

## Fault Code Information

FAULT CODE {LAMP}	J1587 PID(P) SID(S) {FMI}	J1939 SPN(S) {FMI}	REASON	EFFECT
111 {Red}	S254 {12}	629 {12}	Electronic Control Module Critical Internal Failure - Bad Intelligent Device or Component. Error internal to the electronic control module (ECM) related to memory hardware failures or internal ECM voltage supply circuits.	Engine may <b>not</b> start.
115 {Red}	P190 {2}	612 {2}	Engine Magnetic Speed/Position Lost Both of Two Signals - Data Erratic, Intermittent, or Incorrect. The electronic control module (ECM) has detected that the primary and backup speed sensor signals are connected backwards.	None on performance.
122 {Amber}	P102 {3}	102 {3}	Intake Manifold 1 Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the intake manifold pressure circuit.	Derate in power output of the engine.
123 {Amber}	P102 {4}	102 {4}	Intake Manifold 1 Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage or open circuit detected at the intake manifold pressure circuit.	Derate in power output of the engine.
131 {Red}	P091 {3}	91 {3}	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at accelerator pedal position number 1 circuit.	Severe derate in power output of the engine. Limp home power <b>only</b> .
132 {Red}	P091 {4}	91 {4}	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at accelerator pedal position number 1 signal circuit.	Severe derate in power output of the engine. Limp home power <b>only</b> .
133 {Red}	P372 {3}	974 {3}	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at remote accelerator position signal circuit.	Remote accelerator will <b>not</b> operate. Remote accelerator position will be set to zero percent.
134 {Red}	P372 {4}	974 {4}	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at remote accelerator position signal circuit.	Remote accelerator will <b>not</b> operate. Remote accelerator position will be set to 0 percent.
144 {Amber}	P110 {3}	110 {3}	Engine Coolant Temperature 1 Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage or open circuit detected at engine coolant temperature circuit.	Possible white smoke. Fan will stay ON if controlled by ECM. No engine protection for engine coolant temperature.
145 {Amber}	P110 {4}	110 {4}	Engine Coolant Temperature 1 Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at engine coolant temperature circuit.	Possible white smoke. Fan will stay ON if controlled by ECM. No engine protection for engine coolant temperature.
146 {Amber}	P110 {0}	110 {16}	Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level. Engine coolant temperature is above engine protection warning limit.	Power derate and possible engine shutdown if Engine Protection Shutdown feature is enabled.
151 {Red}	P110 {0}	110 {0}	Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Most Severe Level. Engine coolant temperature signal indicates engine coolant temperature above engine protection critical limit.	Progressive power derate increasing in severity from time of alert. If Engine Protection Shutdown feature is enabled, engine will shut down 30 seconds after red STOP lamp starts flashing.
153 {Amber}	P105 {3}	105 {3}	Intake Manifold 1 Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at intake manifold air temperature circuit.	Possible white smoke. Fan will stay ON if controlled by the ECM. No engine protection for intake manifold air temperature.
154 {Amber}	P105 {4}	105 {4}	Intake Manifold 1 Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at intake manifold air temperature circuit.	Possible white smoke. Fan will stay ON if controlled by ECM. No engine protection for intake manifold air temperature.
155 {Red}	P105 {0}	105 {0}	Intake Manifold 1 Temperature - Data Valid but Above Normal Operational Range - Most Severe Level. Intake manifold air temperature signal indicates intake manifold air temperature above engine protection critical limit.	Progressive power and derate increasing in severity from time of alert. If the Engine Protection Shutdown feature is enabled, engine will shut down 30 seconds after the red STOP lamp starts flashing.
195 {Amber}	P111 {3}	111 {3}	Coolant Level Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at engine coolant level circuit.	None on performance.
196 {Amber}	P111 {4}	111 {4}	Coolant Level Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the engine coolant level circuit.	None on performance.
197 {Amber}	P111 {1}	111 {18}	Coolant Level - Data Valid but Below Normal Operational Range - Moderately Severe Level. Low engine coolant level detected.	None on performance.

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221 {Amber}	P108 {3}	108 {3}	Barometric Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at barometric pressure circuit.	Engine power derate.
222 {Amber}	P108 {4}	108 {4}	Barometric Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at barometric pressure circuit.	Engine power derate.
227 {Amber}	S211 {3}	3510 {3}	Sensor Supply 2 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at sensor supply number 2 circuit.	Engine will run derated. No engine protection for intake manifold air temperature.
234 {Red}	P190 {0}	190 {0}	Engine Crankshaft Speed/Position - Data Valid but Above Normal Operational Range - Most Severe Level. Engine speed signal indicates engine speed above engine protection limit.	Fuel injection disabled until engine speed falls below the overspeed limit.
238 {Amber}	S232 {4}	3511 {4}	Sensor Supply 3 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected on the +5 volt sensor supply circuit to the engine speed sensor.	Possible hard starting and rough running.
239 {Amber}	S232 {3}	3511 {3}	Sensor Supply 3 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at sensor supply number 3 circuit.	Possible hard starting and rough running.
241 {Amber}	P084 {2}	84 {2}	Wheel-Based Vehicle Speed - Data Erratic, Intermittent, or Incorrect. The ECM lost the vehicle speed signal.	Engine speed limited to Maximum Engine Speed without VSS parameter value. Cruise control, Gear-Down Protection, and Road Speed Governor will not work.
245 {Amber}	S033 {4}	647 {4}	Fan Control Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the fan control circuit when commanded ON.	The fan can possibly stay on continuously or not run at all.
249 {Amber}	P171 {3}	171 {3}	Ambient Air Temperature Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at ambient air temperature circuit.	None on performance.
252 {Amber}	P98 {2}	98 {2}	Engine Oil Level - Data Erratic, Intermittent, or Incorrect. An intermittent signal is being received from the oil level sensor.	Oil level sensor operation will be disabled.
253 {Red}	P98 {1}	98 {1}	Engine Oil Level - Data Valid But Below Normal Operational Range - Most Severe Level. Very low oil level has been detected by the oil level sensor.	The engine may derate. Possible low oil pressure. Possible severe engine damage.
256 {Amber}	P171 {4}	171 {4}	Ambient Air Temperature Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at ambient air temperature circuit.	None on performance.
271 {Amber}	S126 {4}	1347 {4}	Fuel Pump Pressurizing Assembly 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the fuel pump actuator circuit.	Engine will run poorly at idle. Engine will have low power. Fuel pressure will be higher than commanded.
272 {Amber}	S126 {3}	1347 {3}	Fuel Pump Pressurizing Assembly 1 Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage or open circuit detected at the fuel pump actuator circuit.	Engine will not run or engine will run poorly.
285 {Amber}	S231 {9}	639 {9}	SAE J1939 Multiplexing PGN Timeout Error - Abnormal Update Rate. The ECM expected information from a multiplexed device but did not receive it soon enough or did not receive it at all.	One or more multiplexed devices will not operate properly. One or more symptoms will occur.
286 {Amber}	S231 {13}	639 {13}	SAE J1939 Multiplexing Configuration Error - Out of Calibration. The ECM expected information from a multiplexed device but only received a portion of the necessary information.	At least one multiplexed device will not operate properly.
287 {Red}	P091 {2}	91 {19}	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Received Network Data In Error. The OEM vehicle electronic control unit (VECU) detected a fault with its accelerator pedal.	Engine may only idle or engine will not accelerate to full speed.
288 {Red}	P372 {2}	974 {19}	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Position Sensor System - Received Network Data In Error. The OEM vehicle electronic control unit (VECU) detected a fault with the remote accelerator.	The engine will not respond to the remote throttle. Engine may only idle. The primary or cab accelerator may be able to be used.
295 {Amber}	P108 {2}	108 {2}	Barometric Pressure - Data Erratic, Intermittent, or Incorrect. The ambient air pressure sensor is reading an erratic value at initial key-on.	Engine power derate.
322 {Amber}	S001 {5}	651 {5}	Injector Solenoid Driver Cylinder 1 Circuit - Current Below Normal or Open Circuit. Current detected at injector Number 1 when the voltage is turned off.	Current to injector is shut off. Engine can possibly misfire or run rough.

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323 {Amber}	S005 {5}	655 {5}	Injector Solenoid Driver Cylinder 5 Circuit - Current Below Normal or Open Circuit. Current detected at injector Number 5 when the voltage is turned off.	Current to injector is shut off. Engine can possibly misfire or run rough.
324 {Amber}	S003 {5}	653 {5}	Injector Solenoid Driver Cylinder 3 Circuit - Current Below Normal or Open Circuit. Current detected at injector Number 3 when voltage is turned off.	Current to injector is shut off. Engine can possibly misfire or run rough.
325 {Amber}	S006 {5}	656 {5}	Injector Solenoid Driver Cylinder 6 Circuit - Current Below Normal or Open Circuit. Current detected at injector Number 6 when voltage is turned off.	Current to injector is shut off. Engine can possibly misfire or run rough.
331 {Amber}	S003 {5}	653 {5}	Injector Solenoid Driver Cylinder 2 Circuit - Current Below Normal or Open Circuit. Current detected at injector Number 2 when voltage is turned off.	Current to injector is shut off. Engine can possibly misfire or run rough.
332 {Amber}	S004 {5}	654 {5}	Injector Solenoid Driver Cylinder 4 Circuit - Current Below Normal or Open Circuit. Current detected at injector Number 4 when voltage is turned off.	Current to injector is shut off. Engine can possibly misfire or run rough.
343 {Amber}	S254 {12}	629 {12}	Electronic Control Module Warning Internal Hardware Failure - Bad Intelligent Device or Component. ECM power supply errors have been detected.	Possible no noticeable performance effects or engine dying or hard starting. Fault information, trip information, and maintenance monitor data can be inaccurate.
351 {Amber}	S251 {12}	627 {12}	Injector Power Supply - Bad Intelligent Device or Component. The ECM measured injector boost voltage is low.	Possible low power, engine misfire, and/or engine will not start.
352 {Amber}	S212 {4}	3509 {4}	Sensor Supply 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at sensor supply number 1 circuit.	Engine power derate.
386 {Amber}	S212 {3}	3509 {3}	Sensor Supply 1 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at sensor supply number 1 circuit.	Engine power derate.
415 {Red}	P100 {1}	100 {1}	Engine Oil Rifle Pressure - Data Valid but Below Normal Operational Range - Most Severe Level. Oil pressure signal indicates oil pressure is below the engine protection critical limit.	Progressive power derate increasing in severity from time after alert. If the Engine Protection Shut-down feature is enabled, engine will shut down 30 seconds after the red STOP lamp starts flashing.
418 {Maintenance}	P097 {0}	97 {15}	Water-In-Fuel Indicator - Data Valid but Above Normal Operational Range - Least Severe Level. Water has been detected in the fuel filter.	Possible white smoke, loss of power, or hard starting.
427 {None}	S231 {9}	639 {9}	J1939 Datalink - Abnormal Update Rate. Communication between the electronic control module (ECM) and another device on the SAE J1939 data link has been lost.	Engine speed will ramp down and remain at idle.
428 {Amber}	P097 {3}	97 {3}	Water-in-Fuel Indicator Sensor Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at the water-in-fuel circuit.	None on performance. No water-in-fuel warning available.
429 {Amber}	P097 {4}	97 {4}	Water-in-Fuel Indicator Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at the water-in-fuel circuit.	None on performance. No water-in-fuel warning available.
435 {Amber}	P100 {2}	100 {2}	Engine Oil Rifle Pressure - Data Erratic, Intermittent, or Incorrect. The engine oil pressure sensor is reading an erratic value at key-on.	None on performance. No engine protection for oil pressure.
441 {Amber}	P168 {1}	168 {18}	Battery 1 Voltage - Data Valid but Below Normal Operational Range - Moderately Severe Level. ECM supply voltage is below the minimum system voltage level.	Engine may stop running or be difficult to start.
442 {Amber}	P168 {0}	168 {16}	Battery 1 Voltage - Data Valid but Above Normal Operational Range - Moderately Severe Level. ECM supply voltage is above the maximum system voltage level.	Possible electrical damage to all electrical components.
449 {Amber}	P157 {0}	157 {0}	Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Most Severe Level. Fuel pressure signal indicates that fuel pressure has exceeded the maximum limit for the given engine rating.	The engine may be derated.
451 {Amber}	P157 {3}	157 {3}	Injector Metering Rail Number 1 Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at rail fuel pressure sensor circuit.	Power and or speed derate.
452 {Amber}	P157 {4}	157 {4}	Injector Metering Rail Number 1 Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the rail fuel pressure sensor circuit.	Power and or speed derate.
471 {Maintenance}	P98 {1}	98 {17}	Engine Oil Level - Data Valid But Below Normal Operational Range - Least Severe Level. Low oil level has been detected by the oil level sensor.	The engine may derate. Possible low oil pressure. Possible severe engine damage.

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499 {Amber}	P98 {4}	98 {4}	Engine Oil Level Sensor Circuit - Voltage Below Normal or Shorted to Low Source. The engine oil level sensor has detected an internal failure.	Oil level sensor operation will be disabled.
553 {Amber}	P157 {0}	157 {16}	Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level. The ECM has detected that fuel pressure is higher than commanded pressure.	None or possible engine noise associated with higher injection pressures (especially at idle or light load). Engine power is reduced.
554 {Amber}	P157 {2}	157 {2}	Injector Metering Rail 1 Pressure - Data Erratic, Intermittent, or Incorrect. The ECM has detected that the fuel pressure signal is <b>not</b> changing.	The ECM will estimate fuel pressure and power is reduced.
555 {Amber}	P101 {0}	101 {16}	Crankcase Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level. The crankcase breather filter requires maintenance.	None on performance.
556 {Red}	P101 {0}	101 {0}	Crankcase Pressure - Data Valid but Above Normal Operational Range - Most Severe Level. The crankcase breather filter requires maintenance.	Engine power derate.
559 {Yellow}	P94 {0}	94 {18}	Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level. The ECM has detected that fuel pressure is lower than commanded pressure.	Possibly hard to start, low power, or engine smoke.
584 {Amber}	S39 {3}	677 {3}	Starter Relay Driver Circuit - Voltage Above Normal or Shorted to High Source. Open circuit or high voltage detected at starter lockout circuit.	Either the engine will <b>not</b> start or the engine will <b>not</b> have starter lockout protection.
585 {Amber}	S039 {4}	677 {4}	Starter Relay Driver Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at starter lockout circuit.	The engine will <b>not</b> have starter lockout protection.
596 {Amber}	P167 {0}	167 {16}	Electrical Charging System Voltage - Data Valid but Above Normal Operational Range - Moderately Severe Level. High battery voltage detected by the battery voltage monitor feature.	Amber warning lamp illuminated until high battery voltage condition is corrected.
597 {Amber}	P167 {1}	167 {18}	Electrical Charging System Voltage - Data Valid but Below Normal Operational Range - Moderately Severe Level. Low battery voltage detected by the battery voltage monitor feature.	Amber lamp will light until low battery voltage condition is corrected.
598 {Red}	P167 {1}	167 {1}	Electrical Charging System Voltage - Data Valid but Below Normal Operational Range - Most Severe Level. Very low battery voltage detected by the battery voltage monitor feature.	Red lamp illuminated until very low battery voltage condition is corrected.
649 {Maintenance}	S115 {11}	1378 {31}	Engine Oil Change Interval - Condition Exists. Change engine oil and filter.	Maintenance reminder <b>only</b> .
686 {Amber}	P103 {2}	103 {2}	Turbocharger 1 Speed - Data Erratic, Intermittent, or Incorrect. An invalid turbocharger speed signal has been detected by the ECM.	None on performance. The ECM uses an estimated turbocharger speed.
687 {Amber}	P103 {1}	103 {18}	Turbocharger 1 Speed - Data Valid but Below Normal Operational Range - Moderately Severe Level. Low turbocharger speed detected by the ECM.	Engine power derate. The ECM uses an estimated turbocharger speed.
688 {Red}	P98 {0}	98 {0}	Engine Oil Level - Data Valid but Above Normal Operational Range - Most Severe Level. High oil level has been detected by the oil level sensor.	Possible low power, excessive smoke, oil dilution, contamination, or severe engine damage. The engine may derate.
689 {Amber}	P190 {2}	190 {2}	Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect. Loss of signal from primary camshaft engine position sensor.	Engine can run rough. Possibly poor starting capability. Engine runs using backup speed sensor. Engine power is reduced.
691 {Amber}	P351 {3}	1172 {3}	Turbocharger 1 Compressor Inlet Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the turbocharger compressor inlet air temperature circuit.	Engine power derate.
692 {Amber}	P351 {4}	1172 {4}	Turbocharger 1 Compressor Inlet Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the turbocharger compressor inlet air temperature sensor circuit.	Engine power derate.
698 {Amber}	P21 {4}	1136 {4}	ECM Internal Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the internal ECM temperature sensor.	None on performance.
731 {Amber}	S064 {7}	723 {7}	Engine Speed/Position Camshaft and Crankshaft Misalignment - Mechanical System Not Responding Properly or Out of Adjustment. Engine position signal from the engine speed sensor and camshaft position sensor do <b>not</b> match.	Engine will run derated. Hard start and rough idle possible.

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778 {Amber}	S064 {2}	723 {2}	Engine Camshaft Speed/Position Sensor - Data Erratic, Intermittent, or Incorrect. The ECM has detected an error in the camshaft position sensor signal.	Engine can run rough. Possibly poor starting capability. Engine runs using primary engine position sensor.
779 {Amber}	S051 {11}	703 {11}	Auxiliary Equipment Sensor Input 3 - Root Cause Not Known	Possible engine derate.
784 {None}	S145 {2}	1590 {2}	Adaptive Cruise Control Mode - Data Erratic, Intermittent, or Incorrect. Loss of communication with adaptive cruise control.	Adaptive cruise control will <b>not</b> operate. Standard cruise control may <b>not</b> operate.
1117 {None}	S251 {2}	627 {2}	Power Supply Lost With Ignition On - Data Erratic, Intermittent, or Incorrect. Supply voltage to the ECM fell below 6.2 volts momentarily or the ECM was <b>not</b> allowed to power down correctly (retain battery voltage for 30 seconds after key OFF).	Possible no noticeable performance effects or engine dying or hard starting. Fault information, trip information, and maintenance monitor data can be inaccurate.
1239 {Amber}	None {3}	2623 {3}	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at accelerator pedal position number 2 signal circuit.	Severe derate in power output of the engine. Limp home power <b>only</b> .
1241 {Amber}	None {4}	2623 {4}	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at accelerator pedal position number 2 signal circuit.	Severe derate in power output of the engine. Limp home power <b>only</b> .
1242 {Red}	P091 {2}	91 {2}	Accelerator Pedal or Lever Position Sensor 1 and 2 - Data Erratic, Intermittent, or Incorrect. Accelerator position sensor number 1 and number 2 are reading different values.	The engine will <b>only</b> idle.
1663 {Amber}	S326 {11}	3241 {31}	Catalyst Inlet Temperature Sensor Swapped with Outlet - Condition Exists. The inlet and outlet catalyst temperature sensor connections are swapped.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1664 {Amber}	None {11}	3050 {31}	Catalyst Missing - Condition Exists. The aftertreatment catalyst in the exhaust system is <b>not</b> present.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1665 {Amber}	S326 {4}	3241 {4}	Aftertreatment Exhaust Gas Temperature 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the catalyst inlet sensor circuit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1666 {Amber}	S326 {3}	3241 {3}	Aftertreatment Exhaust Gas Temperature 1 Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the catalyst inlet temperature sensor circuit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1667 {Amber}	S326 {2}	3241 {2}	Aftertreatment Exhaust Gas Temperature 1 - Data Erratic, Intermittent, or Incorrect. The aftertreatment diesel oxidation catalyst inlet temperature sensor is <b>not</b> changing with engine operating conditions.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1674 {Amber}	S327 {4}	3249 {4}	Aftertreatment Exhaust Gas Temperature 2 Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the aftertreatment diesel particulate filter inlet temperature sensor circuit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1675 {Amber}	S327 {3}	3249 {3}	Aftertreatment Exhaust Gas Temperature 2 Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the aftertreatment diesel particulate filter inlet temperature sensor circuit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1676 {Amber}	S327 {2}	3249 {2}	Aftertreatment Exhaust Gas Temperature 2 - Data Erratic, Intermittent, or Incorrect. The aftertreatment diesel particulate filter inlet temperature sensor is <b>not</b> changing with engine operating conditions.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1691 {Amber}	None {13}	3050 {13}	Catalyst Efficiency - Out of Calibration. The temperature increase across the aftertreatment diesel oxidation catalyst is lower than expected.	None on performance.
1695 {Amber}	S232 {3}	3513 {3}	Sensor Supply 5 - Voltage Above Normal or Shorted to High Source. High voltage detected at sensor supply number 5 circuit in the OEM harness.	Severe derate in power output of the engine. Limp home power <b>only</b> .
1696 {Amber}	S232 {4}	3513 {4}	Sensor Supply 5 - Voltage Below Normal or Shorted to Low Source. Low voltage detected at sensor supply number 5 circuit in the OEM harness.	Severe derate in power output of the engine. Limp home power <b>only</b> .
1843 {Amber}	P101 {3}	101 {3}	Crankcase Pressure Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the crankcase pressure circuit.	No engine protection for high crankcase pressure.
1844 {Amber}	P101 {4}	101 {4}	Crankcase Pressure Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the crankcase pressure circuit.	No engine protection for high crankcase pressure.

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1866 {Amber}	P411 {2}	411 {2}	Exhaust Gas Recirculation Valve Delta Pressure - Data Erratic, Intermittent, or Incorrect. An error in the EGR delta pressure signal was detected at initial key-on or the sensor failed the auto-zero test.	EGR valve actuation will be disabled.
1876 {Amber}	S328 {3}	3245 {3}	Aftertreatment Exhaust Gas Temperature 3 Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the catalyst inlet temperature sensor circuit.	None on performance.
1877 {Amber}	S328 {4}	3245 {4}	Aftertreatment Exhaust Gas Temperature 3 Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the aftertreatment diesel particulate filter outlet temperature sensor circuit.	None on performance.
1878 {Amber}	S328 {2}	3245 {2}	Aftertreatment Exhaust Gas Temperature 3 - Data Erratic, Intermittent, or Incorrect. The aftertreatment diesel oxidation catalyst inlet temperature sensor is <b>not</b> changing with engine operating conditions.	None on performance.
1879 {Amber}	S324 {3}	3251 {3}	Aftertreatment Particulate Filter Differential Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the aftertreatment differential pressure sensor circuit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1881 {Amber}	S324 {4}	3251 {4}	Aftertreatment Particulate Filter Differential Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage or open circuit detected at the aftertreatment differential pressure sensor circuit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1883 {Amber}	S324 {2}	3251 {2}	Aftertreatment Particulate Filter Differential Pressure Sensor - Data Erratic, Intermittent, or Incorrect. The aftertreatment diesel particulate filter differential pressure sensor is reading an erratic value at initial key-on or during engine operation.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1896 {Amber}	S146 {13}	2791 {13}	EGR Valve Controller - Out of Calibration. The EGR valve has failed the automatic calibration procedure at initial key-on.	EGR valve actuation will be disabled.
1899 {Amber}	P411 {1}	411 {18}	Exhaust Gas Recirculation Valve Delta Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level. The EGR differential pressure sensor has detected low EGR gas flow or the EGR differential pressure reading is <b>not</b> valid for engine operating conditions.	EGR valve actuation will be disabled.
1911 {Amber}	P157 {0}	157 {0}	Injector Metering Rail Number 1 Pressure - Data Valid But Above Normal Operating Range - Most Severe Level. Fuel pressure signal indicates that fuel pressure has exceeded the maximum limit for the given engine rating.	None or possible engine noise associated with higher injection pressure, especially at idle or light load. Engine power is reduced.
1921 {Amber}	S324 {0}	3251 {16}	Aftertreatment Particulate Filter Differential Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level. The soot load of the aftertreatment diesel particulate filter has exceeded the recommended limits.	The aftertreatment dash lamp will flash. Engine protection derate.
1922 {Red}	S324 {0}	3251 {0}	Aftertreatment Particulate Filter Differential Pressure - Data Valid but Above Normal Operational Range - Most Severe Level. The soot load of the aftertreatment diesel particulate filter has exceeded the recommended limits.	Severe engine derate.
1938 {Amber}	None {1}	3597 {18}	ECU Power Output Supply Voltage 1 - Data Valid but Below Normal Operational Range - Moderately Severe Level. Low battery voltage detected by the VGT actuator.	None on performance.
1942 {Amber}	P101 {2}	101 {2}	Crankcase Pressure - Data Erratic, Intermittent, or Incorrect. The ECM has detected that the crankcase pressure signal is <b>not</b> changing with engine operating conditions.	None on performance.
1943 {None}	None {1}	3555 {17}	Ambient Air Density - Data Valid but Below Normal Operational Range - Least Severe Level. Engine torque has been reduced because the vehicle was operating at a high altitude condition.	Possible engine derate.
1962 {Amber}	S027 {0}	641 {15}	VGT Actuator Driver Over Temperature (Calculated) - Data Valid but Above Normal Operational Range - Least Severe Level. High internal VGT actuator temperature has been detected.	None on performance.

FAULT CODE {LAMP}	J1587 PID(P) SID(S) {FMI}	J1939 SPN(S) {FMI}	REASON	EFFECT
1968 {Amber}	S327 {0}	3249 {16}	Aftertreatment Exhaust Gas Temperature 2 - Data Valid but Above Normal Operational Range - Moderately Severe Level. The aftertreatment diesel particulate filter inlet temperature sensor reading has exceeded the maximum temperature limit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1969 {Red}	S327 {0}	3249 {0}	Aftertreatment Exhaust Gas Temperature 2 - Data Valid but Above Normal Operational Range - Most Severe Level. The aftertreatment diesel particulate filter inlet temperature sensor reading has exceeded the maximum engine protection temperature limit.	Engine power derate. Active aftertreatment diesel particulate filter regeneration will be disabled.
1972 {Amber}	S328 {0}	3245 {16}	Aftertreatment Exhaust Gas Temperature 3 - Data Valid but Above Normal Operational Range - Moderately Severe Level. The aftertreatment diesel particulate filter outlet temperature sensor reading has exceeded the maximum temperature limit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1973 {Red}	S328 {0}	3245 {0}	Aftertreatment Exhaust Gas Temperature 3 - Data Valid but Above Normal Operational Range - Most Severe Level. The aftertreatment diesel particulate filter outlet temperature sensor reading has exceeded the maximum engine protection temperature limit.	Engine power derate. Active aftertreatment diesel particulate filter regeneration will be disabled.
1974 {Maintenance}	P101 {0}	101 {15}	Crankcase Pressure - Data Valid but Above Normal Operational Range - Least Severe Level. The crankcase breather filter requires maintenance.	None on performance.
1981 {Amber}	S324 {0}	3251 {15}	Aftertreatment Particulate Trap Differential Pressure - Data Valid but Above Normal Operational Range - Least Severe Level. The aftertreatment differential pressure has exceeded the maximum operating limits or the diesel particulate filter is plugged.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1993 {Amber}	None {31}	3064 {31}	Aftertreatment Particulate Trap Missing - Condition Exists. The aftertreatment diesel particulate filter in the exhaust system is <b>not</b> present.	Active aftertreatment diesel particulate filter regeneration will be disabled.
2182 {Amber}	S79 {3}	1072 {3}	Engine Brake Actuator Driver 1 Circuit - Voltage Above Normal or Shorted to High Source. High voltage or open circuit detected at the engine brake solenoid number 1 signal circuit.	Engine brake on cylinders 1, 2, and 3 can <b>not</b> be activated.
2183 {Amber}	S79 {4}	1072 {4}	Engine Brake Actuator Circuit #1 - Voltage Below Normal or Shorted to Low Source. Low voltage detected at the engine brake solenoid number 1 signal circuit.	Engine brake on cylinders 1,2, and 3 can <b>not</b> be activated.
2185 {Amber}	S232 {3}	3512 {3}	Sensor Supply 4 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at +5 volt sensor supply circuit to the accelerator pedal position sensor.	Engine will <b>only</b> idle.
2186 {Amber}	S232 {4}	3512 {4}	Sensor Supply 4 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at the +5 volt sensor supply circuit to the accelerator pedal position sensor.	Engine will <b>only</b> die.
2198 {Amber}	S027 {11}	641 {11}	VGT Actuator Driver Circuit - Root Cause Not Known. Intermittent communication between the smart VGT controller and the ECM has been detected. The VGT controller is <b>not</b> interpreting the J1939 message from the ECM correctly.	VGT actuation will be disabled.
2265 {Amber}	S126 {3}	1075 {3}	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage Above Normal or Shorted to High Source. High voltage or open detected at the fuel lift pump signal circuit.	Engine can be difficult to start.
2266 {Amber}	S126 {4}	1075 {4}	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the fuel lift pump circuit.	Engine can be difficult to start.
2272 {Amber}	P027 {4}	27 {4}	EGR Valve Position Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage has been detected at the EGR position sensor circuit.	EGR valve actuation will be disabled.
2273 {Amber}	P411 {3}	411 {3}	Exhaust Gas Recirculation Valve Delta Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the EGR differential pressure sensor circuit.	EGR valve actuation will be disabled.
2274 {Amber}	P411 {4}	411 {4}	Exhaust Gas Recirculation Valve Delta Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the EGR differential pressure sensor circuit.	EGR valve actuation will be disabled.

FAULT CODE {LAMP}	J1587 PID(P) SID(S) {FMI}	J1939 SPN(S) {FMI}	REASON	EFFECT
2288 {None}	P103 {0}	103 {15}	Turbocharger 1 Speed - Data Valid but Above Normal Operational Range - Least Severe Level. High turbocharger speed has been detected by the ECM.	Engine power derate to lower the turbocharger speed.
2311 {Amber}	S018 {11}	633 {31}	Electronic Fuel Injection Control Valve Circuit - Condition Exists. Fuel pump actuator circuit resistance too high or too low.	Possible low power.
2321 {None}	P190 {2}	190 {2}	Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect. Crankshaft engine speed sensor intermittent synchronization.	Engine can exhibit misfire as control switches from the primary to the backup speed sensor. Engine power is reduced while the engine operates on the backup speed sensor.
2322 {None}	S064 {2}	723 {2}	Engine Camshaft Speed/Position Sensor - Data Erratic, Intermittent, or Incorrect. Camshaft engine speed sensor intermittent synchronization.	None on performance.
2345 {Amber}	P103 {10}	103 {10}	Turbocharger 1 Speed - Abnormal Rate of Change. The turbocharger speed sensor has detected an erroneous speed value.	None on performance. The ECM uses an estimated turbocharger speed.
2346 {None}	None {0}	2789 {15}	Turbocharger Turbine Inlet Temperature (Calculated) - Data Valid but Above Normal Operational Range - Least Severe Level. Turbocharger turbine inlet temperature has exceeded the engine protection limit.	Fuel is limited in an attempt to decrease the exhaust gas temperature entering the turbocharger.
2347 {None}	None {0}	2790 {15}	Turbocharger Compressor Outlet Temperature (Calculated) - Data Valid but Above Normal Operational Range - Least Severe Level. High turbocharger compressor outlet air temperature has been calculated by the electronic control module (ECM).	Fuel is limited in an attempt to decrease the calculated turbocharger compressor outlet air temperature.
2349 {Amber}	S146 {5}	2791 {5}	EGR Valve Control Circuit - Current Below Normal or Open Circuit. Motor terminal or motor coil open circuit has been detected by the smart EGR controller.	EGR valve actuation will be disabled.
2351 {Amber}	S146 {4}	2791 {4}	EGR Valve Control Circuit - Voltage Below Normal or Shorted to Low Source. Motor terminal or motor coil short circuit to ground, or power supply has been detected by the smart EGR controller.	EGR valve actuation will be disabled.
2357 {Amber}	S146 {7}	2791 {7}	EGR Valve Control Circuit - Mechanical System Not Responding Properly or Out of Adjustment. The EGR motor has exceeded the duty cycle limit, indicating a stuck open EGR valve.	EGR valve actuation will be disabled.
2359 {Amber}	P411 {0}	411 {16}	Exhaust Gas Recirculation Valve Delta Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level. The EGR differential pressure sensor has detected high EGR gas flow or the EGR differential pressure reading is not valid for engine operating conditions.	EGR valve actuation will be disabled.
2363 {Amber}	S029 {4}	1073 {4}	Engine Brake Actuator Driver Output 2 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at the engine brake solenoid number 2 signal circuit.	Engine brake on cylinders 4, 5, and 6 can not be activated.
2367 {Amber}	S80 {3}	1073 {3}	Engine Brake Actuator Driver Output 2 Circuit - Voltage Above Normal or Shorted to High Source. Open circuit or high voltage detected at the engine brake solenoid number 2 signal circuit.	Engine brake on cylinders 4, 5, and 6 can not be activated.
2373 {Amber}	P131 {3}	1209 {3}	Exhaust Gas Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the exhaust gas pressure circuit.	None on performance.
2374 {Amber}	P131 {4}	1209 {4}	Exhaust Gas Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the exhaust gas pressure circuit.	None on performance.
2375 {Amber}	P412 {3}	412 {3}	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at EGR temperature circuit.	EGR valve actuation will be disabled.
2376 {Amber}	P412 {4}	412 {4}	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at EGR temperature circuit.	EGR valve actuation will be disabled.
2377 {Amber}	S033 {3}	647 {3}	Fan Control Circuit - Voltage Above Normal or Shorted to High Source. Open circuit or high voltage detected at the fan control circuit.	The fan may stay on continuously or not run at all.



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2387 {Amber}	S027 {7}	641 {7}	VGT Actuator Driver Circuit (Motor) - Mechanical System Not Responding Properly or Out of Adjustment. The smart VGT controller has detected incorrect stop limits, or the VGT is unable to move to the closed position.	VGT travel may be limited.
2448 {Maintenance}	None {1}	111 {17}	Coolant Level - Data Valid but Below Normal Operational Range - Least Severe Level. Low engine coolant level detected.	None on performance.
2449 {Red}	S027 {13}	641 {13}	VGT Actuator Controller - Out of Calibration. The VGT has failed the automatic calibration procedure at initial key-on. VGT will be in the open position.	Low intake manifold pressure.
2451 {None}	N/A {0}	2789 {16}	Turbocharger Turbine Inlet Temperature (Calculated) - Data Valid but Above Normal Operational Range - Moderately Severe Level. Turbocharger turbine inlet temperature has exceeded the engine protection limit.	Fuel is limited in an attempt to decrease the calculated exhaust gas temperature entering the turbocharger.
2554 {Amber}	P131 {2}	1209 {2}	Exhaust Gas Pressure - Data Erratic, Intermittent, or Incorrect. The exhaust gas pressure sensor is reading an erratic value at initial key-on.	The ECM will estimate the exhaust gas pressure.
2555 {Amber}	S070 {3}	729 {3}	Intake Air Heater 1 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at the intake air heater signal circuit.	The intake air heaters may be ON or OFF all the time.
2556 {Amber}	S070 {4}	729 {4}	Intake Air Heater 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at the intake air heater signal circuit.	The intake air heater may be ON or OFF all the time.
2634 {Red}	S027 {12}	641 {12}	VGT Actuator Controller - Bad Intelligent Device or Component. An internal error has been detected by the smart VGT controller.	VGT actuation will be disabled.
2635 {Red}	S027 {11}	641 {31}	VGT Actuator Driver Circuit - Condition Exists. A calibration mismatch between the VGT actuator and the ECM has been detected.	VGT actuation will be disabled.
2636 {Red}	S027 {9}	641 {9}	VGT Actuator Driver Circuit - Abnormal Update Rate. No communications on the J1939 datalink between the engine ECM and the smart VGT controller.	VGT actuation will be disabled.
2637 {None}	None {11}	3050 {11}	Catalyst Face Plugged - Root Cause Not Known. The front face of the aftertreatment diesel oxidation catalyst has been detected to be plugged with soot.	Active aftertreatment diesel particulate filter regeneration will be disabled.
2638 {None}	None {13}	3050 {13}	Catalyst Efficiency - Out of Calibration. The temperature increase across the aftertreatment diesel oxidation catalyst is lower than expected.	None on performance.
2639 {None}	S324 {0}	3251 {15}	Aftertreatment Particulate Filter Differential Pressure - Data Valid but Above Normal Operational Range - Least Severe Level. The soot load of the aftertreatment diesel particulate filter has exceeded the recommended limits.	The aftertreatment dash lamp will be illuminated and will begin to flash as the severity of the soot load increases. Possible engine protection derate based on severity.
2646 {Amber}	P110 {31}	110 {31}	Engine Coolant Temperature - Condition Exists. The EGR valve was closed to reduce engine coolant temperature.	EGR valve actuation will be disabled.
2659 {None}	P110 {31}	110 {31}	Engine Coolant Temperature - Condition Exists. The EGR valve was closed to reduce engine coolant temperature.	EGR valve actuation will be disabled.
2728 {None}	None {16}	3556 {16}	Aftertreatment Fuel Injector 1 - Data Valid but Above Normal Operational Range - Moderately Severe Level. Excessive fuel injection into the aftertreatment system has been detected.	None on performance.
2742 {None}	None {17}	3249 {17}	Aftertreatment Exhaust Gas Temperature 2 - Data Valid but Below Normal Operating Range - Least Severe Level. The temperatures in the aftertreatment system can not reach the required temperatures for stationary regeneration.	None on performance.
2743 {None}	None {17}	3249 {17}	Aftertreatment Exhaust Gas Temperature 2 - Data Valid but Below Normal Operating Range - Moderately Severe Level.	None on performance.
2754 {Amber}	None {16}	81 {16}	Engine Particulate Trap Inlet Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level. Excessive black smoke has been detected exiting the engine and entering the aftertreatment diesel particulate filter.	None on performance.
2777 {None}	N/A {11}	3703 {31}	Particulate Trap Active Regeneration Inhibited Due to Inhibit Switch - Condition Exists. Regeneration of the diesel particulate filter has been prevented due to the inhibit switch being activated.	Active aftertreatment diesel particulate filter regeneration has been disabled.

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2778 {Amber}	N/A {0}	3481 {16}	Aftertreatment Fuel Rate - Data Valid but Above Normal Operational Range - Moderately Severe Level	None on performance.
2961 {None}	P412 {0}	412 {15}	Exhaust Gas Recirculation Temperature - Data Valid but Above Normal Operational Range - Least Severe Level. EGR temperature has exceeded the engine protection limit.	Slight fueling derate to bring EGR temperature under the maximum limit.
2962 {Amber}	P412 {0}	412 {16}	Exhaust Gas Recirculation Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level. EGR temperature has exceeded the engine protection limit.	Severe fueling derate to bring EGR temperature under the maximum limit.
2963 {None}	P110 {0}	110 {15}	Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Least Severe Level. Engine coolant temperature is above the engine coolant temperature engine protection warning limit.	Power derate and possible engine shutdown if engine protection shutdown feature is enabled.
2964 {None}	P105 {0}	105 {15}	Intake Manifold 1 Temperature - Data Valid but Above Normal Operational Range - Least Severe Level. Intake manifold air temperature signal indicates intake manifold air temperature is above engine protection warning limit.	Progressive power derate increasing in severity from time of alert.
2973 {Amber}	P102 {2}	102 {2}	Intake Manifold 1 Pressure - Data Erratic, Intermittent, or Incorrect. The ECM has detected an intake manifold pressure signal that is too high or low for current engine operating conditions.	Engine power derate.

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