Hatz Diesel - Diagnostic trouble codes SPN/FMI

SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
29	Accelerator pedal	DFC_SRCHighAPP2	3	Signal Range Check High for APP2	If the signal exceeds the applicatable threshold APP_uRaw2SRCHigh_C (2388mV) a signal range violation is detected after the debouncing.	wiring harness or component	1.1
29	Accelerator pedal	DFC_SRCLowAPP2	4	Signal Range Check Low for APP2	If the signal is below the applicatable threshold APP_uRaw2SRCLow_C (280mV) a signal range violation is detected after debouncing.	wiring harness or component	1.1
84	Vehicle Speed Sensor	DFC_VehVMax	0	Maximum threshold error for vehicle speed			1.1
84	Vehicle Speed Sensor	DFC_VehVNplMon	5	NPL error for vehicle speed signal over Tachomter or hardware sensor		wiring harness or component	1.1
84	Vehicle Speed Sensor	DFC_VehVSRCHi	3	signal level low error for vehicle speed signal over Tachomter or hardware sensor		wiring harness or component	1.1
84	Vehicle Speed Sensor	DFC_VehVSRCLo	4	signal level low error for vehicle speed signal over Tachomter or hardware sensor		wiring harness or component	1.1
91	Accelerator pedal	DFC_SRCHighAPP1	3	Signal Range Check High for APP1	If the signal exceeds the applicatable threshold APP_uRaw1SRCHigh_C 4775mV) a signal range violation is detected after debouncing.	wiring harness or component	1.1
91	Accelerator pedal	DFC_SRCLowAPP1	4	Signal Range Check Low for APP1	If the signal is below the applicatable threshold APP_uRaw1SRCLow_C (740mV) a signal range violation is detected after the debouncing.	wiring harness or component	1.1
91	Accelerator pedal	DFC_SyncAPP	11	In case of dual analog accelerator pedal, it is the plausibility check between APP1 and APP2 and in case of potentiometer switch accelerator pedal, it is the plausibility check between APP1 and idle switch	If the permitted maximum for the difference of both the input signals APP_uDiffMax_mp is exceeded this is reported in the DFC_st.DFC_SyncAPP via the DSM.	wiring harness or component	1.1
95	Fuel Low Pressure System	DFC_FuelPLoP	17	Low fuel pressure error monitoring	Engine speed Epm_nEng greater or equal to Fl_nStrtMonFuelP_C, and Fuel pressure value Fl_pFuelP is lesser than the curve output Fl_pFuelSpd_CUR	fuel tank empty, fuel filter blocked, wiring harness or pre supply pump itself defective	2.1
95	Fuel Low Pressure System	DFC_FuelPSRCMax	3	SRC High for Environment Pressure	The sensor raw value is lesser than or equal to Fl_SRCFuelP.uMax_C	wiring harness or component	2.1
95	Fuel Low Pressure System	DFC_FuelPSRCMin	4	SRC low for Environment Pressure	The sensor raw value is lesser than or equal to Fl_SRCFuelP.uMin_C	wiring harness or component	2.1
97	Water in Fuel	DFC_FlFWLvlWtHi	15	Water in fuel detected		Water in fuel detected.	2.1
97	Water in Fuel	DFC_NplFlFWLvl	17	Fuel Level unplausible		wiring harness or component	2.1
100	Oil pressure sensor	DFC_OilPSwmpPhysRngHi	0	Maximum oil pressure error in plausibility check	The oil temperature Oil_tSwmp is equal to or greater than the limit Oil_tLimP_C and the oil pressure Oil_pSwmp is greater than the threshold Oil_pMaxP_mp.	wiring harness or component	2.3
100	Oil pressure sensor	DFC_OilPSwmpPhysRngLo	1	Minimum oil pressure error in plausibility check	The oil pressure Oil_pSwmp is less than the threshold Oil_pMinP_mp.	wiring harness or component	2.3
100	Oil pressure sensor	DFC_OilPSwmpSRCMax	3	Oil_uRawPSwmp > Oil_SRCPSwmp.uMax_C (4772mV)	Oil_uRawPSwmp > Oil_SRCPSwmp.uMax_C (4772mV)	wiring harness or component	2.3

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SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
100	Oil pressure sensor	DFC_OilPSwmpSRCMin	4	Oil_uRawPSwmp < Oil_SRCPSwmp.uMin_C (234mV)	Oil_uRawPSwmp < Oil_SRCPSwmp.uMin_C (234mV)	wiring harness or component	2.3
102	boost pressure sensor	DFC_PIntkVUsPhysRngHi	0	Physical Range Check high for air pressure at the upstream of intake valve sensor	If the signal Air_pSensPIntkVUs is greater than Air_PhysRngPIntkVUs.Max_C for a duration DDRC_DurDeb.Air_tiPhysRngHiPIntkVUsDebDef_C , then a physical range check high error is reported.	Over boost condition, maybe wastgate blocked	1.3
102	boost pressure sensor	DFC_PIntkVUsPhysRngLo	1	Physical Range Check low for air pressure at the upstream of intake valve sensor	If the signal Air_pSensPIntkVUs is less than Air_PhysRngPIntkVUs.Min_C for a duration DDRC_DurDeb.Air_tiPhysRngLoPIntkVUsDebDef_C , then a physical range check low error is reported.	Under boost, maybe turbocharger defective	1.3
102	boost pressure sensor	DFC_PIntkVUsSRCMax	3	Diagnostic fault check for SRC high in air pressure upstream of intake valve sensor	The sensor raw signal Air_uRawPIntkVUs (voltage) is above Air_SRCPIntkVUs.uMax_C	wiring harness or component	1.3
102	boost pressure sensor	DFC_PIntkVUsSRCMin	4	Diagnostic fault check for SRC low in air pressure upstream of intake valve sensor	The sensor raw signal Air_uRawPIntkVUs (voltage) is below Air_SRCPIntkVUs.uMin_C	wiring harness or component	1.3
105	boost pressure temperature sensor	DFC_TCACDsPhysRngHi	0	Physical Range Check high for Charged Air cooler down stream temperature		Physical Range Check high for Charged Air cooler down stream temperature	1.3
105	boost pressure temperature sensor	DFC_TCACDsPhysRngLo	1	Physical Range Check low for Charged Air cooler down stream temperature		Physical Range Check low for Charged Air cooler down stream temperature	1.3
105	boost pressure temperature sensor	DFC_TCACDsSRCMax	3	The sensor raw signal Air_uRawTCACDs (voltage) is above Air_SRCTCACDs.uMax_C (4803mV).	The sensor raw signal Air_uRawTCACDs (voltage) is above Air_SRCTCACDs.uMax_C (4803mV).	wiring harness or component	1.3
105	boost pressure temperature sensor	DFC_TCACDsSRCMin	4	The sensor raw signal Air_uRawTCACDs (voltage) is above Air_SRCTCACDs.uMax_C (318mV).	The sensor raw signal Air_uRawTCACDs (voltage) is above Air_SRCTCACDs.uMax_C (318mV).	wiring harness or component	1.3
107	Air Filter System	DFC_AirFltClogDet	14	Error path for Clog Detection in Air filter		air filter clogged/ sensor value ok?	1.3
107	Air Filter System	DFC_PAirFltDSRCMax	3	SRC High for Controller Mode Switch		wiring harness or component	1.3
107	Air Filter System	DFC_PAirFltDSRCMin	4	SRC low for Controller Mode Switch		wiring harness or component	1.3
108	environmental pressure sensor	DFC_PEnvRngChkMax	0	Ambient air pressure sensor range chack max-error		wiring harness or component	1.1
108	environmental pressure sensor	DFC_PEnvRngChkMin	1	Ambient air pressure sensor range check min-error		wiring harness or component	1.1
108	environmental pressure sensor	DFC_PEnvSigRngMax	3	fault check max signal range violated for ambient air pressure sensor		wiring harness or component	1.1
108	environmental pressure sensor	DFC_PEnvSigRngMin	4	fault check min signal range violated for ambient air pressure sensor		wiring harness or component	1.1
110	coolant temperature sensor	DFC_CEngDsTAbsTst	17	defect fault check for Absolute plausibility test	coolant temperature did not reach the threshold temperature	sensor value problems	3.1
110	coolant temperature sensor	DFC_CEngDsTDynTst	18	defect fault check for dynamic plausibility test	rise in coolant is not reached the minimum rise of coolant temperature	sensor value problems	3.1

SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
110	coolant temperature sensor	DFC_CEngDsTNplHigh	15	Engine coolant temperature too high plausibility error	An "ERROR" is reported if the engine coolant temperature CEngDsT_t is greater than an threshold CEngDsT_tMaxT_C.	less cooling water, water pump defective, water cooler blocked	3.1
110	coolant temperature sensor	DFC_CEngDsTPhysRngHi	0	Physical Range Check high for CEngDsT	The sensed sensor signal CEngDsT_tSens is greater than CEngDsT_PhysRng.Max_C	wiring harness or component	3.1
110	coolant temperature sensor	DFC_CEngDsTPhysRngLo	1	Physical Range Check low for CEngDsT	The sensed sensor signal CEngDsT_tSens is less than CEngDsT_PhysRng.Min_C	wiring harness or component	3.1
110	coolant temperature sensor	DFC_CEngDsTSRCMax	3	The sensor raw signal CEngDsT_uRaw (voltage) is above CEngDsT_SRC.uMax_C (4957mV).	The sensor raw signal CEngDsT_uRaw (voltage) is above CEngDsT_SRC.uMax_C.	wiring harness or component	3.1
110	coolant temperature sensor	DFC_CEngDsTSRCMin	4	The sensed raw voltage value CEngDsT_uRaw is less than CEngDsT_SRC.uMin_C (359mV).	The sensed raw voltage value CEngDsT_uRaw is less than CEngDsT_SRC.uMin_C.	wiring harness or component	3.1
111	coolant level	DFC_ClntLvRngFltDetn	17	low coolant level error	If the coolant level is low, i.e. if the message ClntLv_st is set.	-Low coolant level -coolant level sensor defective - wiring harness defctive	3.1
157	Rail pressure sensor	DFC_RailPSRCMax	3	Sensor voltage above upper limit	If the raw sensor voltage RailP_uRaw exceeds the limiting value RailP_SRC.uMax_C (4662,30mV) a fault will be detected. If the uncorrected raw sensor voltage RailP_uRawNoCor_mp exceeds the limiting value RailP_AdcMaxVal_C (4900mV) a fault will be detected.	wiring harness or component	2.2
157	Rail pressure sensor	DFC_RailPSRCMin	4	Sensor voltage below lower limit	If the raw sensor voltage RailP_uRaw falls below the limiting value RailP_SRC.uMin_C (250mV) a fault will be detected.	wiring harness or component	2.2
167	Alternator	DFC_AltIOMonPlaus	7	Alternator monitoring		wiring harness or component	1.1
168	Supply voltage	DFC_BattUHi	0	High Battery Voltage indication	The sensor raw signal BattU_uRaw (voltage) is above BattU_uHiBatt_C.	alternator defective or Battery with voltage >12V is used for jump start	1.1
168	Supply voltage	DFC_BattULo	1	Low Battery voltage indication	The sensor raw signal BattU_uRaw (voltage) is below BattU_uLoBatt_C.	Battery voltage low --> discharged or defective, alternator defective	1.1
168	Supply voltage	DFC_BattUSRCMax	3	The sensor raw signal BattU_uRaw (voltage) is above BattU_uSRCMax_C (4521mV).	The sensor raw signal BattU_uRaw (voltage) is above BattU_uSRCMax_C.	Battery voltage upper limit	1.1
168	Supply voltage	DFC_BattUSRCMin	4	The sensor raw signal BattU_uRaw (voltage) is below BattU_uSRCMin_C (950mV).	The sensor raw signal BattU_uRaw (voltage) is below BattU_uSRCMin_C.	Battery voltage below limit	1.1
174	Fuel temp. sensor	DFC_FuelTPhysRngHi	0	Physical Range Check high for fuel temperature	The sensed sensor signal FuelT_tSens is greater than FuelT_PhysRng.Max_C	high engine load with low fuel level and high ambient temperture	2.1
174	Fuel temp. sensor	DFC_FuelTPhysRngLo	1	Physical Range Check low for fuel temperature	The sensed sensor signal FuelT_tSens is less than FuelT_PhysRng.Min_C	very cold ambient temperture	2.1
174	Fuel temp. sensor	DFC_FuelTSRCMax	3	SRC high for fuel temperature sensor	The sensor raw signal voltage FuelT_uRaw is above FuelT_SRC.uMax_C (4933mV).	wiring harness or component	2.1
174	Fuel temp. sensor	DFC_FuelTSRCMin	4	SRC low for fuel temperature sensor	The sensor raw signal FuelT_uRaw (voltage) is below FuelT_SRC.uMin_C (310mV).	wiring harness or component	2.1

SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
175	Oil temperature sensor	DFC_OilTNplHigh	15	Oil temperature too high plausibility error	The Oil temperature Oil_tSwmp is greater than the threshold Oil_tMaxT_C .	oil extremely hot, maybe missuse of engine (tuning) wiring harness or component	2.3
175	Oil temperature sensor	DFC_OilTPhysRngHi	0	Physical Range Check high for Oil Temperature	If the signal Oil_tSensSwmp is greater than Oil_PhysRngT.Max_C for a duration DDRC_DurDeb.OilT_tiPhysRngHiTDebDef_C , then a physical range check high error is reported	1) Too high load on engine 2) Sensor misadjusted or wiring harness	2.3
175	Oil temperature sensor	DFC_OilTPhysRngLo	1	Physical Range Check low for Oil Temperature	If the signal Oil_tSensSwmp is smaller than Oil_PhysRngT.Min_C for a duration DDRC_DurDeb.OilT_tiPhysRngLoTDebDef_C , then a physical range check low error is reported	Sensor misadjusted or wiring harness	2.3
175	Oil temperature sensor	DFC_OilTSRCMax	3	SRC High for Oil Temperature	The sensor raw signal Oil_uRawTSwmp (voltage) is above Oil_SRCT.uMax_C (5200.4mV)	wiring harness or component	2.3
175	Oil temperature sensor	DFC_OilTSRCMin	4	SRC low for Oil Temperature	The sensor raw signal Oil_uRawTSwmp (voltage) is below Oil_SRCT.uMin_C (0mV)	wiring harness or component	2.3
190	camshaft sensor	DFC_EpmCaSI1ErrSig	8	In between of several camshaft revolutions there are too many or too less camshaft edges present or the distance or the series of the camshaft edges is unplausible. The defect debounce counter EpmCaS_ctErrSigDef is incremented at each inplausible camshaft revolution, reaches the counter the threshold EpmCaS_numErrSigDef_C the error is set. If the monitoring range is left, the debounce counter is reseted.	In between of several camshaft revolutions there are too many or too less camshaft edges present or the distance or the series of the camshaft edges is unplausible. The defect debounce counter EpmCaS_ctErrSigDef is incremented at each inplausible camshaft revolution, reaches the counter the threshold EpmCaS_numErrSigDef_C the error is set. If the monitoring range is left, the debounce counter is reseted.	tone wheel defective	1.2
190	camshaft sensor	DFC_EpmCaSI1NoSig	12	In between of several crankshaft revolutions there is not any camshaft edge present. The defect debounce counter EpmCaS_ctNoSig reaches the threshold EpmCaS_numNoSigDef_C. If the monitoring range is left, the debounce counter is reseted.	In between of several crankshaft revolutions there is not any camshaft edge present. The defect debounce counter EpmCaS_ctNoSig reaches the threshold EpmCaS_numNoSigDef_C. If the monitoring range is left, the debounce counter is reseted.	wiring harness or component	1.2
190	camshaft sensor	DFC_EpmCaSI1OfsErr	2	DFC for camshaft offset angle exceeded	DFC for camshaft offset angle exceeded	wiring harness or camshaft sensor defect or wrong mounting position or tone wheel misadjusted	1.2

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SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
190	crankshaft sensor	DFC_EpmCrSErrSig	8	DFC for crankshaft signal diagnose - disturbed signal	A disturbed crankshaft signal exists if the number of signal plausibilisation errors EpmCrS_ctErrSig reaches the threshold EpmCrS_numErrSigMaxDef_C. The debouncing increment can be adjusted by EpmCrS_numErrSigIncDef_C	– Loose connection or poor contact on socket – Change of air gap between sensor and trigger wheel (eccentric trigger wheel, air gap too big, loose sensor mounting, sensor movement) – Disturbance on sensor lines – Oscillating trigger wheel as starter engages – Bended or broken teeth on crankshaft trigger wheel	1.2
190	crankshaft sensor	DFC_EpmCrSNoSig	12	There is no crankshaft signal available (EpmHCrS_stSigMode = WAITSIG). The camshaft signal has been checked (EpmCaS_stNEng .7 = 1) and it is plausible (EpmCaS_stNEng .0-2 = 0). The Camshaft rotation counter EpmCrS_ctCaSRev_mp for defect debouncing reaches threshold EpmCrS_numNoSigDef_C (4 events).	There is no crankshaft signal available (EpmHCrS_stSigMode = WAITSIG). The camshaft signal has been checked (EpmCaS_stNEng .7 = 1) and it is plausible (EpmCaS_stNEng .0-2 = 0). The Camshaft rotation counter EpmCrS_ctCaSRev_mp for defect debouncing reaches threshold EpmCrS_numNoSigDef_C (4 events).	wiring harness or crankshaft sensor defect	1.2
597	Brake	DFC_BrkNpl	2	Plausibility check for Brake	If the main brake contact Brk_stMn and the redundant brake contact Brk_stRed are not in the same state.	wiring harness or component	
651	injector	DFC_IVDiaCylNoLd_0	5	open load	Open load error of an injector (interruption of an electric connection)	wiring harness or injector load drop cylinder	2.2
651	injector	DFC_IVDiaCylShCir_0	3	general short circuit	Short circuit of an injector	wiring harness or injector cylinder.	2.2
652	injector	DFC_IVDiaCylNoLd_3	5	open load	Open load error of an injector (interruption of an electric connection)	wiring harness or injector load drop cylinder	2.2
652	injector	DFC_IVDiaCylShCir_3	3	general short circuit	Short circuit of an injector	wiring harness or injector cylinder.	2.2
653	injector	DFC_IVDiaCylNoLd_1	5	open load	Open load error of an injector (interruption of an electric connection)	wiring harness or injector load drop cylinder	2.2
653	injector	DFC_IVDiaCylShCir_1	3	general short circuit	Short circuit of an injector	wiring harness or injector cylinder.	2.2
654	injector	DFC_IVDiaCylNoLd_2	5	open load	Open load error of an injector (interruption of an electric connection)	wiring harness or injector load drop cylinder	2.2
654	injector	DFC_IVDiaCylShCir_2	3	general short circuit	Short circuit of an injector	wiring harness or injector cylinder.	2.2
677	Starter relay	DFC_StrtOL	5	No load error		wiring harness or component	1.1
677	Starter relay	DFC_StrtOvrTemp	6	Over temperature error on ECU powerstage for Starter		Over temperature error on ECU powerstage for Starter	1.1
677	Starter relay	DFC_StrtSCB	3	Short circuit to battery error		wiring harness or component	1.1
677	Starter relay	DFC_StrtSCG	4	Short circuit to ground error		wiring harness or component	1.1
976	Multi State Switch	DFC_MaxPTOSwt	3	Diagnostic fault check for max error of COM message	The sensed raw value PTOSwt_uRaw is more than PTOSwt_SRC.uMax_C when MoFPTO_swtSigSelCalMsg is equal to 0.	wiring harness or component	1.1
976	Multi State Switch	DFC_MinPTOSwt	4	Diagnostic fault check for min error of COM message	The sensed raw value PTOSwt_uRaw is less than PTOSwt_SRC.uMin_C when MoFPTO_swtSigSelCalMsg is equal to 0.	wiring harness or component	1.1

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976	Multi State Switch	DFC_NplPTOSwt	2	Diagnostic fault check non plausibility of COM message	The sensed raw value PTOSwt_uSens is less than the minimum threshold MoFPTO_uThresCalMsgA[n] or PTOSwt_uSens is more than the maximum threshold MoFPTO_uThresCalMsgA[n+1] (wherein n=0,2,4,6), whenever MoFPTO_swtSigSelCalMsg is equal to 0.	wiring harness or component	1.1
1076	Metering Unit	DFC_MeUnOL	5	open load of metering unit output	Detecting an open load fault in the metering unit	wiring harness or component	2.2
1076	Metering Unit	DFC_MeUnOT	12	over teperature of device driver of metering unit	Detection of a metering unit power stage overtemperature	output stage of ECU defect or wiring harness	2.2
1076	Metering Unit	DFC_MeUnShCirHSBatt	15	short circuit to battery in the high side of the MeUn		wiring harness or component	2.2
1076	Metering Unit	DFC_MeUnShCirHSGnd	17	short circuit to ground in the high side of the MeUn		wiring harness or component	2.2
1076	Metering Unit	DFC_MeUnShCirLSBatt	16	short circuit to battery of metering unit output	Detecting a short circuit low side to battery voltage in the metering unit	wiring harness or component	2.2
1076	Metering Unit	DFC_MeUnShCirLSGnd	18	short circuit to ground of metering unit output	Detecting a short circuit low side to ground in the metering unit	wiring harness or component	2.2
1108	ECU	DFC_MoFOvR	16	Diagnostic fault check to report the error due to Over Run	The current energising time is greater than the maximum permitted energising time after overrun demand by the driver.	ECU internal fault	1.2
1108	ECU	DFC_MoFOvRHtPrt	15	Diagnostic fault check to report the error due to cooling injection in Over Run	Error in the plausibility of current energising time when Over Heat Protection injection active with maximum permitted energising time	ECU internal fault	1.2
1109	ECU	DFC_EngICO	11	Injection cut off demand (ICO) for shut off coordinator	The un-debounced defect detection takes place in the standard ICO mode EngICO_stMode_C=0) with an ICO (Mo_stICOMsg) requested and an engine speed Epm_nEng greater than EngICO_nCtOffStdICO_C (1700rpm). The un-debounced defective detection takes place in the comfortable ICO mode (EngICO_stMode_C = 1) with requested ICO (Mo_stICOMsg) and an engine speed Epm_nEng greater than EngICO_nCtOffCmftICOHard_C (1700rpm).	ECU internal defect	1.2
1136	ECU	DFC_TECUSRCMax	3	SRC high for ECU temperature sensor	The Sensed raw voltage value TECU_uRaw_[%] is greater than TECU_SRC%.uMax_C	ECU internal fault	1.1
1136	ECU	DFC_TECUSRCMin	4	SRC low for ECU temperature sensor	The Sensed raw voltage value TECU_uRaw_[%] is less than TECU_SRC%.uMin_C	ECU internal fault	1.1
1244	PCV - Pressure Control Valve	DFC_PCVOL	5	open load of pressure control valve output		wiring harness or component	2.2
1244	PCV - Pressure Control Valve	DFC_PCVOT	12	over teperature of device driver of pressure control valve		wiring harness or component	2.2
1244	PCV - Pressure Control Valve	DFC_PCVShCirHSBatt	15	short circuit to battery in the high side of the pressure control valve		wiring harness or component	2.2

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1244	PCV - Pressure Control Valve	DFC_PCVShCirHSGnd	17	short circuit to ground in the high side of the pressure control valve		wiring harness or component	2.2
1244	PCV - Pressure Control Valve	DFC_PCVShCirLSBatt	16	short circuit to battery of pressure control valve output		wiring harness or component	2.2
1244	PCV - Pressure Control Valve	DFC_PCVShCirLSGnd	18	short circuit to ground of the pressure control valve output		wiring harness or component	2.2
1244	PCV - Pressure Control Valve	DFC_PCVSRCMax	4	signal range check high error of pressure control valve AD-channel		wiring harness or component	2.2
1244	PCV - Pressure Control Valve	DFC_PCVSRCMin	3	signal range check low error of pressure control valve AD-channel		wiring harness or component	2.2
1769	Engine overspeed	DFC_EngPrtOvrSpd	11	Overspeed detection in component engine protection	Exceeding of the engine-speed threshold EngPrt_nOvrSpd_C.	overspeed caused by driver	1.2
2791	EGRVlv	DFC_EGRVlvGovDvtMax	18	Permanent governor deviation for valve	The negative limit for the governor deviation EGRVlv_GovDvtMonCal.rDvtMax_C has been exceeded and - The governor deviation has been persistent longer than the applicable time from EGRVlv_tiDebGovDvtDef_CUR. - The control valve has not been detected as jammed. - The position governor is active. - The control valve is not set to a mechanical stop. - No system error is reported, i.e. the bit DINH_stFld.Fld_EGRVlvGovOn.5 is set.	EGR valve dirty or defective	1.4
2791	EGRVlv	DFC_EGRVlvGovDvtMin	16	Permanent governor deviation for valve	The negative limit for the governor deviation EGRVlv_GovDvtMonCal.rDvtMin_C has been exceeded and - The governor deviation has been persistent longer than the applicable time from EGRVlv_tiDebGovDvtDef_CUR. - The control valve has not been detected as jammed. - The position governor is active. - The control valve is not set to a mechanical stop. - No system error is reported, i.e. the bit DINH_stFld.Fld_EGRVlvGovOn.5 is set.	EGR valve dirty or defective	1.4
2791	EGRVlv	DFC_EGRVlvPhysSRCMax	20	DFC for valve position sensor physical SRC high	EGRVlv_SensCal.uRawMaxOpn_C / EGRVlv_SensCal.uRawMaxClsd_C < EGRVlv_uRaw < EGRVlv_SensCal.uMax_C	EGRVlv missadjusted or dirty	1.4
2791	EGRVlv	DFC_EGRVlvPhysSRCMin	21	DFC for valve position sensor physical SRC low	EGRVlv_SensCal.uRawMinClsd_C / EGRVlv_SensCal.uRawMinOpn_C > EGRVlv_uRaw > EGRVlv_SensCal.uMin_C	EGRVlv missadjusted or dirty	1.4
2791	EGRVlv	DFC_EGRVlvSRCMax	13	DFC for valve position sensor voltage SRC high	The sensor raw signal EGRVlv_uRaw (voltage) is above EGRVlv_SRC.uMax_C (4622mV) .	wiring harness or component	1.4

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SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
2791	EGRVlv	DFC_EGRVlvSRCMin	14	DFC for valve position sensor voltage SRC low	The sensor raw signal EGRVlv_uRaw (voltage) is below EGRVlv_SRC.uMin_C (384mV).	wiring harness or component	1.4
2802	ECU	DFC_EEPEraseErr	11	EEP Read Error based on the error for more blocks	If sector erase (only Flash)cannot be performed or successfully completed an error will be registered.	ECU internal fault	1.2
2802	ECU	DFC_EEPRdErr	14	EEP Read Error based on the error for more blocks	If at least three blocks cannot be read an error will be registered.	ECU internal fault	1.2
2802	ECU	DFC_EEPWrErr	12	EEP Write Error based on the error for one block	If one block cannot be written more than 3 times an error will be registered	disconnection of battery while writing of EEPROM (afterrun).ECU internal fault	1.2
3509	ECU	DFC_SSpMon1	2	Error Sensor supplies 1	The sensor supply voltage is monitored by an HW comparator. If the sensor supply voltage lies outside of the switching thresholds a fault is output. The detection thresholds are defined by the hardware and cannot be calibrated.	Boost pressue/ Boost Temperature Pin A9 APP2 Pin K44 Fuel low pressue/ Fuel temperature Pin A21 Oil pressure/ Oil temperature Pin A24	1.2
3510	ECU	DFC_SSpMon2	2	Error Sensor supplies 2	The sensor supply voltage is monitored by an HW comparator. If the sensor supply voltage lies outside of the switching thresholds a fault is output. The detection thresholds are defined by the hardware and cannot be calibrated.	Airfilter pressure K23 EGR position sensor A22 APP1 K45 Camshaft sensor A08	1.2
3511	ECU	DFC_SSpMon3	2	Error Sensor supplies 3	The sensor supply voltage is monitored by an HW comparator. If the sensor supply voltage lies outside of the switching thresholds a fault is output. The detection thresholds are defined by the hardware and cannot be calibrated.	Rail pressure A06	1.2
3597	ECU	DFC_ARlySCB_0	3	Short circuit to battery error at acuator relay		ECU internal fault	1.1
3597	ECU	DFC_ARlySCG_0	4	Short circuit to ground error at actuator relay		ECU internal fault	1.1
3598	ECU	DFC_ARlySCB_1	3	Short circuit to battery error at acuator relay		ECU internal fault	1.1
3598	ECU	DFC_ARlySCG_1	4	Short circuit to ground error at actuator relay		ECU internal fault	1.1
5324	Glow System	DFC_GlwPlgPLUGErr_0	11	Array of DFCs for failure in 1th Glow Plug		glowing problems	3.2
5324	Glow System	DFC_GlwPlgPLUGSC_0	4	Array of DFCs for short circuit in 1th Glow Plug		glowing problems	3.2
5325	Glow System	DFC_GlwPlgPLUGErr_1	11	Array of DFCs for failure in 2nd Glow Plug		glowing problems	3.2
5325	Glow System	DFC_GlwPlgPLUGSC_1	4	Array of DFCs for short circuit in 2nd Glow Plug		glowing problems	3.2
5326	Glow System	DFC_GlwPlgPLUGErr_2	11	Array of DFCs for failure in 3rd Glow Plug		glowing problems	3.2
5326	Glow System	DFC_GlwPlgPLUGSC_2	4	Array of DFCs for short circuit in 3rd Glow Plug		glowing problems	3.2

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SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
5327	Glow System	DFC_GlwPlgPLUGErr_3	11	Array of DFCs for failure in 4th Glow Plug		glowing problems	3.2
5327	Glow System	DFC_GlwPlgPLUGSC_3	4	Array of DFCs for short circuit in 4th Glow Plug		glowing problems	3.2
20201	ECU	DFC_Cy320SpiCom	19	SPI/COM-Errors of the Cy320	When any peripheral monitoring function reports an error	ECU internal fault	1.2
20220	ECU	DFC_MoCADCNTP	2	Diagnostic fault check to report the NTP error in ADC monitoring	Error in the check with the no-load test pulse operation.	ECU internal fault	1.2
20220	ECU	DFC_MoCADCTst	11	Diagnostic fault check to report the ADC test error	Implausible ADC test errors It is checked whether MoCADC_ctDebTst >= MoCADC_ctDebTst_C (15 Events). If yes the error is set. The diagnosis is carried out in the 40-ms interval.	ECU internal fault	1.2
20220	ECU	DFC_MoCADCVltgRatio	14	Diagnostic fault check to report the error in Voltage ratio in ADC monitoring	It is checked whether MoCADC_ctDebVltgRatio >= MoCADC_ctDebVltgRatio_C (15 Events). If yes the error is set. The diagnosis is carried out in the 40-ms interval.	ECU internal fault	1.2
20221	ECU	DFC_MoCComErrCnt	11	Diagnostic fault check to report errors in query-/response-communication	If there is no active shut-off path test (MoCSOP_stRdyMsg == TRUE) and the error counter MoCCom_ctErrMM or MoCCom_ctErrFC is >= MOCCOM_MM_STATUS_LIMIT_ERRORS (5) there is an undebounced defect detection	ECU internal fault	1.2
20222	ECU	DFC_MoCComSPI	11	Diagnostic fault check to report errors in SPI-communication	If the error counter MoCCom_ctErrSPI is greater than 0 and there is no active shut-off path test (MoCSOP_stRdyMsg != FALSE) there is an undebounced defect detection.	ECU internal fault	1.2
20223	ECU	DFC_MoCROMErrXPg	11	Diagnostic fault check to report multiple error while checking the complete ROM-memory	If multiple errors are detected while testing the complete ROM-memory (irreversibles error bit 2 in MoCMem_st is set) there is an undebounced defect detection.	ECU internal fault	1.2
20224	ECU	DFC_MoFAPP	11	Diagnostic fault check to report the accelerator pedal position error	Implausible accelerator pedal voltage. The two voltage values (ADC_VAL1 ADC_VAL2) detected by the accelerator pedal are not plausible to eachother.	ECU internal fault	1.2
20225	ECU	DFC_MoFESpd	11	Diagnostic fault check to report the engine speed error	Implausible engine speed. The engine speed value calculated in level 2 (MoFESpd_nEngL2_mp) and Epm_nEngLRes (engine speed from level 1) are not plausible to each other.	ECU internal fault	1.2
20226	ECU	DFC_MoFInjDatET	11	Diagnostic fault check to report the plausibility error between level 1 energizing time and level 2 information	Implausible injection quantity. It is tested if MoFInjDat_ctDebETErr >= MoFInjDat_ctDebETErr_C (5 Events). In case of this the error is set. This diagnosis is processed in the 40ms interval.	ECU internal fault	1.2

SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20227	ECU	DFC_MoFInjDatPhi	11	Diagnostic fault check to report the error due to plausibility between the injection begin v/s injection type	Implausible start of energising angles. It is tested if MoFInjDat_ctDebPhiErr >= MoFInjDat_ctDebPhiErr_C (5 Events). In case of this the error is set. This diagnosis is processed in the 40ms interval.	ECU internal fault	1.2
20228	ECU	DFC_MoFInjQnt	11	Diagnostic fault check to report the error due to non plausibility in ZFC	Implausible energising times. The energising times of the zero fuel quantity calibration ZFC MoFInjDat_tiPi-I1ZFCETCor MoFInjDat_tiPil2ZFCETCor and MoFInjDat_tiPil3ZFCETCor are tested on their plausible value ranges.	ECU internal fault	1.2
20229	ECU	DFC_MoFMode1	11	Diagnosis fault check to report the demand for normal mode due to an error in the Pol2 quantity	Implausible Pol2 efficiencies. The efficiency of Pol2 MoFMode_facPol2Eff_mp is tested of its plausible value range. Or an unplausbility is detected during monitoring of the operation mode resp. ramp time counter transgression.	ECU internal fault	1.2
20229	ECU	DFC_MoFMode2	14	Diagnosis fault check to report the error to demand for an ICO due to an error in the Pol2 shut-off	Error in the Pol2 shut-off. The quantity MoFQntCor_qPol2 is tested of its shut-off value in normal mode.	ECU internal fault	1.2
20230	ECU	DFC_MoFMode3	11	Diagnosis fault check to report the error to demand for an ICO due to an error in the Pol3 efficiency factor	Implausible Pol3 efficiencies. The efficiency of Pol3 MoFInjDat_facPol3EffSet is tested of its plausible value range.	ECU internal fault	1.2
20231	ECU	DFC_MoFQntCor	11	Diagnostic fault check to report the error due to injection quantity correction	Implausible wave correction parts of the injection quantity correction. The plausibility is displayed by the measuring points MoFQntCor_stPil1ErrAct_mp MoFQntCor_stMl1ErrAct_mp and MoFQntCor_stPol2ErrAct_mp.	ECU internal fault	1.2
20232	ECU	DFC_MoFRailP	11	Diagnostic fault check to report the plausibility error in rail pressure monitoring	The rail pressure of level 1 is checked after a calibratable ramp debounce of MoFRailP_ctRmp_C (240ms) in case of a SRC error. If the value lies outside a caliberatable window an irreversible error is detected an reported to the DSM after an error debouncing of MoFRailP_ctDebErr_C (760ms). Also in case of a rail pressure gradient error reported by the level 1 the error is reported after a debounce time MoFRailP_ctDebGradMax_C (2550ms). Additionally the error will be reported after a debounce time MoFRailP_ctDebGradMax_C if level 2 detects a gradient error and level 1 is not reporting it.	ECU internal fault	1.2
20233	ECU	DFC_MoFTrqCmp	11	Diagnostic fault check to report the error due to torque comparison	FStSys_stStrtRlsCAN_mp = TRUE).	ECU internal fault	1.2

SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20234	ECU	DFC_MonLimCurr	11	Diagnosis of curr path limitation forced by ECU monitoring level 2	The setpoint path of the rail pressure control (PthLead_trqInrCurr) is limited by the limitation torque (EngTrqPtd_trqLim) of the functional control unit monitoring.	ECU internal fault	1.2
20234	ECU	DFC_MonLimLead	20	Diagnosis of lead path limitation forced by ECU monitoring level 2	The setpoint path of the air system (PthLead_trqInrLead) is limited by the limitation torque (EngTrqPtd_trqLim) of the functional control unit monitoring.	ECU internal fault	1.2
20234	ECU	DFC_MonLimSet	21	Diagnosis of set path limitation forced by ECU monitoring level 2	The quantity setpoint path (PthLead_trqInrSet) is limited by the limitation torque (EngTrqPtd_trqLim) of the functional control unit monitoring.	ECU internal fault	1.2
20238	ECU	DFC_OCWDACom	11	Diagnostic fault check to report "WDA active" due to errors in query-/response communication	In the case of a non active shut-off path test (MoCSOP_stActMsg == FALSE) whose debounce OCWDA_CTDEBSOPNOTACTV* 10ms has expired (counter OCWDA_ctDebSOPNotActv = 0) and an active WDA wire a defect detection takes place.	ECU internal fault	1.2
20238	ECU	DFC_OCWDALowVltg	4	Diagnostic fault check to report "ABE active" due to undervoltage detection	In the case of a non active shut-off path test (MoCSOP_stActMsg == FALSE) whose debounce OCWDA_CTDEBSOPNOTACTV* 10ms has expired (counter OCWDA_ctDebSOPNotActv = 0) and an active ABE wire due to undervoltage there is an undebounced defect detection after the battery voltage BattU_u keeps greater than OCWDA_uBattMin_C (8V) longer than the debounce time OCWDA_CTUBATTMX(100ms).	ECU internal fault	1.2
20238	ECU	DFC_OCWDAOvrVltg	3	Diagnostic fault check to report "ABE active" due to overvoltage detection	In the case of a non active shut-off path test (MoCSOP_stActMsg == FALSE) whose debounce OCWDA_CTDEBSOPNOTACTV* 10ms has expired (counter OCWDA_ctDebSOPNotActv = 0) and an active ABE wire due to overvoltage a defect detection takes place.	ECU internal fault	1.2
20238	ECU	DFC_OCWDAReasUnkwn	14	Diagnostic fault check to report "WDA/ABE active" due to unknown reason	In the case of a non active shut-off path test (MoCSOP_stActMsg == FALSE) whose debounce OCWDA_CTDEBSOPNOTACTV* 10ms has expired (counter OCWDA_ctDebSOPNotActv = 0) and an active ABE wire due to undervoltage there is an undebounced defect detection after the battery voltage BattU_u keeps greater than OCWDA_uBattMin_C (8V) longer than the debounce time OCWDA_CTUBATTMX (100ms).	ECU internal fault	1.2

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SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20251	ECU	DFC_SWReset_0	11	Visibility of SoftwareResets in DSM	The evaluation of the reset reason will be done after every reset. Depending on the configured visibility of the current reset one of the fault checks in the array will be set.	ECU internal fault	1.2
20251	ECU	DFC_SWReset_1	20	Visibility of SoftwareResets in DSM	The evaluation of the reset reason will be done after every reset. Depending on the configured visibility of the current reset one of the fault checks in the array will be set.	ECU internal fault	1.2
20251	ECU	DFC_SWReset_2	21	Visibility of SoftwareResets in DSM	The evaluation of the reset reason will be done after every reset. Depending on the configured visibility of the current reset one of the fault checks in the array will be set.	ECU internal fault	1.2
20276	ECU	DFC_MoFRmtAPP	11	Diagnostic fault check to report the remote accelerator pedal position error	Implausible accelerator pedal voltage. The two voltage values (ADC_VAL1, ADC_VAL2), detected by the accelerator pedal, are not plausible to each other. If RMTAPP with LIS is used , defect is detected if there is a implausibilty with LIS and RMTAPP1 voltage.	ECU internal fault	1.2
20282	EGRVlv	DFC_EGRVlvHBrgOpnLd	5	Open load error for powerstage	Open Load error Monitoring for TLE7209/CJ230	wiring harness or component	1.4
20282	EGRVlv	DFC_EGRVlvHBrgOvrTemp	12	Over temperature error for H-bridge	Over Temperature error Monitoring for TLE7209/CJ230	wiring harness component or ECU internal fault	1.4
20282	EGRVlv	DFC_EGRVlvHBrgShCirBatt1	3	Short circuit to battery on Out1 error for H-bridge	Short Circuit to Battery at Out1 of TLE7209/CJ230 error	wiring harness or component	1.4
20282	EGRVlv	DFC_EGRVlvHBrgShCirBatt2	3	Short circuit to battery on Out2 error for H-bridge	Short Circuit to Battery at Out2 of TLE7209/CJ230 error	wiring harness or component	1.4
20282	EGRVlv	DFC_EGRVlvHBrgShCirGnd1	4	Short circuit to ground on Out1 error for H-bridge	Short Circuit to Ground at Out1 of TLE7209/CJ230 error	wiring harness or component	1.4
20282	EGRVlv	DFC_EGRVlvHBrgShCirGnd2	4	Short circuit to ground on Out2 error for H-bridge	Short Circuit to Ground at Out2 of TLE7209/CJ230 error	wiring harness or component	1.4
20288	Glow System	DFC_GlwPlg2of3	21	DFC for coding error when selected coding is not working		glowing problems	3.2
20288	Glow System	DFC_GlwPlgDiagErr	22	DFC for faulty diagnostic data transmission or protocol error		glowing problems	3.2
20288	Glow System	DFC_GlwPlgDiff	2	DFC for coding error when different coding words were received in a coding cycle		glowing problems	3.2
20288	Glow System	DFC_GlwPlgLVSOL	5	No load error for Low Voltage System		glowing problems	3.2
20288	Glow System	DFC_GlwPlgLVSOvrTemp	12	Over temperature error on ECU powerstage for Glow plug Low Voltage System		glowing problems	3.2
20288	Glow System	DFC_GlwPlgLVSSCB	3	Short circuit to battery error for Low Voltage System		glowing problems	3.2
20288	Glow System	DFC_GlwPlgLVSSCG	4	Short circuit to ground error for Low Voltage System		glowing problems	3.2
20288	Glow System	DFC_GlwPlgT30Miss	14	DFC for T30 missing error in GCU-T		glowing problems	3.2
20288	Glow System	DFC_GlwPlgUnErr	23	DFC for glow module error in GCU-T		glowing problems	3.2

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SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20290	ECU	DFC_MoCSOPErrMMRespByte	11	Loss of synchronization sending bytes to the MM from CPU.	Irreversible error bit 5 set in MoCSOP_st (counter MoCSOP_ctErrMMRespByte > MOCSOP_MM_RESPBYTE_RESET_ERROR(10) within the SOP test) and state MOCSOP_STEP_ERROR reached due to time out.	ECU internal fault	1.2
20290	ECU	DFC_MoCSOPErrNoChk	20	DFC to set a torque limitation once an error is detected before MoCSOP's error reaction is set	If an error was found by the SOP test but additionally the injector diagnose reported an error (Fld_Mo-CSOPInjDiagErr or Fld_MoCSOPInjDiagDeb are blocking) then only the test flag of every MoCSOP DFC will be set. Besides the error bits of DFC_MoCSOPErrNoChk will be set.	ECU internal fault	1.2
20290	ECU	DFC_MoCSOPErrRespTime	21	Wrong set response time	Irreversible error bit 8 set in MoCSOP_st (counter MoCSOP_ctErrRespTime > MOCSOP_MM_RESPTIME_RESET_ERRORS(2) within the SOP test) and state MOCSOP_STEP_ERROR reached due to time out.	ECU internal fault	1.2
20290	ECU	DFC_MoCSOPErrSPI	22	Too many SPI errors during MoCSOP execution.	Irreversible error bit 6 set in MoCSOP_st (counter MoCSOP_ctErrSPI >= MOCSOP_SPI_RESET_ERRORS(16) within the SOP test) and state MOCSOP_STEP_ERROR reached due to time out.	ECU internal fault	1.2
20290	ECU	DFC_MoCSOPLoLi	23	Diagnostic fault check to report the error in undervoltage monitoring	Irreversible error bit 3 set in MoCSOP_st (counter MoCSOP_ctDebPSDia >= MoCSOP_ctDebPSDia_C during under voltage detection of the SOP test).	ECU internal fault	1.2
20290	ECU	DFC_MoCSOPMM	23	Diagnostic fault check to report that WDA is not working correct	Irreversible error bit 1 set in MoCSOP_st (for example counter MoCSOP_ctDebSOPTst >= MoCSOP_ctDebSOPTst_C (66 Events) or (MoCSOP_ctDebPSDia < MoCSOP_ctDebPSDia_C (2 Events)) AND (MoCSOP_ctCylNum >= MoFInjDat_numCyl_C (4)) during the MM SOP test).	ECU internal fault	1.2
20290	ECU	DFC_MoCSOPOSTimeOut	25	OS timeout in the shut off path test. Failure setting the alarm task period.	Irreversible error bit 7 set in MoCSOP_st (counter MoCSOP_ctErrOSTimeout > MOCSOP_MM_OSTIMEOUT_RESET_ERRORS(2) within the SOP test) and state MOCSOP_STEP_ERROR reached due to time out.	ECU internal fault	1.2
20290	ECU	DFC_MoCSOPPsvTstErr	25	Diagnostic fault check to report that the positive test failed	Irreversible error bit 10 set in MoCSOP_st (bit MOCSOP_RSLTRDY_BP(0) of the return value from InjVlv_SOPTst() set to one, and bit MOCSOP_SUCCESS_BP(1) set to zero).	ECU internal fault	1.2
20290	ECU	DFC_MoCSOPTimeOut	25	Diagnostic fault check to report the timeout in the shut off path test	Irreversible error bit 0 set in MoCSOP_st (counter MoCSOP_ctDebSOPTst > MoCSOP_ctDebSOPTst_C (66 Events) during SOP test).	ECU internal fault	1.2

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SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20290	ECU	DFC_MoCSOPUpLi	3	Diagnostic fault check to report the error in overvoltage monitoring	Irreversible error bit 2 set in MoCSOP_st (counter MoCSOP_ctDebPSDia >= MoCSOP_ctDebPSDia_C (2 Events) during over voltage detection of the SOP test).	ECU internal fault	1.2
22040	CAN communication	DFC_ComTSC1TETO	19	Timeout Error of CAN-Receive-Frame TSC1TE	Timeout of TSC1_TE message. The message is not received for 40 ms (TimeoutCount = 4, selected task cycle = 10 ms, FRMSCH_RXMODE1) and the defect debouncing time DDRC_DurDeb.Com_tiTSC1TETODebDef_C is passed and the TSC1 message is enabled and there is no busoff (i.e Com_stSAEJ1939RxEnbl[12].6 is set to 1)	CAN transmitter DPF System	4.1
22058	ECU	DFC_Cy146SpiCom1	19	Reported SPI and COM-Errors of a Cy146		ECU internal fault	1.2
23350	Injection system	DFC_IVDiaBnkShCir_0	4	short circuit	Short circuit in injection bank 0 (all injectors of the same bank can be affected)	wiring harness or injector short circuit.	2.2
23352	Injection system	DFC_IVDiaBnkShCir_1	4	short circuit	Short circuit in injection bank 1 (all injectors of the same bank can be affected)	wiring harness or injector short circuit.	2.2
23354	ECU	DFC_IVDiaChp_0	12	CY33X is defect	Chip error in the CY33x power stage component	ECU internal fault	1.2
23550	T50 signal	DFC_T50Err	12	Defective T50 switch	The debounced signal is high (T50_st == 1) for a period longer than DDRC_DurDeb.T50_tiErrDebDef_C (50ms)	switch defective or is active for a long time	1.1
23613	CR system	DFC_RailMeUn0	0	maximum positive deviation of rail pressure exceeded	If the rail pressure governor deviation Rail_pDvt exceeds the limiting value based on the engine speed Rail_pMeUnDvtMax_CUR an error will be detected.	1.) Leakage in the high pressure section 2.) injection nozzle stuck in open position 3.) worn high pressure pump 4.) worn injector (to high injector backflow quantity) 5.) fuel filter clogged up 6.) PSP (electric pre-supply pump) output too low	2.2
23613	CR system	DFC_RailMeUn10	24	leakage is detected based on fuel quantity balance	If the high pressure pump delivery quantity (MeUn_dvolSet) exceeds the plausibility limit of the volume flow balance (evaluated over the product life and supplemented to include tolerances) Rail_dvolMonMax_mp, an error will be detected.	Maladjusted rail pressure sensor, defective high pressure pump, leakage, Possible error in the low pressure stage, Backflow too low	2.2
23613	CR system	DFC_RailMeUn2	1	If the rail pressure governor deviation Rail_pDvt falls below the limiting value Rail_pMeUnDvtMin_CUR and if the CP3 delivery quantity MeUn_dvolSet falls to the threshold Rail_MeUnMon.dvolSetMin_C (-350 mm^3/s) an error will be detected.	If the rail pressure governor deviation Rail_pDvt falls below the limiting value Rail_pMeUnDvtMin_CUR and if the CP3 delivery quantity MeUn_dvolSet falls to the threshold Rail_MeUnMon.dvolSetMin_C an error will be detected.	1.) Metering unit is stuck in open position 2.) zero delivery throttle clogged up 3.) metering unit without power due to electrical error. 4.) pressure after zero-delivery throttle too high.	2.2

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SPN	Source of trouble	FaultCheckName	FMI	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
23613	CR system	DFC_RailMeUn4	2	If the rail pressure RailP_pFlt exceeds the limiting value Rail_MeUnMon.pFltMax_C (1.750.000 hPa) an error will be detected.	If the rail pressure RailP_pFlt exceeds the limiting value Rail_MeUnMon.pFltMax_C an error will be detected.	1.) Metering unit is stuck in open position 2.) zero delivery throttle clogged up 3.) metering unit without power due to electrical error. 4.) pressure after zero-delivery throttle too high. 5.) very last action: change ECU	2.2
23614	CR system	DFC_RailPCV0	20	maximum positive deviation of rail pressure exceeded		maximum positive deviation of rail pressure exceeded	2.2
23614	CR system	DFC_RailPCV2	22	maximum negative rail pressure deviation with closed pressure control valve exceeded		maximum negative rail pressure deviation with closed pressure control valve exceeded	2.2
23614	CR system	DFC_RailPCV4	0	maximum rail pressure exceeded		maximum rail pressure exceeded	2.2
23614	CR system	DFC_RailPCV42	1	maximum rail pressure exceeded (second stage)		maximum rail pressure exceeded (second stage)	2.2
23895	ECU	DFC_IVAdjDiaIVAdj_0	13	check of missing injector adjustment value programming	Detection if the monitoring for missing or faulty programming of the injector adjustment values is active and: • the checksum of the injector adjustment code words is not correct or • the basic correction quantity in at least one injector checkpoint has exceeded the admissible limits or • no injector adjustment values could be read due to faulty EEPROM access.	IMA not programmed	2.2
23896	ECU	DFC_IVAdjDiaIVAdj_1	13	check of missing injector adjustment value programming		IMA not programmed	2.2
23897	ECU	DFC_IVAdjDiaIVAdj_2	13	check of missing injector adjustment value programming		IMA not programmed	2.2
23898	ECU	DFC_IVAdjDiaIVAdj_3	13	check of missing injector adjustment value programming		IMA not programmed	2.2
23906	Pre Supply Pump	DFC_PSPOL	5	open load of pre-supply pump output		wiring harness or component	2.1
23906	Pre Supply Pump	DFC_PSPOvrTemp	12	Over temperature error on ECU powerstage for Pre supply pump		ECU internal fault	2.1
23906	Pre Supply Pump	DFC_PSPSCB	3	short circuit to battery of pre-supply pump output		wiring harness or component	2.1
23906	Pre Supply Pump	DFC_PSPSCG	4	short circuit to ground of pre-supply pump output		wiring harness or component	2.1
24000	CAN communication	DFC_ComDM1DCUSPN1	0	Error path SPN1 matching of DM1DCU message	The error is set in this DFC if received SPN number match with Com_numDM1DCUSPN1_CA	CAN transmitter	1.5
24000	ECU	DFC_MoFStrt	11	function monitoring: fault in the monitoring of the start control		ECU internal fault	
25000	CAN Start Stop	DFC_ComCM1TO	0	Can signal		CAN transmitter	

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