

Support document engine related errors

This support document contains a limited summary of possible engine related error codes that could appear on the display. The intention of this list is to initially help you identify what might be the error area or possible error causing component. Bear in mind that only trained, skilled and certified technicians are allowed to work on this type of extreme high pressure common rail fuel injection engines.

It is not allowed to work on these types of engines besides the low pressure fuel system section and cooling system!

The below listed SPN- codes (Suspect Parameter Numbers) are universal and originate from the J1939 Norm which contains a list of over 4000 codes.

This document contains a SPN-code selection which can be encountered in diesel engine driven BBA pump units.

Besides SPN-codes this document also lists FMI-numbers. These FMI-numbers (Failure Mode Identifier) give an additional error specification to the SPN-code (range 0 – 31) and is also clearly visualized on the BBA pump unit display in case of an error.

Engine error codes (SPN)

0	Data Valid but Above Normal Operational Range, Most Severe Level
1	Data Valid but Below Normal Operational Range, Most Severe Level
2	Data Erratic, Intermittent or Incorrect (rationality)
3	Voltage Above Normal, or Shorted to High Source
4	Voltage Below Normal, or Shorted to High Source
5	Current Below Normal, or Open Circuit
6	Current Above Normal, or Grounded Circuit
7	Mechanical System not Responding or Out of Adjustment
8	Abnormal Frequency or Pulse Width or Period
9	Abnormal Update Rate
10	Abnormal Rate of Change
11	Failure Code not Identifiable
12	Bad Intelligent Device or Component
13	Out of Calibration
14	Special Instructions
15	Data Valid but Above Normal Range : Least Severe Level
16	Data Valid but Above Normal Range: Moderately Severe Level
17	Data Valid but Below Normal Range: Least Severe Level
18	Data Valid but Below Normal Range: Moderately Severe Level
19	Received Network Data in Error: (Multiplexed Data)
20	Engine extended range engine coolant pressure
27	EGR valve
29	Accelerator pedal position #2
51	Engine throttle position

70	Hand Brake Switch
84	Vehicle Speed Sensor
91	Accelerator pedal position #1
92	Engine % load at current speed
94	Engine fuel delivery pressure low
95	Fuel Low Pressure Sensor
96	Fuel Level Plausibility
97	Water in fuel indicator
98	Engine oil level
99	Engine oil filter differential pressure
100	Engine oil pressure
101	Crankcase pressure
102	Engine intake manifold 1 pressure
103	Turbo charger actuator
105	Engine Intake Manifold #1 Temperature
106	Engine intake air pressure
107	Engine Air Filter 1 Differential Pressure
108	Ambient air pressure
110	Engine coolant temperature
111	Engine coolant level
131	Engine exhaust back pressure
132	PFM
153	Engine high resolution crankcase pressure
157	Engine injector metering Rail 1 pressure sensor
158	Battery voltage
164	Engine injection control pressure
166	Engine rated power
167	Alternator Monitoring
168	Battery potential
171	Ambient air temperature sensor
172	Engine intake air temperature
173	Engine exhaust gas temperature
174	Engine fuel temperature 1
175	Oil temperature
177	Transmission oil temperature 1
183	Engine fuel rate
188	Engine speed at idle, poin 1
190	Engine speed
235	Engine total idle hours
236	Engine total idle fuel used
247	Engine total hours of operation
250	Engine total fuel used
411	EGR differential pressure

412	EGR temperature
430	Starter Relay
441	Auxiliary temperature sensor
442	Humidity sensor temperature
511	Throttle Valve
512	Throttle Valve
513	Actual engine - percent torque
514	Nominal friction - percent torque
515	Throttle Valve
518	Requested torque / torque limit
520	CAN
527	Cruise Control
528	Engine speed at point 2
529	Engine speed at point 3
530	Engine speed at point 4
531	Engine speed at point 5
532	Engine speed at high idle, point 6
535	Engine requested speed control range lower limit
536	Engine requested speed control range upper limit
539	Percent torque at idle point 1
540	Percent torque at point 2
541	Percent torque at point 3
542	Percent torque at point 4
543	Percent torque at point 5
544	Reference engine torque
558	Accelerator pedal 1 low idle switch
593	Engine Idle Shutdown has Shutdown engine
594	Engine idle shutdown driver alert mode
597	Brake System
598	Clutch
604	Gear Neutral Switch
608	Throttle position
620	5 volts DC supply
623	Red stop lamp
624	Amber warning lamp status
626	Engine start enable device 1
628	Factory Mode Active
629	Controller error
630	Calibration memory
631	Calibration module
633	Pressure Control Valve
636	ECU
637	Engine timing sensor

639	CAN
641	Turbo Charger Actuator
647	Cooling fan control
649	Engine exhaust back pressure regulator control command
651 - 656	Engine Injector Cylinder #1 to #6
675	Glow Lamp
676	Engine glow plug
677	Engine starter motor relay
678	ECU 8 volts dc supply
679	Engine injection control pressure regulator
695	Override control mode
696	Requested speed control conditions
702	Air Filter Lamp
705	Oil Pressure Lamp
723	Engine speed sensor #2
729	Engine Inlet Air Heater
730	Engine Inlet Air Heater
858	Adblue®/DEF internal filter heater
859	Adblue®/DEF external filter heater
876	Air Condition Compressor
897	Override control mode priority
898	CAN
916	Service delay / operational time based
970	Engine auxiliary engine shutdown switch
975	Fan speed
976	Power take off (PTO) state
977	Fan drive state
980	Engine PTO governor enable switch
981	Engine PTO governor accelerate switch
982	Engine PTO resume switch
983	Engine PTO governor coast / decelerate switch
984	Engine PTO governor set switch
986	Requested percent fan speed
987	SVS
988	Trip group 1
1041	Start signal indicator
1045	Brake system main brake
1046	Brake system redundant brake
1072	Engine (Compression) Brake output #1
1073	Engine (Compression) Brake output #2
1075	Engine Electric Lift Pump for Engine Fuel Supply
1076	Engine fuel injection pump fuel control valve
1079	Sensor Supply Monitoring 1

1080	Sensor Supply Monitoring 2
1081	Engine Wait to Start indicator
1108	Engine protection system timer override
1109	Engine protection system approaching shutdown
1110	Engine Protection System has Shutdown Engine
1127	Boost Pressure Governor
1136	Engine ECM temperature
1176	Turbo Charger Upstream Pressure Sensor
1180	Turbo Charger Upstream Temperature
1184	Engine turbocharger 1 turbine outlet temperature
1188	Engine turbocharger 1 wastegate actuator 1 position
1209	Engine exhaust gas pressure
1213	Malfunction indicator lamp
1214	Suspect parameter number
1215	Failure mode identifier
1216	Occurrence count
1221	Continuously monitored systems support/status
1231	CAN B
1235	CAN C
1239	Engine fuel leakage 1
1244	Pressure Control Valve
1377	Engine synchronization switch
1382	Fuel Filter
1387	Auxiliary pressure #1
1485	ECM main relay
1550	Fan
1638	Hydraulic temperature
1639	Fan speed
1656	Engine Compartment Button
1664	Engine Automatic Start Failed
1668	CAN D
1675	Engine starter mode
1761	Aftertreatment 1 Diesel Exhaust Fluid Tank Level / Aftertreatment reagent level
1769	Engine overspeed
1784	Engine speed limit request - minimum continuous
1804	Engine start enable device 2
2017	Lost communication (source address 17)
2036	Lost communication (source address 36)
2541	CAN
2630	Engine charge air cooler 1 outlet temperature
2633	Turbo Charger Actuator
2634	Defect main relay
2659	EGR Mass Flow Rate

2791	EGR valve Control
2795	Turbo Charger Actuator
2797	Engine injector group 1
2798	Engine injector group 2
2802	ECU Data memory error
2812	Engine overspeed test
2840	ECU instance
2880	Engine operator primary intermediate speed select
2882	Engine alternate rating select
2883	Engine alternate low idle switch
2891	Engine alternate low idle select state
2898	Engine start enable device 2 configuration
2899	Engine start enable device 1 configuration
2901	ECU part number
2902	ECU Serial
2970	Accelerator pedal #2 low idle switch
2988	Engine Coolant Diverter Valve / Thermostat bypass valve
3031	Aftertreatment 1 diesel exhaust fluid tank temperature
3038	Emission system malfunction indicator flash
3039	Flash red stop indicator
3040	Flash amber warning indicator
3041	Engine protect indicator flash
3051	Aftertreatment reagent dosing valve
3062	Air Condition Compressor
3216	Aftertreatment #1 Intake NOx
3217	Aftertreatment #1 intake o2
3219	Aftertreatment #1 Intake Gas Sensor at Temperature
3222	Aftertreatment #1 intake gas sensor heater
3226	Aftertreatment #1 Outlet NOx
3227	Aftertreatment #1 intake o2
3241	Aftertreatment #1 intake o2
3242	Aftertreatment #1 DPF intake temperature
3244	Aftertreatment #1 DPF intake sensor
3245	Exhaust Gas Temperature Sensor Bank 1 Sensor 3
3248	Aftertreatment #1 DPF downstream temperature
3249	Exhaust Gas Temperature Sensor Bank 1 Sensor 2
3251	Aftertreatment #1 DPF Differential Pressure
3252	CAN
3253	DPF monitoring
3295	Minutes run by engine while MIL activated
3349	TSC1 transmission rate
3350	TSC1 control purpose
3353	CAN

3357	Actual maximum available engine - percent torque
3358	EGR inlet pressure
3360	Aftertreatment #1 diesel exhaust fluid controller
3361	Aftertreatment #1 DEF Dosing Unit
3362	Aftertreatment #1 DEF Dosing Unit Input Lines
3363	Aftertreatment #1 DEF Tank Heater
3364	Aftertreatment #1 diesel exhaust fluid tank quality
3464	Engine throttle actuator
3468	Engine fuel temperature 2
3470	Turbo Charger Actuator
3509 - 3512	Sensor supply monitoring 1 to 4
3516	Aftertreatment 1 diesel exhaust fluid concentration
3519	Aftertreatment 1 diesel exhaust fluid temperature 2
3520	Aftertreatment 1 diesel exhaust fluid properties
3521	Invalid Data Received From Reductant Quality Module
3522	Adblue®/ Diesel exhaust fluid consumption
3532	Reductant Level Sensor "A"
3543	Engine operating state
3551	Engine oil priming state
3563	Engine intake manifold #1 absolute pressure
3597	Actuator Supply Voltage "A"
3598	Actuator Supply Voltage "B"
3609	DPF Intake Pressure
3675	Turbo Charger Actuator
3695	Aftertreatment regeneration inhibit switch
3697	Diesel particulate filter lamp command
3698	Exhaust system high temperature lamp command
3700	Aftertreatment Diesel particulate filter active regeneration status
3701	Aftertreatment Diesel particulate Filter status
3702	Particulate trap active regeneration inhibited status
3703	Diesel particulate filter active regeneration inhibited due to inhibit swith
3714	DPF Active Regeneration Inhibited Due to Permanent System Lockout
3715	DPF Active Regeneration Inhibited Due to Permanent System Lockout
3719	Particulate trap #1 soot load percent
4009	Fuel Filter Heater
4083	Fuel pump prime status
4201	Engine speed 1
4203	Engine speed sensor 1 timing pattem status
4204	Engine speed sensor 2 timing pattem status
4206	Message counter
4207	Message checksum
4228	Turbo Charger Actuator

4304	ECU manufacturer name
4332	Aftertreatment #1 SCR system state
4334	Aftertreatment 1 diesel exhaust fluid doser absolute pressure
4337	Aftertreatment 1 diesel exhaust fluid dosing temperature
4354 - 4356	Aftertreatment 1 diesel exhaust fluid line heater 1 to 3
4360	Aftertreatment #1 SCR catalyst intake gas temperature
4364	Aftertreatment #1 SCR catalyst conversion efficiency
4366	Reductant Heater
4374	Aftertreatment 1 diesel exhaust fluid pump motor speed
4375	Reductant Pump "A" Control
4376	Aftertreatment #1 DEF Return Valve
4377	Aftertreatment #1 outlet NH3
4380	Aftertreatment 1 outlet NH3 gas sensor power in rage
4383	Aftertreatment 1 outlet NH3 Gas sensor heater control
4354	Aftertreatment 1 diesel exhaust fluid line heater 1
4750	EGR Cooler Inlet Temperature
4752	EGR Monitoring
4765	Aftertreatment #1 diesel oxidation catalyst intake temperature
4770	CAN
4781	DPF monitoring
4783	DPF #1 mean soot signal
4785	CAN
4791	Oxidation Catalyst Heater Plugs
4793	Oxidation Catalyst Heater Relay
5016	Actuator Supply voltage "D"
5019	Engine exhaust gas recirculation outlet pressure
5024	Aftertreatment 1 intake NOx sensor heater ratio
5031	Aftertreatment 1 outlet NOx sensor heater ratio
5055	Engine oil viscosity
5077	Warning Lamp
5086	Engine air filter restriction lamp command
5099	Engine oil pressure low lamp data
5100	Coolant Temperature Display
5101	Engine coolant level low lamp data
5245	Aftertreatment 1 Diesel exhaust fluid tank 1 low level indicator
5246	Aftertreatment SCR Operator Inducement Severity
5298	Aftertreatment 1 Diesel oxidation catalyst conversion efficiency
5317	Oxidation Catalyst Monitoring
5319	Particulate Filter Monitoring
5324 - 3529	Engine Glow Plugs
5357	Engine Fuel Injection Quantity Error for Multiple Cylinders
5369	Turbo Charger Actuator

4374	Aftertreatment Reagent Pressure Leakage
5375	Throttle Valve
5377	Throttle Valve
5386	Turbo Charger Actuator
5392	Aftertreatment #1 DEF Dosing Unit #1 Loss of Prime
5394	Aftertreatment diesel exhaust fluid dosing valve
5400	SCR thermal management active
5419	Engine throttle actuator #1
5421	Engine Turbocharger Wastegate Actuator #1
5435	Aftertreatment #1 Diesel Exhaust Fluid Pump stat
5485	Aftertreatment 1 diesel exhaust fluid pump orifice flow
5491	Aftertreatment #1 Diesel Exhaust Fluid line heater relay
5571	High pressure common rail fuel pressure relief valve
5576	Aftertreatment #1 identification
5579	Fuel Filter Downstream Pressure Sensor
5609	Brake System
5625	Engine exhaust back pressure regulator position
5629	DPF Active Regeneration Inhibited Due to Low Exhaust Gas Pressure
5631	PFM
5706	Aftertreatment #1 diesel exhaust fluid pump heater
5707	Aftertreatment 1 diesel exhaust fluid pump heater command
5742	Aftertreatment DPF Temperature Sensor Module
5743	Aftertreatment 1 SCR Temperature Sensor Module
5758	Aftertreatment #1 intake gas sensor power supply
5759	Aftertreatment #1 outlet gas sensor power supply
5763	EGR Valve
5770	EGR Valve
5771	EGR Valve
5784	Throttle Valve
5793	Desired engine fuelling state
5794	Feedback engine fuelling state
5795	Engine fuelling inhibit allowed
5797	Oxidation Catalyst Upstream Temperature
5798	Aftertreatment #1 DEF Dosing Unit Heater Temperature
5826	Emission control system operator inducement severity
5841	Diesel exhaust fluid quality malfunction
5963	Aftertreatment 1 total diesel exhaust fluid used
5965	Aftertreatment 1 diesel exhaust fluid control module relay control
5966	Aftertreatment 1 diesel exhaust fluid control module power supply
6219	Engine ignition control maintenance hours reset
6309	Aftertreatment 1 diesel exhaust fluid control module power supply 2
6322	Aftertreatment #1 SCR desulfation too frequent
6385	Starter Relay

6719	Pre Supply Pump
6808	Engine operating mode command
6935	Aftertreatment #1 SCR system total cleaning time
7105	Aftertreatment #1 Inconsistent Configuration Detected
7332	Energizing Time Control
7343	SCR Operator Inducement Override Renewal Required
7440	Aftertreatment active regeneration inhibited due to low exhaust pressure
7441	Aftertreatment ambient air temperature
7502	Aftertreatment engine speed increase request
7503	Aftertreatment engine load request
7576	Glow Control Unit
7577	Glow Control Unit
7579	Elevated engine speed allowed switch
7745	Start request message
7746	Start consent message
7747	Start abort request message
7748	Engine starter 1 feedback
7759	CAN
8608	Engine operating mode command
8631	Engine Turbocharger #1 Efficiency Low
8694	Engine operating mode selection
20227	RmtAPP Poti 1
20278	RmtAPP Poti 2
22000	CAN A
22001	CAN B
22040	CAN
23618	Battery/Electric Supply
516096	PFM
516097	PFM
516098	PFM
520413	Lost Communication With ECM on Engine Subnet
522001	Air Condition Compressor
522002	Air Condition Compressor
522003	CAN
522004	CAN
522005	CAN
522006	CAN
522008	CAN
522009	CAN
522010	CAN
522011	CAN
522012	CAN
522013	CAN

522014	CAN
522015	CAN
522016	CAN
522017	CAN
522018	CAN
522019	CAN
522020	CAN
522021	CAN
522022	CAN
522023	CAN
522024	CAN
522025	CAN
522026	CAN
522027	CAN
522028	CAN
522029	CAN
522030	CAN
522041	High Pressure System
522042	High Pressure System
522052	Air Control Governor
522053	Air Control Governor
522054	Air Control Governor
522055	Air Control Governor
522056	Air Control Governor
522057	Air Control Governor
522058	Air Control Governor
523010	High Pressure System
523011	CAN
523012	CAN
523013	CAN
523014	CAN
523015	CAN
523016	CAN
523017	CAN
523018	CAN
523019	CAN
523020	CAN
523021	Error Lamp
523022	Fuel Consumption Display
523023	Fuel Balance Control Monitoring
523024	Fuel Balance Control Monitoring
523025	Fuel Balance Control Monitoring
523026	Fuel Balance Control Monitoring

523027	Fuel Level Lamp
523028	Turbo Charger Upstream Temperature Lamp
523029	High Pressure System
523030	High Pressure System
523031	High Pressure System
523032	High Pressure System
523033	High Pressure System
523034	High Pressure System
523035	High Pressure System
523036	High Pressure System
523037	High Pressure System
523038	High Pressure System
523039	High Pressure System
523040	High Pressure System
523041	High Pressure System
523042	High Pressure System
523043	High Pressure System
523044	High Pressure System
523211	CAN
523213	CAN
523214	CAN
523218	CAN
523222	CAN
523223	CAN
523324	Glow Control Unit
523325	Glow Control Unit
523326	Glow Control Unit
523327	Glow Control Unit
523350	Injection System
523352	Injection System
523450	PTO
523460	Boost Pressure Governor
523461	Boost Pressure Governor
523591	Vehicle Speed Sensor
523592	Vehicle Speed Sensor
523601	Sensor Supply Monitoring 3
523602	Sensor Supply Monitoring
523605	CAN
523606	CAN
523613	High Pressure System
523615	Metering Unit
523516	Injection System
523676	Glow Plugs

523677	Glow Plugs Relay
523703	CAN
523704	CAN
523705	CAN
523706	CAN
523714	CAN
523717	CAN
523741	CAN
523747	CAN
523762	DPF Lamp
523763	CAN
523766	CAN
523767	CAN
523768	CAN
523769	CAN
523770	CAN
523771	CAN
523776	CAN
523777	CAN
523778	CAN
523779	CAN
523867	CAN
523878	CAN
523882	CAN
523883	CAN
523884	CAN
523885	CAN
523886	CAN
523887	CAN
523891	Intake Air Heater
523801	Injection System
523946	Zero Fuel Learning Monitoring
523947	Zero Fuel Learning Monitoring
523948	Zero Fuel Learning Monitoring
523949	Zero Fuel Learning Monitoring
523961 - 523967	Exhaust Gas Temperature Monitoring
523970	Performance Limiter
523994	Engine Speed Output
523995	Performance Limiter
524054	ECU Internal
524058 - 524101	ECU Internal

524103 - 525109	High Pressure System
524110	Injection System
524111	Injection System
524112	Injection System
524113	Intake Air Heater
524114	Intake Air Heater
524115	Intake Air Heater
524120	ECU Internal
524121	ECU Internal
524122	ECU Internal
524124	ECU Internal
524128	ECU Internal
524131	Creep mode
524132	Creep mode
524133	Creep mode
524134	Creep mode
524135	Creep mode
524136	Oxidation Catalyst Monitoring
524137	DPF Monitoring
524138	DPF Monitoring
524139	DPF Monitoring
524140	DPF Monitoring
524141	High Pressure System
524142	High Pressure System
524143	High Pressure System
524144	High Pressure System
524145	High Pressure System
524146	High Pressure System
524149	Error in Limiter
524150	Error in Limiter
524151	Error in Limiter
524153	Error in Limiter
524154	Error in Limiter
524155	Error in Limiter

FMI error code

0	Data Valid but Above Normal Operational Range, Most Severe Level
1	Data Valid but Below Normal Operational Range, Most Severe Level
2	Data Erratic, Intermittent or Incorrect (rationality)
3	Voltage Above Normal, or Shorted to High Source
4	Voltage Below Normal, or Shorted to High Source
5	Current Below Normal, or Open Circuit
6	Current Above Normal, or Grounded Circuit
7	Mechanical System not Responding or Out of Adjustment
8	Abnormal Frequency or Pulse Width or Period
9	Abnormal Update Rate
10	Abnormal Rate of Change
11	Failure Code not Identifiable
12	Bad Intelligent Device or Component
13	Out of Calibration
14	Special Instructions
15	Data Valid but Above Normal Range : Least Severe Level
16	Data Valid but Above Normal Range: Moderately Severe Level
17	Data Valid but Below Normal Range: Least Severe Level
18	Data Valid but Below Normal Range: Moderately Severe Level
19	Received Network Data in Error: (Multiplexed Data)
20	Data Drifted High (rationality high)
21	Data Drifted Low (rationality low)
22 to 30	Reserved for SAE Assignment
31	Condition Exists