of shift in process, used to get the clutch status via CAN - Output shaft speed - Status of momentary engine overspeed demand, used to increase the max engine speed via CAN (NOT USED BY FUSO) Received CAN messages are checked for timeout	Defective CAN controller of Gearbox Control Unit , under voltage of ETC, missing ETC, CAN cable connecting the ETC is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the ETC to the network, check correct functioning of the ETC CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	37259-31
ComETC2DLC	CAN Bus: Incorrect data length of CAN--Receive-Frame ETC2 from Transmission Controller	B48B-1F	CAN Bus	The message ETC2 is sent by the Transmission Controller as a broadcast message. It contains several information on Transmission status: - Selected gear - Current gear - Current gear ratio The data length of message is monitored	Wrong CAN configuration in Transmission Controller	Check CAN configuration in Transmission Controller	Frequency: no lamp Lamp: no lamp	46219-31
ComETC2TO	CAN Bus: Timeout Error of CAN--Receive-Frame Electronic Transmission Control 2 (ETC2: selected gear, gear ratio)	938B-1F	CAN Bus	The message ETC2 is sent by the Transmission Controller (AMT) as a broadcast message. It contains several information on Transmission status: - Selected gear - Current gear - Current gear ratio (NOT USED BY FUSO) Received CAN messages are checked for timeout	Defective CAN controller of Gearbox Control Unit , under voltage of ETC, missing ETC, CAN cable connecting the ETC is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the ETC to the network, check correct functioning of the ETC CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	37771-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComET C7DLC	CAN Bus: Incorrect data length of CAN--Receive-Frame Electronic Transmission Control 7 (ETC7: transmission engine crank enable)	B68B-1F	CAN Bus	ETC7 message is sent from the Gearbox Control Unit (ETC) to the EDC and under ns information "transmission crank enable" Data length of CAN message is checked	Wrong CAN configuration in Transmission Controller ECU	Check CAN configuration in Transmission Controller ECU	Frequency: no lamp Lamp: no lamp	46731-31
ComET C7TO	CAN Bus: Timeout Error of CAN--Receive-Frame Electronic Transmission Control 7 (ETC7: transmission engine crank enable)	958B-1F	CAN Bus	ETC7 message is sent from the Gearbox Control Unit (ETC) to the EDC and under ns information "transmission crank enable" Received CAN messages are checked for timeout	Defective CAN controller of Gearbox Control Unit , under voltage of ETC, missing ETC, CAN cable connecting the ETC is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the ETC to the network, check correct functioning of the ETC CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	38283-31
ComET C8DLC	CAN Bus: Incorrect data length of CAN--Receive-Frame Electronic Transmission Control 8 (ETC8: torque converter ratio)	BD6B-1F	CAN Bus	ETC8 message is sent from the Gearbox Control Unit (ETC) to the EDC and under ns information "torque converter ratio" Data length of CAN message is checked	Wrong CAN configuration in Transmission Controller ECU	Check CAN configuration in Transmission Controller ECU	Frequency: no lamp Lamp: no lamp	48491-31
ComET C8TO	CAN Bus:Timeout of CAN-Receive--Frame Electronic Transmission Control 8 (ETC8: torque converter ratio)	9E6B-1F	CAN Bus	ETC8 message is sent from the Gearbox Control Unit (ETC) to the EDC and under ns information "torque converter ratio" Received CAN messages are checked for timeout	Defective CAN controller of Gearbox Control Unit , under voltage of ETC, missing ETC, CAN cable connecting the ETC is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the ETC to the network, check correct functioning of the ETC CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	40555-31
ComFD BCDLC	CAN Bus: Incorrect Data LengthofCAN--Receive-Frame FDBC (Fan control from Body Computer)	BE43-1F	CAN Bus	FDBC message contains message from Body Computer to pilot fan control. Size and under mity of the received message is monitored	Wrong CAN configuration in Body Computer	Check CAN configuration in Body Computer	Frequency: no lamp Lamp: no lamp	48707-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComFD BCTO	CAN Bus: Timeout Error of CAN-- Receive-Frame FDBC (Fan control from Body Computer)	9D43-1F	CAN Bus	FDBC message contains message from Body Computer to pilot fan control. Received CAN messages are monitored for timeout	Defective CAN controller of Body Computer , under-voltage of BC, missing BC, CAN cable connecting the BC is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the BC to the network, Check correct functioning of the BC CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	40259-31
ComFD Err	Cooling Fan Control: error state	4C43-1F	Cooling fan control	FDBC message contains message from Body Computer to pilot fan control.	Fan Control module sends defect status	Check and under e Fan Module	Frequency: no lamp Lamp: no lamp	19523-31
ComFIE coTO	CAN Bus: Timeout Error of CAN-Transmit-Frame Fuel economy message (FIEco: fuel rate, instant fuel)	943B-1F	CAN Bus	FIEco message contains the information about Fuel consumption instant, average and uel rate. The messages transmitted from ECU are monitored for timeout.	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37947-31
ComFL P2EDC Ctrl	Exhaust Flap Actuator: Control failure reported by actuator via CAN message	319C-1F	Exhaust Flap actuator	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Smart actuator reports an actuation error	Check and under e smart actuator	Frequency: ON Lamp: Amber (SVS)	12700-31
ComFL P2EDC DLC	Exhaust Flap Actuator: Incorrect Data Length of CAN message FLP2EDC from FLap actuator	B2BC-1F	Exhaust Flap actuator	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Wrong CAN configuration in Exhaust Flap smart actuator	Check CAN configuration in Exhaust Flap smart actuator	Frequency: no lamp Lamp: no lamp	45756-31
ComFL P2EDC Elec	Exhaust Flap Actuator: Electrical problem reported by actuator via CAN message	329C-1F	Exhaust Flap actuator	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Defective exhaust flap, electrical problem	Check Exhaust Flap supply, wiring, replace actuator	Frequency: no lamp Lamp: no lamp	12956-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComFL P2EDC Err	Exhaust Flap Actuator: Loss of communica-tionl error reported by actuator via CAN message	439C-1F	Exhaust Flap actuator	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Disturbance on CAN com-munication, or CAN inter-ruption	Check Exhaust Flap supply, wiring,and under tion to CAN, replace actuator	Frequency: no lamp Lamp: no lamp	17308-31
ComFL P2EDC HiEff	Exhaust Flap Actuator: High motor effort reported by actuator	149C-1F	Exhaust Flap actuator	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Increased Exhaust Flap Actuator friction	Check Exhaust Flap Actuator	Frequency: no lamp Lamp: no lamp	5276-31
ComFL P2EDCI nit	Exhaust Flap Actuator: Initial-isation failure	EC9C-1F	Exhaust Flap actuator	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Frozen actuator, blocking due to debris or deposit or defective actuator	Check if the actuator is correctly moving, perform an exhaus flap test. If failure persists at each ECU start replace the actuator	Frequency: no lamp Lamp: no lamp	60572-31
ComFL P2EDCI nitCnt	Exhaust Flap Actuator: Num-ber of running initialisation too high	359C-1F	Exhaust Flap actuator	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Loose contact in Exhaust Flap Actuator supply causes initialisation running of actu-ator during driving cycle	Check Exhaust Flap wiring and under	Frequency: no lamp Lamp: no lamp	13724-31
ComFL P2EDC PosDvt Max	Exhaust Flap actuator: Feed-back position positive devi-ation to high	199C-1F	Exhaust Flap actuator	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Sticking Exhaust Flap valve, increased inner resistance	Check and under e Exhaust Flap valve actuator	Frequency: no lamp Lamp: no lamp	6556-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComFL P2EDC PosDvt Min	Exhaust Flap actuator: Feedback position negative deviation to high	2A9C-1F	Exhaust Flap actuator	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Sticking Exhaust Flap valve, increased inner resistance	Check and under e Exhaust Flap valve actuator	Frequency: no lamp Lamp: no lamp	10908-31
ComFL P2EDC Syst	Exhaust Flap Actuator: Actuator reports system failure over CAN message	469C-1F	Exhaust Flap actuator	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort			Frequency: ON Lamp: Amber (SVS)	18076-31
ComFL P2EDC Temp	Exhaust Flap Actuator: Actuator reports over temperature error	879C-1F	Exhaust Flap actuator	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. The message is structured as follows: Byte1: actuator status Byte2,3: actual actuator position Byte4: actuator temperature Byte5: actuator fault code Byte6,7: Target actuator position Byte8: motor effort	Exhaust Flap Actuator overheated, supply problem?, increased resistance	Check Exhaust Flap actuator supply, wiring and under on	Frequency: no lamp Lamp: no lamp	34716-31
ComFL P2EDC TO	CAN Bus: Timeout Error of CAN--Receive-Frame FLP2EDC from Exhaust Flap	91BC-1F	CAN Bus	The receive message FLP2EDC is used for reading the status/feedback frame transmitted by the exhaust flap actuator. Message is monitored for timeout	Defective CAN controller of Exhaust Flap Actuator , undervoltage or missing Flap, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Exhaust Flap Actuator to the network, check correct functioning of the CAN controller and ts voltage supply. Check wiring.	Frequency: ON Lamp: Amber (SVS)	37308-31
ComG bxData	CAN Bus: Gear information from AMT contain implausible value for (gear/-gear ratio)	36AB-1F	CAN Bus	The message ETC2 is sent by the Transmission Controller (AMT) as a broadcast message. It contains several information on Transmission status: - Selected gear - Current gear - Current gear ratio (NOT USED BY FUSO) The plausibility of these values is checked.	ETC2 message from AMT transmission is disabled or AMT problem with gear recognition	Check if dataset in ECU is compatible to AMT transmission, check AMT for gear recognition problem	Frequency: no lamp Lamp: no lamp	13995-31
ComG PM12T O	CAN Bus: Timeout Error of CAN-Transmit-Frame GPM12 message	9C2B-1F	CAN Bus	The transmitted message GPM12 contains information about Engine speed upper and under limit. CAN messages are monitored for timeout.	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check the installation and he proper connection of the Engine Control Unit and he Instrument Cluster to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	39979-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComGPM23DLC	CAN Bus: Incorrect Data LengthofCAN--Receive-Frame GPM23	B67B-1F	CAN Bus	The message GPM23 (high and ow idle engine speed setpoint) is received from Body Computer. Received CAN messages are checked for correct length	Wrong CAN configuration of Body Computer ,	Check CAN configuration of the Body Computer	Frequency: no lamp Lamp: no lamp	46715-31
ComGPM23TO	CAN Bus: Timeout Error of CAN--Receive-Frame GPM23	957B-1F	CAN Bus	The message GPM23 (high and ow idle engine speed setpoint) is received from Body Computer. Received CAN messages are checked for timeout	Defective CAN controller of Body Computer , under-voltage of BC, missing BC, CAN cable connecting the BC is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Body Computer to the network, check correct functioning of the BC CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	38267-31
ComHCU2EDC1BAM2BAMTO	CAN Bus: Timeout of CAN-Receive--Frame HCU2EDC1BAM	95CA-1F	CAN Bus	Message HCU2EDC1BAM (Heater Control Unit 1) is received from SCR Heater Control Unit and under ns information about HCU software number, HCU hardware number, HCU Calld and CU CVN number. The time between two BAMs is monitored and under red for timeout	Defective CAN controller of HCU, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of HCU to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38346-31
ComHCU2EDC1BAM2PKTTO	CAN Bus: Timeout of CAN-Receive--Frame HCU2EDC1 (BAM to packet timeout)	96CA-1F	CAN Bus	Message HCU2EDC1BAM (Heater Control Unit 1) is received from SCR Heater Control Unit and under ns information about HCU software number, HCU hardware number, HCU Calld and CU CVN number. The multipacket frame has 4 packets. The time between BAM and under PACK is monitored for timeout	Defective CAN controller of HCU, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of HCU to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38602-31
ComHCU2EDC1DLC	CAN Bus: Incorrect data length of CAN--Receive-Frame HCU2EDC1	B7CA-1F	CAN Bus	Message HCU2EDC1 (Heater Control Unit 1) is received from SCR Heater Control Unit and under ns information about HCU state,power supply, heater 1 and state. Message data length is monitored	Wrong CAN configuration in Heater Control Unit	Check CAN configuration in Heater Control Unit	Frequency: no lamp Lamp: no lamp	47050-31
ComHCU2EDC1PKT2PKTTO	CAN Bus: Timeout of CAN-Receive--Frame HCU2EDC1 (packet timeout)	98CA-1F	CAN Bus	Message HCU2EDC1BAM (Heater Control Unit 1) is received from SCR Heater Control Unit and under ns information about HCU software number, HCU hardware number, HCU Calld and CU CVN number. The multipacket frame has 4 packets. The time between two PACK is monitored for timeout	Defective CAN controller of HCU, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of HCU to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39114-31
ComHCU2EDC1TO	CAN Bus: Timeout of CAN-Receive--Frame HCU2EDC1	9ECA-1F	CAN Bus	Message HCU2EDC1 (Heater Control Unit 1) is received from SCR Heater Control Unit and under ns information about HCU state,power supply, heater 1 and state. Message is monitored for timeout	Defective CAN controller of HCU , under voltage of HCU, missing HCU, CAN cable connecting the ETC is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the HCU to the network, check correct functioning of the HCU CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	40650-31
ComHCU2EDC2DLC	CAN Bus: Incorrect data length of CAN--Receive-Frame HCU2EDC2	BFCA-1F	CAN Bus	Message HCU2EDC2 (Heater Control Unit 2) is received from SCR Heater Control Unit and under ns information about state, voltage and under t feedback of heater 1 and . Message data length is monitored	Wrong CAN configuration in Heater Control Unit	Check CAN configuration in Heater Control Unit	Frequency: no lamp Lamp: no lamp	49098-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComH CU2ED C2TO	CAN Bus: Timeout of CAN-Receive--Frame HCU2EDC2	BFBA-1F	CAN Bus	Message HCU2EDC2 (Heater Control Unit 2) is received from SCR Heater Control Unit and under ns information about state, voltage and under t feedback of heater 1 and . Message is monitored for timeout	Defective CAN controller of HCU , under voltage of HCU, missing HCU, CAN cable connecting the HCU is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the HCU to the network, check correct functioning of the HCU CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	49082-31
ComH RLFCD LC	CAN Bus: Incorrect data length of CAN--Transmit-Frame HRLFC (High Resolution Fuel Consumption)	B53B-1F	CAN Bus	The function processes and under its the high resolution fuel consumption message. Message data length is monitored			Frequency: no lamp Lamp: no lamp	46395-31
ComH RLFCT O	CAN Bus: Timeout Error of CAN-Transmit-Frame HRLF (High Resolution fuel consumption)	963B-1F	CAN Bus	The function processes and under its the high resolution fuel consumption message. Message is monitored for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38459-31
ComH RVDDL C	CAN Bus: Incorrect data length of CAN--Receive-Frame High Resolution Vehicle Distance (HRVD)	BFFB-1F	CAN Bus	The proprietary IVECO message collects High Resolution Vehicle Distance value from Body Computer CAN messages received from ECM are monitored for correct length.	Wrong CAN configuration of Body Computer	Check CAN configuration of Body Computer	Frequency: no lamp Lamp: no lamp	49147-31
ComH RVDT O	CAN Bus: Timeout Error of CAN--Receive-Frame High Resolution Vehicle Distance (HRVD)	9731-1F	CAN Bus	The proprietary IVECO message collect High Resolution Vehicle Distance value from Body Computer CAN messages received from ECM are monitored for timeout. Not used by FUSO	Defective CAN controller of Body Computer , under voltage of BC missing BC, CAN cable connecting the Body Computer is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Body Computer to the network, Check correct functioning of the BC CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	38705-31
ComH RWSD LC	CAN Bus: Incorrect data length of CAN--Receive-Frame High Resolution Wheel Speed Information (HRWS: Front Axle Left/Right wheel speed)	B9EB-1F	CAN Bus	The message HRWS is sent by the Body Controller or VCM and under its the vehicle speed, in the high resolution format. The selection of the CAN source for the vehicle speed information is done by calibration. Four values are received via CAN: right/left front/rear axle wheel speed. These values are averaged to obtain the final road speed. In case of any of the input data is less than the constant minimum value VEL_LO_LIM (2.88 km/h), then for this input the value 0 is considered. It is sent time synchronous every 20 ms. Received CAN messages are monitored for data length conformity	Wrong CAN configuration in Body Controller or VCM	Check CAN configuration in Body Controller or VCM	Frequency: no lamp Lamp: no lamp	47595-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComHRWSTO	CAN Bus: Timeout Error of CAN--Receive-Frame High Resolution Wheel Speed Information (HRWS: Front Axle Left/Right wheel speed)	9831-1F	CAN Bus	The message HRWS is sent by the Body Controller or VCM and under its the vehicle speed, in the high resolution format. The selection of the CAN source for the vehicle speed information is done by calibration. Four values are received via CAN: right/left front/rear axle wheel speed. These values are averaged to obtain the final road speed. In case of any of the input data is less than the constant minimum value VEL_LO_LIM (2.88 km/h), then for this input the value 0 is considered. It is sent time synchronous every 20 ms. NOT USED BY FUSO Received CAN messages are monitored for timeout	Defective CAN controller of Body Controller or VCM, undervoltage, CAN cable connecting Body Controller or VCM is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of Body Controller or VCM to the network, check CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	38961-31
ComIC1TO	CAN Bus: Timeout Error of CAN-Transmit-Frame IC1 (SAE J1939)	973B-1F	CAN Bus	Time out for the IC1 CAN frame. This frame is according to SAE J1939, update rate of 10ms. It contains the following information: - Particulate trap inlet pressure - Boost pressure - Intake manifold temperature - Air inlet pressure - Air filter differential pressure - Exhaust gas temperature - Coolant filter differential pressure	CAN bus overload, frame could not be send.	Check CAN bus wiring. A defect could cause error frames which lead to high bus load or send the CAN controller to "bus off" state.	Frequency: no lamp Lamp: no lamp	38715-31
ComInjOnDPMSAE	CAN Bus: SAEJ1939 signal not in range for HCl dosing request status (from DPM module)	313C-1F	HC Injection	The function receives and under ses the PRODPM1 message, proprietary message from Departronic system, containing HCl dosing information. HCl dosing request status contained in the CAN message is monitored for plausiblility			Frequency: no lamp Lamp: no lamp	12604-31
ComISCSBCDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame ISCSBC (Intermediate Speed Select State from Body Computer)	B47B-1F	CAN Bus	The message collects Intermediate Speed Select State value from Body Computer CAN messages received from ECM are monitored for correct length.	Wrong CAN configuration of Body Computer	Check CAN configuration of Body Computer	Frequency: no lamp Lamp: no lamp	46203-31
ComISCSBCTO	CAN Bus: Timeout Error of CAN--Receive-Frame ISCSBC (Intermediate Speed Select State from Body Computer)	937B-1F	CAN Bus	The message collects Intermediate Speed Select State value from Body Computer CAN messages received from ECM are monitored for timeout.	Defective CAN controller of BodymComputer, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Body Computer to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37755-31
ComISCSTO	CAN Bus: Timeout Error of CAN-Transmit-Frame ISCS	9D4B-1F	CAN Bus	The transmitted and under ed CAN messages are monitored for timeout	Defective CAN controller of EDC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40267-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComLFCTO	CAN Bus: Timeout Error of CAN-Transmit-Frame of Fuel Consumption (LFC)	983B-1F	CAN Bus	The message LFC is sent by the ECM in broadcast mode supporting several signals: - Trip fuel consumption - Total fuel consumption It is sent on request	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38971-31
ComMuxInfoDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame MUXInfo from Body Computer (Reverse light, Parking brake status)	BA7B-1F	CAN Bus	The IVECO proprietary message collects various information values from Body Computer: - Reverse light request status - Parking Brake status CAN messages received from ECM are monitored for correct length.	Wrong CAN configuration of Body Computer	Check CAN configuration of Body Computer	Frequency: no lamp Lamp: no lamp	47739-31
ComMVS	CAN Bus: Timeout Error of CAN-Transmit-Frame of MVS (Maximum Vehicle speed for limiter)	993B-1F	CAN Bus	Message MVS is transmitted by EDC to Body Computer or VCM The message contains: - Maximum vehicle speed limiter - Second vehicle speed limiter - Adjustable vehicle speed limiter Message transmitted every 100 ms Message is monitored for timeout.	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39227-31
ComMVSBCDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame MVSBC from Body Computer (Veh.speed limit 1)	BB6B-1F	CAN Bus	The received message MVSBC collects Maximum Vehicle Speed Limit 1 from Body Computer: CAN messages received from ECM are monitored for correct length.	Wrong CAN configuration of Body Computer	Check CAN configuration of Body Computer	Frequency: no lamp Lamp: no lamp	47979-31
ComMVSBCTO	CAN Bus: Timeout of CAN-Receive--Frame MVSBC from Body Computer (Veh.speed limit 1)	9C6B-1F	CAN Bus	The received message MVSBC collects Maximum Vehicle Speed Limit 1 from Body Computer: CAN messages received from ECM are monitored for timeout..	Defective CAN controller of Body Computer, cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Body Computer to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40043-31
ComMVSDLC	CAN Bus: Incorrect data length of CAN--Transmit-Frame MVS (Maximum Vehicle Speed)	BA3B-1F	CAN Bus	The function processes and under its the Maximum Vehicle Speed (MVS) message. Message data length is monitored			Frequency: no lamp Lamp: no lamp	47675-31
ComNH3FactDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame NH3Fac from NH3 sensor	B5EE-1F	CAN Bus	The message NH3fac is transmitted by NH3 sensor and under ts measured raw signals from NH3 and O2 sensor cell and rim factor for the calculation of NH3 signal CAN messages received from ECM are monitored for correct length.	Wrong CAN configuration of NH3 sensor	Check CAN configuration of NH3 sensor (compatibility with ECU software)	Frequency: ON Lamp: Amber (SVS)	46574-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComNH3FactTO	CAN Bus: Timeout Error of CAN--Receive-Frame NH3Fac from NH3 sensor	96EE-1F	CAN Bus	The message NH3fac is transmitted by NH3 sensor and under ts measured raw signals from NH3 and O2 sensor cell and rim factor for the calculation of NH3 signal. CAN messages received from ECM are monitored for time out.	Defective CAN controller of NH3 sensor, cable dis-connected or broken. Short circuit in wiring.	Check presence and under t connection of the NH3 sensor to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: ON Lamp: Amber (SVS)	38638-31
ComNH3FactTrimCyclHiLim	NH3 Sensor: Trim factor vari-ation above upper limit	1AEE-1F	NH3 Sensor	The message NH3fact is transmitted by NH3 sensor and under ts measured raw signals from NH3 and O2 sensor cell and rim factor for the calculation of NH3 signal Each NH3 sensor is provided with an internal resistance defining a trimming factor for scaling the raw signal to ppm value. The sensor trimming factor is monitored and under stay inside defined limits.	Defective sensor, internal trimming resistance defect-ive	Replace NH3 sensor	Frequency: no lamp Lamp: no lamp	6894-31
ComNH3FactTrimCyclLoLim	NH3 Sensor: Trim factor vari-ation below lower limit	2BEE-1F	NH3 Sensor	The message NH3fact is transmitted by NH3 sensor and under ts measured raw signals from NH3 and O2 sensor cell and rim factor for the calculation of NH3 signal Each NH3 sensor is provided with an internal resistance defining a trimming factor for scaling the raw signal to ppm value. The sensor trimming factor is monitored and under stay inside defined limits.	Defective sensor, internal trimming resistance defect-ive	Replace NH3 sensor	Frequency: no lamp Lamp: no lamp	11246-31
ComNH3FactTrimHiLim	NH3 Sensor: Trim factor above upper limit	1CEE-1F	NH3 Sensor	The message NH3fact is transmitted by NH3 sensor and under ts measured raw signals from NH3 and O2 sensor cell and rim factor for the calculation of NH3 signal Each NH3 sensor is provided with an internal resistance defining a trimming factor for scaling the raw signal to ppm value. The sensor trimming factor is monitored and under stay inside defined limits.	Defective sensor, internal trimming resistance defect-ive	Replace NH3 sensor	Frequency: no lamp Lamp: no lamp	7406-31
ComNH3FactTrimLowLim	NH3 Sensor: Trim factor below lower limit	2DEE-1F	NH3 Sensor	The message NH3fact is transmitted by NH3 sensor and under ts measured raw signals from NH3 and O2 sensor cell and rim factor for the calculation of NH3 signal Each NH3 sensor is provided with an internal resistance defining a trimming factor for scaling the raw signal to ppm value. The sensor trimming factor is monitored and under stay inside defined limits.	Defective sensor, internal trimming resistance defect-ive	Replace NH3 sensor	Frequency: no lamp Lamp: no lamp	11758-31
ComNH3SensDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame NH3Sens from NH3 Sensor	B1EE-1F	CAN Bus	The software module ComRx_NH3Sens receives and under ses the informa-tion sent over CAN by NH3 Sensor Message is monitored for correct length.	Wrong CAN configuration in NH3 Sensor	Check CAN configuration in NH3 Sensor	Frequency: ON Lamp: Amber (SVS)	45550-31
ComNH3SensElecEMFxLine	NH3 sensor: Internal open load or short circuit error on measuring cell line	E6DE-1F	NH3 Sensor	The NH3 smart sensor provides the ECU different information about its status, signal quality and under ed hardware problems via CAN message NH3Sens. The message NH3Sens contains the following information: - Measured signal values (NH3 and O2). - Status information, related to signal validity (sensor signals and under). - Error information, related to open wire, short circuit and under onal dia-gnostics. - Enabling of monitoring Different failure paths are triggered depending of the detected problems.	Defective NH3 Sensor	Replace NH3 Sensor	Frequency: ON Lamp: Amber (SVS)	59102-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComNH3SensElecGndLine	NH3 sensor: Internal open load or short circuit error on ground line	E7DE-1F	NH3 Sensor	The NH3 smart sensor provides the ECU different information about its status, signal quality and under ed hardware problems via CAN message NH3Sens. The message NH3Sens contains the following information: - Measured signal values (NH3 and O2). - Status information, related to signal validity (sensor signals and under). - Error information, related to open wire, short circuit and under onal diagnostics. - Enabling of monitoring Different failure paths are triggered depending of the detected problems.	Defective NH3 Sensor	Replace NH3 Sensor	Frequency: ON Lamp: Amber (SVS)	59358-31
ComNH3SensElecHtrMax	NH3 sensor: Internal Short circuit on heater line (overheated Sensor)	18DE-1F	NH3 Sensor	The NH3 smart sensor provides the ECU different information about its status, signal quality and under ed hardware problems via CAN message NH3Sens. The message NH3Sens contains the following information: - Measured signal values (NH3 and O2). - Status information, related to signal validity (sensor signals and under). - Error information, related to open wire, short circuit and under onal diagnostics. - Enabling of monitoring Different failure paths are triggered depending of the detected problems.	Defective NH3 Sensor	Replace NH3 Sensor	Frequency: ON Lamp: Amber (SVS)	6366-31
ComNH3SensElecHtrMin	NH3 sensor: Internal Short circuit on heater line (underheated Sensor)	E9DE-1F	NH3 Sensor	The NH3 smart sensor provides the ECU different information about its status, signal quality and under ed hardware problems via CAN message NH3Sens. The message NH3Sens contains the following information: - Measured signal values (NH3 and O2). - Status information, related to signal validity (sensor signals and under). - Error information, related to open wire, short circuit and under onal diagnostics. - Enabling of monitoring Different failure paths are triggered depending of the detected problems.	Defective NH3 Sensor	Replace NH3 Sensor	Frequency: ON Lamp: Amber (SVS)	59870-31
ComNH3SensElecTempLine	NH3 sensor: Internal Short circuit or open load error on temperature cell input line	EADE-1F	NH3 Sensor	The NH3 smart sensor provides the ECU different information about its status, signal quality and under ed hardware problems via CAN message NH3Sens. The message NH3Sens contains the following information: - Measured signal values (NH3 and O2). - Status information, related to signal validity (sensor signals and under). - Error information, related to open wire, short circuit and under onal diagnostics. - Enabling of monitoring Different failure paths are triggered depending of the detected problems.	Defective NH3 Sensor	Replace NH3 Sensor	Frequency: ON Lamp: Amber (SVS)	60126-31
ComNH3SensElecTrimLine	NH3 sensor: Internal Short circuit or open load error on trim resistor line	EBDE-1F	NH3 Sensor	The NH3 smart sensor provides the ECU different information about its status, signal quality and under ed hardware problems via CAN message NH3Sens. The message NH3Sens contains the following information: - Measured signal values (NH3 and O2). - Status information, related to signal validity (sensor signals and under). - Error information, related to open wire, short circuit and under onal diagnostics. - Enabling of monitoring Different failure paths are triggered depending of the detected problems.	Defective NH3 Sensor	Replace NH3 Sensor	Frequency: ON Lamp: Amber (SVS)	60382-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComNH3SensHtrCtrl	NH3 sensor: Internal sensor heater control failure	4CDE-1F	NH3 Sensor	The NH3 smart sensor provides the ECU different information about its status, signal quality and under ed hardware problems via CAN message NH3Sens. The message NH3Sens contains the following information: - Measured signal values (NH3 and O2). - Status information, related to signal validity (sensor signals and under). - Error information, related to open wire, short circuit and under onal diagnostics. - Enabling of monitoring Different failure paths are triggered depending of the detected problems.	Defective NH3 Sensor	Replace NH3 Sensor	Frequency: ON Lamp: Amber (SVS)	19678-31
ComNH3SensHtrPrf	NH3 sensor: Sensor heater defective	37EE-1F	NH3 Sensor	If the dew point has been reached the NH3 sensor must reach the heated upstate after a given time. If the sensor cannot reach the heated up state a failure shall be detected.	Sensor heating defective or insufficient	Check NH3 sensor wiring between Sensor controller and under for defects. If visual inspection is OK, replace NH3 sensor.	Frequency: ON Lamp: Amber (SVS)	14318-31
ComNH3SensHtrTempInvld	NH3 Sensor: Invalid sensor temperature	32DE-1F	NH3 Sensor	The software module ComRx_NH3Sens receives and under ses the information sent over CAN by NH3 Sensor	NH3 sensor heater defective, or inner temperature measurement defective	Replace NH3 sensor	Frequency: ON Lamp: Amber (SVS)	13022-31
ComNH3SensNOxSensSignPlaus	NH3 Sensor: Plausibility error between NH3/NOx Signal of NH3 sensor	3FDE-1F	NH3 Sensor	The NH3 sensor has 2 cells to detect NH3. The first cell detects NH3 and O2 (voltage signal EMF1) and he second cell detects NO2 (voltage signal EMF2). The first cell value is corrected by the second cell value to determine the NH3 signal (complex algorithm).	Drifted or defective NH3 sensor	Replace NH3 sensor	Frequency: no lamp Lamp: no lamp	16350-31
ComNH3SensSignPlaus	NH3 sensor: sensor is drifted	38EE-1F	NH3 Sensor	The NH3 sensor has 2 cells to detect NH3. The first cell detects NH3 and O2 (voltage signal EMF1) and he second cell detects NO2 (voltage signal EMF2). The first cell value is corrected by the second cell value to determine the NH3 signal (complex algorithm). If NH3 is zero the value of the first cell must be identical to the value of the second cell as both are measuring NO2. If it is not the case we must assume that the sensor is drifted.	NH3 sensor shows negative drift	Replace NH3 sensor	Frequency: no lamp Lamp: no lamp	14574-31
ComNH3SensSupplErr	NH3 sensor: Internal sensor heater supply failure (CAN communication monitoring - NH3 sensor reports an error related to power supply of heater or sensor, message via CAN)	4DDE-1F	NH3 Sensor	The NH3 smart sensor provides the ECU different information about its status, signal quality and under ed hardware problems via CAN message NH3Sens. The message NH3Sens contains the following information: - Measured signal values (NH3 and O2). - Status information, related to signal validity (sensor signals and under). - Error information, related to open wire, short circuit and under onal diagnostics. - Enabling of monitoring Different failure paths are triggered depending of the detected problems.	Defective NH3 Sensor	Replace NH3 Sensor	Frequency: ON Lamp: Amber (SVS)	19934-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComNH3SensSystErr	NH3 sensor: Electrical problem	4EDE-1F	NH3 Sensor	The NH3 smart sensor provides the ECU different information about its status, signal quality and under ed hardware problems via CAN message NH3Sens. The message NH3Sens contains the following information: - Measured signal values (NH3 and O2). - Status information, related to signal validity (sensor signals and under). - Error information, related to open wire, short circuit and under onal diagnostics. - Enabling of monitoring Different failure paths are triggered depending of the detected problems.	Defective NH3 Sensor	Replace NH3 Sensor	Frequency: ON Lamp: Amber (SVS)	20190-31
ComNH3SensTO	CAN Bus: Timeout Error of CAN--Receive-Frame NH3Sens from NH3 Sensor	92EE-1F	CAN Bus	The software module ComRx_NH3Sens receives and under ses the information sent over CAN by NH3 Sensor The message is monitored for timeout	Defective CAN controller of NH3 Sensor , undervoltage of Sensor, missing Sensor, CAN cable connecting the Sensor is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the NH3 Sensor to the network, Check correct functioning of the Sensor CAN controller and ts voltage supply. Check wiring.	Frequency: ON Lamp: Amber (SVS)	37614-31
ComNOxDataBAMDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame NOxDataBAM from NOx sensor	B76E-1F	NOx Sensor (CAN)	The software module ComRx_NoxData receives and under ses the information sent over CAN by downstream NOX Sensor before the dew point has been reached. Message is monitored for correct length.	Wrong CAN configuration in downstream NOx sensor	Check CAN configuration in downstream NOx sensor	Frequency: no lamp Lamp: no lamp	46958-31
ComNOxDataPacDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame NOxDataPac from NOx sensor	B86E-1F	NOx Sensor (CAN)	The software module ComRx_NoxData receives and under ses the information sent over CAN by downstream NOX Sensor before the dew point has been reached. Message is monitored for correct length.	Wrong CAN configuration in downstream NOx sensor	Check CAN configuration in downstream NOx sensor	Frequency: no lamp Lamp: no lamp	47214-31
ComNOxDataTO	CAN Bus; Timeout error of CAN--Receive frame NOxData from NOx sensor	996E-1F	CAN Bus	The software module ComRx_NoxData receives and under ses the information sent over CAN by downstream NOX Sensor before the dew point has been reached. Message is monitored for timeout	Defective CAN controller of NOX Sensor, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the NOX Sensor to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39278-31
ComNOxDataUsBAMDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame NOxDataUsBAM from NOx sensor upstream	BA6E-1F	NOx Sensor (CAN)	The software module ComRx_NoxDataUs receives and under ses the information sent over CAN by upstream NOX Sensor before the dew point has been reached. Message is monitored for correct length.	Wrong CAN configuration in upstream NOx sensor	Check CAN configuration in upstream NOx sensor	Frequency: no lamp Lamp: no lamp	47726-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComNOxDataUsPacDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame NOxDataUsPac from NOx sensor upstream	BB6E-1F	NOx Sensor (CAN)	The software module ComRx_NoxDataUs receives and under ses the information sent over CAN by upstream NOX Sensor before the dew point has been reached. Message is monitored for correct length.	Wrong CAN configuration in upstream NOx sensor	Check CAN configuration in upstream NOx sensor	Frequency: no lamp Lamp: no lamp	47982-31
ComNOxDataUsTO	CAN Bus; Timeout error of CAN--Receive frame NOxDataUs from NOx sensor upstream	9C6E-1F	CAN Bus	The software module ComRx_NoxDataUs receives and under ses the information sent over CAN by upstream NOX Sensor before the dew point has been reached. Message is monitored for timeout	Defective CAN controller of NOX Sensor upstream, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the NOX Sensor upstream to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40046-31
ComNOxSensDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame NOxSens from NOx sensor	B7BE-1F	NOx Sensor (CAN)	NOxSens message contains information from NOx sensor Received CAN messages are checked for correct data length.	Wrong CAN configuration in the NOx sensor	Check CAN configuration in the NOx sensor	Frequency: ON Lamp: Amber (SVS)	47038-31
ComNOxSensHtrMax	CAN NOx Sensor: Open Circuit Error for Nox Sensor	E16E-1F	CAN NOx Sensor	The NOx Sensor has an internal monitoring for open wire or short circuit and under a message in case of a detected failure. Error byte is configured as follows (for every bit: 0=OK, 1=NOK): bit0: Open wire heater bit1: Open wire NOx bit2: Open wire linear lambda bit3: Open wire binary lambda bit4: Short heater bit5: Short NOx signal bit6: Short linear lambda signal bit7: Short binary lambda signal	Wiring defect NOx Sensor defect	Internal NOx Sensor wiring defect, replace sensor.	Frequency: ON Lamp: Amber (SVS)	57710-31
ComNOxSensHtrMin	CAN NOx Sensor: Short Circuit Error for Nox Sensor	E26E-1F	CAN NOx Sensor	The NOx Sensor has an internal monitoring for open wire or short circuit and under a message in case of a detected failure. Error byte is configured as follows (for every bit: 0=OK, 1=NOK): bit0: Open wire heater bit1: Open wire NOx bit2: Open wire linear lambda bit3: Open wire binary lambda bit4: Short heater bit5: Short NOx signal bit6: Short linear lambda signal bit7: Short binary lambda signal	Wiring harness has short circuit NOx Sensor defect	Internal NOx Sensor wiring defect, replace sensor.	Frequency: ON Lamp: Amber (SVS)	57966-31
ComNOxSensHtrPrf	NOx Sensor (CAN): Sensor Heater performance insufficient	A36E-1F	NOx Sensor (CAN)	The heat up performance of the NOx sensor connected via CAN is evaluated.	NOx sensor heater efficiency decreased	Check wiring/supply, replace NOx sensor.	Frequency: ON Lamp: Amber (SVS)	41838-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComNOxSensNOxMax	NOx Sensor (CAN): Open circuit error detected by sensor	E18E-1F	NOx Sensor (CAN)	The smart NOx sensor deliver information about its error status, error byte is configured as follows: Bit 0: Open wire heater Bit 1: Open wire NOx Bit 2: Open wire linear lambda Bit 3: Open wire binary lambda Bit 4: Short heater Bit 5: Short NOx Bit 6: Short linear lambda Bit 7: Short binary lambda If failure is detected corresponding bit is set.	Wiring defect NOx Sensor defect	Internal NOx Sensor wiring defect, replace sensor.	Frequency: ON Lamp: Amber (SVS)	57742-31
ComNOxSensNOxMin	NOx Sensor (CAN): Short circuit error detected by sensor	E28E-1F	NOx Sensor (CAN)	The smart NOx sensor deliver information about its error status, error byte is configured as follows: Bit 0: Open wire heater Bit 1: Open wire NOx Bit 2: Open wire linear lambda Bit 3: Open wire binary lambda Bit 4: Short heater Bit 5: Short NOx Bit 6: Short linear lambda Bit 7: Short binary lambda If failure is detected corresponding bit is set.	Wiring defect NOx Sensor defect	Internal NOx Sensor wiring defect, replace sensor.	Frequency: ON Lamp: Amber (SVS)	57998-31
ComNOxSensNpl	CAN NOx Sensor: NOx Signal out of range	338E-1F	CAN NOx Sensor	The NOx Sensor Signal is checked for plausibility, i.e. the raw signal should not be << 0 , as negative NOx concentration is not possible. If the signal is < -100,00-, a wrong sensing must be assumed. Note: If the signal is < -100,00- but still > -100,00-, the signal is limited to -100,00- without any other reaction!	NOx Sensor defective	Replace NOx sensor	Frequency: ON Lamp: Amber (SVS)	13198-31
ComNOxSensSlfDiagAbortCt	NOx sensor: Self diagnosis on smart sensor aborted	3ABE-1F	NOx Sensor (CAN)	The smart NOx sensor deliver information about its error status, and s provided with a self diagnosis procedure monitored by the ECU. Self diagnosis is requested and under med during ECU afterrun.	Calibration issue, the self diagnostic request is sent too early after engine stop	Contact Help Desk	Frequency: no lamp Lamp: no lamp	15038-31
ComNOxSensSlfDiagNotPssbl	NOx sensor: Self diagnosis not possible (old sensor type installed)	3BBE-1F	NOx Sensor (CAN)	The smart NOx sensor deliver information about its error status, and s provided with a self diagnosis procedure monitored by the ECU. Self diagnosis is requested and under med during ECU afterrun.	Sensor software too old (not able to perform self diagnostic). Monitor should be disabled in serial production, only used during development phase to verify installation of correct sensor type.	Replace sensor with updated and under ible version	Frequency: no lamp Lamp: no lamp	15294-31
ComNOxSensSlfDiagResultPrcHighLim	Nox Sensor: Self diagnosis result above higher limit (positive drif)	1CBE-1F	NOx Sensor (CAN)	The smart NOx sensor deliver information about its error status, and s provided with a self diagnosis procedure monitored by the ECU. Self diagnosis is requested and under med during ECU afterrun.	NOx Sensor has a too high positive drift	Replace NOx sensor	Frequency: no lamp Lamp: no lamp	7358-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComNOxSensSlfDiagResultPrcLowLim	Nox Sensor: Self diagnosis result below lower limit	2DBE-1F	NOx Sensor (CAN)	The smart NOx sensor deliver information about its error status, and s provided with a self diagnosis procedure monitored by the ECU. Self diagnosis is requested and under med during ECU afterrun.	NOx Sensor has a too high negative drift	Replace NOx sensor	Frequency: no lamp Lamp: no lamp	11710-31
ComNOxSensUsDLC	CAN Bus: Incorrect data length of CAN--Receive-Frame NOxSensUs from NOx Upstream Sensor	B8BE-1F	NOx Sensor (CAN)	NOxSensUs message contains information from NOx sensor upstream Received CAN messages are checked for correct data length.	Wrong CAN configuration in the NOx Upstream sensor	Check CAN configuration in the NOx Upstream sensor	Frequency: ON Lamp: Amber (SVS)	47294-31
ComNOxSensUsHtrMax	CAN NOx Sensor Upstream: Open Circuit Error for Nox Sensor upstream	E46E-1F	CAN NOx Sensor	The smart NOx sensor deliver information about its error status, error byte is configured as follows: Bit 0: Open wire heater Bit 1: Open wire NOx Bit 2: Open wire linear lambda Bit 3: Open wire binary lambda Bit 4: Short heater Bit 5: Short NOx Bit 6: Short linear lambda Bit 7: Short binary lambda If failure is detected corresponding bit is set.	Wiring defect NOx Sensor upstream defect	Internal NOx Upstream Sensor wiring defect, replace sensor.	Frequency: ON Lamp: Amber (SVS)	58478-31
ComNOxSensUsHtrMin	CAN NOx Sensor Upstream: Short Circuit Error for Nox Sensor upstream	256E-1F	CAN NOx Sensor	The smart NOx sensor deliver information about its error status, error byte is configured as follows: Bit 0: Open wire heater Bit 1: Open wire NOx Bit 2: Open wire linear lambda Bit 3: Open wire binary lambda Bit 4: Short heater Bit 5: Short NOx Bit 6: Short linear lambda Bit 7: Short binary lambda If failure is detected corresponding bit is set.	Wiring defect NOx Sensor upstream defect	Internal NOx Upstream Sensor wiring defect, replace sensor.	Frequency: ON Lamp: Amber (SVS)	9582-31
ComNOxSensUsHtrPrf	NOx Sensor Upstream (CAN): Sensor Heater performance insufficient	A66E-1F	NOx Sensor (CAN)	The heat up performance of the NOx Upstream sensor connected via CAN is evaluated.	NOx upstream sensor heater efficiency decreased	Check wiring/supply, replace NOx upstream sensor.	Frequency: ON Lamp: Amber (SVS)	42606-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComNOxSensUsNOxMax	NOx Sensor Upstream (CAN): Open Wire error detected by sensor	E48E-1F	NOx Sensor (CAN)	The smart NOx upstream sensor deliver information about its error status, error byte is configured as follows: Bit 0: Open wire heater Bit 1: Open wire NOx Bit 2: Open wire linear lambda Bit 3: Open wire binary lambda Bit 4: Short heater Bit 5: Short NOx Bit 6: Short linear lambda Bit 7: Short binary lambda If failure is detected corresponding bit is set.	Wiring defect NOx Upstream Sensor defect	Internal NOx Upstream Sensor wiring defect, replace sensor.	Frequency: ON Lamp: Amber (SVS)	58510-31
ComNOxSensUsNOxMin	NOx Sensor Upstream (CAN): Short circuit error detected by sensor	258E-1F	NOx Sensor (CAN)	The smart NOx upstream sensor deliver information about its error status, error byte is configured as follows: Bit 0: Open wire heater Bit 1: Open wire NOx Bit 2: Open wire linear lambda Bit 3: Open wire binary lambda Bit 4: Short heater Bit 5: Short NOx Bit 6: Short linear lambda Bit 7: Short binary lambda If failure is detected corresponding bit is set.	Wiring defect NOx Upstream Sensor defect	Internal NOx Upstream Sensor wiring defect, replace sensor.	Frequency: ON Lamp: Amber (SVS)	9614-31
ComNOxSensUsNpl	CAN NOx Sensor Upstream: NOx Signal out of range	368E-1F	CAN NOx Sensor	The NOx Sensor Upstream Signal is checked for plausibility, i.e. the raw signal should not be << 0 , as negative NOx concentration is not possible. If the signal is < -100,00-, a wrong sensing must be assumed. Note: If the signal is < 2,00- but still > -100,00-, the signal is limited to 2,00- without any other reaction!	NOx Sensor defective	Replace NOx sensor	Frequency: ON Lamp: Amber (SVS)	13966-31
ComNOxSensUsSlfDiagAbortCt	NOx Sensor Upstream: Self diagnosis on smart sensor aborted	EEBE-1F	NOx Sensor (CAN)	The smart NOx upstream sensor deliver information about its error status, and s provided with a self diagnosis procedure monitored by the ECU. Self diagnosis is requested and under med during ECU afterrun.	Calibration issue, the self diagnostic request is sent too early after engine stop	Contact Help Desk	Frequency: no lamp Lamp: no lamp	61118-31
ComNOxSensUsSlfDiagNotPssbl	NOx Sensor Upstream: Self diagnosis not possible (old sensor type installed)	EFBE-1F	NOx Sensor (CAN)	The smart NOx upstream sensor deliver information about its error status, and s provided with a self diagnosis procedure monitored by the ECU. Self diagnosis is requested and under med during ECU afterrun.	Sensor software too old (not able to perform self diagnostic). Monitor should be disabled in serial production, only used during development phase to verify installation of correct sensor type.	Replace sensor with updated and unde ible version	Frequency: no lamp Lamp: no lamp	61374-31
ComNOxSensUsSlfDiagResultPrcHighLim	Nox Sensor Upstream: Self diagnosis result above higher limit	11CE-1F	NOx Sensor (CAN)	The smart NOx upstream sensor deliver information about its error status, and s provided with a self diagnosis procedure monitored by the ECU. Self diagnosis is requested and under med during ECU afterrun.	NOx Sensor Upstream has a too high positive drift	Replace NOx sensor Upstream	Frequency: no lamp Lamp: no lamp	4558-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComNOxSensUsSlfDiagResultPrcLowLim	NOx Sensor Upstream: Self diagnosis result below lower limit	22CE-1F	NOx Sensor (CAN)	The smart NOx upstream sensor deliver information about its error status, and s provided with a self diagnosis procedure monitored by the ECU. Self diagnosis is requested and under med during ECU afterrun.	NOx Sensor Upstream has a too high negaitive drift	Replace NOx sensor Upstream	Frequency: no lamp Lamp: no lamp	8910-31
ComPA_MCDLC	CAN Bus: Incorrect Data LengthofCAN--Receive-Frame PA_MC from VCM	91F1-1F	CAN Bus	The CAN Message PA_MC contains speed governor parameters from Vehicle Control Module (VCM) Message is monitored for correct length.	Wrong CAN configuration of VCM	Check CAN configuration of Body Computer	Frequency: no lamp Lamp: no lamp	37361-31
ComPA_MCTO	CAN Bus: Timeout Error of CAN--Receive-Frame PA_MC from VCM	92F1-1F	CAN Bus	The CAN Message PA_MC contains speed governor parameters from Vehicle Control Module (VCM) Received CAN messages are checked for timeout	Defective CAN controller of VCM, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the VCM to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37617-31
ComPAETO	CAN Bus: Timeout Error of CAN-Transmit-Frame PA_E message	9D2B-1F	CAN Bus	The transmitted message PA_E contains information about Air Conditioner Compressor state. CAN messages are monitored for timeout.	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check the installation and he proper connection of the Engine Control Unit and he Instrument Cluster to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	40235-31
ComPRODPM1DLC	CAN Bus: Incorrect Data LengthofCAN--Receive-Frame PRODPM1 from Departronic System	BAEB-1F	CAN Bus	The function receives and under ses the PRODPM1 message, proprietary message from Departronic system, containing HCl dosing information. Received CAN messages are checked for correct data length	Wrong CAN configuration in Departronic System	Check CAN configuration in Departronic System	Frequency: no lamp Lamp: no lamp	47851-31
ComPRODPM1TO	CAN Bus: Timeout Error of CAN--Receive-Frame PRODPM1 from Departronic System	9D7C-1F	CAN Bus	The function receives and under ses the PRODPM1 message, proprietary message from Departronic system, containing HCl dosing information. Received CAN messages are checked for timeout	Defective CAN controller of Departronic System, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Departronic System to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40316-31
ComPTOBCDLC	Data Length Code Error of CAN-Receive--Frame PTOBC	B6A1-1F	CAN Bus	The software module ComRx_PTOBC receives and under ses the information of Engine power take off enable switch status message. Message is monitored for correct length.	Wrong CAN configuration in BC Module	Check CAN configuration in BC Module	Frequency: no lamp Lamp: no lamp	46753-31
ComPTOBCTO	Timeout Error of CAN--Receive-Frame PTOBC	97A1-1F	CAN Bus	The software module ComRx_PTOBC receives and under ses the information of Engine power take off enable switch status message. Message is monitored for Timeout condition.	Defective CAN controller of BC, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the BC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38817-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComPTODEDLC	CAN Bus: Incorrect data length of CAN--Receive--FramePTODE from VCM	B8A1-1F	CAN Bus	The task of this subsystem is to receive and under s the PTODE CAN message (Transmitted by VCM), containing information about PTO status. Message is monitored for correct length	Wrong CAN configuration in Vehicle Control Module	Check CAN configuration in Vehicle Control Module	Frequency: no lamp Lamp: no lamp	47265-31
ComPTODETO	CAN Bus: Timeout Error of CAN--Receive-Frame PTODE from VCM	99A1-1F	CAN Bus	The task of this subsystem is to receive and under s the PTODE CAN message (Transmitted by VCM), containing information about PTO status. Message is monitored for timeout	Defective CAN controller of VCM, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the VCM to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39329-31
ComPTOTxDLC	CAN Bus: Incorrect data length of CAN--Transmit-Frame PTOTx	BAA1-1F	CAN Bus	The software module ComRx_NH3Sens receives and under ses the information sent over CAN by NH3 Sensor. Message is monitored for correct length.			Frequency: no lamp Lamp: no lamp	47777-31
ComPTOTxTO	CAN Bus: Timeout Error of CAN-Transmit-Frame PTOTx	9BA1-1F	CAN Bus	The transmit message PTOTx (PTO transmission message) is used for sending PTO parameters (PTO speed, PTO set speed,PTO governor enable switch,PTO governor set switch) CAN messages are monitored for time out	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check the installation and he proper connection of the Engine Control Unit to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	39841-31
ComRCDRBAMDLC	CAN Bus: Incorrect Data LengthofCAN--Receive frame RCDRBAM	BDCB-1F	CAN Bus	Message RCDRBAM (Retarder configuration) is received from retarder Message data length is monitored	Wrong CAN configuration in Electronic Retarder Controller	Check CAN configuration in Electronic Retarder Controller	Frequency: no lamp Lamp: no lamp	48587-31
ComRCDRPacDLC	CAN Bus: Incorrect Data LengthofCAN--Receive frame RCDRPac	BECB-1F	CAN Bus	Message RCDRPac Multipacket (Retarder configuration) is received from retarder Message data length is monitored	Wrong CAN configuration in Electronic Retarder Controller	Check CAN configuration in Electronic Retarder Controller	Frequency: no lamp Lamp: no lamp	48843-31
ComRCDRTO	CAN Bus: Timeout Error of CAN--Receive-Frame RCDR from retarder	9FCB-1F	CAN Bus	Message RCDR (Retarder configuration) is received from retarder Message is monitored for time out	Defective CAN controller of Retarder controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Retarder controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40907-31
ComRESETDLC	CAN Bus: Incorrect data length of CAN--Receive frame RESET from vehicle controller	B27B-1F	CAN Bus	Wrong data size detection of the RESET CAN message, received from the EDC and under itted by IC or VCM. The message is used to reset the trip fuel consumption data.	Wrong CAN configuration in IC/VCM	Check CAN configuration of IC/VCM	Frequency: no lamp Lamp: no lamp	45691-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComRESETTO	CAN Bus: Timeout of CAN-Receive frame RESET from vehicle controller	917B-1F	CAN Bus	Timeout detection of the RESET CAN message, received from the EDC and under itted by IC or VCM. The message is used to reset the trip fuel consumption data.	Defective CAN controller of IC/VCM, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the IC/VCM to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37243-31
ComRFTO	CAN Bus: Timeout Error of CAN--Receive-Frame RF (Hydraulic Retarder Oil Temperature)	99CB-1F	CAN Bus	The Receive CAN Message RF contains information about Hydraulic Retarder Oil and under Temperature. CAN Received messages are monitored for time out	Defective CAN controller of Driveline Retarder , under voltage or missing Driveline Retarder Unit, CAN cable connecting the Driveline Retarder Unit is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Driveline Retarder Unit to the network, check correct functioning of the Driveline Retarder Unit CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	39371-31
ComRxACC1DLC	CAN Bus: CAN-Receive--Frame of Adaptive Cruise Control/Vehicle Speed (ACC1) , wrong data length	BB51-1F	CAN Bus	The Adaptive Cruise Control/Vehicle Speed information acquired via RADAR interface is monitored for correct data length.	Wrong CAN configuration in Radar Interface	Check CAN configuartion in the Radar Interface	Frequency: no lamp Lamp: no lamp	47953-31
ComRxACC1TO	CAN Bus: Timeout Error of CAN--Receive-Frame Adaptive Cruise Control Vehicle Speed from Radar Interface	9C51-1F	CAN Bus	The Adaptive Cruise Control/Vehicle Speed information acquired via RADAR interface is monitored for timeout. The CAN messages received by ECM are monitored for timeouts.	Defective CAN controller of Radar Interface, CAN cable connecting the interface is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Radar Interface to the network. Check wiring.	Frequency: no lamp Lamp: no lamp	40017-31
ComRxAmbDLC	CAN Bus: Incorrect data length Error of CAN-Receive--Frame RxAmb (Ambient temperature) from VCM	B6FB-1F	CAN Bus	The task of this subsystem is to receive and under s the AMBRx CAN message (Transmitted by VCM) containing the ambient air temperature. Messag is monitored for correct data length	Wrong CAN configuration in VCM	Check CAN configuration in VCM	Frequency: no lamp Lamp: no lamp	46843-31
ComRxAmbTO	CAN Bus: Timeout Error of CAN--Receive-Frame RxAmb (AMbient temperature) from VCM	9FC4-1F	CAN Bus	The task of this subsystem is to receive and under s the AMBRx CAN message (Transmitted by VCM) containing the ambient air temperature. Messag is monitored for timeout	Defective CAN controller of VCM, CAN cable connecting the interface is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the VCM to the network. Check wiring.	Frequency: no lamp Lamp: no lamp	40900-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComRx CCVSD LC	CAN Bus: Incorrect Data LengthofCAN--Receive-Frame Cruise Control Vehicle Speed	B841-1F	CAN Bus	RxCCVS message is sent from the Body Computer or Vehicle Control Module (BC or VCM) to the EDC and under ns parking brake, wheel speed,brake switch, clutch switch and TO state information. CAN messages received from ECM are monitored correct data length	Wrong CAN configuration in Body Computer or Vehicle Control Module	Check CAN configuration in Body Controller or VCM	Frequency: no lamp Lamp: no lamp	47169-31
ComRx CCVST O	CAN Bus: Timeout Error of CAN--Receive-Frame Cruise Control Vehicle Speed	9741-1F	CAN Bus	RxCCVS message is sent from the Body Computer or Vehicle Control Module (BC or VCM) to the EDC and under ns parking brake, wheel speed,brake switch, clutch switch and TO state information. CAN messages received from ECM are monitored for timeout.	Defective CAN controller of Body Computer or Vehicle Control Module , undervoltage of BC or VCM, missing BC or VCM, CAN cable connecting the BC or VCM is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the BC or VCM to the network, check correct functioning of the BC or VCM CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	38721-31
ComRx EngTe mp2DL C	CAN Bus: Incorrect data length of CAN--Receive-Frame RxEngTemp2 from EGR	B7AB-1F	CAN Bus	RxEngTemp2 CAN message contains the information about EGR temperature The message data length is monitored	Wrong CAN configuration in EGR temperature module	Check EGR configuration in EGR temperature module	Frequency: no lamp Lamp: no lamp	47019-31
ComRx EngTe mp2Se nsMax	CAN Bus: Open Circuit Error for Exhaust Gas temperature Signal	1117-1F	CAN Bus	The EGR temperature is aquired via CAN interface and under ed to the ECM via CAN message Com_tEGRTEG. This failure reports an open circuit error for the EGR temperature signal.	Defective or incorrect functioning of EGR temperature measuring device	Check EGR temperature measuring device for proper functioning	Frequency: no lamp Lamp: no lamp	4375-31
ComRx EngTe mp2Se nsMin	CAN Bus: Short Circuit Error for Exhaust Gas temperature signal	2217-1F	CAN Bus	The EGR temperature is aquired via CAN interface and under ed to the ECM via CAN message Com_tEGRTEG. This failure reports a short circuit error for the EGR temperature signal.	Defective or incorrect functioning of EGR temperature measuring device	Check EGR temperature measuring device for proper functioning	Frequency: no lamp Lamp: no lamp	8727-31
ComRx EngTe mp2Se nsNpl	CAN Bus: NPL Error Circuit Error for Exhaust Gas Mass Temperature Signal	3317-1F	CAN Bus	The EGR temperature is aquired via CAN interface and under ed to the ECM via CAN message Com_tEGRTEG. This failure reports that the measured signal for EGR temperature is not plausible.	Defective or incorrect functioning of EGR temperature measuring device	Check EGR temperature measuring device for proper functioning	Frequency: no lamp Lamp: no lamp	13079-31
ComRx EngTe mp2Se nsSig	CAN Bus: Sig Error for Exhaust Gas temperature Signal	4417-1F	CAN Bus	The EGR temperature is aquired via CAN interface and under ed to the ECM via CAN message Com_tEGRTEG. This failure reports that the measured signal for EGR temperature is not stable.	Defective or incorrect functioning of EGR temperature measuring device	Check EGR temperature measuring device for proper functioning	Frequency: no lamp Lamp: no lamp	17431-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComRx EngTe mp2TO	CAN Bus: Timeout Error of CAN--Receive-Frame RxEngTemp2	98AB-1F	CAN Bus	The CAN messages received by ECM are monitored for timeouts. RxEngTemp2 CAN message contains the information about EGR temperature	Defective CAN controller of EGR Temperature Sensor , undervoltage of EGR Sensor, missing EGR Sensor, CAN cable connecting the EGR Sensor is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the EGR Sensor to the network, check correct functioning of the EGR Sensor CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	39083-31
ComRx SERVD LC	CAN Bus: Incorrect data length of CAN--Receive-Frame RxSERV	B87B-1F	CAN Bus	The task of this subsystem is to receive and under s the SERV CAN message containing Service Component Identification. Message is monitored for correct length.			Frequency: no lamp Lamp: no lamp	47227-31
ComRx SERVT O	CAN Bus: Timeout Error of CAN--Receive-Frame RxSERV	977B-1F	CAN Bus	The task of this subsystem is to receive and under s the SERV CAN message containing Service Component Identification. Message is monitored for timeout			Frequency: no lamp Lamp: no lamp	38779-31
ComRx VDDL C	CAN Bus: CAN-Receive--Frame of Vehicle Distance (RxVD), wrong data length	B931-1F	CAN Bus	RxVD CAN message transmitted by the body controller contains the information about vehicle distance The message data length is monitored.	Wrong CAN configuration in the Body Controller	Check CAN configuration in the Body Computer	Frequency: no lamp Lamp: no lamp	47409-31
ComRx VDTO	CAN Bus: Timeout error of CAN--Receive-Frame of Vehicle Distance (RxVD)	9A31-1F	CAN Bus	The CAN messages received by ECM are monitored for timeouts. RxVD CAN message transmitted by the body controller contains the information about vehicle distance	Defective CAN controller of Body Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of Body Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39473-31
ComSC R1DLC	CAN Bus: Incorrect data length of CAN--Receive-Frame SCR1 from Denox module	B8FA-1F	CAN Bus	Denox system is sending information to EDC about catalyst upstream/downstream temperatures, Urea pressure, SCR failures and CR protection request in case of too high exhaust temperatures. Message is monitored for correct data length	Wrong CAN configuration in the Denox system	Check CAN configuration in Denox system	Frequency: no lamp Lamp: no lamp	47354-31
ComSC R1Prot 1	INFO: SCR Protection request 1 activated	F18A-1F	Info: Torque Limitation active	Denox system is sending information to EDC about catalyst upstream/downstream temperatures, Urea pressure, SCR failures and CR protection request in case of too high exhaust temperatures.	Exhaust temperature too high, SCR Protection request activated	INFO failure, no intervention necessary	Frequency: no lamp Lamp: no lamp	61834-31
ComSC R1Prot 2	INFO: SCR Protection request 2 activated	F28A-1F	Info: Torque Limitation active	Denox system is sending information to EDC about catalyst upstream/downstream temperatures, Urea pressure, SCR failures and CR protection request in case of too high exhaust temperatures.	Exhaust temperature too high, SCR Protection request activated	INFO failure, no intervention necessary	Frequency: no lamp Lamp: no lamp	62090-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComSCR1ProtDfrz	INFO: SCR Protection request 1 activated due to defreezing	438A-1F	Info: Torque Limitation active	Denox system is sending information to EDC about catalyst upstream/downstream temperatures, Urea pressure, SCR failures and CR protection request in case of too high exhaust temperatures or defreezing status.	SCR Protection request activated because SCR is in defreezing mode and o UREA injection is possible	No intervention needed, SCR system needs time to defreeze	Frequency: no lamp Lamp: no lamp	17290-31
ComSCR1TO	CAN Bus: Timeout error of CAN--Receive-Frame SCR1 from DCU15 (Catalyst Temperatures, Urea pressure, SCR failures,SCR protection request)	97FA-1F	CAN Bus	Denox system is sending information to EDC about catalyst upstream/downstream temperatures, Urea pressure, SCR failures and CR protection request in case of too high exhaust temperatures. Message is monitored for timeout	Defective CAN controller of DCU15 , undervoltage or missing Actuator, CAN cable is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the DCU15 to the network, check correct functioning of the controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	38906-31
ComSCR2DLC	CAN Bus: Incorrect data length of CAN--Receive-Frame SCR2 from Denox module	BDFA-1F	CAN Bus	Denox system is sending information to EDC about Urea Tank level and under ature, SCR status. Message is monitored for correct data length	Wrong CAN configuration in the Denox system (DCU15)	Check CAN configuration in Denox system (DCU15)	Frequency: no lamp Lamp: no lamp	48634-31
ComSCR2TO	CAN Bus: TimeOut of CAN-Receive--Frame SCR2 from Denox module	9CFA-1F	CAN Bus	Denox system is sending information to EDC about Urea Tank level and under ature, SCR status. Message is monitored for timeout	Defective CAN controller of DCU15 , undervoltage or missing Actuator, CAN cable is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the DCU15 to the network, check correct functioning of the controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	40186-31
ComSERVTO	CAN Bus: Timeout error of CAN-Transmit frame SERV (Service component Id. and under e distance)	9C4B-1F	CAN Bus	Timeout detection of the SERV CAN message, transmitted by the EDC and under ed by IC or VCM. The message contains the informations Service Component Identification and under ing distance until oil service.	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check the installation and he proper connection of the Engine Control Unit to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	40011-31
ComShutDwnTO	CAN Bus: Timeout error of CAN-Transmit-Frame Shut Down (ShutDwn)	9B3B-1F	CAN Bus	The CAN messages transmitted by ECM are monitored for timeouts. The message ShutDwn is sent by the ECM in broadcast mode supporting several signals: - Engine wait to start lamp - Engine protection system has shutdown engine It is sent time synchronous every 1000 ms (applicable time).	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check the installation and he proper connection of the Engine Control Unit to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	39739-31
ComSotErr	Soot Sensor Error, invalid soot signal	311E-1F	Decompression brake	DPF1S Message contains information about Diesel Particulate Filter Soot Mass Message supposrts a soot mass between 0..250 g/L, an error status can be sended with soot mass == 254 (outside normal range)	Soot sensor reports a self diagnosed error	Replace soot sensor	Frequency: no lamp Lamp: no lamp	12574-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComSR A2EDC Ctrl	eVGT Actuator: Control failure reported by actuator via CAN message	3398-1F	Turbocharger control	The Sw Module ComRx_SRA2EDC receives and under ses the IVECO proprietary CAN messages SRA2EDC sent from the eVGT ECU (Smart Remote Actuator) to EDC. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	Defective eVGT actuator, electrical problem	Check eVGT supply, wiring, replace actuator	Frequency: ON Lamp: Amber (SVS)	13208-31
ComSR A2EDC DLC	eVGT Actuator: Incorrect data length of CAN--Receive-Frame SRA2EDC from eVGT Actuator	BB98-1F	CAN Bus	The Sw Module ComRx_SRA2EDC receives and under ses the IVECO proprietary CAN messages SRA2EDC sent from the eVGT ECU (Smart Remote Actuator) to EDC. The message contains information about actuator status, position, temperature, fault codes, target position and under effort) CAN Message is monitored for correct data length	Wrong CAN configuration in eVGT smart actuator	Check CAN configuration in eVGT smart actuator	Frequency: ON Lamp: Amber (SVS)	48024-31
ComSR A2EDC Elec	eVGT Actuator: Electrical failure detected	3498-1F	Turbocharger control	The Sw Module ComRx_SRA2EDC receives and under ses the IVECO proprietary CAN messages SRA2EDC sent from the eVGT ECU (Smart Remote Actuator) to EDC. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	Defective eVGT actuator, electrical problem	Check eVGT supply, wiring, replace actuator	Frequency: ON Lamp: Amber (SVS)	13464-31
ComSR A2EDC Err	eVGT Actuator: General error reported by actuator via CAN message	3598-1F	Turbocharger control	The Sw Module ComRx_SRA2EDC receives and under ses the IVECO proprietary CAN messages SRA2EDC sent from the eVGT ECU (Smart Remote Actuator) to EDC. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	Defective eVGT Actuator, general error	Check eVGT supply, wiring, replace actuator	Frequency: ON Lamp: Amber (SVS)	13720-31
ComSR A2EDC HiEff	eVGT Actuator: Motor effort too high	E698-1F	Turbocharger control	The Sw Module ComRx_SRA2EDC receives and under ses the IVECO proprietary CAN messages SRA2EDC sent from the eVGT ECU (Smart Remote Actuator) to EDC. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	EVTG actuator mechanically blocked or friction too high	Check EVTG actuator	Frequency: no lamp Lamp: no lamp	59032-31
ComSR A2EDC InitCnt	eVGT Actuator: too much running inits	3798-1F	Turbocharger control	The Sw Module ComRx_SRA2EDC receives and under ses the IVECO proprietary CAN messages SRA2EDC sent from the eVGT ECU (Smart Remote Actuator) to EDC. The message contains information about actuator status, position, temperature, fault codes, target position and under effort) T he electric VGT actuator usually initialises once at start-up of the ECU. A loose contact on the actuator power supply may cause sporadic re-initialisations during engine operation.	Loose contact on the actuator power supply	Check eVGT actuator supply and under	Frequency: no lamp Lamp: no lamp	14232-31
ComSR A2EDC PosDvt Max	eVGT Actuator: Position deviation above maximum tolerance value	1B58-1F	Turbocharger control	The Sw Module ComRx_SRA2EDC receives and under ses the IVECO proprietary CAN messages SRA2EDC sent from the eVGT ECU (Smart Remote Actuator) to EDC. The message contains information about actuator status, position, temperature, fault codes, target position and under effort) The deviation between eVGT setpoint and he position feedback is monitored.	EVTG actuator mechanically blocked or friction too high	Check EVTG actuator	Frequency: no lamp Lamp: no lamp	7000-31
ComSR A2EDC PosDvt Min	eVGT Actuator: Position deviation below minimum tolerance value	2C58-1F	Turbocharger control	The Sw Module ComRx_SRA2EDC receives and under ses the IVECO proprietary CAN messages SRA2EDC sent from the eVGT ECU (Smart Remote Actuator) to EDC. The message contains information about actuator status, position, temperature, fault codes, target position and under effort) The deviation between eVGT setpoint and he position feedback is monitored.	EVTG actuator mechanically blocked or friction too high	Check EVTG actuator	Frequency: no lamp Lamp: no lamp	11352-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComSR A2EDC Syst	eVGT Actuator: Actuator reports system failure over CAN message	4898-1F	Turbocharger control	The Sw Module ComRx_SRA2EDC receives and under ses the IVECO proprietary CAN messages SRA2EDC sent from the eVGT ECU (Smart Remote Actuator) to EDC. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)			Frequency: ON Lamp: Amber (SVS)	18584-31
ComSR A2EDC Temp	eVGT Actuator: Actuator reports over temperature error	8998-1F	Turbocharger control	The Sw Module ComRx_SRA2EDC receives and under ses the IVECO proprietary CAN messages SRA2EDC sent from the eVGT ECU (Smart Remote Actuator) to EDC. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	eVGT Actuator overheated, supply problem?, increased resistance	Check eVGT actuator supply, wiring and under on	Frequency: ON Lamp: Amber (SVS)	35224-31
ComSR A2EDC TO	CAN Bus: Timeout Error of CAN--Receive-Frame SRA2EDC from eVGT Actuator	9A98-1F	CAN Bus	The Sw Module ComRx_SRA2EDC receives and under ses the IVECO proprietary CAN messages SRA2EDC sent from the eVGT ECU (Smart Remote Actuator) to EDC. The message contains information about actuator status, position, temperature, fault codes, target position and under effort) The message is monitored for timeout.	Defective CAN controller of eVGT Actuator , undervoltage or missing actuator, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the eVGT Actuator to the network, check correct functioning of the CAN controller and ts voltage supply. Check wiring.	Frequency: ON Lamp: Amber (SVS)	39576-31
ComT CFG2D LC	CAN Bus: Incorrect Data LengthofCAN--Receive-Frame TCFG2 (Transmission Torque limit)	BA6B-1F	CAN Bus	Wrong data size detection of the TCFG2 CAN message, received from the EDC and under itted by the Transmission Controller or VCM. The message contains the information Transmission Torque Limit received by the EDC.	Wrong CAN configuration in Transmission Ccontroller or VCM	Check CAN configuration of Transmission Ccontroller or VCM	Frequency: no lamp Lamp: no lamp	47723-31
ComT CFG2T O	CAN Bus: Timeout error of CAN--Receive-Frame TCFG2 (Transmission Torque limit)	996B-1F	CAN Bus	TCFG2 CAN message, received from the EDC and under itted by the Transmission Controller or VCM. The message contains the information Transmission Torque Limit received by the EDC. Message is monitored for timeout	Defective CAN controller ofTransmissionController/-VCM, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Transmission Controller/VCM to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39275-31
ComT CO1D LC	CAN Bus: Incorrect Data LengthofCAN--Receive-Frame Tachograf (TCO1)	B2FB-1F	CAN Bus	The message TCO1 is sent by the Tachograph or by the Instrument Cluster as a broadcast message. It contains speed values: - Transmission shaft speed - Vehicle speed The CAN messages received by ECM are monitored for correct data length.	Wrong CAN configuration in the Tachograph or the Instrument Cluster	Check CAN configuration in the Tachograph or the Instrument Cluster	Frequency: no lamp Lamp: no lamp	45819-31
ComT CO1T O	CAN Bus: Timeout Error of CAN--Receive-Frame Tachograf (TCO1)	9631-1F	CAN Bus	The message TCO1 is sent by the Tachograph or by the Instrument Cluster as a broadcast message. It contains speed values: - Transmission shaft speed - Vehicle speed The CAN messages received by ECM are monitored for timeouts.	Defective CAN controller of Tachograph or Instrument Cluster, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Tachograph or of the Instrument Cluster to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38449-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComTF DLC	CAN Bus: Incorrect length of CAN--Receive-Frame TF from Transmission Control (Transmission oil temperature)	B88B-1F	CAN Bus	The task of this subsystem is to receive and under s the TF information (Transmission Fluids) from Transmission Control. The message contains Transmission Oil Temperature information. The message is monitored for correct data length	Wrong CAN configuration in Transmission Controller	Check CAN configuration in Transmission Controller	Frequency: no lamp Lamp: no lamp	47243-31
ComTF TO	CAN Bus: Timeout Error of CAN--Receive-Frame TF from Transmission Control (Transmission oil temperature)	978B-1F	CAN Bus	The task of this subsystem is to receive and under s the TF information (Transmission Fluids) from Transmission Control. The message contains Transmission Oil Temperature information. The message is monitored for timeout.	Defective CAN controller of Transmission Control , undervoltage or CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Transmission Control to the network, check correct functioning of the CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	38795-31
ComTI ITO	CAN Bus: Timeout Error of CAN-Transmit-Frame Urea Tank Information (TI1: fostered catalyst tank level; catalyst temperature)	989A-1F	CAN Bus	The CAN messages transmitted by ECM are monitored for timeouts. TI1 is the CAN message for transmitting UREA tank level and REA tank temperature (not used by FUSO)	Defective CAN Controller within Chassis CAN, CAN Cables disconnected or broken. Short circuit in wiring.	Check the installation and he proper connection of the Engine Control Unit to the CAN vehicle network. Check correct operating conditions of the CAN controller. Check the vehicle wirings.	Frequency: no lamp Lamp: no lamp	39066-31
ComTi meDat eDLC	CAN Bus: CAN-Receive--Frame of TimeDate, wrong data length	B4D1-1F	CAN Bus	The function receives and under ses the TimeDate message, from the Instrument Cluster Received CAN messages are checked for correct data length	Wrong CAN configuration in Instrument Cluster	Check CAN configuration in Instrument Cluster	Frequency: no lamp Lamp: no lamp	46289-31
ComT OBC2E DC1	CAN Bus: Timeout Error of CAN--Receive-Frame IVECO proprietary Body Computer to EDC (BC2EDC1)	936B-1F	CAN Bus	The CAN messages received by ECM are monitored for timeouts. BC2EDC1 is the proprietary CAN message from Body Computer containing information about Cruise Control status, PTO, Engine brake, MIL, Multiple State switch, Immobilizer, Vehicle speed limiter	Defective CAN controller of Body Computer , undervoltage of BC, missing BC, CAN cable connecting the BC is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the BC to the network, Check correct functioning of the BC CAN controller and ts voltage supply. Check wiring.	Frequency: ON Lamp: Amber (SVS)	37739-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComT OBC2E DC2	CAN Bus: Timeout Error of CAN--Receive-Frame IVECO proprietary Body Computer to EDC (BC2EDC2)	956B-1F	CAN Bus	The CAN messages received by ECM are monitored for timeouts. BC2EDC2 is the proprietary CAN message from Body Computer containing information about following status: Clutch, parking brake, main brake, red.brake, cabin tilt, gbx neutral switch, fuel filter heating, ignition switch, oil life monitoring. It also contains following request information: fan activation,speed limiter, air conditioning, PTO request	Defective CAN controller of Body Computer , undervoltage of BC, missing BC, CAN cable connecting the BC is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the BC to the network, Check correct functioning of the BC CAN controller and ts voltage supply. Check wiring.	Frequency: ON Lamp: Amber (SVS)	38251-31
ComT OEDC 2BC	CAN Bus: Timeout Error of CAN-Transmit-Frame IVECO proprietary EDC to Body Computer (EDC2BC)	9D3B-1F	CAN Bus	EDC2BC message contains information from EDC to Body computer for different status: Cold start heater, Immobilizer, Diagnostic Lamp, Unsuccessful regeneration lamp, Speed limiter, Engine overspeed, Engine over temperature, Max vehicle speed limit set point Adjustable speed limiter, Engine brake, MIL, Electric load request, oil life monitoring, Regeneration lamp, Strt/Stop button, Fuel filter heater, Water in fuel, Oil temperature high, Oil pressure low, Engine degradation level, EDC operational status, Humidity, Air compressor Transmitted CAN messages are checked for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40251-31
ComT OERC1	CAN Bus: Timeout Error of CAN-Transmit-Frame Electronic Retarder Controller 1 (ERC1)	9ADB-1F	CAN Bus	ERC1 message contains information from EDC to Electronic Retarder Controller (Shift Assist Switch, Brake Assist Switch, Retarder Torque Mode) Transmitted CAN messages are checked for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39643-31
ComT OMuxI nfo	CAN Bus: Timeout Error of CAN--Receive-Frame MuxInfo from Body Computer for reverse gear lights	997B-1F	CAN Bus	The IVECO proprietary message collects various information values from Body Computer: - Reverse light request status - Parking Brake status Received CAN messages are checked for timeout	Defective CAN controller of Body Computer or VCM, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Body Computer to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39291-31
ComT ONOx Sens	CAN NOx Sensor: Timeout Error of CAN--Receive-Frame NOX sensor (NOxSens: NOX concentration,Lambda function,Oxygen function, sensor status, sensor error)	9D6E-1F	CAN NOx Sensor	NOxSens message contains information from NOx sensor Received CAN messages are checked for timeout	Defective CAN controller of NOx Sensor , undervoltage of NOx Sensor, missing NOx Sensor, CAN cable connecting the NOx Sensor is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the NOx Sensor to the network, Check correct functioning of the NOx Sensor CAN controller and ts voltage supply. Check wiring.	Frequency: ON Lamp: Amber (SVS)	40302-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComTONOxSensUs	CAN NOx Sensor Upstream: Timeout Error of CAN--Receive-Frame NOX sensor upstream (NOxSens: NOX concentration,Lambda function,Oxygen function, sensor status, sensor error)	9E6E-1F	CAN NOx Sensor	NOxSensUs message contains information from NOx sensor upstream Received CAN messages are checked for timeout	Defective CAN controller of NOx Sensor Upstream , undervoltage of NOx Sensor, missing NOx Sensor Upstream, CAN cable connecting the NOx Sensor Upstream is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the NOx Sensor Upstream to the network, Check correct functioning of the NOx Sensor Upstream CAN controller and ts voltage supply. Check wiring.	Frequency: ON Lamp: Amber (SVS)	40558-31
ComTOTimeDate	CAN Time Date: Timeout Error of CAN--Receive-Frame Time Date message (TimeDate)	93D1-1F	CAN Time Date	The message TimeDate is sent by the Tachograph or by the Instrument Cluster as a broadcast message. It contains date/time values: - Year, Month, Day - Hours, Minute, Second - Local Hour Offset, Local Minute Offset All the CAN messages are checked for timeout.	Defective CAN controller of Tachograph or Instrument Cluster, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Tachograph or of the Instrument Cluster to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37841-31
ComTOTSC1ACCEAct	CAN Bus: Active DFC TimeOut of CAN-Receive--Frame TSC1ACCE from Adaptive Cruise Control	9151-1F	CAN Bus	The message TSC1ACCE contains the information for torque/speed demand rom Adaptive Cruise Control (ACC) to EDC. TSC1 CAN messages (Torque/Speed Control) can be sent at fast rate (10 ms) if Torque/speed request is active and t slower rate if no request is active, to reduce CAN bus load. Different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of the Adaptive Cruise Control, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Adaptive Cruise Control to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37201-31
ComTOTSC1ACCEPas	CAN Bus: Passive DFC TimeOut of CAN-Receive--Frame TSC1ACCE from Adaptive Cruise Control	9251-1F	CAN Bus	The message TSC1ACCE contains the information for torque/speed demand rom Adaptive Cruise Control (ACC) to EDC. TSC1 CAN messages (Torque/Speed Control) can be sent at fast rate (10 ms) if Torque/speed request is active and t slower rate if no request is active, to reduce CAN bus load. Different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of the Adaptive Cruise Control, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Adaptive Cruise Control to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37457-31
ComTOTSC1ACCRAct	CAN Bus: Active DFC TimeOut of CAN-Receive--Frame TSC1ACCR from Adaptive Cruise Control	9D41-1F	CAN Bus	The message TSC1ACCR contains the information for torque/speed demand rom Adaptive Cruise Control (ACC) to EDC Retarder. TSC1 CAN messages (Torque/Speed Control) can be sent at fast rate (10 ms) if Torque/speed request is active and t slower rate if no request is active, to reduce CAN bus load. Different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of the Adaptive Cruise Control, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Adaptive Cruise Control to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40257-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComTOTSC1ACCRPas	CAN Bus: Passive DFC TimeOut of CAN-Receive--Frame TSC1ACCR from Adaptive Cruise Control	9E41-1F	CAN Bus	The message TSC1ACCR contains the information for torque/speed demand rom Adaptive Cruise Control (ACC) to EDC Retarder. TSC1 CAN messages (Torque/Speed Control) can be sent at fast rate (10 ms) if Torque/speed request is active and t slower rate if no request is active, to reduce CAN bus load. Different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of the Adaptive Cruise Control, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Adaptive Cruise Control to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40513-31
ComTOTSC1ADEAct	CAN Bus: Active DFC TimeOut of CAN-Receive--Frame TSC1ADE from Expansion Module	9BAB-1F	CAN Bus	The message TSC1ADE contains the information for torque/speed demand rom Expansion Module to EDC. TSC1 CAN messages (Torque/Speed Control) can be sent at fast rate (10 ms) if Torque/speed request is active and t slower rate if no request is active, to reduce CAN bus load. Different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of the Expansion Module, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Expansion Module to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39851-31
ComTOTSC1ADEPas	CAN Bus: Passive DFC TimeOut of CAN-Receive--Frame TSC1ADE from Expansion Module	9CAB-1F	CAN Bus	The message TSC1ADE contains the information for torque/speed demand rom Expansion Module to EDC. TSC1 CAN messages (Torque/Speed Control) can be sent at fast rate (10 ms) if Torque/speed request is active and t slower rate if no request is active, to reduce CAN bus load. Different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of the Expansion Module, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Expansion Module to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40107-31
ComTOTSC1ADRAct	CAN Bus: Active DFC TimeOut of CAN-Receive--Frame TSC1ADR from Expansion Module	9DAB-1F	CAN Bus	The message TSC1ADR contains the information for torque/speed demand rom Expansion Module to EDC Retarder. TSC1 CAN messages (Torque/Speed Control) can be sent at fast rate (10 ms) if Torque/speed request is active and t slower rate if no request is active, to reduce CAN bus load. Different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of the Expansion Module, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Expansion Module to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40363-31
ComTOTSC1ADRPas	CAN Bus: Passive DFC TimeOut of CAN-Receive--Frame TSC1ADR from Expansion Module	9EAB-1F	CAN Bus	The message TSC1ADR contains the information for torque/speed demand rom Expansion Module to EDC Retarder. TSC1 CAN messages (Torque/Speed Control) can be sent at fast rate (10 ms) if Torque/speed request is active and t slower rate if no request is active, to reduce CAN bus load. Different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of the Expansion Module, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Expansion Module to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40619-31
ComTOTSC1AEAct	CAN Bus: Active DFC TimeOut of Torque Speed Control TSC1AE Message	9FAB-1F	CAN Bus	The message TSC1AE contains the information for torque/speed demand rom ABS / ASR / ESP to EDC. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of ABS / ASR / ESP, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the ABS / ASR / ESP to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40875-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComT OTSC1 AEPas	CAN Bus: Passive DFC TimeOut of Torque Speed Control TSC1AE Message	91BB-1F	CAN Bus	The message TSC1AE contains the information for torque/speed demand rom ABS / ASR / ESP to EDC. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of ABS / ASR / ESP, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the ABS / ASR / ESP to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37307-31
ComT OTSC1 ARAct	CAN Bus: Active DFC TimeOut of Torque Speed Control TSC1AR Message	92BB-1F	CAN Bus	The message TSC1AR contains the information for negative torque demand rom ABS / ASR / ESP to EDC. Input for retarder function in the ECM is set in this message. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of ABS / ASR / ESP, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the ABS / ASR / ESP to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37563-31
ComT OTSC1 ARPas	CAN Bus: Passive DFC TimeOut of Torque Speed Control TSC1AR Message	93BB-1F	CAN Bus	The message TSC1AR contains the information for negative torque demand rom ABS / ASR / ESP to EDC. Input for retarder function in the ECM is set in this message. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of ABS / ASR / ESP, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the ABS / ASR / ESP to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37819-31
ComT OTSC1 DEAct	CAN Bus: Passive DFC TimeOut of Torque Speed Control TSC1DE Message (Fast rate)	94BB-1F	CAN Bus	The message TSC1DE contains the information for torque/speed demand rom Driveline Retarder or from RDU to EDC. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of Driveline Retarder or RDU, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Driveline Retarder or RDU to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38075-31
ComT OTSC1 DEPas	CAN Bus: Passive DFC TimeOut of Torque Speed Control TSC1DE Message (Low rate)	95BB-1F	CAN Bus	The message TSC1DE contains the information for torque/speed demand rom Driveline Retarder or from RDU to EDC. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of Driveline Retarder or RDU, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Driveline Retarder or RDU to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38331-31
ComT OTSC1 DRAct	CAN Bus: Active DFC TimeOut of Torque Speed Control TSC1DR Message (Fast rate)	96BB-1F	CAN Bus	The message TSC1DR contains the information for negative torque demand rom Driveline Retarder or from RDU to EDC. Input for retarder function in the ECM is set in this message. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of Driveline Retarder or RDU, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Driveline Retarder or RDU to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38587-31
ComT OTSC1 DRPas	CAN Bus: Passive DFC TimeOut of Torque Speed Control TSC1DR Message (Low rate)	97BB-1F	CAN Bus	The message TSC1DR contains the information for negative torque demand rom Driveline Retarder or from RDU to EDC. Input for retarder function in the ECM is set in this message. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of Driveline Retarder or RDU, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Driveline Retarder or RDU to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38843-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComT OTSC1 PEAct	CAN Bus: Active DFC TimeOut of Torque Speed Control TSC1PE Message	98BB-1F	CAN Bus	The message TSC1PE contains the information for torque/speed demand rom PTO Controller to EDC. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of PTO Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the PTO Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: ON Lamp: Amber (SVS)	39099-31
ComT OTSC1 PEPas	CAN Bus: Passive DFC TimeOut of Torque Speed Control TSC1PE Message	99BB-1F	CAN Bus	The message TSC1PE contains the information for torque/speed demand rom PTO Controller to EDC. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of PTO Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the PTO Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: ON Lamp: Amber (SVS)	39355-31
ComT OTSC1 PRAct	CAN Bus:Active DFC TimeOut of Torque Speed Control TSC1PR Message form PTO	9ABB-1F	CAN Bus	The message TSC1PR contains the information for torque/speed demand rom PTO or VCM to EDC Retarder. TSC1 CAN messages (Torque/Speed Control) can be sent at fast rate (10 ms) if Torque/speed request is active and t slower rate if no request is active, to reduce CAN bus load. Different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of PTO Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the PTO Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39611-31
ComT OTSC1 PRPas	CAN Bus: Passive DFC TimeOut of Torque Speed Control TSC1PR Message from PTO	9BBB-1F	CAN Bus	The message TSC1PR contains the information for torque/speed demand rom PTO or VCM to EDC Retarder. TSC1 CAN messages (Torque/Speed Control) can be sent at fast rate (10 ms) if Torque/speed request is active and t slower rate if no request is active, to reduce CAN bus load. Different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of PTO Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the PTO Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39867-31
ComT OTSC1 TEAct	CAN Bus: Active Time out for Torque Speed Control TSC1TE message	9CBB-1F	CAN Bus	The message TSC1TE contains the information for torque/speed demand rom Transmission Controller (AMT) to EDC. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of Transmission Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Transmission Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40123-31
ComT OTSC1 TEPas	CAN Bus: Passive Time out for Torque Speed Control TSC1TE message	9DBB-1F	CAN Bus	The message TSC1TE contains the information for torque/speed demand rom Transmission Controller (AMT) to EDC. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of Transmission Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Transmission Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40379-31
ComT OTSC1 TRAct	CAN Bus: Active Time out for Torque Speed Control TSC1TR message	9EBB-1F	CAN Bus	The message TSC1TR contains the information for negative torque demand rom Transmission Controller to EDC. Input for retarder function in the ECM is set in this message.	Defective CAN controller of Transmission Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Transmission Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40635-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComTOTSC1TRPas	CAN Bus: Passive Time out for Torque Speed Control TSC1TR message	9FBB-1F	CAN Bus	The message TSC1TR contains the information for negative torque demand rom Transmission Controller to EDC. Input for retarder function in the ECM is set in this message. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of Transmission Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Transmission Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40891-31
ComTOTSC1VEAct	CAN Bus: Active Time out for Torque Speed Control TSC1VE message	91CB-1F	CAN Bus	The message TSC1VE contains the information for torque/speed demand rom Vehicle Controller to EDC. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of Vehicle Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Vehicle Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: ON Lamp: Red (SVS)	37323-31
ComTOTSC1VEPas	CAN Bus: Passive Time out for Torque Speed Control TSC1VE message	92CB-1F	CAN Bus	The message TSC1VE contains the information for torque/speed demand rom Vehicle Controller to EDC. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of Vehicle Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Body Computer to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: ON Lamp: Red (SVS)	37579-31
ComTOTSC1VRAct	CAN Bus: Active Time out for Torque Speed Control TSC1VR message	93CB-1F	CAN Bus	The message TSC1VR contains the information torque/speed control from Body Computer to EDC. Input for retarder function in the ECM is set in this message. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of Body Computer, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Body Computer to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: ON Lamp: Amber (SVS)	37835-31
ComTOTSC1VRPas	CAN Bus: Passive Time out for Torque Speed Control TSC1VR message	94CB-1F	CAN Bus	The message TSC1VR contains the information torque/speed control from Body Computer to EDC. Input for retarder function in the ECM is set in this message. TSC1 CAN messages (Torque/Speed Control) are sent at fast rate if Torque/-speed request is active and t slower rate if no request is active, to reduce CAN traffic, so different timeout monitor are provided: a fast one if a request is active (active timeout), and slow one if no request is active (passive timeout).	Defective CAN controller of Body Computer, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Body Computer to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: ON Lamp: Amber (SVS)	38091-31
ComTSC1ACCEDLC	CAN Bus: CAN-Receive--Frame of TSC1ACCE, wrong data length	B941-1F	CAN Bus	The message TSC1ACCE contains the information for torque/speed demand rom Adaptive Cruise Control (ACC) to EDC. The message data length is monitored	Wrong CAN configuration in the Adaptive Cruise Control (ACC)	Check CAN configuration in the Adaptive Cruise Control (ACC)	Frequency: no lamp Lamp: no lamp	47425-31
ComTSC1ACCETO	CAN Bus: TimeOut of CAN-Receive--Frame TSC1ACCE from Adaptive Cruise Control	9A41-1F	CAN Bus	The message TSC1ACCE contains the information for torque/speed demand rom Adaptive Cruise Control (ACC) to EDC. The message is monitored for timeout	Defective CAN controller of the Adaptive Cruise Control, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Adaptive Cruise Control to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39489-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComTSC1ACCLH	CAN Bus: CAN Receive Frame TSC1ACCE disturbed or incorrect	9351-1F	CAN Bus	The message TSC1ACCE contains the information for torque/speed demand rom Adaptive Cruise Control (ACC) to EDC. The message is monitored for checksum and under r error	Disturbed or wrongly configured CAN	Check CAN for disturbance, check ACC CAN configuration	Frequency: no lamp Lamp: no lamp	37713-31
ComTSC1ACCRDLC	CAN Bus: CAN-Receive--Frame of TSC1ACCR, wrong data length	BB41-1F	CAN Bus	The message TSC1ACCR contains the information for torque/speed demand rom Adaptive Cruise Control (ACC) to EDC Retarder. The message data length is monitored	Wrong CAN configuration in the Adaptive Cruise Control (ACC)	Check CAN configuration in the Adaptive Cruise Control (ACC)	Frequency: no lamp Lamp: no lamp	47937-31
ComTSC1ACCRTO	CAN Bus: TimeOut of CAN-Receive--Frame TSC1ACCR from Adaptive Cruise Control	9C41-1F	CAN Bus	The message TSC1ACCR contains the information for torque/speed demand rom Adaptive Cruise Control (ACC) to EDC Retarder. Message is monitored for timeout	Defective CAN controller of the Adaptive Cruise Control, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Adaptive Cruise Control to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40001-31
ComTSC1ADEDLC	CAN Bus: CAN-Receive--Frame of TSC1ADE, wrong data length	BC8B-1F	CAN Bus	The message TSC1ADE contains the information for torque/speed demand rom Expansion Module to EDC. The message data length is monitored	Wrong CAN configuration in the Expansion Module	Check CAN configuration in the Expansion Module	Frequency: no lamp Lamp: no lamp	48267-31
ComTSC1ADETO	CAN Bus: TimeOut of CAN-Receive--Frame TSC1ADE from Expansion Module	9B8B-1F	CAN Bus	The message TSC1ADE contains the information for torque/speed demand rom Expansion Module to EDC. Message is monitored for timeout	Defective CAN controller of the Expansion Module, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Expansion Module to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39819-31
ComTSC1ADLH	CAN Bus: CAN Receive Frame TSC1ADE disturbed or incorrect	9451-1F	CAN Bus	The message TSC1ADE contains the information for torque/speed demand rom Expansion Module to EDC. The message is monitored for checksum and under r error	Disturbed or wrongly configured CAN	Check CAN for disturbance, check Expansion Module CAN configuration	Frequency: no lamp Lamp: no lamp	37969-31
ComTSC1ADRDLC	CAN Bus: CAN-Receive--Frame of TSC1ADR, wrong data length	BE8B-1F	CAN Bus	The message TSC1ADR contains the information for torque/speed demand rom Expansion Module to EDC Retarder. The message data length is monitored	Wrong CAN configuration in the Expansion Module	Check CAN configuration in the Expansion Module	Frequency: no lamp Lamp: no lamp	48779-31
ComTSC1ADRTO	CAN Bus: TimeOut of CAN-Receive--Frame TSC1ADR from Expansion Module	9D8B-1F	CAN Bus	The message TSC1ADR contains the information for torque/speed demand rom Expansion Module to EDC Retarder. The message is monitored for timeout	Defective CAN controller of the Expansion Module, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Expansion Module to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40331-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComTSC1AEDLC	CAN Bus: Incorrect length of CAN--Receive-Frame Torque Speed Control TSC1AE message from ABS/-ESP/ASR	BBC2-1F	CAN Bus	The message TSC1AE contains the information for torque/speed demand rom ABS / ASR / ESP to EDC. The CAN messages received by ECM are monitored for correct data length.	Wrong CAN configuration in ABS / ASR / ESP	Check CAN configuration in ABS / ASR / ESP	Frequency: no lamp Lamp: no lamp	48066-31
ComTSC1ARDLC	CAN Bus: Incorrect length of CAN--Receive-Frame Torque Speed Control TSC1AR message from ABS/-ESP/ASR	BCC2-1F	CAN Bus	The message TSC1AR contains the information for negative torque demand rom ABS / ASR / ESP to EDC. Input for retarder function in the ECM is set in this message. The CAN messages received by ECM are monitored for correct data length.	Wrong CAN configuration in ABS / ASR / ESP	Check CAN configuration in ABS / ASR / ESP	Frequency: no lamp Lamp: no lamp	48322-31
ComTSC1ATCLH	CAN Bus: Checksum error on TSC1AE frame message	95AB-1F	CAN Bus	The Sw module ComRx_TSC1AE receives and under ses the raw byte information coming from the TSC1_AE CAN message (Torque/Speed control from ABS/ASR to EDC) through the relevant FRM Sw Module that gets the information from the CAN buffer. The message integrity is verified by checksum verification	Disturbed CAN controller of ABS / ASR / ES, calibration error	Check presence and under t connection of the ABS / ASR / ESP to the network, check correct programming	Frequency: no lamp Lamp: no lamp	38315-31
ComTSC1DEDLC	CAN Bus: Incorrect length of CAN--Receive-Frame Torque Speed Control TSC1DE message from Retarder	BDC2-1F	CAN Bus	The message TSC1DE contains the information for torque/speed demand rom Driveline Retarder or from RDU to EDC. The CAN messages received by ECM are monitored for correct data length.	Wrong CAN configuration in Driveline Retarder or RDU	Check CAN configuration in Driveline Retarder or RDU	Frequency: no lamp Lamp: no lamp	48578-31
ComTSC1DRDLC	CAN Bus: Incorrect length of CAN--Receive-Frame Torque Speed Control TSC1DR message from Retarder	BEC2-1F	CAN Bus	The message TSC1DR contains the information for negative torque demand rom Driveline Retarder or from RDU to EDC. Input for retarder function in the ECM is set in this message. The CAN messages received by ECM are monitored for correct data length.	Wrong CAN configuration in Driveline Retarder or RDU	Check CAN configuration in Driveline Retarder or RDU	Frequency: no lamp Lamp: no lamp	48834-31
ComTSC1DrvRtdrLH	CAN Bus: Checksum error on TSC1DR frame message	9FD2-1F	CAN Bus	The Sw module ComRx_TSC1DE receives and under ses the raw byte information coming from the TSC1_DE CAN message (Torque/Speed control from ABS/ASR to EDC) through the relevant FRM Sw Module that gets the information from the CAN buffer The message integrity is verified by checksum verification	Disturbed CAN controller of ABS / ASR / ES, calibration error	Check presence and under t connection of the ABS / ASR / ESP to the network, check correct programming	Frequency: no lamp Lamp: no lamp	40914-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComTSC1PEDLC	CAN Bus: Incorrect length of CAN--Receive-Frame Torque Speed Control TSC1PE message from PTO controller	BFC2-1F	CAN Bus	The message TSC1PE contains the information for torque/speed demand rom PTO Controller to EDC. The CAN messages received by ECM are monitored for correct data length.	Wrong CAN configuration in PTO Controller	Check CAN configuration in PTO Controller	Frequency: no lamp Lamp: no lamp	49090-31
ComTSC1PRDLC	CAN Bus: Incorrect length of CAN--Receive-Frame Torque Speed Control TSC1PR message	B6CB-1F	CAN Bus	The message TSC1PR contains the information for torque/speed demand rom PTO or VCM to EDC Retarder. Message data length is monitored	Wrong CAN configuration in PTO or VCM	Check CAN configuration in PTO or VCM	Frequency: no lamp Lamp: no lamp	46795-31
ComTSC1PRTO	CAN Bus: TimeOut of CAN-Receive--Frame TSC1PR from Expansion Module	95CB-1F	CAN Bus	The message TSC1PR contains the information for torque/speed demand rom PTO or VCM to EDC Retarder. Message is monitored for timeout	Defective CAN controller of PTO Controller, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the PTO Controller to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38347-31
ComTSC1PTOLH	CAN Bus: Checksum error on TSC1PE frame message	9ACB-1F	CAN Bus	The message TSC1PE contains the information for torque/speed demand rom PTO Controller to EDC. The message integrity is verified by checksum verification	Disturbed CAN controller of PTO controller, calibration error	Check presence and under t connection of the PTO controller to the network, check correct programming	Frequency: ON Lamp: Amber (SVS)	39627-31
ComTSC1TEDLC	CAN Bus: Incorrect length of CAN--Receive-Frame Torque Speed Control TSC1TE message from transmission controller	B1D2-1F	CAN Bus	The message TSC1TE contains the information for torque/speed demand rom Transmission Controller (AMT) to EDC. The CAN messages received by ECM are monitored for correct data length.	Wrong CAN configuration in the Transmission Controller	Check CAN configuration in the Transmission Controller	Frequency: no lamp Lamp: no lamp	45522-31
ComTSC1TraLH	CAN Bus: Checksum error on TSC1TE frame message	9BCB-1F	CAN Bus	The message TSC1TE contains the information for torque/speed demand rom Transmission Controller (AMT) to EDC. The message integrity is verified by checksum verification	Disturbed CAN controller of Transmission Controller, calibration error	Check presence and under t connection of the Transmission Controller to the network, check correct programming	Frequency: ON Lamp: Amber (SVS)	39883-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComTSC1TRDLC	CAN Bus: Incorrect length of CAN--Receive-Frame Torque Speed Control TSC1TR message from transmission controller	B2D2-1F	CAN Bus	The message TSC1TR contains the information for negative torque demand rom Transmission Controller to EDC. Input for retarder function in the ECM is set in this message. The CAN messages received by ECM are monitored for correct data length.	Wrong CAN configuration in the Transmission Controller	Check CAN configuration in the Transmission Controller	Frequency: no lamp Lamp: no lamp	45778-31
ComTSC1VCMLH	CAN Bus: Checksum error on TSC1VE frame message	9CCB-1F	CAN Bus	The Sw module ComRx_TSC1VE receives and under ses the raw byte information coming from the TSC1_VE CAN message (Torque/Speed control from ABS/ASR to EDC) through the relevant FRM Sw Module that gets the information from the CAN buffer The message integrity is verified by checksum verification	Disturbed CAN controller of ABS/ASR controller, calibration error	Check presence and under t connection of the ABS/ASR controller to the network, check correct programming	Frequency: ON Lamp: Amber (SVS)	40139-31
ComTSC1VEDLC	CAN Bus: Incorrect length of CAN--Receive-Frame Torque Speed Control TSC1VE message from Vehicle Controller	B3D2-1F	CAN Bus	The CAN messages received by ECM are monitored for correct data length. The message TSC1VE contains the information for torque/speed demand rom Vehicle Controller to EDC.	Wrong CAN configuration in the Vehicle Controller	Check CAN configuration in the Vehicle Controller	Frequency: no lamp Lamp: no lamp	46034-31
ComTSC1VRDLC	CAN Bus: Incorrect length of CAN--Receive-Frame Torque Speed Control TSC1VR message from Body Computer	B4D2-1F	CAN Bus	The message TSC1VR contains the information torque/speed control from Body Computer to EDC. Input for retarder function in the ECM is set in this message. The CAN messages received by ECM are monitored for correct data length.	Wrong CAN configuration in the Body Computer	Check CAN configuration in the Body computer	Frequency: no lamp Lamp: no lamp	46290-31
ComTVA2EDCCtrl	TVA Actuator: Control failure reported by actuator via CAN message	31B4-1F	Intake Throttle Valve	The Sw Module ComRx_TVA2EDC receives and under ses the IVECO proprietary CAN messages TVA2EDC sent from the Throttle Valve Actuator ECU (Smart Remote Actuator) to EDC. The TVA actuator on the engine air intake side can be used for increasing the exhaust temperature (rapid heatup) or for EGR control. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	Defective TVA actuator, electrical problem	Check TVA supply, wiring, replace actuator	Frequency: no lamp Lamp: no lamp	12724-31
ComTVA2EDCDLC	TVA Actuator: Incorrect data length of CAN--Receive-Frame TVA2EDC from TVA Actuator	B2B4-1F	CAN Bus	The Sw Module ComRx_TVA2EDC receives and under ses the IVECO proprietary CAN messages TVA2EDC sent from the Throttle Valve Actuator ECU (Smart Remote Actuator) to EDC. The TVA actuator on the engine air intake side can be used for increasing the exhaust temperature (rapid heatup) or for EGR control. The message contains information about actuator status, position, temperature, fault codes, target position and under effort) CAN Message is monitored for correct data length	Wrong CAN configuration in TVA smart actuator	Check CAN configuration in TVA smart actuator	Frequency: no lamp Lamp: no lamp	45748-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComTV A2EDC Elec	TVA Actuator: Electrical problem reported by actuator via CAN message	43B4-1F	Intake Throttle Valve	The Sw Module ComRx_TVA2EDC receives and under ses the IVECO proprietary CAN messages TVA2EDC sent from the Throttle Valve Actuator ECU (Smart Remote Actuator) to EDC. The TVA actuator on the engine air intake side can be used for increasing the exhaust temperature (rapid heatup) or for EGR control. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	DefectiveThrottle valve, electrical problem	Check Throttle valve supply, wiring, replace actuator	Frequency: no lamp Lamp: no lamp	17332-31
ComTV A2EDC Err	TVA Actuator: Loss of communicationl error reported by actuator via CAN message	44B4-1F	Intake Throttle Valve	The Sw Module ComRx_TVA2EDC receives and under ses the IVECO proprietary CAN messages TVA2EDC sent from the Throttle Valve Actuator ECU (Smart Remote Actuator) to EDC. The TVA actuator on the engine air intake side can be used for increasing the exhaust temperature (rapid heatup) or for EGR control. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	Disturbance on CAN communication, or CAN interruption	Check Exhaust Flap supply, wiring,and under tion to CAN, replace actuator	Frequency: no lamp Lamp: no lamp	17588-31
ComTV A2EDC HiEff	TVA Actuator: High motor effort reported by actuator	35B4-1F	Intake Throttle Valve	The Sw Module ComRx_TVA2EDC receives and under ses the IVECO proprietary CAN messages TVA2EDC sent from the Throttle Valve Actuator ECU (Smart Remote Actuator) to EDC. The TVA actuator on the engine air intake side can be used for increasing the exhaust temperature (rapid heatup) or for EGR control. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	Increased TVA Actuator friction	Check TVA Actuator	Frequency: no lamp Lamp: no lamp	13748-31
ComTV A2EDC InitCnt	TVA Actuator: Number of running initialisation too high	36B4-1F	Intake Throttle Valve	The Sw Module ComRx_TVA2EDC receives and under ses the IVECO proprietary CAN messages TVA2EDC sent from the Throttle Valve Actuator ECU (Smart Remote Actuator) to EDC. The TVA actuator on the engine air intake side can be used for increasing the exhaust temperature (rapid heatup) or for EGR control. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	Loose contact in TVA Actuator supply causes initialisation running of actuator during driving cycle	Check TVA wiring and under	Frequency: no lamp Lamp: no lamp	14004-31
ComTV A2EDC PosDvt Max	TVA actuator: Feedback position positive deviation to high	17B4-1F	Intake Throttle Valve	The Sw Module ComRx_TVA2EDC receives and under ses the IVECO proprietary CAN messages TVA2EDC sent from the Throttle Valve Actuator ECU (Smart Remote Actuator) to EDC. The TVA actuator on the engine air intake side can be used for increasing the exhaust temperature (rapid heatup) or for EGR control. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	Sticking TVA valve, increased inner resistance	Check and under e TVA valve actuator	Frequency: no lamp Lamp: no lamp	6068-31
ComTV A2EDC PosDvt Min	TVA actuator: Feedback position ngative deviation to high	28B4-1F	Intake Throttle Valve	The Sw Module ComRx_TVA2EDC receives and under ses the IVECO proprietary CAN messages TVA2EDC sent from the Throttle Valve Actuator ECU (Smart Remote Actuator) to EDC. The TVA actuator on the engine air intake side can be used for increasing the exhaust temperature (rapid heatup) or for EGR control. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	Sticking TVA valve, increased inner resistance	Check and under e TVA valve actuator	Frequency: no lamp Lamp: no lamp	10420-31
ComTV A2EDC Syst	TVA Actuator: Actuator reports system failure over CAN message	49B4-1F	Intake Throttle Valve	The Sw Module ComRx_TVA2EDC receives and under ses the IVECO proprietary CAN messages TVA2EDC sent from the Throttle Valve Actuator ECU (Smart Remote Actuator) to EDC. The TVA actuator on the engine air intake side can be used for increasing the exhaust temperature (rapid heatup) or for EGR control. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)			Frequency: no lamp Lamp: no lamp	18868-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComTV A2EDC Temp	TVA Actuator: Actuator reports over temperature error	8AB4-1F	Intake Throttle Valve	The Sw Module ComRx_TVA2EDC receives and under ses the IVECO proprietary CAN messages TVA2EDC sent from the Throttle Valve Actuator ECU (Smart Remote Actuator) to EDC. The TVA actuator on the engine air intake side can be used for increasing the exhaust temperature (rapid heatup) or for EGR control. The message contains information about actuator status, position, temperature, fault codes, target position and under effort)	TVA Actuator overheated, supply problem?, increased resistance	Check TVA actuator supply, wiring and under on	Frequency: no lamp Lamp: no lamp	35508-31
ComTV A2EDC TO	CAN Bus: Timeout Error of CAN-- Receive-Frame TVA2EDC from Throttle Valve Actuator	9BB4-1F	Intake Throttle Valve	The Sw Module ComRx_TVA2EDC receives and under ses the IVECO proprietary CAN messages TVA2EDC sent from the Throttle Valve Actuator ECU (Smart Remote Actuator) to EDC. The TVA actuator on the engine air intake side can be used for increasing the exhaust temperature (rapid heatup) or for EGR control. The message contains information about actuator status, position, temperature, fault codes, target position and under effort) Received frame messages are monitored for time out	Defective CAN controller of TVA Actuator , undervoltage or missing Flap, CAN cable disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the TVA Actuator to the network, check correct functioning of the CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	39860-31
ComTx CCVST O	CAN Bus: Timeout Error of CAN-Transmit-Frame to Cruise Control Vehicle Speed Information	914B-1F	CAN Bus	The message TxCCVS is sent by the ECM in broadcast mode supporting several signals for cruise control vehicle speed information: - Parking brake switch - Cruise Control switches status - Wheel based vehicle speed - Clutch switch - PTO state - Engine Idle Increment/Decrement switch - Engine test mode switch Transmitted CAN messages are checked for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37195-31
ComTx DDTO	CAN Bus: Timeout Error of CAN-Transmit-Frame to Dash DIsplay (FUel filter diff.-pressure)	9C3B-1F	CAN Bus	The transmitted message DD contains information about Fuel FIlter delta pressuree. CAN messages are monitored for timeout.	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39995-31
ComTx EBC1T O	CAN Bus: Timeout Error of CAN-Transmit-Frame to Electronic Brake Controller	99DB-1F	CAN Bus	The message TxEBC1 is sent by the ECM in broadcast mode supporting several signals: - Engine auxiliary shutdown switch - (not used by FUSO) - Engine retarder selection It is sent time synchronous every 50 ms (applicable time). Transmitted CAN messages are checked for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39387-31
ComTx TC1TO	CAN Bus: Timeout Error of CAN-Transmit-Frame to Transmission Control message TC1	944B-1F	CAN Bus	This frame is used to send out the creep mode information to gearbox ECU using the transmission mode 1 (transmission modes are manufacturer specific). This is done to be sure that gearbox fulfils creep mode conditions. Transmitted CAN messages are checked for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37963-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComUreaLvlDLC	CAN Bus: Incorrect length of CAN--Receive-Frame Urea Tank Level (UreaLvl)	BBAA-1F	CAN Bus	Urea level message contains SCR reagent tank level information. Received CAN messages are checked for correct data length	Wrong CAN configuration in Urea Tank Level Sensor	Check CAN configuration in Urea Tank Level Sensor	Frequency: no lamp Lamp: no lamp	48042-31
ComUreaLvlTO	CAN Urea Level: Timeout Error of CAN--Receive-Frame Urea Tank Level (UreaLvl)	9AAA-1F	CAN Urea Level	Urea level message contains SCR reagent tank level information. Received CAN messages are checked for timeout	Defective CAN controller of Urea tank level sensor , CAN cable connecting the sensor is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the Urea tank level sensor to the network, Check correct functioning of the sensor CAN controller and ts voltage supply. Check wiring.	Frequency: ON Lamp: Amber (SVS)	39594-31
ComVCMLLimFailure	Vehicle Controller: Vehicle speed limiter error (severe inducement not possible)	2531-1F		The message EEC2V is sent by vehicle controller. It contains the accelerator pedal information (status, percent) and he road speed limit status	VCM problem, speed limiter/vehicle speed rerading trouble	Check VCM, check vehicle speed reading	Frequency: no lamp Lamp: no lamp	9521-31
ComVDC1DLC	CAN Bus: CAN-Receive--Frame of VDC1, wrong data length	BA8B-1F	CAN Bus	The message VDC1 is sent by the ESP as a broadcast message. It contains several information on Vehicle Dynamic Intervention status: - Status of Roll Over Prevention engine control, used to shut off the Cruise Control, by calibration - Status of Roll Over Prevention brake control, used to shut off the Cruise Control, by calibration - Status of Yaw Control engine control, used to shut off the Cruise Control, by calibration - Status of Yaw Control brake control, used to shut off the Cruise Control, by calibration - Status of VDC lamp NOT USED BY FUSO - Status of ESP fully functional NOT USED BY FUSO - Status of VDC brake light NOT USED BY FUSO The message data length is monitored	Wrong CAN configuration in the ABS/ASR/ESP/EBS	Check CAN configuration in the ABS/-ASR/ESP/EBS	Frequency: no lamp Lamp: no lamp	47755-31
ComVDC1TO	CAN Bus: Timeout Error of CAN--Receive-Frame Vehicle Dynamic Stability Control 1	998B-1F	CAN Bus	The message VDC1 is sent by the ESP as a broadcast message. It contains several information on Vehicle Dynamic Intervention status: - Status of Roll Over Prevention engine control, used to shut off the Cruise Control, by calibration - Status of Roll Over Prevention brake control, used to shut off the Cruise Control, by calibration - Status of Yaw Control engine control, used to shut off the Cruise Control, by calibration - Status of Yaw Control brake control, used to shut off the Cruise Control, by calibration - Status of VDC lamp NOT USED BY FUSO - Status of ESP fully functional NOT USED BY FUSO - Status of VDC brake light NOT USED BY FUSO The CAN messages received by ECM are monitored for timeouts.	Defective CAN controller of Vehicle Dynamics Control Unit , under voltage of VDCU, missing VDCU, CAN cable connecting the VDCU is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the VDCU to the network, check correct functioning of the VDCU CAN controller and ts voltage supply. Check wiring.	Frequency: no lamp Lamp: no lamp	39307-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComVEP1TO	CAN Bus: Timeout Error of CAN-Transmit-Frame Vehicle Power (VEP1: battery voltage information)	954B-1F	CAN Bus	VEP1 message contains battery voltage information. Transmitted CAN messages are checked for timeout	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38219-31
ComVM2EDCDLC	CAN Bus: CAN-Receive--Frame of VM2EDC, wrong data length	BC7B-1F	CAN Bus	VM2EDC is the proprietary CAN message from vehicle controller module to ECM containing High idle, Low idle, Intermediate speed parameters Message data length is monitored	Wrong CAN configuration in the Vehicle Controller Module	Check CAN configuration in the Vehicle Controller Module	Frequency: no lamp Lamp: no lamp	48251-31
ComVM2EDCTO	CAN Bus: Timeout Error of CAN--Receive-Frame Vehicle Control Module to EDC (VM2EDC:low/-high Idle, Intermediate speed Gov.parameters)	9B7B-1F	CAN Bus	The CAN messages received by ECM are monitored for timeouts. VM2EDC is the proprietary CAN message from vehicle controller module to ECM The message contains: - low idle speed set point demand - high idle speed set point demand - low idle speed parameters set demand - high idle speed parameters set demand - intermediate speed parameters set demand - Intermediate feedback factor - under braking status Message received every 50 ms.	Defective CAN controller of Vehicle Control Module , undervoltage of VCM, missing VCM, CAN cable connecting the VCM is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the VCM to the network, Check correct functioning of the VCM CAN controller and ts voltage supply. Check wiring.	Frequency: ON Lamp: Amber (SVS)	39803-31
ComWFITO	CAN Bus: Timeout Error of CAN-Transmit-Frame Water in Fuel Information	9DB5-1F	CAN Bus	The CAN messages Transmitted by ECM are monitored for timeouts. The message WFI is sent by the ECM in broadcast mode supporting several signals: - Water in fuel indicator It is sent time synchronous every 1000 ms (applicable time).	Defective CAN controller, CAN cable disconnected or broken. Short circuit in wiring.	Check the presence and under t connection of the EDC to the network, Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40373-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComWPC2EDCCtrl	Water pump actuator reports control error	3363-1F	Coolant pump	The receive message WPC2EDC is used for reading the status/feedback frame transmitted by the water pump actuator. Actuator monitors its own failures and under s them to ECU. The message contains following information: 1. Status signal 2. Actual actuator position 3. Fault code 4. Motor effort / motor power 5. Actuator temperature 6. Target position (optional)	Water Pump actuator detected a control error. Possible failure status are: [0000] Motor OK [0001] Motor Stall [0010] Motor Spin-up [0011] Motor Spin-down [0100] Motor Fail [0101] Motor Controller Over Current [0110] Motor Controller Over Voltage [0111] Motor Controller Under Voltage [1000] Motor not at Target Speed [1001] Motor Over Temperature [1010] Motor Controller Under Current	Check reported status and under or replace the water pump	Frequency: no lamp Lamp: no lamp	13155-31
ComWPC2EDCDLC	CAN Bus: CAN-Receive--Frame of WPC2EDC, wrong data length	B463-1F	CAN Bus	The receive message WPC2EDC is used for reading the status/feedback frame transmitted by the water pump actuator. The CAN messages received by ECM are monitored for corrrect data length. The message contains following information: 1. Status signal 2. Actual actuator position 3. Fault code 4. Motor effort / motor power 5. Actuator temperature 6. Target position (optional)	Wrong CAN configuration in the Water Pump Controller	Check CAN configuration in the Water Pump Controller	Frequency: no lamp Lamp: no lamp	46179-31
ComWPC2EDCElec	Water pump actuator reports an electrical error	4563-1F	Coolant pump	The receive message WPC2EDC is used for reading the status/feedback frame transmitted by the water pump actuator. Actuator monitors its own failures and under s them to ECU. The message contains following information: 1. Status signal 2. Actual actuator position 3. Fault code 4. Motor effort / motor power 5. Actuator temperature 6. Target position (optional)	Water Pump actuator detected an electrical failure. Possible failure status are: [0000] Motor OK [0001] Motor Stall [0010] Motor Spin-up [0011] Motor Spin-down [0100] Motor Fail [0101] Motor Controller Over Current [0110] Motor Controller Over Voltage [0111] Motor Controller Under Voltage [1000] Motor not at Target Speed [1001] Motor Over Temperature [1010] Motor Controller Under Current	Check reported status and under or replace the water pump	Frequency: no lamp Lamp: no lamp	17763-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComWPC2EDCErr	Water pump actuator reports a general error	4663-1F	Coolant pump	The receive message WPC2EDC is used for reading the status/feedback frame transmitted by the water pump actuator. Actuator monitors its own failures and under s them to ECU. The message contains following information: 1. Status signal 2. Actual actuator position 3. Fault code 4. Motor effort / motor power 5. Actuator temperature 6. Target position (optional)	Water Pump actuator detected a general failure. Possible failure status are: [0000] Motor OK [0001] Motor Stall [0010] Motor Spin-up [0011] Motor Spin-down [0100] Motor Fail [0101] Motor Controller Over Current [0110] Motor Controller Over Voltage [0111] Motor Controller Under Voltage [1000] Motor not at Target Speed [1001] Motor Over Temperature [1010] Motor Controller Under Current	Check reported status and under or replace the water pump	Frequency: no lamp Lamp: no lamp	18019-31
ComWPC2EDCHiEff	Water pump actuator: motor effort too high	4763-1F	Coolant pump	If the average motor effort is significantly increased over a long time, this may be an indication for abnormal friction or a sticky pump. This error condition will be detected by the ECU.	Water pump motor effort too high, abnormal friction or pump sticking	Check and under or replace the water pump	Frequency: no lamp Lamp: no lamp	18275-31
ComWPC2EDClnitCnt	Water pump actuator: pump stalling during operation (initialise procedure due to loose contact)	4863-1F	Coolant pump	The water pump actuator usually initialises once at startup of the ECU. A loose contact on the actuator power supply may cause sporadic re-initialisations during engine operation. This typically causes temporary malfunction of the engine (stalling).	Loose contact on the actuator power supply	Check and under wiring/connector of water pump	Frequency: no lamp Lamp: no lamp	18531-31
ComWPC2EDCPosDvtMax	Water pump actuator: Slow response, permanent positive deviation detected	4963-1F	Coolant pump	To detect a slow response of the CAN controlled water pump actuator, the deviation of the commanded position to the actual position is monitored	Slow response of water pump actuator	Check and under e water pump actuator	Frequency: no lamp Lamp: no lamp	18787-31
ComWPC2EDCPosDvtMin	Water pump actuator: Slow response, permanent negative deviation detected	4A63-1F	Coolant pump	To detect a slow response of the CAN controlled water pump actuator, the deviation of the commanded position to the actual position is monitored	Slow response of water pump actuator	Check and under e water pump actuator	Frequency: no lamp Lamp: no lamp	19043-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ComW PC2ED CSyst	Water pump actuator reports a system error	4B63-1F	Coolant pump	The receive message WPC2EDC is used for reading the status/feedback frame transmitted by the water pump actuator. Actuator monitors its own failures and under s them to ECU. The message contains following information: 1. Status signal 2. Actual actuator position 3. Fault code 4. Motor effort / motor power 5. Actuator temperature 6. Target position (optional)	Water Pump actuator detected a system failure. Possible failure status are: [0000] Motor OK [0001] Motor Stall [0010] Motor Spin-up [0011] Motor Spin-down [0100] Motor Fail [0101] Motor Controller Over Current [0110] Motor Controller Over Voltage [0111] Motor Controller Under Voltage [1000] Motor not at Target Speed [1001] Motor Over Temperature [1010] Motor Controller Under Current	Check reported status and under or replace the water pump	Frequency: no lamp Lamp: no lamp	19299-31
ComW PC2ED CTemp	Water pump actuator reports an over temperature error	8C63-1F	Coolant pump	The receive message WPC2EDC is used for reading the status/feedback frame transmitted by the water pump actuator. Actuator monitors its own failures and under s them to ECU. The message contains following information: 1. Status signal 2. Actual actuator position 3. Fault code 4. Motor effort / motor power 5. Actuator temperature 6. Target position (optional)	Water Pump actuator detected an over temperature failure. Possible failure status are: [0000] Motor OK [0001] Motor Stall [0010] Motor Spin-up [0011] Motor Spin-down [0100] Motor Fail [0101] Motor Controller Over Current [0110] Motor Controller Over Voltage [0111] Motor Controller Under Voltage [1000] Motor not at Target Speed [1001] Motor Over Temperature [1010] Motor Controller Under Current	Check reported status and under or replace the water pump	Frequency: no lamp Lamp: no lamp	35939-31
ComW PC2ED CTO	CAN Bus: Timeout Error of CAN--Receive-Frame WPC2EDC from Water Pump Controller	9D63-1F	CAN Bus	The receive message WPC2EDC is used for reading the status/feedback frame transmitted by the water pump actuator. The CAN messages received by ECM are monitored for time out. The message contains following information: 1. Status signal 2. Actual actuator position 3. Fault code 4. Motor effort / motor power 5. Actuator temperature 6. Target position (optional)	Defective CAN controller of Water Pump Control Unit , under voltage of WPC, missing WPC, CAN cable connecting the WPC is disconnected or broken. Short circuit in wiring.	Check presence and under t connection of the WPC to the network, check correct functioning of the WPC CAN controller and ts voltage supply. Check wiring.	Frequency: ON Lamp: Amber (SVS)	40291-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CooltP 1Hi	Primary coolant pressure: value too high	1C73-1F	Coolant pressure	Primary coolant pressure in the cooling circuit is monitored	Primary coolant pressure too high	Sensor drifted? Pump defective? Restriction at pump down stream	Frequency: no lamp Lamp: no lamp	7283-31
CooltP 1Lo	Primary coolant pressure: value too low	2D73-1F	Coolant pressure	Primary coolant pressure in the cooling circuit is monitored	Primary coolant pressure too low	Sensor drifted? FIlter clogged? Pump defective Restriction pump up stream	Frequency: ON Lamp: Amber (SVS)	11635-31
CooltP Hi	Secondary coolant circut pressure high	1C93-1F	Coolant pressure	Pressure in the secondary coolant circuit is monitored			Frequency: no lamp Lamp: no lamp	7315-31
CooltP Lo	Secondary coolant circut pressure low	2D93-1F	Coolant pressure	Pressure in the secondary coolant circuit is monitored			Frequency: no lamp Lamp: no lamp	11667-31
CooltP mpSpd LonPer	Coolant Pump speed: long period error (speed zero)	4E63-1F	Coolant pump	Coolant pump speed is monitored. The signal from the coolant pump speed sensor is directly connected to a time period measurement hardware of the micro-controller. The device driver module accesses this hardware by its interface to obtain the measured period duration. This time period CooltPmpSpd_tiSpdSigPer_mp provides the time between two pulses in us. The number of pulses per revolution is calibratable (1,00- per revolutions). If a Timer overflow occurs, CooltPmpSpd_stOvrFlw is set to 1 and under mpSpd_nSens is set to 0. Coolant pump speed sensor not installed in this configuration.	Coolant pump speed sensor defective or coolant pump standing still	Check coolant pump roatation, check sensor, check presence of other failure indicating blocked coolant pump (overheating)	Frequency: no lamp Lamp: no lamp	20067-31
CooltP mpSpd SRCHigh	Coolant Pump speed: pump speed too high	3F63-1F	Coolant pump	Coolant pump speed is monitored. The signal from the coolant pump speed sensor is directly connected to a time period measurement hardware of the micro-controller. The device driver module accesses this hardware by its interface to obtain the measured period duration. This time period CooltPmpSpd_tiSpdSigPer_mp provides the time between two pulses in us. The number of pulses per revolution is calibratable (1,00- per revolutions). Coolant pump can be switched in 3 different increasing speed stages. Coolant pump speed sensor not installed in this configuration.	Excessive measured pump speed due to defective speed sensor or pump switched in higher speed stage than the one detected	Check speed sensor, check pump stage switch	Frequency: no lamp Lamp: no lamp	16227-31
CooltP mpSpd SRCLow	Coolant Pump speed: pump speed too low	4173-1F	Coolant pump	Coolant pump speed is monitored. The signal from the coolant pump speed sensor is directly connected to a time period measurement hardware of the micro-controller. The device driver module accesses this hardware by its interface to obtain the measured period duration. This time period CooltPmpSpd_tiSpdSigPer_mp provides the time between two pulses in us. The number of pulses per revolution is calibratable (1,00- per revolutions). Coolant pump can be switched in 3 different increasing speed stages. Coolant pump speed sensor not installed in this configuration.	Measured pump speed too low due to defective speed sensor or pump switched in lower speed stage than the one detected	Check speed sensor, check pump stage switch	Frequency: no lamp Lamp: no lamp	16755-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CooltT DeltaT Hi	Secondary coolant circut: Coolant circuit temperature deviating	3693-1F	Coolant temp sensor	Charge Air Cooler coolant temperature downstream is monitored			Frequency: ON Lamp: Amber (SVS)	13971-31
CoVeh EmgySt rt	Info: Emergency restart	FAAF-1F	Info: Engine shut OFF	This function is part of the inducement strategy. To move the vehicle out of danger zone at every restart full power (and under speed) is available for 30,00s.			Frequency: no lamp Lamp: no lamp	64175-31
CoVeh PrfmLi mAct	Info: Torque Limitation act-ive: OBD per-formance lim-iter is active.	FD8F-1F	Info: Torque Limitation active	This failure path is only for information, that there was an active performance limitation due to OBD legislation, which was caused by too high NOx emissions. This failure does not ask for any action except, to check if another failure con-cerning the NOx emissions is stored in the memory (with FID_CoVehPr-fmLim%%OBD with %%=11,12,21 or 22)	Active power reduction due to the OBD perform-ance limiter because of too high NOx emissions	Check which failure activated the perform-ance limitation (FID_CoVehPr-fmLim%%OBD with %%=11,12,21 or 22) and under m troubleshooting on the basis of this defect. Note: The OBD performance limiter can be disabled with service tester at max-imum 5,00- times for 4,00h each time, to give the possibility to drive also a fully loaded vehicle to the next repair station.	Frequency: no lamp Lamp: no lamp	64911-31
CPmpA ctrDIO OL	Coolant Pump digital actuator: Open Load error on the output power stage	5C13-1F	Coolant pump	The Power stage of Coolant Pump Digital Actuator is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Coolant Pump Digital Actuator	Check of wiring, replace Coolant Pump digital Actuator	Frequency: no lamp Lamp: no lamp	23571-31
CPmpA ctrDIO OvrTe mp	Coolant Pump digital actuator:	8D13-1F	Coolant pump	The Power stage of Coolant Pump Digital Actuator is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	36115-31
CPmpA ctrDIO SCB	Coolant Pump digital actuator: Short Circuit to Battery error on the output power stage	6E13-1F	Coolant pump	The Power stage of Coolant Pump Digital Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to external source or defect-ive Coolant Pump digital actuator	Check of wiring or replace Coolant Pump digital actuator	Frequency: no lamp Lamp: no lamp	28179-31
CPmpA ctrDIO SCG	Coolant Pump digital actuator: Short Circuit to Ground error on the output power stage	6F13-1F	Coolant pump	The Power stage of Coolant Pump Digital Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to ground or defective Coolant Pump actuator	Check of wiring or replace Coolant Pump actuator	Frequency: no lamp Lamp: no lamp	28435-31
CPmpA ctrPW MOL	Coolant Pump PWM actuator: Open Load error on the output power stage	5B23-1F	Coolant pump	The Power stage of Coolant Pump Duty Cycle Actuator (PWM) is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Coolant Pump PWM Actuator	Check of wiring, replace Coolant Pump PWM Actuator	Frequency: no lamp Lamp: no lamp	23331-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CPmpActrPWMOvrTemp	Coolant Pump PWM actuator: Over Temperature error on the output power stage	8C23-1F	Coolant pump	The Power stage of Coolant Pump Duty Cycle Actuator (PWM) is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	35875-31
CPmpActrPWMSCB	Coolant Pump PWM actuator: Short Circuit to Battery error on the output power stage	6D23-1F	Coolant pump	The Power stage of Coolant Pump Duty Cycle Actuator (PWM) is monitored by Hardware for electric failures.	Short circuit of wiring to external source or defective Coolant Pump digital actuator	Check of wiring or replace Coolant Pump digital actuator	Frequency: no lamp Lamp: no lamp	27939-31
CPmpActrPWMSCG	Coolant Pump PWM actuator: Short Circuit to Ground error on the output power stage	7E23-1F	Coolant pump	The Power stage of Coolant Pump Duty Cycle Actuator (PWM) is monitored by Hardware for electric failures.	Short circuit of wiring to ground or defective Coolant Pump actuator	Check of wiring or replace Coolant Pump actuator	Frequency: no lamp Lamp: no lamp	32291-31
CrCLmpOL	Cruise Control Lamp: No load error for power stage.	5541-1F	Cruise Control Lamp	The Power stage for the control lamp for Cruise Control activation is controlled by Hardware for electrical failures	Broken or disconnected wiring or defective Cruise Ctrl Lamp	Check of wiring or replacement of Cruise Ctrl Lamp	Frequency: no lamp Lamp: no lamp	21825-31
CrCLmpOT	Cruise Control Lamp: Over temperature error.	8641-1F	Cruise Control Lamp	The Power stage for the control lamp for Cruise Control activation is controlled by Hardware for electrical failures	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	34369-31
CrCLmpSCB	Cruise Control Lamp: Short circuit to battery error for power stage.	6341-1F	Cruise Control Lamp	The Power stage for the control lamp for Cruise Control activation is controlled by Hardware for electrical failures	Short circuit of wiring to external source or inside cruise control lamp	Check of wiring or replacement cruise control lamp	Frequency: no lamp Lamp: no lamp	25409-31
CrCLmpSCG	Cruise Control Lamp: Short circuit to ground error for power stage.	7441-1F	Cruise Control Lamp	The Power stage for the control lamp for Cruise Control activation is controlled by Hardware for electrical failures	Short circuit of wiring to ground or inside cruise control lamp	Check of wiring or replacement cruise control lamp	Frequency: no lamp Lamp: no lamp	29761-31
CrCsP2PhysRngHi	Crankcase differential pressure : Sensor in crankcase, Physical signal above upper limit (physical SRC)	15A3-1F	Crankcase pressure	The raw signal measured by crankcase differential pressure sensor is converted into a physical value. This value is monitored and under lie in a plausible range. Sensor is measuring relative pressure.	Excessive crankcase differential pressure is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	5539-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CrCsP2PhysRngLo	Crankcase differential pressure : Sensor in crankcase, Physical signal below lower limit (physical SRC)	26A3-1F	Crankcase pressure	The raw signal measured by crankcase differential pressure sensor is converted into a physical value. This value is monitored and under lie in a plausible range. Sensor is measuring relative pressure.	Excessively low crankcase differential pressure is measured	Check wiring and he accuracy of the crankcase differential pressure sensor and under e it if necessary. Check also vacuum pump (vacuum breaker). Check for factors which could abnormally decrease crankcase pressure	Frequency: no lamp Lamp: no lamp	9891-31
CrCsP2SRCMax	Crankcase differential pressure : Sensor in crankcase, Signal Range Check high	17A3-1F	Crankcase pressure	The electrical Signal of the Crankcase differential pressure sensor is monitored. In case of defect recognition a substitute value is taken. Sensor is measuring relative pressure.	Short circuit of sensor to external source or defective sensor	Check wiring and under	Frequency: no lamp Lamp: no lamp	6051-31
CrCsP2SRCMin	Crankcase differential pressure : Sensor in crankcase, Signal Range Check low	28A3-1F	Crankcase pressure	The electrical Signal of the Crankcase differential pressure sensor is monitored. In case of defect recognition a substitute value is taken. Sensor is measuring relative pressure.	Short circuit of sensor to ground or defective sensor	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	10403-31
CrCsPPhysRngHi	Crankcase differential pressure : Physical signal above upper limit (physical SRC)	11A3-1F	Crankcase pressure	The raw signal measured by crankcase differential pressure sensor is converted into a physical value. Measured physical value should lie in a defined range. .	Excessive crankcase differential pressure is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	4515-31
CrCsPPhysRngLo	Crankcase differential pressure : Physical signal below lower limit (physical SRC)	22A3-1F	Crankcase pressure	The raw signal measured by crankcase differential pressure sensor is converted into a physical value. Measured physical value should lie in a defined range.	Excessively low crankcase differential pressure is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	8867-31
CrCsPPlausLo	Crankcase differential pressure: Physical signal below a filtered threshold value (Plausibiliy Check)	3CA3-1F	Crankcase pressure	The raw signal measured by crankcase differential pressure sensor is converted into a physical value. This value is monitored and under lie in a plausible range.	Inaccurate or defective crankcase differential pressure sensor, defect in the wiring, or Blow-By valve locked in open state.	Check wiring and he accuracy of the crankcase differential pressure sensor and under e it if necessary. Check the wirings or Blow--By valve.	Frequency: no lamp Lamp: no lamp	15523-31
CrCsPSRCMax	Crankcase differential pressure : Signal Range Check high	13A3-1F	Crankcase pressure	The electrical Signal of the Crankcase differential pressure sensor is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to external source or defective sensor	Check wiring and under	Frequency: ON Lamp: Amber (SVS)	5027-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CrCsPSRCMin	Crankcase differential pressure : Signal Range Check low	24A3-1F	Crankcase pressure	The electrical Signal of the Crankcase differential pressure sensor is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to ground or defective sensor	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	9379-31
CrCsVDisclntMnf	Crankcase differential pressure value above limit; hose drop of crankcase ventilation	49A3-1F	Crankcase pressure	The function monitors the crankcase ventilation and under s a hose drop between the crankcase and under manifold to prevent ventilation of the blow--by gas flows into the environment. Crankcase pressure is monitored by a single differential pressure sensor. Sensor is measuring relative pressure.	Disconnection in hose line between the crankcase and under manifold	Check blow-by duct	Frequency: no lamp Lamp: no lamp	18851-31
CrCsVDisclntMnf2	Crankcase differential pressure: Overpressure in the crankcase	4AA3-1F	Crankcase pressure	The overpressure is detected in case of blocked blow-by valve or blocked blow--by oil filter Crankcase pressure is monitored by a single differential pressure sensor. Sensor is measuring relative pressure.	Blocked blow-by valve or blocked blow-by oil filter	Check Blw-by valve and il filter	Frequency: no lamp Lamp: no lamp	19107-31
CrCsVDisclntMnf3	Crankcase differential pressure: Pressure in crankcase implausibly low	4BA3-1F	Crankcase pressure	The function monitors if the crankcase pressure is above a minimum defined value. Crankcase pressure is monitored by a single differential pressure sensor. Sensor is measuring relative pressure.	Crankcase not tight	Check oil filler cap, check crankcase for other leakages.	Frequency: no lamp Lamp: no lamp	19363-31
CrCUIIrvrsNpl	Cruise control: Irreversible fault path which indicates the invalid combination of cruise control keys pressed	3141-1F	Cruise control	The Cruise Control switches are checked for Plausibility, i.e. Each switch must be "off" at least 700,00ms after Key 15 on A switch should never be pressed longer than 250,00ms 2 switches should never be pressed together longer than 10,92min This failure is not reversible, i.e there is no self healing at this driving cycle. The system is configured as 4-button system (Off, Up, Down, Resume)	Failure in Cruise control module (switches) Failure in wiring harness	Check Cruise control unit Check wiring harness	Frequency: no lamp Lamp: no lamp	12609-31
CrCUIRvrsNpl	Cruise control: Reversible fault path which indicates the invalid combination of cruise control keys pressed	3241-1F	Cruise control	The Cruise Control switches are checked for Plausibility, i.e. Each switch must be "off" at least 700,00ms after Key 15 on A switch should never be pressed longer than 250,00ms 2 switches should never be pressed together longer than 10,92min This failure is reversible, i.e there is a self healing as soon as the button are in "logic" state. The system is configured as 4-button system (Off, Up, Down, Resume)	Failure in Cruise control module (switches) Failure in wiring harness	Check Cruise control unit Check wiring harness	Frequency: no lamp Lamp: no lamp	12865-31
CrpModeActv	Info Failure: Creep mode activated	FBAF-1F	Info: Torque Limitation active	The US 2010 legislation require for SCR systems special measures to ensure functionality. The availability of the urea solution will have the most impact. To ensure that the driver replenishes the urea and ets a defect SCR system repaired, the legislation requires certain inducements which will increase with emptying tank or distance driven with a defect. If the driver continues driving with a system defect or the urea tank became empty, a creep mode will be activated after the next engine start. The creep mode will limit the torque which does not allow the vehicle to drive faster than 5 mph and hus effectively avoid a Truck to continue travelling. But it would still be possible to shunt the truck and ind a car park.	A failure related to the SCR system should be present ot UREA tank is empty	Refill UREA tank if empty, check and under SCR failures	Frequency: no lamp Lamp: no lamp	64431-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
CThmstOL	Coolant Thermostat: Open Load error on the PWM output power stage	5123-1F	Coolant Thermostat	The Power stage of Coolant Thermostat is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Coolant Thermostat	Check of wiring or replacement of Coolant Thermostat	Frequency: no lamp Lamp: no lamp	20771-31
CThmstOvrTemp	DFC for OvrTemp error on the PWM output power stage	8423-1F	Coolant Thermostat	The Power stage of Coolant Thermostat is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	33827-31
CThmstSCB	DFC for SCB error on the PWM output power stage	6223-1F	Coolant Thermostat	The Power stage of Coolant Thermostat is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside Coolant Thermostat	Check of wiring or replacement of Coolant Thermostat	Frequency: no lamp Lamp: no lamp	25123-31
CThmstSCG	DFC for SCG error on the PWM output power stage	7323-1F	Coolant Thermostat	The Power stage of Coolant Thermostat is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Coolant Thermostat	Check of wiring or replacement of Coolant Thermostat	Frequency: no lamp Lamp: no lamp	29475-31
CtT	Coolant temp sensor: DFC-ID of CtT to be used with DSM	3913-1F	Coolant temp sensor	The failure should detect a delay in the warming up of the engine coolant temperature by comparing the measured value with a modelled temperature value.	Coolant temperature sensors does not measure correct values or Thermostat does not close correctly (engine remains too cold for a too long time)	Check fucntionality of Thermostat Check functionality of Coolant temperature sensor	Frequency: no lamp Lamp: no lamp	14611-31
DevLibBattUHi	Battery voltage: Power stage diagnosis could be disabled due to high Battery voltage	117D-1F	Battery voltage	The power stage monitoring needs to be disabled under specially conditions (ECM state, battery voltage). This failure informs about power stage diagnostic disabling due to high battery voltage.	Power supply is to high --> possibly external power supply connected (battery charger??) or internal failure of ECU (wrong measurement of supply voltage)	Check battery status and under e level,Disconnect external device if connected or replace ECU if no supply problem is found.	Frequency: no lamp Lamp: no lamp	4477-31
DevLibBattULo	Battery voltage: Power stage diagnosis could be disabled due to low Battery voltage	227D-1F	Battery voltage	The power stage monitoring needs to be disabled under specially conditions (some ECM states, battery voltage level). This failure informs about power stage diagnostic disabling due to high battery voltage.	Too low battery voltage, possible also during engine cranking (possibly in cold conditrion), too low measurement of battery voltage possibly due to corroded contacts or wiring harness	Chech battery state (charge state). Check connectors and under harness to corrosion and/or too high electrical resistance	Frequency: no lamp Lamp: no lamp	8829-31
DStgyEffMon	SCR Control: Too low catalyst efficiency	2DDA-1F	SCR Control	The Efficiency of the SCR Catalyst is monitored calculating the ratio between the measured NOx after SCR and he measured NOx engine raw emission before the SCR and under ating this value over a predefined time window. This efficiency ratio is then compared to an expected catalyst ratio.	Too low Reagent injection Wrong NOx measurement (NOx Sensor measures too high values) Engine NOx raw emissions higher than expected (humidity sensor measures too wet air, injection timing anticipated, fuel pressure sensor measures too low fuel pressure...) Bad catalyst efficiency	Check Reagent, if correct concentration Check Dosing quantity of SCR system Check if engine raw emissions are OK (e.g. drive vehicle at constant speed without Reagent injection and under e measured with estimated NOx with tester), if not check: Check NOx Sensor Humidity Sensor Fuel pressure sensor Injection timing Replace catalyst	Frequency: ON Lamp: Amber (SVS)	11738-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
DStgyHiEff	SCR Control: Too high efficiency of the catalyst system	12DA-1F	SCR Control	The Efficiency of the SCR Catalyst is monitored with the NOx Sensor: The SCR efficiency is calculated by the difference of the measured NOx after SCR and he modelled NOx engine raw emission before the SCR (estimated NOx). Additionally the expected SCR efficiency (modelled by the actual state of NH3 filling, actual Reagent injection, actual SCR temperature and under exhaust gas flow) is calculated and lso filtered by 5,00s. The ratio "Filtered expected SCR efficiency / Filtered Measured SCR efficiency" is calculated as long as the (modelled) NOx concentration before SCR > 20,00ppm, else the ratio is set to 1. The ratio "expected/measured" SCR efficiency should normally be 1. If the "long-time" ratio < -4,00- for longer than 10,92min, the real SCR efficiency is definitively higher than expected and t must be assumed, that the system is not working correctly (or defect NOx measurement, of too high reagent injection or defect in engine)	Reagent with too high UREA concentration (>>32%) Too high Reagent injection Wrong NOx measurement (NOx Sensor measures too low values) Engine NOx raw emissions lower than epxected (humidity sensor measures too dry air, injection timing retarded, fuel pressure sensor measures too high fuel pressure...)	Check Reagent, if correct concentration Check Dosing quantity of SCR system Check if engine raw emissions are OK (e.g. drive vehicle at constant speed without Reagent injection and under e measured with estimated NOx with tester), if not check: Check NOx Sensor Humidity Sensor Fuel pressure sensor Injection timing	Frequency: ON Lamp: Amber (SVS)	4826-31
DStgyLambdaMon	NOx Sensor: Lambda value measurement from NOx sensor incorrect	3CAE-1F	NOx Sensing	This function is based on the assumption that difference between downstream NOx sensor lambda values should be similar to the calculated lambda value (from determined fuel/air quantity). If difference is too important NOx sensor is not measuring correctly.	NOx sensors downstream is not measuring correct lambda values or air/fuel quantity estimation is incorrect.	Check NOx sensor, check system for presence other faults involving fuelling or air quantity determination.	Frequency: ON Lamp: Amber (SVS)	15534-31
DStgyLambdaUsMon	NOx upstream Sensor: Lambda value measurement from NOx upstream sensor incorrect	32BE-1F	NOx Sensing	This function basically compares estimated lambda value to measured value upstream of catalyst: in case the difference is outside of a range error is raised.	NOx sensors upstream is not measuring correct lambda values or air/fuel quantity estimation is incorrect.	Check NOx sensor, check system for presence other faults involving fuelling or air quantity determination.	Frequency: ON Lamp: Amber (SVS)	12990-31
DStgyLvl2EffMon	SCR Control: NOx emission too high after DEV refill	1EDA-1F	SCR Control	The Efficiency of the SCR Catalyst is monitored with the NOx Sensor: The SCR efficiency is calculated by the difference of the measured NOx after SCR and he modelled NOx engine raw emission before the SCR (estimated NOx). The measuring disturbances are filtered out with a filter constant of 1,00s. Additionally the expected SCR efficiency (modelled by the actual state of NH3 filling, actual Reagent injection, actual SCR temperature and under exhaust gas flow) is calculated and lso filtered by 5,00s. The ratio "Filtered expected SCR efficiency / Filtered Measured SCR efficiency" is calculated as long as the (modelled) NOx concentration before SCR > 20,00ppm, else the ratio is set to 1. The ratio "expected/measured" SCR efficiency should normally be 1. A Level2 evaluation of NOx efficiency is performed after UREA refill to determine conformity of UREA quality	After refill high NOx emissions detected, probably bad UREA quality tanked	Check UREA in the tank, replace it	Frequency: ON Lamp: Amber (SVS)	7898-31
DStgyNegNOxSensDrift	NOx Sensor negative drift detected	33BE-1F	NOx Sensing	A drifted NOx sensor will show negative values if it measures a NOx level of 0ppm. Running at high load points the SCR catalyst is saturated. If the load point switches now to idle the SCR catalyst has a conversion rate of nearly 100% so that NOx level is reduced to nearly 0ppm. If NOx sensor is measuring values below 0 ppm at this point, it is drifted.	NOx sensor is drifted	Check and under e NOx sensor	Frequency: no lamp Lamp: no lamp	13246-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
DStgyNH3HiSlip	SCR Control: NH3 slip above second limit	15DE-1F	SCR Control	In case of a failure in the dosing system or the use of wrong reagent (too high UREA concentration >>32%) it is possible, that the SCR emits NH3, which can cause ambient hazards. Therefore the system checks with the NOx sensor, if there is NH3 slip present, which is possible due to the fact, that the NOx sensor measures NH3 as NOx. Two level of severity of NH3 slippage are foreseen.	Reagent with too high UREA concentration (>>32%) Too high Reagent injection Wrong NOx measurement (NOx Sensor measures too high values) Engine NOx raw emissions lower than epxected (humidity sensor measures too dry air, injection timing retarded, fuel pressure sensor measures too high fuel pressure...)	Check Reagent, if correct concentration Check Dosing quantity of SCR system Check if engine raw emissions are OK (e.g. drive vehicle at constant speed without Reagent injection and under e measured with estimated NOx with tester), if not check: Check NOx Sensor Humidity Sensor Fuel pressure sensor Injection timing If OK, repeat test WITh Reagent dosing and under Closed Loop Control parameter: if continuously < 0.7 or > 1.3 --> rsik of NH3 slip due to system problem.	Frequency: no lamp Lamp: no lamp	5598-31
DStgyNH3Slip	SCR Control: NH3 slip above first limit	13DA-1F	SCR Control	In case of a failure in the dosing system or the use of wrong reagent (too high UREA concentration >>32%) it is possible, that the SCR emits NH3, which can cause ambient hazards. Therefore the system checks with the NOx sensor, if there is NH3 slip present, which is possible due to the fact, that the NOx sensor measures NH3 as NOx. Two level of severity of NH3 slippage are foreseen.	Reagent with too high UREA concentration (>>32%) Too high Reagent injection Wrong NOx measurement (NOx Sensor measures too high values) Engine NOx raw emissions lower than epxected (humidity sensor measures too dry air, injection timing retarded, fuel pressure sensor measures too high fuel pressure...)	Check Reagent, if correct concentration Check Dosing quantity of SCR system Check if engine raw emissions are OK (e.g. drive vehicle at constant speed without Reagent injection and under e measured with estimated NOx with tester), if not check: Check NOx Sensor Humidity Sensor Fuel pressure sensor Injection timing If OK, repeat test WITh Reagent dosing and under Closed Loop Control parameter: if continuously < 0.7 or > 1.3 --> rsik of NH3 slip due to system problem.	Frequency: no lamp Lamp: no lamp	5082-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
DStgyNOxDrft	NOx Sensing: Drift error of NOx sensor value	34DA-1F	NOx Sensing	As the NOx sensor is used for closed loop control of the Reagent dosing, a wrong NOx sensor signal influences directly the NOx emissions (=OBD failure) and an also cause NH3 slip. To prevent this, the NOx sensor is checked for correct measuring of "no NOx". The engine does no emit any NOx if it is driven without combustion (overrun) which is detected, if the modelled NOx emission <= 600,00ppm and he fuel injection quantity <= 0,00mg/cyc. If the averaged measured NOx concentration outside applicable range it must be assumed, that the NOx sensor does not measure correctly. Before storing a failure the procedure is repeated and he test must have failed 5,00- times. Note: In case of overdosing and igh NH3 slip, 0-drift failure can also be detected, as the Sensor measures NH3 as NOx.	NOx Sensor dos not measure correctly Continuous NH3 slip (in this case possibly also failure NOxLv11 or NOxLv2 active!)	Check NOx sensor: drive and under e NOx Sensor signal - must indicate < 600,00ppm and -600,00ppm each time engine is in overrun. If not, disable Reagent dosing and under test: - If NOx concentration still outside range in overrun phase -> NOx sensor defect --> replace it. - If NOx concentration in range during overrun without dosing --> reason was probably NH3 slip: - check correct reagent (32% UREA) - check correct reagent dosing quantity - check correct SCR functionality: Check if engine raw emissions are OK (e.g. drive vehicle at constant speed without Reagent injection and under e measured with estimated NOx with tester), if NOT, check: Humidity Sensor Fuel pressure sensor Injection timing ELSE repeat test WITH Reagent dosing and under Closed Loop Control parameter: if continuously < 0.7 or > 1.3 --> rsik of NH3 slip due to system problem. Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk tha performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periodes of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readinsess state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	13530-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
DStgyNOxLvl1	Too High NOx Emissions: Catalyst efficiency lower than first NOx production threshold level	25DA-1F	Too High NOx Emissions	The Efficiency of the SCR Catalyst is monitored with the NOx Sensor: The SCR efficiency is calculated by the difference of the measured NOx after SCR and he modelled NOx engine raw emission before the SCR (estimated NOx). The measuring disturbances are filtered out with a filter constant of 1,00s. Additionally the expected SCR efficiency (modelled by the actual state of NH3 filling, actual Reagent injection, actual SCR temperature and under exhaust gas flow) is calculated and lso filtered by 5,00s. The ratio "Filtered expected SCR efficiency / Filtered Measured SCR efficiency" is calculated as long as the (modelled) NOx concentration before SCR > 20,00ppm, else the ratio is set to 1. The ratio "expected/measured" SCR efficiency should normally be 1. If the "long-time" ratio (i.e. filtered by 0,00s) > 1,50- for longer than 10,92min, the real SCR efficiency is definitively lower than expected and t must be assumed, that the NOx emissions are above the OBD Limi	Reagent with too low UREA concentration (<<32%) Too low or no Reagent injection Wrong NOx measurement (NOx Sensor measures too high values) Engine NOx raw emissions higher than expected (humidity sensor measures too humid air, injection timing anticipated, fuel pressure sensor measures too low fuel pressure...)	Check Reagent, if correct concentration Check Dosing quantity of SCR system Check if engine raw emissions are OK (e.g. drive vehicle at constant speed without Reagent injection and under e measured with estimated NOx with tester), if not check: NOx Sensor Humidity Sensor Fuel pressure sensor Injection timing If OK, repeat test WITH Reagent dosing and under Closed Loop Control parameter: if continuously < 0.7 or > 1.3 --> risk of NH3 slip due to system problem.	Frequency: no lamp Lamp: no lamp	9690-31
DStgyNOxLvl2	Too High NOx Emissions: Catalyst efficiency lower than second NOx production threshold level	26DA-1F	Too High NOx Emissions	The Efficiency of the SCR Catalyst is monitored with the NOx Sensor: The SCR efficiency is calculated by the difference of the measured NOx after SCR and he modelled NOx engine raw emission before the SCR (estimated NOx). The measuring disturbances are filtered out with a filter constant of 1,00s. Additionally the expected SCR efficiency (modelled by the actual state of NH3 filling, actual Reagent injection, actual SCR temperature and under exhaust gas flow) is calculated and lso filtered by 5,00s. The ratio "Filtered expected SCR efficiency / Filtered Measured SCR efficiency" is calculated as long as the (modelled) NOx concentration before SCR > 20,00ppm, else the ratio is set to 1. The ratio "expected/measured" SCR efficiency should normally be 1. If the "long-time" ratio (i.e. filtered by 0,00s) > 1,70- for longer than 0,00ms, the real SCR efficiency is definitively lower than expected and t must be assumed, that the NOx emissions are above the OBD Limit. Note: This failure activates the Long time failures OBDGenFaultClct (not erasable for 400 days) and BD Performance Limiter on the European Heavy Duty application (EURO V and under) according OBD legislation. As this failure shows the exceding of 2nd threshold limit, the failure DStgyNoxLvl1 will also be stored in the failure memory.	Reagent with too low UREA concentration (<<32%) Too low or no Reagent injection Wrong NOx measurement (NOx Sensor measures too high values) Engine NOx raw emissions higher than expected (humidity sensor measures too humid air, injection timing anticipated, fuel pressure sensor measures too low fuel pressure...)	Check Reagent, if correct concentration Check Dosing quantity of SCR system Check if engine raw emissions are OK (e.g. drive vehicle at constant speed without Reagent injection and under e measured with estimated NOx with tester), if not check: NOx Sensor Humidity Sensor Fuel pressure sensor Injection timing If OK, repeat test WITH Reagent dosing and under Closed Loop Control parameter: if continuously < 0.7 or > 1.3 --> risk of NH3 slip due to system problem.	Frequency: no lamp Lamp: no lamp	9946-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
DStgyNOxPlaus	NOx Sensing: Plausibility error of NOx sensor value	37DA-1F	NOx Sensing	As the NOx sensor is used for closed loop control of the Reagent dosing, a wrong NOx sensor signal influences directly the NOx emissions (=OBD failure) and an also cause NH3 slip. To prevent this, the NOx sensor is checked for correct measuring by comparing the modelled engine raw NOx emissions with the measured NOx, while the SCR does not reduce NOx. If the engine is running in a range, where the NOx modelling is reliable, the Reagent Dosing is switched off until the estimated SCR efficiency is < 0,60-. After 1000,00ms of stabilisation time, the modelled and under ed NOx concentrations are compared during 1000,00ms. If the Ratio "modelled/measured" NOx concentration is within 0,70- and under a counter is decremented by 1. If the counter reaches 0, the NOx sensor is OK and o more tests are executed during this driving cycle. As the counter is set to 1 at each system start, normally the test is made only once each driving cycle. If the ratio "modelled/measured NOx" is OUTSIDE the range 0,70- to 1,30-, the counter is incremented by 1. As long as the counter is > 0, the tests are repeated each 10,00s, i.e. after an interruption of the test because the conditions are no more met or in case of failed test. If number of failed tests > 5,00- the NOx sensor does not measure correctly and he failure is stored. To prevent too high NOx emissions (each test increases NOx, as dosing switched off), the number of total tests is limited to 10,00- each driving cycle.	NOx Sensor dos not measure correctly Engine NOx raw emissions different from expected (humidity sensor measures wrong humidty, injection timing not correct, fuel pressure sensor measures wrong fuel pressure...)	Check if engine raw emissions are OK (e.g. drive vehicle at constant speed without Reagent injection and under e measured with estimated NOx with tester), if not check: NOx Sensor Humidity Sensor Fuel pressure sensor Injection timing Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk tha performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periodes of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readinsess state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	14298-31
DStgyNOxSensDC	NOx sensor: measured value stuck	43CE-1F	NOx Sensing	This function is in charge of detecting a constant NOx signal stuck. The error is detected if the difference of maximum and under m value of measured NOx is below of a applicable threshold over a given time period.Function is enabled only if NOx sensor is ready and f difference of maximum and under m value of estimated NOx is over a threshold.	NOx sensor defective or incorrectly mounted	Check sensor mounting, replace NOx sensor	Frequency: ON Lamp: Amber (SVS)	17358-31
DStgyNOxSensExchMon	NOx Sensors : Upstream /- Downstream NOx sensor position interchanged	3E8E-1F	NOx Sensing	The upstream and under ream NOx sensor are checked for correct (not interchanged) mounting	NOx sensor position interchanged	CHeck NOx sensor position, excheange Upstream/Downstream NOx sensor connection	Frequency: no lamp Lamp: no lamp	16014-31
DStgyNOxSensUsPl	NOx sensor upstream: Sensor plausibility error	3CDA-1F	NOx Sensing	The upstream sensor plausibility monitoring is established by monitoring the filtered difference between the NOx estimation output and he corrected NOx sensor signal	NOx sensors upstream is not measuring correct values, engine is emitting unexpected quantity of NOx or NOx estimation model is incorrect.	Check presence of other failures which could influence NOx emission or NOx estimation, if no other failure identified, replace NOx sensor	Frequency: no lamp Lamp: no lamp	15578-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
DStgyPlausDyn	SCR Temp monitoring: SCR upstream temperature not plausible with down-stream temper-ature	38DA-1F	SCR Temp monitoring	The Temperature sensors of SCR are essential for the correct reagent dosing quantity and Ox reduction (for OBD!). Therefore the signal is monitored for correct measuring during normal opera-tion, based on the fact, that the temperature before and under SCR are similar on average (the SCR is a thermal "filter" which smoothes the temperature vari-ation, but the temperature level remains more or less constant). The temperature before SCR is filtered with an exhaust flow dependant filter (from 9,80s at 0,00Kg/h over 2,45s at 889,00Kg/h to 1,09s at 2000,00Kg/h) to "simulate" the thermal filter of SCR. The Difference "filtered temperature before - measured temperature after" SCR is filtered by 0,00s, to evaluate the "long-time" difference, which should be near 0. If the "long time deviation" is higher than an exhaust flow dependant limit (from -2398,30° C at 600,00Kg/h over -2398,30° C at 1600,00Kg/h to -2398,30° C at 3000,00Kg/h - to compensate the exhaust flow dependant heat loss of SCR), it must be assumed, that one of both sensors does not measure correctly.	One of the SCR Temperat-ure sensors defective One of the SCR Temperat-ure sensors with corroded connector or defect wiring harness One of both SCR Temper-ature sensors not mounted correctly (e.g. not in exhaust flow due to mount-ing problems) Temperature increase over SCR due to oil or fuel in exhaust (exothermic reac-tion): If temperature after SCR much higher than before SCR	Check the SCR temperature sensors for correct mounting (sensor in exhaust flow, not covered by insulation of SCR housing etc...), correct connectors (no corrosion) and under (correct insulation, not broken). Check temperature sensors and under e them if necessary. If problem not solved and he temperature measurement OK: Check if there is oil or fuel in the exhaust system (by turbochar-ger, possibly defective Oxicat etc...)	Frequency: no lamp Lamp: no lamp	14554-31
DStgyPlausTem pBoth	SCR Temp monitoring: Plausibility tem-perature monit-oring when with ambient or catalyst temper-atures	3E1A-1F	SCR Temp monitoring	The Temperature sensors of SCR are essential for the correct reagent dosing quantity and Ox reduction (for OBD!). Therefore the SCR temperature sensors are checked each cold start. After a "long" engine stand under period, it can be assumed, that the temperat-ures before and under SCR are equal and under r to the temperature near the air filter (usually temperature sensor in humidity sensor). Long stand under period is evaluated if the time between last engine stop and under engine start >12,00h (if external clock available) and he engine must have cooled down since last engine stop more than 30,00K. If both SCR Temperature sensors are similar but different to the Ambient tem-perature sensor there are 2 possibilities: - Ambient temperature sensor wrong - both SCR temperature sensors wrong (e.g. due to corroded connectors)	AmbientTemperature sensor (in humidity sensor) defective. Both, before and under SCR temperature sensors defective. Vehicle "shifted" into "heated" room after long stand under in cold ambi-ent.	Check temperature sensor in humidity sensor. Check temperature sensors before and under SCR. Check, if "special ambient conditions" (vehicle shifted from cold ambeint to heated room without engine start) could have caused the problem.	Frequency: no lamp Lamp: no lamp	15898-31
DStgyPlausTem pDs	SCR Temp monitoring: Plausibility tem-perature monit-oring with down stream temperature	3F1A-1F	SCR Temp monitoring	The Temperature sensors of SCR are essential for the correct reagent dosing quantity and Ox reduction (for OBD!). Therefore the SCR temperature sensors are checked each cold start. After a "long" engine stand under period, it can be assumed, that the temperat-ures before and under SCR are equal and under r to the temperature near the air filter (usually temperature sensor in humidity sensor). Long stand under period is evaluated if the time between last engine stop and under engine start >12,00h (if external clock available) and he engine must have cooled down since last engine stop more than 30,00K. If one of the sensors differs too much, it can be assumed, that its signal is wrong.	Temperature sensor after SCR defective. Exhaust system at "sun-shine", rest of the system in "cold shadow" for a longer time. Temperature sensor before SCR defective. Ambient temperature sensor defective.	Check Temperature sensor after SCR. Check temperature sensor before SCR. Check temperature sensor in humidity sensor. Check, if "special ambient conditions" (as sunshine at temperature after SCR) could have caused the problem.	Frequency: no lamp Lamp: no lamp	16154-31
DStgyPlausTem pUs	SCR Temp monitoring: Plausibility tem-perature monit-oring when with up stream tem-perature	312A-1F	SCR Temp monitoring	The Temperature sensors of SCR are essential for the correct reagent dosing quantity and Ox reduction (for OBD!). Therefore the SCR temperature sensors are checked each cold start. After a "long" engine stand under period, it can be assumed, that the temperat-ures before and under SCR are equal and under r to the temperature near the air filter (usually temperature sensor in humidity sensor). Long stand under period is evaluated if the time between last engine stop and under engine start >12,00h (if external clock available) and he engine must have cooled down since last engine stop more than 30,00K. If one of the sensors differs too much, it can be assumed, that its signal is wrong.	Temperature sensor before SCR defective. Exhaust system at "sun-shine", rest of the system in "cold shadow" for a longer time. Temperature sensor after SCR defective. Ambient temperature sensor defective.	Check Temperature sensor after SCR. Check temperature sensor before SCR. Check temperature sensor in humidity sensor. Check, if "special ambient conditions" (as sunshine at temperature after SCR) could have caused the problem.	Frequency: no lamp Lamp: no lamp	12586-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
DStgyPrs	SCR Temp Sensing: Catalyst present monitoring	49DA-1F	SCR Temp Sensing	For OBD purposes it must be monitored, that the SCR catalyst is not dismounted (for tampering). If there is no NOx sensor available, this requested monitoring is realised on the fact, that the SCR Catalyst has a heat capacity, which "smoothes" temperature variations, i.e. the temperature variation in transient condition is much higher before than after catalyst. Therefore the temperature variation before and under SCR are determined by the "1 derivative" of the temperature, taking only the "absolute" value, which is averaged over 0,00s. The ratio of averaged temperature variation before/after SCR must be > 10,00-, otherwise "missing SCR" is detected. The averaging of the temperature variation is frozen to the last value, if the actual variation of temperature before SCR < 1,00° C/s longer than 100,00ms and under uous, if temperature variation > 1,00° C/s longer than 100,00ms. The monitoring is only active in transient conditions, i.e. the averaged temperature variation before SCR > 1,00° C/s and he actual variation of fuel quantity > 10,00mg/cyc since > 100,00ms OR < 10,00mg/cyc not longer than 100,00ms and he system must be stable (i.e. engine running > 1000,00ms.	SCR Catalyst dismounted. Temperature sensors before-after SCR interchanged.	Check if SCR not dismounted (i.e. not empty housing) Check if SCR temperature sensors are connected correctly (not interchanged)	Frequency: no lamp Lamp: no lamp	18906-31
DStgySCRState	SCR Control: State monitoring of the SCR system	4ADA-1F	SCR Temp Sensing	The Dosing system is working as long as the reagent is not frozen, i.e. > -11°C. In case of frozen Reagent, a "no dosing" must be accepted until the heating system has melted enough Reagent. This could lead to "tampering" by showing a very low Reagent temperature in the Reagent tank to the system, which would lead to "no dosing" without any failure recognition. To prevent this, the "readiness" of the dosing system is monitored: At high ambient temperatures (>0°C) there is no risk of frozen reagent and he system should be ready to inject in a short time (25,00h at -2428,30° C). In case of potentially frozen Reagent, the time until the system is ready depends on the ambient temperature (45,00h at -2458,30° C to 2,28h at -2478,30° C). If the system is not ready within this time, it must be assumed, that the heating system is not working correctly or somebody tries to inhibit Reagent injection by "tampering" the temperatures.	Heating system not working. Wrong temperature measurement of Reagent tank or Reagent pump temperature (too low temp measurement) No pressure built up possible in Reagent dosing pump (e.g. leakage in suction line, no Reagent in tank, Pump defect)	Check if reagent available. Check reagent heating system (not necessary, if failure occured at ambient temperature > 0°C and under t tank temperature > 0°C when failure occurred) Check Temperature sensors in Reagent tank and/or reagent pump for correct measuring. Cehck Dosing system.	Frequency: no lamp Lamp: no lamp	19162-31
DStgyTimeClsdLoop	Time to reach urea closed loop control too long	4FDA-1F	SCR Control	DStgy calculates the urea quantity to be injected by the dosing module into the SCR catalyst in order to reduce the NOx quantity. Legislation demands that the feedback control starts within a manufacturer specified time. If system fails to begin control an error shall be reported.	Defective Urea dosing system, system not ready to inject in time	Check Dosing system, check presence of other SCR related errors	Frequency: no lamp Lamp: no lamp	20442-31
DstgyUreaDesDmErr_0	Info: Desired Urea quantity too high (odd detection)	F8CF-1F	SCR Reagent Feeding	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Desired Urea injection quantity is monitored, if it is exceeding a defined threshold event is detected. Two failure path are available, the first register odd detections (1st,3rd,5th,....), the second one even detections (2nd,4th,6th,.....)	Event detection, desired urea quantity too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	63695-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
DstgyUreaDesDmErr_1	Info: Desired Urea quantity too high (even detection)	F9CF-1F	SCR Reagent Feeding	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Desired Urea injection quantity is monitored, if it is exceeding a defined threshold event is detected. Two failure path are available, the first register odd detections (1st,3rd,5th,....), the second one even detections (2nd,4th,6th,.....)	Event detection, desired urea quantity too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	63951-31
EBrkPreSelPlaus	Break Actuation: Engine break preselection not plausible	3B9C-1F	Break Actuation	The pre selection switch for engine brake (engine brake active in accelerator pedal low idle position or in case service brake active) is checked for plausibility. If both signals are simultaneously preselected, the control unit detects a failure.	- One of the preselection switches or the wiring has a short circuit.	- Check the switches for short circuit.	Frequency: no lamp Lamp: no lamp	15260-31
ECBtnStopSig	Engine compartment button: stop button pressed	4122-1F	Engine compartment button	The engine compartment stop button activation is monitored.	Engine compartment button is in pressed position	Only an information that engine compartmente stop button was pressed	Frequency: no lamp Lamp: no lamp	16674-31
ECBtnStrtSig	Engine compartment button: start button pressed too long	4222-1F	Engine compartment button	The engine compartment start button activation is monitored.	Engine compartment button is in pressed position	Only an information that start button was pressed	Frequency: no lamp Lamp: no lamp	16930-31
ECBVlvOL	EGR Valve: No load error on power stage for EGR Cooling Valve Bypass Actuator	5C77-1F	EGR Valve	The Power stage of EGR Cooling Bypass Valve Actuator is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective EGR Cooling Bypass Valve Actuator	Check of wiring replace EGR Cooling Bypass Valve Actuator	Frequency: no lamp Lamp: no lamp	23671-31
ECBVlvOvrTemp	EGR Valve: Over temperature error on power stage for EGR cooler bypass valve	8D77-1F	EGR Valve	The Power stage of EGR Cooling Bypass Valve Actuator is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or actuator defective	Check battery voltage, wiring, power stage and under or	Frequency: no lamp Lamp: no lamp	36215-31
ECBVlvPhysRngHi	EGR Valve: Physical Signal for EGR Cooling Valve Bypass Actuator above maximum limit	1437-1F	EGR Valve	The sensed position of EGR Cooling Bypass Valve Actuator is checked and under be in a possible physical range.	Inaccurate or defective position sensor, or defect in the wiring of the sensor	Check wiring and he accuracy of the position sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	5175-31
ECBVlvPhysRngLo	EGR Valve: Physical Signal for EGR Cooling Valve Bypass Actuator below minimum limit	2537-1F	EGR Valve	The sensed position of EGR Cooling Bypass Valve Actuator is checked and under be in a possible physical range.	Inaccurate or defective position sensor, or defect in the wiring of the sensor	Check wiring and he accuracy of the position sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	9527-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ECBVlv SCB	EGR Valve: Short circuit to battery error on power stage for EGR Cooling Valve Bypass Actuator	6637-1F	EGR Valve	The Power stage of EGR Cooling Bypass Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to external source or defective EGR Cooling Bypass Valve Actuator	Check of wiring or replace EGR Cooling Bypass Valve Actuator	Frequency: no lamp Lamp: no lamp	26167-31
ECBVlv SCG	EGR Valve: Short circuit to ground error on power stage for EGR Cooling Valve Bypass Actuator	7737-1F	EGR Valve	The Power stage of EGR Cooling Bypass Valve Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to ground or defective EGR Cooling Bypass Valve Actuator	Check of wiring or replace EGR Cooling Bypass Valve Actuator	Frequency: no lamp Lamp: no lamp	30519-31
ECBVlv SRCMax	EGR Valve: Fault check SRC Max error of ECBVlv position sensor	1837-1F	EGR Valve	The electrical Signal of the EGR Cooling Bypass Valve position sensor is monitored. In case of defect recognition a replacement value is taken.	Short circuit of wiring to external source or defective position sensor	Check wiring harness or replace sensor	Frequency: no lamp Lamp: no lamp	6199-31
ECBVlv SRCMin	EGR Valve: Fault check SRC Min error of ECBVlv position sensor	2937-1F	EGR Valve	The electrical Signal of the EGR Cooling Bypass Valve position sensor is monitored. In case of defect recognition a replacement value is taken.	Short circuit at wiring harness or inside the EGR Cooling Bypass Valve position sensor to ground or open circuit	Check of wiring or replace EGR Cooling Bypass Valve position sensor	Frequency: no lamp Lamp: no lamp	10551-31
ECRVlv Err	High Side SCB error and ow side SCG error	41F3-1F	Decompression brake	The Power stages of Engine Compression Release Valve Actuator at High Side and ow Side are monitored by Hardware for electric failures.	Short circuit of wiring at High Side and ow Side or inside relay	Check of wiring or replacement of relay	Frequency: ON Lamp: Amber (SVS)	16883-31
ECRVlv HSSCB	Engine Compression Release Valve: Short Circuit to Battery error at high side	62F3-1F	Decompression brake	The Power stage of Engine Compression Release Valve Actuator at High Side is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside relay	Check of wiring or replacement of relay	Frequency: ON Lamp: Amber (SVS)	25331-31
ECRVlv HSSCG	Engine Compression Release Valve: Short Circuit to Ground error at high side	73F3-1F	Decompression brake	The Power stage of Engine Compression Release Valve Actuator at High Side is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside relay	Check of wiring or replacement of relay	Frequency: ON Lamp: Amber (SVS)	29683-31
ECRVlv LSOL	Engine Compression Release Valve: Open Load error at low side	54F3-1F	Decompression brake	The Power stage of Engine Compression Release Valve Actuator at Low Side is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Engine Compression Release Valve Actuator at Low Side	Check of wiring or replacement of Engine Compression Release Valve Actuator	Frequency: ON Lamp: Amber (SVS)	21747-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ECRVlvLSOvrTemp	Engine Compression Release Valve: Over Temperature error at low side	85F3-1F	Decompression brake	The Power stage of Engine Compression Release Valve Actuator at Low Side is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside Engine Compression Release Valve Actuator at Low Side	Check battery voltage, wiring, power stage and under Compression Release Valve Actuator at Low Side	Frequency: ON Lamp: Amber (SVS)	34291-31
ECRVlvLSSCB	Engine Compression Release Valve: Short Circuit to Battery error at low side	66F3-1F	Decompression brake	The Power stage of Engine Compression Release Valve Actuator at Low Side is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside relay	Check of wiring or replacement of relay	Frequency: ON Lamp: Amber (SVS)	26355-31
ECRVlvLSSCG	Engine Compression Release Valve: Short Circuit to Ground error at low side	77F3-1F	Decompression brake	The Power stage of Engine Compression Release Valve Actuator at Low Side is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Engine Compression Release Valve Actuator at Low Side	Check of wiring or replacement of Engine Compression Release Valve Actuator	Frequency: ON Lamp: Amber (SVS)	30707-31
EEC2VEnblRCCS	CAN Receive Frame: Missed frame or wrong checksum for Electronic Engine Control #2 from Vehicle Controller (EEC2V)	CFEF-1F	CAN Bus	The proprietary message EEC2 contains the accelerator pedal information (status, percent) The message chechsum and under e counter are monitored	CAN malfunction, frame lost or repeated or CAN message corrupted	Check CAN connection, bus load or other CAN malfunctions	Frequency: no lamp Lamp: no lamp	53231-31
EEPEraseErr	ECU EEPROM: EEP sector erase failed	E26D-1F	ECU EEPROM	A functionality for reading writing and under g values to a memory media (Flash or EEPROM) is available. These operations are monitored and f problems arise a failure is reported.	Wrong programming/flashing of the ECM, internal defect of the ECM.	Try to flash the ECM correctly with a proper dataset, if defect persists: replace ECM.	Frequency: ON Lamp: Amber (SVS)	57965-31
EEPRdErr	ECU EEPROM: EEP Read Error based on the error for more blocks	E36D-1F	ECU EEPROM	A functionality for reading writing and under g values to a memory media (Flash or EEPROM) is available. These operations are monitored and f problems arise a failure is reported.	Wrong programming/flashing of the ECM, internal defect of the ECM.	Try to flash the ECM correctly with a proper dataset, if defect persists: replace ECM.	Frequency: ON Lamp: Amber (SVS)	58221-31
EEPWrErr	ECU EEPROM: EEP Write Error based on the error for one block	E46D-1F	ECU EEPROM	A functionality for reading writing and under g values to a memory media (Flash or EEPROM) is available. These operations are monitored and f problems arise a failure is reported.	Wrong programming/flashing of the ECM, internal defect of the ECM.	Try to flash the ECM correctly with a proper dataset, if defect persists: replace ECM.	Frequency: ON Lamp: Amber (SVS)	58477-31
EGRCACPlaus	EGR cooler or Charged air pressure cooler efficiency low	3177-1F	None	For EGR cooler plausibility monitoring the temperature downstream EGR cooler Air_tEGRClrDs and modelled temperature ASMod_tEGRDs are compared. If measured temperature is too high a defective EGR cooler is assumed. This monitoring is not used.	EGR cooler or charged air cooler efficiency low (error can not be localised clearly)	Check EGR cooler and under d air cooler	Frequency: no lamp Lamp: no lamp	12663-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
EGRClg Mon	EGR cooler: Cooler efficiency low	3277-1F	EGR Cooler	For EGR cooler plausibility monitoring the temperature downstream EGR cooler Air_tEGRClrDs and modelled temperature ASMod_tEGRDs are compared. If measured temperature is too high a defective EGR cooler is assumed.	EGR cooler efficiency low or temperature sensors not measuring correctly	Check temperature sensors: Visual check of temperature sensor. Clean if dirty Compare measured values with known temperature (i.e. ambient temperature (tolerance +/- 10°C) Check EGR cooler, coolant flow not restricted, sealing OK (no leakages)	Frequency: no lamp Lamp: no lamp	12919-31
EGRClg MonVlv	EGR Valve: EGR cooler bypass clogged	3377-1F	EGR Cooler	The function monitors the operational capability of the EGR cooler bypass valve. For this, the temperature of the recirculated exhaust gas downstream of the EGR cooler is observed while the position of the bypass valve is adjusted. Depending on the change of the temperature, a jammed bypass valve is detected.	EGR cooler clogged, bypass valve stuck	Check EGR cooler bypass valve	Frequency: no lamp Lamp: no lamp	13175-31
EGRClr Plaus	EGR cooler: Cooler efficiency low	3477-1F	EGR Cooler	For EGR cooler plausibility monitoring the temperature downstream EGR cooler Air_tEGRClrDs and modelled temperature ASMod_tEGRDs are compared. If measured temperature is too high a defective EGR cooler is assumed. This monitoring is not used.	EGR cooler efficiency low or temperature sensors not measuring correctly	Check temperature sensors: Visual check of temperature sensor. Clean if dirty Compare measured values with known temperature (i.e. ambient temperature (tolerance +/- 10°C) Check EGR cooler, coolant flow not restricted, sealing OK (no leakages)	Frequency: no lamp Lamp: no lamp	13431-31
EGRCo olerTe mpDef	EGR Cooler: Temperature deviation of intake air after EGR	3577-1F	EGR Cooler	The measured temperature after EGR cooler is compared to a modeled temperature . If the difference between the output of the model and he measured temperature exceeds a defined applicable threshold a failure is detected.	EGR Cooler efficiency deviating or temperature sensor deviating	Check temperature sensor, check or rfeplace EGR cooler	Frequency: no lamp Lamp: no lamp	13687-31
EGRIL mpOL	EGR Inducement Lamp: Open Load Error	5927-1F	EGRInducement Lamp	The Power stage of EGR Inducement Lamp is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective EGR Inducement Lamp	Check of wiring, replace EGR Inducement Lamp	Frequency: no lamp Lamp: no lamp	22823-31
EGRIL mpOvr Temp	EGR Inducement Lamp: Over Temperature Error	8A27-1F	EGRInducement Lamp	The Power stage of EGR Inducement Lamp is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside EGR Inducement Lamp.	Check battery voltage, wiring, power stage and under l lamp for EGR Inducement Lamp	Frequency: no lamp Lamp: no lamp	35367-31
EGRIL mpSCB	EGR Inducement Lamp: Short Circuit to Battery Error	6B27-1F	EGRInducement Lamp	The Power stage of EGR Inducement Lamp is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside EGR Inducement lamp	Check of wiring or replacement EGR Inducement lamp	Frequency: no lamp Lamp: no lamp	27431-31
EGRIL mpSCG	EGR Inducement Lamp: Short Circuit to Ground Error	7C27-1F	EGRInducement Lamp	The Power stage of EGR Inducement Lamp is monitored by Hardware for electric failures.	Short circuit to ground of wiring or inside EGR Inducement Lamp	Check of wiring or replacement of EGR Inducement Lamp	Frequency: no lamp Lamp: no lamp	31783-31
EGRNo xDiff	EGR control: Measured NOx upstream catalyst deviating from modelled value	3847-1F	EGR Control	The measured NOx upstream EGTCond_rNOxRaw is compared with the simulated one EGTCond_rNoxUsCalc	EGR quantity is deviating from expected	CHeck EGR system	Frequency: no lamp Lamp: no lamp	14407-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
EGROff	Info: EGR shut off for intercooler or EGR cooler efficiency test	4947-1F	None	In case of not plausible engine intake temperature it may be necessary to switch off EGR to determine if intercooler or EGR cooler is defective. When EGR is shut off for this test, the failure path is set (information)	Only information path, no intervention required	No intervention required	Frequency: no lamp Lamp: no lamp	18759-31
EGRRgl GovDvt Neg	EGR Control: EGR rate too high	4A47-1F	EGR Control	EGR rate deviation is calculated by substraction of the desired EGR rate setpoint EGRRgl_rEGRRateDesVal minus the actual EGR rate EGRRgl_rEGRRate. Too high EGR.	EGR rate too high, actuators drifted?	CHeck EGR actuators	Frequency: no lamp Lamp: no lamp	19015-31
EGRRgl GovDvt Pos	EGR Control: EGR rate too low	4B47-1F	EGR Control	EGR rate deviation is calculated by substraction of the desired EGR rate setpoint EGRRgl_rEGRRateDesVal minus the actual EGR rate EGRRgl_rEGRRate. Too low EGR.	EGR rate too low. Clogged EGR valve or drifted EGR valve or EGR pipe leakage	Check EGR actuators	Frequency: no lamp Lamp: no lamp	19271-31
EGRRgl OBDM on	EGR Control: EGR low flow detected	3E27-1F	EGR Control	The EGR system has to be monitored to ensure that it is working properly. For detecting low flow (EGR path is clogged or tampered), this function evaluates the pressure signals before intake valve and/or the pressure in exhaust manifold upstream turbine. The function must be executed once after every startup of the engine.	EGR actuator slow reponse detected	Check and under e EGR actuator	Frequency: no lamp Lamp: no lamp	15911-31
EGRVlv OL	EGR Valve: No load error for power stage	5137-1F	EGR Valve	The Power stage of EGR valve actuator is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective EGR Valve Actuator	Check of wiring replace EGR actuator	Frequency: no lamp Lamp: no lamp	20791-31
EGRVlv OvrTemp	EGR Valve: Over temperature error	8237-1F	EGR Valve	The Power stage of EGR Valve Actuator is monitored by Hardware for electric failures.	High battery voltage, high ECU temperature and igh load or defective wiring, power stage or EGR Valve Actuator defective	Check battery voltage, wiring, power stage and GR Valve Actuator	Frequency: no lamp Lamp: no lamp	33335-31
EGRVlv SCB	EGR Valve: Short circuit to battery error for power stage	7337-1F	EGR Valve	The Power stage of EGR Valve Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to external source or defective EGR Valve Actuator	Check of wiring or replace EGR Valve Actuator	Frequency: no lamp Lamp: no lamp	29495-31
EGRVlv SCG	EGR Valve: Short circuit to ground error for power stage	6D27-1F	EGR Valve	The Power stage of EGR Valve Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to ground or defective EGR valve actuator	Check of wiring or replace EGR valve actuator	Frequency: no lamp Lamp: no lamp	27943-31
EGTCondNOx Est	SCR NOx calculation: multi signal defects in NOx estimation	3BDA-1F	SCR NOx calculation	The NOx Estimation (= calculated engine raw emission based on several input data's) is essential for the calculation of the needed AdBlue dosing quantity on the SCR system and or controlling the NOx emissions. If the calculation is not reliable due to a defective sensor, the NOx control is no more correct. Therefore this failure path is set by the Fld_EGTCondGsCnstn, which will be activated by a failure due to which the NOx estimation is no more reliable.	see leading failure (failure also stored in memory, which activates Fld_EGTCondGsCnstn)	see failure stored in memory, which activated Fld_EGTCondGsCnstn	Frequency: no lamp Lamp: no lamp	15322-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
EngDa_TEngChkDwn	Plausibility check: One or more temperature sensors deviating from expected value at cold start (measured temp.too low)	3612-1F	Temperature Sensor	This function is in charge of evaluating several engine temperatures and under e them with respect calculated reference temperature. If one (or more) of selected temperatures deviating from reference temperature error failure path is set.	One or more temperature sensors deviating from expected value (measured temperature too low)	Check wiring, check sensors	Frequency: no lamp Lamp: no lamp	13842-31
EngDa_TEngChkUp	Plausibility check: One or more temperature sensors deviating from expected value at cold start (measured temp.too high)	3712-1F	Temperature Sensor	This function is in charge of evaluating several engine temperatures and under e them with respect calculated reference temperature. If one (or more) of selected temperatures deviating from reference temperature error failure path is set.	One or more temperature sensors deviating from expected value (measured temperature too high)	Check wiring, check sensors	Frequency: no lamp Lamp: no lamp	14098-31
EngDaTPrevWarn	Info: Engine temperature exceeded pre--warn level	F523-1F	Info: Torque Limitation active	Two engine temperature thresholds are available to signal high engine temperature. Pre-warning is set if engine temperature > -2356,30° C Warning is set if engine temperature > -2352,30° C	Too high engine temperature	Cooling system problem or simply overheated engine due to heavy use or high environmental temperature	Frequency: ON Lamp: Amber (SVS)	62755-31
EngDaTWarn	Info: Engine temperature exceeded warn level	F623-1F	Info: Torque Limitation active	Two engine temperature thresholds are available to signal high engine temperature. Pre-warning is set if engine temperature > -2356,30° C Warning is set if engine temperature > -2352,30° C	Too high engine temperature	Cooling system problem or simply overheated engine due to heavy use or high environmental temperature	Frequency: BLINK Lamp: Red (SVS)	63011-31
EnglCO	ECU internal Check: Injection cut off demand under for shut off coordinator	E536-1F	ECU internal Check	Injection cut off is the request of ECM to inhibit fuel injection to limit the engine speed to a controllable range. This procedure is triggered when some ECM internal failures which concern reliability of accelerator pedal signal , fuel injection parameters or engine speed are detected.	Another failure requested engine speed limitation. This failure path should always appear in failure memory with another lead failure from ECM monitoring level (level 2)	No action, this is only an information path	Frequency: ON Lamp: Amber (SVS)	58678-31
EngPrtBlwBy	Engine blow by protection activated	4AB3-1F	Blow by valve	Engine blow by conditions are checked and n case of abnormal blow by detection, engine operation can be shutdown for engine protection.			Frequency: no lamp Lamp: no lamp	19123-31
EngPrtOvrSpd	Engine Overspeed: Overspeed detection in component engine protection	F1A2-1F	Engine Overspeed	Engine speed is monitored and n case of overspeed detection a failure is reported. Unacceptably high engine speed may arise in the event of an error in the ECM or under certain operating states like downhill travel, in this case the failure should does not indicate an error but simply informs about a "misuse" of the engine.	Engine overspeed has occurred	No reactions necessary only if this fault/-information status reoccurs frequently. In this case check driving conditions of vehicle, engine speed acquisition and under ion system for quantity set point and under value during fault recognition, check also for ECM errors.	Frequency: no lamp Lamp: no lamp	61858-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
EngPrtTMFWShOff	Engine speed sensing: Indicates if a Two Mass Flywheel resonance shutoff condition is active	F2A2-1F	Engine speed sensing	To avoid resonances which could damage two mass flywheel, if during under braking phase the engine speed falls below a defined threshold the engine is stopped.	Engine stalled by driver mishap.	No intervention necessary	Frequency: no lamp Lamp: no lamp	62114-31
EngSpdOL	Engine speed signal output: No load error on the engine speed output power stage	5182-1F	Engine speed sensing	The Power stage for the PWM output of engine speed signal (tachometer) is monitored by Hardware for electrical failures	Broken or disconnected wiring or defective tachometer	Check of wiring or replace tachometer	Frequency: no lamp Lamp: no lamp	20866-31
EngSpdOvrTemp	DFC for OvrTemp error on the PWM output power stage for engine speed output.	8282-1F	Engine speed sensing	The Power stage for the PWM output of engine speed signal (tachometer) is monitored by Hardware for electrical failures	High battery voltage, high load and igh ECU temperature, defective wiring, Tachometer or ECU	Check load and under , check wiring, replace Tachometer or ECU	Frequency: no lamp Lamp: no lamp	33410-31
EngSpdSCB	Engine speed signal output: Short circuit to battery error on the engine speed output power stage	6382-1F	Engine speed sensing	The Power stage for the PWM output of engine speed signal (tachometer) is monitored by Hardware for electrical failures	Short circuit of wiring to external source or defective engine speed limiter	Check of wiring or replace tachometer	Frequency: no lamp Lamp: no lamp	25474-31
EngSpdSCG	Engine speed signal output: Short circuit to ground error on the engine speed output power stage	7482-1F	Engine speed sensing	The Power stage for the PWM output of engine speed signal (tachometer) is monitored by Hardware for electrical failures	Short circuit of wiring to ground or defective tachometer	Check of wiring or replace tachometer	Frequency: no lamp Lamp: no lamp	29826-31
EnhSRCMaxT1ExhTMon	Oxicat Temp Monitoring: Diagnostic Fault Check for enhancedSRC--Max of First exhaust gas temperature	111C-1F	Oxicat Temp Monitoring	Physical signal range check: Exhaust Temperature before Oxicat can not exceed physically -1708,30° C. If the measured value is higher, the sensor signal is not reliable.	Exhaust Temperature Sensor before Oxicat measures wrong values or interchanged with Temperature before Oxicat	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	4380-31
EnhSRCMaxT2ExhTMon	DPF Temp Monitoring: Diagnostic Fault Check for enhancedSRC--Max of Second exhaust gas temperature	121C-1F	DPF Temp Monitoring	Physical signal range check: Exhaust Temperature before DPF can not exceed physically -1708,30° C. If the measured value is higher, the sensor signal is not reliable.	Exhaust Temperature Sensor before DPF measures wrong values	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: BLINK Lamp: Red (SVS)	4636-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
EnhSRCMaxT3ExhTMon	SCR Temp monitoring: Diagnostic Fault Check for enhancedSRC--Max of T3 (exhaust gas temperature after engine)	131C-1F	SCR Temp monitoring	Physical signal range check: Exhaust Temperature after DPF can not exceed physically -1708,30° C. If the measured value is higher, the sensor signal is not reliable.	Exhaust Temperature Sensor after DPF measures wrong values	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	4892-31
EnhSRCMaxT4ExhTMon	Exhaust Temp monitoring: Diagnostic Fault Check for enhancedSRC--Max of Fourth exhaust gas temperature	141C-1F	Exhaust Temp monitoring	Physical signal range check: Exhaust Temperature after DPF can not exceed physically 541,70° C. If the measured value is higher, the sensor signal is not reliable.	Exhaust Temperature Sensor after DPF measures wrong values	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	5148-31
EnhSRCMaxT5ExhTMon	Exhaust Temp monitoring: Diagnostic Fault Check for enhancedSRC--Max of fifth exhaust gas temperature	151C-1F	Exhaust Temp monitoring	Physical signal range check: Exhaust Temperature at exhaust collector inlet can not exceed physically 545,30° C. If the measured value is higher, the sensor signal is not reliable.	Exhaust Temperature Sensor at exhaust collector inlet measures wrong values	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	5404-31
EnhSRCMaxT6ExhTMon	Exhaust Temp monitoring: Diagnostic Fault Check for enhancedSRC--Max of sixth exhaust gas temperature	161C-1F	Exhaust Temp monitoring	Physical signal range check: Exhaust Temperature at exhaust collector inlet can not exceed physically 545,30° C. If the measured value is higher, the sensor signal is not reliable.	Exhaust Temperature Sensor at exhaust collector inlet measures wrong values	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	5660-31
EnhSRCMinT1ExhTMon	Oxicat Temp Monitoring: Diagnostic Fault Check for enhancedSRC--Min of First exhaust gas temperature	271C-1F	Oxicat Temp Monitoring	Physical signal range check: Exhaust Temperature before Oxicat can physically not be below -2508,30° C. If the measured value is lower, the sensor signal is not reliable.	Exhaust Temperature Sensor before Oxicat measures wrong values	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	10012-31
EnhSRCMinT2ExhTMon	DPF Temp Monitoring: Diagnostic Fault Check for enhancedSRC--Min of Second exhaust gas temperature	281C-1F	DPF Temp Monitoring	Physical signal range check: Exhaust Temperature before DPF can physically not be below -2508,30° C. If the measured value is lower, the sensor signal is not reliable.	Exhaust Temperature Sensor before DPF measures wrong values	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	10268-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
EnhSRCMinT3ExhTMon	SCR Temp monitoring: Diagnostic Fault Check for enhancedSRC--Min of third exhaust gas temperature	291C-1F	SCR Temp monitoring	Physical signal range check: Exhaust Temperature after DPF can physically not be below -2508,30° C. If the measured value is lower, the sensor signal is not reliable.	Exhaust Temperature Sensor after DPF measures wrong values	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	10524-31
EnhSRCMinT4ExhTMon	Exhaust Temp monitoring: Diagnostic Fault Check for enhancedSRC--Min of Fourth exhaust gas temperature	2A1C-1F	Exhaust Temp monitoring	Physical signal range check: Exhaust Temperature after DPF can physically not be below -6008,20° C. If the measured value is lower, the sensor signal is not reliable.	Exhaust Temperature Sensor after DPF measures wrong values	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	10780-31
EnhSRCMinT5ExhTMon	Exhaust Temp monitoring: Diagnostic Fault Check for enhancedSRC--Min of fifth exhaust gas temperature	2B1C-1F	Exhaust Temp monitoring	Exhaust Temperature at exhaust collector inlet can physically not be below -6008,20° C. If the measured value is lower, the sensor signal is not reliable.	Exhaust Temperature Sensor at exhaust collector inlet measures wrong values	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	11036-31
EnhSRCMinT6ExhTMon	Exhaust Temp monitoring: Diagnostic Fault Check for enhancedSRC--Min of sixth exhaust gas temperature	2C1C-1F	Exhaust Temp monitoring	Physical signal range check: Exhaust Temperature at exhaust collector inlet can physically not be below -6008,20° C. If the measured value is lower, the sensor signal is not reliable.	Exhaust Temperature Sensor at exhaust collector inlet measures wrong values	Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	11292-31
EnvPPhysRngHi	Ambient pressure sensor: Physical Signal above maximum limit	11C4-1F	Ambient pressure sensor	Physical value of ambient pressure is checked for plausibility. Measured value should lie in a defined range.	Ambient pressure sensor inside ECU is defect	Replace ECU	Frequency: no lamp Lamp: no lamp	4548-31
EnvPPhysRngLo	Ambient pressure sensor: Physical Signal below minimum limit	22C4-1F	Ambient pressure sensor	Physical value of ambient pressure is checked for plausibility. Measured value should lie in a defined range.	Ambient pressure sensor inside ECU is defect	Replace ECU	Frequency: no lamp Lamp: no lamp	8900-31
EnvPSig	Ambient pressure sensor: CAN message reports a defect	45C4-1F	Ambient pressure sensor	Environmental pressure sensor is available and under ted via hardware to the ECM. Pressure is obtained through Analogic to Digital Converter and under ormed to a physical value in EnvP_pSens.	Ambient pressure sensor is defect	Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	17860-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
EnvPSRCMax	Ambient pressure sensor: SRC High for Environment Pressure	13C4-1F	Ambient pressure sensor	Environmental pressure sensor is available and under ted via hardware to the ECM. Pressure is obtained through Analogic to Digital Converter and under ormed to a physical value in EnvP_pSens. A signal range check is performed on the signal. Sensor is inside ECU.	Ambient pressure sensor inside ECU is defect	Replace ECU	Frequency: ON Lamp: Amber (SVS)	5060-31
EnvPSRCMin	Ambient pressure sensor: SRC low for Environment Pressure	24C4-1F	Ambient pressure sensor	Environmental pressure sensor is available and under ted via hardware to the ECM. Pressure is obtained through Analogic to Digital Converter and under ormed to a physical value in EnvP_pSens. A signal range check is performed on the signal. Sensor is inside ECU.	Ambient pressure sensor inside ECU is defect	Replace ECU	Frequency: ON Lamp: Amber (SVS)	9412-31
EnvTAmbTempMon	Environment temperature sensor plausibility check error	3CC4-1F	Ambient temperature sensor	The environmental temperature and he air temperature at Air Mass Flow Sensor are compared for plausibility. Environment temperature sensor is present and under ted via hardware to the ECM. Temperature is obtained through Analogic to Digital Converter and under ormed to a physical value in EnvT_tSens. Environmental temperature is EnvT_tSens	Environment Temperature sensor or Air Mass Flow Temperature deviating	Check both sensors	Frequency: no lamp Lamp: no lamp	15556-31
EnvTPhysRngHi	Environmental Temperature sensor (in humidity sensor): Physical Signal above maximum limit	17C4-1F	Ambient temperature sensor	Reaction only triggered if Fid_xxxRplVal is applied: Environmental temperature sensor is available and under ted via hardware to the ECM. Temperature is obtained through Analogic to Digital Converter and under ormed to a physical value in EnvT_tSens. Measured physical value should lie in a defined range.	Excessive measured Environmental temperature	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	6084-31
EnvTPhysRngLo	Environmental Temperature sensor (in humidity sensor): Physical Signal below minimum limit	28C4-1F	Ambient temperature sensor	Environmental temperature sensor is available and under ted via hardware to the ECM. Temperature is obtained through Analogic to Digital Converter and under ormed to a physical value in EnvT_tSens. Measured physical value should lie in a defined range.	Excessively low measured Environmental temperature	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	10436-31
EnvTSig	Environmental Temperature sensor (in humidity sensor): DFC for CAN message	4BC4-1F	Ambient temperature sensor	Environmental temperature sensor is available and under ted via hardware to the ECM. Temperature is obtained through Analogic to Digital Converter and under ormed to a physical value in EnvT_tSens.	Ambient temperature sensor defective	Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	19396-31
EnvTSRCMax	Environmental Temperature sensor (in humidity sensor): SRC High for Environment Temperature	19C4-1F	Ambient temperature sensor	Environmental temperature sensor is available and under ted via hardware to the ECM. Temperature is obtained through Analogic to Digital Converter and under ormed to a physical value in EnvT_tSens. A signal range check is performed on the signal.	Sensor defective or short circuit in wiring to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	6596-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
EnvTSRCMin	Environmental Temperature sensor (in humidity sensor): SRC low for Environment Temperature	2AC4-1F	Ambient temperature sensor	Environmental temperature sensor is available and under ted via hardware to the ECM. Temperature is obtained through Analogic to Digital Converter and under ormed to a physical value in EnvT_tSens. A signal range check is performed on the signal.	Sensor defective or short circuit wiring to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	10948-31
EPCtlMulSigDfctMax	Turbocharger controller: Multi signal defect	EA48-1F	Turbocharger control	The main task of the function is to detect VGT malfunctions and under failures in order to avoid further and ore severe damage of the turbo charger and he engine. The system errors that could be potentially dangerous regard anomalous behaviours of turbine speed, boost pressure and under t pressure. Boost pressure is monitored for overboost.	Multiple failures detected on turbocharger control	Check other turbocharger failure involved (turbo speed, boost pressure, exhaust pressure, VGT control)	Frequency: no lamp Lamp: no lamp	59976-31
EPCtlP2Max	Boost pressure: Overboost detection	1B48-1F	Turbocharger control	The main task of the function is to detect VGT malfunctions and under failures in order to avoid further and ore severe damage of the turbo charger and he engine. The system errors that could be potentially dangerous regard anomalous behaviours of turbine speed, boost pressure and under t pressure. Boost pressure is monitored for overboost.	Inaccurate boost pressure sensing, defective boost pressure actuator (e.g. VGT), inadequate PCR governor application	Check boost pressure sensing and he boost pressure actuator for correct functioning, ensure corret PCR application	Frequency: ON Lamp: Amber (SVS)	6984-31
EPCtlP3Max	Turbine upstream pressure: Value too high (overpressure)	1C48-1F	Turbocharger control	The main task of the function is to detect VGT malfunctions and under failures in order to avoid further and ore severe damage of the turbo charger and he engine. The system errors that could be potentially dangerous regard anomalous behaviours of turbine speed, boost pressure and under t pressure. Exhaust gas (turbine upstream) overpressure is monitored	Inaccurate exhaust pressure sensing, defective boost pressure actuator (e.g. VGT), inadequate PCR governor application	Check exhaust pressure sensing and he boost pressure actuator for correct functioning, ensure corret PCR application	Frequency: no lamp Lamp: no lamp	7240-31
EPCtlP3Sig	Turbine upstream pressure: Value too high, deviation from setpoint	3D48-1F	Turbocharger control	The main task of the function is to detect VGT malfunctions and under failures in order to avoid further and ore severe damage of the turbo charger and he engine. The system errors that could be potentially dangerous regard anomalous behaviours of turbine speed, boost pressure and under t pressure. Exhaust gas pressure (turbine upstream) signal is monitored	Inaccurate exhaust pressure sensing, defective boost pressure actuator (e.g. VGT), inadequate PCR governor application	Check exhaust pressure sensing and he boost pressure actuator for correct functioning, ensure corret PCR application	Frequency: no lamp Lamp: no lamp	15688-31
EPCtlTrbNpl	Turbocharger reversible overspeed detection (open burst)	3E48-1F	Turbocharger control	The main task of the function is to detect VGT malfunctions and under failures in order to avoid further and ore severe damage of the turbo charger and he engine. The system errors that could be potentially dangerous regard anomalous behaviours of turbine speed, boost pressure and under t pressure. Turbochager speed is monitored for overspeed.	Clogged air filter leading to low intake pressure and under e overspeed, inadequate application of speed evaluation from raw signal, defective turbine speed sensor, sticking VGT	Check, clean or replace air filter, check application of speed evaluation, check for plausiblity of raw turbine speed signals (pulses), replace sensor, check VGT	Frequency: no lamp Lamp: no lamp	15944-31
EPCtlTrbSig	Turbocharger Irreversible overspeed detection	3F48-1F	Turbocharger control	The main task of the function is to detect VGT malfunctions and under failures in order to avoid further and ore severe damage of the turbo charger and he engine. The system errors that could be potentially dangerous regard anomalous behaviours of turbine speed, boost pressure and under t pressure. Turbochager speed is monitored for overspeed.	Clogged air filter leading to low intake pressure and under e overspeed, inadequate application of speed evaluation from raw signal, defective turbine speed sensor, sticking VGT	Check, clean or replace air filter, check application of speed evaluation, check for plausiblity of raw turbine speed signals (pulses), replace sensor, check VGT	Frequency: ON Lamp: Amber (SVS)	16200-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
EpmCaSI1ErrSig	Engine speed sensing: DFC for camshaft signal diagnosis - disturbed signal	4112-1F	Engine speed sensing	The Engine Position Management module is responsible for signals from camshaft and under haft sensor evaluation: angle and under determination, signal plausibility and under y are monitored by this module. Plausibility of number and under on of the camshaft edges detected by camshaft speed sensor is monitored here.	Cam Shaft speed signal not stable: - electrical intermittent open circuit - sensor not fixed correctly - electrical disturbances due to damaged isolation of wiring harness - electrical disturbances due to special electrical features	Check wiring, sensor installation and under functioning of camshaft phase sensor (evaluate raw signals) Check if sensor fixed correctly (should not be moveable),check wiring harness and under ts, check if electrical lines with high electric performance are additionally installed (components not validated by the vehicle manufacturer).	Frequency: no lamp Lamp: no lamp	16658-31
EpmCaSI1NoSig	Engine speed sensing: DFC for camshaft signal diagnosis - no signal	4212-1F	Engine speed sensing	The Engine Position Management module is responsible for signals from camshaft and under haft sensor evaluation: angle and under determination, signal plausibility and under y are monitored by this module. Loss of camshaft speed sensor signal is monitored here.	Camshaft speed sensor defective Wiring harness "open circuit" Camshaft sensor not mounted	Check if sensor mounted correctly Check wiring harness Check sensor functionality and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	16914-31
EpmCaSI1OfsErr	Engine speed sensing: DFC for camshaft offset angle exceeded	3312-1F	Engine speed sensing	The Engine Position Management module is responsible for signals from camshaft and under haft sensor evaluation: angle and under determination, signal plausibility and under y are monitored by this module. Plausibility between camshaft and under haft speed sensor signal is monitored here.	Camshaft sensor position deviates form crankshaft position: - camshaft mal positioned (e.g. tooth belt: 1 tooth skipped) - camshaft position wheel mal positioned (if adjustable) - camshaft sensor position mal positioned (if adjustable) - crankshaft signal mal positioned (same as camshaft)	Check correct positions of camshaft signal wheel and under haft signal wheel to piston position	Frequency: no lamp Lamp: no lamp	13074-31
EpmCrSErrSig	Engine speed sensing: Crankshaft signal disturbance	4412-1F	Engine speed sensing	The Engine Position Management module is responsible for signals from camshaft and under haft sensor evaluation: angle and under determination, signal plausibility and under y are monitored by this module. Plausibility of crankshaft speed signal is monitored here.	- High vibration of crank shaft signal sensor - Intermittent open circuit of sensor - Electrical disturbances due to damaged isolation of wiring harness - Electrical disturbances due external electromagnetic disturbances	Check if sensor fixed correctly (should not be moveable) Check wiring harness and under ts Check if electrical lines with high electric performance are additionally installed (components not validated by the vehicle manufacturer)	Frequency: ON Lamp: Amber (SVS)	17426-31
EpmCrSNoSig	Engine speed sensing: Crankshaft signal loss	4512-1F	Engine speed sensing	The Engine Position Management module is responsible for signals from camshaft and under haft sensor evaluation: angle and under determination, signal plausibility and under y are monitored by this module. Presence of crankshaft speed signal is monitored here.	Crank shaft speed sensor defect Crank shaft speed sensor not mounted correctly Crank shaft speed sensor not connected electrically, open circuit or short circuit.	Check if crank shaft speed sensor mounted correctly Check wiring harness to open/short circuit Check crank shaft speed sensor for correct function and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	17682-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
EpmEng NErr_0	Info: Engine speed too high (1st detection)	FACF-1F	Engine Overspeed	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Engine speed is monitored, if it is exceeding a defined threshold event is detected. Five failure paths are available which can cyclically collect the event.	Event detection, engine speed too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	64207-31
EpmEng NErr_1	Info: Engine speed too high (2nd detection)	FBCF-1F	Engine Overspeed	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Engine speed is monitored, if it is exceeding a defined threshold event is detected. Five failure paths are available which can cyclically collect the event.	Event detection, engine speed too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	64463-31
EpmEng NErr_2	Info: Engine speed too high (3rdt detection)	FCCF-1F	Engine Overspeed	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Engine speed is monitored, if it is exceeding a defined threshold event is detected. Five failure paths are available which can cyclically collect the event.	Event detection, engine speed too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	64719-31
EpmEng NErr_3	Info: Engine speed too high (4th detection)	FDCF-1F	Engine Overspeed	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Engine speed is monitored, if it is exceeding a defined threshold event is detected. Five failure paths are available which can cyclically collect the event.	Event detection, engine speed too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	64975-31
EpmEng NErr_4	Info: Engine speed too high (5th detection)	FECF-1F	Engine Overspeed	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Engine speed is monitored, if it is exceeding a defined threshold event is detected. Five failure paths are available which can cyclically collect the event.	Event detection, engine speed too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	65231-31
ETCtlIn rLopCt VMax	DPF Exhaust Temp control: Desired Temperature before Oxicat not reached during DPF Regeneration	153C-1F	DPF Exhaust Temp control	During DPF regeneration a closed loop control of the OxiCat downstream temperature (DPF upstream) takes place to reach the Regeneration temperature of DPF. The Temperature before Oxidation Cat is increased by variation of Air mass set point and under ion adjustment, incl post injection to bring the Oxicat into condition to burn the excessive fuel (Inner control loop). The Temperature after Oxidation catalyst is controlled by the (late) post injection quantity, which is varied depending on the temperature before Oxicat and he Difference between desired and eal temperature after Oxicat (outer control loop). Both control strategies are monitored for reaching the desired temperatures within a reasonable time. This failure path is set, if the temperature before Oxicat can not reached.	Difficult ambient conditions resp vehicle use (demanded temperature can not reached due to ambient conditions) Problems with temperature measurement before Oxicat (sensor defect or sensors before/after Oxicat interchanged) Problems with Air control or injection system	Check Temperature sensors Check air control system Check injection system	Frequency: no lamp Lamp: no lamp	5436-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ETCtlInrLopCtVMin	DPF Exhaust Temp control: Desired Temperature before Oxicat exceeded during DPF Regeneration	263C-1F	DPF Exhaust Temp control	During DPF regeneration a closed loop control of the OxiCat downstream temperature (DPF upstream) takes place to reach the Regeneration temperature of DPF. The Temperature before Oxidation Cat is increased by variation of Air mass set point and under ion adjustment, incl post injection to bring the Oxicat into condition to burn the excessive fuel (Inner control loop). The Temperature after Oxidation catalyst is controlled by the (late) post injection quantity, which is varied depending on the temperature before Oxicat and he Difference between desired and eal temperature after Oxicat (outer control loop). Both control strategies are monitored for reaching the desired temperatures within a reasonable time. This failure path is set, if the temperature before Oxicat can not reached.	Problems with temperature measurement before Oxicat (sensor defect or sensors before/after Oxicat interchanged) Problems with Air control or injection system	Check Temperature sensors Check air control system Check injection system	Frequency: no lamp Lamp: no lamp	9788-31
ETCtlInrLopRpT	DPF Exhaust Temp control: Control for increased temperature before Oxicat active for too long time (too long DPF Regeneration time)	373C-1F	DPF Exhaust Temp control	During DPF regeneration a closed loop control of the OxiCat downstream temperature (DPF upstream) takes place to reach the Regeneration temperature of DPF. The Temperature before Oxidation Cat is increased by variation of Air mass set point and under ion adjustment, incl post injection to bring the Oxicat into condition to burn the excessive fuel (Inner control loop). The Temperature after Oxidation catalyst is controlled by the (late) post injection quantity, which is varied depending on the temperature before Oxicat and he Difference between desired and eal temperature after Oxicat (outer control loop). Both control strategies are monitored for reaching the desired temperatures within a reasonable time. Normally the regeneration (and under ore the active time of the temperature control) is finished after a certain time, which is dependant on the temperature before Oxicat and he engine speed and under If the control is activated much longer, the risk of "infinite" regeneration is high and under ore a failure is stored.	Problems with temperature measurement before Oxicat (sensor defect or sensors before/after Oxicat interchanged) Problems with Air control or injection system	Check Temperature sensors Check air control system Check injection system	Frequency: no lamp Lamp: no lamp	14140-31
ETCtlOutrLopCtVMax	DPF Exhaust Temp control: Desired Temperature after Oxicat not reached during DPF Regeneration	183C-1F	DPF Exhaust Temp control	During DPF regeneration a closed loop control of the OxiCat downstream temperature (DPF upstream) takes place to reach the Regeneration temperature of DPF. The Temperature before Oxidation Cat is increased by variation of Air mass set point and under ion adjustment, incl post injection to bring the Oxicat into condition to burn the excessive fuel (Inner control loop). The Temperature after Oxidation catalyst is controlled by the (late) post injection quantity, which is varied depending on the temperature before Oxicat and he Difference between desired and eal temperature after Oxicat (outer control loop). Both control strategies are monitored for reaching the desired temperatures within a reasonable time. This failure path is set, if the temperature after Oxicat can not be reached.	Difficult ambient conditions resp vehicle use (demanded temperature can not reached due to ambient conditions) Problems with temperature measurement after Oxicat (sensor defect or sensors before/after Oxicat interchanged) Oxicat defective (does not burn fuel) Problems with injection system (too low post injection quantity)	Clean temperature sensors, upstream & donwstream. Then, perform Service Regeneration. If temperature not reached investigate possible exhaust line leak. If injection system related DFCs were present check injection system.	Frequency: no lamp Lamp: no lamp	6204-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ETCtlOutrLopCtVMin	DPF Exhaust Temp control: Desired Temperature after Oxicat exceeded during DPF Regeneration	293C-1F	DPF Exhaust Temp control	During DPF regeneration a closed loop control of the OxiCat downstream temperature (DPF upstream) takes place to reach the Regeneration temperature of DPF. The Temperature before Oxidation Cat is increased by variation of Air mass set point and under ion adjustment, incl post injection to bring the Oxicat into condition to burn the excessive fuel (Inner control loop). The Temperature after Oxidation catalyst is controlled by the (late) post injection quantity, which is varied depending on the temperature before Oxicat and he Difference between desired and eal temperature after Oxicat (outer control loop). Both control strategies are monitored for reaching the desired temperatures within a reasonable time. This failure path is set, if the temperature after Oxicat can not be reached.	Problems with temperature measurement after Oxicat (sensor measures much too high temp) Problems with injection system (too Ihigh post injection quantity)	Check Temperature sensors Check Oxicat (execute service regeneration --> does tempa fter Oxicat increase with activated Post injection?) Check injection system	Frequency: no lamp Lamp: no lamp	10556-31
ETCtlOutrLopRpT	DPF Exhaust Temp control: Control for increased temperature after Oxicat active for too long time (too long DPF Regeneration time)	3A3C-1F	DPF Exhaust Temp control	During DPF regeneration a closed loop control of the OxiCat downstream temperature (DPF upstream) takes place to reach the Regeneration temperature of DPF. The Temperature before Oxidation Cat is increased by variation of Air mass set point and under ion adjustment, incl post injection to bring the Oxicat into condition to burn the excessive fuel (Inner control loop). The Temperature after Oxidation catalyst is controlled by the (late) post injection quantity, which is varied depending on the temperature before Oxicat and he Difference between desired and eal temperature after Oxicat (outer control loop). Both control strategies are monitored for reaching the desired temperatures within a reasonable time. Normally the regeneration (and under ore the active time of the temperature control) is finished after a certain time, which is dependant on the temperature before Oxicat and he engine speed and under If the control is activated much longer, the risk of "infinite" regeneration is high and under ore a failure is stored.	Problems with temperature measurement after Oxicat (sensor defect or sensors before/after Oxicat interchanged) Oxicat defective (does not burn fuel) Problems with injection system (too low post injection quantity)	Check Temperature sensors Check Oxicat (execute service regeneration --> does tempa fter Oxicat increase with activated Post injection?) Check injection system	Frequency: no lamp Lamp: no lamp	14908-31
ExhFlpErr	High Side SCB error and ow side SCG error	61AC-1F	Exhaust Flap actuator	The Power stage of Exhaust Flap Actuator at High Side and t Low Side is monitored by Hardware for electric failures.	Short circuit of High Side wiring to external source or inside relay and under circuit of Low Side wiring to ground or inside Exhaust Flap Actuator at Low Side	Check of wirings or replacement of Exhaust Flap Actuator.	Frequency: no lamp Lamp: no lamp	25004-31
ExhFlpHSSCB	Exhaust Flap Actuator: Short Circuit to Battery error at the high side	62AC-1F	Exhaust Flap actuator	The Power stage of Exhaust Flap Actuator at High Side is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside relay	Check of wiring or replacement of relay	Frequency: no lamp Lamp: no lamp	25260-31
ExhFlpHSSCG	Exhaust Flap Actuator: Short Circuit to Ground error at the high side	73AC-1F	Exhaust Flap actuator	The Power stage of Exhaust Flap Actuator at High Side is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside relay	Check of wiring or replacement of relay	Frequency: no lamp Lamp: no lamp	29612-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ExhFlpL POL	Exhaust flap: No load error on power stage for Exhaust Flap Actuator	54AC-1F	Exhaust Flap actuator	The Power stage of Exhaust Flap Actuator is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Exhaust Flap Actuator	Check of wiring, replace Exhaust Flap Actuator	Frequency: no lamp Lamp: no lamp	21676-31
ExhFlpL POvrTemp	Exhaust Flap actuator: Over temperature error on power stage for Exhaust Flap Actuator	85AC-1F	Exhaust Flap actuator	The Power stage of Exhaust Flap Actuator is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	Check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	34220-31
ExhFlpL PSCB	Exhaust Flap actuator: Short circuit to battery error on power stage for Exhaust Flap Actuator	66AC-1F	Exhaust Flap actuator	The Power stage of Exhaust Flap Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to external source or defective exhaust flap actuator	Check of wiring or replace exhaust flap actuator	Frequency: no lamp Lamp: no lamp	26284-31
ExhFlpL PSCG	Exhaust Flap actuator: Short circuit to ground error on power stage for Exhaust Flap Actuator	77AC-1F	Exhaust Flap actuator	The Power stage of Exhaust Flap Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to ground or defective Exhaust Flap Actuator	First Check wiring, if no short circuit found replace Exhaust Flap Actuator	Frequency: no lamp Lamp: no lamp	30636-31
ExhFlpL SOL	Exhaust Flap Actuator: Open Load error at the low side	58AC-1F	Exhaust Flap actuator	The Power stage of Exhaust Flap Actuator at Low Side is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Exhaust Flap Actuator at Low Side	Check of wiring or replacement of Exhaust Flap Actuator	Frequency: no lamp Lamp: no lamp	22700-31
ExhFlpL SOvrTemp	Exhaust Flap Actuator: Over Temperature error at the low side	89AC-1F	Exhaust Flap actuator	The Power stage of Exhaust Flap Actuator at Low Side is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside Exhaust Flap Actuator at Low Side	Check battery voltage, wiring, power stage and under t Flap Actuator at Low Side	Frequency: no lamp Lamp: no lamp	35244-31
ExhFlpL SSCB	Exhaust Flap Actuator: Short Circuit to Battery error at the low side	6AAC-1F	Exhaust Flap actuator	The Power stage of Exhaust Flap Actuator at Low Side is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside relay	Check of wiring or replacement of relay	Frequency: no lamp Lamp: no lamp	27308-31
ExhFlpL SSCG	Exhaust Flap Actuator: Short Circuit to Ground error at the low side	7BAC-1F	Exhaust Flap actuator	The Power stage of Exhaust Flap Actuator at Low Side is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Exhaust Flap Actuator at Low Side	Check of wiring or replacement of Exhaust Flap Actuator	Frequency: no lamp Lamp: no lamp	31660-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ExhMgTHcMon	HC accumulated in the exhaust reached maximum tolerated level (too long running at idle)	9E8C-1F	None	This function realizes a component protection for the exhaust system in case of using the vehicle for a long time in idle speed and ith cold environmental temperatures. This causes the system to accumulate a lot of liquid HC mass in the exhaust system which could burn up when engine is driven under load again and under exhaust system to catch fire or even to destroy the vehicle. Threshold for fault detection should be applied so that a warning or an engine shut down is triggered before HC accumulation becomes dangerous.	Engine driven a long time at idle condition (low temperatures)	Warm up engine and under t by driving under load	Frequency: ON Lamp: Amber (SVS)	40588-31
ExhMgTHcMonWarn	HC accumulated in the exhaust reached second warning level	31E9-1F	None	This function realizes a component protection for the exhaust system in case of using the vehicle for a long time in idle speed and ith cold environmental temperatures. This causes the system to accumulate a lot of liquid HC mass in the exhaust system which could burn up when engine is driven under load again and under exhaust system to catch fire or even to destroy the vehicle. Threshold for fault detection should be applied so that a warning or an engine shut down is triggered before HC accumulation becomes dangerous.	Engine driven a long time at idle condition (low temperatures)	Warm up engine and under t by driving under load	Frequency: no lamp Lamp: no lamp	12777-31
ExhTMonPlaus_0	Oxicat Temp Monitoring: deviation from other sensors at cold start	3D1C-1F	Oxicat Temp Monitoring	Several temperature sensors are compared to each other at cold start. If the Exhaust Temperature before Oxicat differs to the others more than a maximum allowed value, and he others are all within the limits between each others, the Exhaust Temperature before Oxicat is not plausible.	Exhaust Temperature Sensor before Oxicat measures wrong values	Note: Too fast ambient temperature change, e.g. vehicle (and under ted temperature sensor) exposed to sun shine after very cold night, or if the sensor is in a "warm air stream" (e.g. by additional engines like a cooling compressor for a cold compartment which runs also during vehicle stand under or an external source like a "exhaust stream" of a builidng climatisation) can cause this failure, if the ambient of this sensor is not equal to the "normal" ambient! --> in this case no action needed! Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	15644-31
ExhTMonPlaus_1	Oxicat Temp Monitoring: deviation from other sensors at cold start	3E1C-1F	Oxicat Temp Monitoring	Several temperature sensors are compared to each other at cold start. If the Exhaust Temperature before DPF differs to the others more than a maximum allowed value, and he others are all within the limits between each others, the Exhaust Temperature before DPF is not plausible	Exhaust Temperature Sensor before DPF measures wrong values	Note: Too fast ambient temperature change, e.g. vehicle (and under ted temperature sensor) exposed to sun shine after very cold night, or if the sensor is in a "warm air stream" (e.g. by additional engines like a cooling compressor for a cold compartment which runs also during vehicle stand under or an external source like a "exhaust stream" of a builidng climatisation) can cause this failure, if the ambient of this sensor is not equal to the "normal" ambient! --> in this case no action needed! Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	15900-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ExhTMonPlaus_2	DPF Temp Monitoring: deviation from other sensors at cold start	3F1C-1F	DPF Temp Monitoring	Several temperature sensors are compared to each other at cold start. If the Exhaust Temperature after DPF differs to the others more than a maximum allowed value, and he others are all within the limits between each others, the Exhaust Temperature after DPF is not plausible	Exhaust Temperature Sensor after DPF measures wrong values	Note: Too fast ambient temperature change, e.g. vehicle (and under ted temperature sensor) exposed to sun shine after very cold night, or if the sensor is in a "warm air stream" (e.g. by additional engines like a cooling compressor for a cold compartment which runs also during vehicle stand under or an external source like a "exhaust stream" of a builidng climatisation) can cause this failure, if the ambient of this sensor is not equal to the "normal" ambient! --> in this case no action needed! Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	16156-31
ExhTMonPlaus_3	SCR Temp monitoring: deviation from other sensors at cold start	312C-1F	SCR Temp monitoring	Several temperature sensors are compared to each other at cold start. If the Exhaust Temperature after DPF differs to the others more than a maximum allowed value, and he others are all within the limits between each others, the Exhaust Temperature after DPF is not plausible	Exhaust Temperature Sensor after DPF measures wrong values	Note: Too fast ambient temperature change, e.g. vehicle (and under ted temperature sensor) exposed to sun shine after very cold night, or if the sensor is in a "warm air stream" (e.g. by additional engines like a cooling compressor for a cold compartment which runs also during vehicle stand under or an external source like a "exhaust stream" of a builidng climatisation) can cause this failure, if the ambient of this sensor is not equal to the "normal" ambient! --> in this case no action needed! Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	12588-31
ExhTMonPlaus_4	Exhaust Temp monitoring: deviation from other sensors at cold start	322C-1F	Exhaust Temp monitoring	Several temperature sensors are compared to each other at cold start. If the Exhaust Temperature at exhaust collector inlet differs to the others more than a maximum allowed value, and he others are all within the limits between each others, the Exhaust Temperature at exhaust collector inlet is not plausible	Exhaust Temperature Sensor at exhaust collector inlet measures wrong values	Note: Too fast ambient temperature change, e.g. vehicle (and under ted temperature sensor) exposed to sun shine after very cold night, or if the sensor is in a "warm air stream" (e.g. by additional engines like a cooling compressor for a cold compartment which runs also during vehicle stand under or an external source like a "exhaust stream" of a builidng climatisation) can cause this failure, if the ambient of this sensor is not equal to the "normal" ambient! --> in this case no action needed! Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	12844-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ExhTMonPlaus_5	Exhaust Temp monitoring: Diagnostic Fault check array for cold start condition of exhaust--gas temperature	332C-1F	Exhaust Temp monitoring	Several temperature sensors are compared to each other at cold start. If the Exhaust Temperature at exhaust collector inlet differs to the others more than a maximum allowed value, and he others are all within the limits between each others, the Exhaust Temperature at exhaust collector inlet is not plausible	Exhaust Temperature Sensor at exhaust collector inlet measures wrong values	Note: Too fast ambient temperature change, e.g. vehicle (and under ted temperature sensor) exposed to sun shine after very cold night, or if the sensor is in a "warm air stream" (e.g. by additional engines like a cooling compressor for a cold compartment which runs also during vehicle stand under or an external source like a "exhaust stream" of a builidng climatisation) can cause this failure, if the ambient of this sensor is not equal to the "normal" ambient! --> in this case no action needed! Check wiring and under tors for correct contact (corrosion). Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	13100-31
ExhTMonPlaus Gen	Exhaust gas temperature sensor: two or more temp sensors not plausible after long stand under time	342C-1F	Exhaust Temp monitoring	Several temperature sensors are compared to each other at cold start. If more than one sensor deviates from the others, it can not be defined, which sensor is defective, therefore a general failure is activated.	Several sensors have wrong measurement values.	After long stand under time (10 hours), compare coolant temperature with exhaust gas temperatures. All temperatures must be within 10°C. Replace sensor which is outside of this tolerance.	Frequency: no lamp Lamp: no lamp	13356-31
ExhTMonPlaus Pos1	Oxicat Temp monitoring: Diagnostic Fault check for Model based plausibility check of first exhaust-gas temperature	352C-1F	Oxicat Temp Monitoring	The measured Exhaust Temperature before Oxicat is compared with the model based calculated (depending engine speed, load and under t conditions) Exhaust Temperature before Oxicat If there is a too big difference, the sensor is not reliable.	Bad electrical wiring (e.g. corroded connector or damaged isolation of wire) or gain offset of sensor for Exhaust Temperature before Oxicat	Check wiring and under tors for correct isolation / contact Check sensor and under e it, if necessary Note: failure can also be caused, if the real exhaust temperature differes from the calculated one due to a failure in the engine like: wrong injection pressure, wrong injection begin wrong EGR rate	Frequency: ON Lamp: Amber (SVS)	13612-31
ExhTMonPlaus Pos2	DPF Temp Monitoring: Diagnostic Fault check for Model based plausibility check of secondexhaust--gas temperature	362C-1F	DPF Temp Monitoring	Exhaust Temperature before DPF is compared with the model based calculated (depending engine speed, load and under t conditions) Exhaust Temperature after DPF. If there is a too big difference, the sensor is not reliable.	Bad electrical wiring (e.g. corroded connector or damaged isolation of wire) or gain offset of sensor for Exhaust Temperature before DPF	Check wiring and under tors for correct isolation / contact Check sensor and under e it, if necessary Note: failure can also be caused, if the real exhaust temperature differes from the calculated one due to a failure in the engine like: wrong injection pressure, wrong injection begin wrong EGR rate Therefore check also the engine system, if the failure can not be repaired easily.	Frequency: ON Lamp: Amber (SVS)	13868-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ExhTMonPlausPos3	SCR Temp monitoring: Diagnostic Fault check for Model based plausibility check of third exhaust--gas temperature	372C-1F	SCR Temp monitoring	Exhaust Temperature after DPF is compared with the model based calculated (depending engine speed, load and under t conditions) Exhaust Temperature at exhaust collector inlet If there is a too big difference, the sensor is not reliable.	Bad electrical wiring (e.g. corroded connector or damaged isolation of wire) or gain offset of sensor for Exhaust Temperature after DPF	Check wiring and under tors for correct isolation / contact Check sensor and under e it, if necessary Note: failure can also be caused, if the real exhaust temperature differes from the calculated one due to a failure in the engine like: wrong injection pressure, wrong injection begin wrong EGR rate Therefore check also the engine system, if the failure can not be repaired easily.	Frequency: ON Lamp: Amber (SVS)	14124-31
ExhTMonPlausPos4	Exhaust Temp monitoring: Diagnostic Fault check for Model based plausibility check of first exhaust-gas temperature	382C-1F	Exhaust Temp monitoring	Exhaust Temperature after DPF is compared with the model based calculated (depending engine speed, load and under t conditions) Exhaust Temperature at exhaust collector inlet If there is a too big difference, the sensor is not reliable.	Bad electrical wiring (e.g. corroded connector or damaged isolation of wire) or gain offset of sensor for Exhaust Temperature after DPF	Check wiring and under tors for correct isolation / contact Check sensor and under e it, if necessary Note: failure can also be caused, if the real exhaust temperature differes from the calculated one due to a failure in the engine like: wrong injection pressure, wrong injection begin wrong EGR rate Therefore check also the engine system, if the failure can not be repaired easily.	Frequency: no lamp Lamp: no lamp	14380-31
ExhTMonPlausPos5	Exhaust Temp monitoring: Diagnostic Fault check for Model based plausibility check of secondexhaust--gas temperature	392C-1F	Exhaust Temp monitoring	Exhaust Temperature at exhaust collector inlet is compared with the model based calculated (depending engine speed, load and under t conditions) Exhaust Temperature after DPF. If there is a too big difference, the sensor is not reliable.	Bad electrical wiring (e.g. corroded connector or damaged isolation of wire) or gain offset of sensor for Exhaust Temperature at exhaust collector inlet	Check wiring and under tors for correct isolation / contact Check sensor and under e it, if necessary Note: failure can also be caused, if the real exhaust temperature differes from the calculated one due to a failure in the engine like: wrong injection pressure, wrong injection begin wrong EGR rate Therefore check also the engine system, if the failure can not be repaired easily.	Frequency: no lamp Lamp: no lamp	14636-31
ExhTMonPlausPos6	Exhaust Temp monitoring: Diagnostic Fault check for Model based plausibility check of third exhaust--gas temperature	3A2C-1F	Exhaust Temp monitoring	Exhaust Temperature at exhaust collector inlet is compared with the model based calculated (depending engine speed, load and under t conditions) Exhaust Temperature after DPF. If there is a too big difference, the sensor is not reliable.	Bad electrical wiring (e.g. corroded connector or damaged isolation of wire) or gain offset of sensor for Exhaust Temperature at exhaust collector inlet	Check wiring and under tors for correct isolation / contact Check sensor and under e it, if necessary Note: failure can also be caused, if the real exhaust temperature differes from the calculated one due to a failure in the engine like: wrong injection pressure, wrong injection begin wrong EGR rate Therefore check also the engine system, if the failure can not be repaired easily.	Frequency: no lamp Lamp: no lamp	14892-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
FanDIO OL	Fan digital: Open Load error on the output power stage	5133-1F	Cooling fan control	The Power stage of Fan Actuator Digital output is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Fan Digital output Actuator	Check of wiring, replace Fan digital Actuator	Frequency: no lamp Lamp: no lamp	20787-31
FanDIO OvrTemp	Fan digital: Over Temperature error on the output power stage	8233-1F	Cooling fan control	The Power stage of Fan Actuator Digital output is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	33331-31
FanDIO SCB	Fan digital: Short Circuit to battery error on the output power stage	6333-1F	Cooling fan control	The Power stage of Fan Actuator Digital output is monitored by Hardware for electric failures.	Short circuit of wiring to external source or defective fan actuator	Check of wiring or replace fan acutator	Frequency: no lamp Lamp: no lamp	25395-31
FanDIO SCG	Fan digital: Short Circuit to Ground error on the output power stage	7433-1F	Cooling fan control	The Power stage of Fan Actuator Digital output is monitored by Hardware for electric failures.	Short circuit of wiring to ground or defective fan actuator	Check of wiring or replace fan actuator	Frequency: no lamp Lamp: no lamp	29747-31
FanPWM OL	Fan PWM Actuator: Open load error	5533-1F	Cooling fan control	The Power stage of Fan PWM Actuator is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Fan PWM Actuator	Check of wiring, replace Fan PWM Actuator	Frequency: ON Lamp: Amber (SVS)	21811-31
FanPWM OvrTemp	Fan PWM Actuator: Over temperature error	8633-1F	Cooling fan control	The Power stage of Fan PWM Actuator is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside Fan PWM Actuator	Check battery voltage, wiring, power stage and an PWM Actuator	Frequency: ON Lamp: Amber (SVS)	34355-31
FanPWM SCB	Fan PWM Actuator: Short Circuit to Battery error	6733-1F	Cooling fan control	The Power stage of Fan PWM Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to battery or inside Fan PWM Actuator	Check of wiring, replace Fan PWM Actuator	Frequency: ON Lamp: Amber (SVS)	26419-31
FanPWM SCG	Fan PWM Actuator: Short Circuit to Ground error	7833-1F	Cooling fan control	The Power stage of Fan PWM Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Fan PWM Actuator	Check of wiring, replace Fan PWM Actuator	Frequency: ON Lamp: Amber (SVS)	30771-31
FanSpd LonPer	Fan speed sensor: signal long period fault path (fan speed not measurable)	4933-1F	Cooling fan control	Fan speed sensor signal is monitored for plausibility. Speed is measured using time interval between pulses, when time interval is too long, fan is stopped or sensor is defective or maladjusted. No fan speed sensor installed in this configuration.	Fan not running, short circuit in sensor wiring or sensor defective or not correctly mounted	Check if fan is running, check wiring and under ng of fan speed sensor, replace sensor	Frequency: ON Lamp: Amber (SVS)	18739-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
FanSpd SRCHigh	Fan speed sensor: Signal range check high	1A33-1F	Cooling fan control	Fan speed sensor signal is monitored for plausibility. Speed is measured using time interval between pulses. No fan speed sensor installed in this configuration.	Fan overpeeding? wrong sensor measurement?	Check fan integrity, check fan sensor wiring and under ng	Frequency: ON Lamp: Amber (SVS)	6707-31
FanSpd SRCLow	Fan speed sensor: Signal range check low	2B33-1F	Cooling fan control	Fan speed sensor signal is monitored for plausibility. Speed is measured using time interval between pulses. No fan speed sensor installed in this configuration.	Fan blocked or sensor not measuring correctly	Check fan, check fan sensor wiring and under ng	Frequency: ON Lamp: Amber (SVS)	11059-31
FBCMon_0	Fuel Balancing Control: fuel correction for Injector of cylinder 1 outside tolerance range	41A5-1F	Injector	A cylinder specific Fuel Balancing Correction (FBC) monitor is performed, if fuel quantity correction is outside tolerance range a failure is detected.	Injector of Cylinder 1 fuel introduction outside tolerance range	Replace fuel injector of cylinder 1.	Frequency: no lamp Lamp: no lamp	16805-31
FBCMon_1	Fuel Balancing Control: fuel correction for Injector of cylinder 5 outside tolerance range	42A5-1F	Injector	A cylinder specific Fuel Balancing Correction (FBC) monitor is performed, if fuel quantity correction is outside tolerance range a failure is detected.	Injector of Cylinder 5 fuel introduction outside tolerance range	Replace fuel injector of cylinder 5.	Frequency: no lamp Lamp: no lamp	17061-31
FBCMon_2	Fuel Balancing Control: fuel correction for Injector of cylinder 3 outside tolerance range	43A5-1F	Injector	A cylinder specific Fuel Balancing Correction (FBC) monitor is performed, if fuel quantity correction is outside tolerance range a failure is detected.	Injector of Cylinder 3 fuel introduction outside tolerance range	Replace fuel injector of cylinder 3.	Frequency: no lamp Lamp: no lamp	17317-31
FBCMon_3	Fuel Balancing Control: fuel correction for Injector of cylinder 6 outside tolerance range	44A5-1F	Injector	A cylinder specific Fuel Balancing Correction (FBC) monitor is performed, if fuel quantity correction is outside tolerance range a failure is detected.	Injector of Cylinder 6 fuel introduction outside tolerance range	Replace fuel injector of cylinder 6.	Frequency: no lamp Lamp: no lamp	17573-31
FBCMon_4	Fuel Balancing Control: fuel correction for Injector of cylinder 2 outside tolerance range	45A5-1F	Injector	A cylinder specific Fuel Balancing Correction (FBC) monitor is performed, if fuel quantity correction is outside tolerance range a failure is detected.	Injector of Cylinder 2 fuel introduction outside tolerance range	Replace fuel injector of cylinder 2.	Frequency: no lamp Lamp: no lamp	17829-31
FBCMon_5	Fuel Balancing Control: fuel correction for Injector of cylinder 4 outside tolerance range	46A5-1F	Injector	A cylinder specific Fuel Balancing Correction (FBC) monitor is performed, if fuel quantity correction is outside tolerance range a failure is detected.	Injector of Cylinder 4 fuel introduction outside tolerance range	Replace fuel injector of cylinder 4.	Frequency: no lamp Lamp: no lamp	18085-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
FlFilClogMaiFil	Fuel FIlter: Main fuel filter clogged (mild clogging)	1AB5-1F	Fuel FIlter	The functionality detects fuel filter clogging evaluating differntial pressure over main fuel filter	Main fuel filter is clogged	Clean or replace main fuel filter	Frequency: no lamp Lamp: no lamp	6837-31
FlFilClogMaiFillmdt	Fuel FIlter: Main fuel filter clogged (severe clogging)	19B5-1F	Fuel FIlter	The functionality detects fuel filter clogging evaluating differntial pressure over main fuel filter	Main fuel filter is clogged	Clean or replace main fuel filter	Frequency: no lamp Lamp: no lamp	6581-31
FlFilClogPreFil	Fuel Filter: Pre filter is clogged	31E5-1F	Fuel FIlter	The functionality detects fuel prefilter clogging evaluating fuel pressure after pre filter	Fuel pre filter is clogged	Clean or replace fuel pre filter	Frequency: no lamp Lamp: no lamp	12773-31
FlFltCtlClogDet	Fuel Filter is clogged (sensor switch active)	4BB5-1F	Fuel FIlter	This function evaluates the fuel filter clog detection switch. The switch evaluates the differential pressure over the fuel filter. If that exceeds a certain value, the switch is operated and under tes a clogged fuel filter. Digital signal evaluation is processed by this function. Additionally an event counter is implemented which counts how many times the fuel filter has suffered clogging.	Fuel filter clogged	CLean or replace fuel filter	Frequency: no lamp Lamp: no lamp	19381-31
FlFltCtlClogDetPlaus	Fuel FIlter Clog Switch blocked in clogged status	4CB5-1F	Fuel FIlter	This function evaluates the fuel filter clog detection switch. The switch evaluates the differential pressure over the fuel filter. If that exceeds a certain value, the switch is operated and under tes a clogged fuel filter. Digital signal evaluation is processed by this function. Additionally an event counter is implemented which counts how many times the fuel filter has suffered clogging.	Defective filter clogging switch, blocked in active position	Check and under e filter clog switch	Frequency: ON Lamp: Amber (SVS)	19637-31
FlFltHtOL	Fuel filter heater: No load error in power stage of fuel filter heating	51B5-1F	Fuel filter heater	The Power stage of Fuel Filter heater is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective fuel filter heater.	Check of wiring or replace fuel filter heater	Frequency: ON Lamp: Amber (SVS)	20917-31
FlFltHtOvrTemp	Fuel filter heater: Over Temperature error at ECM power stage	82B5-1F	Fuel filter heater	The Power stage of Fuel Filter heater is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	Check load and under , check wiring, replace ECU	Frequency: ON Lamp: Amber (SVS)	33461-31
FlFltHtSCB	Fuel filter heater: Short circuit to battery error in power stage of fuel filter heating	63B5-1F	Fuel filter heater	The Power stage of Fuel Filter heater is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside fuel filter heater	Check of wiring, replace fuel filter heater	Frequency: ON Lamp: Amber (SVS)	25525-31
FlFltHtSCG	Fuel filter heater: Short circuit to ground error in power stage of fuel filter heating	74B5-1F	Fuel filter heater	The Power stage of Fuel Filter heater is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside fuel filter heater	Check of wiring, replace fuel filter heater	Frequency: ON Lamp: Amber (SVS)	29877-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
FlFWLvlSRCMax	Water in Fuel Filter Sensor: Signal range check high	1115-1F	Water in Fuel determination	The Water Level in Fuel Filter Sensor is connected via Hardware pin. Digital signal is configured. No signal range check is performed.	Water Level in Fuel FIlter Sensor defective or short circuit to battery	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	4373-31
FlFWLvlSRCMin	Water in Fuel Filter Sensor: Signal range check low	2215-1F	Water in Fuel determination	The Water Level in Fuel Filter Sensor is connected via Hardware pin. Digital signal is configured. No signal range check is performed.	Water Level in Fuel FIlter Sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	8725-31
FllnOilDet	Fuel in oil detection	4315-1F	Oil Lubricant	Diluition of oil with fuel is monitored	Oill diluition with fuel exceeded defined limit	Check and under e oil	Frequency: ON Lamp: Amber (SVS)	17173-31
FlSys_WtDet	Water in Fuel Determination: Water in Fuel	4415-1F	Water in Fuel determination	The Water in fuel detection is carried out with a digital sensor placed in fuel filter	Water in fuel filter Sensor defective	Clean fuel filter filter Check Sensor	Frequency: BLINK Lamp: Red (SVS)	17429-31
FlSys_WtDet_SensChk	Water in fuel Sensor defective	4F15-1F	Water in Fuel determination	At key-on, the fuel filter electronics performs a self-test, setting the WaterInFuel signal to the alarm condition for a certain time Ttest (Ttest = 3 sec. ± 20 %) to perform a connection check.	Water in Fuel Sensor defective	Check and under e Water in Fuel Sensor	Frequency: ON Lamp: Amber (SVS)	20245-31
FlSysTnkLo	Fuel tank level: fuel tank below critical level or danger of an air contaminated hydraulic system	42E1-1F	Fuel tank level	With low fuel level in tank it is possible that there is air in the fuel system. To prevent wrong failure recognition of fuel system, different monitoring and under l parameters for the fuel rail pressure control are used in the case of potential air. Potential air is recognised with this failure path.	Empty Fuel tank Wrong signal of Tank level sensor	Fill up fuel tank Check fuel level sensor and ts wiring (additional resistance on connectors...)	Frequency: ON Lamp: Amber (SVS)	17121-31
FlWLmpOL	Water in Fuel Lamp: Open Laod error	55B5-1F	Water in fuel lamp	The Power stage of Water in Fuel Lamp is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Water in Fuel Lamp	Check of wiring, replace Water in Fuel Lamp	Frequency: no lamp Lamp: no lamp	21941-31
FlWLmpOvrTemp	Water in Fuel Lamp: Over Temperature error	86B5-1F	Water in fuel lamp	The Power stage of Water in Fuel Lamp is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside Water in Fuel Lamp	Check battery voltage, wiring, power stage and under in Fuel Lamp	Frequency: no lamp Lamp: no lamp	34485-31
FlWLmpSCB	Water in Fuel Lamp: Short circuit to battery	67B5-1F	Water in fuel lamp	The Power stage of Water in Fuel Lamp is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside Water in Fuel Lamp	Check of wiring or replacement of Water in Fuel Lamp	Frequency: no lamp Lamp: no lamp	26549-31
FlWLmpSCG	Water in Fuel Lamp: Short circuit to ground	78B5-1F	Water in fuel lamp	The Power stage of Water in Fuel Lamp is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Water in Fuel Lamp	Check of wiring or replacement of Water in Fuel Lamp	Frequency: no lamp Lamp: no lamp	30901-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
FMOqCorOBDMax	Injector Adjustment: Injection quantity correction value too high	17A5-1F	Injector Adjustement	The function calculates a correction to the fuel quantity. Input variables are the calculated injected fuel mass as well as the measured lambda value and he measured air mass.	Calculated lambda may be wrong: air mass meter defect or injectors defect. Measured lambda-value wrong, check lambda sensor.	Check air mass meter, injectors and under sensor.	Frequency: no lamp Lamp: no lamp	6053-31
FMOqCorOBDMin	Injector Adjustment: Injection quantity correction value too low	28A5-1F	Injector Adjustement	The function calculates a correction to the fuel quantity. Input variables are the calculated injected fuel mass as well as the measured lambda value and he measured air mass.	Calculated lambda may be wrong: air mass meter defect or injectors defect. Measured lambda-value wrong, check lambda sensor.	Check air mass meter, injectors and under sensor.	Frequency: no lamp Lamp: no lamp	10405-31
FOCasePressHigh	Crankcase pressure:Crankcase pressure too high: Blow-by pressure exceeded admissible threshold	11C3-1F	Crankcase pressure	If the oil level reaches the blow by filter the pressure increases strongly beacuse the filter is bloked and he blow by gas cumulates in the crankcase. This can happen if there is an internal leakage of fuel inside the engine. The amount of fuel at which blocking of the filter happens is depending on the inclination of the engine.	Crankcase pressure too high, possible fuel in oil diluition, rail leakage inside engine or untight pistons rings.	Check oil level, check presence of fuel in oil, replace oil. Check rail for leakage, check cylinder compression	Frequency: no lamp Lamp: no lamp	4547-31
FOReacExpected	Crankcase Pressure: INFO failure, pressure sank after venting valve opening	12C3-1F	Crankcase pressure	When oil level is increased too much because of fuel in oil diluition, pressure in the crankcase is increased and under ally overcomes the tightness of the blow-by filter. To avoid that, a venting valve in the crankcase electrically controlledl can be opened and failure message reported. When crankcase pressure is too high during engine running, venting valve is opened, the pressure variation after this intervention is monitored after a first and under delayed time interval.	INFO Failure: the opening of venting valve produced expected reaction, cranckase pressure did sink	INFO Failure no intervention necessary, lead fault FOCasePressHigh should be investiagted	Frequency: no lamp Lamp: no lamp	4803-31
FOReacExpectedDelay	Crankcase Pressure: INFO failure, pressure sank after venting valve opening and under d time interval	43C3-1F	Crankcase pressure	When oil level is increased too much because of fuel in oil diluition, pressure in the crankcase is increased and under ally overcomes the tightness of the blow-by filter. To avoid that, a venting valve in the crankcase electrically controlledl can be opened and failure message reported. When crankcase pressure is too high during engine running, venting valve is opened, the pressure variation after this intervention is monitored after a first and under delayed time interval.	INFO Failure: the opening of venting valve produced expected reaction, cranckase pressure did sink	INFO Failure no intervention necessary, lead fault FOCasePressHigh should be investiagted	Frequency: no lamp Lamp: no lamp	17347-31
FOReacNOTExpected	Crankcase Pressure: Pressure did not sink after venting valve opening	44C3-1F	Crankcase pressure	When oil level is increased too much because of fuel in oil diluition, pressure in the crankcase is increased and under ally overcomes the tightness of the blow-by filter. To avoid that, a venting valve in the crankcase electrically controlledl can be opened and failure message reported. When crankcase pressure is too high during engine running, venting valve is opened, the pressure variation after this intervention is monitored.	The opening of venting valve did not produce expected reaction, cranckase pressure did not sink to normal value, venting valve blocked or oil level critically high	Crankcase pressure critical, check oil level, check presence of fuel in oil, check venting valve	Frequency: no lamp Lamp: no lamp	17603-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
FORefill	Crankcase Pressure; pressure sank and he reincreased with venting valve open	45C3-1F	Crankcase pressure	When oil level is increased too much because of fuel in oil diluition, pressure in the crankcase is increased and under ally overcomes the tightness of the blow-by filter. To avoid that, a venting valve in the crankcase electrically controlledl can be opened and failure message reported. When crankcase pressure is too high during engine running, venting valve is opened, if the pressure sinks to normal value after this intervention pressure variation is still monitored to check if it increases again	The engine is most probably filled up with oil, venting valve is clogged	Check oil level, check presence of fuel in oil	Frequency: no lamp Lamp: no lamp	17859-31
FORefill Delay	Crankcase Pressure; pressure sank and he reincreased with venting valve open after delay time	46C3-1F	Crankcase pressure	When oil level is increased too much because of fuel in oil diluition, pressure in the crankcase is increased and under ally overcomes the tightness of the blow-by filter. To avoid that, a venting valve in the crankcase electrically controlledl can be opened and failure message reported. When crankcase pressure is too high during engine running, venting valve is opened, if the pressure sinks to normal value after this intervention pressure variation is still monitored to check if it increases again	The engine is most probably filled up with oil, venting valve is clogged	Check oil level, check presence of fuel in oil	Frequency: no lamp Lamp: no lamp	18115-31
FOSens NotPlaus	Crankcase pressure: value not plausible at engine start	3DA3-1F	Crankcase pressure	When oil level is increased too much because of fuel in oil diluition, pressure in the crankcase is increased and under ally overcomes the tightness of the blow-by filter. Plausibility of crankcase pressure at start is checked here.	Crankcase pressure sensor value not plausible	Check crankcase pressure sensor	Frequency: no lamp Lamp: no lamp	15779-31
FOValv NotPlaus	Crankcase pressure: Blow By Venting valve not opening during test	3EA3-1F	Crankcase pressure	When oil level is increased too much because of fuel in oil diluition, pressure in the crankcase is increased and under ally overcomes the tightness of the blow-by filter. To avoid that, a venting valve in the crankcase electrically controlledl can be opened and failure message reported. After engine start a plausibility check of blow by valve is performed, the valve is shortly opened and under ase pressure decrease is monitored.	Blow By Venting valve not opening	Valve could be mechanically blocked, electrically disconnected or defective. Check wiring, check blow by venting valve.	Frequency: no lamp Lamp: no lamp	16035-31
FrmNOxSensLmbdDef	NOx Sensor (CAN): NOx Sensor detects not plausible values for Lambda value	3DAE-1F	NOx Sensor (CAN)	The NOx Sensor itself checks if the Signals are plausible or not and under the state to the ECM by CAN message: bit0: Sensor Supply (0== in range; 1== out of range) bit1: Heater Temperature (0== NOK; 1==OK) bit2: Lambda binary (0== NOK; 1==OK) bit3: Lambda linerar (0== NOK; 1==OK) bit4: NOx signal (0== NOK; 1==OK) bit5: Self diagnosis (0 == not active; 1== active) bit 6,7: not used This failure path is set, if the NOx Sensor sends the message "Lambda not Plausible".	Short Circuit or Open wire in wiring harness Defective NOx Sensor	Check wiring harness Check NOx Sensor Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk tha performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periodes of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readinsess state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	15790-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
FrmNOxSensNOx	NOx Sensor (CAN): NOx Sensor detects not plausible values (NOx or Lambda)	319E-1F	NOx Sensor (CAN)	The NOx Sensor itself checks if the Signals are plausible or not and under the state to the ECM by CAN message: bit0: Sensor Supply (0== in range; 1== out of range) bit1: Heater Temperature (0== NOK; 1==OK) bit2: Lambda binary (0== NOK; 1==OK) bit3: Lambda linerar (0== NOK; 1==OK) bit4: NOx signal (0== NOK; 1==OK) bit5: Self diagnosis (0 == not active; 1== active) bit 6,7: not used This failure path is set, if the NOx Sensor sends the message "Lambda not Plausible" or "NOx not plausible".	Short Circuit or Open wire in sensor internal wiring harness Defective NOx Sensor	Replace NOx Sensor Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk tha performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periodes of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readinsess state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: ON Lamp: Amber (SVS)	12702-31
FrmNOxSensNOxDef	NOx Sensor (CAN): NOx Sensor detects not plausible values for NOx	3EAE-1F	NOx Sensor (CAN)	The NOx Sensor itself checks if the Signals are plausible or not and under the state to the ECM by CAN message: bit0: Sensor Supply (0== in range; 1== out of range) bit1: Heater Temperature (0== NOK; 1==OK) bit2: Lambda binary (0== NOK; 1==OK) bit3: Lambda linerar (0== NOK; 1==OK) bit4: NOx signal (0== NOK; 1==OK) bit5: Self diagnosis (0 == not active; 1== active) bit 6,7: not used This failure path is set, if the NOx Sensor sends the message "Lambda not Plausible" or "NOx not plausible".	Short Circuit or Open wire in sensor internal wiring harness Defective NOx Sensor	Replace NOx Sensor Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk tha performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periodes of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readinsess state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: ON Lamp: Amber (SVS)	16046-31
FrmNOxSensSupply	NOx Sensor (CAN): NOx Sensor detects incorrect supply	478E-1F	NOx Sensor (CAN)	The NOx Sensor itself checks if the Signals are plausible or not and under the state to the ECM by CAN message: bit0: Sensor Supply (0== in range; 1== out of range) bit1: Heater Temperature (0== NOK; 1==OK) bit2: Lambda binary (0== NOK; 1==OK) bit3: Lambda linerar (0== NOK; 1==OK) bit4: NOx signal (0== NOK; 1==OK) bit5: Self diagnosis (0 == not active; 1== active) bit 6,7: not used This failure path is set, if the NOx Sensor sends the message "sensor supply not OK"	Defective NOx sensor supply	Check wiring harness, vehicle supply voltage. If failure is still present replace the sensor.	Frequency: ON Lamp: Amber (SVS)	18318-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
FrmNOxSensTemp	NOx Sensor (CAN): NOx Sensor temperature out of range	488E-1F	NOx Sensor (CAN)	The NOx Sensor itself checks if the Signals are plausible or not and under the state to the ECM by CAN message: bit0: Sensor Supply (0== in range; 1== out of range) bit1: Heater Temperature (0== NOK; 1==OK) bit2: Lambda binary (0== NOK; 1==OK) bit3: Lambda linerar (0== NOK; 1==OK) bit4: NOx signal (0== NOK; 1==OK) bit5: Self diagnosis (0 == not active; 1== active) bit 6,7: not used This failure path is set, if the NOx Sensor sends the message "sensor temperature not OK"	Defective NOx sensor heating	Replace NOx Sensor	Frequency: no lamp Lamp: no lamp	18574-31
FrmNOxSensUsLmbdDef	NOx Sensor (CAN): NOx Sensor upstream detects not plausible values for Lambda value	3FAE-1F	NOx Sensor (CAN)	The NOx Sensor itself checks if the Signals are plausible or not and under the state to the ECM by CAN message: bit0: Sensor Supply (0== in range; 1== out of range) bit1: Heater Temperature (0== NOK; 1==OK) bit2: Lambda binary (0== NOK; 1==OK) bit3: Lambda linerar (0== NOK; 1==OK) bit4: NOx signal (0== NOK; 1==OK) bit5: Self diagnosis (0 == not active; 1== active) bit 6,7: not used This failure path is set, if the NOx Sensor sends the message "Lambda not Plausible".	Short Circuit or Open wire in wiring harness Defective NOx Upstream Sensor	Check wiring harness Check NOx Upstream Sensor	Frequency: no lamp Lamp: no lamp	16302-31
FrmNOxSensUsNOx	NOx Sensor Upstream (CAN): Nox Concentration invalid	E98E-1F	NOx Sensor (CAN)	The NOx Sensor itself checks if the Signals are plausible or not and under the state to the ECM by CAN message: bit0: Sensor Supply (0== in range; 1== out of range) bit1: Heater Temperature (0== NOK; 1==OK) bit2: Lambda binary (0== NOK; 1==OK) bit3: Lambda linerar (0== NOK; 1==OK) bit4: NOx signal (0== NOK; 1==OK) bit5: Self diagnosis (0 == not active; 1== active) bit 6,7: not used This failure path is set, if the NOx Sensor upstream sends the message "Lambda not Plausible" or "NOx not plausible".	Short Circuit or Open wire in Sensor internal wiring harness Defective NOx Upstream Sensor	Replace NOx Upstream Sensor	Frequency: ON Lamp: Amber (SVS)	59790-31
FrmNOxSensUsNOxDef	NOx Sensor (CAN): NOx Sensor upstream detects not plausible values for NOx value	31BE-1F	NOx Sensor (CAN)	The NOx Sensor itself checks if the Signals are plausible or not and under the state to the ECM by CAN message: bit0: Sensor Supply (0== in range; 1== out of range) bit1: Heater Temperature (0== NOK; 1==OK) bit2: Lambda binary (0== NOK; 1==OK) bit3: Lambda linerar (0== NOK; 1==OK) bit4: NOx signal (0== NOK; 1==OK) bit5: Self diagnosis (0 == not active; 1== active) bit 6,7: not used This failure path is set, if the NOx Sensor upstream sends the message "Lambda not Plausible" or "NOx not plausible".	Short Circuit or Open wire in sensor internal wiring harness Defective NOx Upstream Sensor	Replace NOx Upstream Sensor	Frequency: ON Lamp: Amber (SVS)	12734-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
FrmNOxSensUsSupply	NOx Sensor Upstream (CAN): NOx Sensor detects incorrect supply	4A8E-1F	NOx Sensor (CAN)	The NOx Sensor itself checks if the Signals are plausible or not and under the state to the ECM by CAN message: bit0: Sensor Supply (0== in range; 1== out of range) bit1: Heater Temperature (0== NOK; 1==OK) bit2: Lambda binary (0== NOK; 1==OK) bit3: Lambda linerar (0== NOK; 1==OK) bit4: NOx signal (0== NOK; 1==OK) bit5: Self diagnosis (0 == not active; 1== active) bit 6,7: not used This failure path is set, if the NOx Sensor upstream sends the message "sensor supply not OK"	Defective NOx sensor upstream sensor supply	Check wiring harness, vehicle supply voltage. If failure is still peresent replace the sensor.	Frequency: ON Lamp: Amber (SVS)	19086-31
FrmNOxSensUsTemp	NOx Sensor Upstream (CAN): NOx Sensor temperature out of range	4B8E-1F	NOx Sensor (CAN)	The NOx Sensor itself checks if the Signals are plausible or not and under the state to the ECM by CAN message: bit0: Sensor Supply (0== in range; 1== out of range) bit1: Heater Temperature (0== NOK; 1==OK) bit2: Lambda binary (0== NOK; 1==OK) bit3: Lambda linerar (0== NOK; 1==OK) bit4: NOx signal (0== NOK; 1==OK) bit5: Self diagnosis (0 == not active; 1== active) bit 6,7: not used This failure path is set, if the NOx Sensor upstream sends the message "sensor temperature not OK"	Defective NOx upstream sensor heating	Replace NOx Upstream Sensor	Frequency: no lamp Lamp: no lamp	19342-31
FuelPDynTstMax	Fuel low pressure cycle: Maximum fuel pressure error in dynamic plausibility test (low pressure)	16C5-1F	Fuel low pressure cycle	The Physical signal of the Fuel pressure sensor (low pressure cycle) is checked against engine speed and uel temperature dependant limits.	Inaccurate fuel pressure sensor or excessive fuel pressure in system	Check pressure sensor accuracy and f necessary replace sensor. Also check fuel pressure in system.	Frequency: no lamp Lamp: no lamp	5829-31
FuelPDynTstMin	Fuel low pressure cycle: Minimum fuel pressure error in dynamic plausibility test (low pressure)	27C5-1F	Fuel low pressure cycle	The Physical signal of the Fuel pressure sensor (low pressure cycle) is checked against engine speed and uel temperature dependant limits.	Inaccurate fuel pressure sensor or too low fuel pressure in system	Check pressure sensor accuracy and f necessary replace sensor. Also check fuel pressure in system.	Frequency: no lamp Lamp: no lamp	10181-31
FuelPSig	Fuel low pressure cycle: DFC for CAN message of fuel pressure sensor (low pressure)	48C5-1F	Fuel low pressure cycle	The Sensor is connected via CAN to the ECU and under s a failure by the message (self diagnostic of sensor). Only this message is analyses	Sensor defect	Check Sensor	Frequency: no lamp Lamp: no lamp	18629-31
FuelPSRCMax	Fuel low pressure cycle: SRC High for fuel pressure (low pressure cycle)	19C5-1F	Fuel low pressure cycle	The electrical Signal of the Fuel pressure (low pressure side) sensor is monitored. In case of defect recognition a default value for the fuel pressure is taken.	Sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	6597-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
FuelPSRCMin	Fuel low pressure cycle: SRC Low for fuel pressure (low pressure cycle)	2AC5-1F	Fuel low pressure cycle	The electrical Signal of the Fuel pressure (low pressure side) sensor is monitored. In case of defect recognition a default value for the fuel pressure is taken.	Sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	10949-31
FuelTPhysRngHi	Fuel Temperature Sensor: Physical Signal above maximum limit	1A15-1F	Fuel Temp Sensor	Measured Fuel temperature value should lie in a defined range.	Excessive Fuel temperature measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	6677-31
FuelTPhysRngLo	Fuel Temperature Sensor: Physical Signal below minimum limit	2B15-1F	Fuel Temp Sensor	Measured Fuel temperature value should lie in a defined range.	Excessively low Fuel temperature measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	11029-31
FuelTSRCMax	Fuel Temp Sensor: SRC high for fuel temperature sensor	1C15-1F	Fuel Temp Sensor	The electrical Signal of the Fuel temperature sensor is monitored. In case of defect recognition a default value for the fuel temperature is taken. In case of defect a fix value or the actual engine temperature can be taken as substitution, depending on configuration (by data set) and under ility of the sensors.	Sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	7189-31
FuelTSRCMin	Fuel Temp Sensor: SRC low for fuel temperature sensor	2D15-1F	Fuel Temp Sensor	The electrical Signal of the Fuel temperature sensor is monitored. In case of defect recognition a default value for the fuel temperature is taken. In case of defect a fix value or the actual engine temperature can be taken as substitution, depending on configuration (by data set) and under ility of the sensors.	Sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	11541-31
FuelTVDPlaus	Fuel Temperature Sensor: failed plausibility check at ECU start	3E15-1F	Fuel Temp Sensor	The physical value of Fuel temperature signal is monitored for plausibility at ECU start. The value of fuel temperature sensor is compared to Ambient temperature for plausibility	Fuel temperature sensor defective	Check sensor	Frequency: no lamp Lamp: no lamp	15893-31
FuFilCloggPreFilWarn	Fuel pre filter: filter clogged warning	47E5-1F	Fuel FIlter	The functionality detects fuel prefilter clogging evaluating fuel pressure after pre filter	Fuel pre filter is clogged	Clean or replace fuel pre filter	Frequency: no lamp Lamp: no lamp	18405-31
Gbx_RevGearNpl	Gear Box reverse: plausibility error in reverse gear signal	3281-1F	Gear Box reverse	The system acquires and under ses the information from the reverse gear engagement switch and under the signal plausibility.	Not plausible signal from reverse gear switch	Check and under e reverse gear switch	Frequency: no lamp Lamp: no lamp	12929-31
GbxNPosSig	Gear Box neutral: Check for error for CAN input	3181-1F	Gear Box neutral	The Gearbox Neutral Position is received via hardware for manual gearbox. Monitoring of CAN signal is not used	The gearbox neutral position switch is defective.	Check the gearbox neutral position switch.	Frequency: no lamp Lamp: no lamp	12673-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
GlwLmpOL	Glow lamp: No load error	5152-1F	Glow lamp	The Power stage for the control lamp for Glow Plug activation is controlled by Hardware for electrical failures	Broken or disconnected wiring or defective glow lamp	Check of wiring or replace glow lamp	Frequency: no lamp Lamp: no lamp	20818-31
GlwLmpOvrTemp	Glow lamp: Over temperature error on the power stage	8252-1F	Glow lamp	The Power stage for the control lamp for Glow Plug activation is controlled by Hardware for electrical failures	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside control lamp for Glow Plug activation	Check battery voltage, wiring, power stage and under l lamp for Glow Plug activation	Frequency: no lamp Lamp: no lamp	33362-31
GlwLmpSCB	Glow lamp: Short circuit to battery error	6352-1F	Glow lamp	The Power stage for the control lamp for Glow Plug activation is controlled by Hardware for electrical failures	Short circuit of wiring to external source or inside glow lamp	Check of wiring, replace glow lamp	Frequency: no lamp Lamp: no lamp	25426-31
GlwLmpSCG	Glow lamp: Short circuit to ground error	7452-1F	Glow lamp	The Power stage for the control lamp for Glow Plug activation is controlled by Hardware for electrical failures	Short circuit of wiring to ground or inside glow lamp	Check of wiring, replace glow lamp	Frequency: no lamp Lamp: no lamp	29778-31
GptaEEPData1BlkErr	ECU EEPROM: Error in block EEPData1	E56D-1F	ECU EEPROM	Error in EEPROM block EEPData1. Correction values not be calculated. Error normally disabled on serial application, only relevant for Bosch during calibration activity.	Wrong programming/flashing of the ECM, internal defect of the ECM.	Reprogram ECM, replace ECM	Frequency: no lamp Lamp: no lamp	58733-31
HLSDem_MonOBDMax	Engine speed exceeds the upper limit while High-Low Speed Demands active	1192-1F	Engine speed limiter	The low-idle speed and under m engine-speed demand under m) uses the engine interval speed governor (EISGov) as the actual controller. For this purpose, it provides the EISGov with a low-idle speed, a maximum engine speed and he corresponding parameter sets . The engine speed should remain inside the defined limits.	Injection system problem, injectors deviation	Replace Injectors	Frequency: no lamp Lamp: no lamp	4498-31
HLSDem_MonOBDMin	Engine speed falls below the lower limit while High-Low Speed Demands active	2292-1F	Engine speed limiter	The low-idle speed and under m engine-speed demand under m) uses the engine interval speed governor (EISGov) as the actual controller. For this purpose, it provides the EISGov with a low-idle speed, a maximum engine speed and he corresponding parameter sets . The engine speed should remain inside the defined limits.	Injection system problem, injectors deviation	Replace Injectors	Frequency: no lamp Lamp: no lamp	8850-31
HydLoadDeactvnOL	Hydraulic Load Deactivation: Open load on Power stage	5142-1F	PTO actuation	The module controls the actuator power stage with hydraulic load deactivation status. Hydraulic load is deactivated after ECU start for 0,00ms, during cranking and under engine start for 0,00ms. The Power stage of Hydraulic Load deactivation is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Hydraulic Load Deactivation	Check of wiring or replace Hydraulic Load Deactivation	Frequency: ON Lamp: Amber (SVS)	20802-31
HydLoadDeactvnOvrTemp	Hydraulic Load Deactivation: Over temperature on Power stage	8242-1F	PTO actuation	The module controls the actuator power stage with hydraulic load deactivation status. Hydraulic load is deactivated after ECU start for 0,00ms, during cranking and under engine start for 0,00ms. The Power stage of Hydraulic Load deactivation is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	Check load and under , check wiring, replace ECU	Frequency: ON Lamp: Amber (SVS)	33346-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
HydLoaddDeactvnSCB	Hydraulic Load Deactivation: Short Circuit to Battery on Power stage	6342-1F	PTO actuation	The module controls the actuator power stage with hydraulic load deactivation status. Hydraulic load is deactivated after ECU start for 0,00ms, during cranking and under engine start for 0,00ms. The Power stage of Hydraulic Load deactivation is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside Hydraulic Laod Deactivation	Check of wiring, replace Hydraulic Load Deactivation	Frequency: ON Lamp: Amber (SVS)	25410-31
HydLoaddDeactvnSCG	Hydraulic Load Deactivation: Short Circuit to Ground on Power stage	7442-1F	PTO actuation	The module controls the actuator power stage with hydraulic load deactivation status. Hydraulic load is deactivated after ECU start for 0,00ms, during cranking and under engine start for 0,00ms. The Power stage of Hydraulic Load deactivation is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Hydraulic Load deactivation	Check of wiring, replace Hydraulic Load Deactivation	Frequency: ON Lamp: Amber (SVS)	29762-31
IAirHtOL_0	Air heater: Open load on Power stage 0	5614-1F	Air heater	The Power stage of Intake Air Heater actuator 0 (Digital Output) is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective air heater	Check of wiring or replace air heater	Frequency: ON Lamp: Amber (SVS)	22036-31
IAirHtOL_1	Air heater: Open load on Power stage 1	5714-1F	Air heater	The Power stage of Intake Air Heater actuator 1 (Digital Output) is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective air heater	Check of wiring or replace air heater	Frequency: no lamp Lamp: no lamp	22292-31
IAirHtOL_2	Air heater: Open load on Power stage 2	5594-1F	Air heater	The Power stage of Intake Air Heater actuator 2 (Digital Output) is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective air heater	Check of wiring or replace air heater	Frequency: no lamp Lamp: no lamp	21908-31
IAirHtOvrTemp_0	Air heater: Over temperature on Power stage 0	8814-1F	Air heater	The Power stage of Intake Air Heater actuator 0 (Digital Output) is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	Check load and under , check wiring, replace ECU	Frequency: ON Lamp: Amber (SVS)	34836-31
IAirHtOvrTemp_1	Air heater: Over temperature on Power stage 1	8914-1F	Air heater	The Power stage of Intake Air Heater actuator 1 (Digital Output) is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	Check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	35092-31
IAirHtOvrTemp_2	Air heater: Over temperature on Power stage 2	8694-1F	Air heater	The Power stage of Intake Air Heater actuator 2 (Digital Output) is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	Check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	34452-31
IAirHtSCB_0	Air heater: Short circuit to battery on power stage 0	6A14-1F	Air heater	The Power stage of Intake Air Heater actuator 0 (Digital Output) is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside air heater	Check of wiring, replace air heater	Frequency: ON Lamp: Amber (SVS)	27156-31
IAirHtSCB_1	Air heater: Short circuit to battery on power stage 1	6B14-1F	Air heater	The Power stage of Intake Air Heater actuator 1 (Digital Output) is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside air heater	Check of wiring, replace air heater	Frequency: no lamp Lamp: no lamp	27412-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
IAirHtSCB_2	Air heater: Short circuit to battery on power stage 2	6794-1F	Air heater	The Power stage of Intake Air Heater actuator 2 (Digital Output) is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside air heater	Check of wiring, replace air heater	Frequency: no lamp Lamp: no lamp	26516-31
IAirHtSCG_0	Air heater: Short circuit to ground error on power stage 0	7C14-1F	Air heater	The Power stage of Intake Air Heater actuator 0 (Digital Output) is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside air heater	Check of wiring, replace air heater	Frequency: ON Lamp: Amber (SVS)	31764-31
IAirHtSCG_1	Air heater: Short circuit to ground error on power stage 1	7D14-1F	Air heater	The Power stage of Intake Air Heater actuator 1 (Digital Output) is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside air heater	Check of wiring, replace air heater	Frequency: no lamp Lamp: no lamp	32020-31
IAirHtSCG_2	Air heater: Short circuit to ground error on power stage 2	7894-1F	Air heater	The Power stage of Intake Air Heater actuator 0 (Digital Output) is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside air heater	Check of wiring, replace air heater	Frequency: no lamp Lamp: no lamp	30868-31
IndAHNPL	Induction Air Humidity Sensor: Signal plausibility failure	3754-1F	Intake Air humidity Sensor	The plausibility of humidity sensor signal is checked. Induction air humidity is acquired by an analogic sensor connected via hardware pin.	Humidity sensor dynamic compromised, value sticking	Check and under e humidity sensor	Frequency: no lamp Lamp: no lamp	14164-31
IndAHPhysRngHi	Induction Air Humidity Sensor: Physical signal above maximum limit	1854-1F	Intake Air humidity Sensor	The induction air humidity sensor is connected via Hardware pin. Measured value should lie in a defined range.	Inaccurate or defective Induction Air Humidity sensor, or defect in its wiring	Check wiring and he accuracy of Induction Air Humidity sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	6228-31
IndAHPhysRngLo	Induction Air Humidity Sensor: Physical signal below minimum limit	2954-1F	Intake Air humidity Sensor	The induction air humidity sensor is connected via Hardware pin. Measured value should lie in a defined range.	Inaccurate or defective Induction Air Humidity sensor, or defect in its wiring	Check wiring and he accuracy of Induction Air Humidity sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	10580-31
IndAHSig	Intake Air humidity Sensor: DFC for CAN message	4A54-1F	Intake Air humidity Sensor	Induction air humidity is acquired by an analogic sensor connected via hardware pin. No CAN signal monitoring performed	Disturbed CAN signal transmission, sensor problem	Check the CAN for proper configuration and under oning, check air humidity sensor.	Frequency: no lamp Lamp: no lamp	19028-31
IndAHSRCMax	Info: Intake Air humidity Sensor: Probably water droplets on Sensor	FB54-1F	Intake Air humidity Sensor	The Humidity Sensor is sensitive to water droplets, which causes a short circuit error. Normally the Sensor should be "dried" after some minutes after cold start, i.e. before the Dosing system is ready for UREA injection. As it can not be distinguished between real failure and under circuit due to water droplets, a 2 stage failure monitoring is made: IndAHSRCMAx: stored as information, that there was a Problem with the Sensor, but probably caused by water droplets. IndAHSRCMAxDly: If the short circuit is present longer than 48,00s after start, this means that there is very probably an electrical failure. Induction air humidity is acquired by an analogic sensor connected via hardware pin. Signal range check is performed.	Sensor full with water droplets or Sensor defective or short circuit to external source	NO action needed as long as the failure IndAHSRCMaxDly is not active. If failure IndAHSRCMaxDly is not active, check duration of failure active: If a single duration lasts longer than ~10 min --> there is probably an electrical failure. --> Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	64340-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
IndAHSRCMaxDly	Intake Air humidity Sensor: Defect Fault Check for Signal value above maximum limit	1C54-1F	Intake Air humidity Sensor	The Humidity Sensor is sensitive to water droplets, which causes a short circuit error. Normally the Sensor should be "dried" after some minutes after cold start, i.e. before the Dosing system is ready for UREA injection. If there are water droplets on the sensor, this is indicated by the failure Path "IndAHSRCMax" failure Path. If the Short Circuit (Sensor signal > 3,60V) is still active, when the engine has run at least 48,00s after start and he engine temperature is > -2418,30° C. and he SCR Dosing System would be ready for UREA injection, there is a real electrical problem. Induction air humidity is acquired by an analogic sensor connected via hardware pin. Signal range check is performed.	Sensor full with water droplets Sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	7252-31
IndAHSRCMin	Intake Air humidity Sensor: SRC low for Induction Air Humidity	2D54-1F	Intake Air humidity Sensor	Induction air humidity is acquired by an analogic sensor connected via hardware pin. Signal range check is performed.	Short circuit of wiring to ground or defective sensor	Check wiring and under	Frequency: ON Lamp: Amber (SVS)	11604-31
InjCrvInjLimChrgBal	Injector: Number of injections is limited by charge balance of booster capacity	1636-1F	Injector	The compatibility between requested number of injections and under t capability of the injection system of fulfilling that request is checked. Number of requested number of injections is beyond current booster capacity.	Application of number of requested injections not compatible with system capability or charging of injector booster insufficient	Check battery voltage, check power supply of ECU, if both OK replace ECU	Frequency: no lamp Lamp: no lamp	5686-31
InjCrvInjLimQntBal	Injector: Number of injections is limited by quantity balance of high pressure pump	4736-1F	Injector	The compatibility between requested number of injections and under t capability of the injection system of fulfilling that request is checked. Number of requested number of injections is beyond current maximal capacity of high pressure pump.	Application of number of requested injections not compatible with system capability or high pressure pump efficiency limited due to ageing, insufficient rail pressure or too high fuel temperature.	Check fuel temperature, check presence of other failures regarding rail pressure deviation or fuel delivery. CHeck High pressure pump.	Frequency: no lamp Lamp: no lamp	18230-31
InjCrvInjLimSys	Injector: Number of injections is limited by system	F836-1F	Injector	The compatibility between requested number of injections and under t capability of the injection system of fulfilling that request is checked. Number of requested number of injections is beyond maximal number of injections released by application for the system.	Dataset application wrong, too high number of injections allowed.	Dataset should be replaced, contact Help Desk	Frequency: no lamp Lamp: no lamp	63542-31
InjCrvNumInjRtmLim	Injector: Number of injections is limited by runtime	F936-1F	Injector	The compatibility between requested number of injections and under t capability of the injection system of fulfilling that request is checked. Number of requested number of injections is beyond maximal number of injections released for the current engine speed. At high speed the number of possible injections is limited by computing time needed for calculations.	Dataset application wrong, too high number of injections allowed.	Dataset should be replaced, contact Help Desk	Frequency: no lamp Lamp: no lamp	63798-31
InjCtlMonMax	Injection quantity at low idle above maximum value	1166-1F	Injector Adjustement	The injection quantity at low idle is monitored within applicable limits	Auxilaries with high torque request activated Injector defective, stuck open	Check for special auxilaries and under auxilaries strategies Run engine in standard low idle (no AC, lamps off, no additional auxilaries) in warm condition and under injection quantity, if failure is still detected, check injectors	Frequency: no lamp Lamp: no lamp	4454-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
InjCtlMonMin	Injection quantity at low idle below minimum value	2266-1F	Injector Adjustement	The injection quantity at low idle is monitored within applicable limits	Injector defective, stuck open	Run engine in standard low idle (no AC, lamps off, no additional auxilaries) in warm condition and under injection quantity If injection quantiy is still too low (failure detected) replace injectors. Otherwise ignore failure	Frequency: no lamp Lamp: no lamp	8806-31
InjUnStrtTst	Check of engine starting problems	4A36-1F	None	When there are problems during engine start (InjUn_stStrt! = 0), the cause can be stored in this failure path.	Engine did not start	Check measure value InjUn_stStrt for reason: If bit0 set: rail pressure insufficient. If bit1 set: engine speed insufficient If bit2 set: no synchronisation If bit3 set: Shut off request active (check CoEng_stShutOffPath) If bit5 set: Immobilizer problem CoEng_stShutOffPath interpretation: bit0: no energizing time bit1: injection quantity set to 0 bit2:Rail pressure set to 0 bit3:Throttle valve closed bit4: Pres supply pump shut off bit7 egr valve closed bit8: set inner torque=0 bit19: engine brake requested bit20: engine stop request bit21: starting system zero fuel request bit22: zero fuel req.from engine brake test	Frequency: no lamp Lamp: no lamp	18998-31
InjVlvPresMin	Injector: check of minimum rail pressure	2B36-1F	Injector	The minimum rail pressure value necessary to allow fuel injection is monitored.	Rail pressure controller problem (metering unit sticking), High Pressure pump efficiency too low, no fuel delivery from gear pump to high pressure pum or system leakages	Check presence of other more specific failures related to rail pressure controller. Check high pressure pump delivery, metering unit, check for rail or injector leakages. Check for clogged main fuel filter	Frequency: no lamp Lamp: no lamp	11062-31
IVAdjDialVAdj_0	Injector Adjustment: IMA programming not correct for injector cyl 1	F176-1F	Injector Adjustement	The injectors are corrected individually (IMA Code) to guarantee exact fuel injection quantity of each injector from lowest to highest fuel quantity. The correction is done at the end of production line (EOL) and under substitution of the injectors with the tester. The data's are stored in the EEPROM. The stored values in the EEPROM are protected with checksum parameters. At each Key 15 "on" the correction data's are read from the EEPROM and under d, if the values are plausible and he checksums are correct. If not, the injector will not be corrected and failure will be stored.	Invalid IMA code has been programmed wrong programming/flashing of the EDC (initialization of EEPROM) internal defect of the ECU	Reprogram IMA code Reflash the ECU (including EEPROM initialisation) if defect persists: replace EDC	Frequency: ON Lamp: Amber (SVS)	61814-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
IVAdjDialVAdj_1	Injector Adjustment: IMA programming not correct for injector cyl 5	F276-1F	Injector Adjustement	The injectors are corrected individually (IMA Code) to guarantee exact fuel injection quantity of each injector from lowest to highest fuel quantity. The correction is done at the end of production line (EOL) and under substitution of the injectors with the tester. The data's are stored in the EEPROM. The stored values in the EEPROM are protected with checksum parameters. At each Key 15 "on" the correction data's are read from the EEPROM and under d, if the values are plausible and he checksums are correct. If not, the injector will not be corrected and failure will be stored.	Invalid IMA code has been programmed wrong programming/flashing of the EDC (initialization of EEPROM) internal defect of the ECU	Reprogram IMA code Reflash the ECU (including EEPROM initialisation) if defect persists: replace EDC	Frequency: ON Lamp: Amber (SVS)	62070-31
IVAdjDialVAdj_2	Injector Adjustment: IMA programming not correct for injector cyl 3	F376-1F	Injector Adjustement	The injectors are corrected individually (IMA Code) to guarantee exact fuel injection quantity of each injector from lowest to highest fuel quantity. The correction is done at the end of production line (EOL) and under substitution of the injectors with the tester. The data's are stored in the EEPROM. The stored values in the EEPROM are protected with checksum parameters. At each Key 15 "on" the correction data's are read from the EEPROM and under d, if the values are plausible and he checksums are correct. If not, the injector will not be corrected and failure will be stored.	Invalid IMA code has been programmed wrong programming/flashing of the EDC (initialization of EEPROM) internal defect of the ECU	Reprogram IMA code Reflash the ECU (including EEPROM initialisation) if defect persists: replace EDC	Frequency: ON Lamp: Amber (SVS)	62326-31
IVAdjDialVAdj_3	Injector Adjustment: IMA programming not correct for injector cyl 6	F476-1F	Injector Adjustement	The injectors are corrected individually (IMA Code) to guarantee exact fuel injection quantity of each injector from lowest to highest fuel quantity. The correction is done at the end of production line (EOL) and under substitution of the injectors with the tester. The data's are stored in the EEPROM. The stored values in the EEPROM are protected with checksum parameters. At each Key 15 "on" the correction data's are read from the EEPROM and under d, if the values are plausible and he checksums are correct. If not, the injector will not be corrected and failure will be stored.	Invalid IMA code has been programmed wrong programming/flashing of the EDC (initialization of EEPROM) internal defect of the ECU	Reprogram IMA code Reflash the ECU (including EEPROM initialisation) if defect persists: replace EDC	Frequency: ON Lamp: Amber (SVS)	62582-31
IVAdjDialVAdj_4	Injector Adjustment: IMA programming not correct for injector cyl 2	F576-1F	Injector Adjustement	The injectors are corrected individually (IMA Code) to guarantee exact fuel injection quantity of each injector from lowest to highest fuel quantity. The correction is done at the end of production line (EOL) and under substitution of the injectors with the tester. The data's are stored in the EEPROM. The stored values in the EEPROM are protected with checksum parameters. At each Key 15 "on" the correction data's are read from the EEPROM and under d, if the values are plausible and he checksums are correct. If not, the injector will not be corrected and failure will be stored.	Invalid IMA code has been programmed wrong programming/flashing of the EDC (initialization of EEPROM) internal defect of the ECU	Reprogram IMA code Reflash the ECU (including EEPROM initialisation) if defect persists: replace EDC	Frequency: ON Lamp: Amber (SVS)	62838-31
IVAdjDialVAdj_5	Injector Adjustment: IMA programming not correct for injector cyl 4	F676-1F	Injector Adjustement	The injectors are corrected individually (IMA Code) to guarantee exact fuel injection quantity of each injector from lowest to highest fuel quantity. The correction is done at the end of production line (EOL) and under substitution of the injectors with the tester. The data's are stored in the EEPROM. The stored values in the EEPROM are protected with checksum parameters. At each Key 15 "on" the correction data's are read from the EEPROM and under d, if the values are plausible and he checksums are correct. If not, the injector will not be corrected and failure will be stored.	Invalid IMA code has been programmed wrong programming/flashing of the EDC (initialization of EEPROM) internal defect of the ECU	Reprogram IMA code Reflash the ECU (including EEPROM initialisation) if defect persists: replace EDC	Frequency: ON Lamp: Amber (SVS)	63094-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
IVDiaBnkShCir_0	Injector: bank0, short circuit	7116-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (over current, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected. Two banks are present.	Short circuit in wiring or injector connected to bank 0	Check the wiring and under ors connected to bank 0.	Frequency: ON Lamp: Amber (SVS)	28950-31
IVDiaBnkShCir_1	Injector: bank1, short circuit	7216-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (over current, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected. Two banks are present.	Short circuit in wiring or injector connected to bank 1.	Check the wiring and under ors.	Frequency: ON Lamp: Amber (SVS)	29206-31
IVDiaChp	Injector: ECM internal failure of Injector actuation (chip error)	E126-1F	ECU Internal	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (over-current, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Defective ECM	Replace ECM	Frequency: ON Lamp: Amber (SVS)	57638-31
IVDiaCylNoLd_0	Injector: open load, injector cylinder 1	5316-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (over-current, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Open load for injector of cylinder 1 is detected.	Check wiring, replace fuel injector of cylinder 1.	Frequency: ON Lamp: Amber (SVS)	21270-31
IVDiaCylNoLd_1	Injector: open load, injector cylinder 5	5416-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (over-current, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Open load for injector of cylinder 5 is detected.	Check wiring, replace fuel injector of cylinder 5.	Frequency: ON Lamp: Amber (SVS)	21526-31
IVDiaCylNoLd_2	Injector: open load, injector cylinder 3	5516-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (over-current, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Open load for injector of cylinder 3 is detected.	Check wiring, replace fuel injector of cylinder 3.	Frequency: ON Lamp: Amber (SVS)	21782-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
IVDiaCylNoLd_3	Injector: open load, injector cylinder 6	5616-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Open load for injector of cylinder 6 is detected.	Check wiring, replace fuel injector of cylinder 6.	Frequency: ON Lamp: Amber (SVS)	22038-31
IVDiaCylNoLd_4	Injector: open load, injector cylinder 2	5716-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Open load for injector of cylinder 2 is detected.	Check wiring, replace fuel injector of cylinder 2.	Frequency: ON Lamp: Amber (SVS)	22294-31
IVDiaCylNoLd_5	Injector: open load, injector cylinder 4	5816-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Open load for injector of cylinder 4 is detected.	Check wiring, replace fuel injector of cylinder 4.	Frequency: ON Lamp: Amber (SVS)	22550-31
IVDiaCylPttDet_0	Injector: Special pattern error at injector cylinder1 (Project specific)	4916-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected. For special applications it may be desirous for occurrences of a known error pattern only to be logged in the fault code memory, but without triggering a substitute reaction by the system. This fault path is available for this purpose.	Particular injector behaviour detected	Only information failure, no intervention necessary	Frequency: no lamp Lamp: no lamp	18710-31
IVDiaCylPttDet_1	Injector: Special pattern error at injector cylinder5 (Project specific)	4A16-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected. For special applications it may be desirous for occurrences of a known error pattern only to be logged in the fault code memory, but without triggering a substitute reaction by the system. This fault path is available for this purpose.	Particular injector behaviour detected	Only information failure, no intervention necessary	Frequency: no lamp Lamp: no lamp	18966-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
IVDiaCylPttDet_2	Injector: Special pattern error at injector cylinder3 (Project specific)	4B16-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected. For special applications it may be desirous for occurrences of a known error pattern only to be logged in the fault code memory, but without triggering a substitute reaction by the system. This fault path is available for this purpose.	Particular injector behaviour detected	Only information failure, no intervention necessary	Frequency: no lamp Lamp: no lamp	19222-31
IVDiaCylPttDet_3	Injector: Special pattern error at injector cylinder6 (Project specific)	4C16-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected. For special applications it may be desirous for occurrences of a known error pattern only to be logged in the fault code memory, but without triggering a substitute reaction by the system. This fault path is available for this purpose.	Particular injector behaviour detected	Only information failure, no intervention necessary	Frequency: no lamp Lamp: no lamp	19478-31
IVDiaCylPttDet_4	Injector: Special pattern error at injector cylinder2 (Project specific)	4D16-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected. For special applications it may be desirous for occurrences of a known error pattern only to be logged in the fault code memory, but without triggering a substitute reaction by the system. This fault path is available for this purpose.	Particular injector behaviour detected	Only information failure, no intervention necessary	Frequency: no lamp Lamp: no lamp	19734-31
IVDiaCylPttDet_5	Injector: Special pattern error at injector cylinder4 (Project specific)	4E16-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected. For special applications it may be desirous for occurrences of a known error pattern only to be logged in the fault code memory, but without triggering a substitute reaction by the system. This fault path is available for this purpose.	Particular injector behaviour detected	Only information failure, no intervention necessary	Frequency: no lamp Lamp: no lamp	19990-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
IVDiaCylShCir_0	Injector: short circuit, injector cylinder 1	6226-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 1.	Frequency: ON Lamp: Amber (SVS)	25126-31
IVDiaCylShCir_1	Injector: short circuit, injector cylinder 5	6326-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 5.	Frequency: ON Lamp: Amber (SVS)	25382-31
IVDiaCylShCir_2	Injector: short circuit, injector cylinder 3	6426-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 3.	Frequency: ON Lamp: Amber (SVS)	25638-31
IVDiaCylShCir_3	Injector: short circuit, injector cylinder 6	6526-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 6.	Frequency: ON Lamp: Amber (SVS)	25894-31
IVDiaCylShCir_4	Injector: short circuit, injector cylinder 2	6626-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 2.	Frequency: ON Lamp: Amber (SVS)	26150-31
IVDiaCylShCir_5	Injector: short circuit, injector cylinder 4	6726-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 4.	Frequency: ON Lamp: Amber (SVS)	26406-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
IVDiaCylShCirHSLS_0	Injector: short circuit of high side to low side for injector of cylinder 1	4826-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 1.	Frequency: ON Lamp: Amber (SVS)	18470-31
IVDiaCylShCirHSLS_1	Injector: short circuit of high side to low side for injector of cylinder 5	4926-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 5.	Frequency: ON Lamp: Amber (SVS)	18726-31
IVDiaCylShCirHSLS_2	Injector: short circuit of high side to low side for injector of cylinder 3	4A26-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 3.	Frequency: ON Lamp: Amber (SVS)	18982-31
IVDiaCylShCirHSLS_3	Injector: short circuit of high side to low side for injector of cylinder 6	4B26-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 6.	Frequency: ON Lamp: Amber (SVS)	19238-31
IVDiaCylShCirHSLS_4	Injector: short circuit of high side to low side for injector of cylinder 2	4C26-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 2.	Frequency: ON Lamp: Amber (SVS)	19494-31
IVDiaCylShCirHSLS_5	Injector: short circuit of high side to low side for injector of cylinder 4	4D26-1F	Injector	Hardware errors in the injectors and under tive ECM power stages are investigated. Diagnostic procedure uses pattern detection to identify specific errors and under r appropriate substitute reaction. The behaviour pattern describes in a bit mask different detected problem (overcurrent, command under ion, RAM error,short circuit,....) when the expected combination of errors is detected (measured and under nce pattern are matching) a failure is detected.	Short circuit in wiring or injector	Check wiring, replace fuel injector of cylinder 4.	Frequency: ON Lamp: Amber (SVS)	19750-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
IVDiaShCirGndToutBnk_0	Time out of SCG measurement_0	7E26-1F	Injector				Frequency: no lamp Lamp: no lamp	32294-31
IVDiaShCirGndToutBnk_1	Time out of SCG measurement_1	7F26-1F	Injector				Frequency: no lamp Lamp: no lamp	32550-31
IVDiaShCirGndTstBnk_0	Short circuit to ground monitoring test in bank_0	7136-1F	Injector				Frequency: no lamp Lamp: no lamp	28982-31
IVDiaShCirGndTstBnk_1	Short circuit to ground monitoring test in bank_1	7236-1F	Injector				Frequency: no lamp Lamp: no lamp	29238-31
IVDiaSPITout	ECU Internal: SPI communication timeout	E336-1F	ECU Internal	SPI bus communication is monitored for time out	Internal ECU error	Replace ECU	Frequency: no lamp Lamp: no lamp	58166-31
LinBus Off	LIN-Bus: Bus--Off error	9C71-1F	LIN-Bus	The LIN-Coordinator (Lin_Coord) performs all common LIN-Functionality (LIN-Bus-WakeUp, LIN-Bus-GoToSleep, etc.) and under nates the transmission and under ion of the LIN-Frames of the LIN-Nodes. The transmission and under ion of the LIN-Frames is delegated by the LIN-Coordinator to the corresponding LIN-Node.	LIN-Bus disturbance	Check LIN-Bus	Frequency: no lamp Lamp: no lamp	40049-31
LSUCircNernstSig	Lambda sensor Wiring: Open circuit at the lambda sensor Nernst cell pin	5ADC-1F	Lambda sensor Wiring	The Open load tests for Virtual Ground (VG) and under Cell (UN) are made with hot LSU (Heater in control mode). The test is only carried out, if the inner resistance of the heater indicates a problem, as there is connection to the heater in case of an Open load of virtual ground or Nernst Cell. The differentiation can be made by the O2 signal: if within a certain range --> the Virtual ground has open load, if outside the Nernst Cell has open load	Defect in wiring (open load in Nernst Cell (UN) line, Nernst cell; Due to SW bug: open load in heater line, K51) of the lambda sensor, defective lambda sensor	Check entire wiring of lambda sensor, check lambda sensor itself, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	23260-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUCircPmpCurSig	Lambda sensor Wiring: open circuit at the lambda sensor pump current pin - IP (lambda = 1 detection)	5BDC-1F	Lambda sensor Wiring	The Pump Cell Line IP is monitored for open load by following relation: An open load would lead to a O2 signal = 0 (which means Lambda =1 driving). If at same time all driving conditions exclude, that the engine is driven with lambda 1, this means a wrong sensor signal due to open load connection of the IP line of Pump Cell.	Defect in wiring (open load in IP line, pump current; of the lambda sensor, defective lambda sensor	Check entire wiring of lambda sensor, check lambda sensor itself, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	23516-31
LSUCircVirtGndSig	Lambda sensor Wiring: Open circuit at the lambda sensor Virtual ground pin	5CDC-1F	Lambda sensor Wiring	The Open load tests for Virtual Ground (VG) and under Cell (UN) are made with hot LSU (Heater in control mode). The test is only carried out, if the inner resistance of the heater indicates a problem, as there is connection to the heater in case of an Open load of virtual ground or Nernst Cell. The differentiation can be made by the O2 signal: if within a certain range --> the Virtual ground has open load, if outside the Nernst Cell has open load	Defect in wiring (open load in Virtual Ground (VG) line, virtual ground; Due to SW bug: open load in heater line, K51) of the lambda sensor, defective lambda sensor	Check entire wiring of lambda sensor, check lambda sensor itself, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	23772-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUDynChk	Lambda Sensing: Fault to indicate Dynamics of the sensor signal too small	3DDC-1F	Lambda Sensing	The dynamic check of Lambda Sensor monitors the time the O2 signal needs to get 20.95% when engine state changes from "running with load" to "overrun". The response of the Lambda sensor is validated by 2 criterias: 1) response velocity: the transition from 30% to 60% of the step between actual value to 21% should be faster than 0,60s. 2) sticking: 60% of the step between actual value to 21% should be reached latest within 10,00s. As the LSU sensor normally is much faster, a very short time with engine overrun is needed to detect a correct working sensor, but a quite long time (>0,60s or even 10,00s) in case of defective sensor.	Defect in wiring of lambda sensor, defective lambda sensor, problems in injection system (e.g. leaky injectors) or EGR valve does not close in overrun condition	Check wiring, check injection system, replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	15836-31
LSUHtCoupSig	Lambda Sensor Heater: O2 concentration is outside the predefined window during Heater coupling detection	35CC-1F	Lambda Sensor Heater	For the heater coupling check the heater is deactivated each 15,00s for 0,06s and he variation of O2 signal is checked. If the O2 signal (filtered with 0,00ms) varies more than 122,20mV while the system is "steady state" (i.e. LSU temperature ~constant and 2 15,00s after reactivation of heater ~constant) a failure is reported, as there is an internal coupling between heater and 2 signal.	Defective lambda sensor	Replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	13772-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUHtr Max	Lambda Sensor Heater: SCB error of the LSU Heater Power stage	61CC-1F	Lambda Sensor Heater	The heater power stage of Lambda sensor is monitored against short circuit to battery (by Hardware Monitoring) as long as the Heater is working. As the Power stage is switched off wit a failure all functions connected to lambda sensor are switched off.	Short circuit of wiring to external source, defective lambda sensor or power stage	Check wiring and under sensor, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) or ECU. Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	25036-31
LSUHtr Min	Lambda Sensor Heater: SCG error of the LSU Heater Power stage	72CC-1F	Lambda Sensor Heater	The heater power stage of Lambda sensor is monitored against short circuit to Ground (by Hardware Monitoring) as long as the Heater is working. As the Power stage is switched off wit a failure all functions connected to lambda sensor are switched off.	Short circuit of wiring to external ground, defective lambda sensor or power stage	Check wiring and under sensor, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) or ECU Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	29388-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUHtrNpl	Lambda Sensor Heater: Over temperature error of the LSU Heater Power stage	33CC-1F	Lambda Sensor Heater	The heater power stage of Lambda sensor is monitored against overtemperature (too high current) (by Hardware Monitoring) as long as the Heater is working. As the Power stage is switched off with a failure all functions connected to lambda sensor are switched off.	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring and under sensor, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) or ECU Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	13260-31
LSUHtrSig	Lambda Sensor Heater: Open Load error of the LSU Heater Power stage	54CC-1F	Lambda Sensor Heater	The heater power stage of Lambda sensor is monitored against open load (by Hardware Monitoring) as long as the Heater is working. As the Power stage is switched off wit a failure all functions connected to lambda sensor are switched off.	Broken or disconnected wiring or defective lambda sensor	Check wiring and under sensor, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	21708-31
LSULowBatt	Lambda Sensing: Blow out maximum time exceeded (LSU heating insufficient)	19EC-1F	Lambda Sensor Heater	Heat-up of LSU is monitored. If blow out of LSU is too long a failure is detected.	LSU heater problem	Replace LSU sensor	Frequency: no lamp Lamp: no lamp	6636-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUO2 ClbMax	Lambda Sensing: Fault code to indicate SRC High error for O2 calibration	1EDC-1F	Lambda Sensing	The O2 signal is calibrated by an electrical 0-offset calibration each 10,00min but not before 8,00s after start if following conditions fulfilled: No DPF or NOx Aftertreatment regeneration active Calibration not inhibited by Fid_LSUo2Clb0 due to another failure Engine in operating range 1 (speed between 3000,00rpm and under 0rpm and load between 10,00mg/hub and under g/hub) OR in operating range 2 (speed between 3000,00rpm and under 0rpm and load between 30,00mg/hub and under g/hub) The analogic O2 signal measured during calibration must be lower than 200,00mV, otherwise a failure is stored	Defect in wiring of lambda sensor, inaccurate or defective lambda sensor, problems with EGR actuators or injection system	Check wiring and under cy of lambda sensor, check functioning of injection system and GR actuators, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	7900-31
LSUO2 ClbMin	Lambda Sensing: Fault code to indicate SRC Low error for O2 calibration	2FDC-1F	Lambda Sensing	The O2 signal is calibrated by an electrical 0-offset calibration each 10,00min but not before 8,00s after start if following conditions fulfilled: No DPF or NOx Aftertreatment regeneration active Calibration not inhibited by Fid_LSUo2Clb0 due to another failure Engine in operating range 1 (speed between 3000,00rpm and under 0rpm and load between 10,00mg/hub and under g/hub) OR in operating range 2 (speed between 3000,00rpm and under 0rpm and load between 30,00mg/hub and under g/hub) The analogic O2 signal measured during calibration must be higher than -200,00mV, otherwise a failure is stored	Defect in wiring of lambda sensor, inaccurate or defective lambda sensor, problems with EGR actuators or injection system	Check wiring and under cy of lambda sensor, check functioning of injection system and GR actuators, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	12252-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUO2 Max	Lambda Sensing: O2 value above the max threshold	11EC-1F	Lambda Sensing	The O2 signal should be between 200,00mV and under during normal operation, otherwise a failure is reported.	Defect in wiring (open circuit at line IA (Pump Cell)), Excessive drifting in O2 concentration during overrun, Defective lambda sensor, Short circuit to external source	Check lambda sensor and ts entire wiring, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	4588-31
LSUO2 Min	Lambda Sensing: O2 value below the min threshold	22EC-1F	Lambda Sensing	The O2 signal should be between 200,00mV and under during normal operation, otherwise a failure is reported.	Defect in wiring, defective lambda sensor, short circuit to ground	Check lambda sensor and ts entire wiring, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	8940-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUO2 PlausMaxFLd	Lambda Sensing: Oxygen concentration implausibly high at High Load	33EC-1F	Lambda Sensing	The expected O2 concentration is calculated with the actual air flow and under fuel injection. If the engine is running in steady state (i.e. the calculated O2 concentration does not vary more than 0,01- for 1,50s), the calculated - filtered by 0,00s - and under ed O2 concentration are compared. If at Full load condition (engine speed between 1600,00rpm and under 0rpm and under load between 30,00mg/hub and under g/hub) the O2 difference is outside the Window + 0,04-) / - 0,05- (0.21 corresponds to air with 21% O2) a failure is reported)	Leakage or blockage in exhaust gas system, defect in wiring of lambda sensor, inaccurate lambda or air flow sensor, problems in injection system (e.g. blockage in injectors)	Check exhaust gas system, check wiring of lambda sensor, check accuracy of lambda and ir flow sensor, check injection system, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	13292-31
LSUO2 PlausMaxOvrRun	Lambda Sensing: Oxygen concentration implausibly high at Overrun	34EC-1F	Lambda Sensing	The expected O2 at overrun is calculated as ~20.95%. If the engine is running in steady state (i.e. the calculated O2 concentration does not vary more than 0,01- for 1,50s), the calculated - filtered by 0,00s - and under ed O2 concentration are compared. If at Overrun condition (engine speed between 1600,00rpm and under 0rpm and under load between -0,50mg/hub and under /hub) the O2 difference is outside the Window + 0,02- / - 0,05- (0.21 corresponds to air with 21% O2) , a failure is reported	Leakage or blockage in exhaust gas system, defect in wiring of lambda sensor, inaccurate lambda or air flow sensor, problems in injection system (e.g. blockage in injectors)	Check exhaust gas system, check wiring of lambda sensor, check accuracy of lambda and ir flow sensor, reset all learning factors of LSU in EEPROM and under k the accuracy of LSU, check injection system, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	13548-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUO2 PlausMaxPartLd	Lambda Sensing: Oxygen concentration implausibly high at Part Load	35EC-1F	Lambda Sensing	The expected O2 concentration is calculated with the actual air flow and under fuel injection. If the engine is running in steady state (i.e. the calculated O2 concentration does not vary more than 0,01- for 1,50s), the calculated - filtered by 0,00s - and under ed O2 concentration are compared. If at Part load condition (engine speed between 1600,00rpm and under 0rpm and under load between 10,00mg/hub and under g/hub) the O2 difference is outside the Window + 0,05- / - 0,07- (0.21 corresponds to air with 21% O2) , a failure is reported	Leakage or blockage in exhaust gas system, defect in wiring of lambda sensor, inaccurate lambda or air flow sensor, problems in injection system (e.g. blockage in injectors)	Check exhaust gas system, check wiring of lambda sensor, check accuracy of lambda and ir flow sensor, reset all learning factors of LSU in EEPROM and under k the accuracy of LSU, check injection system, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	13804-31
LSUO2 PlausMinFLd	Lambda Sensing: Oxygen concentration implausibly low at High Load	36EC-1F	Lambda Sensing	The expected O2 concentration is calculated with the actual air flow and under fuel injection. If the engine is running in steady state (i.e. the calculated O2 concentration does not vary more than 0,01- for 1,50s), the calculated - filtered by 0,00s - and under ed O2 concentration are compared. If at Full load condition (engine speed between 1600,00rpm and under 0rpm and under load between 30,00mg/hub and under g/hub) the O2 difference is outside the Window + 0,04- / - 0,05- (0.21 corresponds to air with 21% O2) , a failure is reported	Leakage or blockage in exhaust gas system, defect in wiring of lambda sensor, inaccurate lambda or air flow sensor, problems in injection system (e.g. leaky injectors)	Check exhaust gas system, check wiring of lambda sensor, check accuracy of lambda and ir flow sensor, reset all learning factors of LSU in EEPROM and under k the accuracy of LSU, check injection system, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	14060-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUO2 PlausMinOvrRun	Lambda Sensing: Oxygen concentration implausibly low at Overrun	37EC-1F	Lambda Sensing	The expected O2 at overrun is calculated as ~20.95%. If the engine is running in steady state (i.e. the calculated O2 concentration does not vary more than 0,01- for 1,50s), the calculated - filtered by 0,00s - and under ed O2 concentration are compared. If at Overrun condition (engine speed between 1600,00rpm and under 0rpm and under load between -0,50mg/hub and under /hub) the O2 difference is outside the Window +0,02- / - 0,05- (0.21 corresponds to air with 21% O2) , a failure is reported	Leakage or blockage in exhaust gas system, defect in wiring of lambda sensor, inaccurate lambda or air flow sensor, problems in injection system (e.g. leaky injectors)	Check exhaust gas system, check wiring of lambda sensor, check accuracy of lambda and ir flow sensor, reset all learning factors of LSU in EEPROM and under k the accuracy of LSU, check injection system, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	14316-31
LSUO2 PlausMinPartLd	Lambda Sensing: Oxygen concentration implausibly low at part Load	38EC-1F	Lambda Sensing	The expected O2 concentration is calculated with the actual air flow and under fuel injection. If the engine is running in steady state (i.e. the calculated O2 concentration does not vary more than 0,01- for 1,50s), the calculated - filtered by 0,00s - and under ed O2 concentration are compared. If at Part load condition (engine speed between 1600,00rpm and under 0rpm and under load between 10,00mg/hub and under g/hub) the O2 difference is outside the Window + 0,05- / - 0,07- (0.21 corresponds to air with 21% O2) , a failure is reported	Leakage or blockage in exhaust gas system, defect in wiring of lambda sensor, inaccurate lambda or air flow sensor, problems in injection system (e.g. leaky injectors)	Check exhaust gas system, check wiring of lambda sensor, check accuracy of lambda and ir flow sensor, reset all learning factors of LSU in EEPROM and under k the accuracy of LSU, check injection system, if necessary replace lambda sensor (and under all learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	14572-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUPresCompMax	Lambda Sensing: Fault check for k-value exceeding maximum limit	1AEC-1F	Lambda Sensing	The O2 signal is compensated according the actual pressure (ambient + modelled resistance of exhaust flow (ASMod)) with a constant factor k, which is dependant on the sensor due production tolerances and he tolerances of ASMod. This k-factor is learnt and failure is reported, if the correction value is not between 200,00- and under -.	Wrong exhaust pressure caclulation due to: - wrong exhaust flow estimation (Boost pressure, Boost temperature or HFM out of range, EGR rate not OK --> all cases should cause a special failure activation) - wrong ambient pressure (ambient pressure sensor) Lambda sensor defective	Check if there is a failure stored conserning exhaust pressure caclulation due to: - Boost pressure - Boost temperature - HFM out of range - EGR rate not OK - ambient pressure Replace Lambda sensor (and under learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk tha performance limiter gets active, althoug the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periodes of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readinsess state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	6892-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUPresCompMin	Lambda Sensing: Fault check for k-value below minimum limit	1BEC-1F	Lambda Sensing	The O2 signal is compensated according the actual pressure (ambient + modelled resistance of exhaust flow (ASMod)) with a constant factor k, which is dependant on the sensor due production tolerances and he tolerances of ASMod. This k-factor is learnt and failure is reported, if the correction value is not between 200,00- and under -.	Wrong exhaust pressure caclulation due to: - wrong exhaust flow estimation (Boost pressure, Boost temperature or HFM out of range, EGR rate not OK --> all cases should cause a special failure activation) - wrong ambient pressure (ambient pressure sensor) Lambda sensor defective	Check if there is a failure stored conserning exhaust pressure caclulation due to: - Boost pressure - Boost temperature - HFM out of range - EGR rate not OK - ambient pressure Replace Lambda sensor (and under learning values in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk tha performance limiter gets active, althoug the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periodes of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readinsess state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	7148-31
LSUPresCompPlaus	Lambda Sensing: Pressure compensated signal deviating	4EEC-1F	Lambda Sensing	The standard deviation of the pressure compensated Lambda Sensor signal is monitored.	Lambda sensor defective	Replace Lambda sensor (and under learning values in EEPROM with tester)	Frequency: no lamp Lamp: no lamp	20204-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSURiCIbMax	Lambda sensor Wiring: Lambda Sensor inner Resistance calibration value too High	14DC-1F	Lambda sensor Wiring	The resistance of the Lambda Sensor heater is taken as temperature measurement device and sks high precision. Therefore the inner resistance is calibrated each 10,00min but not before 8,00s after start if following conditions fulfilled: Battery Voltage > 90,00mV No DPF or NOx Aftertreatment regeneration active Engine in operating range 1 (speed between 3000,00rpm and under 0rpm and load between 10,00mg/-hub and under g/hub) OR in operating range 2 (speed between 3000,00rpm and under 0rpm and load between 30,00mg/hub and under g/hub) The Resistance measured during calibration must be lower than 46,00Ohm, otherwise a failure is stored	Defect in wiring of lambda sensor (heater lines), inaccurate or defective lambda sensor	Check wiring and under cy of lambda sensor, if necessary replace lambda sensor (and under the learning factors in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	5340-31
LSURiCIbMin	Lambda sensor Wiring: Lambda Sensor inner Resistance calibration value too Low	15DC-1F	Lambda sensor Wiring	The resistance of the Lambda Sensor heater is taken as temperature measurement device and sks high precision. Therefore the inner resistance is calibrated each 10,00min but not before 8,00s after start if following conditions fulfilled: Battery Voltage > 90,00mV No DPF or NOx Aftertreatment regeneration active Engine in operating range 1 (speed between 3000,00rpm and under 0rpm and load between 10,00mg/-hub and under g/hub) OR in operating range 2 (speed between 3000,00rpm and under 0rpm and load between 30,00mg/hub and under g/hub) The Resistance measured during calibration must be higher than -46,00Ohm, otherwise a failure is stored	Defect in wiring of lambda sensor (heater lines), inaccurate or defective lambda sensor	Check wiring and under cy of lambda sensor, if necessary replace lambda sensor (and under the learning factors in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	5596-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUSPI BattLowMin	Lambda Sensor Supply: low battery voltage at the SPI chip	29DC-1F	Lambda Sensor Supply	The low battery voltage is detected by the CJ125 SPI via ASIC, i.e. is made by Hardware	wiring defect, defective lambda sensor or SPI chip in ECU	Check Wiring of lambda sensor, if necessary replace lambda sensor (and under the learning factors in EEPROM with tester) or ECU Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	10716-31
LSUSPI Sig	Lambda sensor Wiring: Fault check to indicate SPI chip error of lambda sensor	E6DC-1F	Lambda sensor Wiring	The SPI controls the Lambda sensor device for measuring or calibrating the inner resistance for temperature evaluation, switches on and ff the pump current (to measure O2 content) and he hardware related Open load and under circuit monitoring. The requests for those actions are made by SW and under in a configuration of the initialisation register (Hardware controlled). Parallelly same configuration is calculated by Software. If both configuration are not identical, the SPI is not plausible.	SPI chip in ECU defective	Replace ECU	Frequency: no lamp Lamp: no lamp	59100-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUtExcMax	Lambda Sensor Temperature: LSU sensor temperature Ri exceeds the maximum limit	17DC-1F	Lambda Sensor Temperature	The Lambda Sensor (LSU) measures O2 concentration only correctly, when the measuring cell is in a certain temperature range. The temperature is estimated by the inner resistance (Ri) of the heater. If the estimated temperature is higher than a threshold, a failure is reported.	Defect in wiring of sensor. Disconnected lambda sensor. Short circuit to ground in UN line. Defective lambda sensor.	Check entire wiring of the sensor and he sensor itself, check connection of lambda sensor, if necessary replace lambda sensor (and under the learning factors in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	6108-31
LSUtExcMin	Lambda Sensor Temperature: LSU sensor temperature Ri is below the minimum limit	28DC-1F	Lambda Sensor Temperature	The Lambda Sensor (LSU) measures O2 concentration only correctly, when the measuring cell is in a certain temperature range. The temperature is estimated by the inner resistance (Ri) of the heater. If the estimated temperature is lower than a threshold, a failure is reported.	Disconnected lambda sensor. Open load in VM or UN sensor line Defect in wiring of sensor Defective lambda sensor	Check connection of lambda sensor, check entire wiring of the sensor and he sensor itself, if necessary replace lambda sensor (and under the learning factors in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	10460-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUWireIPSig	Lambda sensor Wiring: O2 Voltage exceeds the threshold value for shunting	13DC-1F	Lambda sensor Wiring	The Lambda Sensor wiring is monitored with cold sensor: if there is a "shunt" the O2 signal is in a defined window also with cold sensor	Lambda sensor was too warm to carry out shunting dection, shunt in wire connections of lambda sensor	Let engine cool down entirely and under ignition on and ff, (failure should be healed at next start), check wiring of lambda sensor, if necessary replace lambda sensor (and under the learning factors in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk tha performance limiter gets active, althoug the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periodes of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readinsess state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	5084-31
LSUWireSCB	Lambda sensor Wiring: short to battery at Pump Cell (IA,IP), Nernst Cell (UN), or virtual ground VG	61DC-1F	Lambda sensor Wiring	The conditioning circuit of the lambda sensor is monitored by hardware directly (CJ125) for the Nernst Cell (UN), the Pump Cell (IA,IP) and he virtual Ground (VG) in one common failure path	Short circuit to external source in one of the wiring lines of the lambda sensor, open load in virtual ground VG, defective LSU	Check entire wiring of lambda sensor, check lambda sensor itself, if necessary replace lambda sensor (and under the learning factors in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	25052-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LSUWireSCG	Lambda sensor Wiring: short to ground at Pump Cell (IA,IP), Nernst Cell (UN), or virtual ground (VG)	72DC-1F	Lambda sensor Wiring	The conditioning circuit of the lambda sensor is monitored by hardware directly (CJ125) for the Nernst Cell (UN), the Pump Cell (IA,IP) and he virtual Ground (VG) in one common failure path	Short circuit to ground in one of the wiring lines of the lambda sensor, defective LSU	Check entire wiring of lambda sensor, check lambda sensor itself, if necessary replace lambda sensor (and under the learning factors in EEPROM with tester) Note for EURO OBD application: this failure activates a Performance limitation due to legislation. Therefore after repair following procedure must be done, otherwise there is the risk that performance limiter gets active, although the failure is repaired: 1) clear memory with tester 2) if performance limiter active: disable it with tester 3) drive the vehicle ~20min in engine speed range >1600rpm with constant periods of ~5 sec and ore than 5 motoring phases > 10sec (highest gear) 4) check with "OBD scan tool" Service $01 (or Readiness state) that "comprehensive components" are "ready" 5) if not: repeat the procedure	Frequency: no lamp Lamp: no lamp	29404-31
LTCPmpOL	Low Temperature Coolant Pump actuator: Open Load error on the output power stage	5673-1F	Coolant pump	The Power stage for Low Temperature Coolant Pump is controlled by Hardware for electrical failures.	Broken or disconnected wiring or defective Low Temperature Coolant Pump Actuator	Check of wiring, replace Low Temperature Coolant Pump Actuator	Frequency: no lamp Lamp: no lamp	22131-31
LTCPmpOvrTemp	Low Temperature Coolant Pump actuator: Over Temperature error on the output power stage	8773-1F	Coolant pump	The Power stage of Low Temperature Coolant Pump Actuator is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	34675-31
LTCPmpSCB	Low Temperature Coolant Pump actuator: Short Circuit to Battery error on the output power stage	6873-1F	Coolant pump	The Power stage of Low Temperature Coolant Pump Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to external source or defective Low Temperature Coolant Pump actuator	Check of wiring or replace Low Temperature Coolant Pump digital actuator	Frequency: no lamp Lamp: no lamp	26739-31
LTCPmpSCG	Low Temperature Coolant Pump actuator: Short Circuit to Ground error on the output power stage	7973-1F	Coolant pump	The Power stage for Low Temperature Coolant Pump is controlled by Hardware for electrical failures.	Short circuit of wiring to ground or defective LOw Temperature Coolant Pump actuator	Check of wiring or replace Low Temperature Coolant Pump actuator	Frequency: no lamp Lamp: no lamp	31091-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
LubCrkCasePresHi	High pressure in crankcase	15E3-1F	Crankcase pressure	This monitor checks the crankcase pressure.	Locking blow-by; high level oil.	Check blow-by; check oil level.	Frequency: no lamp Lamp: no lamp	5603-31
LubFICalc	DPF Lube Oil monitoring: Fuel in oil has exceeded the limit for safe driveability	7189-1F	DPF Lube Oil monitoring	A failure is reported if the fuel in oil exceeds a defined quantity. Fuel in oil is calculated considering the amount of post injection used for particulate filter regeneration which adds fuel to oil minus the fuel quantity which evaporates from oil (proportional to oil temperature). Fuel in oil integrated quantity is stored in EEPROM and ead at each ECU start.	Excessive oil dilution by fuel due to post injections during particulate filter regenerations	Change lubrication oil and under the fuel--in-oil calculation via tester.	Frequency: no lamp Lamp: no lamp	29065-31
LubFIMax	DPF Lube Oil monitoring: Fuel in oil has exceeded the Maximum limit	14E3-1F	DPF Lube Oil monitoring	A failure is reported if the fuel in oil exceeds a maximum quantity. Fuel in oil is calculated considering the amount of post injection used for particulate filter regeneration, which adds fuel to oil, minus the fuel quantity which evaporates from oil (proportional to oil temperature). Fuel in oil integrated quantity is stored in EEPROM and ead at each ECU start.	Excessive oil dilution by fuel due to post injections during particulate filter regeneration	Change lubrication oil and under the fuel--in-oil calculation via tester, using UDS Routine Control Service (ID $0255)	Frequency: BLINK Lamp: Red (SVS)	5347-31
LubFIWarn	DPF Lube Oil monitoring: Fuel in oil has exceeded the warning limit	16E3-1F	DPF Lube Oil monitoring	A failure is reported if the fuel in oil exceeds a defined quantity. Fuel in oil is calculated considering the amount of post injection used for particulate filter regeneration which adds fuel to oil minus the fuel quantity which evaporates from oil (proportional to oil temperature). Fuel in oil integrated quantity is stored in EEPROM and ead at each ECU start.	Excessive oil dilution by fuel due to post injections during particulate filter regenerations	Change lubrication oil and under the fuel--in-oil calculation via tester, using UDS Routine Control Service (ID $0255)	Frequency: no lamp Lamp: no lamp	5859-31
LubSot	DPF Lube Oil monitoring: Soot in oil has exceeded the Maximum limit	17E3-1F	DPF Lube Oil monitoring	A failure is reported if soot in oil exceeds a maximum quantity. Soot in oil is calculated by a module which cumulates total engine running time at each crankshaft angle for end of last of torque giving injection, calculating the expected soot contamination of oil. Soot in oil integrated quantity is stored in EEPROM and ead at each ECU start.	Soot accumulation in the lubrication oil too high	Change lubrication oil and under the soot--in-oil calculation via tester, using UDS Routine Control Service (ID $0245) Replace PCV filter.	Frequency: no lamp Lamp: no lamp	6115-31
MaxPTOSwt	PTO actuation: Defect Fault Check for signal value above maximum limit	11A1-1F	PTO actuation	A range and under bility check for the value of PTO switch are performed. The source for the multi value PTO switch is the CAN message Com_stPTOSwt	PTO switch defective (possible short circuit)	Check PTO switch and under	Frequency: no lamp Lamp: no lamp	4513-31
MeUnIntCtct	Fuel metering unit: Error check for loose contact between metering unit (MeUn) and CU	4155-1F	Fuel metering unit	A loose contact in the wiring of the metering unit can result in a malfunction of the metering unit and ead to fuel pressure oscillations (irregular engine running, possible Fuel pressure failures detected). A permanent loosen contact is detected by the electrical monitoring (SCB,SCG,OL Monitorings), but very short contact loosing (e.g. due to vibration) are not detected. Therefore this monitoring counts the number "short term loosen contacts" (shorter than debouncing of electrical failure) in the way, that a counter is incremented by one each time a loosen contact is recognised, and under ented by 1, if the time between 2 loosen contact recognitions is longer than 300,00ms. If the counter reaches or exceeds 1000,00- a "bad contact" will be recognised.	Bad Contacts on Connector "Broken" wiring harness or Insulation (--> short circuits) Defective Metering Unit (MeUn)	Check Connector Check Wiring Harness Check Metering unit (MeUn)	Frequency: BLINK Lamp: Red (SVS)	16725-31
MeUnOL	Fuel metering unit: open load of metering unit output	5255-1F	Fuel metering unit	The power stage of the fuel metering unit to common rail (MeUn) is monitored electrically for voltage and under t by Hardware.	Broken or disconnected wiring, defective metering unit	Check of wiring or metering unit	Frequency: ON Lamp: Amber (SVS)	21077-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
MeUn OT	Fuel metering unit: over temperature of device driver of metering unit	8355-1F	Fuel metering unit	The power stage of the fuel metering unit to common rail (MeUn) is monitored electrically for voltage and under t by Hardware.	High battery voltage, high temperature inside ECU, high load or wiring problem	Check of wiring or metering unit. Check resistance of wiring or metering unit. Check for ECU cooling	Frequency: ON Lamp: Amber (SVS)	33621-31
MeUnS hCirHS Batt	Fuel Metering Unit: Short Circuit to Battery at High Side	6455-1F	Fuel metering unit	The Power stage of Metering Unit at High Side is monitored by Hardware for electric failures.	Short circuit of wiring to battery or inside Metering Unit at High Side	Check of wiring, replace Metering Unit	Frequency: ON Lamp: Amber (SVS)	25685-31
MeUnS hCirHS Gnd	Fuel Metering Unit: Short Circuit to Ground at High Side	7555-1F	Fuel metering unit	The Power stage of Metering Unit at High Side is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Metering Unit at High Side	Check of wiring, replace Metering Unit	Frequency: ON Lamp: Amber (SVS)	30037-31
MeUnS hCirLSB att	Fuel Metering Unit: Short Circuit to Battery at Low Side	6655-1F	Fuel metering unit	The Power stage of Metering Unit at Low Side is monitored by Hardware for electric failures.	Short circuit of wiring to battery or inside Metering Unit at Low Side	Check of wiring, replace Metering Unit	Frequency: ON Lamp: Amber (SVS)	26197-31
MeUnS hCirLS Gnd	Fuel Metering Unit: Short Circuit to Ground at Low Side	7755-1F	Fuel metering unit	The Power stage of Metering Unit at Low Side is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Metering Unit at Low Side	Check of wiring, replace Metering Unit	Frequency: ON Lamp: Amber (SVS)	30549-31
MeUnS RCMax	Fuel metering unit: signal range check high error of metering unit AD-channel	1855-1F	Fuel metering unit	The power stage of the fuel metering unit to common rail (MeUn) is monitored electrically for voltage and under t by Hardware.	Metering unit defective or short circuit to external source	Check wiring or replace metering unit	Frequency: no lamp Lamp: no lamp	6229-31
MeUnS RCMin	Fuel metering unit: signal range check low error of metering unit AD--channel	2955-1F	Fuel metering unit	The power stage of the fuel metering unit to common rail (MeUn) is monitored electrically for voltage and under t by Hardware.	Metering unit defective or short circuit to ground	Check wiring or replace metering unit	Frequency: no lamp Lamp: no lamp	10581-31
MILOL	OBD Lamp (MIL): No load error	5272-1F	OBD Lamp (MIL)	The Power stage for the control lamp for MIL (Malfunction Indication Lamp for OBD purposes) activation is controlled by Hardware for electrical failures	Broken or disconnected wiring or defective MIL.	Check of wiring or replace MIL	Frequency: no lamp Lamp: no lamp	21106-31
MILOvr Temp	OBD Lamp (MIL): Over temperature error	8372-1F	OBD Lamp (MIL)	The Power stage for the control lamp for MIL (Malfunction Indication Lamp for OBD purposes) activation is controlled by Hardware for electrical failures	High battery voltage, high load and igh ECU temperature, defective wiring, MIL or ECU	Check load and under , check wiring, replace MIL or ECU	Frequency: no lamp Lamp: no lamp	33650-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
MILSCB	OBD Lamp (MIL): Short circuit to battery error	6472-1F	OBD Lamp (MIL)	The Power stage for the control lamp for MIL (Malfunction Indication Lamp for OBD purposes) activation is controlled by Hardware for electrical failures	Short circuit of wiring to external source	Check of wiring	Frequency: no lamp Lamp: no lamp	25714-31
MILSCG	OBD Lamp (MIL): Short circuit to ground error	7572-1F	OBD Lamp (MIL)	The Power stage for the control lamp for MIL (Malfunction Indication Lamp for OBD purposes) activation is controlled by Hardware for electrical failures	Short circuit of wiring to ground	Check of wiring	Frequency: no lamp Lamp: no lamp	30066-31
MinPTOSwt	PTO actuation: Defect Fault Check for signal value below minimum limit	22A1-1F	PTO actuation	A range and under bility check for the value of PTO switch are performed. The source for the multi value PTO switch is the CAN message Com_stPTOSwt	PTO switch defective (possible short circuit)	Check PTO switch and under	Frequency: no lamp Lamp: no lamp	8865-31
MisfDetMisfireCyl_0	Injectors: Misfiring: Too many detected misfires at cylinder 1	4146-1F	Injectors: Misfiring	A combustion of a cylinder can be detected as an acceleration of the engine speed between TDC and TD of the dedicated cylinder. If within 1000 engine revolutions more than 200,00- cycles with too low engine accelerations are detected, misfiring is detected.	Severe loss of compression or fuel injection failure	Check the sealing of the combustion chamber (piston ring, cylinder head...), look for injection failures of cylinder 1	Frequency: no lamp Lamp: no lamp	16710-31
MisfDetMisfireCyl_1	Injectors: Misfiring: Too many detected misfires at cylinder 5	4246-1F	Injectors: Misfiring	A combustion of a cylinder can be detected as an acceleration of the engine speed between TDC and TD of the dedicated cylinder. If within 1000 engine revolutions more than 200,00- cycles with too low engine accelerations are detected, misfiring is detected.	Severe loss of compression or fuel injection failure	Check the sealing of the combustion chamber (piston ring, cylinder head...), look for injection failures of cylinder 5	Frequency: no lamp Lamp: no lamp	16966-31
MisfDetMisfireCyl_2	Injectors: Misfiring: Too many detected misfires at cylinder 3	4346-1F	Injectors: Misfiring	A combustion of a cylinder can be detected as an acceleration of the engine speed between TDC and TD of the dedicated cylinder. If within 1000 engine revolutions more than 200,00- cycles with too low engine accelerations are detected, misfiring is detected.	Severe loss of compression or fuel injection failure	Check the sealing of the combustion chamber (piston ring, cylinder head...), look for injection failures of cylinder 3	Frequency: no lamp Lamp: no lamp	17222-31
MisfDetMisfireCyl_3	Injectors: Misfiring: Too many detected misfires at cylinder 6	4446-1F	Injectors: Misfiring	A combustion of a cylinder can be detected as an acceleration of the engine speed between TDC and TD of the dedicated cylinder. If within 1000 engine revolutions more than 200,00- cycles with too low engine accelerations are detected, misfiring is detected.	Severe loss of compression or fuel injection failure	Check the sealing of the combustion chamber (piston ring, cylinder head...), look for injection failures of cylinder 6	Frequency: no lamp Lamp: no lamp	17478-31
MisfDetMisfireCyl_4	Injectors: Misfiring: Too many detected misfires at cylinder 2	4546-1F	Injectors: Misfiring	A combustion of a cylinder can be detected as an acceleration of the engine speed between TDC and TD of the dedicated cylinder. If within 1000 engine revolutions more than 200,00- cycles with too low engine accelerations are detected, misfiring is detected.	Severe loss of compression or fuel injection failure	Check the sealing of the combustion chamber (piston ring, cylinder head...), look for injection failures of cylinder 2	Frequency: no lamp Lamp: no lamp	17734-31
MisfDetMisfireCyl_5	Injectors: Misfiring: Too many detected misfires at cylinder 4	4646-1F	Injectors: Misfiring	A combustion of a cylinder can be detected as an acceleration of the engine speed between TDC and TD of the dedicated cylinder. If within 1000 engine revolutions more than 200,00- cycles with too low engine accelerations are detected, misfiring is detected.	Severe loss of compression or fuel injection failure	Check the sealing of the combustion chamber (piston ring, cylinder head...), look for injection failures of cylinder 4	Frequency: no lamp Lamp: no lamp	17990-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
MisfDetMisfireMul	Injectors: Misfiring: Too many recognized misfires in more than one cylinder	4746-1F	Injectors: Misfiring	A combustion of a cylinder can be detected as an acceleration of the engine speed between TDC and TD of the dedicated cylinder. If within 1000 engine revolutions more than 200,00- cycles with too low engine accelerations are detected, misfiring is detected. If more than 1 cylinder shows misfiring, the failure "multiple" cylinder misfiring" is stored. If less than 1,00- cylinders show misfiring, the failure path of the defective cylinders are also stored in the failure memory.	Severe loss of compression or fuel injection failure	If Failure Path for Misfiring of single cylinders are also stored: check the dedicated cylinders. If no Failure path of Misfiring of single cylidner is stored (this means more than 1,00- show misfiring): check all cylinders for correct injection and r compression.	Frequency: no lamp Lamp: no lamp	18246-31
MoCADCNTP	ECU Internal: Diagnostic fault check to report the ADC no--load test pulse error	E21D-1F	ECU Internal	The Analogic Digital Converter (ADC) of the ECM is monitored for plausibility using redundantly read input (accelerator pedal) and est voltage inputs.	ECM internal failure	Replace ECM	Frequency: ON Lamp: Amber (SVS)	57885-31
MoCADCTst	ECU Internal: Diagnostic fault check to report the ADC test error	E31D-1F	ECU Internal	The Analogic Digital Converter (ADC) of the ECM is monitored for plausibility using redundantly read input (accelerator pedal) and est voltage inputs.	ECM internal failure	Replace ECM	Frequency: ON Lamp: Amber (SVS)	58141-31
MoCADCVltgRatio	ECU Internal: Diagnostic fault check to report the error in Voltage ratio in ADC monitoring	E41D-1F	ECU Internal	The analogic Digital Converter (ADC) of the ECM is monitored for plausibility using redundantly read input (accelerator pedal) and est voltage inputs.	ECM internal failure	Replace ECM	Frequency: ON Lamp: Amber (SVS)	58397-31
MoCComErrCnt	ECU Internal: Diagnostic fault check to report errors in query-/response-communication	E51D-1F	ECU Internal	Communication between ECM processor and under stage controller over SPI bus is monitored. Error is detected if no response or an erroneous response is detected by the processor.	Defective monitoring module or CPU (e.g. impaired functioning of the CPU clock) of the EDC. Disturbed SPI-Bus.	If error exists only temporary (i.e. injection reoccurs) error can be ignored and under deleted in the fault memory. In case of a permanent error the injection remains blocked and he ECU has to be replaced	Frequency: ON Lamp: Amber (SVS)	58653-31
MoCComSPI	ECU Internal: Diagnostic fault check to report errors in SPI--communication	E61D-1F	ECU Internal	Communication between ECM processor and under stage controller over SPI bus is monitored. Error is detected if no response or an erroneous response is detected by the processor.	Disturbed SPI-Bus	If ECM functions correctly after recovery only temporary SPI error occurred and under memory can be deleted and under ignored. If permanent SPI error is present and he ECM does not leave boot block --> Replace ECM	Frequency: ON Lamp: Amber (SVS)	58909-31
MoCROMErrXPg	ECU Internal: Diagnostic fault check to report multiple error while checking the complete ROM-memory	E71D-1F	ECU Internal	The complete ROM memory is checked once per driving cycle, at each ECM shut off phase (after-run).	Corrupted datas in the ECM,ECM internal failure	Reprogram ECM, replace ECM	Frequency: ON Lamp: Amber (SVS)	59165-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
MoCS OPErr MMResp Byte	ECU Internal Check: Communication timeout from CPU to Monitoring Module	E13D-1F	ECU internal Check	The ECM comprises so-called redundant shut-off paths which deactivate all power stages relevant to injection if certain internal ECU errors are detected. In order to test the correct functioning of the shut off procedure every path is shortly activated during ECM initialization and under ing this the fuel injection power stage is activated. Since, however, the Shut off is active no injection should occur if procedure functions correctly.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	57661-31
MoCS OPErr NoChk	ECU Internal Check: Error during Shut Off Path test; uncertain cause (defective injector or shut-off path)	E23D-1F	ECU internal Check	The ECM comprises so-called redundant shut-off paths which deactivate all power stages relevant to injection if certain internal ECU errors are detected. In order to test the correct functioning of the shut off procedure every path is shortly activated during ECM initialization and under ing this the fuel injection power stage is activated. Since, however, the Shut off is active no injection should occur if procedure functions correctly.	ECM internal failure or injector problem	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	57917-31
MoCS OPErr RespTime	ECU Internal Check: Wrong set response time	E33D-1F	ECU internal Check	The ECM comprises so-called redundant shut-off paths which deactivate all power stages relevant to injection if certain internal ECU errors are detected. In order to test the correct functioning of the shut off procedure every path is shortly activated during ECM initialization and under ing this the fuel injection power stage is activated. Since, however, the Shut off is active no injection should occur if procedure functions correctly.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	58173-31
MoCS OPErr SPI	ECU Internal Check: Too many SPI errors during Shut Off Path test execution.	E43D-1F	ECU internal Check	The ECM comprises so-called redundant shut-off paths which deactivate all power stages relevant to injection if certain internal ECU errors are detected. In order to test the correct functioning of the shut off procedure every path is shortly activated during ECM initialization and under ing this the fuel injection power stage is activated. Since, however, the Shut off is active no injection should occur if procedure functions correctly.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	58429-31
MoCS OPLoLi	ECU Internal: Diagnostic fault check to report the error in undervoltage monitoring	E53D-1F	ECU Internal	The ECM comprises so-called redundant shut-off paths which deactivate all power stages relevant to injection if certain internal ECU errors are detected. In order to test the correct functioning of the shut off procedure every path is shortly activated during ECM initialization and under ing this the fuel injection power stage is activated. Since, however, the Shut off is active no injection should occur if procedure functions correctly.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	58685-31
MoCS OPMM	ECU Internal: Diagnostic fault check to report that line to power stage supply is not working correct	E63D-1F	ECU Internal	The ECM comprises so-called redundant shut-off paths which deactivate all power stages relevant to injection if certain internal ECU errors are detected. In order to test the correct functioning of the shut off procedure every path is shortly activated during ECM initialization and under ing this the fuel injection power stage is activated. Since, however, the Shut off is active no injection should occur if procedure functions correctly.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	58941-31
MoCS OPOS TimeOut	ECU Internal Check: OS timeout in the shut off path test. Failure setting the alarm task period.	E73D-1F	ECU internal Check	The ECM comprises so-called redundant shut-off paths which deactivate all power stages relevant to injection if certain internal ECU errors are detected. In order to test the correct functioning of the shut off procedure every path is shortly activated during ECM initialization and under ing this the fuel injection power stage is activated. Since, however, the Shut off is active no injection should occur if procedure functions correctly.	ECM need to be replaced, contact nearest head office for authorisation.	Contact Help Desk	Frequency: ON Lamp: Amber (SVS)	59197-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
MoCS OPPsv TstErr	ECU Internal Check: Error during positive test	E83D-1F	ECU internal Check	The ECM comprises so-called redundant shut-off paths which deactivate all power stages relevant to injection if certain internal ECU errors are detected. In order to test the correct functioning of the shut off procedure every path is shortly activated during ECM initialization and under ing this the fuel injection power stage is activated. Since, however, the Shut off is active no injection should occur if procedure functions correctly.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	59453-31
MoCS OPTim eOut	ECU Internal: Diagnostic fault check to report the timeout in the shut off path test	E69D-1F	ECU Internal	The ECM comprises so-called redundant shut-off paths which deactivate all power stages relevant to injection if certain internal ECU errors are detected. In order to test the correct functioning of the shut off procedure every path is shortly activated during ECM initialization and under ing this the fuel injection power stage is activated. Since, however, the Shut off is active no injection should occur if procedure functions correctly.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	59037-31
MoCS OPUpL i	ECU Internal: Diagnostic fault check to report the error in overvoltage monitoring	E79D-1F	ECU Internal	The ECM comprises so-called redundant shut-off paths which deactivate all power stages relevant to injection if certain internal ECU errors are detected. In order to test the correct functioning of the shut off procedure every path is shortly activated during ECM initialization and under ing this the fuel injection power stage is activated. Since, however, the Shut off is active no injection should occur if procedure functions correctly.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	59293-31
MoFAP P	ECU Internal: Diagnostic fault check to report the accelerator pedal position error	E5B1-1F	ECU Internal	A redundant acquisition and under bility check of accelerator pedal signal for function monitoring is provided in the ECM at software level 2 (monitoring level). The ECM is configured for a potentiometer/switch accelerator pedal.	ECM internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	58801-31
MoFES pd	ECU Internal: Diagnostic fault check to report the engine speed error	E812-1F	ECU Internal	A redundant check for engine speed is performed for function monitoring at software level 2. Monitoring in the ECM takes place in 3 levels: Level 1: Functions level (engine control, component monitoring) Level 2: Function monitoring level (detects defective processes of functions in level 1) Level 3: Controller monitoring level (check corrects processing of ECM program commands)	ECM internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	59410-31
MoFInj DatET	ECU Internal Check: Error in the plausibility of the injection energizing time	EC36-1F	ECU internal Check	Energising time request plausibility for the injectors is monitored by ECM monitoring software (level 2). ECM level 2 monitors ECM level 1 software (user software).	ECM internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	60470-31
MoFInj DatPhi	ECU Internal: Error in the plausibility of the start of energising angles	ED36-1F	ECU Internal	Start of energising time for the injectors, is monitored for plausibility by ECM monitoring software (level 2). ECM level 2 monitors ECM level 1 software (user software).	ECM internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	60726-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
MoFInj Qnt	ECU Internal: Diagnostic fault check to report the error due to non plausibility in ZFC	EE36-1F	ECU Internal	The plausibility of the Zero Fuel quantity Calibration (ZFC) or Zero Fuel quantity calibration during Low idle (ZFL), used to correct pilot injection quantity is monitored for plausibility.	ECM internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	60982-31
MoFMode1	ECU Internal: Diagnosis fault check to report the demand or normal mode due to an error in the PoI2 quantity	E1DD-1F	ECU Internal	The total fuel quantity contributing to torque generation is determined from the addition of pilot injections, main injection plus the product of post injection 2 and and under efficiency (post injection 1 only used for DPF regeneration). Post injection 2 start angle and under ency are evaluated here. Furthermore engine operation mode plausibility and ode transitions are monitored.	ECM internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	57821-31
MoFMode2	ECU Internal: Diagnosis fault check to report the error to demand or an ICO due to an error in the PoI2 shut-off	E2DD-1F	ECU Internal	The total fuel quantity contributing to torque generation is determined from the addition of pilot injections, main injection plus the product of post injection 2 and and under efficiency (post injection 1 only used for DPF regeneration). Post injection quantity 2 shut off in normal mode is evaluated.	ECM internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	58077-31
MoFMode3	ECU Internal: Error in the plausibility of PoI3 efficiency.	E3DD-1F	ECU Internal	The total fuel quantity contributing to torque generation is determined from the addition of pilot injections, main injection plus the product of post injection 2 and and under efficiency (post injection 1 only used for DPF regeneration). Post injection 3 efficiency plausibility is evaluated.	ECM internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	58333-31
MoFOvR	ECU Internal: Diagnostic fault check to report the error due to Over Run	E4DD-1F	ECU Internal	The Actuation time of Common Rail injector is calculated by the demanded fuel injection quantity of actual injection part (Pilot, Main, Post...) and under fuel rail pressure. As very low quantities must be guaranteed, there are correction factors evaluated, which compensate the tolerances and under behaviour of several components. This system is validated as "safety critical", because the injection duration can be increased by such corrections. Therefore the calculation of the final injector actuation time (calculated on level 1) is observed by a separate monitoring (level 2). If the actuation time during "Overrun" (engine driven by vehicle without combustion) exceeds a limit, the ECU is not working correctly. Note: If this failure appears, this means a fatal error in the ECU or a wrong data set calibration. Therefore contact helpdesk in this case.	ECM internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	58589-31
MoFOvRHtPrt	ECU Internal: Too high injector energising time during Over Run	EE2D-1F	ECU Internal	The Actuation time of Common Rail injector is calculated by the demanded fuel injection quantity of actual injection part (Pilot, Main, Post...) and under fuel rail pressure.			Frequency: BLINK Lamp: Red (SVS)	60973-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
MoFQntCor	ECU Internal: Diagnostic fault check to report the error due to injection quantity correction	E5DD-1F	ECU Internal	The Common Rail system allows to have several injections (Pilot 1, Pilot 2, Main, Post 1, Post 2). Each injection part causes a pressure oscillation in the Rail, which can influence the quantity of the next injection. This is compensated by the "pressure wave correction", which adapts the "virtual requested" quantity of the actual injection part depending on the actual pressure situation, in the way, that the real injection quantity is equal to the desired one. The pressure wave correction is validated as "safety critical", because the procedure can increase the requested injection quantity. Therefore the calculation of the correction (Level 1) is observed by a second calculation (Level 2). If the result of the corrections on level 1 is not plausible with the result of Level 2, the ECU is not working correctly. Note: If this failure appears, this means a fatal error in the ECU or a wrong data set calibration. Therefore contact helpdesk in this case.	ECU internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	58845-31
MoFRailP	ECU Internal: Diagnostic fault check to report the plausibility error in rail pressure monitoring	E6DD-1F	ECU Internal	The behaviour of Fuel pressure in Common Rail is a safety critical functionality. Therefore the correct functionality of the physical Fuel pressure monitoring (Level 1) is observed with an additional monitoring (level 2) to check, if the ECU is working correctly. If the Level 2 detects an implausible behaviour of the fuel pressure while the level 1 monitoring does not detect any inconvenience, the ECU is not working correctly. Note: If this failure appears, this means a fatal error in the ECU or a wrong data set calibration. Therefore contact helpdesk in this case.	ECU internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	59101-31
MoFTrqCmp	ECU Internal: Diagnostic fault check to report the error due to torque comparison	E7DD-1F	ECU Internal	The torque request can be influenced from a lot of vehicle functions (as accelerator pedal, ESP, ACS, automatic gear box etc) which are in some cases additive, in some cases as maximum and n some case as limitation. This complex structure can lead to a torque request, which is higher than accepted by engine. Therefore the total requested engine torque is compared to a maximal allowed engine torque, which is calculated by a redundant procedure. If the requested torque is higher, the system layout is not correct (calibration error in ECM) or the ECU does not work correctly. Therefore the ECU is reset (=switch off and under tic restart) 13,00- times to give the possibility to the system for correct calculation. If the requested torque is still higher than allowed, a fatal error in the system must be assumed, which is very critical. Therefore the engine speed is limited or in worst case the engine is stopped. Such intervention is confirmed with stored failure EnglCO in failure memory. Note: if this failure happens, that means, that the ECU is not calibrated well or there is a fatal problem in the ECU. Contact the Help desk in case this failure is active.	ECU internal failure or calibration error.	Contact Helpdesk	Frequency: BLINK Lamp: Red (SVS)	59357-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
MonLimCurr	ECU Internal: Diagnosis of lead torque limitation (for fuel pressure control) forced by ECU monitoring level 2	E8DD-1F	ECU Internal	The torque request can be influenced from a lot of vehicle functions (as accelerator pedal, ESP, ACS, automatic gear box etc) which are in some cases additive, in some cases as maximum and n some case as limitation. Further the finally requested torque on engine must not be similar to the engine torque output, as the request takes into consideration system tolerances (e.g. due to learning factors, but also due temperatures and under res), i.e. the final torque request is "virtual" in the way, that the real torque would be correct. As fuel pressure control is dependant on the torque input, the "virtual" torque request would lead to a wrong set point and under ore to wrong emissions. Therefore the input torque for the fuel pressure control is calculated separately - called "Lead torque". This complex structure can lead to a "lead" torque request, which is higher than accepted by engine. Therefore the total requested "lead" torque is compared to a maximal allowed (inner) torque. If the requested torque is higher, the system layout is not correct (calibration error in one of the electronic vehicle systems) and failure is stored. Note: if this failure happens, that means, that one of the control systems is not calibrated well or there is a fatal problem in the ECU. Contact the Help desk in case this failure is active.	ECU internal failure or failure in the dataset calibration of ECU or another vehicle control unit	Contact help desk or Replace ECU	Frequency: BLINK Lamp: Red (SVS)	59613-31
MonLimLead	ECU Internal: Diagnosis of lead torque limitation (for Air Control) forced by ECU monitoring level 2	E9DD-1F	ECU Internal	The torque request can be influenced from a lot of vehicle functions (as accelerator pedal, ESP, ACS, automatic gear box etc) which are in some cases additive, in some cases as maximum and n some case as limitation. Further the finally requested torque on engine must not be similar to the engine torque output, as the request takes into consideration system tolerances (e.g. due to learning factors, but also due temperatures and under res), i.e. the final torque request is "virtual" in the way, that the real torque would be correct. As the air control (Boost pressure, EGR rate etc) is dependant on the torque input, the "virtual" torque request would lead to a wrong set point and under ore to wrong emissions. Therefore the input torque for the Air control is calculated separately - called "Lead torque". This complex structure can lead to a "lead" torque request, which is higher than accepted by engine. Therefore the total requested "lead" torque is compared to a maximal allowed (inner) torque. If the requested torque is higher, the system layout is not correct (calibration error in one of the electronic vehicle systems) and failure is stored. Note: if this failure happens, that means, that one of the control systems is not calibrated well or there is a fatal problem in the ECU. Contact the Help desk in case this failure is active.	ECU internal failure or failure in the data set calibration of ECU or another vehicle control unit	Contact Help desk	Frequency: BLINK Lamp: Red (SVS)	59869-31
MonLimSet	ECU Internal: Diagnosis of engine torque limitation forced by ECU monitoring level 2	EADD-1F	ECU Internal	The torque request can be influenced from a lot of vehicle functions (as accelerator pedal, ESP, ACS, automatic gear box etc) which are in some cases additive, in some cases as maximum and n some case as limitation. This complex structure can lead to a torque request, which is higher than accepted by engine. Therefore the total requested engine torque is transferred to an "inner" engine torque (i.e. torque which has to be produced by the piston) and under ed to a maximal allowed inner torque. If the requested torque is higher, the system layout is not correct (calibration error in one of the electronic vehicle systems) and failure is stored. Note: if this failure happens, that means, that one of the control system is not calibrated well or there is a fatal problem in the ECU. Contact the Help desk in case this failure is active.	ECU internal failure or failure in the data set calibration of ECU or another vehcile cotnrol unit	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: BLINK Lamp: Red (SVS)	60125-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
MonU MaxSup ply1	ECU Voltage Supply: Reported Over-Voltage of Supply	EBDD-1F	ECU Voltage Supply	The CJ945 is a chip with 18 power stage and n additional module to monitor ECM internal 5Volts supply. Voltage error of the internal 5 Volt supply is monitored.	Excessive voltage supply of a CJ945 component: High battery voltage, defective wiring, internal defect of the ECM	Check the battery for correct voltage supply, check wiring. If defect remains replace ECM (internal defect)	Frequency: ON Lamp: Amber (SVS)	60381-31
MonU MinSup ply1	ECU Voltage Supply: Reported Under-Voltage of Supply	ECDD-1F	ECU Voltage Supply	The CJ945 is a chip with 18 power stage and n additional module to monitor ECM internal 5Volts supply. Voltage error of the internal 5 Volt supply is monitored.	Insufficient voltage supply of a CJ945 component: Low battery voltage, defective wiring, internal defect of the ECM	Check the battery for sufficient voltage supply, check wiring. If defect remains replace ECM (internal defect)	Frequency: ON Lamp: Amber (SVS)	60637-31
MRlyErl yOpng	ECU Main relay: Early opening defect of main relay	F561-1F	ECU Main relay	The Main relay is controlled by the ECU itself: After Key 15 off the ECU goes into the "After-run", where mainly following actions are made: - storage of the failures into the memory - counting of driving cycles and he corresponding reactions (pending --> validated failure, failure declared as long time failure etc.) Therefore the Main Relay is controlled by the ECU to assure the After-run. The main Relay is switched off by the ECU itself after the After-run has finished. This means, that all this actions can not be done, if the Main relay switches off before the After-run has finished. Therefore the correct opening of Main Relay is monitored. At each start a bit in the EEPROM is set, which is reset to 0 at the end of the After-run immediately before the ECU switches off the Main Relay. At next start the System checks the state of the bit in the EEPROM: If it is still set, this means that the Main Relay was switched off before the request of the ECU.	The Main Relay is switched off directly by Key 15 instead of the request of ECU: - in case vehicle equipped with "main electrical switch": engine stopped by "main switch" instead of Key 15 OR Main switch disconnected before afterrun finished. - due to wrong wiring to the Main Relay (direct contact to the battery missing or wiring ECU to Main relay) - due to internal defect of ECU	In case of vehicle equipped with "main electrical switch": inform driver of correct engine shut off by Key 15. In case of vehicle equipped with electronic "main electrical switch": check electronic of main switch for correct working (if opens after afterrun finished) Check wiring harness between main Relay and under y Check wiring harness between ECU and ain Relay Check ECU	Frequency: ON Lamp: Amber (SVS)	62817-31
MRlyStk	ECU Main relay: DFC for stuck main relay error	4661-1F	ECU Main relay	The Main relay is controlled by the ECU itself: After Key 15 off the ECU goes into the "After-run", where mainly following actions are made: - storage of the failures into the memory - counting of driving cycles and he corresponding reactions (pending --> validated failure, failure declared as long time failure etc.) Therefore the Main Relay is controlled by the ECU to assure the After-run. The main Relay is switched off by the ECU itself after the After-run has finished. After the request of "Main Relay switch off" the ECU expects, that the supply voltage drops below limit within 200,00ms. If not, it is assumed that the main relay is stuck in closed position.	Main relay has a short circuit or is mechanically stuck in closed position	Check wiring or replace main relay	Frequency: ON Lamp: Amber (SVS)	18017-31
NoCat 2DsBatt St	Power supply monitoring for the NOx sensor	7C8E-1F	NOx Sensing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	31886-31
NoCat 2DsCm pChk	NOx sensor plausibility check with other sensors	329E-1F	NOx Sensing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	12958-31
NoCat 2DsFdb kFault	NOx feed back fault detection	339E-1F	NOx Sensing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	13214-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
NoCat 2DsLa mBinMa x	SRC Max error for the binary lambda signal	149E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	5278-31
NoCat 2DsLa mBinMi n	SRC Min error for the binary lambda signal	259E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	9630-31
NoCat 2DsLa mLinMa x	SRC Max error for the Linear lambda signal	169E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	5790-31
NoCat 2DsLa mLinMi n	SRC Min error for the Linear lambda signal	279E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	10142-31
NoCat 2DsLa mPlaus Max	Error detection and under g of MAX error of lambda plausib- ility test	189E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	6302-31
NoCat 2DsLa mPlaus Min	Error detection and under g of MIN error of lambda plausib- ility test	299E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	10654-31
NoCat 2DsNO xOfsCo rrLim	Offset Min/Max error detection for NOx exten- ded Offset value	3A9E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	15006-31
NoCat 2DsNO xOfsCo rrMaxLi m	Offset Max error detection based on the NOx Offset value	1B9E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	7070-31
NoCat 2DsNO xOfsCo rrMinLi m	Offset Min error detection based on the NOx Offset value	2C9E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	11422-31
NoCat 2DsNO xOfsMa x	NOx offset max error detection	1D9E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	7582-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
NoCat 2DsNO xOfsMi n	NOx offset min error detection	2E9E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	11934-31
NoCat 2DsNO xPlaus Min	Plausibility error during Rich to Lean switch over	3F9E-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	16286-31
NoCat 2DsNO xRdyT O	Monitoring of NOx signal readiness	31AE-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	12718-31
NoCat 2DsNO xSRCM ax	SRC Max error for the NOx signal	12AE-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	4782-31
NoCat 2DsNO xSRCMi n	SRC Min error for the NOx signal	23AE-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	9134-31
NoCat 2DsOp Cir	Open circuit error for the NOx signal	54AE-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	21678-31
NoCat 2DsSh Cir	Short circuit error for the NOx signal	75AE-1F	NOx Sens- ing	The NOx sensor component driver controls, evaluates and under rs the sensor signal transmitted via CAN from the NOx sensor downstream of the DeNOx Catalyst.			Frequency: no lamp Lamp: no lamp	30126-31
NplEnv PSensP PFltDiff	DPF pressure monitoring: Fault check for the plausibility check of EnvP sensor	3119-1F	DPF pres- sure monit- oring	Plausibility of environment pressure sensor is check by comparing its value with boost pressure sensor and under d value of the pressure upstream of particle filter. Adapted value of the pressure upstream of particle filter depending on system configuration can be a measured value a modelled one.	Inaccurate or defective atmospheric pressure sensor	Check accuracy of sensor or replace ECM (sensor is positioned inside the ECM)	Frequency: no lamp Lamp: no lamp	12569-31
NplHs ChngPP FltDiff	DPF pressure monitoring: Fault check for Hose Line con- nection of dif- ferential pres- sure sensor	3219-1F	DPF pres- sure monit- oring	A failure is reported if the differential pressure sensor for particulate filter is upside down (hose line crossed)	Differential pressure sensor of filter upside down, hose lines crossed	Check differential pressure sensor mount- ing and ose lines. Reset offset drift compensation for diff.- pressure sensor using dedicated UDS Routine Control Service (ID $0253)	Frequency: no lamp Lamp: no lamp	12825-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
NplPres SensCr CsP	Crankcase pressure: Value measured at ECM shut off not plausible	37B3-1F	Crankcase pressure	The plausibility of Crankcase differential pressure is evaluated during ECM after--run	Too high pressure in crankcase because of clogged Blow By Filter Too low pressure in crankcase because of clogged blow by filter	1 Open oil refill closure 2 Observe corresponding measuring channel CrCsP_pSens at engine stand under if the value is still out of the limit à3 3 Remove BlowBy Filter 4 Observe corresponding measuring channel CrCsP_pSens at engine stand under if the value is still out of the limit à5 5 component has a permant offsetà replace sensor	Frequency: no lamp Lamp: no lamp	14259-31
NplPres SensCr CsP2	Crankcase differential pressure: Pressure in crankcase implausible at engine stop during afterrun	18B3-1F	Crankcase pressure	The raw signal measured by crankcase differential pressure sensor is converted into a physical value. This value is monitored and under lie in a plausible range. Sensor is measuring relative pressure.	Inaccurate or defective crankcase differential pressure sensor	Check sensor	Frequency: no lamp Lamp: no lamp	6323-31
NplPres SensPAi rFltDs	Air FIlter Pressure Sensor: Sensor drifted	3A84-1F	Air Filter Pressure Sensor	The raw signal measured by Air FIlter pressure sensor is converted into a physical value. This value is monitored and under lie in a plausible range. When engine is stopped pressure should lie very close to zero if the sensor is not drifted	Air pressure sensor is drifted	Check and under e air pressure sensor	Frequency: no lamp Lamp: no lamp	14980-31
NplPres SensPP FltDiff	DPF pressure monitoring: Fault check for the pressure sensor plausibility	3319-1F	DPF pressure monitoring	The absolute value of the uncorrected signal of the differential pressure Exh_pSensPPFltDiff > 40,00hPa OR the absolute value of the difference of adapted value of pressure at the upstream of particle filter and under nmental pressure (Exh_pAdapPPFltUs - EnvP_p) > 32,77bar (if not inhibited by FId_PPFltDiffNplEnvP set by another failure)	Differential pressure sensor is inaccurate.	Check accuracy of differential pressure sensor.	Frequency: ON Lamp: Amber (SVS)	13081-31
NplPT OSwt	PTO actuation: Defect Fault Check for non plausible signal value	33A1-1F	PTO actuation	A range and under bility check for the value of PTO switch are performed. The source for the multi value PTO switch is the CAN message Com_stPTOSwt	PTO switch defective	Check and under e PTO switch	Frequency: no lamp Lamp: no lamp	13217-31
NSCDs BattSt	Power supply monitoring for the NOx sensor	3D8E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	15758-31
NSCDs CmpCh k	NOx sensor plausibility check with other sensors	36AE-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	13998-31
NSCDs DynCh k	Dynamic Monitoring of the Nox sensor	37AE-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	14254-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
NSCDs DynChkDIUMPR	The DFC for updating DIUMPR. The update is for OBD requirement	38AE-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	14510-31
NSCDs FdbkFault	NOx feed back fault detection	39AE-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	14766-31
NSCDs LamBinSRCMax	SRC Max error for the binary lambda signal	117E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	4478-31
NSCDs LamBinSRCMin	SRC Min error for the binary lambda signal	227E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	8830-31
NSCDs LamLinSRCMax	SRC Max error for the Linear lambda signal	137E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	4990-31
NSCDs LamLinSRCMin	SRC Min error for the Linear lambda signal	247E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	9342-31
NSCDs LamPlausMax	Error detection and under g of MAX error of lambda plausibility test	157E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	5502-31
NSCDs LamPlausMin	Error detection and under g of MIN error of lambda plausibility test	267E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	9854-31
NSCDs NOxOfsCorrMaxLim	NOx Offset Max status based on the offset learned value	177E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	6014-31
NSCDs NOxOfsCorrMinLim	NOx Offset Min status based on the offset learned value	287E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	10366-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
NSCDs NOxOf sMax	NOx offset signal plausibility check	197E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	6526-31
NSCDs NOxOf sMin	NOx offset signal plausibility check	2A7E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	10878-31
NSCDs NOxPl ausMin	Plausibility error during Rich to Lean switch over	3AAE-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	15022-31
NSCDs NOxRd yTO	Monitoring of NOx signal readiness	3BAE-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	15278-31
NSCDs NOxSR CMax	SRC Max error for the NOx signal	1B7E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	7038-31
NSCDs NOxSR CMin	SRC Min error for the NOx signal	2C7E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	11390-31
NSCDs OpCir	Open circuit error for the NOx signal	5D7E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	23934-31
NSCDs ShCir	Short circuit error for the NOx signal	7E7E-1F	NOx Sensing	The NOx sensor downstream component driver monitors, controls and under tes signals coming from the NOx sensor at downstream of the main catalyst module.			Frequency: no lamp Lamp: no lamp	32382-31
OBDG enFault Clct1	Info: OBD Long Time failure: fuel system	F12F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if the system detects too high NOx emissions by the Sensor (Lambda or NOx if available) and failure is active WHICH COULD BE RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault1. The Long time failure will be active parallelly to the too high NOx recognition and he responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	NOx Level (HardNOx or Soft NOx) was exceeded and under poranelly a failure of this system by FID_OBDGenFaultClct1 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	61743-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
OBDGenFaultClct10	Info: OBD Long Time failure: Reagent Quality	FA2F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if a failure is active WHICH IS RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault10. The Long time failure will be active parallelly to the responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	A failure of this system by FID_OBDGenFaultClct10 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	64047-31
OBDGenFaultClct11	Info: OBD Long Time failure: NOx Sensor	FBBF-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if a failure is active WHICH IS RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault11. The Long time failure will be active parallelly to the responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	A failure of this system by FID_OBDGenFaultClct11 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: ON Lamp: no lamp	64447-31
OBDGenFaultClct12	Info: OBD Long Time failure: Oxygen sensor	FC2F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if a failure is active WHICH IS RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault12. The Long time failure will be active parallelly to the responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	A failure of this system by FID_OBDGenFaultClct12 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	64559-31
OBDGenFaultClct13	Info: OBD Long Time failure:	FD2F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if a failure is active WHICH IS RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault13. The Long time failure will be active parallelly to the responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	A failure of this system which activates FID_OBDGenFaultClct13, is activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	64815-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
OBDGenFaultClct14	Info: OBD Long Time failure:	FE2F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if a failure is active WHICH IS RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault14. The Long time failure will be active parallelly to the responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	A failure of this system which activates FID_OBDGenFailtClct14, is activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	65071-31
OBDGenFaultClct15	Info: OBD Long Time failure:	FF2F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if a failure is active WHICH IS RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault15. The Long time failure will be active parallelly to the responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	A failure of this system which activates FID_OBDGenFailtClct15, is activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	65327-31
OBDGenFaultClct16	Info: OBD Long Time failure:	F13F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if a failure is active WHICH IS RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault16. The Long time failure will be active parallelly to the responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	A failure of this system which activates FID_OBDGenFailtClct16, is activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	61759-31
OBDGenFaultClct2	Info: OBD Long Time failure: Injection timing system	F22F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if the system detects too high NOx emissions by the Sensor (Lambda or NOx if available) and failure is active WHICH COULD BE RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault2. The Long time failure will be active parallelly to the too high NOx recognition and he responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	NOx Level (HardNOx or Soft NOx) was exceeded and under poranelly a failure of this system by FID_OBDGenFaultClct2 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	61999-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
OBDGenFaultClct3	Info: OBD Long Time failure: air System:	F32F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if the system detects too high NOx emissions by the Sensor (Lambda or NOx if available) and failure is active WHICH COULD BE RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault3. The Long time failure will be active parallelly to the too high NOx recognition and he responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	NOx Level (HardNOx or Soft NOx) was exceeded and under poranelly a failure of this system by FID_OBDGenFaultClct3 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	62255-31
OBDGenFaultClct4	Info: OBD Long Time failure: EGR System:	F42F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if the system detects too high NOx emissions by the Sensor (Lambda or NOx if available) and failure is active WHICH COULD BE RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault4. The Long time failure will be active parallelly to the too high NOx recognition and he responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	NOx Level (HardNOx or Soft NOx) was exceeded and under poranelly a failure of this system by FID_OBDGenFaultClct4 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	62511-31
OBDGenFaultClct5	Info: OBD Long Time failure: SCR System	F52F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if the system detects too high NOx emissions by the Sensor (Lambda or NOx if available) and failure is active WHICH COULD BE RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault5. The Long time failure will be active parallelly to the too high NOx recognition and he responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	NOx Level (HardNOx or Soft NOx) was exceeded and under poranelly a failure of this system by FID_OBDGenFaultClct5 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	62767-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
OBDGenFaultClct6	Info: OBD Long Time failure: SCR Temperature	F62F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if the system detects too high NOx emissions by the Sensor (Lambda or NOx if available) and failure is active WHICH COULD BE RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault6. The Long time failure will be active parallelly to the too high NOx recognition and he responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	NOx Level (HardNOx or Soft NOx) was exceeded and under poranelly a failure of this system by FID_OBDGenFaultClct6 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	63023-31
OBDGenFaultClct7	Info: OBD Long Time failure: SCR Reagent Dosing:	F72F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if the system detects too high NOx emissions by the Sensor (Lambda or NOx if available) and failure is active WHICH COULD BE RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault7. The Long time failure will be active parallelly to the too high NOx recognition and he responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	NOx Level (HardNOx or Soft NOx) was exceeded and under poranelly a failure of this system by FID_OBDGenFaultClct7 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	63279-31
OBDGenFaultClct8	Info: OBD Long Time failure: No Reagent dosing	F82F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if the system detects too high NOx emissions by the Sensor (Lambda or NOx if available) and failure is active WHICH COULD BE RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault8. The Long time failure will be active parallelly to the too high NOx recognition and he responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	NOx Level (HardNOx or Soft NOx) was exceeded and under poranelly a failure of this system by FID_OBDGenFaultClct8 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	63535-31
OBDGenFaultClct9	Info: OBD Long Time failure: Empty Reagent Tank	F92F-1F	Info: OBD Long Time failure	This failure path is for OBD purposes: Instead of a single failure this one is stored as "non erasable for 400,00d days". The failure is activated only, if a failure is active WHICH IS RESPONSIBLE for the too high NOx. The dedicated failures are assigned with a corresponding FID_OBDGenFault9. The Long time failure will be active parallelly to the responsible failure (i.e. also yet in pending state!), but is erasable as long as it is not in validated state This responsible failure itself will also be stored in the memory, but it is erasable by the tester as every other failure. Only this responsible failure needs an action but not OBD long time failure. This failure path can be erased by tester only if it is never reactivated (e.g. by another failure of same group) during 9600 engine running hours	A failure of this system by FID_OBDGenFaultClct9 was activ	NONE - check the failure memory for other failures, which could have caused the activation of the long time failure (FID for this Long time failure group set?) and under the repair action for that failure. If the failure was not yet validated (i.e. still in pending state), it can be erased by the tester. In case the failure was yet validated, the failure is no more erasable for 9600 engine running hours	Frequency: no lamp Lamp: no lamp	63791-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
OCW DACo m	ECU Internal: Diagnostic fault check to report "WDA active" due to errors in query-/response communication	E81D-1F	ECU Internal	Communication between CJ945 (power stage chips) and under (power stage voltage supplier) is monitored.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	59421-31
OCW DALow Vltg	ECU Internal: Diagnostic fault check to report "ABE active" due to under-voltage detec-tion	E91D-1F	ECU Internal	Communication between CJ945 (power stage chips) and under (power stage voltage supplier) is monitored.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	59677-31
OCW DAOvr Vltg	ECU Internal: Diagnostic fault check to report "ABE active" due to over-voltage detec-tion	EA1D-1F	ECU Internal	Communication between CJ945 (power stage chips) and under (power stage voltage supplier) is monitored.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	59933-31
OCW DAREa sUnkwn	ECU Internal: Error report "ABE/WDA active" due to an unknown reason	EB1D-1F	ECU Internal	Communication between CJ945 (power stage chips) and under (power stage voltage supplier) is monitored.	ECM internal failure	ECM need to be replaced, contact nearest head office for authorisation.	Frequency: ON Lamp: Amber (SVS)	60189-31
OilFltCl ogDet	Oil filter clogged	3ED3-1F	Oil Lubric-ant	Oil filter is checked for clogging detection using a digital pressure switch	Oil filter clogged	Clean or replace oil filter	Frequency: no lamp Lamp: no lamp	16083-31
OilFltPS wtPlaus	Oil filter clog-ging sensor defective	3FD3-1F	Oil Lubric-ant	Oil filter clogging is checked using a digital switch. Plausibility of switch is checked	Oil filter clogging switch blocked	Check and under e oil filter switch	Frequency: no lamp Lamp: no lamp	16339-31
OilLfT DrvDist Max	Oil Lubrificant monitoring:crit-ical distance covered with oil change	F1FF-1F	Oil Lubric-ant	Monitor detects oil change dependent on covered vehicle mileage	Oil consumption	Oil change	Frequency: no lamp Lamp: no lamp	61951-31
OilLfT DrvDist Sig	Oil lubrificant monitoring:oil change depend-ent on covered vehicle mileage	F2FF-1F	Oil Lubric-ant	Monitor detects oil change dependent on covered vehicle mileage	Oil consumption	Oil change	Frequency: no lamp Lamp: no lamp	62207-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
OilLfTLowViscMin	Oil viscosity(below a first threshold)	F3FF-1F	Oil Lubricant	Monitor checks oil viscosity	Oil consumption	Oil change	Frequency: ON Lamp: Amber (SVS)	62463-31
OilLfTLowViscSig	Oil viscosity(below a second threshold)	F4FF-1F	Oil Lubricant	Monitor checks oil viscosity	Oil consumption	Oil change	Frequency: BLINK Lamp: Red (SVS)	62719-31
OilLftRgnOilDil	DPF Lube Oil monitoring: Critical time for oil dilution exceeded	48E3-1F	DPF Lube Oil monitoring	A failure is reported if the engine oil should be replaced because its lifetime has exceeded the maximal running time under oil dilution conditions. Oil dilution is caused by retarded post injection during some phases of particulate filter regeneration.	Excessive engine running time under oil dilution conditions, due to retarded post injection for filter regeneration.	Replace engine oil and under timer for oil dilution with tester using the dedicated UDS service "Routine Control ID =$245"	Frequency: no lamp Lamp: no lamp	18659-31
OilLvlMax	Oil Level sensor: Duty cycle greater than maximum	19E3-1F	Oil Level sensor	Level of lubricating oil measured in the crankcase is evaluated and under red. No sensor available in this application.	Defect in the oil level sensor or its electronic module, defect in wiring connecting the sensor	Check wiring of sensor, check oil level sensor and he electronic module	Frequency: no lamp Lamp: no lamp	6627-31
OilLvlMin	Oil Level sensor: Duty cycle lesser than minimum	2AE3-1F	Oil Level sensor	Level of lubricating oil measured in the crankcase is evaluated and under red. No sensor available in this application.	Defect in the oil level sensor or its electronic module, defect in wiring connecting the sensor	Check wiring of sensor, check oil level sensor and he electronic module	Frequency: no lamp Lamp: no lamp	10979-31
OilLvlNpl	Oil Level sensor: Plausibility Check	31D3-1F	Oil Level sensor	Level of lubricating oil measured in the crankcase is evaluated and under red. After stopping the engine the oil needs a minimum of time (temperature dependent) to return to the oil pan otherwise the oil level measured directly after engine restart will be implausible. If this is the case the dashboard will show the oil level measured in the previous driving cycle (stored in the EEPROM).	Defect in wiring, defect in oil level sensor or electronic module OR too many repetitions of: interruped engine afterruns (e.g. fast ignition key ON-OFF-ON), too short vehicle stand under , time signal not received via CAN from Body Computer, engine started too soon	Warm up the engine, turn ignition off and et the engine cool down entirely (afterrun must be completed), check wiring of sensor, check oil level sensor and he electronic module	Frequency: no lamp Lamp: no lamp	12755-31
OilLvlSens	Oil Level sensor: Oil level sensor fault	42D3-1F	Oil Level sensor	Level of lubricating oil measured in the crankcase is evaluated and under red. No sensor available in this application.	Defect in the oil level sensor or its electronic module, defect in wiring connecting the sensor	Check wiring of sensor, check oil level sensor and he electronic module	Frequency: no lamp Lamp: no lamp	17107-31
OilPLmpOL	Oil Pressure Lamp: Open Load error	4BE3-1F	Oil pressure lamp	The Power stage of Oil Pressure Lamp is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Oil Pressure Lamp	Check of wiring, replace Oil Pressure Lamp	Frequency: no lamp Lamp: no lamp	19427-31
OilPLmpOvrTemp	Oil Pressure Lamp: Over Temperature error	8CE3-1F	Oil pressure lamp	The Power stage of Oil Pressure Lamp is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside Oil Pressure Lamp	Check battery voltage, wiring, power stage and il Pressure Lamp	Frequency: no lamp Lamp: no lamp	36067-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
OilPLmpSCB	Oil Pressure Lamp: Short circuit to battery	6DE3-1F	Oil pressure lamp	The Power stage of Oil Pressure Lamp is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside Oil Pressure Lamp	Check of wiring or replacement of Oil Pressure Lamp	Frequency: no lamp Lamp: no lamp	28131-31
OilPLmpSCG	Oil Pressure Lamp: Short circuit to ground	7EE3-1F	Oil pressure lamp	The Power stage of Oil Pressure Lamp is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Oil Pressure Lamp	Check of wiring or replacement of Oil Pressure Lamp	Frequency: no lamp Lamp: no lamp	32483-31
OilPMin	Oil pressure sensing: Diagnostic fault check for oil pressure below minimum limit	23D3-1F	Oil pressure sensing	Engine oil pressure value is monitored for plausibility, when engine is running, pressure should be higher than a defined minimum value, detected by an oil pressure digital switch. Oil Pressure signal is acquired from oil pressure sensor connected via hardware pin, signal is acquired via the analogic sensor (ADC).	Low oil pressure or digital oil pressure switch blocked	Check oil level and under re, check oil pressure switch	Frequency: BLINK Lamp: Red (SVS)	9171-31
OilPNpl	Oil pressure sensing: Plausibility check for oil pressure sensor	34D3-1F	Oil pressure sensing	Engine oil pressure value is monitored for plausibility, when engine is stopped, pressure should be lower than a defined maximum value, detected by an oil pressure digital switch. Oil Pressure signal is acquired from oil pressure sensor connected via hardware pin, signal is acquired via the analogic sensor (ADC).	Oil pressure digital switch defective	Check oil pressure digital switch	Frequency: ON Lamp: Amber (SVS)	13523-31
OilPSwmpPhysRngHi	Oil Pressure Sensor: Physical signal above maximum limit	15D3-1F	Oil pressure sensing	Oil pressure raw voltage value measured by sensor read from the ADC is converted to physical value Oil_pSwmp. Measured physical value should lie in a defined range.	Oil pressure to high, or inaccurate or defective Oil Pressure sensor, or defect in its wiring	Check oil level, check blow-by, check wiring and he accuracy of Oil Pressure sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	5587-31
OilPSwmpPhysRngLo	Oil Pressure Sensor: Physical signal below minimum limit	26D3-1F	Oil pressure sensing	Oil pressure raw voltage value measured by sensor read from the ADC is converted to physical value Oil_pSwmp. Measured physical value should lie in a defined range.	Oil pressure too low, or inaccurate or defective Oil Pressure sensor, or defect in its wiring	Check oil level, check oil leakage, check wiring and he accuracy of Oil Pressure sensor and under e it if necessary	Frequency: BLINK Lamp: Red (SVS)	9939-31
OilPSwmpSig	Oil pressure sensing: Signal error on CAN for oil pressure sensor	47D3-1F	Oil pressure sensing	Oil pressure sensor is available and under ted via hardware to the ECM. Pressure is obtained through analogic to Digital Converter and under ormed to a physical value in Oil_pSensPSwmp. Signal availability is monitored.	ADC converter error, ECM problem or sensor problem (CAN)	Check sensor, check other sensor failures (power stages), possibly ECM replacement necessary	Frequency: no lamp Lamp: no lamp	18387-31
OilPSwmpSRCMax	Oil pressure sensing: SRC high for oil pressure sensor	18D3-1F	Oil pressure sensing	Oil pressure sensor is available and under ted via hardware to the ECM. Pressure is obtained through analogic to Digital Converter and under ormed to a physical value in Oil_pSensPSwmp. A signal range check is performed on the signal.	Sensor defective or wiring short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	6355-31
OilPSwmpSRCMin	Oil pressure sensing: SRC low for Oil pressure sensor	29D3-1F	Oil pressure sensing	Oil pressure sensor is available and under ted via hardware to the ECM. Pressure is obtained through analogic to Digital Converter and under ormed to a physical value in Oil_pSensPSwmp. A signal range check is performed on the signal.	Sensor defective or short circuit to ground in the wiring	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	10707-31
OilSwmpPErr_0	Info: Oil Pressure too low (1st detection)	FFCF-1F	Oil pressure sensing	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Oil pressure is monitored, if it is in a critical interval, event is detected. Flve failure paths are available which can cyclically collect the event.	Event detection, oil pressure too low	No intervention necessary	Frequency: no lamp Lamp: no lamp	65487-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
OilSwmpPErr_1	Info: Oil Pressure too low (2nd detection)	F1DF-1F	Oil pressure sensing	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Oil pressure is monitored, if it is in a critical interval, event is detected. Five failure paths are available which can cyclically collect the event.	Event detection, oil pressure too low	No intervention necessary	Frequency: no lamp Lamp: no lamp	61919-31
OilSwmpPErr_2	Info: Oil Pressure too low (3rd detection)	F2DF-1F	Oil pressure sensing	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Oil pressure is monitored, if it is in a critical interval, event is detected. Five failure paths are available which can cyclically collect the event.	Event detection, oil pressure too low	No intervention necessary	Frequency: no lamp Lamp: no lamp	62175-31
OilSwmpPErr_3	Info: Oil Pressure too low (4th detection)	F3DF-1F	Oil pressure sensing	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Oil pressure is monitored, if it is in a critical interval, event is detected. Five failure paths are available which can cyclically collect the event.	Event detection, oil pressure too low	No intervention necessary	Frequency: no lamp Lamp: no lamp	62431-31
OilSwmpPErr_4	Info: Oil Pressure too low (5th detection)	F4DF-1F	Oil pressure sensing	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Oil pressure is monitored, if it is in a critical interval, event is detected. Five failure paths are available which can cyclically collect the event.	Event detection, oil pressure too low	No intervention necessary	Frequency: no lamp Lamp: no lamp	62687-31
OilSwmpTErr_0	Info: Oil temperature too high (odd detection)	F5DF-1F	Oil Temperature sensing	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Oil temperature is monitored, if it is exceeding a defined threshold event is detected. Two failure path are available, the first register odd detections (1st,3rd,5th,....), the second one even detections (2nd,4th,6th,.....)	Event detection, oil temperature too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	62943-31
OilSwmpTErr_1	Info: Oil temperature too high (even detection)	F6DF-1F	Oil Temperature sensing	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Oil temperature is monitored, if it is exceeding a defined threshold event is detected. Two failure path are available, the first register odd detections (1st,3rd,5th,....), the second one even detections (2nd,4th,6th,.....)	Event detection, oil temperature too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	63199-31
OilTNplHigh	Oil Temperature sensing: Oil temperature too high plausibility error	3AD3-1F	Oil Temperature sensing	Oil temperature is measured by a sensor connected via hardware pin to the ECM. Raw value is processed by analogic Digital Converter into physical oil temperature Oil_tSensSwmp. Plausibility of oil temperature is checked.	Inaccurate oil temperature sensor or defect (e.g. blockage, insufficient recirculation) in the oil system.	Check oil temperature sensor for accuracy and under oil system	Frequency: no lamp Lamp: no lamp	15059-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
OilTPhysRngHi	Oil Temperature sensing: Physical Signal above maximum limit	1BD3-1F	Oil Temperature sensing	Oil temperature is measured by a sensor connected via hardware pin to the ECM. Raw value is processed by analogic Digital Converter into physical oil temperature Oil_tSensSwmp. Measured physical value should lie in a defined range.	Excessive measured Oil temperature	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	7123-31
OilTPhysRngLo	Oil Temperature sensing: Physical Signal below minimum limit	2CD3-1F	Oil Temperature sensing	Oil temperature is measured by a sensor connected via hardware pin to the ECM. Raw value is processed by analogic Digital Converter into physical oil temperature Oil_tSensSwmp. Measured physical value should lie in a defined range.	Excessively low measured Oil temperature	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	11475-31
OilTSig	Oil Temperature sensing: Signal error on CAN for Oil Temperature	4DD3-1F	Oil Temperature sensing	Oil temperature is measured by a sensor connected via hardware pin to the ECM. Raw value is processed by analogic Digital Converter into physical oil temperature Oil_tSensSwmp.	Oil temperature sensor defective	Check sensor	Frequency: ON Lamp: Amber (SVS)	19923-31
OilTSRCMax	Oil Temperature sensing: SRC High for Oil Temperature	11E3-1F	Oil Temperature sensing	Oil temperature is measured by a sensor connected via hardware pin to the ECM. Raw value is processed by analogic Digital Converter into physical oil temperature Oil_tSensSwmp. A signal range check is performed on the signal.	Sensor defective or wiring short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	4579-31
OilTSRCMin	Oil Temperature sensing: SRC low for Oil Temperature	22E3-1F	Oil Temperature sensing	Oil temperature is measured by a sensor connected via hardware pin to the ECM. Raw value is processed by analogic Digital Converter into physical oil temperature Oil_tSensSwmp. A signal range check is performed on the signal.	Sensor defective or wiring short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	8931-31
OilTVDPlaus	Oil Temperature: failed plausibility check at ECU start	33E3-1F	Oil Temperature sensing	The physical value of Oil temperature signal is monitored for plausibility at ECU start. The value of oil temperature sensor is compared to Ambient temperature for plausibility	Oil temperature sensor drifted	Check sensor	Frequency: no lamp Lamp: no lamp	13283-31
OxiCatMonActvMin	Active monitoring of the oxidation catalyst	21B9-1F	Oxicat Temp Monitoring	The function for monitoring of the oxidation catalyst checks the HC conversion in the catalyst, i.e. the performance of the catalyst according to OBD regulations. The function monitors the oxidation catalyst by calculating the minimal expected exothermic energy input in exhaust (i.e. temperature increase) and undering it to the measured energy input (=temperature increase over Oxicat).	Temperature sensors before and under Oxicat interchanged Oxicat thermal aged (too low efficiency) Post injection not working	Check correct connection of Temperature sensors at Oxicat Check / Replace Oxicat Check Injectors	Frequency: no lamp Lamp: no lamp	8633-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
OxiCat MonPas Min	Oxicat Temp Monitoring: Passive monitoring of the oxidation catalyst	22B9-1F	Oxicat Temp Monitoring	The function for monitoring of the oxidation catalyst checks the HC conversion in the catalyst, i.e. the performance of the catalyst according to OBD regulations. The function monitors the oxidation catalyst by calculating the minimal expected exothermic energy input in exhaust (i.e. temperature increase) and under ing it to the measured energy input (=temperature increase over Oxicat). Following temperatures are used (by Data Set OxiCat_numXXXPas): Measured temperature before Oxicat: Sensor Signal of Temperature before Turbine Measured temperature after Oxicat (=measured thermal energy): Sensor Signal of Temperature before Turbine Calculated temperature after Oxicat (incl thermal energy due to HC conversion): Temperature after turbine Calculated temperature after Oxicat WITHOUT thermal energy by HC conversion (reference temperature): Temperature after turbine	Temperature sensors before and under Oxicat interchanged Oxicat thermal aged (too low efficiency) Post injection not working	Check correct connection of Temperature sensors at Oxicat Check / Replace Oxicat Check Injectors	Frequency: no lamp Lamp: no lamp	8889-31
OxiCat MonRH U	Oxicat: Monitoring of OxiCat in Rapid Heat Up	23B9-1F	Oxicat Temp Monitoring	The function for passive monitoring of the oxidation catalyst during the rapid heat-up of the exhaust system checks the HC conversion in the catalyst and hus the performance of the catalyst according to OBD regulations. The monitoring is performed by calculating and under ting the conversion rate for the reaction of hydrocarbons (HC). The conversion rate is calculated during an exothermic hydrocarbon reaction which is required in rapid heat-up. If the calculated conversion rate is less than a calibratable monitoring limit, an error is set.	Temperature sensors before and under Oxicat interchanged Oxicat thermal aged (too low efficiency) Post injection not working	Check correct connection of Temperature sensors at Oxicat Check / Replace Oxicat Check Injectors	Frequency: no lamp Lamp: no lamp	9145-31
OxiCat TSensP os	Oxicat Temp Monitoring: wrong mounting of temperature sensors	3A99-1F	Oxicat Temp Monitoring	The system detects the wrong mounting of temperature sensors upstream and under ream of the Oxidant catalyst.	Wrong mounting of temperature sensors upstream and under ream of a Oxidant catalyst.	Check and under ting correctly the temperature sensors.	Frequency: no lamp Lamp: no lamp	15001-31
P4Plaus	Plausibility error of exhaust pressure P4	3B2C-1F	P4 Pressure				Frequency: no lamp Lamp: no lamp	15148-31
PAirFlt DsPhys RngHi	Air FIlter Pressure Sensor: Physical Range Check High error	1584-1F	Air Filter Pressure Sensor	The raw signal measured by Air FIlter pressure sensor is converted into a physical value. This value is monitored and under lie in a defined range.	Excessive air filter pressure measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	5508-31
PAirFlt DsPhys RngLo	Air FIlter Pressure Sensor: Physical Range Check Low error	2684-1F	Air Filter Pressure Sensor	The raw signal measured by Air FIlter pressure sensor is converted into a physical value. This value is monitored and under lie in a defined range.	Excessively low air filter pressure measured	Check cause for value to fall below minimum allowed threshold (like air filter clogging, environmental factors, air intake restrictions). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	9860-31
PAirFlt DsPlaus Lo	Air FIlter Pressure Sensor: Measured pressure implausibly low	3784-1F	Air Filter Pressure Sensor	The raw signal measured by Air FIlter pressure sensor is converted into a physical value. This value is monitored and under lie in a plausible range.	Inaccurate or defective pressure sensor, defect in the wiring, clogged or leaking air intake	Check air intake for leaking/restrictions. Check wiring and he accuracy of the pressure sensor and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	14212-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PAirFlt DsSRC Max	Air FIlter Pressure Sensor: Sensor voltage above upper limit	3884-1F	Air Filter Pressure Sensor	Electric monitoring of Air Filter Pressure sensor	Sensor defective or wiring short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	14468-31
PAirFlt DsSRC Min	Air FIlter Pressure Sensor: Sensor voltage below lower limit	2984-1F	Air Filter Pressure Sensor	Electric monitoring of Air Filter Pressure sensor	Sensor defective or short circuit wiring to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	10628-31
PCAC DsEnvP Pls	Boost pressure: Ambient and under pressure are different at start	3118-1F	Boost pressure	The Boost pressure sensor and he Ambient pressure sensor should show similar values as long as there is no boost pressure. The Boost pressure sensor is calibrated at each start (engine speed < 50,00rpm), 3,00- times the PT1 filter constant 0,00s = 0.000 sec after Key 15 on. The Difference between boost pressure sensor and under t pressure sensor is taken as Offset for correct Boost pressure calculation and under in the EEPROM as correction value. The step of the correction value in one driving cycle is limited to 5,00hPa. The calibration is only made at ambient pressure > 0,00hPa, i.e. not at too high altitude. If the NON corrected Boost pressure differs > 200,00hPa from Ambient pressure at engine speed < 100,00rpm and uel injection < 1,00mg/hub, the sensor signal is not plausible and s taken as defect (i.e. the max allowed Offset correction is 200,00hPa).	Either the boost pressure or the ambient pressure sensor is is out of specification	Check which sensor deviates at engine stand under too much from the actual ambient pressure by: - Analysing ambient condition (Snap Shot) of failure occurrence - measuring both values with tester - Ambient pressure: By external tool or estimated: 1000 mbar at sea level, 10 mbar less each 100m altitude above sea level Note: if one of the Sensor has to be replaced, the Offset Factor in EEPROM must be reset.	Frequency: BLINK Lamp: Red (SVS)	12568-31
PCAC DsEPCt l	new failure P662V80	3818-1F	None				Frequency: no lamp Lamp: no lamp	14360-31
PCAC DsOvr Bst	Boost pressure: Over Boost Detection	F178-1F	Boost pressure	A failure is reported, if the actual measured boost pressure exceeds an engine speed dependant maximum pressure	Boost pressure regulation device of the turbocharger is malfunctioning (sticking or blocked in closed position) or Boost pressure sensor measures too high pressure	Check for defects in the boost pressure control functionality and under proper functioning of the regulation device (e.g. VGT or wastegate): - PWM pressure transducer (if available) - VGT or Wastegate mechanism - control mechanism is correct, then check the boost pressure sensor	Frequency: no lamp Lamp: no lamp	61816-31
PCAC DsPhys RngHi	Boost pressure: Physical Range Check High error	1218-1F	Boost pressure	The raw signal measured by boost pressure sensor is converted into a physical value. Measured physical value should lie in a defined range.	Excessive boost pressure measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	4632-31
PCAC DsPhys RngLo	Boost pressure: Physical Range Check Low error	2318-1F	Boost pressure	The raw signal measured by boost pressure sensor is converted into a physical value. Measured physical value should lie in a defined range.	Excessively low boost pressure measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	8984-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PCAC DsSig	Boost pressure: CAN signal error for Boost pressure	4418-1F	Boost pressure	The CAN Message of the boost pressure sensor indicates a Problem with the sensor	Disturbed CAN signal transmission or Boost pressure sensor is defective	Check the CAN for proper configuration and under oning Check the Boost pressure sensor	Frequency: BLINK Lamp: Red (SVS)	17432-31
PCAC DsSRC Max	Boost pressure: SRC High Boost pressure sensor	1518-1F	Boost pressure	The electrical Signal of the Boost pressure sensor is monitored. In case of defect recognition a default value for the boost pressure is taken.	Sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: BLINK Lamp: Red (SVS)	5400-31
PCAC DsSRC Min	Boost pressure: SRC low for Boost pressure sensor	2618-1F	Boost pressure	The electrical Signal of the Boost pressure sensor is monitored. In case of defect recognition a default value for the boost pressure is taken.	Sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: BLINK Lamp: Red (SVS)	9752-31
PCRMuISigDfct Max	Turbocharger control: At least two sensor defective (boost pressure,turbo speed, exhaust pressure)	4738-1F	Turbocharger control	Signals necessary for turbocharger control are monitored. The presence of at least two sensor defective triggers the multi signal failure Following signals are used here: - Boost pressure - (Turbine speed sensor not present) - Exhaust pressure Upstream Turbine	At least two sensors necessary for turbocharger control are defective	Check defective sensor	Frequency: no lamp Lamp: no lamp	18232-31
PCRP2 Max	Turbocharger control: Boost pressure value above highest threshold value	1338-1F	Turbocharger control	Boost pressure value is monitored, if it is higher than a defined threshold a failure is detected.	VGT actuator sticking, PCR control signal deviating (turbo speed? boost pressure? exhaust pressure?)	Check PCR control sensors, check VGT actuator	Frequency: ON Lamp: Amber (SVS)	4920-31
PCRP2 Sig	Turbocharger control: Boost pressure deviation from target value too high (overboost)	1438-1F	Turbocharger control	Boost pressure value is monitored, if actual boost pressure is higher than target boost pressure beside a defined threshold a failure is detected.	VGT actuator sticking, PCR control signal deviating (turbo speed? boost pressure? exhaust pressure?)	Check PCR control sensors, check VGT actuator	Frequency: ON Lamp: Amber (SVS)	5176-31
PCRP3 Max	Turbocharger control: Exhaust gas overpressure (P3), value above maximum threshold	1538-1F	Turbocharger control	Exhaust pressure upstream turbine (P3) value is monitored, if it is higher than a defined threshold a failure is detected.	VGT actuator sticking, PCR control signal deviating (turbo speed? boost pressure? exhaust pressure?)	Check PCR control sensors, check VGT actuator	Frequency: no lamp Lamp: no lamp	5432-31
PCRP3 Sig	Turbocharger control: Exhaust gas overpressure (P3), deviation from target	4638-1F	Turbocharger control	Exhaust pressure upstream turbine (P3) value is monitored, If actual exhaust pressure is higher than target exhaust pressure beside a defined threshold a failure is detected.	VGT actuator sticking, PCR control signal deviating (turbo speed? boost pressure? exhaust pressure?)	Check PCR control sensors, check VGT actuator	Frequency: no lamp Lamp: no lamp	17976-31
PCRSlw Resp	Slow boot pressure buildup error	3278-1F	Turbocharger control	The delay for actual boost pressure to reach boost pressure set point is evaluated.	Slow response of boost pressure actuator	Check boost pressure actuator wiring supply and under	Frequency: no lamp Lamp: no lamp	12920-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PCRTrb Sig	Turbocharger control: Irreversible turbine overspeed detected	1238-1F	Turbocharger control	Turbine speed is monitored to protect turbocharger integrity.	VGT actuator sticking, PCR control signal deviating (turbo speed? boost pressure? exhaust pressure?)	Check PCR control sensors, check VGT actuator	Frequency: ON Lamp: Amber (SVS)	4664-31
PCRUndBstMax	Turbocharger control: Underboost detection	2838-1F	Turbocharger control	Pressure Charger Regulatior is monitored for any deviation of actual boost pressure from target pressure. Underboost is detected if the engine is running within the specified working area and positive boost pressure deviation is detected.	VGT actuator sticking or turbocharger efficiency deviating (leakage?)	Check VGT and under harger piping, replace Turbocharger	Frequency: ON Lamp: Amber (SVS)	10296-31
PCVAdaptCrvMax	Pressure Control Valve: Adaptation correction value above upper limit	1A85-1F	Pressure control valve	The adaptive Pressure Control Valve calculates an associated correction curve that contains the deviation from the nominal PCV characteristic. This provides the governor an adapted correction curve in the learned state. If the correction contribution is too big a failure is detected.	Pressure Control Valve drifted	Replace Pressure Control Valve	Frequency: no lamp Lamp: no lamp	6789-31
PCVAdaptCrvMin	Pressure Control Valve: Adaptation correction value below lower limit	2B85-1F	Pressure control valve	The adaptive Pressure Control Valve calculates an associated correction curve that contains the deviation from the nominal PCV characteristic. This provides the governor an adapted correction curve in the learned state. If the correction contribution is too big a failure is detected.	Pressure Control Valve drifted	Replace Pressure Control Valve	Frequency: no lamp Lamp: no lamp	11141-31
PCVNoStrt	Pressure control valve: number of startup attempts exceeded the limit	4C85-1F	Pressure control valve	Normally the fuel pressure should rise within 32,77s to 1,60bar at start. If this is not the case, the fuel pressure system is probably not OK. Therefore is checked, how often the engine was started although the fuel pressure was rising too slow. A counter is increased in this case. In case of correct start, the counter is decreased by 1. The actual number of these "failed" starts is stored in the EEPROM and failure is reported, if the number exceeds 255,00-.	Pressure can not rise fast enough during cranking due to: - very high fuel temperatures during starts (check ambient conditions) - leaky fuel pressure control valve - wrong positon of the fuel quantity cotnrol valve (MPROP) - bad efficiency of high pressure pump - leakage in the fuel pressure system (possibly injectors, pressure limiting valve if present...)	Check ambient conditions: if fuelt temperature > 80° C --> this could be the reason for the failed start --> check the reason for high fuel temperature. Check Fuel rail pressure control valve Ceck Fuel system for leakages and he high pressure pump for efficiency.	Frequency: no lamp Lamp: no lamp	19589-31
PCVOL	Pressure control valve: open load of pressure control valve output	5F85-1F	Pressure control valve	The power stage of the fuel rail pressure control valve is monitored electrically for voltage and under t by Hardware.	Broken or disconnected wiring or defective pressure control valve	Check of wiring or replace relay or pressure control valve	Frequency: BLINK Lamp: Red (SVS)	24453-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PCVOT	Pressure control valve: over temperature of device driver of pressure control valve	8195-1F	Pressure control valve	The power stage of the fuel rail pressure control valve is monitored electrically for voltage and under t by Hardware.	High battery voltage, high temperature inside ECU, high load or wiring problem	Check of wiring or Pressure Control Valve	Frequency: BLINK Lamp: Red (SVS)	33173-31
PCVShCirHSBatt	Pressure Control Valve: Short Circuit to Battery at High Side Power stage	6295-1F	Pressure control valve	The Power stage of Pressure Control Valve at High Side is monitored by Hardware for electric failures.	Short circuit of wiring to battery or inside Pressure Control Valve at High Side	Check of wiring, replace Pressure Control Valve	Frequency: no lamp Lamp: no lamp	25237-31
PCVShCirHSGnd	Pressure Control Valve: Short Circuit to Ground at High Side Power stage	7395-1F	Pressure control valve	The Power stage of Pressure Control Valve at High Side is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Pressure Control Valve at High Side	Check of wiring, replace Pressure Control Valve	Frequency: no lamp Lamp: no lamp	29589-31
PCVShCirLSBatt	Pressure Control Valve: Short Circuit to Battery at Low Side Power stage	6495-1F	Pressure control valve	The Power stage of Pressure Control Valve at Low Side is monitored by Hardware for electric failures.	Short circuit of wiring to battery or inside Pressure Control Valve at Low Side	Check of wiring, replace Pressure Control Valve	Frequency: no lamp Lamp: no lamp	25749-31
PCVShCirLSGnd	Pressure Control Valve: Short Circuit to Ground at Low Side Power stage	7595-1F	Pressure control valve	The Power stage of Pressure Control Valve at Low Side is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Pressure Control Valve at Low Side	Check of wiring, replace Pressure Control Valve	Frequency: no lamp Lamp: no lamp	30101-31
PCVSRCMax	Pressure control valve: signal range check high error of pressure control valve AD-channel	1695-1F	Pressure control valve	The power stage of the fuel rail pressure control valve is monitored electrically for voltage and under t by Hardware	Short circuit (to ground) or broken contact in wire or pressure control valve itself. Possibly also failure in ECU power stage	Check wiring and under re control valve.	Frequency: BLINK Lamp: Red (SVS)	5781-31
PCVSRCMin	Pressure control valve: signal range check low error of pressure control valve AD-channel	2795-1F	Pressure control valve	The power stage of the fuel rail pressure control valve is monitored electrically for voltage and under t by Hardware.	Short circuit in wire or pressure control valve itself. Possibly also failure in ECU power stage	Check wiring and under re control valve.	Frequency: BLINK Lamp: Red (SVS)	10133-31
PEGRDiffNpl	EGR DIfferential pressure sensor: Non plausible error	3427-1F	EGR DIff.Pressure Sensor	EGR differential pressure is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Air_pSensPEGRDiff. This signal is checked for the Signal Range Errors and hen transformed into physical value Air_pSensPEGRDiff.. The physical value is checked for plausibility.	Inaccurate or defective EGR differential pressure sensor, or defect in its wiring	Check wiring and he accuracy ofEGR differential pressure sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	13351-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PEGRDiffPhysRngHi	EGR DIfferential pressure sensor: Physical Signal above maximum limit	1527-1F	EGR DIff.Pressure Sensor	EGR differential pressure is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Air_pSensPEGRDiff. This signal is checked for the Signal Range Errors and hen transformed into physical value Air_pSensPEGRDiff.. Measured physical value should lie in a defined range.	Excessive value for EGR differential pressure is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary,	Frequency: no lamp Lamp: no lamp	5415-31
PEGRDiffPhysRngLo	EGR DIfferential pressure sensor: Physical Signal below minimum limit	2627-1F	EGR DIff.Pressure Sensor	EGR differential pressure is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Air_pSensPEGRDiff. This signal is checked for the Signal Range Errors and hen transformed into physical value Air_pSensPEGRDiff.. Measured physical value should lie in a defined range.	Excessively low EGR differential pressure value is measured.	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary,	Frequency: no lamp Lamp: no lamp	9767-31
PEGRDiffSRCMax	EGR DIfferential pressure sensor: Signal Range Check high error	1727-1F	EGR DIff.Pressure Sensor	EGR differential pressure is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Air_pSensPEGRDiff. This signal is checked for the Signal Range Errors.	EGR differential pressure sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	5927-31
PEGRDiffSRCMin	EGR DIfferential pressure sensor: Signal Range Check low error	2827-1F	EGR DIff.Pressure Sensor	EGR differential pressure is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Air_pSensPEGRDiff. This signal is checked for the Signal Range Errors.	EGR differential pressure sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	10279-31
PEngOLmpOL	Post Engine Operation Lamp: Open Load error	519D-1F	Afterrun lamp	The Power stage of Post Engine Operation Lamp is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Post Engine Operation Lamp	Check of wiring, replace Post Engine Operation Lamp	Frequency: no lamp Lamp: no lamp	20893-31
PEngOLmpOvrTemp	Post Engine Operation Lamp: Over Temperature error	829D-1F	Afterrun lamp	The Power stage of Post Engine Operation Lamp is monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside Post Engine Operation Lamp	Check battery voltage, wiring, power stage and ost Engine Operation Lamp	Frequency: no lamp Lamp: no lamp	33437-31
PEngOLmpSCB	Post Engine Operation Lamp: Short circuit to battery	639D-1F	Afterrun lamp	The Power stage of Post Engine Operation Lamp is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside Post Engine Operation Lamp	Check of wiring, replace Post Engine Operation Lamp	Frequency: no lamp Lamp: no lamp	25501-31
PEngOLmpSCG	Post Engine Operation Lamp: Short circuit to ground	749D-1F	Afterrun lamp	The Power stage of Post Engine Operation Lamp is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Post Engine Operation Lamp	Check of wiring, replace Post Engine Operation Lamp	Frequency: no lamp Lamp: no lamp	29853-31
PFltAshLdMax	DPF model plausibility: Ash load in DPF has exceeded the limit	1149-1F	DPF model plausibility	Particulate filter is accumulating over its life not combustible ashes. When a maximal ashes volume is reached filter should be removed and under or simply replaced.	Accumulated ashes has reached maximum volume.	Replace the filter or remove it and ash it.	Frequency: no lamp Lamp: no lamp	4425-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PFltChaRPDiffMax	DPF pressure monitoring: Differential pressure over DPF higher then expected	1419-1F	DPF pressure monitoring	Depending on exhaust flow and oot stored in the particulate filter, pressure drop over the filter should not exceed a maximal value, otherwise a clogged filter or a problem in the filter mounting should be assumed.	Filter is clogged or not installed correctly (exhaust flow restricted)	Check filter for proper installation and under on. If foreseen perform service regeneration.	Frequency: ON Lamp: Amber (SVS)	5145-31
PFltChaRPDiffMin	DPF pressure monitoring: Differential pressure over DPF lower then expected (DPF cracked or removed)	2519-1F	DPF pressure monitoring	Depending on exhaust flow and oot stored in the particulate filter a minimal pressure drop over the filter is expected, otherwise a breach or a leakage upstream of filter should be assumed.	Filter is not installed or has an internal breakthrough	Check filter for proper installation and under on (no black smoke at exhaust pipe)	Frequency: no lamp Lamp: no lamp	9497-31
PFltClogging	DPF filter is clogged	4739-1F	DPF model plausibility	Clogging of particulate filter is monitored. Clogging estimation is performed basing on the DPF inlet temperature; this parameter can be either retrieved from the sensor (if present) or estimated from the engine setpoint. The temperature is used to calculate the time needed to completely clog or clean the filter	FIlter is clogged	Service regeneration/FIlter replace?	Frequency: no lamp Lamp: no lamp	18233-31
PFltDstrMin	DPF model plausibility: Diagnostic fault check for damaged particulate filter	3619-1F	DPF model plausibility	To determine the integrity of particulate filter, the measured pressure drop over the empty filter (low soot) at steady state conditions, is compared to referenced values determined on a new and under ged DPF.	Cracked or dismounted particulate filter	Check if black smoke is visible at exhaust pipe.	Frequency: no lamp Lamp: no lamp	13849-31
PFltEff	DPF model plausibility: Filter soot accumulation below expected minimum	4249-1F	DPF model plausibility	The efficiency of the particulate filter (DPF) is monitored by checking that accumulated soot is not below expected quantity Efficiency evaluation is only activated when filter is completely filled	Filter efficiency too low	Check DPF integrity	Frequency: no lamp Lamp: no lamp	16969-31
PFltEngPrt	DPF model plausibility: Measured differential pressure over DPF exceeds limit	1939-1F	DPF model plausibility	If exhaust gas back pressure reaches too high values the system goes into "Alarm state" and failure is activated, which gives the possibility to reduce power to protect the DPF against damage. This alarm is activated latest, if the measured pressure drop over filter is higher than a exhaust flow dependant limit (from 32,77bar at 0,00m^3/h over 32,77bar at 600,00m^3/h to 32,77bar at 1200,00m^3/h).	DPF is clogged. Filter regeneration was not successful or not possible.	Launch service regeneration via tester and under filter and under t system.	Frequency: ON Lamp: Amber (SVS)	6457-31
PFltFrdRgn	DPF model plausibility: Forced Regeneration Error	4349-1F	DPF model plausibility	The DPF control lamp is controlled by the different filter state: OFF = no needed regeneration / no regeneration active ON = regeneration active SLOW BLINK = regeneration requested but not active FAST FLASHING = regeneration not successful IRREGULAR BLINKING = system detected an error The state IRREGULAR BLINKING is also stored as failure in the failure memory.	Problem of regeneration, which is shown with dedicated Failure (see there)	According the proposal a dedicated failure concerning regeneration	Frequency: no lamp Lamp: no lamp	17225-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PFltFreq	Monitoring for too frequent regeneration of the particulate filter	4449-1F	DPF model plausibility	The frequency of regeneration procedures is monitored to detect an increase in raw emissions due to the more frequent heating measures for the particulate filter regeneration	Leakage of injectors (high soot) Too low air flow (leakage in intake air system) or differential pressure not measure correctly (rear hose line clogged).	Check leakage in intake system, check injectors Perform service regeneration if needed	Frequency: no lamp Lamp: no lamp	17481-31
PFltLckHDNumRgn2	DPF model plausibility: Fault path for maximum number of locked regenerations for HD	4549-1F	DPF model plausibility	For Heavy Duty application different regeneration states are applied. This dedicated errors checks if a request for regeneration state 2 was active when maximal number of locked regenerations was exceeded.	See Dfp_PFltLckRgn, only here an error is triggered specifically for a regeneration request of 2	Check filter and under variable of saturation model, look for sensor errors	Frequency: no lamp Lamp: no lamp	17737-31
PFltLckHDNumRgn3	DPF model plausibility: Fault path for maximum number of locked regenerations for HD	4649-1F	DPF model plausibility	For Heavy Duty application different regenerations state are applied. This dedicated errors checks if a request for regeneration state 3 was active when maximal number of locked regenerations was exceeded.	See Dfp_PFltLckRgn, only here an error is triggered specifically for regeneration request of 3	Check filter and under variable of saturation model, look for sensor errors	Frequency: no lamp Lamp: no lamp	17993-31
PFltLckRgn	DPF model plausibility: Fault path for maximum number of locked regenerations	1749-1F	DPF model plausibility	To prevent permanent regeneration of particulate filter DPF due to special conditions and/or defective sensors, the maximum duration of each regeneration level is limited to: Level 1: "On" if SootMass > 3,00g and under if soot mass < 2,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min Level 2: "On" if SootMass > 8,00g and under if soot mass < 7,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min Level 3: "On" if SootMass > 13,00g and under if soot mass < 12,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min Level 4: "On" if SootMass > 18,00g and under if soot mass < 17,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min Level 5: "On" if SootMass > 23,00g and under if soot mass < 22,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min Level 6: "On" if SootMass > 28,00g and under if soot mass < 27,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min If the number of such locked regenerations exceeds 65535,00-, the system is in a critical situation and failure is assigned.	Special ambient conditions or vehicle use (city cycle) which lead to too low DPF temperature for real regeneration. Temperature sensor before Oxicat or before DPF show too low temperature, so system dose not detect real regeneration. Oxicat does not work correctly, i.e. the temperature increase is too low (should be shown by a additionally stored dedicated failure)	Check temperature sensor before Oxicat and under DPF for correct measuring Check Oxicat Check DPF	Frequency: no lamp Lamp: no lamp	5961-31
PFltLmp2OL	DPF 2nd Control Lamp: No load error	5159-1F	DPF Control Lamp	The Power stage for the 2nd control lamp for DPF monitoring is controlled by Hardware for electrical failures	Broken or disconnected wiring or defective lamp	Check of wiring or replace lamp	Frequency: no lamp Lamp: no lamp	20825-31
PFltLmp2OvrTemp	DPF 2nd Control Lamp: Over temperature error	8259-1F	DPF Control Lamp	The Power stage for the 2nd control lamp for DPF monitoring is controlled by Hardware for electrical failures	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure is present only for short time, otherwise check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	33369-31
PFltLmp2SCB	DPF 2nd Control Lamp: Short circuit to battery error	6359-1F	DPF Control Lamp	The Power stage for the 2nd control lamp for DPF monitoring is controlled by Hardware for electrical failures	Short circuit of wiring to external source or inside lamp	Check of wiring, replace Lamp	Frequency: no lamp Lamp: no lamp	25433-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PFltLmp2SCG	DPF 2nd Control Lamp: Short circuit to ground error	6459-1F	DPF Control Lamp	The Power stage for the 2nd control lamp for DPF monitoring is controlled by Hardware for electrical failures	Short circuit of wiring or lamp to ground	Check of wiring, replace lamp	Frequency: no lamp Lamp: no lamp	25689-31
PFltLmp3OL	DPF 3rd Control Lamp: No load error	5559-1F	DPF Control Lamp	The Power stage for the 3rd control lamp for DPF monitoring is controlled by Hardware for electrical failures	Broken or disconnected wiring or defective lamp	Check of wiring or replace lamp	Frequency: no lamp Lamp: no lamp	21849-31
PFltLmp3OvrTemp	DPF 3rd Control Lamp: Over temperature error	8659-1F	DPF Control Lamp	The Power stage for the 3rd control lamp for DPF monitoring is controlled by Hardware for electrical failures	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure is present only for short time, otherwise check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	34393-31
PFltLmp3SCB	DPF 3rd Control Lamp: Short circuit to battery error	6759-1F	DPF Control Lamp	The Power stage for the 3rd control lamp for DPF monitoring is controlled by Hardware for electrical failures	Short circuit of wiring to external source or inside lamp	Check of wiring, replace Lamp	Frequency: no lamp Lamp: no lamp	26457-31
PFltLmp3SCG	DPF 3rd Control Lamp: Short circuit to ground error	7859-1F	DPF Control Lamp	The Power stage for the 3rd control lamp for DPF monitoring is controlled by Hardware for electrical failures	Short circuit of wiring or lamp to ground	Check of wiring, replace lamp	Frequency: no lamp Lamp: no lamp	30809-31
PFltLmpOL	DPF Control Lamp: No load error	5959-1F	DPF Control Lamp	The Power stage for the control lamp for DPF monitoring is controlled by Hardware for electrical failures	Broken or disconnected wiring or defective lamp	Check of wiring or replace lamp	Frequency: no lamp Lamp: no lamp	22873-31
PFltLmpOvrTemp	DPF Control Lamp: Over temperature error	8A59-1F	DPF Control Lamp	The Power stage for the control lamp for DPF monitoring is controlled by Hardware for electrical failures	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	35417-31
PFltLmpSCB	DPF Control Lamp: Short circuit to battery error	6B59-1F	DPF Control Lamp	The Power stage for the control lamp for DPF monitoring is controlled by Hardware for electrical failures	Short circuit of wiring to battery	Check of wiring	Frequency: no lamp Lamp: no lamp	27481-31
PFltLmpSCG	DPF Control Lamp: Short circuit to ground error	7C59-1F	DPF Control Lamp	The Power stage for the control lamp for DPF monitoring is controlled by Hardware for electrical failures	Short circuit of wiring to ground	Check of wiring	Frequency: no lamp Lamp: no lamp	31833-31
PFltLowEfficiency	DPF efficieny below minimal threshold	2839-1F	DPF model plausibility	DPF efficinecy is proportional to the difference between inlet and under temperatures of the filter; the higher the clogging status is, the higher this difference will be.			Frequency: no lamp Lamp: no lamp	10297-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PFltNumRgnMax	DPF model plausibility: Calculated soot mass above threshold	1849-1F	DPF model plausibility	Depending on the collected soot mass in DPF (calculated) a different regeneration level is requested, which can lead to different measures for forced regeneration: Level 0 (no regeneration): Soot mass < 2,00g Level 1: "On" if SootMass > 3,00g and under if soot mass < 2,00g Level 2: "On" if SootMass > 8,00g and under if soot mass < 7,00g Level 3: "On" if SootMass > 13,00g and under if soot mass < 12,00g Level 4: "On" if SootMass > 18,00g and under if soot mass < 17,00g Level 5: "On" if SootMass > 23,00g and under if soot mass < 22,00g Level 6: "On" if SootMass > 28,00g and under if soot mass < 27,00g If requested Level > 6,00- (i.e. Soot mass > 28,00g) then the system is not capable to execute a regeneration.	Special ambient conditions and under e use which does not allow correct DPF regeneration due to too low exhaust temperatures Temperature sensor before Oxicat and/or before DPF shows too low temperature Oxicat does not work correctly (bad HC burning) - in this case also a further dedicated failure should be stored and he vehicle shows blue smoke and under odour.	Service regeneration should be performed to reduce soot mass in the filter If Service regeneration fails: see troubleshooting there.	Frequency: no lamp Lamp: no lamp	6217-31
PFltOpSnceClnMax	DPF filter: service interval overdued	3A39-1F	None	Particulate filter is accumulating over its life not combustible ashes. When a maximal ashes volume is reached filter should be removed and under or simply replaced. THe time iknterval for this maintenance is monitored.	Service interval overdued	Proceed with FIlter service and under service interval timer	Frequency: no lamp Lamp: no lamp	14905-31
PFltOvldLvl2	Particulate filter overloaded (lover evel 2)	1339-1F	DPF pressure monitoring	When filter regeneration is insufficient, due too prolongated city driving cycle (low exhaust temperatures) or DOC is damaged (no feed gas produced), filter flow resistance can increase above critical values.	Filter is overloaded, flow resistance too high	- Check delta pressure sensor on filter - Perform filter regeneration or clean filter (at this point procedure not defined yet) - Check presence and under ion of DOC	Frequency: ON Lamp: Amber (SVS)	4921-31
PFltOvldLvl3	Particulate filter overloaded (lover evel 3)	1439-1F	DPF pressure monitoring	When filter regeneration is insufficient, due too prolongated city driving cycle (low exhaust temperatures) or DOC is damaged (no feed gas produced), filter flow resistance can increase above critical values.	Filter is overloaded, flow resistance too high	- Check delta pressure sensor on filter - Perform filter regeneration or clean filter (at this point procedure not defined yet) - Check presence and under ion of DOC	Frequency: BLINK Lamp: Red (SVS)	5177-31
PFltRgnNoCompl	Incomplete regeneration of the DPF	4949-1F	DPF model plausibility	After a successful regeneration has been detected, a monitoring for incomplete regeneration by comparing the measured soot mass PFltLd_mSotMeas with the monitoring limit determined depending on the continually simulated soot mass PFltLd_mSotSimCont . Monitoring is based on the fact that the flow resistance of the particulate filter, calculated from the differential pressure and he exhaust-gas volume flow, does not exceed a maximum value after successful regeneration.	Blocked OxiCat inlet, real ash load too high or some restriction upstream OxiCat or differential pressure measuring wrong (rear hose clogged)	Clean OxiCat inlet mechanically , check exhaust for restrictions, check differential pressure sensor for gain failure.	Frequency: no lamp Lamp: no lamp	18761-31
PFltRgnNotEnd	Particulate filter regeneration process exceeded maximum time	1539-1F	DPF model plausibility	Duration of regeneration is monitored. If maximum defined time is exceeded failure is detected			Frequency: ON Lamp: Amber (SVS)	5433-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PFltRgn Perm	DPF model plausibility: Diagnostic fault check for SRC high in Flow Resistance	4A49-1F	DPF model plausibility	To prevent permanent regeneration of particulate filter DPF due to special conditions and/or defective sensors, the maximum duration of each regeneration level is limited to: Level 1: "On" if SootMass > 3,00g and under if soot mass < 2,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min Level 2: "On" if SootMass > 8,00g and under if soot mass < 7,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min Level 3: "On" if SootMass > 13,00g and under if soot mass < 12,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min Level 4: "On" if SootMass > 18,00g and under if soot mass < 17,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min Level 5: "On" if SootMass > 23,00g and under if soot mass < 22,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min Level 6: "On" if SootMass > 28,00g and under if soot mass < 27,00g: max allowed duration = 60,00min, Regeneration locked for 5,00min If the max allowed time of regeneration has passed a failure bit is set.	Special ambient conditions or vehicle use (city cycle) which lead to too low DPF temperature for real regeneration. Temperature sensor before Oxicat or before DPF show too low temperature, so system dose not detect real regeneration. Oxicat does not work correctly, i.e. the temperatue increas is too low (should be shown by a additionally stored dedicated failure)	Check temperature sensor before Oxicat and under DPF for correct measuring Check Oxicat Check DPF	Frequency: no lamp Lamp: no lamp	19017-31
PFltSot MsDvt Max	DPF model plausibility: Deviation between pressure differential and oot load characteristics	1B49-1F	DPF model plausibility	The correlation between differential pressure and oot loading model is checked to verify the correspondence between filter efficiency and aw particulate emissions.	Increased raw particulate engine emissions because of a problem with EGR, air mass sensor, injectors or injection timing deviation or particulate filter mounting problem (increased exhaust flow resistance) or differential pressure sensor deviation.	Check differential pressure sensor. check particulate filter mounting, check if other failure are present concerning EGR, air mass sensor or injectors.	Frequency: no lamp Lamp: no lamp	6985-31
PFltSot MsDvt Min	DPF model plausibility: Deviation between pressure differential and oot load characteristics	2C49-1F	DPF model plausibility	The correlation between differential pressure and oot loading model is checked to verify the correspondence between filter efficiency and aw particulate emissions.	Reduced particulate filter efficiency (filter breach) or differential pressure sensor deviation or raw particulate emissions lower than expected because of air/injection system daviation, EGR problem or injection timing deviation.	Check filter integrity (no black smoke at exhaust pipe), check differential pressure sensor, check if other failure are present concerning EGR, air mass sensor or injectors.	Frequency: no lamp Lamp: no lamp	11337-31
PFltSot MsMax	DPF model plausibility: Maximum soot mass in DPF exceeded	1D49-1F	DPF model plausibility	Particulate filter soot loading, should not exceed defined limits or a filter regeneration could cause a thermal damage of the filter.	Regeneration could not be carried out for too long	Perform particulate filter service regeneration.	Frequency: no lamp Lamp: no lamp	7497-31
PFltSRC MaxFlw Rstn	DPF model plausibility: SRC High in DPF Flow Resistance	1E49-1F	DPF model plausibility	Flow resistance, dependent on soot mass stored in the particulate filter, should not exceed a defined limit, otherwise a clogged filter or a problem in the filter mounting should be assumed.	Filter is clogged or not installed correctly, exhaust flow restricted Pressure difference sensor measures too high values	Check filter for proper installation and under on Check Pressure Difference sensor over filter	Frequency: BLINK Lamp: Red (SVS)	7753-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PFltSRC MaxFlw Rstn2	DPF model plausibility: SRC High in DPF Flow Resistance (above second maximal limit)	1D29-1F	DPF model plausibility	Flow resistance, dependent on soot mass stored in the particulate filter, should not exceed a defined limit, otherwise a clogged filter or a problem in the filter mounting should be assumed. Two alarm threshold are provided.	Filter is clogged or not installed correctly, exhaust flow restricted Pressure difference sensor measures too high values	Check filter for proper installation and under on Check Pressure Difference sensor over filter	Frequency: BLINK Lamp: Red (SVS)	7465-31
PFltSRC MinFlw Rstn	DPF model plausibility: SRC Low in DPF Flow Resistance	2139-1F	DPF model plausibility	A minimum flow resistance dependent on soot mass stored in the particulate filter is expected, otherwise a broken or a missing filter should be assumed.	Filter is not installed or has an internal breakthrough Difference pressure sensor measures too low value due to: - broken line before sensor . sensor itself	Check filter for proper installation and under on (no black smoke at exhaust pipe) Check Hose line of Diffferential pressure sensor (upstrem DPF) Check Differential Pressure sensor	Frequency: ON Lamp: Amber (SVS)	8505-31
PFltSwt RgnInhb nNPL	Particulate Filter Emergency regeneration Inhibition Switch implausible	3639-1F	None	The Particulate Filter Emergency Regeneration Inhibitor Switch is monitored for plausibility. Emergency switch is disabled	Emergency Regeneration Switch signal is implausible	CHeck Emergency Switch	Frequency: no lamp Lamp: no lamp	13881-31
PFltSwt RgnNP L	DPF emergency regeneration switch: Not plausible switch value	3239-1F	DPF emergency regen.switch	The vehicle is provided with an emergency regeneration switch which should be activated when normal regeneration activated during driving could not conveniently regenerate particle filter.	Emergency regeneration switch pressed at high vehicle speed or switch defective	Check emergency regeneration switch	Frequency: no lamp Lamp: no lamp	12857-31
PFuMai FilDynT stMax	Fuel main FIlter Pressure: Maximum plausibility eror	11C5-1F	Fuel pressure	Main Fuel Filter Pressure sensor available for the system, the Fuel Pressure is given by the default value 7000,00-.	Inaccurate or defective pressure sensor, defect in the wiring	Check wiring and he accuracy of the pressure sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	4549-31
PFuMai FilDynT stMin	Fuel main FIlter Pressure: Minimum plausibility eror	22C5-1F	Fuel pressure	Main Fuel Filter Pressure sensor available for the system, the Fuel Pressure is given by the default value 7000,00-.	Inaccurate or defective pressure sensor, defect in the wiring	Check wiring and he accuracy of the pressure sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	8901-31
PFuMai FilSig	Fuel main FIlter Pressure: Signal error on CAN for fuel pressure	33C5-1F	Fuel pressure	Main Fuel Filter Pressure sensor available for the system, the Fuel Pressure is given by the default value 7000,00-.	Fuel pressure sensor is defective	Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	13253-31
PFuMai FilSRC Max	Fuel main FIlter Pressure: Signal Range Check High	14C5-1F	Fuel pressure	Main Fuel Filter Pressure sensor available for the system, the Fuel Pressure is given by the default value 7000,00-.	Sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	5317-31
PFuMai FilSRC Min	Fuel main FIlter Pressure: Signal Range Check Low	25C5-1F	Fuel pressure	Main Fuel Filter Pressure sensor available for the system, the Fuel Pressure is given by the default value 7000,00-.	Sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	9669-31
PFuPre FilDynT stMax	Fuel Pre-FIlter Pressure: Maximum plausibility eror	32E5-1F	Fuel pressure	Fuel Pre-Filter Pressure sensor available for the system, the Fuel Pressure is given by the default value 800,00-	Inaccurate or defective pressure sensor, defect in the wiring	Check wiring and he accuracy of the pressure sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	13029-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PFuPre FilDynT stMin	Fuel Pre-FIlter Pressure: Min-imum plausibil-ity eror	33E5-1F	Fuel pres-sure	Fuel Pre-Filter Pressure sensor available for the system, the Fuel Pressure is given by the default value 800,00-	Inaccurate or defective pressure sensor, defect in the wiring	Check wiring and he accuracy of the pres-sure sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	13285-31
PFuPre FilSig	Fuel Pre-FIlter Pressure: Signal error on CAN for fuel pressure	34E5-1F	Fuel pres-sure	Fuel Pre-Filter Pressure sensor available for the system, the Fuel Pressure is given by the default value 800,00-	Fuel pressure sensor is defective	Check sensor and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	13541-31
PFuPre FilSRC Max	Fuel Pre-FIlter Pressure: Signal Range Check High	15E5-1F	Fuel pres-sure	Fuel Pre-Filter Pressure sensor available for the system, the Fuel Pressure is given by the default value 800,00-	Sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	5605-31
PFuPre FilSRC Min	Fuel Pre-FIlter Pressure: Signal Range Check Low	16E5-1F	Fuel pres-sure	Fuel Pre-Filter Pressure sensor available for the system, the Fuel Pressure is given by the default value 800,00-	Sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	5861-31
PhyMo dNonM onMap Npl	ECU internal Check: Not plausible fault: non strictly monotonous q curves quantity in conversion maps fuel quantity /torque	E1FD-1F	ECU internal Check	The map for the conversion from fuel quantity to torque is checked for consist-ency.	Wrong application of the basic map for conversion of injection quantity to inner torque and ice versa (FMTC_trq2qBas_MAP).	Application error, the dataset has a faulty application and under not be used.	Frequency: no lamp Lamp: no lamp	57853-31
PIntkV UsOvrB st	Boost pressure sensor: over boost detection	2718-1F	Boost pres-sure	The raw signal measured by boost pressure sensor is converted into a physical value. This value is monitored and under lie in a plausible range.	Inaccurate or defective boost pressure sensor, defective VGT control	Check VGT, check boost pressure sensor	Frequency: no lamp Lamp: no lamp	10008-31
PIntkV UsPhys RngHi	Boost pressure sensor: Physical Signal above maximum limit	1964-1F	Boost pres-sure	The raw signal measured by boost pressure sensor is converted into a physical value. Measured physical value should lie in a defined range.	Excessive boost pressure is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	6500-31
PIntkV UsPhys RngLo	Boost pressure sensor: Physical Signal below minimum limit	2A64-1F	Boost pres-sure	The raw signal measured by boost pressure sensor is converted into a physical value. Measured physical value should lie in a defined range..	Excessively low boost pres-sure is measured	Check cause for value to fall below min-imum allowed threshold (like environ-mental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	10852-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PIntkV UsPlsHi	Boost Pressure: Diagnostic Fault Check for High Plausibility error	3B64-1F	Boost pressure	The plausibility of boost pressure measured under low speed and oad conditions is monitored. Boost pressure is compared with environmental pressure.	Inaccurate or defective boost pressure sensor, defect in the wiring	Check wiring and he accuracy of the boost pressure sensor and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	15204-31
PIntkV UsPlsLo	Boost Pressure: Diagnostic Fault Check for Low Plausibility error	3C64-1F	Boost pressure	The plausibility of boost pressure measured under low speed and oad conditions is monitored. Boost pressure is compared with environmental pressure.	Inaccurate or defective boost pressure sensor, defect in the wiring	Check wiring and he accuracy of the boost pressure sensor and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	15460-31
PIntkV UsSRC Max	Boost pressure sensor: Signal value above maximum limit	1D64-1F	Boost pressure	The electrical Signal of the boost pressure sensor is monitored. In case of defect recognition a replacement value is taken.	Short circuit of sensor to external source or defective sensor	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	7524-31
PIntkV UsSRC Min	Boost pressure sensor: Signal value below minimum limit	2E64-1F	Boost pressure	The electrical Signal of the boost pressure sensor is monitored. In case of defect recognition a replacement value is taken.	Short circuit at wiring harness or inside the boost pressure sensor to ground or open circuit	Check of wiring or replace boost pressure sensor	Frequency: ON Lamp: Amber (SVS)	11876-31
PostDrvRlyHsOL	Post Drive Relay HS: No load error at the High Side	5171-1F	None	Post Drive relay is specifically implemented for commercial vehicles where there is an emergency switch thorugh which there is a possibility that post drive may not occur.Post Drive relay is switched on during initialisation of the ECU to prevent power supply disconnection if T15 is switched off. It should be made sure that the Post Drive relay is activated before T15 is off The Power stage is monitored at High Side by Hardware for electric failures.	Broken or disconnected wiring or defective Post drive Relay at High Side	Check of wiring or replacement of Post drive Relay	Frequency: ON Lamp: Amber (SVS)	20849-31
PostDrvRlyHsOvrTemp	Post Drive Relay HS: Over Temperature error at the High Side	8271-1F	None	Post Drive relay is specifically implemented for commercial vehicles where there is an emergency switch thorugh which there is a possibility that post drive may not occur.Post Drive relay is switched on during initialisation of the ECU to prevent power supply disconnection if T15 is switched off. It should be made sure that the Post Drive relay is activated before T15 is off The Power stage is monitored at High Side by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside Post Drive Relay at High Side	Check battery voltage, wiring, power stage and ost Drive Relay at High Side	Frequency: no lamp Lamp: no lamp	33393-31
PostDrvRlyHsSCB	Post Drive Relay HS: Short Circuit to Battery error at the High Side	6371-1F	None	Post Drive relay is specifically implemented for commercial vehicles where there is an emergency switch thorugh which there is a possibility that post drive may not occur.Post Drive relay is switched on during initialisation of the ECU to prevent power supply disconnection if T15 is switched off. It should be made sure that the Post Drive relay is activated before T15 is off The Power stage is monitored at High Side by Hardware for electric failures.	Short circuit of wiring to external source or defective HS Post Drive relay	Check of wiring or replacement of Post Drive relay	Frequency: no lamp Lamp: no lamp	25457-31
PostDrvRlyHsSCG	Post Drive Relay HS: power stage output short circuit to ground	6471-1F	None	Post Drive relay is specifically implemented for commercial vehicles where there is an emergency switch thorugh which there is a possibility that post drive may not occur.Post Drive relay is switched on during initialisation of the ECU to prevent power supply disconnection if T15 is switched off. It should be made sure that the Post Drive relay is activated before T15 is off The Power stage is monitored at High Side by Hardware for electric failures.	Short circuit of wiring to ground or inside Post Drive Relay at High Side	Check of wiring or replacement of Post Drive Relay	Frequency: no lamp Lamp: no lamp	25713-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PostDrvRlyLsOLSCG	Post Drive Relay LS: power stage output short circuit to ground or Open Load	5971-1F	None	Post Drive relay is specifically implemented for commercial vehicles where there is an emergency switch thorugh which there is a possibility that post drive may not occur.Post Drive relay is switched on during initialisation of the ECU to prevent power supply disconnection if T15 is switched off. It should be made sure that the Post Drive relay is activated before T15 is off The Power stage is monitored at Low Side by Hardware for electric failures.	Short circuit of wiring to ground or Open load or inside Post Drive Relay at Low Side	Check of wiring or replacement of Post Drive Relay	Frequency: ON Lamp: Amber (SVS)	22897-31
PostDrvRlyLsOvrTemp	Post Drive Relay LS: Over Temperature error at the Low Side	8671-1F	None	Post Drive relay is specifically implemented for commercial vehicles where there is an emergency switch thorugh which there is a possibility that post drive may not occur.Post Drive relay is switched on during initialisation of the ECU to prevent power supply disconnection if T15 is switched off. It should be made sure that the Post Drive relay is activated before T15 is off The Power stage is monitored at Low Side by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside Post Drive Relay at Low Side	Check battery voltage, wiring, power stage and ost Drive Relay at Low Side	Frequency: no lamp Lamp: no lamp	34417-31
PostDrvRlyLsSCB	Post Drive Relay LS: Short Circuit to Battery error at the High Side	6771-1F	None	Post Drive relay is specifically implemented for commercial vehicles where there is an emergency switch thorugh which there is a possibility that post drive may not occur.Post Drive relay is switched on during initialisation of the ECU to prevent power supply disconnection if T15 is switched off. It should be made sure that the Post Drive relay is activated before T15 is off The Power stage is monitored at Low Side by Hardware for electric failures.	Short circuit of wiring to external source or defective LS Post Drive relay	Check of wiring or replacement of Post Drive relay	Frequency: no lamp Lamp: no lamp	26481-31
PPFltDiffEnhSRCMax	DPF filter differential pressure sensor: Signal value above maximum limit -- Enhanced check	1719-1F	DPF pressure monitoring	Signal range check of the raw adapted differential pressure signal. If the raw value exceeds the limit value for a certain time, the failure is set.	Signal range check of the DPF differential pressure sensor. Upper limit exceeded, possibly Pressor sensor failure, connection tubes or filter substrate.	Please check differential pressure sensor as well as connection tubes. If failure remains, check particulate filter substrate if blocked.	Frequency: ON Lamp: Amber (SVS)	5913-31
PPFltDiffEnhSRCMin	DPF filter differential pressure sensor: Signal value below minimum limit -- Enhanced check	2819-1F	DPF pressure monitoring	Signal range check of the raw adapted differential pressure signal. If the raw value is lower than the value for a certain time, the failure is set.	Signal range check of the DPF differential pressure sensor. lower limit exceeded, possibly Pressor sensor failure, connection tubes or filter substrate.	Please check differential pressure sensor as well as connection tubes. If failure remains, check particulate filter substrate if missing.	Frequency: ON Lamp: Amber (SVS)	10265-31
PPFltDiffNplCldCnd	DPF pressure monitoring: Fault check for the pressure sensor plausibility at cold conditions	31D9-1F	DPF pressure monitoring	The measured differential pressure after engine stop, during ECM after-run should be close to zero, otherwise a sensor drift problem should be assumed. For cold condition this specific monitor is forseen with different debounce time than under warm conditions	Differential pressure sensor is inaccurate.	Check accuracy of differential pressure sensor.	Frequency: ON Lamp: Amber (SVS)	12761-31
PPFltDiffNplDyn	DPF filter differential pressure sensor: dynamic plausibility	3919-1F	DPF pressure monitoring	Diagnostic Fault Check for dynamic plausibility of DPF pressure sensor	Dynamic plausibility check of the DPF differential pressure sensor. Possibly Pressure sensor failure, connection tubes or filter substrate.	Please check differential pressure sensor as well as connection tubes. If failure remains, check particulate filter substrate if missing.	Frequency: no lamp Lamp: no lamp	14617-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PPFltDiffNplDynCld	DPF filter differential pressure sensor: dynamic plausibility at cold state	32D9-1F	DPF pressure monitoring	Diagnostic Fault Check for dynamic plausibility of DPF pressure sensor at cold conditions	Dynamic plausibility check of the DPF differential pressure sensor. Possibly Pressure sensor failure, connection tubes or filter substrate.	Please check differential pressure sensor as well as connection tubes. If failure remains, check particulate filter substrate if missing.	Frequency: no lamp Lamp: no lamp	13017-31
PPFltDiffNplHsLn	DPF filter differential pressure sensor: Hose Line Monitoring	4A19-1F	DPF pressure sensing	The hose line monitoring can detect dropped off, clogged or blocked hose connections of the particle filter pressure sensor system. For this purpose the filtered differential pressure Exh_pFltPPFltDiff and he change of the filtered volume flow over time Exh_ddvolFltPPFltDiff_mp are evaluated.	Hose connection upstream from the particle filter detached or completely blocked. Atmospheric pressure is constantly present at the pressure connection upstream from the particle filter.	Check mounting, check hose line	Frequency: ON Lamp: Amber (SVS)	18969-31
PPFltDiffNplHsLnCld	DPF differential pressure sensor: Hose Line Monitoring at cold state	33D9-1F	DPF pressure sensing	The hose line monitoring can detect dropped off, clogged or blocked hose connections of the particle filter pressure sensor system. For this purpose the filtered differential pressure Exh_pFltPPFltDiff and he change of the filtered volume flow over time Exh_ddvolFltPPFltDiff_mp are evaluated. This monitor is performed only at cold state.	Hose connection upstream from the particle filter detached or completely blocked. Atmospheric pressure is constantly present at the pressure connection upstream from the particle filter.	Check mounting, check hose line	Frequency: ON Lamp: Amber (SVS)	13273-31
PPFltDiffSot	DPF differential pressure sensor: Sooted hose line detected	4B19-1F	DPF pressure monitoring	The value for DPF differential pressure is monitored for plausibility. If the value drops below a defined limit sensor hose line is assumed to be clogged.	Hoseline to differential pressure sensor clogged or mounting incorrect	Check mounting, check hoseline	Frequency: no lamp Lamp: no lamp	19225-31
PPFltDiffSRCMax	DPF differential pressure sensor: SRC value above maximum limit	1C19-1F	DPF pressure sensing	The electrical Signal of the DPF differential pressure sensor is monitored. In case of defect recognition a default value for the pressure is taken.	Short circuit of wiring to external source or defective sensor	Check wiring harness or replace sensor	Frequency: ON Lamp: Amber (SVS)	7193-31
PPFltDiffSRCMin	DPF differential pressure sensor: SRC value below minimum limit	2D19-1F	DPF pressure sensing	The electrical Signal of the DPF differential pressure sensor is monitored. In case of defect recognition a default value for the pressure is taken.	Short circuit of wiring to ground or defective sensor	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	11545-31
PPFltUsPhysRngHi	DPF upstream pressure sensor: Physical Signal above maximum limit	1E19-1F	DPF pressure monitoring	The raw signal measured by DPF Upstream pressure sensor is converted into a physical value. Measured physical value should lie in a defined range.	Excessive DPF upstream pressure is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	7705-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PPFltUs PhysRn gLo	DPF upstream pressure sensor: Physical Signal below minimum limit	2F19-1F	DPF pressure monitoring	The raw signal measured by DPF Upstream pressure sensor is converted into a physical value. Measured physical value should lie in a defined range.	Excessively low DPF upstream pressure is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	12057-31
PPFltUs SensFrz	DPF filter upstream pressure sensor: Frozen sensor	2129-1F	DPF pressure monitoring	The frozen state of the DPF upstream pressure sensor is monitored. In case of defect recognition a default value for the pressure is taken. The frozen state is determined by evaluating environmental temperature (EnvT_t)	DPF upstream pressure sensor is frozen due to very low temperature	No action needed, if temperature is above freezeing value sensor should work correctly	Frequency: no lamp Lamp: no lamp	8489-31
PPFltUs SRCMa x	DPF upstream pressure sensor: SRC value above maximum limit	1229-1F	DPF pressure sensing	The electrical Signal of the DPF upstream pressure sensor is monitored. In case of defect recognition a default value for the pressure is taken.	Short circuit of sensor to external source or defective sensor	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	4649-31
PPFltUs SRCMin	DPF upstream pressure sensor: SRC value below minimum limit	2329-1F	DPF pressure sensing	The electrical Signal of the DPF upstream pressure sensor is monitored. In case of defect recognition a default value for the pressure is taken.	Short circuit of sensor to ground or defective sensor	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	9001-31
PRVct OpnMa x	Pressure Relief Valve: Opening count of PRV for wear out monitoring had exceeded maximum value	1145-1F	Pressure Relieve Valve	For determination of the mechanical state of the pressure relief valve it is detected, if the pressure relief valve is forced to open too many times.	PRV opens to often. Possible failure causes: Metering unit or wiring harness defective, rail pressure sensor failure, PRV problem (PRV opening pressure too low)	Check other rail failure, check PRV valve tightness and under g pressure, check metering unit, check wiring harness The PRV needs to be replaced and under r for number of opening should be reset using appropriate routine control service.	Frequency: ON Lamp: Amber (SVS)	4421-31
PRVFr OpnPre sInc	Pressure Relief Valve: Pressure shock test performed, first step, rail pressure increase	F245-1F	Pressure Relieve Valve	To determine mechanical wearout, the Pressure Relief Valve can be forced to open by performing a defined rail pressure shock in two steps: - Waiting for rail pressure build up - Performing pressure shock The two steps are recorded in the failure memory Pressure shock is only possible in a defined engine speed range depending from rail pressure.	Pressure increase and under re shock are means to set system into limp home mode. In case of rail pressure sensor failure or maximum rail pressure exceeded, the system is set into limp home mode by performing pressure increase (MeUn set to full delivery) and under re shock (MeUn set to full delivery and under ion quantity set to zero)	No intervention necessary	Frequency: ON Lamp: Amber (SVS)	62021-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PRVFrOpnPresShck	Pressure Relief Valve: Pressure shock test performed, second step, rail pressure shock	F345-1F	Pressure Relieve Valve	To determine mechanical wearout, the Pressure Relief Valve can be forced to open by performing a defined rail pressure shock in two steps: - Waiting for rail pressure build up - Performing pressure shock The two steps are recorded in the failure memory Pressure shock is only possible in a defined engine speed range depending from rail pressure.	Pressure increase and under re shock are means to set system into limp home mode. In case of rail pressure sensor failure or maximum rail pressure exceede, the system is set into limp home mode by performing pressure increase (MeUn set to full delivery) and under re shock (MeUn set to full delivery and under ion quantity set to zero)	No intervention necessary	Frequency: ON Lamp: Amber (SVS)	62277-31
PRVOpn	Info: Pressure Relief Valve Opened	F445-1F	Pressure Relieve Valve	If rail pressure exceeds normal operation values a mechanical valve (PRV= pressure Relief Valve) is opened to control maximum rail pressure	Pressure Relief Valve is open due to: Failure of rail pressure sensor, wiring harness, metering unit or rail pressure failure	Check Rail pressure sensor, metering unit, wiring harness connection, rail system failure or PRV opening pressure decrease	Frequency: BLINK Lamp: Red (SVS)	62533-31
PRVQBalChk	Pressure Relief Valve: Pressure shock test: Quantity balance check for pressure shock failed	4545-1F	Pressure Relieve Valve	To determine mechanical wearout, the Pressure Relief Valve can be forced to open by performing a defined rail pressure shock in two steps: - Waiting for rail pressure build up - Performing pressure shock The two steps are recorded in the failure memory Pressure shock is only possible in a defined engine speed range depending from rail pressure.	Not a failure, Pressure shock request due to rail pressure sensor failure out of possible range.	Check RDS and DS wiring harness connection	Frequency: BLINK Lamp: Red (SVS)	17733-31
PRVRPOutOfRng	Pressure Relief Valve: Averaged rail pressure is outside the expected range with open PRV	3645-1F	Pressure Relieve Valve	PRV is classified as open after the successful evaluation of the rail pressure gradients After this the rail pressure averaging is executed continuously. If the average rail pressure is outside the expected range the open evaluation of the pressure relief valve by rail pressure averaging failed	Pressure Relief Valve not or not completely opened or restriction at PRV connection. Wrong PRV limp home pressure due to defective PRV. Rail pressure sensor failure (intermittend connection)	Check PRV, check rail pressure sensor	Frequency: ON Lamp: Amber (SVS)	13893-31
PRVtiOpnMax	Pressure Relief Valve: Open time of PRV for wear out monitoring had exceeded maximum value	1745-1F	Pressure Relieve Valve	The monitoring of the wear out of the PRV is done by counting the number of times the PRV is opened and he duration of its opening. The duration of opening (PRV_tiOpn_mp) is accumulated in every driving cycle and under in the EEPROM in afterrun state of the engine. If the PRV was open for a longer time than the applied limit a failure is detected.	PRV opens to often. Possible failure causes: Metering unit or wiring harness defective, rail pressure sensor failure, PRV problem (PRV opening pressure too low)	Check other rail failure, check PRV valve tightness and under g pressure, check metering unit, check wiring harness, check RDS. The PRV needs to be replaced and under monitoring opening status should be reset using appropriate routine control service.	Frequency: ON Lamp: Amber (SVS)	5957-31
PSPOL	Presupply pump: open load of pre-supply pump output	51F5-1F	Presupply pump	The Power stage Fuel Pre-supply pump is controlled by Hardware for electrical failures	Broken or disconnected wiring or defective presupply pump	Check of wiring or replace pre supply pump	Frequency: no lamp Lamp: no lamp	20981-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PSPOvrTemp	Presupply pump: Over temperature error on ECU power stage for Pre supply pump	82F5-1F	Presupply pump	The Power stage Fuel Pre-supply pump is controlled by Hardware for electrical failures	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: no lamp Lamp: no lamp	33525-31
PSPSCB	Presupply pump: short circuit to battery of pre-supply pump output	63F5-1F	Presupply pump	The Power stage Fuel Pre-supply pump is controlled by Hardware for electrical failures	Short circuit of wiring to external source or inside presupply pump	Check of wiring or replace pre supply pump	Frequency: no lamp Lamp: no lamp	25589-31
PSPSCG	Presupply pump: short circuit to ground of pre-supply pump output	74F5-1F	Presupply pump	The Power stage Fuel Pre-supply pump is controlled by Hardware for electrical failures	Short circuit of wiring to ground or inside presupply pump	Check of wiring or replace pre supply pump	Frequency: no lamp Lamp: no lamp	29941-31
PTrbnDsEnvPPls	Diagnostic Fault Check for Static Plausibility error	3158-1F	P4 Pressure	Static plausibility check between Turbine Pressure downstream (P4) and under nmental pressure is performed.	Turbine downstream pressure sensor drifted	Check and under e turbine downstream pressure sensor	Frequency: no lamp Lamp: no lamp	12632-31
PTrbnDsPhysRngHi	Turbine Downstream Pressure Sensor: Physical Signal above maximum limit	1258-1F	P4 Pressure	There is no turbine downstream pressure sensor used in this configuration	Excessive Turbine Downstream Pressure is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	4696-31
PTrbnDsPhysRngLo	Turbine Downstream Pressure Sensor: Physical Signal below minimum limit	2358-1F	P4 Pressure	There is no turbine downstream pressure sensor used in this configuration	Excessive Turbine Downstream Pressure is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	9048-31
PTrbnDsPls	Diagnostic Fault Check for Dynamic Plausibility error	3458-1F	P4 Pressure	Dynamic plausibility check between Turbine Pressure downstream (P4) and under ed pressure value is performed.	Turbine downstream pressure sensor drifted	Check and under e turbine downstream pressure sensor	Frequency: no lamp Lamp: no lamp	13400-31
PTrbnUsPhysRngHi	Turbine Upstream Pressure Sensor: Physical Signal above maximum limit	1558-1F	P3 Pressure	The turbine upstream pressure is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Exh_uRawPTrbnUs. This signal is checked for the Signal Range Errors and hen transformed into physical value Exh_pSensPTrbnUs.. The physical value should lie in a defined range. . Sensor measures absolute pressure.	Excessively low Turbine Upstream Pressure is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	5464-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PTrbnUsPhysRngLo	Turbine Upstream Pressure Sensor: Physical Signal below minimum limit	2658-1F	P3 Pressure	The turbine upstream pressure is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Exh_uRawPTrbnUs. This signal is checked for the Signal Range Errors and hen transformed into physical value Exh_pSensPTrbnUs.. Physical value should lie in a defined range. Sensor measures absolute pressure.	Excessively low Turbine Upstream Pressure is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	9816-31
PTrbnUsSRCMax	Turbine Upstream Pressure Sensor: Signal range check high	1758-1F	P3 Pressure	The turbine upstream pressure is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Exh_uRawPTrbnUs. This signal is checked for the Signal Range Errors and hen transformed into physical value Exh_pSensPTrbnUs..	Turbine Upstream Pressure sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	5976-31
PTrbnUsSRCMin	Turbine Upstream Pressure Sensor: Signal range check low	2858-1F	P3 Pressure	The turbine upstream pressure is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Exh_uRawPTrbnUs. This signal is checked for the Signal Range Errors and hen transformed into physical value Exh_pSensPTrbnUs..	Turbine Upstream Pressure sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	10328-31
PwrRlyHSSCB	Power Relay for Smart Sensors and under ors: Short Circuit to Battery error at the High Side	6961-1F	Actuator Relay	A new power relay dedicated to external smart sensors and under ors was introduced. The Power stage is monitored at High Side by Hardware for electric failures.	Short circuit of wiring to external source or defective HS Power relay	Check of wiring or replacement of HS relay	Frequency: no lamp Lamp: no lamp	26977-31
PwrRlyHSSCG	Power Relay for Smart Sensors and under ors: Short Circuit to Ground error at the High Side	7A61-1F	Actuator Relay	A new power relay dedicated to external smart sensors and under ors was introduced. The Power stage is monitored at High Side by Hardware for electric failures.	Short circuit of wiring to ground or inside Power Relay at High Side	Check of wiring or replacement of Power Relay	Frequency: no lamp Lamp: no lamp	31329-31
PwrRlyLSOL	Power Relay for Smart Sensors and under ors: Open Load error at the Low Side	5B61-1F	Actuator Relay	A new power relay dedicated to external smart sensors and under ors was introduced. The Power stage is monitored at Low Side by Hardware for electric failures.	Broken or disconnected wiring or defective Power Relay at Low Side	Check of wiring or replacement of Power Relay	Frequency: ON Lamp: Amber (SVS)	23393-31
PwrRlyLSOvrTemp	Power Relay for Smart Sensors and under ors: Over Temperature error at the Low Side	8322-1F	Actuator Relay	A new power relay dedicated to external smart sensors and under ors was introduced. The Power stage is monitored at Low Side by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside Power Relay at Low Side	Check battery voltage, wiring, power stage and under Relay at Low Side	Frequency: no lamp Lamp: no lamp	33570-31
PwrRlyLSSCB	Power Relay for Smart Sensors and under ors: Short Circuit to Battery error at the Low Side	6422-1F	Actuator Relay	A new power relay dedicated to external smart sensors and under ors was introduced. The Power stage is monitored at Low Side by Hardware for electric failures.	Short circuit of wiring to external source or defective LS Power relay	Check of wiring or replacement of LS relay	Frequency: no lamp Lamp: no lamp	25634-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
PwrRly LSSCG	Power Relay for Smart Sensors and under ors: Short Circuit to Ground error at the Low Side	7522-1F	Actuator Relay	A new power relay dedicated to external smart sensors and under ors was introduced. The Power stage is monitored at Low Side by Hardware for electric failures.	Short circuit of wiring to ground or inside Power Relay at Low Side	Check of wiring or replacement of Power Relay	Frequency: ON Lamp: Amber (SVS)	29986-31
RailBatt ULow	Info: Battery voltage at engine start too low for rail PCV control, engine started with rail MeUn control	3A55-1F	Battery voltage	When using a PCV with inverted working logic (current less closed), it is necessary to be able to open the valve completely during engine start by PCV control. When the battery voltage drops below a certain threshold (i.e at cold start, with weak battery), it might not deliver enough power to open the valve far enough to adjust the start pressure level. In this case the engine will start in MeUn-Mode instead of PCV-Mode (which is the standard in 2-governor systems).	Information failure path: Battery voltage at engine start too low to start rail in normal mode.	No intervention necessary on rail, check battery charge and under ity.	Frequency: no lamp Lamp: no lamp	14933-31
RailBSA	Injector Blank Shot Actuation aborted , rail pressure not released after engine stop	F895-1F	Injector	In rail system with only one actuator and under ors without recirculation, when engine is stopped rail cannot be depressurised (no system leakage present). For this reason a blank shot functionality was addede during afterrun. A blank shot refers to a very brief activation of the injector that causes the injector control quantity to be discharged in order to reduce the rail pressure, without injecting any fuel into the cylinder	Abnormal engine stop condition? Afterrun interrupted?	INFO failure: No intervention necessary	Frequency: no lamp Lamp: no lamp	63637-31
RailCnt AbortL eakTst	Rail leakage test aborted too often	2A95-1F	Fuel pressure control CPC	A leakage in the rail system causing fuel spilling into engine oil could cause a dangerous oil diluition. A monitor for unexpected rail pressure variation at engine stop and under overrun phases was introduced to detect possible rail leakages. A further monitor was introduced to check that rail leakage test is carried out as scheduled.	Leakage test cannot be carried out correctly, probably because a wrong calibration or ECU afterrun not carried out correctly	Check if ECU problems impacting on afterrun are detected, if it is not the case report to help desk.	Frequency: no lamp Lamp: no lamp	10901-31
RailColl 0Neg	Rail Collective fault0 Negative detected	1845-1F	Fuel pressure (Rail) control	To reduce the number of possible failure entered in the failure memory, fuel rail related failure can be put into collective faults according to a criteria of similiarity (i.e. all failures triggered by positive pressure, deviation, negative deviation,...)			Frequency: no lamp Lamp: no lamp	6213-31
RailColl 0Pos	Rail Collective fault0 Positive detected	2945-1F	Fuel pressure (Rail) control	To reduce the number of possible failure entered in the failure memory, fuel rail related failure can be put into collective faults according to a criteria of similiarity (i.e. all failures triggered by positive pressure, deviation, negative deviation,...)			Frequency: no lamp Lamp: no lamp	10565-31
RailColl 1Neg	Rail Collective fault1 Negative detected	1A45-1F	Fuel pressure (Rail) control	To reduce the number of possible failure entered in the failure memory, fuel rail related failure can be put into collective faults according to a criteria of similiarity (i.e. all failures triggered by positive pressure, deviation, negative deviation,...)			Frequency: no lamp Lamp: no lamp	6725-31
RailColl 1Pos	Rail Collective fault1 Positive detected	2B45-1F	Fuel pressure (Rail) control	To reduce the number of possible failure entered in the failure memory, fuel rail related failure can be put into collective faults according to a criteria of similiarity (i.e. all failures triggered by positive pressure, deviation, negative deviation,...)			Frequency: no lamp Lamp: no lamp	11077-31
RailColl 2Neg	Rail Collective fault2 Negative detected	1C45-1F	Fuel pressure (Rail) control	To reduce the number of possible failure entered in the failure memory, fuel rail related failure can be put into collective faults according to a criteria of similiarity (i.e. all failures triggered by positive pressure, deviation, negative deviation,...)			Frequency: no lamp Lamp: no lamp	7237-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailColl 2Pos	Rail Collective fault2 Positive detected	2D45-1F	Fuel pressure (Rail) control	To reduce the number of possible failure entered in the failure memory, fuel rail related failure can be put into collective faults according to a criteria of similiarity (i.e. all failures triggered by positive pressure, deviation, negative deviation,...)			Frequency: no lamp Lamp: no lamp	11589-31
RailCP C1	Fuel pressure control CPC: PCV position not plausible (too much closed) during rail press control "both devices"	3B55-1F	Fuel pressure control CPC	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed an requested fuel pressure. If there is a too high "fuel consumption", i.e. due to a leakage in the high pressure system or a restriction in the low pressure system, the fuel feeding must increase - which leads to fully open MeUn(=0% PWM) - and/or the Pressure control valve must close, which is done by increasing virtually the demanded fuel pressure for the PCV. If this demanded fuel pressure exceeds a limit while the MeUN is in closed loop control or in "full feeding position" a leakage must be assumed.	Possible faults in high pressure part: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check PCV for thightness in closed position (100% PWM) Check High pressur pump for efficiency Check injectors for thightness	Frequency: no lamp Lamp: no lamp	15189-31
RailCP C3	Fuel pressure control CPC: fuel rail pressure below minimal threshold during rail press control "both devices"	2C55-1F	Fuel pressure control CPC	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed an requested fuel pressure. If there is a too high "fuel consumption", i.e. due to a leakage in the high pressure system or a restriction in the low pressure system, it is possible that the fuel pressure can not be reached even MeUn is in full feeding position (PWM=0%). If the fuel pressure is below a minimum value depending on engine speed, a leakage must be assumed.	Possible faults in high pressure part. injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve, leaking high pressure part itself (tubing) Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric pre supply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Check tubing between pre supply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check high pressure part for leakages (internal / external) Check PCV for tightness in closed position (100% PWM) Check High pressure pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	11349-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailCP C4	Fuel pressure control CPC: fuel rail pressure exceeds maximal limit during rail press control "both devices"	1D55-1F	Fuel pressure control CPC	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed an requested fuel pressure. If the PCV stucks in closed position for the MeUn feeds too much of fuel, the fuel pressure rises up. If it exceeds 21,50bar a failure in the system must be assumed.	Pressure control valve (PCV) stuck in closed position Too high current to PCV (due to partial short circuit) Metering Unit (MeUn) stuck if "full feeding position" Metering Unit (MeUn) without current Zero delivery throttle clogged or pressure after Zero delivery valve to high (due to clogged return tubes) Pressure before gear pump too high due to clogged pressure control valve in low pressure cycle (if present)	Check Pressure control valve (PCV), if opening (PWM = 0%) Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to PCV and eUn Check low pressure fuel tubes (return from CP to tank free?) Check zero delivery valve for correct working	Frequency: no lamp Lamp: no lamp	7509-31
RailCP CTnkLo 1	Fuel pressure control CPC: PCV position not plausible (too much closed) during rail press control "both devices" with Low Fuel level in Tank	4E55-1F	Fuel pressure control CPC	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed an requested fuel pressure. If there is a too high "fuel consumption", i.e. due to a leakage in the high pressure system or a restriction in the low pressure system, the fuel feeding must increase (which leads to open fully (=0% PWM = fully "closed") the MeUn) and/or the Pressure control valve must close, which is done by increasing virtually the demanded fuel pressure for the PCV. If this demanded fuel pressure exceeds a limit while the MeUN is in closed loop control or in "full feeding position" a leakage must be assumed. Note: this failure gets only active with low fuel level in tank.	Possible faults in high pressure part: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check PCV for thightness in closed position (100% PWM) Check High pressur pump for efficiency Check injectors for thightness	Frequency: no lamp Lamp: no lamp	20053-31
RailCP CTnkLo 3	Fuel pressure control CPC: fuel rail pressure below minimal threshold during rail press control "both devices" with low Fuel level in Tank	2F55-1F	Fuel pressure control CPC	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed an requested fuel pressure. If there is a too high "fuel consumption", i.e. due to a leakage in the high pressure system or a restriction in the low pressure system, it is possible that the fuel pressure can not be reached even MeUn is in full feeding position (PWM=0%). If the fuel pressure is below a minimum value depending on engine speed, a leakage must be assumed. Note: this failure gets only active with low fuel level in tank.	Possible faults in high pressure part. injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve, leaking high pressure part itself (tubing)	Possible faults in high pressure part. injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve, leaking high pressure part itself (tubing)	Frequency: no lamp Lamp: no lamp	12117-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailCP CTnkLo 4	Fuel pressure control CPC: fuel rail pressure exceeds maximal limit during rail press control "both devices" with low Fuel level in Tank	1165-1F	Fuel pressure control CPC	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed an requested fuel pressure. If the PCV stuck in closed position for the MeUn feeds too much of fuel, the fuel pressure rises up. If it exceeds 21,50bar a failure in the system must be assumed. Note: this failure gets only active with low fuel level in tank.	Pressure control valve (PCV) stucks in closed position Too high current to PCV (due to partial short circuite) Metering Unit (MeUn) stuck if "full feeding position" Metering Unit (MeUn) without current Zero delivery trhottle clogged or pressure after Zero delivery valve to high (due to clogged return tubes) Pressure before gear pump too high due to clogged pressure control valve in low pressure cycle (if present)	Check Pressure control valve (PCV), if opening (PWM = 0%) Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to PCV and eUn Check low pressure fuel tubes (return from CP to tank free?) Check zero delivery valve for correct working	Frequency: no lamp Lamp: no lamp	4453-31
RailDvo lPos	Rail Collective fault Dvol Positive detected	1E45-1F	Fuel pressure (Rail) control	To reduce the number of possible failure entered in the failure memory, fuel rail related failure can be put into collective faults according to a criteria of similiarity (i.e. all failures triggered by positive pressure, deviation, negative deviation,...)			Frequency: no lamp Lamp: no lamp	7749-31
RailLeak Tst	Monitoring for pressure loss in the high pressure accumulator	3995-1F	Fuel pressure (Rail) control	A leakage in the rail system causing fuel spilling into engine oil could cause a dangerous oil diluition. A monitor for unexpected rail pressure variation at engine stop and under overrun phases was introduced to detect possible rail leakages.	Leakage in the rail system present	Check rail system for leakage, check oil for diluition (if rail leakage is inside engine overhead). Repair leakage and under e engine oil if necessary	Frequency: no lamp Lamp: no lamp	14741-31
RailMe Un0	Fuel pressure control Metering unit: Too low fuel rail pressure with MeUn Control	2265-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If desired fuel pressure can not be reached, a leaky system must be assumed. Note: This Monitoring is only active with non empty fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric pre supply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Check tubing between pre supply and ear pump Check feeding of pre supply pump (possibly low due to clogged tubes at tank outlet) Check high pressure part for leakages (internal / external) Check High pressure pump for efficiency Check injectors for tightness	Frequency: BLINK Lamp: Red (SVS)	8805-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailMeUn1	Fuel pressure control Metering unit: Tool low fuel rail pressure concerning the fuel feeding with MeUn Control	1365-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the desired fuel pressure can not be reached, a leaky system must be assumed. Note: This Monitoring is only active with non empty fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric pre supply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Check tubing between presupply and ear pump Check feeding of pre supply pump (possibly low due to clogged tubes at tank outlet) Check high pressure part for leakages (internal / external) Check High pressure pump for efficiency Check injectors for tightness	Frequency: ON Lamp: Amber (SVS)	4965-31
RailMeUn10	Fuel pressure (Rail) control: Leakage in high pressure system	4465-1F	Fuel pressure (Rail) control	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) as feeding quantity control The desired fuel flow is adjusted by feed back control for reaching the desired fuel pressure. If this needed fuel flow exeeds a maximal expected fuel flow by more than a fuel flow dependant value (350,00mm3/s at 0,00mm3/s to 910,00mm3/s at 2500,00mm3/s), leakage in the system must be assumed. Note: This Monitoring is only active with non empty fuel tank.	External leakage in the high pressure or low pressure system. Fuel pressure sensor signal shows wrong (mainly too low) values. Injectors leak internally (do not close) High pressure pump has too low feeding efficiency Restriction in fuel supply	Check if system has no external leakage Check if fuel pressure sensor signal is correct Check if injectors close well Check High pressure pump delivery Check fuel supply line and under for clogged filter	Frequency: BLINK Lamp: Red (SVS)	17509-31
RailMeUn2	Fuel pressure control Metering unit: Too high fuel pressure with MeUn on 0-delivery state	1565-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the desired fuel pressure is exceeded although the MeUn is fully closed (0-delivery) the system is not OK Note: This Monitoring is only active with non empty fuel tank.	Metering unit stuck in open position, zero-delivery throttle clogged, metering unit without power due to electrical error. Low pressure side: Pressure after zero-delivery throttle too high (Pump backflow pressure too high)	Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to MeUn Check low pressure fuel tubes (return from CP to tank free?) Check zero delivery valve for correct working	Frequency: BLINK Lamp: Red (SVS)	5477-31
RailMeUn22	Fuel pressure control Metering unit: Too high fuel pressure with MeUn on 0-delivery state (second stage)	1665-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the desired fuel pressure is exceeded although the MeUn is fully closed (0-delivery) the system is not OK (in addition to the failure RailMeUn2, but deviation more critical) Note: This Monitoring is only active with non empty fuel tank.	Metering unit stuck in open position, zero-delivery throttle clogged, metering unit without power due to electricel error. Low pressure side: pressure after zero-delivery throttle too high (Pump backflow pressure too high)	Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to MeUn Check low pressure fuel tubes (return from CP to tank free?) Check zero delivery valve for correct working	Frequency: ON Lamp: Amber (SVS)	5733-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailMeUn3	Fuel pressure control Metering unit: Fuel rail pressure below limit with MeUn Control	2765-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the minimal desired fuel pressure is not reached, the system is not OK Note: This Monitoring is only active with non empty fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric pre supply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Check tubing between pre supply and ear pump Check feeding of pre supply pump (possibly low due to clogged tubes at tank outlet) Check high pressure part for leakages (internal / external) Check High pressure pump for efficiency Check injectors for tightness	Frequency: BLINK Lamp: Red (SVS)	10085-31
RailMeUn4	Fuel pressure control Metering unit: Fuel Rail pressure above maximum limit with MeUn Control	1865-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the fuel pressure exceeds 17,00bar, the system is not OK Note: This Monitoring is only active with non empty fuel tank.	Metering unit stuck in open position, zero-delivery throttle clogged, metering unit without power due to electrical error. Low pressure side: pressure after zero-delivery throttle too high (Pump backflow pressure too high)	Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to MeUn Check low pressure fuel tubes (return from CP to tank free?) Check zero delivery valve for correct working	Frequency: BLINK Lamp: Red (SVS)	6245-31
RailMeUn42	Fuel pressure control Metering unit: Fuel Rail pressure above maximum limit with MeUn Control (second stage)	1965-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the fuel pressure exceeds 17,00bar, the system is not OK. (This in addition to RailMeUn4, but with higher threshold for reaction at more critical situation) Note: This Monitoring is only active with non empty fuel tank.	Metering unit stuck in open position, zero-delivery throttle clogged, metering unit without power due to electricel error. Low pressure side: pressure after zero-delivery throttle too high (Pump backflow pressure too high)	Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to MeUn Check low pressure fuel tubes (return from CP to tank free?) Check zero delivery valve for correct working	Frequency: ON Lamp: Amber (SVS)	6501-31
RailMeUn5	Fuel pressure control Metering unit: Too low fuel rail pressure in fast transient condition with MeUn Control	1A65-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the desired fuel pressure can not be reached, a leaky system must be assumed. (This failure is in addition to RailMeUn0 but for faster detection with higher accepted deviation - possibility for fast reaction in case of high leakage) Note: This Monitoring is only active with non empty fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric pre supply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Check tubing between pre supply and ear pump Check feeding of pre supply pump (possibly low due to clogged tubes at tank outlet) Check high pressure part for leakages (internal / external) Check High pressure pump for efficiency Check injectors for tightness	Frequency: ON Lamp: Amber (SVS)	6757-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailMeUn7	Fuel pressure control Metering unit: Leakage in overrun	3B65-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. Highpressure system leakage is checked at overrun. Note: This Monitoring is only active with non empty fuel tank.	Leakage in the high pressure system: low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check High pressur pump for efficiency	Frequency: BLINK Lamp: Red (SVS)	15205-31
RailMeUn8	Fuel pressure control Metering unit: Leakage in high pressure system detected at idle	3C65-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the desired fuel quantity to reach the requested rail pressure is higher than expected at idle speed, a leaky system must be assumed. Note: This Monitoring is only active with non empty fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check High pressur pump for efficiency Check injectors for tightness	Frequency: BLINK Lamp: Red (SVS)	15461-31
RailMeUn9	Fuel pressure control Metering unit: Exceeding of a maximum peak pressure	1D65-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the fuel pressure exceeds 16,00bar several times, the system is not OK Note: This Monitoring is only active with non empty fuel tank.	Metering unit stuck in open position, zero-delivery throttle clogged, metering unit without power due to electricel error. Low pressure side: Pressure before gear pump too high (e.g. by pressure relieve valve), pressure after zero--delivery throttle too high	Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to MeUn Check low pressure fuel tubes (return from CP to tank free?) Check zero delivery valve for correct working	Frequency: ON Lamp: Amber (SVS)	7525-31
RailMeUnTnkLo0	Fuel pressure control Metering unit: Too low fuel rail pressure with MeUn Control with empty Tank	1E65-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the desired fuel pressure can not be reached, a leaky system must be assumed. Note: This Monitoring is only active WITH empty fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check High pressur pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	7781-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailMeUnTnkLo1	Fuel pressure control Metering unit: Tool low fuel rail pressure concerning the fuel feeding with MeUn Control with empty Tank	1F65-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the desired fuel pressure can not be reached, a leaky system must be assumed. Note: This Monitoring is only active WITH empty fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check High pressur pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	8037-31
RailMeUnTnkLo10	Fuel pressure (Rail) control: Leakage in high pressure system with empty tank	1175-1F	Fuel pressure (Rail) control	The Fuel Rail pressure control is executed with 2a Metering Unit (MeUn) as feeding quantity control If the desired fuel pressure is exceede although the MeUn is fully closed (0-delivery) the system is not OK Note: This Monitoring is only active WITH empty fuel tank.	External leakage in the high pressure system. Pressure in back flow tube too high (i.e. back flow tube clogged) Pressure Control valve PCV does not close completely. Fuel pressure sensor signal shows wrong (mainly too low) values. Injectors leak internally (do not close) High pressure pump has too low feeding efficiency	Check if system has no external leakage Check if back flow tube is free Check if fuel pressure sensor signal is correct Check if injectors close well Check High pressure pump delivery	Frequency: no lamp Lamp: no lamp	4469-31
RailMeUnTnkLo2	Fuel pressure control Metering unit: Too high fuel pressure with MeUn on 0-delivery state with empty tank	1275-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the desired fuel pressure is exceeded although the MeUn is fully closed (0-delivery) the system is not OK Note: This Monitoring is only active WITH empty fuel tank.	Metering unit stuck in open position, zero-delivery throttle clogged, metering unit without power due to electricel error. Low pressure side: Pressure before gear pump too high (e.g. by pressure relieve valve), pressure after zero--delivery throttle too high	Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to MeUn Check low pressure fuel tubes (return from CP to tank free?)	Frequency: no lamp Lamp: no lamp	4725-31
RailMeUnTnkLo22	Fuel pressure control Metering unit: Too high fuel pressure with MeUn on 0-delivery state (second stage) with empty tank	1375-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the desired fuel pressure is exceeded although the MeUn is fully closed (0-delivery) the system is not OK (in addition to the failure RailMeUn2, but deviation more critical) Note: This Monitoring is only active WITH empty fuel tank.	Metering unit stuck in open position, zero-delivery throttle clogged, metering unit without power due to electricel error. Low pressure side: Pressure before gear pump too high (e.g. by pressure relieve valve), pressure after zero--delivery throttle too high	Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to MeUn Check low pressure fuel tubes (return from CP to tank free?) Check zero delivery valve for correct working	Frequency: no lamp Lamp: no lamp	4981-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailMe UnTnkL o3	Fuel pressure control Metering unit: Fuel rail pressure below limit with MeUn Control with empty tank	1475-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the minimal desired fuel pressure is not reached, the system is not OK Note: This Monitoring is only active WITH empty fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check High pressur pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	5237-31
RailMe UnTnkL o4	Fuel pressure control Metering unit: Fuel Rail pressure above maximum limit with MeUn Control with empty tank	1575-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the fuel pressure exceeds 17,00bar, the system is not OK Note: This Monitoring is only active WITH empty fuel tank.	Metering unit stuck in open position, zero-delivery throttle clogged, metering unit without power due to electricel error. Low pressure side: Pressure before gear pump too high (e.g. by pressure relieve valve), pressure after zero--delivery throttle too high	Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to MeUn Check low pressure fuel tubes (return from CP to tank free?) Check zero delivery valve for correct working	Frequency: no lamp Lamp: no lamp	5493-31
RailMe UnTnkL o42	Fuel pressure control Metering unit: Fuel Rail pressure above maximum limit with MeUn Control (second stage) with empty tank	1675-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the fuel pressure exceeds 17,00bar, the system is not OK. (This in addition to RailMeUn4, but with higher threshold for reaction at more critical situation) Note: This Monitoring is only active WITH empty fuel tank.	Metering unit stuck in open position, zero-delivery throttle clogged, metering unit without power due to electricel error. Low pressure side: Pressure before gear pump too high (e.g. by pressure relieve valve), pressure after zero--delivery throttle too high	Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to MeUn Check low pressure fuel tubes (return from CP to tank free?) Check zero delivery valve for correct working	Frequency: no lamp Lamp: no lamp	5749-31
RailMe UnTnkL o5	Fuel pressure control Metering unit: Too low fuel rail pressure in fast transient condition with MeUn Control with empty tank	1775-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the desired fuel pressure can not be reached, a leaky system must be assumed. (This failure is in addition to RailMeUn0 but for faster detection with higher accepted deviation - possibility for fast reaction in case of high leakage) Note: This Monitoring is only active WITH empty fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check High pressur pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	6005-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailMe UnTnkL o7	Fuel pressure control Metering unit: Leakage in overrun with empty tank	3875-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. Highpressure system leakage is checked at overrun. Note: This Monitoring is only active with empty fuel tank.	Leakage in the high pressure system: low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Check tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check High pressur pump for efficiency	Frequency: no lamp Lamp: no lamp	14453-31
RailMe UnTnkL o8	Fuel pressure control Metering unit: Leakage in high pressure system detected at idle an empty fuel tank	3975-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the desired fuel quantity to reach the requested rail pressure is higher than expected at idle speed, a leaky system must be assumed. Note: This Monitoring is only active WITH empty fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check High pressur pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	14709-31
RailMe UnTnkL o9	Fuel pressure control Metering unit: Exceeding of a maximum peak pressure at empty fuel tank	1A75-1F	Fuel pressure control Metering unit	The Fuel Rail pressure control is executed with a Metering Unit (MeUn) device as feeding quantity control. If the fuel pressure exceeds 16,00bar several times, the system is not OK Note: This Monitoring is only active with empty fuel tank.	Metering unit stuck in open position, zero-delivery throttle clogged, metering unit without power due to electricel error. Low pressure side: Pressure before gear pump too high (e.g. by pressure relieve valve), pressure after zero--delivery throttle too high	Check metering Unit (MeUn), if closing (PWM = 100%) Check electric wiring to MeUn Check low pressure fuel tubes (return from CP to tank free?) Check zero delivery valve for correct working	Frequency: no lamp Lamp: no lamp	6773-31
RailPCV 0	Fuel pressure control Pressure control valve: Too low fuel rail pressure with PCV control	1B75-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he desired fuel pressure can not be reached, a leaky system must be assumed. Note: This monitoring is only active if Fuel tank not empty	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric pre supply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Check tubing between pre supply and ear pump Check feeding of pre supply pump (possibly low due to clogged tubes at tank outlet) Check high pressure part for leakages (internal / external) Check PCV for tightness in closed position (100% PWM) Check High pressure pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	7029-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailPCV 1	Fuel pressure control Pressure control valve: Too low fuel rail pressure concerning set value PCV (PCV Control)	1C75-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he desired fuel pressure can not be reached although the PCV closes due to governor, a leaky system must be assumed. Note: This monitoring is only active if Fuel tank not empty	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric pre supply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Check tubing between pre supply and ear pump Check feeding of pre supply pump (possibly low due to clogged tubes at tank outlet) Check high pressure part for leakages (internal / external) Check PCV for tightness in closed position (100% PWM) Check High pressure pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	7285-31
RailPCV 2	Fuel pressure control Pressure control valve: Too high fuel rail pressure concerning set value PCV (PCV Control)	2D75-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he fuel pressure exceeds the desired one by > -0.6 bar, although the PCV is open {PCVMonSetp < 500,00hPa}, the system is not OK. Note: This monitoring is only active if Fuel tank not empty	Pressure Control Valve (PCV) stuck in close position, additional current though PCV due to electric problem in wiring, return flow tube from PCV clogged	Check PCV for opening (PWM=0% --> no pressure) Check wiring harness for "external" electric power (short circuit) Check return tube from PCV to tank for clogging	Frequency: no lamp Lamp: no lamp	11637-31
RailPCV 22	Fuel pressure control Pressure control valve: Too high fuel rail pressure concerning set value PCV-second stage (PCV Control)	2E75-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he fuel pressure exceeds the desired one by > 0 bar, although the PCV is open {PCVMonSetp < 500,00hPa}, the system is not OK. This failure is second stage from RailPCV2 to react with higher urgency with higher limits {0,00hPa instead of 600,00hPa } Note: This monitoring is only active if Fuel tank not empty	Pressure Control Valve (PCV) stuck in closed position additional current trhough PCV due to electric problem in wiring, return flow tube from PCV cloggged	Check PCV for opening (PWM=0% --> no pressure) Check wiring harness for "external" electric power (short circuit) Check return tube from PCV to tank for clogging	Frequency: no lamp Lamp: no lamp	11893-31
RailPCV 3	Fuel pressure control Pressure control valve: minimum rail pressure not reached with PCV Control	2F75-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and minimal fuel pressure can not be reached, a leaky system must be assumed. Note: This monitoring is only active if Fuel tank not empty	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric pre supply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Check tubing between pre supply and ear pump Check feeding of pre supply pump (possibly low due to clogged tubes at tank outlet) Check high pressure part for leakages (internal / external) Check PCV for tightness in closed position (100% PWM) Check High pressure pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	12149-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailPCV 4	Fuel pressure control Pressure control valve: maximum rail pressure exceeded with PCV control	2185-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he fuel pressure > 22,50bar, the system is not OK. Note: This monitoring is only active if Fuel tank not empty	Pressure Control Valve (PCV) stuck in close position, additional current through PCV due to electric problem in wiring, return flow tube from PCV clogged Metering Unit (MeUn) stuck in full feeding position No electrical power to metering unit	Check PCV for opening (PWM=0% --> no pressure) Check wiring harness for "external" electric power (short circuit) Check return tube from PCV to tank for clogging Check metering Unit for 0-delivery (PWM=100% --> no delivery) Check wiring for metering unit for partial short circuit (current by-passes MeUn) Check 0-delivery valve of CP Check return flow tube from zero delivery valve to tank for clogging	Frequency: no lamp Lamp: no lamp	8581-31
RailPCV 42	Fuel pressure control Pressure control valve: maximum rail pressure exceeded with PCV control (second stage)	1285-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he fuel pressure > 0,00hPa, the system is not OK. (additional failure to RailPCV4 for urgent reaction with higher limit 0,00hPa than 22,50bar) Note: This monitoring is only active if Fuel tank not empty	Pressure Control Valve (PCV) stuck in close position, additional current trhough PCV due to electric problem in wiring, return flow tube from PCV cloggged Metering Unit (MeUn) stuck in full feeding position No electrical power to metering unit	Check PCV for opening (PWM=0% --> no pressure) Check wiring harness for "external" electric power (short circuit) Check return tube from PCV to tank for clogging Check metering Unit for 0-delivery (PWM=100% --> no delivery) Check wiring for metering unit for partial short circuit (current by-passes MeUn) Check 0-delivery valve of CP Check return flow tube from zero delivery valve to tank for clogging	Frequency: no lamp Lamp: no lamp	4741-31
RailPCV TnkLo0	Fuel pressure control Pressure control valve: Too low fuel rail pressure with PCV control with empty fuel tank	1385-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he desired fuel pressure can not be reached, a leaky system must be assumed. Note: This monitoring is only active with EMPTY Fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check PCV for thightness in closed position (100% PWM) Check High pressur pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	4997-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailPCV TnkLo1	Fuel pressure control Pressure control valve: Too low fuel rail pressure concerning set value PCV (PCV Control) with empty fuel tank	1485-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he desired fuel pressure can not be reached although the PCV closes due to governor, a leaky system must be assumed. Note: This monitoring is only active with EMPTY Fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check PCV for thightness in closed position (100% PWM) Check High pressur pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	5253-31
RailPCV TnkLo2	Fuel pressure control Pressure control valve: Too high fuel rail pressure concerning set value PCV (PCV Control) with empty fuel tank	2585-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he fuel pressure exceeds the desired one by > -0.6 bar, although the PCV is open {PCVMonSetp < 500,00hPa}, the system is not OK. Note: This monitoring is only active with EMPTY Fuel tank.	Pressure Control Valve (PCV) stuck in close position, additional current trhough PCV due to electric problem in wiring, return flow tube from PCV cloggged	Check PCV for opening (PWM=0% --> no pressure) Check wiring harness for "external" electric power (short circuit) Check return tube from PCV to tank for clogging	Frequency: no lamp Lamp: no lamp	9605-31
RailPCV TnkLo2 2	Fuel pressure control Pressure control valve: Too high fuel rail pressure concerning set value PCV-second stage (PCV Control) with empty fuel tank	2685-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he fuel pressure exceeds the desired one by > 0 bar, although the PCV is open {PCVMonSetp < 500,00hPa}, the system is not OK. This failure is second stage from RailPCV2 to react with higher urgency with higher limits {0,00hPa instead of 600,00hPa } Note: This monitoring is only active with EMPTY Fuel tank.	Pressure Control Valve (PCV) stuck in closed position additional current trhough PCV due to electric problem in wiring, return flow tube from PCV cloggged	Check PCV for opening (PWM=0% --> no pressure) Check wiring harness for "external" electric power (short circuit) Check return tube from PCV to tank for clogging	Frequency: no lamp Lamp: no lamp	9861-31
RailPCV TnkLo3	Fuel pressure control Pressure control valve: minimum rail pressure not reached with PCV Control wit empty fuel tank	2785-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and minimal fuel pressure can not be reached, a leaky system must be assumed. Note: This monitoring is only active with EMPTY Fuel tank.	Leakage in the high pressure system: injection nozzle stuck in open position, low efficiency of high pressure pump, internal leakage of injector, leaking pressure control valve Too low pressure at High pressure pump inlet due clogged filter, leaking low pressure tubes, electric presupply pump defective or gear pump defective	Check low pressure system for clogging (specially fuel filter) Che tubing between presupply and ear pump Check feeding of presupply pump (possibly low due to clogged tubes at tank outlet) Check hgih pressure part for leakages (internal / external) Check PCV for thightness in closed position (100% PWM) Check High pressur pump for efficiency Check injectors for tightness	Frequency: no lamp Lamp: no lamp	10117-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailPCV TnkLo4	Fuel pressure control Pressure control valve: maximum rail pressure exceeded with PCV control with empty fuel tank	1885-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he fuel pressure > 22,50bar, the system is not OK. Note: This monitoring is only active with EMPTY Fuel tank.	Pressure Control Valve (PCV) stuck in close position, additional current trhough PCV due to electric problem in wiring, return flow tube from PCV cloggged Metering Unit (MeUn) stuck in full feeding position No electrical power to metering unit	Check PCV for opening (PWM=0% --> no pressure) Check wiring harness for "external" electric power (short circuit) Check return tube from PCV to tank for clogging Check metering Unit for 0-delivery (PWM=100% --> no delivery) Check wiring for metering unit for partial short circuit (current by-passes MeUn) Check 0-delivery valve of CP Check return flow tube from zero delivery valve to tank for clogging	Frequency: no lamp Lamp: no lamp	6277-31
RailPCV TnkLo4 2	Fuel pressure control Pressure control valve: maximum rail pressure exceeded with PCV control (second stage) with empty fuel tank	1985-1F	Fuel pressure control Pressure control valve	The Fuel Rail pressure control is executed with 2 devices: Metering Unit (MeUn) as feeding quantity control and under re control Valve (PCV) as pressure control. The Fuel rail pressure control can switch between the 3 states "only MeUn", "only PCV" and under devices" depending on engine speed and under ted fuel pressure. If the system is in mode "only PCV" (i.e. MeUn full feeding) and he fuel pressure > 0,00hPa, the system is not OK. (additional failure to RailPCV4 for urgent reaction with higher limit 0,00hPa than 22,50bar) Note: This monitoring is only active with EMPTY Fuel tank.	Pressure Control Valve (PCV) stuck in close position, additional current trhough PCV due to electric problem in wiring, return flow tube from PCV cloggged Metering Unit (MeUn) stuck in full feeding position No electrical power to metering unit	Check PCV for opening (PWM=0% --> no pressure) Check wiring harness for "external" electric power (short circuit) Check return tube from PCV to tank for clogging Check metering Unit for 0-delivery (PWM=100% --> no delivery) Check wiring for metering unit for partial short circuit (current by-passes MeUn) Check 0-delivery valve of CP Check return flow tube from zero delivery valve to tank for clogging	Frequency: no lamp Lamp: no lamp	6533-31
RailPGr adMon	Fuel pressure (Rail) sensor: Rail pressure raw value is intermittent	4125-1F	Fuel pressure (Rail) sensor	A loose contact in the rail pressure sensor wiring can lead to incorrect measuring of the rail pressure. If this does occur, typically the measured pressure rises considerably for a brief time (jumps > 2,50bar in a 10 ms window). This kind of extreme pressure increase does not occur in the system. To determine a malfunction based on this appearance, gradient monitoring of the rail pressure is performed.	Periodical loose of contact in the weiring, the connectors or sensor itself	Check wiring and under tors of Rail pressure sensor for good contacts. Check sensor, replace sensor if necessary and under learning values in EEPROM / start New learning	Frequency: no lamp Lamp: no lamp	16677-31
RailPOf sTstMa x	Fuel pressure (Rail) sensor: rail pressure raw value is above maximum offset	1225-1F	Fuel pressure (Rail) sensor	The physical Fuel Rail pressure is monitored against offset drift at engine stand under after a waiting period, which allows to drop the pressure in the rail to ambient pressure. In this condition, the fuel pressure must be similar to 1 bar absolute.	Rail pressure sensor signal inaccurate	Ensure correct wiring and under functioning of rail pressure sensor, Replace sensor if necessary and under learning values in EEPROM / start New learning	Frequency: no lamp Lamp: no lamp	4645-31
RailPOf sTstMin	Fuel pressure (Rail) sensor: rail pressure raw value is below minimum offset	2325-1F	Fuel pressure (Rail) sensor	The physical Fuel Rail pressure is monitored against offset drift at engine stand under after a waiting period, which allows to drop the pressure in the rail to ambient pressure. In this condition, the fuel pressure must be similar to 1 bar absolute.	Rail pressure sensor signal inaccurate	Ensure correct wiring and under functioning of rail pressure sensor, replace sensor Replace sensor if necessary and under learning values in EEPROM / start New learning	Frequency: no lamp Lamp: no lamp	8997-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
RailPRV 4	Fuel pressure control Pressure Relief valve: maximum rail pressure in limp home mode with PRV	1D85-1F	Fuel pressure (Rail) control	This function is used for monitoring the rail pressure when the rail control loop is in limp home mode operated with a PRV.	PRV Valve stuck, fuel backflow clogged or fuel fuel low pressure cycle too high.	Check PRV Valve, check fuel backflow, check low fuel pressure level	Frequency: BLINK Lamp: Red (SVS)	7557-31
RailPRV TnkLo4	Fuel pressure control Pressure Relief valve: maximum rail pressure in limp home mode with PRV and under fuel tank	1E85-1F	Fuel pressure (Rail) control	This function is used for monitoring the rail pressure when the rail control loop is in limp home mode operated with a PRV.	PRV Valve stuck, fuel backflow clogged or fuel fuel low pressure cycle too high.	Check PRV Valve, check fuel backflow, check low fuel pressure level	Frequency: no lamp Lamp: no lamp	7813-31
RailPSR CMax	Fuel pressure (Rail) sensor: Sensor voltage above upper limit	1425-1F	Fuel pressure (Rail) sensor	Electric monitoring of Fuel Rail Pressure sensor	Short circuit of wiring to external source or defective pressure sensor	Check wiring and under functioning of rail pressure sensor Replace sensor if necessary and under learning values in EEPROM / start New learning	Frequency: BLINK Lamp: Red (SVS)	5157-31
RailPSR CMin	Fuel pressure (Rail) sensor: Sensor voltage below lower limit	2525-1F	Fuel pressure (Rail) sensor	Electric monitoring of Fuel Rail Pressure sensor	Short circuit of wiring to ground or defective pressure sensor	Check wiring and under functioning of rail pressure sensor Replace sensor if necessary and under learning values in EEPROM / start New learning	Frequency: BLINK Lamp: Red (SVS)	9509-31
RdcAg QlDetF ail	Urea quality: Inadequate quality of reducing agent detected after urea refill	43EA-1F	SCR Reagent Qualtity	Bad Urea quality is detected by monitoring deviation of Urea quantity adjustment after refill of reducing agent, until an integrated urea quantity dosing is reached.	Bad urea quality refilled	Check urea quality, empty urea tank and under with correct reagent.	Frequency: ON Lamp: Amber (SVS)	17386-31
SCRCd mBlkd	Reagent Consumption Deviation: Dosing valve blocked (consumption too low)	468A-1F	SCR Reagent Feeding	The duty cycles of the two components urea-pump and under valve are compared to each other under certain system situations. In case the ratio of them is drifting away this information is interpreted as a deviation of consumption and under codes are reported.	Dosing valve blocked or clogged	Check and under e dosing valve	Frequency: no lamp Lamp: no lamp	18058-31
SCRCd mLeak	Reagent Consumption Deviation: Dosing module leak (consumption too high)	478A-1F	SCR Reagent Feeding	The duty cycles of the two components urea-pump and under valve are compared to each other under certain system situations. In case the ratio between them is drifting away this information is interpreted as a deviation of consumption and under codes are reported.	Dosing valve leaking or blocked in non close position	Check and under e dosing valve	Frequency: no lamp Lamp: no lamp	18314-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SCRCdmOutdRngHi	Reagent Consumption Deviation: Ratio between Pump speed/Dosing Valve duty cycle too high	348A-1F	SCR Reagent Feeding	The duty cycles of the two components urea-pump and under valve are compared to each other under certain system situations. In case the ratio between them is drifting away this information is interpreted as a deviation of consumption and under codes are reported.			Frequency: no lamp Lamp: no lamp	13450-31
SCRCdmOutdRngLo	Reagent Consumption Deviation: Ratio between Pump speed/Dosing Valve duty cycle too low	258A-1F	SCR Reagent Feeding	The duty cycles of the two components urea-pump and under valve are compared to each other under certain system situations. In case the ratio between them is drifting away this information is interpreted as a deviation of consumption and under codes are reported.			Frequency: no lamp Lamp: no lamp	9610-31
SCRCdmRatMax	Reagent Consumption Deviation: Ratio between Pump speed/Dosing Valve duty cycle above maximum	188A-1F	SCR Reagent Feeding	The duty cycles of the two components urea-pump and under valve are compared to each other under certain system situations. In case the ratio between them is drifting away this information is interpreted as a deviation of consumption and under codes are reported.			Frequency: no lamp Lamp: no lamp	6282-31
SCRCdmRatMin	Reagent Consumption Deviation: Ratio between Pump speed/Dosing Valve duty cycle below minimum	298A-1F	SCR Reagent Feeding	The duty cycles of the two components urea-pump and under valve are compared to each other under certain system situations. In case the ratio between them is drifting away this information is interpreted as a deviation of consumption and under codes are reported.			Frequency: no lamp Lamp: no lamp	10634-31
SCRCtl_WarnStgy_WarnLvl1	Info: SCR reagent tank level below first warning level, DFC for triggering warning action dependent on filling level of reducing agent	F18F-1F	SCR Reagent Tank Level	Reducing agent tank level is monitored, depending on OBD legislations different driver warning/inducement strategies are implemented to avoid that vehicle is run with empty reagent tank.	Reducing agent tank level below first warning level	Refill reducing agent tank	Frequency: no lamp Lamp: no lamp	61839-31
SCRCtl_WarnStgy_WarnLvl2	Info: SCR reagent tank level below second warning level, DFC for triggering warning action dependent on filling level of reducing agent	F28F-1F	SCR Reagent Tank Level	Reducing agent tank level is monitored, depending on OBD legislations different driver warning/inducement strategies are implemented to avoid that vehicle is run with empty reagent tank.	Reducing agent tank level below low second warning level	Refill reducing agent tank	Frequency: no lamp Lamp: no lamp	62095-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SCRCtl_WarnStgy_WarnLvl3	Info: SCR reagent tank level below third warning level, DFC for triggering warning action dependent on filling level of reducing agent	F38F-1F	SCR Reagent Tank Level	Reducing agent tank level is monitored, depending on OBD legislations different driver warning/inducement strategies are implemented to avoid that vehicle is run with empty reagent tank.	Reducing agent tank level below third warning level	Refill reducing agent tank	Frequency: ON Lamp: Amber (SVS)	62351-31
SCRCtl_WarnStgy_WarnLvl4	Info: SCR reagent tank level below fourth warning level, DFC for triggering warning action dependent on filling level of reducing agent	F48F-1F	SCR Reagent Tank Level	Reducing agent tank level is monitored, depending on OBD legislations different driver warning/inducement strategies are implemented to avoid that vehicle is run with empty reagent tank.	Reducing agent tank level below fourth warning level	Refill reducing agent tank	Frequency: no lamp Lamp: no lamp	62607-31
SCRCtl EngIdlOff	Engine shutoff upon long idling	F8AF-1F	SCRInducement	Monitor requires that the engine should be inihibited from restart in case of an SCR failure along with some optional conditions.	SCR failure	Check the whole system SCR	Frequency: no lamp Lamp: no lamp	63663-31
SCRCtl NoRstrt	Error for Restart Restriction	F9AF-1F	SCRInducement	Monitor requires that the engine should be inihibited from restart in case of an SCR failure along with some optional conditions.	SCR failure	Check the whole system SCR	Frequency: no lamp Lamp: no lamp	63919-31
SCRCtl RdcAgQlMax	Error because of too higjh quality of reducing agent	17EA-1F	SCR Reagent Qualtity	After a refill event is detected, the correct adjustment of the reducing agent dosing quantity is checked. If a correct adjustment cannot be made after a certain mass of reducing agent depending on the quality refilled has been dosed the function will detect that the quality of the refilled reducing agent is inadequate. The correct adjustment is determined by the NOx efficiency of the catalyst.	Urea quality deviating from standard	Check urea quality in the tank	Frequency: no lamp Lamp: no lamp	6122-31
SCRCtl RdcAgQlMin	Error because of too low quality of reducing agent	28EA-1F	SCR Reagent Qualtity	After a refill event is detected, the correct adjustment of the reducing agent dosing quantity is checked. If a correct adjustment cannot be made after a certain mass of reducing agent depending on the quality refilled has been dosed the function will detect that the quality of the refilled reducing agent is inadequate. The correct adjustment is determined by the NOx efficiency of the catalyst.	Urea quality deviating from standard	Check urea quality in the tank	Frequency: no lamp Lamp: no lamp	10474-31
SCRCtl RmnDstInfo	Value of the remaining SCR distance within the info range	F58F-1F	SCRInducement	Reducing agent tank level is monitored depending on OBD legislations different driver warning/inducement strategies are implemented to avoid that vehicle is run with empty reagent tank.	Empty reagent tank	Refilling of SCR urea tank	Frequency: ON Lamp: Amber (SVS)	62863-31
SCRCtl RmnDstWrn1	Value of the remaining SCR distance within warning stage 1	F68F-1F	SCRInducement	Reducing agent tank level is monitored depending on OBD legislations different driver warning/inducement strategies are implemented to avoid that vehicle is run with empty reagent tank.	Empty reagent tank	Refilling of SCR urea tank	Frequency: no lamp Lamp: no lamp	63119-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SCRCtlRmnDstWrn2	Value of the remaining SCR distance within warning stage 2	F78F-1F	SCRInducement	Reducing agent tank level is monitored depending on OBD legislations different driver warning/inducement strategies are implemented to avoid that vehicle is run with empty reagent tank.	Empty reagent tank	Refilling of SCR urea tank	Frequency: no lamp Lamp: no lamp	63375-31
SCRMonDetModeBLPlaus	SCR monitoring: general backflow line plausibility error	344A-1F	SCR Reagent Feeding	The SCR monitoring system checks the backflow line and he backflow connector (throttle) for blockages. It is possible to detect a frozen or blocked backflow line or backflow connector.	Blocked, frozen or damage backflow line. Blocked or damaged backflow connector (throttle). Heater ineffective	Check the backflow line. Check the backflow connector (throttle). Check the heater.	Frequency: ON Lamp: Amber (SVS)	13386-31
SCRMonDetModePresChk	SCR monitoring: general pressure check error	354A-1F	SCR Reagent Feeding	The SCR monitoring system detects an already defrosted suction line. The pressure sensor is mounted in the supply module after the pump and under the pressure line. Because of this the pressure sensor could show the desired pressure, but it is not ensured that the pressure line itself is ready for dosing. It still can be partly frozen. The system checks if the pressure line is also defrosted before the dosing can start; after the pressure is stable (around 9 bar), the dosing valve will be actuated for approximately 1 second. If the opening of the valve causes a pressure drop, the pipe is assumed to be free of ice. Otherwise defrosting is continued for an applicable time and he checking is repeated for an applicable number of times.	Blocked, frozen or damage pressure line. Blocked or damaged dosing valve. Heater ineffective	Check the pressure line. Check the dosing valve. Check the heater.	Frequency: ON Lamp: Amber (SVS)	13642-31
SCRMonDetModePresStab	SCR monitoring: pressure stabilization error	334A-1F	SCR Reagent Feeding	The SCR monitoring system detects an already defrosted suction line. The pressure sensor is mounted in the supply module after the pump and under the pressure line. Because of this the pressure sensor could show the desired pressure, but it is not ensured that the pressure line itself is ready for dosing. It still can be partly frozen. The system checks if the pressure line is also defrosted before the dosing can start; after the pressure is stable (around 9 bar), the dosing valve will be actuated for approximately 1 second. If the opening of the valve causes a pressure drop, the pipe is assumed to be free of ice. Otherwise defrosting is continued for an applicable time and he checking is repeated for an applicable number of times.	Blocked, frozen or damage pressure line.	Check the pressure line.	Frequency: ON Lamp: Amber (SVS)	13130-31
SCRMonECUOvrTemp	ECU over temperature error regardless of the state	8B4A-1F	EGR Temperature Sensor	High temperatures can damage the ECM processor and he selected temperature is monitored and under lie in a plausible range.	Inaccurate or defective temperature sensor, defect in the wiring	Check wiring and he accuracy of the temperature sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	35658-31
SCRMonLdStOvrThres	No emptying of the system at the end of the previous driving cycle	314A-1F	SCR Reagent Feeding	The SCR monitoring system, when control unit is switched on and under lized, checks if the hydraulic system is emptied when it is switched On in the previous driving cycle. The emptying is necessary to ensure that no reducing agent can freeze in the hydraulic components after the system has been switched off when temperatures are below the freezing point of the reducing agent.	Problem in reagent back siphoning system, problem in hydrauilc system	Check the back siphoning system, check the hydraulic system	Frequency: no lamp Lamp: no lamp	12618-31
SCRMonMetCtlOvrPresErr	SCR Reagent Feeding: UREA pressure too high	1A4A-1F	SCR Reagent Feeding	As long as the dosing system is in normal operation (i.e. ready for dosing) the system is monitored for correct pressure, as this is mandatory for correct dosing amount. If the UREA pressure is not between 5,50bar and under ar a correct dosing quantity can not be guaranteed and failure is stored. Note: If the UREA pressure exceeds 12,50bar, then also the failure "SCRMonOvrPresErr" will be stored.	UREA level too low (suction of air) Back flow into tank clogged Pump control not OK (e.g. pump is running on max due to electric failure). UREA pressure sensor shows too high values.	Check if UREA level was OK when failure occurred (see ambient conditions). Check if back flow line into tank is open (with test: adjust system to normal pressure (5bar) and under if pressure is constant, if not, stop pump --> pressure must drop down (=system emptying through back flow line)).	Frequency: ON Lamp: Amber (SVS)	6730-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SCRMonMetCtlUndrPresErr	SCR Reagent Feeding: UREA pressure too low	294A-1F	SCR Reagent Feeding	As long as the dosing system is in normal operation (i.e. ready for dosing) the system is monitored for correct pressure, as this is mandatory for correct dosing amount. If the UREA pressure is not between 5,50bar and under ar a correct dosing quantity can not be guaranteed and failure is stored.	UREA level too low (suction of air) Leakage in the UREA system outside or internal (i.e. back flow into tank, leakage into pump housing, external leakage). Pump not delivering enough. Reverting valve blocked "open" (occurrence during normal operation - low probability) UREA pressure sensor shows too low values.	Check, if enough UREA was in tank when failure occurred (ambient conditions) Check if pump can reach enough pressure with tester: set system under normal pressure (5 bar) : - check if there is an external leakage (visible check) - if 5bar reachable: open dosing valve fully for ~3 sec, if pressure drops < 5,75bar --> pump not delivering enough or internal leakage --> replace pump module. If pressure remains stable --> system seems to be OK - if 5 bar not reachable: pump not delivering enough or internal leakage or reverting valve blocked open--> replace pump module	Frequency: ON Lamp: Amber (SVS)	10570-31
SCRMonOvrPresErr	SCR Reagent Feeding: UREA pressure too high (2nd level)	184A-1F	SCR Reagent Feeding	If the UREA pressure exceeds 12,50bar independently on the state of the dosing system, the system is not OK and oes to stand-by state. The system will be restarted as soon as the pressure is below 12,50bar. Note: If this failure occurs during normal operation (i.e. system can inject UREA) also the failure "SCRMonMetCtlOvrPresErr" will probably be stored.	UREA level too low (suction of air) Back flow into tank clogged Pump control not OK (e.g. pump is running on max due to electric failure). UREA pressure sensor shows too high values.	Check if UREA level was OK when failure occurred (see ambient conditions). Check if back flow line into tank is open (with test: adjust system to normal pressure (5bar) and under if pressure is constant, if not, stop pump --> pressure must drop down (=system emptying through back flow line)).	Frequency: ON Lamp: Amber (SVS)	6218-31
SCRMonpBldUpDryActtnErr	SCR Reagent Feeding: Dosing valve reached end of life expectation	483A-1F	SCR Reagent Feeding	As the system is evacuated at each system stop to prevent dosing valve damages due to frozen UREA, the system must be refilled and under rised (=pressure build up) after each start. For this the dosing valve is actuated with 0,00% and he pump set to 0,75% for high feeding until 99,00% are delivered (= volume of tubing) or the UREA pressure exceeds 1,50bar continuously for 1,00s (which occurs first), which means that the system is refilled now. and he pressure build up procedure starts: For this the dosing valve is fully closed and he pump set to 0,75%. If the UREA pressure reaches 6,50bar, the system is ready for injection and oes to "normal operation". If the pressure does not reach 6,50bar within 6,00s the system goes into "ventilation" state, i.e. the dosing valve is opened with 0,75% and ump set to 100,00% for 100,00ms, and oes back to the "pressure build up". The system monitors the nuimber of failed pressure build up attempts (dry buildups), if they exceed a calibrated threshold a fault is stored.	End of life of UREA dosing valve reached, potential problems of leakage or wrong dosing quantity	Dosing valve should be replaced. For failure to disappear pressure buildup counter should be reset using UDS Routine Control $0284	Frequency: no lamp Lamp: no lamp	18490-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SCRMonPBldUpErrAsym	SCR Reagent Feeding: Pressurisation after start not possible	4A8A-1F	SCR Reagent Feeding	As the system is evacuated at each system stop to prevent dosing valve damages due to frozen UREA, the system must be refilled and under rised (=pressure build up) after each start. For this the dosing valve is actuated with 0,00% and he pump set to 0,75% for high feeding until 99,00% are delivered (= volume of tubing) or the UREA pressure exceeds 1,50bar continuously for 1,00s (which occurs first), which means that the system is refilled now. and he pressure build up procedure starts: For this the dosing valve is fully closed and he pump set to 0,75%. If the UREA pressure reaches 6,50bar, the system is ready for injection and oes to "normal operation". If the pressure does not reach 6,50bar within 6,00s the system goes into "ventilation" state, i.e. the dosing valve is opened with 0,75% and ump set to 100,00% for 100,00ms, and oes back to the "pressure build up". If the UREA pressure does not reach 6,50bar after 60,00- "pressure build up cycles", the system is not OK and oes into "Stand-By state" and failure is reported.	UREA level too low (suction of air) Suction tube leaky Leakage in the UREA system outside or internal (i.e. back flow into tank, leakage into pump housing, external leakage). Dosing valve blocked open. Pump not delivering enough. Reverting valve blocked open. UREA pressure sensor shows too low values.	Check, if enough UREA was in tank when failure occurred (ambient conditions) Check if pump can reach enough pressure with tester: set system under normal pressure (5 bar) : - check if there is an external leakage (visible check) - if 5bar reachable: open dosing valve fully for ~3 sec, if pressure drops < 5,75bar --> pump not delivering enough or internal leakage --> check tubing for correct connection (suction tube!), replace pump module. If pressure remains stable --> system seems to be OK - if 5 bar not reachable: pump not delivering enough or internal leakage or dosing valve blocked open or reverting valve blocked open --> check tubing for correct connection (suction tube!), check dosing valve, replace pump module Check dosing valve and under ing valve: Set pump speed to ~20% and under e reverse valve --> pressure must drop down (< 0.8 bar absolute) - if OK: open dosing valve --> pressure must rise to ~1 bar absolute (=ambient) If no depressurisation detected: reverting valve blocked closed or dosing valve open. If there was a depressurisation before actuating the reverting valve --> reverting valve blocked closed.	Frequency: ON Lamp: Amber (SVS)	19082-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SCRMonPBldUpErrSym	SCR Reagent Feeding: Pressurisation after start not possible	4B8A-1F	SCR Reagent Feeding	As the system is evacuated at each system stop to prevent dosing valve damages due to frozen UREA, the system must be refilled and under rised (=pressure build up) after each start. For this the dosing valve is actuated with 0,00% and he pump set to 0,75% for high feeding until 99,00% are delivered (= volume of tubing) or the UREA pressure exceeds 1,50bar continuously for 1,00s (which occurs first), which means that the system is refilled now. and he pressure build up procedure starts: For this the dosing valve is fully closed and he pump set to 0,75%. If the UREA pressure reaches 6,50bar, the system is ready for injection and oes to "normal operation". If the pressure does not reach 6,50bar within 6,00s the system goes into "ventilation" state, i.e. the dosing valve is opened with 0,75% and ump set to 100,00% for 100,00ms, and oes back to the "pressure build up". If the UREA pressure does not reach 6,50bar after 60,00- "pressure build up cycles", the system is not OK and oes into "Stand-By state" and failure is reported.	UREA level too low (suction of air) Suction tube leaky Leakage in the UREA system outside or internal (i.e. back flow into tank, leakage into pump housing, external leakage). Dosing valve blocked open. Pump not delivering enough. Reverting valve blocked open. UREA pressure sensor shows too low values.	Check, if enough UREA was in tank when failure occurred (ambient conditions) Check if pump can reach enough pressure with tester: set system under normal pressure (5 bar) : - check if there is an external leakage (visible check) - if 5bar reachable: open dosing valve fully for ~3 sec, if pressure drops < 5,75bar --> pump not delivering enough or internal leakage --> check tubing for correct connection (suction tube!), replace pump module. If pressure remains stable --> system seems to be OK - if 5 bar not reachable: pump not delivering enough or internal leakage or dosing valve blocked open or reverting valve blocked open --> check tubing for correct connection (suction tube!), check dosing valve, replace pump module Check dosing valve and under ing valve: Set pump speed to ~20% and under e reverse valve --> pressure must drop down (< 0.8 bar absolute) - if OK: open dosing valve --> pressure must rise to ~1 bar absolute (=ambient) If no depressurisation detected: reverting valve blocked closed or dosing valve open. If there was a depressurisation before actuating the reverting valve --> reverting valve blocked closed.	Frequency: ON Lamp: Amber (SVS)	19338-31
SCRMonPresDropChk	SCR monitoring: general pressure drop check error	364A-1F	SCR Reagent Feeding	The SCR monitoring system detects an already defrosted suction line. The system checks if the pressure line is also defrosted before the dosing can start; after the pressure is stable (around 9 bar), the dosing valve will be actuated for approximately 1 second. If the opening of the valve causes a pressure drop, the pipe is assumed to be free of ice.	Blocked, frozen or damage pressure line. Blocked or damaged dosing valve. Heater ineffective	Check the pressure line. Check the dosing valve. Check the heater.	Frequency: ON Lamp: Amber (SVS)	13898-31
SCRMonPresRdcErr	Pressure reduction error	374A-1F	SCR Reagent Feeding	To protect the SCR Dosing system against damages due to frozen UREA, the system must be evacuated at each system stop. First the system is depressurised by actuating the "reverse valve" (pump sucks UREA from feeding tube), the pump is set to 0,25% and he dosing valve is fully closed until the UREA pressure drops below 250,00hPa. After then the system is "evacuated" by still actuating the "reverse valve, the pump set to 0,75% but OPENED dosing valve with 100,00% until the tubing are empty (remaining quantity 0,00% of total tubing volume). If the UREA pressure does not drop below 250,00hPa within 4,00s during "depressurisation" phase, the system is not OK and failure is stored. Note: if pressure drop was < 6,00bar also the failure "SCRPODPlausURevVlv" can be stored in the failure memory.	Reverse valve does not work (blocked closed). Back flow tube into tank clogged. UREA pressure sensor stuck.	Check if Back flow tube free. Check if Reverse valve works with tester: set UREA pressure to 5 bar (dosing valve closed) - wait until pressure stable - actuate reverse valve --> if pressure does not drop down --> reverse valve does not work.	Frequency: ON Lamp: Amber (SVS)	14154-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SCRPODMonTnkT	Urea Tank temperature: overheating of the AdBlue tank	8DAA-1F	SCR Tank heater	The Urea tank temperature is monitored for over temperature. Tank is heated using engine coolant water.	Tank overheated: tank temperature sensor measures implausible values or tank heater valve permanently open	Check tank temperature sensor, check tank heater valve	Frequency: ON Lamp: Amber (SVS)	36266-31
SCRPODPlausUCatDsTStat	Error SCR catalyst downstream temperature sensor static plausibility	322A-1F	SCR Temp Sensing	The system provides plausibility check of the SCR catalyst downstream temperature sensor, by comparing the physical value of the SCR catalyst downstream temperature sensor with the temperature of the engine. This static plausibility check is done after every cold start.	Defective SCR catalyst downstream temperature sensor.	Check and under e the SCR catalyst downstream temperature sensor.	Frequency: no lamp Lamp: no lamp	12842-31
SCRPODPlausUCatUsTMax	Error SCR catalyst upstream temperature sensor plausibility max threshold	111A-1F	SCR Temp Sensor Upstream	The system provides the dynamic plausibility check of the SCR catalyst upstream temperature sensor by comparing measured and under ed value.	Defective SCR catalyst upstream temperature sensor.	Check and under e the SCR catalyst upstream temperature sensor.	Frequency: no lamp Lamp: no lamp	4378-31
SCRPODPlausUCatUsTMin	Error SCR catalyst upstream temperature sensor plausibility min threshold	221A-1F	SCR Temp Sensor Upstream	The system provides the dynamic plausibility check of the SCR catalyst upstream temperature sensor by comparing measured and under ed value.	Defective SCR catalyst upstream temperature sensor.	Check and under e the SCR catalyst upstream temperature sensor.	Frequency: no lamp Lamp: no lamp	8730-31
SCRPODPlausUCatUsTStat	Error SCR catalyst upstream temperature sensor static plausibility	331A-1F	SCR Temp Sensor Upstream	The system provides the static plausibility check of the SCR catalyst upstream temperature sensor, by comparing the physical value of the SCR catalyst upstream temperature sensor with the temperature of the engine. This static plausibility check is done after every cold start.	Defective SCR catalyst upstream temperature sensor.	Check and under e the SCR catalyst upstream temperature sensor.	Frequency: no lamp Lamp: no lamp	13082-31
SCRPODPlausUDosVlv	SCR Dosing valve: Dosing Valve is Blocked closed	377A-1F	SCR Dosing valve	The functionality of the UREA dosing valve is checked by the detection of the needle movement, called BIP detection (Begin of Injection Period): The needle is opened by a magnetic field, which is produced by a coil during electrical valve actuation. The inductivity of the coil is changing as soon as the needle reaches the rear stop, which causes a variation of the current (negative peak). If the needle does not move, this negative current peak does not occur. The evaluation starts between 60,00us and under us (depending of the learning state) after electrical valve actuation and under during the "current holed period" 5,00ms + a window 2,00ms plus 0.5 ms [total 7.50 ms]. During this time, the measured current must exceed at least once 400,00mA * 1,63- = 63.00 mA - to be sure, that there is no electrical failure as e.g. open circuit - and IP must be detected by a variation of the coil inductivity > 65,00-. If no BIP is detected, the starting point is shifted and he measurement is repeated, until the starting point reaches 330,00us after electrical actuation.	Dosing valve blocked mechanically (or frozen)	Check if dosing valve opens. Check if tube between pump and under valve is free.	Frequency: ON Lamp: Amber (SVS)	14202-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SCRPODPlausURevVlv	SCR Reverting Valve: Reverting Valve is Blocked closed	3D4A-1F	SCR Reverting Valve	The reverting valve changes the direction of UREA flow from "feeding" to "evacuation". Therefore the pressure must drop down rapidly. if during pump running with closed dosing valve the reverting valve is actuated. The test is executed, if the system enters the state "pressure reduction" with a pressure > 8,00bar. If in this state ("reverse valve" actuated, pump running with 0,25% and under valve fully closed) the pressure does not drop down to 250,00hPa within 4,00s the failure "SCRMonPresRdcErr" gets active. If the pressure drop during this phase was less than 6,00bar, the "blocked closed reverting valve" is detected additionally. Note: an open blocked reverting valve leads to the fact, that no pressure can be built up, therefore the failure "SCRMonPresBuildUpErr" will be active in this case, or - if the reverting valve opens during operation - the failure "SCRMonMetCtlUndrPresErr" additionally.	Reverse valve does not work (blocked closed). Back flow tube into tank clogged. UREA pressure sensor stuck.	Check if Back flow tube free. Check if Reverse valve works with tester: set UREA pressure to 5 bar (dosing valve closed) - wait until pressure stable - actuate reverse valve --> if pressure does not drop down --> reverse valve does not work.	Frequency: ON Lamp: Amber (SVS)	15690-31
SCRPODPlausUTnkLvlHi	Urea tank level sensor deviation (too high level)	1EAA-1F	SCR Reagent Tank Level	The system monitors the plausibility of the urea tank level sensor. The urea tank level sensor will provide a signal, which shows the fill level to the driver and under is used to calculate the remaining distance.	Signal from urea tank level sensor not plausible	Check and under e the level sensor.	Frequency: no lamp Lamp: no lamp	7850-31
SCRPODPlausUTnkLvlLo	Urea tank level sensor deviation (too low level)	2FAA-1F	SCR Reagent Tank Level	The system monitors the plausibility of th urea tank level sensor. The urea tank level sensor will provide a signal, which shows the fill level to the driver and under is used to calculate the remaining distance.	Signal from urea tank level sensor not plausible	Check and under e the level sensor.	Frequency: no lamp Lamp: no lamp	12202-31
SCRPODPUQPErr	DFC for PUQP function when "FAULT" result occur	393A-1F	SCR Reagent Feeding	Monitor checks plausibility of Urea quantity and ump speed,correlating changes in the dosing valve duty cycle and he changes of the pump duty cycle as response to changes in the dosing quantity.	Empty reagent tank,broken pump.	Check tank of Urea(refilling tank); check pump.	Frequency: no lamp Lamp: no lamp	14650-31
SCRPODSMHtr	Error supply module heater plausibility	3A3A-1F	SCR Reagent Heating	The system provides plausibility check of the SCR catalyst "upstream" temperature sensor,by comparing the physical value of the SCR catalyst "upstream" temperature sensor with the temperature of urea supply module heater.	Defective SCR catalyst "upstream" temperature sensor.	Check and under e the SCR catalyst "upstream" temperature sensor.	Frequency: ON Lamp: Amber (SVS)	14906-31
SCRPODSMHtrT	Error urea supply module heater temperature sensor dynamic plausibility	3B3A-1F	SCR Reagent Heating	The system provides plausibility check of the SCR catalyst "upstream" temperature sensor,by comparing the physical value of the SCR catalyst "upstream" temperature sensor with the temperature of urea supply module heater. This plausibility check is dynamic.	Defective SCR catalyst "upstream" temperature sensor.	Check and under e the SCR catalyst "upstream" temperature sensor.	Frequency: ON Lamp: Amber (SVS)	15162-31
SCRPODSMHtrTCldStrt	Error urea supply module heater temperature sensor cold start plausibility	3C3A-1F	SCR Reagent Heating	The system provides plausibility check of the SCR catalyst "upstream" temperature sensor,by comparing the physical value of the SCR catalyst "upstream" temperature sensor with the temperature of urea supply module heater. This plausibility check is done after every cold start.	Defective SCR catalyst "upstream" temperature sensor.	Check and under e the SCR catalyst (upstream) temperature sensor.	Frequency: ON Lamp: Amber (SVS)	15418-31
SCRPODSMT	Error urea supply module temperature sensor dynamic plausibility	3D3A-1F	SCR Reagent Heating	The system provides plausibility check of the SCR catalyst "upstream" temperature sensor,by comparing the physical value of the SCR catalyst "upstream" temperature sensor with the temperature of urea supply module heater. This plausibility check is dynamic.	Defective SCR catalyst "upstream" temperature sensor.	Check and under e the SCR catalyst "upstream" temperature sensor.	Frequency: ON Lamp: Amber (SVS)	15674-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SCRPODSMTCldStrt	Error urea supply module temperature sensor cold start plausibility	3E3A-1F	SCR Reagent Heating	The system provides plausibility check of the SCR catalyst "upstream" temperature sensor,by comparing the physical value of the SCR catalyst "upstream" temperature sensor with the temperature of urea supply module heater. This plausibility check is done after every cold start.	Defective SCR catalyst "upstream" temperature sensor.	Check and under e the SCR catalyst (upstream) temperature sensor.	Frequency: ON Lamp: Amber (SVS)	15930-31
SCRPODTestInj20PercCdmErr	SCR Dosing system: CDM - Deviation from the dosing quantity exceeded 20%	1F4A-1F	SCR Dosing valve	As soon as all defined release conditions are met, the system changes to a defined pressure state. A single dosing shot is triggered to cause a pressure drop. With the help of Pressure drop and under ty constant(from stiffness determination module) and he ratio of free surface of dosing valve and ree surface of back flow line will be calculated. If it is outside the expected range an error is detected System is checked using Multiple test injection variant: multiple test injections will be performed and nly one stiffness determination will be done. Based on the values from each test injection the ratio of free surface of Dosing valve and ree surface of back flow line will be calculated	The dosing module is injecting a quantity deviating of more than 20% from target value	Replace dosing injector	Frequency: ON Lamp: Amber (SVS)	8010-31
SCRPODTestInjCdmErr	Deviation from the dosing quantity detected during Test	387A-1F	SCR Dosing valve	As soon as all defined release conditions are met, the system changes to a defined pressure state. A single dosing shot is triggered to cause a pressure drop. With the help of Pressure drop and under ty constant(from stiffness determination module) and he ratio of free surface of dosing valve and ree surface of back flow line will be calculated. If it is outside the expected range an error is detected System is checked using Multiple test injection variant: multiple test injections will be performed and nly one stiffness determination will be done. Based on the values from each test injection the ratio of free surface of Dosing valve and ree surface of back flow line will be calculated	The dosing module is injecting a quantity outside defined tolerance (too low or too high quantity)	Replace dosing injector	Frequency: ON Lamp: Amber (SVS)	14458-31
SCRPODTiTilClsdLoop	SCR system is takin too long to start dosing	397A-1F	SCR Reagent Feeding	This function monitors the time needed by SCR system to start dosing once boundary conditions are given..	Defreezing is taking too long or another SCR fault is inhibiting reaching of dosing state	Check defreezing, check presence of other SCR faults	Frequency: no lamp Lamp: no lamp	14714-31
SCRPODTiTilClsdLoopWoHeatr	SCR system is taking too long to start dosing (System without heater)	9A7A-1F	SCR Reagent Feeding	This function monitors the time needed by SCR system to start dosing once boundary conditions are given. Monitor is used for system without urea heater.	SCR fault is inhibiting reaching of dosing state	Check presence of other SCR faults which could inhibit correct SCR start	Frequency: ON Lamp: Amber (SVS)	39546-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SCRPODTnkTempResp	SCR Tank heater: Urea tank heater is faulty	2F3A-1F	SCR Tank heater	If the tank heater is actuated, an increase of the UREA tank temperature is expected. As the increase of the temperature is dependant on the UREA temperature (e.g. temperature rise is lower at higher UREA temperature , but also in case of frozen UREA), the expected temperature increase is dependant on the actual Tank temperature at the end of the monitoring phase. The expected temperature rise within 60,00min at -2493,30° C 60,00min at -2483,30° C 120,00min at -2472,30° C 30,00min at -2463,30° C is -2456,80° C at -2493,30° C -2456,80° C at -2483,30° C -2456,80° C at -2472,30° C -2457,30° C at -2463,30° C if the rise is lower, the tank heater is not working.	Heater in "air bubble" with frozen UREA --> check ambient conditions, if failure happened at temp < -10° --> possible reason. Tank heater defect Wiring harness defect	Check tank heater Check wiring harness	Frequency: ON Lamp: Amber (SVS)	12090-31
SCRPODTSensPos	SCR Temp Monitoring: wrong mounting of temperature sensors	332A-1F	SCR Temp Sensing	The system detects the wrong mounting of temperature sensors upstream and under ream of the SCR catalyst.	Wrong mounting of temperature sensors upstream and under ream of a SCR catalyst.	Check and under ting correctly the temperature sensors.	Frequency: no lamp Lamp: no lamp	13098-31
SCRRCntErr	SCR Reagent Tank Level: Maximum number restarts allowed with empty UREA Tank is exceeded	F7AF-1F	SCR Reagent Tank Level	This failure is a legislation request to inhibit a engine restart in case of a serious SCR failure (via Fld_SCRCtlRCnt1)	see main failure (which activate this function)	see main failure (which activate this function)	Frequency: ON Lamp: Amber (SVS)	63407-31
SCRtUCatDsTErr_0	Info: Urea catalyst downstream Temperature too high (odd detection)	F7DF-1F	SCR Temp monitoring	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Urea catalyst downstream Temperature is monitored, if it is exceeding a defined threshold event is detected. Two failure path are available, the first register odd detections (1st,3rd,5th,....), the second one even detections (2nd,4th,6th,.....)	Event detection, Urea catalyst downstream Temperature too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	63455-31
SCRtUCatDsTErr_1	Info: Urea catalyst downstream Temperature too high (even detection)	F8DF-1F	SCR Temp monitoring	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Urea catalyst downstream Temperature is monitored, if it is exceeding a defined threshold event is detected. Two failure path are available, the first register odd detections (1st,3rd,5th,....), the second one even detections (2nd,4th,6th,.....)	Event detection, Urea catalyst downstream Temperature too high	No intervention necessary	Frequency: BLINK Lamp: Red (SVS)	63711-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
Sia	Immobilizer: DFC to show the status of fuel released or blocked	FF71-1F	Immobilizer	The Sia (Supervisor Immobilizer Authority) has the purpose to protect the vehicle from unauthorised use. The immobilizer is composed of three elements: - Ignition key equipped with transponder to be authorized by Immobilizer Control Unit (ICU) - Immobilizer Control Unit (ICU) - ECM which communicate to ICU via CAN The inhibit of fuel injection release is monitored here	Immobilizer is inhibiting fuele release	Check reason for immobilizer intervention (defective key was used or or wrong key was used (possibly carjacker with fake key) or communication between key and CU disturbed)	Frequency: BLINK Lamp: Red (SVS)	65393-31
SigPTO Swt	PTO actuation: Defect Fault Check for Signal error	44A1-1F	PTO actuation	The source for the multi value PTO switch is the CAN message Com_stPTOSwt. CAN message availability and under bility is checked.	PTO Switch defective	Check and under e PTO switch	Frequency: no lamp Lamp: no lamp	17569-31
SigUTnkLvl	Diagnostic fault check for signal error from CAN	499A-1F	SCR Reagent Level Sensing	Urea tank level is HW connected, PWM signal.	Urea tank level sensor sending an error message	Urea tank level sensor defective, replace it.	Frequency: ON Lamp: Amber (SVS)	18842-31
SMHtrTDycFail	Supply module Temperature: Heater Temperature signal in failure range	416A-1F	SCR Reagent Heating	Supply Module Heater temperature is evaluated directly from the SM and f a problem arise communicated to the ECU via duty cycle code over the same line used for pump actuation.	EMV disturbance or internal Supply Module problem, SM Heater temperature sensor not working correctly	If error persists (frequent detection), replace supply module	Frequency: ON Lamp: Amber (SVS)	16746-31
SMHtrTDycInvld	Supply module Temperature: Heater Temperature signal in invalid range	426A-1F	SCR Reagent Heating	Supply Module Heater temperature is evaluated directly from the SM and f a problem arise communicated to the ECU via duty cycle code over the same line used for pump actuation.	EMV disturbance or internal Supply Module problem, SM temperature sensor not working correctly	If error persists (frequent detection), replace supply module	Frequency: ON Lamp: Amber (SVS)	17002-31
SMNoAvl	Supply Module Temperature: Non availability after temperature measurement	436A-1F	SCR Reagent Pump	At the beginning of each driving cycle the ECU sends a temperature read-out request to the DNOX2.2 supply module. If the supply module does not send a temperature as an answer, an error is set.	Wiring problem with SM	Check wiring harness, if no problem found replace Supply Module	Frequency: ON Lamp: Amber (SVS)	17258-31
SMPerPwm	Supply Module Temperature: Duty cycle signal disturbed (Time period outside specified range)	446A-1F	SCR Reagent Pump	Supply Module Heater temperature is evaluated directly from the SM and f a problem arise communicated to the ECU via duty cycle code over the same line used for pump actuation. Duty cycle signal is monitored.	EMV disturbance or internal Supply Module problem	If error persists (frequent detection), replace supply module	none	17514-31
SMPwm	Supply Module Temperature: Duty cycle signal disturbed (faulty PWM signal)	456A-1F	SCR Reagent Pump	Supply Module Heater temperature is evaluated directly from the SM and f a problem arise communicated to the ECU via duty cycle code over the same line used for pump actuation. Duty cycle signal is monitored.	EMV disturbance or internal Supply Module problem	If error persists (frequent detection), replace supply module	none	17770-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SMTDycFail	Supply module Temperature: Temperature signal in failure range	466A-1F	SCR Temp Sensing	Supply Module temperature is evaluated directly from the SM and f a problem arise communicated to the ECU via duty cycle code over the same line used for pump actuation.	EMV disturbance or Internal Supply Module problem, SM temperature sensor not working correctly	If the error persists (frequent detection) replace supply module	none	18026-31
SMTDycInvld	Supply module Temperature: Temperature signal in invalid range	476A-1F	SCR Temp monitoring	Supply Module temperature is evaluated directly from the SM and f a problem arise communicated to the ECU via duty cycle code over the same line used for pump actuation.	EMV disturbance or internal Supply Module problem, SM temperature sensor not working correctly	If the error persists (frequent detection), replace supply module	none	18282-31
SRCHighAPP1	Accelerator Pedal: Signal Range Check High for APP1	16B1-1F	Accelerator Pedal	The accelerator pedal detection determines the current pedal position, its error status and under es a suitable substitute value if necessary. The ECM is configured for a potentiometer/switch accelerator pedal.	Short circuit of wiring to external source or inside accelerator pedal	Check wiring or replace accelerator pedal	Frequency: ON Lamp: Amber (SVS)	5809-31
SRCHighAPP2	Accelerator Pedal: Signal Range Check High for APP2	17B1-1F	Accelerator Pedal	The accelerator pedal detection determines the current pedal position, its error status and under es a suitable substitute value if necessary. The ECM is configured for a potentiometer/switch accelerator pedal.	Short circuit of wiring to external source or inside accelerator pedal	Check wiring and under rator pedal	Frequency: BLINK Lamp: Red (SVS)	6065-31
SRCLowAPP1	Accelerator Pedal: Signal Range Check Low for APP1	28B1-1F	Accelerator Pedal	The accelerator pedal detection determines the current pedal position, its error status and under es a suitable substitute value if necessary. The ECM is configured for a potentiometer/switch accelerator pedal.	Short circuit to ground in wiring or in accelerator pedal	Check wiring or replace accelerator pedal	Frequency: ON Lamp: Amber (SVS)	10417-31
SRCLowAPP2	Accelerator Pedal: Signal Range Check Low for APP2	29B1-1F	Accelerator Pedal	The accelerator pedal detection determines the current pedal position, its error status and under es a suitable substitute value if necessary. The ECM is configured for a potentiometer/switch accelerator pedal.	Short circuit to ground in wiring or in accelerator pedal	Check wiring or replace accelerator pedal	Frequency: BLINK Lamp: Red (SVS)	10673-31
SRCMaxPTrbnDs	Turbine Downstream Pressure Sensor: Signal range check high	1958-1F	P4 Pressure	There is no turbine downstream pressure sensor used in this configuration	Turbine downstream Pressure sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	6488-31
SRCMaxUTnkLvl	SCR Reagent Tank Level Sensor: Signal above maximum limit.	119A-1F	SCR Reagent Tank Level	The reduction agent level in the tank is read from the sensor through the ADC. This raw voltage value read from the ADC is available as SCR_uRawUTnkLvl. The raw voltage is checked for signal range errors and hen transformed into physical value SCR_lSensUTnkLvl in mm units then is transformed into SCR_rSensUTnkLvl in percentage value	Reduction agent level in the tank sensor defective or short circuit to battery	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	4506-31
SRCMinPTrbnDs	Turbine Downstream Pressure Sensor: Signal range check low	2A58-1F	P4 Pressure	There is no turbine downstream pressure sensor used in this configuration	Turbine downstream Pressure sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	10840-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SRCMinUTnkLvl	SCR Reagent Tank Level Sensor: Signal below minimum limit.	229A-1F	SCR Reagent Tank Level	The reduction agent level in the tank is read from the sensor through the ADC. This raw voltage value read from the ADC is available as SCR_uRawUTnkLvl. The raw voltage is checked for signal range errors and hen transformed into physical value SCR_lSensUTnkLvl in mm units then is transformed into SCR_rSensUTnkLvl in percentage value	Reduction agent level in the tank sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	8858-31
SRCUTnkTMax	Urea Tank Temperature; SRC high error	1ED6-1F	SCR Temp Sensing	Urea tank temperature sensor is connected via hardware to the ECM. The Urea temperature is read from Sensor through analogic Digital Converter (SCR_uRawUTnkT) and f the signal range check is passed, signal is converted into a physical value in channel SCR_tSensUTnkT. A signal range check is performed on the signal.	Sensor defective or short circuit in wiring to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	7894-31
SRCUTnkTMin	Urea Tank Temperature; SRC low error	2FD6-1F	SCR Temp Sensing	Urea tank temperature sensor is connected via hardware to the ECM. The Urea temperature is read from Sensor through analogic Digital Converter (SCR_uRawUTnkT) and f the signal range check is passed, signal is converted into a physical value in channel SCR_tSensUTnkT.	Sensor defective or short circuit in wiring to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	12246-31
SSpMon1	ECU Power Stage 1: Error Sensor supply for sensors (if mounted): SCR pressure. HCl press. and under Acc.-pedal 2, Boost press. and under Oil press.and under EGR diff.pressure	E22D-1F	ECU Power Stage 1	The hardware encapsulation of CY320 performs a diagnostic of the sensor supplies and under rs the communication Between processor and under e supply device CY320. For reasons of safety the ECM provides 3 independent 5V voltage supplies for the sensors. These sensor supply voltages are monitored to ensure they remain within a given range. This check for voltage limits is done autonomously by the hardware (thresholds not applicable).	Excessive battery voltage, defect in wiring harness, electrical failure in connected sensors or in the ECM Involved pins are: 168,191,192,207,231 and 32	Check battery voltage, check wiring for correct voltage supply of the connected sensor and he ECM. Replace ECM	Frequency: ON Lamp: Amber (SVS)	57901-31
SSpMon2	ECU Power Stage 2: Error Sensor supply for sensors (if mounted):Acc.-pedal 1, fuel pre filter clogging, Fuel filter deltaP, Water pump clutch, EGR throttle, P3 sensor	E32D-1F	ECU Power Stage 2	The hardware encapsulation of CY320 performs a diagnostic of the sensor supplies and under rs the communication Between processor and under e supply device CY320. For reasons of safety the ECM provides 3 independent 5V voltage supplies for the sensors. These sensor supply voltages are monitored to ensure they remain within a given range. This check for voltage limits is done autonomously by the hardware (thresholds not applicable).	Excessive battery voltage, defect in wiring harness, electrical failure in connected sensors or in the ECM Involved pins are: 166,167,208,209,210 and 23	Check battery voltage, check wiring for correct voltage supply of the connected sensor and he ECM. Replace ECM	Frequency: ON Lamp: Amber (SVS)	58157-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SSpMon3	ECU Power Stage 3: Error Sensor supply for sensors (if mounted): Humidity sensor (temp.and under ty), Rail pressure, Throttle position	E42D-1F	ECU Power Stage 3	The hardware encapsulation of CY320 performs a diagnostic of the sensor supplies and under rs the communication Between processor and under e supply device CY320. For reasons of safety the ECM provides 3 independent 5V voltage supplies for the sensors. These sensor supply voltages are monitored to ensure they remain within a given range. This check for voltage limits is done autonomously by the hardware (thresholds not applicable).	Excessive battery voltage, defect in wiring harness, electrical failure in connected sensors or in the ECM Involved pins are: 190,211,234	Check battery voltage, check wiring for correct voltage supply of the connected sensor and he ECM. Replace ECM	Frequency: ON Lamp: Amber (SVS)	58413-31
SSpMonExt1	Error sensors supplies voltage tracker	E52D-1F	ECU Voltage Supply	Error sensors supplies voltage tracker			Frequency: no lamp Lamp: no lamp	58669-31
SSpMonSply1Max	Monitoring of 12V sensor supply 1 SRC_HIGH Error	E62D-1F	ECU Voltage Supply	All 12V supplies in the ECU are monitored against to high or low voltages dependent from the battery voltage.	Defect in wiring harness, electrical failure in connected sensors or in the ECM	Check wiring for correct voltage supply of the connected sensor.Check connected sensors electrical integrity. Replace ECM.	Frequency: no lamp Lamp: no lamp	58925-31
SSpMonSply1Min	Monitoring of 12V sensor supply 1 SRC_LOW Error	E72D-1F	ECU Voltage Supply	All 12V supplies in the ECU are monitored against to high or low voltages dependent from the battery voltage.	Defect in wiring harness, electrical failure in connected sensors or in the ECM	Check wiring for correct voltage supply of the connected sensor.Check connected sensors electrical integrity. Replace ECM.	Frequency: no lamp Lamp: no lamp	59181-31
SSpMonSplyMax	Monitoring of internal 12V supply SRC_HIGH Error	E82D-1F	ECU Voltage Supply	All 12V supplies in the ECU are monitored against to high or low voltages dependent from the battery voltage.	Defect in wiring harness, electrical failure in connected sensors or in the ECM	Check wiring for correct voltage supply of the connected sensor.Check connected sensors electrical integrity. Replace ECM.	Frequency: no lamp Lamp: no lamp	59437-31
SSpMonSplyMin	Monitoring of internal 12V supply SRC_LOW Error	E92D-1F	ECU Voltage Supply	All 12V supplies in the ECU are monitored against to high or low voltages dependent from the battery voltage.	Defect in wiring harness, electrical failure in connected sensors or in the ECM	Check wiring for correct voltage supply of the connected sensor.Check connected sensors electrical integrity. Replace ECM.	Frequency: no lamp Lamp: no lamp	59693-31
stComNH3SensNH3	NH3 Sensor: Invalid NH3 or NO2 Signal	39EE-1F	NH3 Sensor	NH3 sensor status is monitored	Defective NH3 Sensor	Check and under e NH3 Sensor	Frequency: no lamp Lamp: no lamp	14830-31
StrtHSSCB	Starter Relay HS: power stage output short circuit to battery	6722-1F	Starter control	Engine Starter is controlled by two relays actuators one for Low Side and ne for High Side. Both power stages are monitored by Hardware for electric failures.	Short circuit of wiring to external source or defective HS starter relay	Check of wiring or replacement of HS relay	Frequency: ON Lamp: Amber (SVS)	26402-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
StrtHSSCG	Starter Relay HS: power stage output short circuit to ground	7822-1F	Starter control	Engine Starter is controlled by two relays actuators one for Low Side and ne for High Side. Both power stages are monitored by Hardware for electric failures.	Short circuit of wiring to ground or defective HS starter relay	Check of wiring or replacement of HS starter relay	Frequency: ON Lamp: Amber (SVS)	30754-31
StrtLSOL	Starter Relay LS: power stage output No Load error	5922-1F	Starter control	Engine Starter is controlled by two relays actuators one for Low Side and ne for High Side. Both power stages are monitored by Hardware for electric failures.	Broken or disconnected wiring or defective LS starter relay	Check of wiring or replacement of LS starter relay	Frequency: ON Lamp: Amber (SVS)	22818-31
StrtLSOvrTemp	Starter Relay LS: power stage output over temperature error	8A22-1F	Starter control	Engine Starter is controlled by two relays actuators one for Low Side and ne for High Side. Both power stages are monitored by Hardware for electric failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	Check battery voltage, wiring, power stage and S starter relay	Frequency: ON Lamp: Amber (SVS)	35362-31
StrtLSSCB	Starter Relay LS: power stage output short circuit to battery.	6B22-1F	Starter control	Engine Starter is controlled by two relays actuators one for Low Side and ne for High Side. Both power stages are monitored by Hardware for electric failures.	Short circuit of wiring to external source or defective LS starter relay	Check of wiring or replacement of LS starter relay	Frequency: ON Lamp: Amber (SVS)	27426-31
StrtLSSCG	Starter Relay LS: Power stage output short circuit to ground	7C22-1F	Starter control	Engine Starter is controlled by two relays actuators one for Low Side and ne for High Side. Both power stages are monitored by Hardware for electric failures.	Short circuit of wiring to ground or defective LS starter relay	Check of wiring or replacement of LS starter relay	Frequency: ON Lamp: Amber (SVS)	31778-31
StSysMonStrtMax	Maximal number of engine start exceeded (starter reached end of life)	1E22-1F	Starter control	The life times of the motor components i.e. battery, high pressure system and under r, are limited by a specified number of start cycles. If the components are reaching the end of their life cycles, the start stop functionality is disabled to allow the system to run at least until next service interval	Number of engine starts exceeded, starter and under ly other component relevant for engine start reached end of life.	Replace starter (and under specified components defined as relevant for engine start) and under weighted number of starts (Routine control $0274: Reset of engine start counter value)	Frequency: no lamp Lamp: no lamp	7714-31
SVSOL	Service lamp Dashboard: No load error	5772-1F	Service lamp Dashboard	The Power stage for the control lamp for Diagnostic (Service) lamp activation is controlled by Hardware for electrical failures	Broken or disconnected wiring or defective diagnostic lamp.	Check of wiring or replace diagnostic lamp	Frequency: ON Lamp: Amber (SVS)	22386-31
SVSOvrTemp	Service lamp Dashboard: Over Temperature error	8872-1F	Service lamp Dashboard	The Power stage for the control lamp for Diagnostic (Service) lamp activation is controlled by Hardware for electrical failures	High battery voltage, high ECU temperature and igh load OR defective wiring, diagnostic lamp or ECU	Check load and under , check wiring, replace diagnostic lamp or ECU	Frequency: ON Lamp: Amber (SVS)	34930-31
SVSSCB	Service lamp Dashboard: Short circuit to battery error	6972-1F	Service lamp Dashboard	The Power stage for the control lamp Diagnostic (Service) lamp activation is controlled by Hardware for electrical failures	Short circuit of wiring to external source	Check of wiring	Frequency: ON Lamp: Amber (SVS)	26994-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SVSSCG	Service lamp Dashboard: Short circuit to ground error	7A72-1F	Service lamp Dashboard	The Power stage for the control lamp for Diagnostic (Service) lamp activation is controlled by Hardware for electrical failures	Short circuit of wiring to ground	Check of wiring	Frequency: ON Lamp: Amber (SVS)	31346-31
SWReset_0	ECU SW Reset: Software Resets visible to all testers	ED1D-1F	ECU SW Reset	A software internal failure occurred which lead to a software reset. This reset caused a failure which is only visible for manufacturer specific testers.	Electronic disturbances, various hardware defects (ECU internal) or configuration problems	If error occurs repeatedly, reprogram EDC. If error remains, replace EDC.	Frequency: no lamp Lamp: no lamp	60701-31
SWReset_1	ECU SW Reset: Software Resets, visible to manufacturer Tester only	EE1D-1F	ECU SW Reset	A software internal failure occurred which lead to a software reset. This reset caused a failure which is only visible for manufacturer specific testers.	Electronic disturbances, various hardware defects (ECU internal) or configuration problems	If error occurs repeatedly, reprogram EDC. If error remains, replace EDC.	Frequency: no lamp Lamp: no lamp	60957-31
SWReset_2	ECU SW Reset: Invisibility Software Resets	EF1D-1F	ECU SW Reset	A software internal failure occurred which lead to a software reset. This reset caused a failure which is only visible for manufacturer specific testers.	Electronic disturbances, various hardware defects (ECU internal) or configuration problems	If error occurs repeatedly, reprogram EDC. If error remains, replace EDC.	none	61213-31
SyCPSplyErr	Error caused by the malfunction of ECU switch off	E84D-1F	ECU Internal	A failure is reported if there is an irregular switch off or reset of ECU without complete shutdown.	Error due to irregular switch off detected	Check ECU supply circuit, replace ECU	Frequency: no lamp Lamp: no lamp	59469-31
SyncAPP	Accelerator Pedal: it is the plausibility check between APP1 and PP2	3AB1-1F	and under or Pedal	The accelerator pedal detection determines the current pedal position, its error status and under es a suitable substitute value if necessary. The ECM is configured for a potentiometer/switch accelerator pedal. Plausibility check between accelerator pedal input and ow idle switch is performed (synchronisation test).	Wiring problem, aged or defective accelerator pedal	Check wiring and under rator pedal	Frequency: ON Lamp: Amber (SVS)	15025-31
SyncAPPDblPotLIS	Accelerator Pedal: Diagnostic fault check of synchronism for double potentiometer and ow idle switch(LIS) .	3BB1-1F	Accelerator Pedal	The accelerator pedal detection determines the current pedal position, its error status and under es a suitable substitute value if necessary. The ECM is configured for a potentiometer/switch accelerator pedal. Plausibility check between accelerator pedal input and ow idle switch is performed (synchronisation test).	Wiring problem, aged or defective accelerator pedal	Check wiring and under rator pedal	Frequency: BLINK Lamp: Red (SVS)	15281-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SysDiag IndcCust HardLv 11	Info: Customer Hard Inducement: Level 1 (Torque reduction), triggered by fault	F1BF-1F	SCRInducement	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering Two further customer specific groups are avilable (not required by legislation) - Customer Inducement moderate - Customer Inducement hard	INFO: Inducement Level1 due to "Customer Inducement hard" group activated	No intervention necessary on this fault. Root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	61887-31
SysDiag IndcCust HardLv 13	Info: Customer Hard Inducement: Level 3 (Creep mode), triggered by fault	F3BF-1F	SCRInducement	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering Two further customer specific groups are avilable (not required by legislation) - Customer Inducement moderate - Customer Inducement hard	INFO: Inducement Level3 due to "Customer Inducement hard" group activated	No intervention necessary on this fault. Root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	62399-31
SysDiag IndcCust tHard Warn	Info: SCR Inducement: Warning, triggered by Costumer Hard fault	F4BF-1F	SCRInducement				Frequency: no lamp Lamp: no lamp	62655-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SysDiag IndcCus tMdrtLv l1	Info: Customer Moderate Inducement: Level 1 (Torque reduction), triggered by fault impacting on NOx effi-ciency	F5BF-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper func-tionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering Two further customer specific groups are avilable (not required by legislation) - Customer Inducement moderate - Customer Inducement hard	INFO: Inducement Level1 due to "Customer Induce-ment moderate" group activated	No intervention necessary on this fault. Root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	62911-31
SysDiag IndcCus tMdrtLv l3	Info: Customer Moderate Inducement: Level 3 (Creep mode), triggered by fault impacting on NOx effi-ciency	F7BF-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper func-tionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering Two further customer specific groups are avilable (not required by legislation) - Customer Inducement moderate - Customer Inducement hard	INFO: Inducement Level3 due to "Customer Induce-ment moderate" group activated	No intervention necessary on this fault. Root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	63423-31
SysDiag IndcCus tMdrt Warn	Info: SCR Inducement: Warning, triggered by Costumer Moderate fault (errors impact-ing NOx effi-ciency)	F8BF-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper func-tionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Driver warning due to "Customer Inducement moderate" group activated	No intervention necessary on this fault. Root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	63679-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SysDiag IndcEG RVlvLvl 1	Info: SCR Inducement: Level 1 (Torque reduction), triggered by EGR valve blocked fault	F19F-1F	SCRInducement	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level1 due to EGR valve blocked activated	No intervention necessary on this fault. EGR fault which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	61855-31
SysDiag IndcEG RVlvLvl 3	Info: SCR Inducement: Level 3 (Torque reduction), triggered by EGR valve blocked fault	F29F-1F	SCRInducement	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level3 due to EGR valve blocked activated	No intervention necessary on this fault. EGR fault which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	62111-31
SysDiag IndcEG RVlvW arn	Info: SCR Inducement: Level 3 (creep mode), triggered by EGR valve blocked fault	F39F-1F	SCRInducement	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Driver warning due to EGR valve blocked activated	No intervention necessary on this fault. EGR fault which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	62367-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SysDiag IndcIntr DosLvl 1	Info: SCR Inducement: Level 1 (Torque reduction), triggered by Reagent dosing interruption fault	F49F-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level1 due to Reagent dosing interruption activated	No intervention necessary on this fault. Reagent dosing interruption fault which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	62623-31
SysDiag IndcIntr DosLvl 3	Info: SCR Inducement: Level 3 (creep mode), triggered by Reagent dosing interruption fault	F59F-1F	SCRInduce-ment	SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level3 due to Reagent dosing interrupted activated	No intervention necessary on this fault. Reagent dosing interrupting fault which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	62879-31
SysDiag IndcIntr DosWa rn	Info: SCR Inducement: Warning, triggered by Reagent dosing interruption fault	F69F-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Driver warning due to reagent dosing interrupting fault activated	No intervention necessary on this fault. reagent dosing interrupting fault, which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	63135-31
SysDiag IndcRdc AgRmn Lvl1	Info: SCR Inducement: Level 1 (Torque reduction), triggered by low reductant level	FCBF-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level1 due to Low Reagent level activated	Reagent tank should be refilled to eliminate inducement	Frequency: ON Lamp: Amber (SVS)	64703-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SysDiag IndcRdc AgRmn Lvl3	Info: SCR Inducement: Level 3 (creep mode), triggered by low reductant level	FDBF-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level3 due to Low Reagent level activated	Reagent tank should be refilled to eliminate inducement	Frequency: ON Lamp: Amber (SVS)	64959-31
SysDiag IndcRdc AgRmn Warn	Info: SCR Inducement: Level 3 (creep mode), triggered by Reagent low level	FCAF-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Driver warning due to "Reagent low level" fault activated	Refill reagent	Frequency: no lamp Lamp: no lamp	64687-31
SysDiag IndcRgn tCnsLvl 1	Info: SCR Inducement: Level 1 (Torque reduction), triggered by Reagent Consumption fault	F79F-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level1 due to "Reagent consumption" fault activated	No intervention necessary on this fault. "Reagent consumption" fault which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	63391-31
SysDiag IndcRgn tCnsLvl 3	Info: SCR Inducement: Level 3 (creep mode), triggered by Reagent Consumption fault	F89F-1F	SCRInduce-ment	SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level3 due to "Reagent Consumption" fault activated	No intervention necessary on this fault. "Reagent Consumption" fault which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	63647-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SysDiag IndcRgn tCnsW arn	Info: SCR Inducement: Warning, triggered by Reagent Consumption fault	F99F-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Driver warning due to "Reagent Consumption" fault activated	No intervention necessary on this fault. "Reagent Consumption" fault, which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	63903-31
SysDiag IndcRgn tQlyLvl 1	Info: SCR Inducement: Level 1 (Torque reduction), triggered by Reagent quality fault	FA9F-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level1 due to "Reagent quality" fault activated	No intervention necessary on this fault. "Reagent quality" fault which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	64159-31
SysDiag IndcRgn tQlyLvl 3	Info: SCR Inducement: Level 3 (creep mode), triggered by Reagent Quality fault	FB9F-1F	SCRInduce-ment	SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level3 due to "Reagent Quality" fault activated	No intervention necessary on this fault. "Reagent Quality" fault which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	64415-31
SysDiag IndcRgn tQlyWa rn	Info: SCR Inducement: Warning, triggered by Reagent Quality fault	FC9F-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Driver warning due to "Reagent Quality" fault activated	No intervention necessary on this fault. "Reagent Quality" fault, which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	64671-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
SysDiag IndcTa mprgLvl 1	Info: SCR Inducement: Level 1 (Torque reduction), triggered by Tampering fault	FD9F-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level1 due to "Tampering" fault activated	No intervention necessary on this fault. "Tampering" fault which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	64927-31
SysDiag IndcTa mprgLvl 3	Info: SCR Inducement: Level 3 (creep mode), triggered by Tampering fault	FE9F-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Inducement Level3 due to "Tampering" fault activated	No intervention necessary on this fault. "Tampering" fault which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	65183-31
SysDiag IndcTa mprgW arn	Info: SCR Inducement: Warning, triggered by Tampering fault	FF9F-1F	SCRInduce-ment	Euro VI and under legislations require special measures to induce proper functionality of SCR and GR systems in Heavy Duty engines. SCR and GR system related faults are monitored and under r different warning and under on. The inducements start with a driver warning, then a torque reduction follows and f the fault is not fixed, a creep mode with strongly reduced maximal vehicle speed is activated. Failures which trigger inducements are grouped in 5 different cathegories: - EGR Vavle Blocked - Interruption of Dosing - Reagent Consumption - Reagent Quality - Tampering	INFO: Driver warning due to "Tampering" fault activated	No intervention necessary on this fault. "Tampering" fault, which is root cause for inducement should be repaired	Frequency: no lamp Lamp: no lamp	65439-31
SysDiag OvrdLo ck	Info: SCR Inducement: Healing by override is locked	FEAF-1F	SCRInduce-ment	The inducement override healing management is originally requested for MY12 Tier4i (US). This healing can be permitted at the next restart if some particular faults are present that have healing problems in case of power derating is active. The override strategy is consisting of some anti-repeated offenders logics in order to avoid the operator to take advantage from the improvement	Maximum number of inducement overrides exceeded	THe fault causing the inducement should be repaired and under de option should be restored by resetting the locked override counter using UDS service	Frequency: ON Lamp: Amber (SVS)	65199-31
SysDiag ValAct	Validation mode activated (full power restart in case of inducement activation)	F9BF-1F	None	The validation mode is a special functionality and under s a calibratable number of full power restarts.			Frequency: no lamp Lamp: no lamp	63935-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
T50Err	ECU Key 16: Defective T50 switch	4761-1F	ECU Key 16	Terminal 50 is used to indicate request for engine cranking Signal is acquired via hardware pin and under d into message T50_stRaw. Duration of cranking request is monitored.	Too long cranking request, short circuit in ignition key module or in wiring	Check ignition key module and under	Frequency: ON Lamp: Amber (SVS)	18273-31
TAFSDtyCycHi	Air Temp in AFS: Signal range lhigh on the duty cycle signal	1544-1F	Air Temp in AFS	The air temperature signal of the HFM sensor is a PWM signal. The physical value of air temperature is coded in the dutycycle of the of the air temperature signal. The range of the signal varies from 20% to 80%. The frequency of the signal is 19Hz. The signal is monitored for plausibility	Electrical problem in wiring or defective temperature sensor	Check wiring, check temperature measure, replase HFM	Frequency: no lamp Lamp: no lamp	5444-31
TAFSDtyCycLo	Air Temp in AFS: Signal range low on the duty cycle signal	2644-1F	Air Temp in AFS	The air temperature signal of the HFM sensor is a PWM signal. The physical value of air temperature is coded in the dutycycle of the of the air temperature signal. The range of the signal varies from 20% to 80%. The frequency of the signal is 19Hz. The signal is monitored for plausibility	Electrical problem in wiring or defective temperature sensor	Check wiring, check temperature measure, replase HFM	Frequency: no lamp Lamp: no lamp	9796-31
TAFSPerHi	Air Temp in AFS: Signal range high on the period of PWM signal	1344-1F	Air Temp in AFS	The air temperature signal of the HFM sensor is a PWM signal. The physical value of air temperature is coded in the dutycycle of the of the air temperature signal. The range of the signal varies from 20% to 80%. The frequency of the signal is 19Hz. The period signal is monitored for plausibility	Electrical problem in wiring or drifted or defective temperature sensor	Check wiring, check temperature measure, replase HFM	Frequency: no lamp Lamp: no lamp	4932-31
TAFSPerLo	Air Temp in AFS: Signal range low on the period of PWM signal	2444-1F	Air Temp in AFS	The air temperature signal of the HFM sensor is a PWM signal. The physical value of air temperature is coded in the dutycycle of the of the air temperature signal. The range of the signal varies from 20% to 80%. The frequency of the signal is 19Hz. The period signal is monitored for plausibility	Electrical problem in wiring or drifted or defective temperature sensor	Check wiring, check temperature measure, replase HFM	Frequency: no lamp Lamp: no lamp	9284-31
TAFSPhysRngHi	Air Temp in AFS: Physical Range high error for air temperature sensor	1144-1F	Air Temp in AFS	The raw signal measured by temperature sensor is converted in to a physical value. This value is monitored and under lie in a defined range.	Excessive air temperature at AFS sensor is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	4420-31
TAFSPhysRngLo	Air Temp in AFS: Physical Range low error for air temperature sensor	2244-1F	Air Temp in AFS	The raw signal measured by temperature sensor is converted in to a physical value. This value is monitored and under lie in a defined range.	Excessively low air temperature at AFS sensor is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	8772-31
TAFSVDPlaus	Air Temp in AFS: Plausibility check error	3744-1F	Air Temp in AFS	Plausibility of HFM temperature sensor is checked by comparing its measure with a second temperature value configured by application. For this application the second temperature is: Induction air temperature (boost temperature)	HFM temperature sensor or second temperature sensor drifted	Check if other failure concerning the second temperature sensor are present, check and under e HFM sensor or second temperature sensor	Frequency: no lamp Lamp: no lamp	14148-31
TCACDsPhysRngHi	Boost temperature: Physical Signal above maximum limit	1164-1F	Boost temperature	The raw signal measured by temperature sensor is converted into a physical value. This physical value is monitored and under lie in a defined range.	Excessive boost temperature is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	4452-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
TCAC DsPhysRngLo	Boost temperature: Physical Signal below minimum limit	2264-1F	Boost temperature	The raw signal measured by temperature sensor is converted into a physical value. This physical value is monitored and under lie in a defined range.	Excessively low boost temperature is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	8804-31
TCAC DsSig	Boost temperature: CAN Signal error for Boost Temperature Sensor	4364-1F	Boost temperature	The CAN Message of the boost Temperature sensor indicates a Problem with the sensor	Disturbed CAN signal transmission or Boost Temperature sensor is defective	Check the CAN for proper configuration and under oning Check the Boost Temperature sensor	Frequency: no lamp Lamp: no lamp	17252-31
TCAC DsSRCMax	Boost temperature: SRC High for Boost Temperature sensor	1464-1F	Boost temperature	The electrical Signal of the Boost pressure sensor is monitored. In case of defect recognition a default value for the boost Temperature is taken.	Sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	5220-31
TCAC DsSRCMin	Boost temperature: SRC Low for Boost Temperature sensor	2564-1F	Boost temperature	The electrical Signal of the Boost pressure sensor is monitored. In case of defect recognition a default value for the boost Temperature is taken.	Sensor defective or short circuit to ground Note: This failure can also be detected, if a very high boost temperature occured (> 350°C) e.g. due to full flow of non cooled EGR or fire	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	9572-31
TCAC DsVDPIaus	Boost temperature: Plausibility Check of the Boost Temperature sensor at cold start	3664-1F	Boost temperature	The signal of Boost temperature sensor is compared to the Air Temperature sensor at intake valve upstream (defined by Data Set) at cold engine, which had a long stand under period (i.e. all temperatures are similar to ambient). If the Difference between the 2 sensors is too high, one of the 2 sensors is not reliable	One of the 2 sensors has an offset or is miscalibrated Additional resistance in connector of the dedicated sensor	Check the ambient conditions to define which sensor is out of range Check the connector of sensor to corrosion Check the sensor itself	Frequency: no lamp Lamp: no lamp	13924-31
TECUPhysRngHi_0	ECU Temperature Sensor: Physical Signal ECU Temperature first sensor above maximum limit	115D-1F	ECU Temperature sensing	High temperatures can damage the ECM processor, one or more sensor can be provided to monitor ECM temperatures. The selected temperature is monitored and under lie in a defined range.	Excessive ECU temperature measured	Check cause for exceeding maximum allowed threshold (like environmental factors) Check wiring and he accuracy of the temperature sensor and under e it if necessary (Sensor is ECU internal, only ECU replacement possible)	Frequency: ON Lamp: Amber (SVS)	4445-31
TECUPhysRngHi_1	ECU Temperature Sensor: Physical Signal ECU Temperature second sensor above maximum limit	125D-1F	ECU Temperature sensing	High temperatures can damage the ECM processor, one or more sensor can be provided to monitor ECM temperatures. The selected temperature is monitored and under lie in a defined range.	Excessive ECU temperature measured	Check cause for exceeding maximum allowed threshold (like environmental factors) Check wiring and he accuracy of the temperature sensor and under e it if necessary (Sensor is ECU internal, only ECU replacement possible)	Frequency: ON Lamp: Amber (SVS)	4701-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
TECUPhysRngLo_0	ECU Temperature Sensor: Physical Signal ECU Temperature first sensor below minimum limit	235D-1F	ECU Temperature sensing	High temperatures can damage the ECM processor, one or more sensor can be provided to monitor ECM temperatures. The selected temperature is monitored and under lie in a defined range.	Excessively low ECU temperature measured	Check cause for value to fall below minimum allowed threshold (like environmental factors) Check wiring and he accuracy of the temperature sensor and under e it if necessary (Sensor is ECU internal, only ECU replacement possible)	Frequency: ON Lamp: Amber (SVS)	9053-31
TECUPhysRngLo_1	ECU Temperature Sensor: Physical Signal ECU Temperature second sensor below minimum limit	245D-1F	ECU Temperature sensing	High temperatures can damage the ECM processor, one or more sensor can be provided to monitor ECM temperatures. The selected temperature is monitored and under lie in a defined range.	Excessively low ECU temperature measured	Check cause for value to fall below minimum allowed threshold (like environmental factors) Check wiring and he accuracy of the temperature sensor and under e it if necessary (Sensor is ECU internal, only ECU replacement possible)	Frequency: ON Lamp: Amber (SVS)	9309-31
TECUSPIErr	ECU Temperature sensing: SPI Error ECU temperature sensor (LM71)	E55D-1F	ECU Temperature sensing	High temperatures can damage the ECM processor, one or more sensor can be provided to monitor ECM temperatures. A signal check is performed on the signal of each digital temperature sensor (LM71) connected via SPI. The Temperature evaluation is made by Hardware and he result sent by the message "TECU_numSPI" to the controller. In normal operation the bit 0 and it 1 are both set (=1). If one of these bits is not set (=0), this means that the Hardware has detected an error.	Temperature sensor defective (inside ECM)	Replace ECM	Frequency: ON Lamp: Amber (SVS)	58717-31
TECUSRCMax	ECU Temperature Sensor: Signal above maximum limit	165D-1F	ECU Temperature sensing	High temperatures can damage the ECM processor, one or more sensor can be provided to monitor ECM temperatures. The selected temperature is monitored and under lie in a plausible range.	Inaccurate or defective temperature sensor, defect in the wiring	Check wiring and he accuracy of the temperature sensor and under e it if necessary (Sensor is ECU internal, only ECU replacement possible)	Frequency: ON Lamp: Amber (SVS)	5725-31
TECUSRCMin	Diagnostic Fault Check for Signal below minimum limit	275D-1F	ECU Temperature sensing	High temperatures can damage the ECM processor, one or more sensor can be provided to monitor ECM temperatures. The selected temperature is monitored and under lie in a plausible range.	Inaccurate or defective temperature sensor, defect in the wiring	Check wiring and he accuracy of the temperature sensor and under e it if necessary (Sensor is ECU internal, only ECU replacement possible)	Frequency: ON Lamp: Amber (SVS)	10077-31
TEGRClrDsPhysRngHi	EGR Cooler Temperature: Physical Signal above maximum limit	1677-1F	EGR Temperature Sensor	The raw signal measured by EGR cooler downstream temperature sensor is converted into a physical value. This value is monitored and under lie in a defined range. EGR cooler downstream temperature sensor not present for this configuration.	Excessive EGR cooler downstream temperature is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	5751-31
TEGRClrDsPhysRngLo	EGR Cooler Temperature: Physical Signal below minimum limit	2777-1F	EGR Temperature Sensor	The raw signal measured by EGR cooler downstream temperature sensor is converted into a physical value. This value is monitored and under lie in a defined range. EGR cooler downstream temperature sensor not present for this configuration.	Excessively low EGR cooler downstream temperature is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	10103-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
TEGRCIrDsSRCMax	EGR Cooler Temperature: SRC high for EGR cooler downstream temperature	1877-1F	EGR Temperature Sensor	The electrical Signal of the EGR cooler downstream temperature sensor is monitored. In case of defect recognition a replacement value is taken. EGR cooler downstream temperature sensor not present for this configuration.	Short circuit of sensor to external source or defective sensor	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	6263-31
TEGRCIrDsSRCMin	EGR Cooler Temperature: SRC low for EGR cooler downstream temperature	2977-1F	EGR Temperature Sensor	The electrical Signal of the EGR cooler downstream temperature sensor is monitored. In case of defect recognition a replacement value is taken. EGR cooler downstream temperature sensor not present for this configuration.	Short circuit of sensor to ground or defective sensor	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	10615-31
TEGRCIrDsVDPlaus	EGR Cooler Temperature: Failed plausibility check at ECU start of EGR cooler downstream temperature	3A77-1F	EGR Temperature Sensor	EGR cooler downstream temperature sensor not present for this configuration.	EGR cooler downstream temperature sensor defective	Check sensor	Frequency: no lamp Lamp: no lamp	14967-31
ThmMngActv	ECU Internal: Defect Fault Check for activation of thermal management	FC2D-1F	ECU Internal	The temperature inside ECM can be monitored by a thermal management functionality which switches off post injection if ECM processor temperature exceeds defined limits	Excessive processor temperature reached, Internal ECM problem	If failure not sporadic , replace ECM	Frequency: no lamp Lamp: no lamp	64557-31
ThmMngMaxTemp	ECU Internal: Defect Fault Check for Signal value above maximum limit	1B2D-1F	ECU Internal	The temperature inside ECM can be monitored by a thermal management functionality which switches off post injection if ECM processor temperature exceeds defined limits	Excessive processor temperature reached, Internal ECM problem	If failure not sporadic , replace ECM	Frequency: no lamp Lamp: no lamp	6957-31
ThrVlvOL	EGR Throttle: No load error on power stage for Throttle Valve Actuator	51A4-1F	EGR Throttle	The Power stage of Throttle Valve Actuator is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Throttle Valve Actuator	Check of wiring, replace Throttle Valve Actuator	Frequency: no lamp Lamp: no lamp	20900-31
ThrVlvOvrTemp	EGR Throttle: Over temperature error on power stage	82A4-1F	EGR Throttle	The Power stage of Throttle Valve Actuator is monitored by Hardware for electric failures.	High battery voltage, high ECU temperature and igh load or defective wiring, power stage or Throttle Valve Actuator defective	Check battery voltage, wiring, power stage and under le Valve Actuator	Frequency: ON Lamp: Amber (SVS)	33444-31
ThrVlvPhysRngHi	EGR Throttle Valve Position sensor: Physical Signal above maximum limit	13A4-1F	EGR Throttle	The raw value of TVA position sensor is converted to physical value and under by ThrVlv_rSens. The physical value is monitored for plausibility.	Inaccurate or defective TVA position sensor, or defect in its wiring	Check wiring and he accuracy of TVA position sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	5028-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ThrVlvPhysRngLo	EGR Throttle Valve Position sensor: Physical Signal below minimum limit	24A4-1F	EGR Throttle	The raw value of TVA position sensor is converted to physical value and under by ThrVlv_rSens. The physical value is monitored for plausibility.	Inaccurate or defective TVA position sensor, or defect in its wiring	Check wiring and he accuracy of TVA position sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	9380-31
ThrVlvSCB	EGR Throttle: Short circuit to battery error on power stage for Throttle Valve Actuator	65A4-1F	EGR Throttle	The Power stage of Throttle Valve Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside Throttle Valve Actuator	Check of wiring or replace Throttle Valve Actuator	Frequency: no lamp Lamp: no lamp	26020-31
ThrVlvSCG	EGR Throttle: Short circuit to ground error on power stage for Throttle Valve Actuator	76A4-1F	EGR Throttle	The Power stage of Throttle Valve Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Throttle Valve Actuator	Check of wiring or replace Throttle Valve Actuator	Frequency: no lamp Lamp: no lamp	30372-31
ThrVlvSRCMax	EGR Throttle: SRC High for TVA position	17A4-1F	EGR Throttle	The electrical Signal of the TVA position sensor is monitored. In case of defect recognition a replacement value is taken.	Short circuit of wiring to external source or defective Throttle Valve Actuator.	Check of wiring or replace Throttle Valve Actuator.	Frequency: ON Lamp: Amber (SVS)	6052-31
ThrVlvSRCMin	EGR Throttle: SRC low for TVA position	28A4-1F	EGR Throttle	The electrical Signal of the TVA position sensor is monitored. In case of defect recognition a replacement value is taken.	Short circuit of wiring to ground or defective Throttle Valve Actuator.	Check of wiring or replace Throttle Valve Actuator.	Frequency: ON Lamp: Amber (SVS)	10404-31
TimeDateClkStopped	Defective external clock (tachograph)	91D1-1F	CAN Time Date	Aim of this monitor is detecting possible stop failure of external clock.	Defective external clock (Tachhograf)	Check and under e tachograf	Frequency: no lamp Lamp: no lamp	37329-31
TimeDatePlaus	External clock manually reset (summer/winter or time zone changed)	32D1-1F	CAN Time Date	This test is performed in order to detect when the clock was manually set back, e.g. due to summer/winter time change or another time zone was entered. In these cases no reliable information about the engine cool down time can be derived, no tests relying on the absolute time shall to be performed.	Summer/winter time change or another time zone was entered	No intervention necessary	Frequency: no lamp Lamp: no lamp	13009-31
TIntkVUsPhysRngHi	Boost temperature: Physical Signal above maximum limit	1174-1F	Boost temperature	The raw signal measured by temperature sensor is converted into a physical value. This physical value is monitored and under lie in a defined range.	Excessive boost temperature is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	4468-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
TIntkV UsPhys RngLo	Boost temperature: Physical Signal below minimum limit	2274-1F	Boost temperature	The raw signal measured by temperature sensor is converted into a physical value. This physical value is monitored and under lie in a defined range.	Excessively low boost temperature is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	8820-31
TIntkV UsSRC Max	Boost temperature: SRC high for air intake temperature	1374-1F	Boost temperature	The electrical Signal of the air temperature sensor upstream engine Inlet Valve, is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to external source or defective sensor	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	4980-31
TIntkV UsSRC Min	Boost temperature: SRC low for air intake temperature	2474-1F	Boost temperature	The electrical Signal of the air temperature sensor upstream engine Inlet Valve, is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to ground or defective sensor	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	9332-31
TOxiCatDsPhys RngHi	Oxidation Catalyser Upstream Temperature Sensor: Physical Signal above maximum limit	1199-1F	Oxicat Temp Sensing	The raw signal measured by temperature sensor is converted into a physical value. This value is monitored and under lie in a defined range.	Excessive Oxidation Catalyser Upstream Temperature is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	4505-31
TOxiCatDsPhys RngLo	Oxidation Catalyser Upstream Temperature Sensor: Physical Signal below minimum limit	2299-1F	Oxicat Temp Sensing	The raw signal measured by temperature sensor is converted into a physical value. This value is monitored and under lie in a defined range.	Excessively low Oxidation Catalyser Upstream Temperature is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	8857-31
TOxiCatDsSRC Max	Signal range check high	1399-1F	Oxicat Temp Sensing	The electrical Signal of the Oxi Cat temperature downstream sensor is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to external source or defective sensor	Check wiring and under	Frequency: ON Lamp: Amber (SVS)	5017-31
TOxiCatDsSRC Min	Signal range check low	2499-1F	Oxicat Temp Sensing	The electrical Signal of the Oxi Cat temperature downstream sensor is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to ground or defective sensor	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	9369-31
TOxiCatUsNpl	Oxicat Temp Sensing: Defect Fault Check for "signal not plausible"	3599-1F	Oxicat Temp Sensing	The plausibility of OxiCat upstream temperature is evaluated by comparing measured value with a modelled one.	An abnormal heating of the exhaust system has occurred or OxiCat upstream temperature sensor is inaccurate.	Let engine cool down before restarting and under sensor accuracy. If the real exhaust temperature really differes from the calculated one due to a failure in the engine like: wrong injection pressure, wrong injection begin wrong EGR rate the engine system should be checked.	Frequency: no lamp Lamp: no lamp	13721-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
TOxiCatUsPhysRngHi	Oxidation Catalyser Upstream Temperature Sensor: Physical Signal above maximum limit	1699-1F	Oxicat Temp Sensing	The raw signal measured by temperature sensor is converted into a physical value. This value is monitored and under lie in a defined range.	Excessive Oxidation Catalyser Upstream Temperature is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	5785-31
TOxiCatUsPhysRngLo	Oxidation Catalyser Upstream Temperature Sensor: Physical Signal below minimum limit	2799-1F	Oxicat Temp Sensing	The raw signal measured by temperature sensor is converted into a physical value. This value is monitored and under lie in a defined range.	Excessively low Oxidation Catalyser Upstream Temperature is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	10137-31
TOxiCatUsSRCMax	Oxicat Temp Sensing: Defect Fault Check for "signal value above maximum limit"	1899-1F	Oxicat Temp Sensing	The electrical Signal of the Oxi Cat temperature upstream sensor is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to external source or defective sensor	Check wiring and under	Frequency: ON Lamp: Amber (SVS)	6297-31
TOxiCatUsSRCMin	Oxicat Temp Sensing: Defect Fault Check for "signal value below minimum limit"	2999-1F	Oxicat Temp Sensing	The electrical Signal of the Oxi Cat temperature upstream sensor is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to ground or defective sensor	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	10649-31
TPFltDsPhysRngHi	Particle Filter Downstream Temperature Sensor: Physical Signal above maximum limit	1429-1F	DPF Temp Sensing	The physical value of the Particle Filter temperature downstream sensor is monitored. This value should lie in a defined range.	Excessive Particulate Filter Downstream Temperature is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	5161-31
TPFltDsPhysRngLo	Particle Filter Downstream Temperature Sensor: Physical Signal below minimum limit	2529-1F	DPF Temp Sensing	The physical value of the Particle Filter temperature downstream sensor is monitored. This value should lie in a defined range.	Excessively low Particulate Filter Downstream Temperature is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	9513-31
TPFltDsSRCMax	Particle Filter Downstream Temperature Sensor: Signal value above maximum limit	1629-1F	DPF Temp Sensing	The electrical Signal of the Particle Filter temperature downstream sensor is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to external source or defective sensor	Check wiring and under	Frequency: no lamp Lamp: no lamp	5673-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
TPFltDsSRCMin	Particle Filter Downstream Temperature Sensor: Signal value below minimum limit	2729-1F	DPF Temp Sensing	The electrical Signal of the Particle Filter temperature downstream sensor is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to ground or defective sensor	Check wiring or replace sensor	Frequency: no lamp Lamp: no lamp	10025-31
TPFltUsNpl	Particle Filter Upstream Temperature Sensor: Plausibility of particle filter upstream temperature	3829-1F	DPF Temp Monitoring	The plausibility of DPF upstream temperature is evaluated by comparing measured value with a modelled one.	An abnormal heating of the exhaust system has occurred or DPF upstream temperature sensor is inaccurate.	If the real exhaust temperature really differs from the calculated one due to a failure in the engine like: - wrong injection pressure, - wrong injection begin - wrong EGR rate the engine system should be checked as follows: Check presence of other DFCs if this is a follow-up failure If injection system related DFCs were present check injection system first. Check an clean temperature sensors. Make sure that the two temeprature sensors have not been switched Let engine cool down before restarting and under sensor accuracy (Offset and under . After 5 hours standing temperatures before and under DOC must be similar	Frequency: no lamp Lamp: no lamp	14377-31
TPFltUsPhysRngHi	Particle Filter Upstream Temperature Sensor: Physical Signal above maximum limit	1929-1F	DPF Temp Monitoring	The raw signal measured by temperature sensor is converted into a physical value. This physical value is monitored and under lie in a defined range.	Excessive Particulate Filter Upstream Temperature is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	6441-31
TPFltUsPhysRngLo	Particle Filter Upstream Temperature Sensor: Physical Signal below minimum limit	2A29-1F	DPF Temp Monitoring	The raw signal measured by temperature sensor is converted into a physical value. This physical value is monitored and under lie in a defined range.	Excessively low Particulate Filter Upstream Temperature is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	10793-31
TPFltUsSRCMax	Particle Filter Upstream Temperature Sensor: Signal Range Check High	1B29-1F	DPF Temp Monitoring	The electrical Signal of the Particle Filter temperature upstream sensor is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to external source or defective sensor	Check wiring and under	Frequency: BLINK Lamp: Red (SVS)	6953-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
TPFltUs SRCMin	Particle Filter Upstream Temperature Sensor: Signal Range Check Low	2C29-1F	DPF Temp Monitoring	The electrical Signal of the Particle Filter temperature upstream sensor is monitored. In case of defect recognition a substitute value is taken.	Short circuit of sensor to ground or defective sensor	Check wiring or replace sensor	Frequency: BLINK Lamp: Red (SVS)	11305-31
TrbCh ACrntS RCMax	Turbocharger Actuator: Signal Range Check High for the current through the turbo charger actuator	1148-1F	Turbocharger control	The Turbo charger Actuator is connected via CAN, no signal range check performed.	Turbo charger Actuator defective or short circuit to battery	Check wiring or replace actuator	Frequency: no lamp Lamp: no lamp	4424-31
TrbCh ACrntS RCMin	Turbocharger Actuator: Signal Range Check Low for the current through the turbo charger actuator	2248-1F	Turbocharger control	The Turbo charger Actuator is connected via CAN, no signal range check performed.	Turbo charger Actuator defective or short circuit to ground	Check wiring or replace actuator	Frequency: no lamp Lamp: no lamp	8776-31
TrbCh Max	Turbine ovespeed defect recognition	1938-1F	Turbocharger control	The system monitors turbocharger overspeed and under izes if it isn't originated by low atmospheric pressure.	It's possible a clogging of the air filter.	Check the air filter, clean or replace it.	Frequency: ON Lamp: Amber (SVS)	6456-31
TrbCh NErr_0	Info: Turbocharger Speed too high (1st detection)	F9DF-1F	Turbocharger speed sensor	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Turbocharger speed is monitored, if it is exceeding a defined threshold event is detected. Three failure paths are available which can cyclically collect the event.	Event detection,turbocharger speed too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	63967-31
TrbCh NErr_1	Info: Turbocharger Speed too high (2nd detection)	FADF-1F	Turbocharger speed sensor	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Turbocharger speed is monitored, if it is exceeding a defined threshold event is detected. Three failure paths are available which can cyclically collect the event.	Event detection,turbocharger speed too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	64223-31
TrbCh NErr_2	Info: Turbocharger Speed too high (3rd detection)	FBDF-1F	Turbocharger speed sensor	New failure paths are introduced in order to monitor some failures that could damage the engine. These new DFCs work as event counters; mainly they store the information about the date and he duration time of the event, and n this way it will be possible to re-build the history of a particular failure. Turbocharger speed is monitored, if it is exceeding a defined threshold event is detected. Three failure paths are available which can cyclically collect the event.	Event detection,turbocharger speed too high	No intervention necessary	Frequency: no lamp Lamp: no lamp	64479-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
TrbChOL	Turbocharger control: Open load of VTG actuator	5468-1F	Turbocharger control	An elecrical actuator for VGT is used. The Power stage of VGT actuator is monitored by Hardware for electric failures.	Broken or disconnected wiring, defective PWM actuator	Check of wiring, replace PWM actuator	Frequency: BLINK Lamp: Red (SVS)	21608-31
TrbChOvrTemp	Turbocharger control: Over temperature of VTG actuator	8368-1F	Turbocharger control	The Power stage of VGT actuator is monitored by Hardware for electric failures.	High battery voltage, high ECU temperature and igh load or defective wiring, power stage or VGT actuator	Check wiring, power stage and GT actuator	Frequency: no lamp Lamp: no lamp	33640-31
TrbChSCB	Turbocharger control: Short circuit to battery of VTG actuator	6168-1F	Turbocharger control	The Power stage of VGT actuator is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside PWM actuator	Check of wiring, replace PWM actuator	Frequency: BLINK Lamp: Red (SVS)	24936-31
TrbChSCG	Turbocharger control: Short circuit to ground of VTG actuator	7268-1F	Turbocharger control	The Power stage of VGT actuator is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside PWM	Check of wiring, replace PWM actuator	Frequency: BLINK Lamp: Red (SVS)	29288-31
TrbChSpdLonPer	Turbine speed sensor: signal long period fault path	4A38-1F	Turbocharger control	Turbine speed Sensor not available	Signal connection from sensor to ECU is interrupted Signal line has a short circuit to supply or ground.	Check wiring, check sensor	Frequency: ON Lamp: Amber (SVS)	19000-31
TrbChSpdPlaus	Turbine speed sensor: Implausible speed variations	3B38-1F	Turbocharger speed sensor	Turbine speed Sensor not available	Implausible turbine speed variation, defective sensor Sticking turbine?	check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	15160-31
TrbChSpdSRCMax	Turbine speed sensor: SRC High fault path	1C38-1F	Turbocharger speed sensor	Turbine speed Sensor not available	Damaged Turbocharger or Turbine Speed sensor defective	Check turbocharger, check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	7224-31
TrbChSpdSRCMin	Turbine speed sensor: SRC low fault path	2D38-1F	Turbocharger speed sensor	Turbine speed Sensor not available	Damaged Turbocharger or Turbine Speed sensor defective	Check turbocharger, check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	11576-31
TrbChSRCMax	Turbocharger control: Signal range check Max error on turbo charger actuator position sensor	1348-1F	Turbocharger control	Electrical Signal range check of VGT position sensor	Short circuit of wiring to external source or defective turbocharger control	Check of wiring or replace turbocharger control	Frequency: no lamp Lamp: no lamp	4936-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
TrbChSRCMin	Turbocharger control: Signal range check Min error on turbo charger actuator position sensor	2448-1F	Turbocharger control	Electrical Signal range check of VGT position sensor	Short circuit of wiring to ground or defective turbocharger control	Check of wiring or replace turbocharger control	Frequency: no lamp Lamp: no lamp	9288-31
TSEACo_TSC1_CHKCNT	Torque or speed control demand under bed or discontinued	ED2D-1F	CAN Bus	TSEACo_TSC1 message is checked for reliability (message discontinued or disturbed). For this purpose frame is provided with a checksum (for detecting message integrity) and rolling counter (for detecting missing frames)	Defect on ABS / ASR / ESP CAN controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: ON Lamp: Amber (SVS)	60717-31
TSEACo_TSC1_TO_0	Torque or speed control demand rom ABS/ESR/ESP exceeding the maximum time	919B-1F	CAN Bus	Failure detection in case of continuous torque or speed control demand under ing the maximum applicable time 65,54s, TSC1AE from ABS / ASR /ESP.	Defect on ABS / ASR / ESP controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37275-31
TSEACo_TSC1_TO_1	Torque or speed control demand rom Driveline Retarder exceeding the maximum time	929B-1F	CAN Bus	Failure detection in case of continuous torque or speed control demand under ing the maximum applicable time 65,54s, TSC1DE from Driveline Retarder.	Defect on Driveline Retarder controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37531-31
TSEACo_TSC1_TO_10	Torque or speed control demand rom Transmission Controller Retarder exceeding the maximum time	939B-1F	CAN Bus	Failure detection in case of continuous torque or speed control demand under ing the maximum applicable time 65,54s, TSC1TE from Transmission Controller Retarder.	Defect on Transmission Control Retarder controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	37787-31
TSEACo_TSC1_TO_11	Torque or speed control demand rom VCM Retarder exceeding the maximum time	949B-1F	CAN Bus	Failure detection in case of continuous torque or speed control demand under ing the maximum applicable time 65,54s, TSC1TE from VCM Retarder.	Defect on VCM Retarder controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38043-31
TSEACo_TSC1_TO_12	Torque or speed control demand rom ABS/ESR/ESP Retarder exceeding the maximum time	959B-1F	CAN Bus	Failure detection in case of continuous negative torque control demand under ing the maximum applicable time 65,54s, TSC1AR from ABS / ASR / ESP Retarder	Defect on ABS / ASR / ESP controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38299-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
TSEACo_TSC1_TO_13	Continuous negative torque control demand rom Driveline Retarder exceeding the maximum time	969B-1F	CAN Bus	Failure detection in case of continuous negative torque control demand under ing the maximum applicable time 65,54s, TSC1DR from Driveline Retarder.	Defect on Driveline Retarder controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38555-31
TSEACo_TSC1_TO_2	Torque or speed control demand rom PTO exceeding the maximum time	979B-1F	CAN Bus	Failure detection in case of continuous torque or speed control demand under ing the maximum applicable time 65,54s, TSC1PE from PTO Controller.	Defect on PTO Controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	38811-31
TSEACo_TSC1_TO_3	Torque or speed control demand rom Transmission Controller AMT exceeding the maximum time	989B-1F	CAN Bus	Failure detection in case of continuous torque or speed control demand under ing the maximum applicable time 65,54s, TSC1TE from Transmission Controller (AMT).	Defect on AMT controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39067-31
TSEACo_TSC1_TO_4	Torque or speed control demand rom Vehicle Controller exceeding the maximum time	999B-1F	CAN Bus	Failure detection in case of continuous torque or speed control demand under ing the maximum applicable time 65,54s, TSC1VE from Vehicle Controller.	Defect on Vehicle Controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39323-31
TSEACo_TSC1_TO_5	Continuous negative torque control demand rom ABS/ESR/-ESP exceeding the maximum time	9A9B-1F	CAN Bus	Failure detection in case of continuous negative torque control demand under ing the maximum applicable time 65,54s, TSC1AR from ABS / ASR / ESP.	Defect on ABS / ASR / ESP controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39579-31
TSEACo_TSC1_TO_6	Continuous negative torque control demand rom Driveline Retarder exceeding the maximum time	9B9B-1F	CAN Bus	Failure detection in case of continuous negative torque control demand under ing the maximum applicable time 65,54s, TSC1DR from Driveline Retarder.	Defect on Driveline Retarder controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	39835-31
TSEACo_TSC1_TO_7	Continuous negative torque control demand rom Transmission AMT exceeding the maximum time	9C9B-1F	CAN Bus	Failure detection in case of continuous negative torque control demand under ing the maximum applicable time 65,54s, TSC1TR from Transmission Controller (AMT).	Defect on AMT controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40091-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
TSEACo_TSC1_TO_8	Continuous negative torque control demand rom Vehicle Controller exceeding the maximum time	9D9B-1F	CAN Bus	Failure detection in case of continuous negative torque control demand under ing the maximum applicable time 65,54s, TSC1VR from Vehicle Controller.	Defect on Vehicle Controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40347-31
TSEACo_TSC1_TO_9	Torque or speed control demand rom PTO Retarder exceeding the maximum time	9E9B-1F	CAN Bus	Failure detection in case of continuous torque or speed control demand under ing the maximum applicable time 65,54s, TSC1 from PTO retarder	Defect on PTO retarder controller, CAN cable problem.	Check correct functioning of the CAN controller. Check wiring.	Frequency: no lamp Lamp: no lamp	40603-31
TTrbnUsNpl	Turbine Upstream Temperature Sensor:Implausibility between measured and under ed value	3948-1F	T3 Temperature	The turbine upstream temperature is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Exh_uRawTTrbnUs. This signal is checked for the Signal Range Errors and hen transformed into physical value Exh_tSensTTrbnUs.. The physical value is compared to a modelled value for plausibility	An abnormal heating of the exhaust system has occurred or Inaccurate or defective Turbine Upstream Temperature sensor, or defect in its wiring	Let engine cool down before restarting and under sensor accuracy. Check wiring and he accuracy of Turbine Upstream Temperature sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	14664-31
TTrbnUsPhysRngHi	Turbine Upstream Temperature Sensor: Physical Signal above maximum limit	1548-1F	T3 Temperature	The turbine upstream temperature is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Exh_uRawTTrbnUs. This signal is checked for the Signal Range Errors and hen transformed into physical value Exh_tSensTTrbnUs.. This physical value is monitored and under lie in a defined range.	Excessive Turbine Upstream Temperatureis measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	5448-31
TTrbnUsPhysRngLo	Turbine Upstream Temperature Sensor: Physical Signal below minimum limit	2648-1F	T3 Temperature	The turbine upstream temperature is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Exh_uRawTTrbnUs. This signal is checked for the Signal Range Errors and hen transformed into physical value Exh_tSensTTrbnUs.. This physical value is monitored and under lie in a defined range.	Excessively low Turbine Upstream Temperature is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: no lamp Lamp: no lamp	9800-31
TTrbnUsSRCMax	Turbine Upstream Temperature Sensor: Signal range check high	1748-1F	T3 Temperature	The turbine upstream temperature is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Exh_uRawTTrbnUs. This signal is checked for the Signal Range Errors and hen transformed into physical value Exh_tSensTTrbnUs..	Turbine Upstream Temperature sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	5960-31
TTrbnUsSRCMin	Turbine Upstream Temperature Sensor: Signal range check low	2848-1F	T3 Temperature	The turbine upstream temperature is acquired via hardware connected sensor. The raw voltage signal is acquired in the message Exh_uRawTTrbnUs. This signal is checked for the Signal Range Errors and hen transformed into physical value Exh_tSensTTrbnUs..	Turbine Upstream Temperature sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	10312-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UCatDsTPhysRngHi	SCR Catalyst Temperature monitoring: Downstream temperature above physical maximum value	141A-1F	SCR Temp Sensor Down-stream	Urea Catalyst downstream temperature is connected via hardware to the ECM. The temperature is read from Sensor through Analogic Digital Converter and f the signal range check is passed, raw voltage signal SCR_uRawUCatDsT is converted into a physical value SCR_tUCatDsT. The physical value should lie in a defined range.	Excessive UREA Catalyst temperature downstream is measured. Sensor could be drifted or not correctly mounted	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: ON Lamp: Amber (SVS)	5146-31
UCatDsTPhysRngLo	SCR Catalyst Temperature monitoring: Downstream temperature below physical minimum value	251A-1F	SCR Temp Sensor Down-stream	Urea Catalyst downstream temperature is connected via hardware to the ECM The temperature is read from Sensor through analogic Digital Converter and f the signal range check is passed, raw voltage signal SCR_uRawUCatDsT is converted into a physical value SCR_tUCatDsT. The physical value should lie in a defined range.	Excessively low UREA Catalyst temperature downstream is measured. Sensor could be drifted.	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: ON Lamp: Amber (SVS)	9498-31
UCatDsTSig	SCR Catalyst Temperature monitoring: Downstream temperature sensor connected via CAN reports an error	4D1A-1F	SCR Temp Sensor Down-stream	Urea Catalyst downstream temperature is connected via hardware to the ECM. The temperature is read from Sensor through analogic Digital Converter and f the signal range check is passed, raw voltage signal SCR_uRawUCatDsT is converted into a physical value SCR_tUCatDsT. No CAN signal error monitored here	Urea Catalyst downstream temperature defective	Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	19738-31
UCatDsTSRCMax	SCR Catalyst Temperature sensing: SRC high for Catalyst temperature downstream	161A-1F	SCR Temp Sensor Down-stream	Urea Catalyst downstream temperature is connected via hardware to the ECM. The temperature is read from Sensor through analogic Digital Converter and f the signal range check is passed, raw voltage signal SCR_uRawUCatDsT is converted into a physical value SCR_tUCatDsT.	Sensor defective or short circuit in wiring to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	5658-31
UCatDsTSRCMin	SCR Catalyst Temperature sensing: SRC low for Catalyst temperature downstream	271A-1F	SCR Temp Sensor Down-stream	Urea Catalyst downstream temperature is connected via hardware to the ECM. The temperature is read from Sensor through analogic Digital Converter and f the signal range check is passed, raw voltage signal SCR_uRawUCatDsT is converted into a physical value SCR_tUCatDsT.	Sensor defective or short circuit in wiring to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	10010-31
UCatUsTPhysRngHi	SCR Catalyst Temperature monitoring: Upstream temperature above physical maximum value	181A-1F	SCR Temp Sensor Upstream	Urea Catalyst upstream temperature is connected via hardware to the ECM. The temperature is read from Sensor through analogic Digital Converter and f the signal range check is passed, raw voltage signal SCR_uRawUCatUsT is converted into a physical value SCR_tUCatUsT. The physical value should lie in a defined range.	Excessive UREA Catalyst temperature upstreamis measured Sensor could be drifted or not correctly mounted	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: ON Lamp: Amber (SVS)	6170-31
UCatUsTPhysRngLo	SCR Catalyst Temperature monitoring: Upstream temperature below physical minimum value	291A-1F	SCR Temp Sensor Upstream	Urea Catalyst upstream temperature is connected via hardware to the ECM. The temperature is read from Sensor through analogic Digital Converter and f the signal range check is passed, raw voltage signal SCR_uRawUCatUsT is converted into a physical value SCR_tUCatUsT. The physical value should lie in a defined range.	Excessively low UREA Catalyst temperature upstream measured. Sensor could bedrifted.	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: ON Lamp: Amber (SVS)	10522-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UCatUsTSig	SCR Catalyst Temperature monitoring: Upstream temperature sensor connected via CAN reports an error	4C1A-1F	SCR Temp Sensor Upstream	Urea Catalyst upstream temperature is connected via hardware to the ECM. The temperature is read from Sensor through analogic Digital Converter and f the signal range check is passed, raw voltage signal SCR_uRawUCatUsT is converted into a physical value SCR_tUCatUsT. No CAN signal error monitored here	Urea Catalyst upstream temperature defective	Check sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	19482-31
UCatUsTSRCMax	SCR Catalyst Temperature sensing: SRC high for Catalyst temperature upstream	1A1A-1F	SCR Temp Sensor Upstream	Urea Catalyst upstream temperature is connected via hardware to the ECM. The temperature is read from Sensor through analogic Digital Converter and f the signal range check is passed, raw voltage signal SCR_uRawUCatUsT is converted into a physical value SCR_tUCatUsT.	Sensor defective or short circuit in wiring to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	6682-31
UCatUsTSRCMin	SCR Catalyst Temperature sensing: SRC low for Catalyst temperature upstream	2B1A-1F	SCR Temp Sensor Upstream	Urea Catalyst upstream temperature is connected via hardware to the ECM. The temperature is read from Sensor through analogic Digital Converter and f the signal range check is passed, raw voltage signal SCR_uRawUCatUsT is converted into a physical value SCR_tUCatUsT.	Sensor defective or short circuit in wiring to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	11034-31
UDCRdcAgRmn	SCR Reagent Tank Level: Empty Urea Tank	FABF-1F	SCR Reagent Tank Level	Urea Tank level is monitored, if empty tank is detected a failure is reported.	Tank is empty	Refill Urea tank	Frequency: no lamp Lamp: no lamp	64191-31
UDosVlvEPHi	Urea Dosing Valve: Current at the end of injection phase exceeds max threshold	717A-1F	SCR Dosing valve	The Power stage of the UREA dosing valve is actuated by a High side switch (i.e. connection to Batt+) and Low side switch (connection to Ground). Both switches are actuated in the way, that the desired current during opening and under phase can be adjusted. The Low side switch is monitored for Over Temperature (too high current) separately.	Defective wiring, power stage or Urea Dosing Valve Actuator defective	Check wiring, power stage (High Slde and ow Slde) and rea Dosing Valve Actuator.	Frequency: ON Lamp: Amber (SVS)	29050-31
UDosVlvOvrTemp	SCR Dosing valve: Diagnostic error check for overtemperature.	857A-1F	SCR Dosing valve	The Power stage of the UREA dosing valve is actuated by a High side switch (i.e. connection to Batt+) and Low side switch (connection to Ground). Both switches are actuated in the way, that the desired current during opening and under phase can be adjusted. The Low side switch is monitored for Over Temperature (too high current) separately.	High battery voltage, high ECU temperature and igh load or defective wiring, power stage or Urea Dosing Valve Actuator defective	Check battery voltage, wiring, power stage and rea Dosing Valve Actuator.	Frequency: ON Lamp: Amber (SVS)	34170-31
UDosVlvSCBLS	SCR Dosing Valve: Short circuit to battery error on lowside switch.	647A-1F	SCR Dosing valve	The Power stage of Urea Dosing Valve at Low Side is monitored by Hardware for electric failures.	Short circuit to battery of wiring or inside Urea Dosing Valve at Low Side	Check of wiring or replacement of Urea Dosing Valve	Frequency: ON Lamp: Amber (SVS)	25722-31
UDosVlvSCBOLHS	SCR Dosing Valve: Short circuit to battery on highside or open load error.	627A-1F	SCR Dosing valve	The Power stage of Urea Dosing Valve at High Side is monitored by Hardware for electric failures.	Short circuit to battery or open load of wiring or inside Urea Dosing Valve at High Side	Check of wiring or replacement of Urea Dosing Valve	Frequency: ON Lamp: Amber (SVS)	25210-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UDosVlvSCGOLLS	SCR Dosing Valve: Short circuit to ground or open load on the lowside switch.	737A-1F	SCR Dosing valve	The Power stage of Urea Dosing Valve at Low Side is monitored by Hardware for electric failures.	Short circuit to ground or open load of wiring or inside Urea Dosing Valve at Low Side	Check of wiring or replacement of Urea Dosing Valve	Frequency: ON Lamp: Amber (SVS)	29562-31
UDosVlvSCHS	SCR Dosing Valve: Short circuit error on highside switch.	467A-1F	SCR Dosing valve	The Power stage of Urea Dosing Valve at High Side is monitored by Hardware for electric failures.	Short circuit of wiring or inside Urea Dosing Valve at High Side	Check of wiring or replacement of Urea Dosing Valve	Frequency: ON Lamp: Amber (SVS)	18042-31
UHCEnfShOffWiEmp	Pressure line heater error and under ature condition to perform an afterrun	3DBA-1F	SCR Reagent Heating	The SCR reagent feeding systems are checked to prevent damages to components during a frozen state.	Blocked, frozen or damage pressure line. Heater ineffective	Check the pressure line. Check the heater.	Frequency: ON Lamp: Amber (SVS)	15802-31
UHtrBLFET	Urea Backflow Line Heater Field Effect Transistor error	E86A-1F	None	Urea Backflow line heater control is monitored			Frequency: no lamp Lamp: no lamp	59498-31
UHtrBLIPhysRngHiDiag	Backflow Line Heater: Curent feedback too high	1A6A-1F	SCR Reagent Heating	Current feedback of UREA Backflow Line Heater is monitored.			Frequency: no lamp Lamp: no lamp	6762-31
UHtrBLIPhysRngLoDiag	Backflow Line Heater: Curent feedback too high	2B6A-1F	SCR Reagent Heating	Current feedback of UREA Backflow Line Heater is monitored.			Frequency: ON Lamp: Amber (SVS)	11114-31
UHtrBLOL	Urea Backflow Line Heater Actuator power stage: Open Load error	57BA-1F	SCR Reagent Heating	The Power stage of UREA Backflow Line Heater is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective UREA Backflow Line Heater	Check of wiring, replace UREA Backflow Line Heater	Frequency: ON Lamp: Amber (SVS)	22458-31
UHtrBLSCB	Urea Backflow Line Heater Actuator power stage: Short Circuit to Battery	65BA-1F	SCR Reagent Heating	The Power stage of UREA Backflow Line Heater is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside UREA Backflow Line Heater	Check of wiring, replace UREA Backflow Line Heater	Frequency: ON Lamp: Amber (SVS)	26042-31
UHtrBLSCG	Urea Backflow Line Heater Actuator power stage: Short Circuit to Ground	66BA-1F	SCR Reagent Heating	The Power stage of UREA Backflow Line Heater is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside UREA Backflow Line Heater	Check of wiring, replace UREA Backflow Line Heater	Frequency: ON Lamp: Amber (SVS)	26298-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UHtrBLUPhysRngHiDiag	Backflow Line Heater: Voltage feedback too high	1C6A-1F	SCR Reagent Heating	Voltage feedback of UREA Backflow Line Heater is monitored.			Frequency: no lamp Lamp: no lamp	7274-31
UHtrBLUPhysRngLoDiag	Backflow Line Heater: Voltage feedback too low	2D6A-1F	SCR Reagent Heating	Voltage feedback of UREA Backflow Line Heater is monitored.			Frequency: ON Lamp: Amber (SVS)	11626-31
UHtrPLOL	SCR Reagent Heating: No load error (Pressure Line Heater)	5BBA-1F	SCR Reagent Heating	The Power stage of Urea Pressure Line heater is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective relay	Check of wiring, replace Urea Pressure Line heater actuator	Frequency: ON Lamp: Amber (SVS)	23482-31
UHtrPLOvrTemp	Over Temperature error of Urea Pressure Line Heater Actuator power stage	8CBA-1F	SCR Reagent Heating	The Power stage of UREA Pressure Line Heater is monitored by Hardware for electric failures and ver temperature errors.	High battery voltage, high temperature inside ECU, high load or wiring problem or actuator defective	Check battery voltage, wiring, power stage and under or	Frequency: ON Lamp: Amber (SVS)	36026-31
UHtrPLSCB	SCR Reagent Heating: Short circuit to battery error (Pressure Line Heater)	69BA-1F	SCR Reagent Heating	The Power stage of Urea Pressure Line heater is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside SCR Reagent Heating	Check of wiring, replace SCR Reagent Heating	Frequency: ON Lamp: Amber (SVS)	27066-31
UHtrPLSCG	SCR Reagent Heating: Short circuit to ground error (Pressure Line Heater)	7ABA-1F	SCR Reagent Heating	The Power stage of Urea Pressure Line heater is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside SCR Reagent Heating	Check of wiring, replace SCR Reagent Heating	Frequency: ON Lamp: Amber (SVS)	31418-31
UHtrSLOL	Urea Suction Line Heater Actuator power stage: Open Load error	53BA-1F	SCR Reagent Heating	The Power stage of UREA Suction Line Heater is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective UREA Suction Line Heater	Check of wiring, replace UREA Suction Line Heater	Frequency: ON Lamp: Amber (SVS)	21434-31
UHtrSLOvrTemp	Over Temperature error of Urea Suction Line Heater Actuator power stage	84BA-1F	SCR Reagent Heating	The Power stage of UREA Suction Line Heater is monitored by Hardware for electric failures and ver temperature errors.	High battery voltage, high temperature inside ECU, high load or wiring problem or actuator defective Check battery voltage, wiring, power stage and under or		Frequency: ON Lamp: Amber (SVS)	33978-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UHtrSL SCB	Urea Suction Line Heater Actuator power stage: Short Circuit to Battery	61BA-1F	SCR Reagent Heating	The Power stage of UREA Suction Line Heater is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside UREA Suction Line Heater	Check of wiring, replace UREA Suction Line Heater	Frequency: ON Lamp: Amber (SVS)	25018-31
UHtrSL SCG	Urea Suction Line Heater Actuator power stage: Short Circuit to Ground	72BA-1F	SCR Reagent Feeding	The Power stage of UREA Suction Line Heater is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside UREA Suction Line Heater	Check of wiring, replace UREA Suction Line Heater	Frequency: ON Lamp: Amber (SVS)	29370-31
UHtrS MFET	Urea Supply Module Heater Field Effect Transistor error	E96A-1F	None	Supply Module heater control is monitored			Frequency: no lamp Lamp: no lamp	59754-31
UHtrS MIPhys RngHiD iag	Supply Module Heater: Current feedback too high	1B7A-1F	SCR Reagent Heating	Current feedback of UREA Supply Module Heater is monitored.			Frequency: no lamp Lamp: no lamp	7034-31
UHtrS MIPhys RngLo Diag	Supply Module Heater: Current feedback too low	2C7A-1F	SCR Reagent Heating	Current feedback of UREA Supply Module Heater is monitored.			Frequency: ON Lamp: Amber (SVS)	11386-31
UHtrS MOL	Urea Supply Module Heater Actuator power stage: Open Load error	563A-1F	SCR Reagent Heating	The Power stage of UREA Supply Module Heater is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective UREA Supply Module Heater	Check of wiring, replace UREA Supply Module Heater	Frequency: ON Lamp: Amber (SVS)	22074-31
UHtrS MSCB	Urea Supply Module Heater Actuator power stage: Short Circuit to Battery	643A-1F	SCR Reagent Heating	The Power stage of UREA Supply Module Heater is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside UREA Supply Module Heater	Check of wiring, replace UREA Supply Module Heater	Frequency: ON Lamp: Amber (SVS)	25658-31
UHtrS MSCG	Urea Supply Module Heater Actuator power stage: Short Circuit to ground	753A-1F	SCR Reagent Heating	The Power stage of UREA Supply Module Heater is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside UREA Supply Module Heater	Check of wiring, replace UREA Supply Module Heater	Frequency: ON Lamp: Amber (SVS)	30010-31
UHtrS MUPhy sRngHi Diag	Supply Module Heater: Voltage feedback too high	1D7A-1F	SCR Reagent Heating	Voltage feedback of UREA Supply Module Heater is monitored.			Frequency: no lamp Lamp: no lamp	7546-31
UHtrS MUPhy sRngLo Diag	Supply Module Heater: Voltage feedback too low	2E7A-1F	SCR Reagent Heating	Voltage feedback of UREA Supply Module Heater is monitored.			Frequency: ON Lamp: Amber (SVS)	11898-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UHtrTnkOL	SCR Reagent Heating: No load error (Reagent Tank Heater)	569A-1F	SCR Reagent Heating	The Power stage of the Urea Tank heater is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Urea Tank Heater	Check of wiring, replace Urea Tank Heater	Frequency: ON Lamp: Amber (SVS)	22170-31
UHtrTnkOvrTemp	Over Temperature error of Urea Tank Heater Actuator power stage	879A-1F	SCR Reagent Heating	The Power stage of UREA Tank Heater is monitored by Hardware for electric failures and ver temperature errors.	High battery voltage, high temperature inside ECU, high load or wiring problem or actuator defective	Check battery voltage, wiring, power stage and under or	Frequency: ON Lamp: Amber (SVS)	34714-31
UHtrTnkSCB	SCR Reagent Heating: Short circuit to battery error (Reagent Tank Heater)	649A-1F	SCR Reagent Heating	The Power stage of the Urea Tank heater is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside Urea Tank Heater	Check of wiring, replace Urea Tank Heater	Frequency: ON Lamp: Amber (SVS)	25754-31
UHtrTnkSCG	SCR Reagent Heating: Short circuit to ground error (Reagent Tank Heater)	759A-1F	SCR Reagent Heating	The Power stage of the Urea Tank heater is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Urea Tank Heater	Check of wiring, replace Urea Tank Heater	Frequency: ON Lamp: Amber (SVS)	30106-31
Unused	0:	1-	None				Frequency: no lamp Lamp: no lamp	-
UPmpMotNDvt	SCR Reagent Pump: Pump motor speed deviation	345A-1F	SCR Reagent Pump	The UREA dosing system is equipped with an intelligent pump motor driver, which monitors the pump speed according the Pump Request PWM. If there is a Pump speed deviation, the pump driver reports an "OL" or "SCG" Error for a dedicated time duration between 4,50s and ,50s I f the Failure state is active > 4,50s but expires before 5,50s, the failure Path "UPmpMotNDvt" is set active. If the failure state "SCG" or "OL" is active less than 4,50s or longer than 5,50s, there is the normal debouncing of the failure "UPmpMotOL" resp. "UPmpMotSCG", which get active after 2,00s resp. 8,00s.	Pump motor defective (blocked, possibly due to crystallisation (after long stand under periode) or frozen UREA in case of cold ambient condition)	Check if Pump is delivering: If OK: failure is only sporadic (possibly long still stand under e or by frozen Reagent - check ambient conditions) --> probably no action needed. If failure appears several times --> replace pump module. If Not OK: Replace Pump module	Frequency: ON Lamp: Amber (SVS)	13402-31
UPmpMotNDvtPerm	SCR Reagent Pump: Permanent Pump Motor Speed Deviation	335A-1F	SCR Reagent Pump	The UREA dosing system is equipped with an intelligent pump motor driver, which monitors the pump speed according the Pump Request PWM.	Pump motor defective (blocked, possibly due to crystallisation (after long stand under periode) or frozen UREA in case of cold ambient condition)	Check if Pump is delivering: If OK: failure is only sporadic (possibly long still stand under e or by frozen Reagent - check ambient conditions) --> probably no action needed. If failure appears several times --> replace pump module. If Not OK: Replace Pump module	Frequency: ON Lamp: Amber (SVS)	13146-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UPmp MotNo Avl	SCR Reagent Pump: UREA pump motor non availability after temperature measurement	325A-1F	SCR Reagent Pump	UREA pump module works either in temperature measurement mode (to determine if defreezing/heat-up is necessary) and under es then pump actuation mode, to build up UREA pressure and under e to inject.			Frequency: ON Lamp: Amber (SVS)	12890-31
UPmp MotOL	SCR Reagent Pump: No load error on power stage for urea pump motor	515A-1F	SCR Reagent Pump	The Power stage for UREA Pump is controlled by Hardware for electrical failures.	Broken or disconnected wiring or defective relay	Check of wiring, replace Urea pump motor	Frequency: ON Lamp: Amber (SVS)	20826-31
UPmp MotOv rTemp	SCR Reagent Pump: Over temperature error on power stage for urea pump motor	833A-1F	SCR Reagent Pump	The Power stage for UREA Pump is controlled by Hardware for electrical failures.	High battery voltage, high temperature inside ECU, high load or wiring problem	No reaction needed if failure isn't present after short time, check load and under , check wiring, replace ECU	Frequency: ON Lamp: Amber (SVS)	33594-31
UPmp MotSC B	SCR Reagent Pump: Short circuit to battery error on power stage for urea pump motor	613A-1F	SCR Reagent Pump	The Power stage for UREA Pump is controlled by Hardware for electrical failures	Short circuit of wiring to external source or inside Urea pump motor	Check of wiring, replace Urea pump motor	Frequency: ON Lamp: Amber (SVS)	24890-31
UPmp MotSC G	SCR Reagent Pump: Short circuit to ground error on power stage for urea pump motor	723A-1F	SCR Reagent Pump	The Power stage for UREA Pump is controlled by Hardware for electrical failures.	Short circuit of wiring to ground or inside Urea pump motor	Check of wiring, replace Urea pump motor	Frequency: ON Lamp: Amber (SVS)	29242-31
UPmpP PhysRn gHi	Urea Pressure sensor Pump Module: Physical Signal above maximum limit	155A-1F	SCR Reagent pressure sensor	The signal of the Reagent pressure sensor is checked, for physical range plausibility The measured relative pressure is summed to environmental pressure and ed to absolute pressure measure channel SCR_pAbsSensUPmpP.	Sensor in Pump module inaccurate or defective, defect in the wiring	Check wiring and he accuracy of the pressure sensor and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	5466-31
UPmpP PhysRn gLo	Urea Pressure sensor Pump Module: Physical Signal below minimum limit	265A-1F	SCR Reagent pressure sensor	The signal of the Reagent pressure sensor is checked, for physical range plausibility The measured relative pressure is summed to environmental pressure and ed to absolute pressure measure channel SCR_pAbsSensUPmpP.	Sensor in Pump module inaccurate or defective, defect in the wiring	Check wiring and he accuracy of the pressure sensor and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	9818-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UPmpP PlausMax	SCR Reagent pressure sensor: Drift to too high pressure	185A-1F	SCR Reagent pressure sensor	The signal of the Reagent pressure sensor is checked, when the Dosing system is not pressurised. In this case the relative Reagent pressure must be near 0. The measured relative pressure is corrected depending on ambient temperature ,(from 0,00hPa at -2508,30° C over 0,00hPa at -2458,30° C and under a at -2378,30° C to 0,00hPa at -2308,30° C. The corrected reagent pressure must be between -500,00hPa and under hPa, otherwise the signal is not reliable.	Sensor in Pump module defective Possibly emptying not executed correctly (clogged tubes, reverting valve not opening etc)	Check sensor signal: Set Pump speed to 0, wait 1 minute (to give to the system for pressure release), open dosing valve to 100%, wait again some seconds and under e the UREA pressure: the value must be near 0 (between -500,00hPa and under hPa) If OK --> failure occurred under "strange circumstances" and under seems OK. If not OK: Check if system clogged: Backflow test:Set pressure to ~5 bar, switch off pump (set to 0) --> pressure must decrease slowly --> if OK tube OK Dosing test: Set pressure to ^5bar, switch off pump, open dosing valve 100% --> pressure must decrease fast. --> if OK --> sensor does not measure correctly --> replace sensor (or whole pump module) If pressure does not decrease: dismount dosing valve and under "dosing test". If UREA exits form dosing valve --> pressure sensor defect, if no flow --> dosing valve or UREA tubes possibly clogged.	Frequency: ON Lamp: Amber (SVS)	6234-31
UPmpP PlausMin	SCR Reagent pressure sensor: Drift to too low pressure	275A-1F	SCR Reagent pressure sensor	The signal of the Reagent pressure sensor is checked, when the Dosing system is not pressurised. In this case the relative Reagent pressure must be near 0. The measured relative pressure is corrected depending on ambient temperature ,(from 0,00hPa at -2508,30° C over 0,00hPa at -2458,30° C and under a at -2378,30° C to 0,00hPa at -2308,30° C. The corrected reagent pressure must be between -500,00hPa and under hPa, otherwise the signal is not reliable.	Sensor in Pump module defective Possibly emptying not exectued correctly (clogged tubes, reverting valve not opening etc)	Check sensor signal: Set Pump speed to 0, wait 1 minute (to give to the system for pressure release), open dosing valve to 100%, wait again some seconds and under e the UREA pressure: the value must be near 0 (between -500,00hPa and under hPa) If OK --> failure occurred under "strange circumstances" and under seems OK. If not OK: Check if system clogged: Backflow test:Set pressure to ~5 bar, switch off pump (set to 0) --> pressure must decrease slowly --> if OK tube OK Dosing test: Set pressure to ^5bar, switch off pump, open dosing valve 100% --> pressure must decrease fast. --> if OK --> sensor does not measure correctly --> replace sensor (or whole pump module) If pressure does not decrease: dismount dosing valve and under "dosing test". If UREA exits form dosing valve --> pressure sensor defect, if no flow --> dosing valve or UREA tubes possibly clogged.	Frequency: ON Lamp: Amber (SVS)	10074-31
UPmpP Sig	Urea Pump module pressure sensor: CAN message reports a defect	4B5A-1F	SCR Reagent pressure sensor	The Urea Pump Module Pressure is read from the sensor through the ADC. This raw voltage value read from the ADC is available as SCR_uRawUPmpP. The raw voltage is checked for Signal Range Errors and hen transformed into absolute physical value SCR_pAbsSensUPmpP.	Urea Pump Module Pressure sensor defective	Check sensor and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	19290-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UPmpPSRCMax	Urea Pump module pressure sensor: Signal above maximum limit.	195A-1F	SCR Reagent pressure sensor	The Urea Pump Module Pressure is read from the sensor through the ADC. This raw voltage value read from the ADC is available as SCR_uRawUPmpP. The raw voltage is checked for Signal Range Errors and hen transformed into absolute physical value SCR_pAbsSensUPmpP.	Urea Pump Module Pressure sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	6490-31
UPmpPSRCMin	Urea Pump module pressure sensor: Signal below minimum limit.	2A5A-1F	SCR Reagent pressure sensor	The Urea Pump Module Pressure is read from the sensor through the ADC. This raw voltage value read from the ADC is available as SCR_uRawUPmpP. The raw voltage is checked for Signal Range Errors and hen transformed into absolute physical value SCR_pAbsSensUPmpP.	Urea Pump Module Pressure sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	10842-31
UQlSensPropRdcAgOL	UREA quality sensor: Concentration signal Open Load error	514E-1F	SCR Reagent Qualtity	Urea quality sensor is monitored for electrical failures. Sensor is connected via CAN, status of the sensor is reported via CAN message.	Sensor defective	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	20814-31
UQlSensPropRdcAgSCB	UREA quality sensor: Concentration signal Short Circuit to Battery	624E-1F	SCR Reagent Qualtity	Urea quality sensor is monitored for electrical failures. Sensor is connected via CAN, status of the sensor is reported via CAN message.	Sensor defective	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	25166-31
UQlSensPropRdcAgSCG	UREA quality sensor: Concentration signal Short Circuit to Ground	734E-1F	SCR Reagent Qualtity	Diagnostic Fault Check to indicate ShortCut to Ground reported via SCR_stPropRdcAgFMI	Sensor defect	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	29518-31
UQlSensPropRdcAgSRCMax	UREA quality sensor: Concentration value SRC high	144E-1F	SCR Reagent Qualtity	Urea quality sensor is monitored for electrical failures. Sensor is connected via CAN, status of the sensor is reported via CAN message.	UREA quality sensor defective	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	5198-31
UQlSensPropRdcAgSRCMin	UREA quality sensor: Concentration value SRC low	254E-1F	SCR Reagent Qualtity	Urea quality sensor is monitored for electrical failures. Sensor is connected via CAN, status of the sensor is reported via CAN message.	UREA quality sensor defective	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	9550-31
UQlSensPropRdcAgSysErr	UREA quality sensor: sensor reports self diagnostic error for concentration signal	464E-1F	SCR Reagent Qualtity	Urea quality sensor is monitored for electrical failures. Sensor is connected via CAN, status of the sensor is reported via CAN message.	Sensor defective	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	17998-31
UQlSensTRdcAg2OL	UREA quality sensor: Temperature signal Open Load	574E-1F	SCR Reagent Qualtity	A temperature sensor is installed inside Urea Quality Sensor. Temperature sensor is monitored for electrical failures. Sensor is connected via CAN, status of the sensor is reported via CAN message.	Temperature sensor inside Urea quality sensor defective	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	22350-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UQISensTRdcAg2SCB	UREA quality sensor: Temperature signal Short Circuit to Battery	684E-1F	SCR Reagent Qualtity	A temperature sensor is installed inside Urea Quality Sensor. Temperature sensor is monitored for electrical failures. Sensor is connected via CAN, status of the sensor is reported via CAN message.	Temperature sensor inside Urea quality sensor defective	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	26702-31
UQISensTRdcAg2SCG	UREA quality sensor: Temperature signal Short Circuit to Ground	794E-1F	SCR Reagent Qualtity	A temperature sensor is installed inside Urea Quality Sensor. Temperature sensor is monitored for electrical failures. Sensor is connected via CAN, status of the sensor is reported via CAN message.	Temperature sensor inside Urea quality sensor defective	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	31054-31
UQISensTRdcAg2SRCMax	UREA quality sensor: Temperature value SRC high	1A4E-1F	SCR Reagent Qualtity	A temperature sensor is installed inside Urea Quality Sensor. Temperature sensor is monitored for electrical failures. Sensor is connected via CAN, status of the sensor is reported via CAN message.	Temperature sensor inside Urea quality sensor defective	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	6734-31
UQISensTRdcAg2SRCMin	UREA quality sensor: Temperature value SRC low	1B4E-1F	SCR Reagent Qualtity	A temperature sensor is installed inside Urea Quality Sensor. Temperature sensor is monitored for electrical failures. Sensor is connected via CAN, status of the sensor is reported via CAN message.	Temperature sensor inside Urea quality sensor defective	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	6990-31
UQISensTRdcAg2SysErr	UREA quality sensor: sensor reports self diagnostic error for temperature signal	4C4E-1F	SCR Reagent Qualtity	A temperature sensor is installed inside Urea Quality Sensor. Temperature sensor is monitored for electrical failures. Sensor is connected via CAN, status of the sensor is reported via CAN message.	Temperature sensor inside Urea quality sensor defective	Replace UREA Quality Sensor	Frequency: ON Lamp: Amber (SVS)	19534-31
URevVlvOL	SCR Reverting Valve: No load error	5E5A-1F	SCR Reverting Valve	The Power stage of Urea Reverting Valve Actuator is monitored by Hardware for electric failures.	Broken or disconnected wiring or defective Urea Reverting Valve Actuator	Check of wiring, replace Urea Reverting Valve Actuator	Frequency: ON Lamp: Amber (SVS)	24154-31
URevVlvOvrTemp	DFC for Over Temperature of urea reverting valve actuator power stage	8F5A-1F	SCR Reverting Valve	The Power stage of Urea Reverting Valve Actuator is monitored by Hardware for electric failures.	High battery voltage, high ECU temperature and igh load or defective wiring, power stage or Reverting Valve Actuator defective	Check battery voltage, wiring, power stage and under ing Valve Actuator	Frequency: ON Lamp: Amber (SVS)	36698-31
URevVlvSCB	SCR Reverting Valve: Short circuit to battery error	6C5A-1F	SCR Reverting Valve	The Power stage of Urea Reverting Valve Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to external source or inside Urea Reverting Valve Actuator	Check of wiring, replace Urea Reverting Valve Actuator	Frequency: ON Lamp: Amber (SVS)	27738-31
URevVlvSCG	SCR Reverting Valve: Short circuit to ground error	7D5A-1F	SCR Reverting Valve	The Power stage of Urea Reverting Valve Actuator is monitored by Hardware for electric failures.	Short circuit of wiring to ground or inside Urea Reverting Valve Actuator	Check of wiring, replace Urea Reverting Valve Actuator	Frequency: ON Lamp: Amber (SVS)	32090-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UrHeatrCtrlUnitMissU	UREA Heater Control Unit: Missing voltage detected	4F7A-1F	SCR Reagent Heating	Pressure line and under module heaters are actuated by the HCU (Heater Control Unit). The HCU is communicating with the ECU via CAN, providing the required information for diagnosis and under of actuation and under ting the actuation command rom the ECU.			Frequency: no lamp Lamp: no lamp	20346-31
UrHeatrCtrlUnitNVM	UREA Heater Control Unit: Non Volatile Memory error detected	EC8A-1F	SCR Reagent Heating	Pressure line and under module heaters are actuated by the HCU (Heater Control Unit). The HCU is communicating with the ECU via CAN, providing the required information for diagnosis and under of actuation and under ting the actuation command rom the ECU.			Frequency: no lamp Lamp: no lamp	60554-31
UrHeatrCtrlUnitOT	UREA Heater Control Unit: Over Temperature Error detected	ED8A-1F	SCR Reagent Heating	Pressure line and under module heaters are actuated by the HCU (Heater Control Unit). The HCU is communicating with the ECU via CAN, providing the required information for diagnosis and under of actuation and under ting the actuation command rom the ECU.			Frequency: no lamp Lamp: no lamp	60810-31
UrHeatrCtrlUnitOverU	UREA Heater Control Unit: Over Voltage Error detected	EE8A-1F	SCR Reagent Heating	Pressure line and under module heaters are actuated by the HCU (Heater Control Unit). The HCU is communicating with the ECU via CAN, providing the required information for diagnosis and under of actuation and under ting the actuation command rom the ECU.			Frequency: no lamp Lamp: no lamp	61066-31
UrHeatrCtrlUnitUnderU	UREA Heater Control Unit: Under Voltage Error detected	EF8A-1F	SCR Reagent Heating	Pressure line and under module heaters are actuated by the HCU (Heater Control Unit). The HCU is communicating with the ECU via CAN, providing the required information for diagnosis and under of actuation and under ting the actuation command rom the ECU.			Frequency: ON Lamp: Amber (SVS)	61322-31
UrQlySnsrCndErr	DEV qualty sensor; Reducing agent conductivity outside range	4ACA-1F	SCR Reagent Qualtity	The functionality determines whether the signal provided by the urea quality sensor is plausible, and under s the signal depending on various system conditions. Conductivity of reducing agent is checked.	Reducing agent conductivity outside accepted range, possibly a fluid other than DEV in the tank	Check DEV tank content, replace fluid if necessary	Frequency: ON Lamp: Amber (SVS)	19146-31
UrQlySnsrConcErr	DEV quality sensor; Reducing agent concentration outside range	4BCA-1F	SCR Reagent Qualtity	The functionality determines whether the signal provided by the urea quality sensor is plausible, and under s the signal depending on various system conditions. Concentration of reducing agent is checked.	Reducing agent concentration outside accepted range	Check DEV tank content, replace fluid if necessary	Frequency: ON Lamp: Amber (SVS)	19402-31
UrQlySnsrCritErr	DEV qualty sensor; critical fluid identified	4CCA-1F	SCR Reagent Qualtity	The functionality determines whether the signal provided by the urea quality sensor is plausible, and under s the signal depending on various system conditions. The sensor can activate a critical error if the fluid in the tank is identified as potentiially destructive for the system Possible states indicated by the sensor (SCR_stTypRdcAg): 0 == Urea 1== Water 2== Dlesel 8 == Air 9 == frozen 13 == unknown	Critical substance instead of reagent was detected (diesel or other fluid potentially destructive)	Replace reagent	Frequency: ON Lamp: Amber (SVS)	19658-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UrQlyS nsrT	DEV qualty sensor; Temperature not plausible, sensor possibly dismounted	4DCA-1F	SCR Reagent Qualtity	The functionality determines whether the signal provided by the urea quality sensor is plausible, and under s the signal depending on various system conditions. The sensor plausibility check is done via a temperature check during startup and continuous check during runtime. Measured temperature should match DEV-tank temperature, otherwise the sensor is possibly dismounted.	Quality Sensor not mounted in the DEV circuit, possible tampering	Check sensor mounting, check temperature measured value both on tank and under .	Frequency: ON Lamp: Amber (SVS)	19914-31
UrQlyS nsrTStrt Up	DEV qualty sensor; Temperature not plausible at cold start, sensor possibly dismounted	49CA-1F	SCR Reagent Qualtity	The functionality determines whether the signal provided by the urea quality sensor is plausible, and under s the signal depending on various system conditions. The sensor plausibility check is done via a temperature check during startup and continuous check during runtime. Measured temperature should match DEV-tank temperature, otherwise the sensor is possibly dismounted.	Quality Sensor not mounted in the DEV circuit, possible tampering	Check sensor mounting, check temperature measured value both on tank and under .	Frequency: ON Lamp: Amber (SVS)	18890-31
UTnkLv lPhysRn gHi	Urea Tank Level Sensor: Physical Signal above maximum limit	11AA-1F	SCR Reagent Tank Level	If the Signal of the UREA tank level is not in the range between 40,00mm and under mm, the signal is physically not plausible and under ore a failure is stored.	Tank level sensor drifted or not correctly mounted Partial short circuit on wiring harness or Level sensor	Check tank level sensor Check wiring	Frequency: no lamp Lamp: no lamp	4522-31
UTnkLv lPhysRn gLo	Urea Tank Level Sensor: Physical Signal below minimum limit	22AA-1F	SCR Reagent Tank Level	If the Signal of the UREA tank level is not in the range between 40,00mm and under mm, the signal is physically not plausible and under ore a failure is stored.	Tank level sensor drifted or not correctly mounted Partial short circuit on wiring harness or Level sensor	Check tank level sensor Check wiring	Frequency: no lamp Lamp: no lamp	8874-31
UTnkLv lSRCMa x	Urea Tank Level; SRC high error	1BD6-1F	SCR Reagent Tank Level	Urea Tank level Sensor is connected via hardware pin	Sensor defective or short circuit in wiring to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	7126-31
UTnkLv lSRCMi n	Urea Tank Level; SRC low error	2CD6-1F	SCR Reagent Tank Level	Urea Tank level Sensor is connected via hardware pin	Sensor defective or short circuit in wiring to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	11478-31
UTnkLv lSysErr	Urea Tank Level: system error	3DD6-1F	SCR Reagent Tank Level	Urea Tank level Sensor is connected via hardware pin	Urea tank level sensor reports a system error	Replace sensor	Frequency: ON Lamp: Amber (SVS)	15830-31
UTnkT PhysRn gHi	SCR Reagent Tank Temperature sensing: Diagnostic Fault Check for Physical Signal above maximum limit	13AA-1F	SCR Reagent Tank Temperatrue sensing	The signal from Urea tank temperature sensor connected via hardware to the ECM is converted into a physical value which should lie in a plausible range.	Inaccurate or defective Urea tank temperature sensor, or defect in the wiring of the sensor	Check wiring and he accuracy of the Urea tank temperature sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	5034-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
UTnkT PhysRngLo	SCR Reagent Tank Temperature sensing: Diagnostic Fault Check for Physical Signal below minimum limit	24AA-1F	SCR Reagent Tank Temperatrue sensing	The signal from Urea tank temperature sensor connected via hardware to the ECM is converted into a physical value which should lie in a plausible range.	Inaccurate or defective Urea tank temperature sensor, or defect in the wiring of the sensor	Check wiring and he accuracy of the Urea tank temperature sensor and under e it if necessary	Frequency: no lamp Lamp: no lamp	9386-31
UTnkT Sig	SCR Reagent Tank Temperature sensing: Signal error for CAN message	49AA-1F	SCR Reagent Tank Temperatrue sensing	Urea tank temperature sensor is connected via hardware to the ECM. The Urea temperature is read from Sensor through analogic Digital Converter (SCR_uRawUTnkT) and f the signal range check is passed, signal is converted into a physical value in channel SCR_tSensUTnkT.	Urea tank temperature sensor defective	Check sensor and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	18858-31
UTnkT SRCMax	SCR Reagent Tank Temperature sensing: SRC high for Urea temperature sensor	15AA-1F	SCR Reagent Tank Temperatrue sensing	Urea tank temperature sensor is connected via hardware to the ECM. The Urea temperature is read from Sensor through analogic Digital Converter (SCR_uRawUTnkT) and f the signal range check is passed, signal is converted into a physical value in channel SCR_tSensUTnkT. A signal range check is performed on the signal.	Sensor defective or short circuit in wiring to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	5546-31
UTnkT SRCMin	SCR Reagent Tank Temperature sensing: SRC low for Urea temperature sensor	26AA-1F	SCR Reagent Tank Temperatrue sensing	Urea tank temperature sensor is connected via hardware to the ECM. The Urea temperature is read from Sensor through analogic Digital Converter (SCR_uRawUTnkT) and f the signal range check is passed, signal is converted into a physical value in channel SCR_tSensUTnkT.	Short circuit of sensor to battery or defective sensor	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	9898-31
UTnkT SysErr	Urea Tank Temperature; system error	21E6-1F	SCR Temp Sensing	Urea tank temperature sensor is connected via hardware to the ECM. The Urea temperature is read from Sensor through analogic Digital Converter (SCR_uRawUTnkT) and f the signal range check is passed, signal is converted into a physical value in channel SCR_tSensUTnkT.	Urea tank temperature sensor reports a system error	Replace sensor	Frequency: ON Lamp: Amber (SVS)	8678-31
UTnkT VDPlausTemp Max	UREA Tank Temperature: Tank temperature sensor plausibility check failed (> max drift)	17AA-1F	SCR Temp Sensing	Urea Tank Temperature plausibility is checked by comparison with environmental temperature	Urea Tank temperature sensor drifted	Check sensor connector, wiring and under measured value	Frequency: ON Lamp: Amber (SVS)	6058-31
UTnkT VDPlausTemp Min	UREA Tank Temperature: Tank temperature sensor plausibility check failed (< min drift)	28AA-1F	SCR Temp Sensing	Urea Tank Temperature plausibility is checked by comparison with environmental temperature	Urea Tank temperature sensor drifted	Check sensor connector, wiring and under measured value	Frequency: ON Lamp: Amber (SVS)	10410-31
VehNCrdCAN Sig	Signal error for cardan speed over CAN	43E1-1F	Vehicle speed sensor	Cardan speed signal via CAN is monitored for plausible value	Sensor connected via CAN announces not valid signal	Check sensor	Frequency: no lamp Lamp: no lamp	17377-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
VehVCANRplDef	CAN vehicle speed source and RWS replacement defect	44E1-1F	Vehicle speed sensor	Selected wheel speed signal and he HRWS wheel speed is not valid front wheels signal is selected.	Wheel speed sensor defective	Check wheel speed sensor	Frequency: no lamp Lamp: no lamp	17633-31
VehVCANSig	Vehicle speed sensor: Vehicle speed signal via CAN defective	45E1-1F	Vehicle speed sensor	Vehicle speed and under shaft speed are calculated from the following signal source: Vehicle speed signal, acquired via CAN interface and under ed to ECM with CAN message Com_vVeh and under drS	Defective or incorrect functioning of vehicle speed measuring device	Check speed measuring device for proper functioning	Frequency: no lamp Lamp: no lamp	17889-31
VehVMax	Vehicle speed sensor: Maximum threshold error for vehicle speed	46E1-1F	Vehicle speed sensor	The Plausibility check is based on fact, that the vehicle can not run faster than 200,00km/h in any case (i.e. including down hill etc.). If the measured value is higher, it has to be taken as not plausible. Vehicle speed signal is acquired via CAN interface and under ed to ECM with CAN message Com_vV Plausibility of measured value is checked.	Real overspeed, i.e. by engine tuning (??) Incorrect speed evaluation (depending on signal source by Wheel Speed Information, Tachograph Output, disturbed CAN)	Check measuring device and under e it if necessary. No action in case of real vehicle overspeed or engine tuning	Frequency: ON Lamp: Amber (SVS)	18145-31
VehVNplMon	Vehicle speed sensor: sensor not connected	37E1-1F	Vehicle speed sensor	Vehicle speed signal is acquired via CAN interface and under ed to ECM with CAN message Com_vV	Defective vehicle speed sensor, wiring defect, wrong voltage supply	Check vehicle speed sensor, wiring harness and under y voltage	Frequency: ON Lamp: Amber (SVS)	14305-31
VehVPhysRngHi	Vehicle speed sensor: Physical signal range check High	18E1-1F	Vehicle speed sensor	There are physical limits of the signal sensing defined in level2 of ECU. If the evaluated signal is higher, the signal sensing must be defective. Vehicle speed signal is acquired via CAN interface and under ed to ECM with CAN message Com_vV. Plausibility of measured value is checked.	Defective vehicle speed sensor.	Check vehicle speed sensor	Frequency: no lamp Lamp: no lamp	6369-31
VehVPhysRngLo	Vehicle speed sensor: Physical signal range check Low	29E1-1F	Vehicle speed sensor	There are physical limits of the signal sensing defined in level2 of ECU. If the evaluated signal is lower, the signal sensing or evaluation must be defective. Vehicle speed signal is acquired via CAN interface and under ed to ECM with CAN message Com_vV. Plausibility of measured value is checked.	Defective vehicle speed sensor.	Check vehicle speed sensor	Frequency: no lamp Lamp: no lamp	10721-31
VehVPlaus	Vehicle speed sensor: Vehicle speed is not plausible to engine speed and under	3AE1-1F	Vehicle speed sensor	The Plausibility of the vehicle speed sensor is based on the assumption, that the engine can not be driven with load at vehicle stand under (except engaged PTO), i.e. a vehicle speed > 10,00km/h should be measured, if the engine is driven with engine speed > 2000,00rpm and oad > 100,00Nm for at least 16,67min. Vehicle speed signal is acquired via CAN interface and under ed to ECM with CAN message Com_vV. Plausibility of measured value is checked.	Defective vehicle speed sensor. Engine driven under load without PTO (i.e. external PTO) In very cold situation possible due to "engine warming up at higher speed" and under e stand under (high torque request in case of "non liquid oil")	Check vehicle speed sensor Check if "external PTO" used Check if failure occurred at very low engine temperature < -10°C)	Frequency: ON Lamp: Amber (SVS)	15073-31
VehVSRCHi	Vehicle speed sensor: short circuit to battery	1BE1-1F	Vehicle speed sensor	Vehicle speed signal is acquired via CAN interface and under ed to ECM with CAN message Com_vVeh	Defective vehicle speed sensor, wiring defect, excessive voltage supply	Check vehicle speed sensor, wiring harness and under y voltage	Frequency: no lamp Lamp: no lamp	7137-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
VehVSRCLo	Vehicle speed sensor: short circuit to ground	2CE1-1F	Vehicle speed sensor	Vehicle speed signal is acquired via CAN interface and under ed to ECM with CAN message Com_vVeh	Defective vehicle speed sensor, wiring defect, insufficient voltage supply	Check vehicle speed sensor, wiring harness and under y voltage	Frequency: no lamp Lamp: no lamp	11489-31
VehVTachMax	Vehicle speed sensor: tachometer signal - pulse width too long	1DE1-1F	Vehicle speed sensor	Vehicle speed signal is acquired via CAN interface and under ed to ECM with CAN message Com_vVeh	Defect in the tachometer speed signal acquisition or wrong configuration of the device	Check tachometer for broken components and under t functioning, clean components or replace tachometer if necessary	Frequency: ON Lamp: Amber (SVS)	7649-31
VehVTachMin	Vehicle speed sensor: tachometer signal - pulse width too short	2EE1-1F	Vehicle speed sensor	Vehicle speed signal is acquired via CAN interface and under ed to ECM with CAN message Com_vVeh	Defect in the tachometer speed signal acquisition or wrong configuration of the device	Check tachometer for broken components and under t functioning, clean components or replace tachometer if necessary	Frequency: ON Lamp: Amber (SVS)	12001-31
VehVTachSig	Vehicle speed sensor: tachometer signal - period duration too short	4FE1-1F	Vehicle speed sensor	Vehicle speed signal is acquired via CAN interface and under ed to ECM with CAN message Com_vVeh	Defect in the tachometer speed signal acquisition or wrong configuration of the device	Check tachometer for broken components and under t functioning, clean components or replace tachometer if necessary	Frequency: ON Lamp: Amber (SVS)	20449-31
VSLimLmpOL	Vehicle speed limitation lamp: No load error	5131-1F	Vehicle speed limitation lamp	The Power stage for the control lamp for Vehicle speed limitation activation is monitored for electrical failures	Broken or disconnected wiring or defective vehicle speed limitation lamp	Check of wiring or replacement of vehicle speed limitation lamp	Frequency: no lamp Lamp: no lamp	20785-31
VSLimLmpOvrTemp	Over temperature error on the power stage	8231-1F	Vehicle speed limitation lamp	The Power stage for the control lamp for Vehicle speed limitation activation is controlled by Hardware for electrical failures	High battery voltage, high temperature inside ECU, high load or wiring problem or problem inside vehicle speed limitation lamp	Check battery voltage, wiring, power stage and under e speed limitation lamp	Frequency: no lamp Lamp: no lamp	33329-31
VSLimLmpSCB	Vehicle speed limitation lamp: Short circuit to battery error	6331-1F	Vehicle speed limitation lamp	The Power stage for the control lamp for Vehicle speed limitation activation is controlled by Hardware for electrical failures	Short circuit of wiring to external source or inside vehicle speed limitation lamp	Check of wiring, replace vehicle speed limitation lamp	Frequency: no lamp Lamp: no lamp	25393-31
VSLimLmpSCG	Vehicle speed limitation lamp: Short circuit to ground error	7431-1F	Vehicle speed limitation lamp	The Power stage for the control lamp for Vehicle speed limitation activation is controlled by Hardware for electrical failures	Short circuit of wiring to ground or inside vehicle speed limitation lamp	Check of wiring, replace vehicle speed limitation lamp	Frequency: no lamp Lamp: no lamp	29745-31
WtrCooltP1PhysRngHi	Primary Coolant Pressure Sensor: Physical signal above maximum limit	1183-1F	Coolant pressure		Excessive Primary coolant pressure measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: ON Lamp: Amber (SVS)	4483-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
WtrCoolP1PhysRngLo	Primary Coolant Pressure Sensor: Physical signal below minimum limit	2283-1F	Coolant pressure		Excessively low Primary coolant pressure is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: ON Lamp: Amber (SVS)	8835-31
WtrCoolP1SRCMax	Primary Coolant Pressure Sensor: SRC high for pressure sensor	1383-1F	Coolant pressure		Sensor defective or wiring short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	4995-31
WtrCoolP1SRCMin	Primary Coolant Pressure Sensor: SRC low for pressure sensor	2483-1F	Coolant pressure		Sensor defective or short circuit to ground in the wiring	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	9347-31
WtrCoolPPhysRngHi	Secondary coolant circut pressure physical range high	1793-1F	Coolant pressure	Pressure in the secondary coolant circuit is monitored	Excessive secondary coolant circuit pressure is measured	Check cause for exceeding maximum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: ON Lamp: Amber (SVS)	6035-31
WtrCoolPPhysRngLo	Secondary coolant circut pressure physical range low	2893-1F	Coolant pressure	Pressure in the secondary coolant circuit is monitored	Excessively low secondary coolant circuit pressure is measured	Check cause for value to fall below minimum allowed threshold (like environmental factors, system problem or engine misuse). If threshold exceeding is implausible check wiring and he accuracy of the sensor and under e it if necessary.	Frequency: ON Lamp: Amber (SVS)	10387-31
WtrCoolPSig	Secondary coolant circut pressure: signal invalid	4993-1F	Coolant pressure	Pressure in the secondary coolant circuit is monitored	Sensor for Pressure in the secondary coolant circuit defective	Check sensor and under e it if necessary	Frequency: ON Lamp: Amber (SVS)	18835-31
WtrCoolPSRCMax	Secondary coolant circuit pressure: Signal Range Check error high	1A93-1F	Coolant pressure	Pressure in the secondary coolant circuit is monitored	Sensor defective or short circuit to external source	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	6803-31
WtrCoolPSRCMin	Secondary coolant circuit pressure: Signal Range Check error low	2B93-1F	Coolant pressure	Pressure in the secondary coolant circuit is monitored	Sensor defective or short circuit to ground	Check wiring or replace sensor	Frequency: ON Lamp: Amber (SVS)	11155-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
XCPByp_FlEco1	Info: Bypass function FlEco1 set	F14F-1F	None	In order to validate the MATLAB Simulink models for fuel economy functions with an external control unit via XCP on CAN, a bypass interface function is provided for the external control unit to communicate with ECU. The status variables XCPByp_stFlEcoDFC1, XCPByp_stFlEcoDFC2, XCPByp_stFlEcoDFC3, XCPByp_stFlEcoDFC4, XCPByp_stFlEcoDFC5 have been configured as external bypass hooks to get the values from external control unit via XCP on CAN. Based on the status of the variables fault paths are set to influence the ECU software. If the status of the hook variables is 1 then the respective fault paths are set.	Info fault for development purposes.	No intervention necessary	Frequency: no lamp Lamp: no lamp	61775-31
XCPByp_FlEco2	Info: Bypass function FlEco2 set	F24F-1F	None	In order to validate the MATLAB Simulink models for fuel economy functions with an external control unit via XCP on CAN, a bypass interface function is provided for the external control unit to communicate with ECU. The status variables XCPByp_stFlEcoDFC1, XCPByp_stFlEcoDFC2, XCPByp_stFlEcoDFC3, XCPByp_stFlEcoDFC4, XCPByp_stFlEcoDFC5 have been configured as external bypass hooks to get the values from external control unit via XCP on CAN. Based on the status of the variables fault paths are set to influence the ECU software. If the status of the hook variables is 1 then the respective fault paths are set.	Info fault for development purposes.	No intervention necessary	Frequency: no lamp Lamp: no lamp	62031-31
XCPByp_FlEco3	Info: Bypass function FlEco3 set	F34F-1F	None	In order to validate the MATLAB Simulink models for fuel economy functions with an external control unit via XCP on CAN, a bypass interface function is provided for the external control unit to communicate with ECU. The status variables XCPByp_stFlEcoDFC1, XCPByp_stFlEcoDFC2, XCPByp_stFlEcoDFC3, XCPByp_stFlEcoDFC4, XCPByp_stFlEcoDFC5 have been configured as external bypass hooks to get the values from external control unit via XCP on CAN. Based on the status of the variables fault paths are set to influence the ECU software. If the status of the hook variables is 1 then the respective fault paths are set.	Info fault for development purposes.	No intervention necessary	Frequency: no lamp Lamp: no lamp	62287-31
XCPByp_FlEco4	Info: Bypass function FlEco4 set	F44F-1F	None	In order to validate the MATLAB Simulink models for fuel economy functions with an external control unit via XCP on CAN, a bypass interface function is provided for the external control unit to communicate with ECU. The status variables XCPByp_stFlEcoDFC1, XCPByp_stFlEcoDFC2, XCPByp_stFlEcoDFC3, XCPByp_stFlEcoDFC4, XCPByp_stFlEcoDFC5 have been configured as external bypass hooks to get the values from external control unit via XCP on CAN. Based on the status of the variables fault paths are set to influence the ECU software. If the status of the hook variables is 1 then the respective fault paths are set.	Info fault for development purposes.	No intervention necessary	Frequency: no lamp Lamp: no lamp	62543-31
XCPByp_FlEco5	Info: Bypass function FlEco5 set	F54F-1F	None	In order to validate the MATLAB Simulink models for fuel economy functions with an external control unit via XCP on CAN, a bypass interface function is provided for the external control unit to communicate with ECU. The status variables XCPByp_stFlEcoDFC1, XCPByp_stFlEcoDFC2, XCPByp_stFlEcoDFC3, XCPByp_stFlEcoDFC4, XCPByp_stFlEcoDFC5 have been configured as external bypass hooks to get the values from external control unit via XCP on CAN. Based on the status of the variables fault paths are set to influence the ECU software. If the status of the hook variables is 1 then the respective fault paths are set.	Info fault for development purposes.	No intervention necessary	Frequency: no lamp Lamp: no lamp	62799-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ZFLET Max_0	Zero fuel correction at low idle for injector of cylinder1 exceeds maximum value	1156-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energizing time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder1	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder1	Frequency: no lamp Lamp: no lamp	4438-31
ZFLET Max_1	Zero fuel correction at low idle for injector of cylinder5 exceeds maximum value	1256-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energizing time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder5	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder5	Frequency: no lamp Lamp: no lamp	4694-31
ZFLET Max_2	Zero fuel correction at low idle for injector of cylinder3 exceeds maximum value	1356-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energizing time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder3	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder3	Frequency: no lamp Lamp: no lamp	4950-31
ZFLET Max_3	Zero fuel correction at low idle for injector of cylinder6 exceeds maximum value	1456-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energizing time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder6	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder6	Frequency: no lamp Lamp: no lamp	5206-31
ZFLET Max_4	Zero fuel correction at low idle for injector of cylinder2 exceeds maximum value	1556-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energizing time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder2	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder2	Frequency: no lamp Lamp: no lamp	5462-31
ZFLET Max_5	Zero fuel correction at low idle for injector of cylinder4 exceeds maximum value	1656-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energizing time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder4	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder4	Frequency: no lamp Lamp: no lamp	5718-31
ZFLET Min_0	Zero fuel correction at low idle for injector of cylinder1 below minimum value	2756-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energising time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder1	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder1	Frequency: no lamp Lamp: no lamp	10070-31
ZFLET Min_1	Zero fuel correction at low idle for injector of cylinder5 below minimum value	2856-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energising time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder5	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder5	Frequency: no lamp Lamp: no lamp	10326-31

Name	Title	DTC	Component	General Remark	Failure Cause	Failure Repair	SVS	DTC SAE (SPN-FMI)
ZFLET Min_2	Zero fuel correction at low idle for injector of cylinder3 below minimum value	2956-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energising time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder3	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder3	Frequency: no lamp Lamp: no lamp	10582-31
ZFLET Min_3	Zero fuel correction at low idle for injector of cylinder6 below minimum value	2A56-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energising time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder6	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder6	Frequency: no lamp Lamp: no lamp	10838-31
ZFLET Min_4	Zero fuel correction at low idle for injector of cylinder2 below minimum value	2B56-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energising time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder2	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder2	Frequency: no lamp Lamp: no lamp	11094-31
ZFLET Min_5	Zero fuel correction at low idle for injector of cylinder4 below minimum value	2C56-1F	Injector	ZFL functionality (Zero Fuel Calibration during Low Idle) evaluates energising time for injectors at low idle. The ZFL is changing the energizing time of the pilot injection by adding the learned calibration values. A monitoring of these learn values is required.	Wrong ISA programming or drifted injector on cylinder4	Check programming of ISA code correspond to the code on the injector, replace injector on cylinder4	Frequency: no lamp Lamp: no lamp	11350-31

UPDATING

Page	Modification Description	Date of revision
-	New document	03/2015