Hatz Diesel - Diagnostic trouble codes SPN/FMI CV54 - V710 - 05632700

SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
29	3	Accelerator pedal	DFC_SRCHighAPP2	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	4	Accelerator pedal	DFC_SRCLowAPP2	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	0	Vehicle Speed Sensor	DFC_VehVMax	Maximum threshold error for vehicle speed			1.1
84	5	Vehicle Speed Sensor	DFC_VehVNplMon	NPL error for vehicle speed signal over Tachomter or hardware sensor		wiring harness or component	1.1
84	3	Vehicle Speed Sensor	DFC_VehVSRCHi	signal level low error for vehicle speed signal over Tachomter or hardware sensor		wiring harness or component	1.1
84	4	Vehicle Speed Sensor	DFC_VehVSRCLo	signal level low error for vehicle speed signal over Tachomter or hardware sensor		wiring harness or component	1.1
91	3	Accelerator pedal	DFC_SRCHighAPP1	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	4	Accelerator pedal	DFC_SRCLowAPP1	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	11	Accelerator pedal	DFC_SyncAPP	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	17	Fuel Low Pressure System	DFC_FuelPLoP	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	3	Fuel Low Pressure System	DFC_FuelPSRCMax	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	4	Fuel Low Pressure System	DFC_FuelPSRCMin	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	15	Water in Fuel	DFC_FlFWLvlWtHi	Water in fuel detected		Water in fuel detected.	2.1
97	17	Water in Fuel	DFC_NplFlFWLvl	Fuel Level unplausible		wiring harness or component	2.1

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SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
100	0	Oil pressure sensor	DFC_OilPSwmpPhysRngHi	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	1	Oil pressure sensor	DFC_OilPSwmpPhysRngLo	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	3	Oil pressure sensor	DFC_OilPSwmpSRCMax	Oil_uRawPSwmp > Oil_SRCPSwmp.uMax_C (4772mV)	Oil_uRawPSwmp > Oil_SRCPSwmp.uMax_C (4772mV)	wiring harness or component	2.3
100	4	Oil pressure sensor	DFC_OilPSwmpSRCMin	Oil_uRawPSwmp < Oil_SRCPSwmp.uMin_C (234mV)	Oil_uRawPSwmp < Oil_SRCPSwmp.uMin_C (234mV)	wiring harness or component	2.3
102	0	boost pressure sensor	DFC_PIntkVUsPhysRngHi	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	1	boost pressure sensor	DFC_PIntkVUsPhysRngLo	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	3	boost pressure sensor	DFC_PIntkVUsSRCMax	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	4	boost pressure sensor	DFC_PIntkVUsSRCMin	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	0	boost pressure temperature sensor	DFC_TCACDsPhysRngHi	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	1	boost pressure temperature sensor	DFC_TCACDsPhysRngLo	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	3	boost pressure temperature sensor	DFC_TCACDsSRCMax	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

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SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
105	4	boost pressure temperature sensor	DFC_TCACDsSRCMin	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	14	Air Filter System	DFC_AirFltClogDet	Error path for Clog Detection in Air filter		air filter clogged/ sensor value ok?	1.3
107	3	Air Filter System	DFC_PAirFltDSRCMax	SRC High for Controller Mode Switch		wiring harness or component	1.3
107	4	Air Filter System	DFC_PAirFltDSRCMin	SRC low for Controller Mode Switch		wiring harness or component	1.3
108	0	environmental pressure sensor	DFC_PEnvRngChkMax	Ambient air pressure sensor range chack max-error		wiring harness or component	1.1
108	1	environmental pressure sensor	DFC_PEnvRngChkMin	Ambient air pressure sensor range check min-error		wiring harness or component	1.1
108	3	environmental pressure sensor	DFC_PEnvSigRngMax	fault check max signal range violated for ambient air pressure sensor		wiring harness or component	1.1
108	4	environmental pressure sensor	DFC_PEnvSigRngMin	fault check min signal range violated for ambient air pressure sensor		wiring harness or component	1.1
110	17	coolant temperature sensor	DFC_CEngDsTAbsTst	defect fault check for Absolute plausibility test	coolant temperature did not reach the threshold temperature	sensor value problems	3.1
110	18	coolant temperature sensor	DFC_CEngDsTDynTst	defect fault check for dynamic plausibility test	rise in coolant is not reached the minimum rise of coolant temperature	sensor value problems	3.1
110	15	coolant temperature sensor	DFC_CEngDsTNplHigh	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	0	coolant temperature sensor	DFC_CEngDsTPhysRngHi	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	1	coolant temperature sensor	DFC_CEngDsTPhysRngLo	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	3	coolant temperature sensor	DFC_CEngDsTSRCMax	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	4	coolant temperature sensor	DFC_CEngDsTSRCMin	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	17	coolant level	DFC_CIntLvRngFltDetn	low coolant level error	If the coolant level is low, i.e. if the message CIntLv_st is set.	-Low coolant level -coolant level sensor defective - wiring harness defctive	3.1
157	3	Rail pressure sensor	DFC_RailPSRCMax	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

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SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
157	4	Rail pressure sensor	DFC_RailPSRCMin	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	7	Alternator	DFC_AltIOMonPlaus			wiring harness or component	1.1
168	0	Supply voltage	DFC_BattUHi	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	1	Supply voltage	DFC_BattULo	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	3	Supply voltage	DFC_BattUSRCMax	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	4	Supply voltage	DFC_BattUSRCMin	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	0	Fuel temp. sensor	DFC_FuelTPhysRngHi	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	1	Fuel temp. sensor	DFC_FuelTPhysRngLo	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	3	Fuel temp. sensor	DFC_FuelTSRCMax	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	4	Fuel temp. sensor	DFC_FuelTSRCMin	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
175	15	Oil temperature sensor	DFC_OilTNplHigh	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	0	Oil temperature sensor	DFC_OilTPhysRngHi	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_tiPhysRngHiT DebDef_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	1	Oil temperature sensor	DFC_OilTPhysRngLo	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_tiPhysRngLoT DebDef_C , then a physical range check low error is reported	Sensor misadjusted or wiring harness	2.3
175	3	Oil temperature sensor	DFC_OilTSRCMax	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

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SPN	*FMI*	*Source of trouble*	*FaultCheckName*	*FaultCheckDescription*	Fault detection condition	Possible Causes	*Blinkcode short - long*
175	4	Oil temperature sensor	DFC_OilTSRCMin	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	8	camshaft sensor	DFC_EpmCaSI1ErrSig	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	12	camshaft sensor	DFC_EpmCaSI1NoSig	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	2	camshaft sensor	DFC_EpmCaSI1OfsErr	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
190	8	crankshaft sensor	DFC_EpmCrSErrSig	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

SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
190	12	crankshaft sensor	DFC_EpmCrSNoSig	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	2	Brake	DFC_BrkNpl	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	5	injector	DFC_IVDiaCylNoLd_0	open load	Open load error of an injector (interruption of an electric connection)	wiring harness or injector load drop cylinder	2.2
651	3	injector	DFC_IVDiaCylShCir_0	general short circuit	Short circuit of an injector	wiring harness or injector cylinder.	2.2
652	5	injector	DFC_IVDiaCylNoLd_3	open load	Open load error of an injector (interruption of an electric connection)	wiring harness or injector load drop cylinder	2.2
652	3	injector	DFC_IVDiaCylShCir_3	general short circuit	Short circuit of an injector	wiring harness or injector cylinder.	2.2
653	5	injector	DFC_IVDiaCylNoLd_1	open load	Open load error of an injector (interruption of an electric connection)	wiring harness or injector load drop cylinder	2.2
653	3	injector	DFC_IVDiaCylShCir_1	general short circuit	Short circuit of an injector	wiring harness or injector cylinder.	2.2
654	5	injector	DFC_IVDiaCylNoLd_2	open load	Open load error of an injector (interruption of an electric connection)	wiring harness or injector load drop cylinder	2.2
654	3	injector	DFC_IVDiaCylShCir_2	general short circuit	Short circuit of an injector	wiring harness or injector cylinder.	2.2
677	5	Starter relay	DFC_StrtOL	No load error		wiring harness or component	1.1
677	6	Starter relay	DFC_StrtOvrTemp	Over temperature error on ECU powerstage for Starter		Over temperature error on ECU powerstage for Starter	1.1
677	3	Starter relay	DFC_StrtSCB	Short circuit to battery error		wiring harness or component	1.1
677	4	Starter relay	DFC_StrtSCG	Short circuit to ground error		wiring harness or component	1.1
976	3	Multi State Switch	DFC_MaxPTOSwt	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	4	Multi State Switch	DFC_MinPTOSwt	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	2	Multi State Switch	DFC_NplPTOSwt	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	5	Metering Unit	DFC_MeUnOL	open load of metering unit output	Detecting an open load fault in the metering unit	wiring harness or component	2.2
1076	12	Metering Unit	DFC_MeUnOT	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	15	Metering Unit	DFC_MeUnShCirHSBatt	short circuit to battery in the high side of the MeUn		wiring harness or component	2.2
1076	17	Metering Unit	DFC_MeUnShCirHSGnd	short circuit to ground in the high side of the MeUn		wiring harness or component	2.2
1076	16	Metering Unit	DFC_MeUnShCirLSBatt	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	18	Metering Unit	DFC_MeUnShCirLSGnd	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	16	ECU	DFC_MoFOvR	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	15	ECU	DFC_MoFOvRHtPrt	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	11	ECU	DFC_EngICO	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

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SPN	*FMI*	*Source of trouble*	*FaultCheckName*	*FaultCheckDescription*	Fault detection condition	Possible Causes	*Blinkcode short - long*
1136	3	ECU	DFC_TECUSRCMax	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	4	ECU	DFC_TECUSRCMin	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	5	PCV - Pressure Control Valve	DFC_PCVOL	open load of pressure control valve output		wiring harness or component	2.2
1244	12	PCV - Pressure Control Valve	DFC_PCVOT	over teperature of device driver of pressure control valve		wiring harness or component	2.2
1244	15	PCV - Pressure Control Valve	DFC_PCVShCirHSBatt	short circuit to battery in the high side of the pressure control valve		wiring harness or component	2.2
1244	17	PCV - Pressure Control Valve	DFC_PCVShCirHSGnd	short circuit to ground in the high side of the pressure control valve		wiring harness or component	2.2
1244	16	PCV - Pressure Control Valve	DFC_PCVShCirLSBatt	short circuit to battery of pressure control valve output		wiring harness or component	2.2
1244	18	PCV - Pressure Control Valve	DFC_PCVShCirLSGnd	short circuit to ground of the pressure control valve output		wiring harness or component	2.2
1244	4	PCV - Pressure Control Valve	DFC_PCVSRCMax	signal range check high error of pressure control valve AD-channel		wiring harness or component	2.2
1244	3	PCV - Pressure Control Valve	DFC_PCVSRCMin	signal range check low error of pressure control valve AD-channel		wiring harness or component	2.2
1769	11	Engine overspeed	DFC_EngPrtOvrSpd	Overspeed detection in component engine protection	Exceeding of the engine-speed threshold EngPrt_nOvrSpd_C.	overspeed caused by driver	1.2
2791	18	EGRVlv	DFC_EGRVlvGovDvtMax	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_stFId.FId_EGRVlvGovOn.5 is set.	EGR valve dirty or defective	1.4

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SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
2791	16	EGRVlv	DFC_EGRVlvGovDvtMin	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.FId_EGRVlvGovOn.5 is set.	EGR valve dirty or defective	1.4
2791	20	EGRVlv	DFC_EGRVlvPhysSRCMax	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	21	EGRVlv	DFC_EGRVlvPhysSRCMin	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	13	EGRVlv	DFC_EGRVlvSRCMax	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
2791	14	EGRVlv	DFC_EGRVlvSRCMin	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	11	ECU	DFC_EEPEraseErr	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	14	ECU	DFC_EEPRdErr	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	12	ECU	DFC_EEPWrErr	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

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SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
3509	2	ECU	DFC_SSpMon1	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	2	ECU	DFC_SSpMon2	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	2	ECU	DFC_SSpMon3	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	3	ECU	DFC_ARlySCB_0	Short circuit to battery error at acuator relay		ECU internal fault	1.1
3597	4	ECU	DFC_ARlySCG_0	Short circuit to ground error at actuator relay		ECU internal fault	1.1
3598	3	ECU	DFC_ARlySCB_1	Short circuit to battery error at acuator relay		ECU internal fault	1.1
3598	4	ECU	DFC_ARlySCG_1	Short circuit to ground error at actuator relay		ECU internal fault	1.1
5324	11	Glow System	DFC_GlwPlgPLUGErr_0	Array of DFCs for failure in i+1th Glow Plug		glowing problems	3.2
5324	4	Glow System	DFC_GlwPlgPLUGSC_0	Array of DFCs for short circuit in i+1th Glow Plug		glowing problems	3.2
5325	11	Glow System	DFC_GlwPlgPLUGErr_1	Array of DFCs for failure in i+1th Glow Plug		glowing problems	3.2
5325	4	Glow System	DFC_GlwPlgPLUGSC_1	Array of DFCs for short circuit in i+1th Glow Plug		glowing problems	3.2
5326	11	Glow System	DFC_GlwPlgPLUGErr_2	Array of DFCs for failure in i+1th Glow Plug		glowing problems	3.2
5326	4	Glow System	DFC_GlwPlgPLUGSC_2	Array of DFCs for short circuit in i+1th Glow Plug		glowing problems	3.2
5327	11	Glow System	DFC_GlwPlgPLUGErr_3	Array of DFCs for failure in i+1th Glow Plug		glowing problems	3.2
5327	4	Glow System	DFC_GlwPlgPLUGSC_3	Array of DFCs for short circuit in i+1th Glow Plug		glowing problems	3.2
20201	19	ECU	DFC_Cy320SpiCom	SPI/COM-Errors of the Cy320	When any peripheral monitoring function reports an error	ECU internal fault	1.2

SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20220	2	ECU	DFC_MoCADCNTP	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	11	ECU	DFC_MoCADCTst	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	14	ECU	DFC_MoCADCVltgRatio	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	11	ECU	DFC_MoCComErrCnt	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	11	ECU	DFC_MoCComSPI	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	11	ECU	DFC_MoCROMErrXPg	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	11	ECU	DFC_MoFAPP	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	11	ECU	DFC_MoFESpd	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

SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20226	11	ECU	DFC_MoFInjDatET	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
20227	11	ECU	DFC_MoFInjDatPhi	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	11	ECU	DFC_MoFInjQnt	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_tiPiI2ZFCETCor and MoFInjDat_tiPiI3ZFCETCor are tested on their plausible value ranges.	ECU internal fault	1.2
20229	11	ECU	DFC_MoFMode1	Diagnosis fault check to report the demand for normal mode due to an error in the PoI2 quantity	Implausible PoI2 efficiencies. The efficiency of PoI2 MoFMode_facPoI2Eff_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	14	ECU	DFC_MoFMode2	Diagnosis fault check to report the error to demand for an ICO due to an error in the PoI2 shut-off	Error in the PoI2 shut-off. The quantity MoFQntCor_qPoI2 is tested of its shut-off value in normal mode.	ECU internal fault	1.2
20230	11	ECU	DFC_MoFMode3	Diagnosis fault check to report the error to demand for an ICO due to an error in the PoI3 efficiency factor	Implausible PoI3 efficiencies. The efficiency of PoI3 MoFInjDat_facPoI3EffSet is tested of its plausible value range.	ECU internal fault	1.2
20231	11	ECU	DFC_MoFQntCor	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_stPiI1ErrAct_mp MoFQntCor_stMI1ErrAct_mp and MoFQntCor_stPoI2ErrAct_mp.	ECU internal fault	1.2

SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20232	11	ECU	DFC_MoFRailP	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	11	ECU	DFC_MoFTrqCmp	Diagnostic fault check to report the error due to torque comparison	FStSys_stStrtRlsCAN_mp = TRUE).	ECU internal fault	1.2
20234	11	ECU	DFC_MonLimCurr	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	20	ECU	DFC_MonLimLead	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	21	ECU	DFC_MonLimSet	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	11	ECU	DFC_OCWDACom	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

SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20238	4	ECU	DFC_OCWDALowVltg	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	3	ECU	DFC_OCWDAOvrVltg	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	14	ECU	DFC_OCWDAReasUnkwn	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
20251	11	ECU	DFC_SWReset_0	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	20	ECU	DFC_SWReset_1	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

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SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20251	21	ECU	DFC_SWReset_2	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	11	ECU	DFC_MoFRmtAPP	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	5	EGRVlv	DFC_EGRVlvHBrgOpnLd	Open load error for powerstage	Open Load error Monitoring for TLE7209/CJ230	wiring harness or component	1.4
20282	12	EGRVlv	DFC_EGRVlvHBrgOvrTemp	Over temperature error for H-bridge	Over Temperature error Monitoring for TLE7209/CJ230	wiring harness component or ECU internal fault	1.4
20282	3	EGRVlv	DFC_EGRVlvHBrgShCirBatt1	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	3	EGRVlv	DFC_EGRVlvHBrgShCirBatt2	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	4	EGRVlv	DFC_EGRVlvHBrgShCirGnd1	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	4	EGRVlv	DFC_EGRVlvHBrgShCirGnd2	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	21	Glow System	DFC_GlwPlg2of3	DFC for coding error when selected coding is not working		glowing problems	3.2
20288	22	Glow System	DFC_GlwPlgDiagErr	DFC for faulty diagnostic data transmission or protocol error		glowing problems	3.2
20288	2	Glow System	DFC_GlwPlgDiff	DFC for coding error when different coding words were received in a coding cycle		glowing problems	3.2
20288	5	Glow System	DFC_GlwPlgLVSOL	No load error for Low Voltage System		glowing problems	3.2
20288	12	Glow System	DFC_GlwPlgLVSOvrTemp	Over temperature error on ECU powerstage for Glow plug Low Voltage System		glowing problems	3.2
20288	3	Glow System	DFC_GlwPlgLVSSCB	Short circuit to battery error for Low Voltage System		glowing problems	3.2
20288	4	Glow System	DFC_GlwPlgLVSSCG	Short circuit to ground error for Low Voltage System		glowing problems	3.2
20288	14	Glow System	DFC_GlwPlgT30Miss	DFC for T30 missing error in GCU-T		glowing problems	3.2
20288	23	Glow System	DFC_GlwPlgUnErr	DFC for glow module error in GCU-T		glowing problems	3.2

SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20290	11	ECU	DFC_MoCSOPErrMMRespByte	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	20	ECU	DFC_MoCSOPErrNoChk	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 (FId_MoCSOPInjDiagErr or FId_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	21	ECU	DFC_MoCSOPErrRespTime	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	22	ECU	DFC_MoCSOPErrSPI	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	23	ECU	DFC_MoCSOPLoLi	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	23	ECU	DFC_MoCSOPMM	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

SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
20290	25	ECU	DFC_MoCSOPOSTimeOut	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	25	ECU	DFC_MoCSOPPsvTstErr	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	25	ECU	DFC_MoCSOPTimeOut	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
20290	3	ECU	DFC_MoCSOPUpLi	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	19	CAN communication	DFC_ComTSC1TETO	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_tiTSC1TETO DebDef_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	19	ECU	DFC_Cy146SpiCom1	Reported SPI and COM-Errors of a Cy146		ECU internal fault	1.2
23350	4	Injection system	DFC_IVDiaBnkShCir_0	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	4	Injection system	DFC_IVDiaBnkShCir_1	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	12	ECU	DFC_IVDiaChp_0	CY33X is defect	Chip error in the CY33x power stage component	ECU internal fault	1.2

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SPN	*FMI*	*Source of trouble*	*FaultCheckName*	*FaultCheckDescription*	Fault detection condition	Possible Causes	*Blinkcode short - long*
23550	12	T50 signal	DFC_T50Err	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	0	CR system	DFC_RailMeUn0	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	24	CR system	DFC_RailMeUn10	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	1	CR system	DFC_RailMeUn2	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
23613	2	CR system	DFC_RailMeUn4	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	20	CR system	DFC_RailPCV0	maximum positive deviation of rail pressure exceeded		maximum positive deviation of rail pressure exceeded	2.2
23614	22	CR system	DFC_RailPCV2	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	0	CR system	DFC_RailPCV4	maximum rail pressure exceeded		maximum rail pressure exceeded	2.2
23614	1	CR system	DFC_RailPCV42	maximum rail pressure exceeded (second stage)		maximum rail pressure exceeded (second stage)	2.2

SPN	FMI	Source of trouble	FaultCheckName	FaultCheckDescription	Fault detection condition	Possible Causes	Blinkcode short - long
23895	13	ECU	DFC_IVAdjDiaIVAdj_0	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	13	ECU	DFC_IVAdjDiaIVAdj_1	check of missing injector adjustment value programming		IMA not programmed	2.2
23897	13	ECU	DFC_IVAdjDiaIVAdj_2	check of missing injector adjustment value programming		IMA not programmed	2.2
23898	13	ECU	DFC_IVAdjDiaIVAdj_3	check of missing injector adjustment value programming		IMA not programmed	2.2
23906	5	Pre Supply Pump	DFC_PSPOL	open load of pre-supply pump output		wiring harness or component	2.1
23906	12	Pre Supply Pump	DFC_PSPOvrTemp	Over temperature error on ECU powerstage for Pre supply pump		ECU internal fault	2.1
23906	3	Pre Supply Pump	DFC_PSPSCB	short circuit to battery of pre-supply pump output		wiring harness or component	2.1
23906	4	Pre Supply Pump	DFC_PSPSCG	short circuit to ground of pre-supply pump output		wiring harness or component	2.1
24000	0	CAN communication	DFC_ComDM1DCUSPN1	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	11	ECU	DFC_MoFStrt	function monitoring: fault in the monitoring of the start control		ECU internal fault	
25000	0	CAN Start Stop	DFC_ComCM1TO			CAN transmitter	