GROUP 11 SELF-DIAGNOSTIC SYSTEM

1. OUTLINE

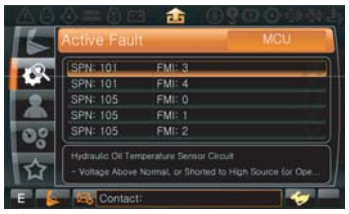
When any abnormality occurs in the ADVANCED CAPO system caused by electric parts malfunction and by open or short circuit, the MCU diagnoses the problem and sends the error codes to the cluster and also stores them in the memory.

2. MONITORING

1) Active fault

2609A3CD51

2609A3CD52



2609A3CD53

· The active faults of the MCU or engine ECM can be checked by this menu.

2) Logged fault

2609A3CD54

2609A3CD55

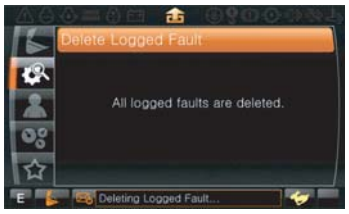
2609A3CD56

· The logged faults of the MCU or engine ECM can be checked by this menu.

3) Delete fault

2609A3CD57

2609A3CD58



2609A3CD59

· The logged faults of the MCU or engine ECM can be deleted by this menu.

3. MACHINE ERROR CODES TABLE

Error code		Description
HCESPN	FMI	
101	3	Hydraulic oil temperature sensor circuit - Voltage above normal, or shorted to high source.
	4	Hydraulic oil temperature circuit - Voltage below normal, or shorted to low source.
105	0	Working pressure sensor data above normal range.
	1	Working pressure sensor data below normal range.
	2	Working pressure sensor data error.
	4	Working pressure sensor circuit - Voltage below normal, or shorted to Low source.
108	0	Travel oil pressure sensor data above normal range.
	1	Travel oil pressure sensor data below normal range.
	2	Travel oil pressure sensor data error.
	4	Travel oil pressure sensor circuit - Voltage below normal, or shorted to low source.
120	0	Main pump 1 (P1) pressure sensor data above normal range.
	1	Main pump 1 (P1) pressure sensor data below normal range.
	2	Main pump 1 (P1) pressure sensor data error.
	4	Main pump 1 (P1) pressure sensor circuit - Voltage below normal, or shorted to low source.
121	0	Main pump 2 (P2) pressure sensor data above normal range.
	1	Main pump 2 (P2) pressure sensor data below normal range.
	2	Main pump 2 (P2) pressure sensor data error.
	4	Main pump 2 (P2) pressure sensor circuit - Voltage below normal, or shorted to low source.
122	0	Overhead pressure sensor data above normal range.
	1	Overhead pressure sensor data below normal range.
	2	Overhead pressure sensor data error.
	4	Overhead pressure sensor circuit - Voltage below normal, or shorted to low source.
123	0	Negative 1 pressure sensor data above normal range.
	1	Negative 1 pressure sensor data below normal range.
	2	Negative 1 pressure sensor data error.
	4	Negative 1 pressure sensor circuit - Voltage below normal, or shorted to low source.
124	0	Negative 2 Pressure sensor data above normal range.
	1	Negative 2 Pressure sensor data below normal range.
	2	Negative 2 Pressure sensor data error.
	4	Negative 2 Pressure sensor circuit - Voltage below normal, or shorted to low source.
125	0	Pilot pump (P3) pressure sensor data above normal range.
	1	Pilot pump (P3) pressure sensor data below normal range.
	2	Pilot pump (P3) pressure sensor data error.
	4	Pilot pump (P3) pressure sensor circuit - Voltage below normal, or shorted to low source.
127	0	Boom up pilot pressure sensor data above normal range.
	1	Boom up pilot pressure sensor data below normal range.
	2	Boom up pilot pressure sensor data error.
	4	Boom up pilot pressure sensor circuit - Voltage below normal, or shorted to low source.
133	0	Arm in/out & bucket in pilot pressure sensor data above normal range.
	1	Arm in/out & bucket in pilot pressure sensor data below normal range.
	2	Arm in/out & bucket in pilot pressure sensor data error.
	4	Arm in/out & bucket in pilot pressure sensor circuit - Voltage below normal, or shorted to low source.

※ Some error codes are not applied to this machine.

Error code		Description
HCESPN	FMI	
135	0	Swing pilot pressure sensor data above normal range.
	1	Swing pilot pressure sensor data below normal range.
	2	Swing pilot pressure sensor data error.
	4	Swing pilot pressure sensor circuit - Voltage below normal, or shorted to low source.
138	0	Attachment pilot pressure sensor data above normal range.
	1	Attachment pilot pressure sensor data below normal range.
	2	Attachment pilot pressure sensor data error.
	4	Attachment pilot pressure sensor circuit - Voltage below normal, or shorted to low source.
139	0	Option pilot pressure sensor data above normal range
	1	Option pilot pressure sensor data below normal range
	2	Option pilot pressure sensor data error
	4	Option pilot pressure sensor circuit - Voltage below normal, or shorted to low source
140	5	Pump EPPR valve circuit - Current below normal, or open circuit.
	6	Pump EPPR valve circuit - Current above normal.
141	5	Boom priority EPPR valve circuit - Current below normal, or open circuit.
	6	Boom priority EPPR valve circuit - Current above normal.
143	5	Travel EPPR valve circuit - Current below normal, or open circuit.
	6	Travel EPPR valve circuit - Current above normal.
144	5	Attachment flow EPPR valve circuit - Current below normal, or open circuit.
	6	Attachment flow EPPR valve circuit - Current above normal.
145	5	Remote cooling fan EPPR valve circuit - Current below normal, or open circuit.
	6	Remote cooling fan EPPR valve circuit - Current above normal.
150	5	Left rotate EPPR valve circuit - Current below normal, or open circuit.
	6	Left rotate EPPR valve circuit - Current above normal.
151	5	Right rotate EPPR valve circuit - Current below normal, or open circuit.
	6	Right rotate EPPR valve circuit - Current above normal.
152	5	Left tilt EPPR valve circuit - Current below normal, or open circuit.
	6	Left tilt EPPR valve circuit - Current above normal.
153	5	Right tilt EPPR valve circuit - Current below normal, or open circuit.
	6	Right tilt EPPR valve circuit - Current above normal.
166	5	Power max solenoid circuit - Current below normal, or open circuit.
	6	Power max solenoid circuit - Current above normal.
167	5	Travel speed solenoid circuit - Current below normal, or open circuit.
	6	Travel speed solenoid circuit - Current above normal.
168	5	Attachment pressure solenoid circuit - Current below normal, or open circuit.
	6	Attachment pressure solenoid circuit - Current above normal.
169	5	Attachment conflux solenoid circuit - Current below normal, or open circuit.
	6	Attachment conflux solenoid circuit - Current above normal.
170	5	Arm regeneration solenoid circuit - Current below normal, or open circuit.
	6	Arm regeneration solenoid circuit - Current above normal.
171	5	Attachment safety solenoid circuit - Current below normal, or open circuit.
	6	Attachment safety solenoid circuit - Current above normal.
181	5	Remote cooling fan reverse solenoid circuit - Current below normal, or open circuit.
	6	Remote cooling fan reverse solenoid circuit - Current above normal.

※ Some error codes are not applied to this machine.

Error code		Description
HCESPN	FMI	
200	0	P1 & P2 EPPR valve pressure (measurement) sensor data above normal range
	1	P1 & P2 EPPR valve pressure (measurement) sensor data below normal range
	2	P1 & P2 EPPR valve pressure (measurement) sensor data error
	4	P1 & P2 EPPR valve pressure (measurement) sensor circuit - Voltage below normal or shorted to low source
301	5	Fuel level sensor circuit - Voltage above normal, or shorted to high source.
	6	Fuel level sensor circuit - Voltage below normal, or shorted to low source.
304	3	Engine coolant temperature sensor circuit - Voltage above normal, or shorted to high source.
	4	Engine coolant temperature sensor circuit - Voltage below normal, or shorted to low source.
310	8	Engine speed signal error - Abnormal frequency or pulse width.
322	3	Engine preheat relay circuit - Voltage above normal, or shorted to high source.
	4	Engine preheat relay circuit - Voltage below normal, or shorted to low source.
325	3	Fuel warmer relay circuit - Voltage above normal, or shorted to high source.
	4	Fuel warmer relay circuit - Voltage below normal, or shorted to low source.
340	3	Potentiometer (G/A) circuit - Voltage above normal, or shorted to high source.
	4	Potentiometer (G/A) circuit - Voltage below normal, or shorted to low source.
341	5	Governor actuator circuit - Current below normal, or open circuit.
	6	Governor actuator circuit - Current above normal.
501	0	Transmission oil pressure sensor data above normal range.
	1	Transmission oil pressure sensor data below normal range.
	2	Transmission oil pressure sensor data error.
	4	Transmission oil pressure sensor circuit - Voltage below normal, or shorted to low source.
503	0	Brake pressure sensor data above normal range.
	1	Brake pressure sensor data below normal range.
	2	Brake pressure sensor data error.
	4	Brake pressure sensor circuit - Voltage below normal, or shorted to low source.
505	0	Working brake pressure sensor data above normal range.
	1	Working brake pressure sensor data below normal range.
	2	Working brake pressure sensor data error.
	4	Working brake pressure sensor circuit - Voltage below normal, or shorted to low source.
506	3	Working brake lamp circuit - Voltage above normal, or shorted to high source.
	4	Working brake lamp circuit - Voltage below normal, or shorted to low source.
520	3	Ram lock lamp circuit - Voltage above normal, or shorted to high source.
	4	Ram lock lamp circuit - Voltage below normal, or shorted to low source.
525	5	Ram lock solenoid circuit - Current below normal, or open circuit.
	6	Ram lock solenoid circuit - Current above normal.
530	0	Travel F pilot pressure sensor data above normal range.
	1	Travel F pilot pressure sensor data below normal range.
	2	Travel F pilot pressure sensor data error.
	4	Travel F pilot pressure sensor circuit - Voltage below normal, or shorted to low source.
531	0	Travel R pilot pressure sensor data above normal range.
	1	Travel R pilot pressure sensor data below normal range.
	2	Travel R pilot pressure sensor data error.
	4	Travel R pilot pressure sensor circuit - Voltage below normal, or shorted to low source.

※ Some error codes are not applied to this machine.

Error code		Description
HCESPN	FMI	
701	3	Hourmeter circuit - Voltage above normal, or shorted to high source.
	4	Hourmeter circuit - Voltage below normal, or shorted to low source.
705	0	MCU input voltage high.
	1	MCU input voltage low.
707	1	Alternator node I voltage low.
714	3	Acc. dial circuit - Voltage above normal, or shorted to high source.
	4	Acc. dial circuit - Voltage below normal, or shorted to low source.
715	3	Rotate signal input circuit - Voltage above normal, or shorted to high source.
	4	Rotate signal input circuit - Voltage below normal, or shorted to low source.
716	3	Tilt signal input circuit - Voltage above normal, or shorted to high source.
	4	Tilt signal input circuit - Voltage below normal, or shorted to low source.
722	3	Travel alarm (buzzer) circuit - Voltage above normal, or shorted to high source.
	4	Travel alarm (buzzer) circuit - Voltage below normal, or shorted to low source.
830	12	MCU internal memory error.
840	2	Cluster communication data error - Intermittent
	9	Cluster communication data error
841	2	ECM communication data error - Intermittent
	9	ECM communication data error
843	2	Option #1 (CAN 2) communication data error - Intermittent
	9	Option #1 (CAN 2) communication data error
850	2	RCM communication data error - Intermittent
	9	RCM communication data error

※ Some error codes are not applied to this machine.

4. ENGINE FAULT CODE

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
111 629 12	Engine control module critical internal failure - Bad intelligent device or component. Error internal to the ECM related to memory hardware failures or internal ECM voltage supply circuits.	Possible no noticeable performance effects, engine dying, or hard starting.
115 612 2	Engine magnetic crankshaft speed/position lost both of two signals - Data erratic, intermittent, or incorrect. The ECM has detected that the primary engine speed sensor and the backup engine speed sensor signals are reversed.	Fueling to injectors is disabled and the engine can not be started.
122 102 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.	Engine power derate.
123 102 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.	Engine power derate.
124 102 16	Intake manifold 1 pressure - Data valid but above normal operational range - Moderately severe level. Intake manifold pressure has exceeded the maximum limit for the given engine rating.	Engine power derate.
131 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 circuit.	Severe derate in power output of the engine. Limp home power only.
132 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 signal circuit.	Severe derate in power output of the engine. Limp home power only.
133 974 3	Remote accelerator pedal or lever position sensor 1 circuit - Voltage above normal, or shorted to high source. High voltage detected at remote accelerator pedal position circuit.	Remote accelerator will not operate. Remote accelerator position will be set to zero percent.
134 974 4	Remote accelerator pedal or lever position sensor 1 circuit - Voltage below normal, or shorted to low source. Low voltage detected at remote accelerator pedal position signal circuit.	Remote accelerator will not operate. Remote accelerator position will be set to zero percent.
135 100 3	Engine oil rifle pressure 1 sensor circuit - Voltage above normal, or shorted to high source. High signal voltage detected at the engine oil pressure circuit.	None on performance. No engine protection for oil pressure.
141 100 4	Engine oil rifle pressure 1 sensor circuit - Voltage below normal, or shorted to low source. Low signal voltage detected at engine oil pressure circuit.	None on performance. No engine protection for oil pressure.
143 100 18	Engine oil rifle pressure - Data valid but below normal operational range - Moderately severe level. Engine oil pressure signal indicates engine oil pressure is below the engine protection warning limit.	Engine power derate.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
144 110 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.
145 110 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.
146 110 16	Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level. Engine coolant temperature signal indicates engine coolant temperature is above engine protection warning limit.	Progressive power derate increasing in severity from time of alert.
147 91 1	Accelerator Pedal or Lever Position 1 Sensor Circuit Frequency - Data Valid but Below Normal Operational Range - Most Severe Level. A frequency of less than 100 Hz has been detected at the frequency throttle input to the ECM.	Severe derate in power output of the engine. Limp home power only.
148 91 0	Accelerator Pedal or Lever Position Sensor 1 - Data Valid but Above Normal Operational Range - Most Severe Level. A frequency of more than 1500 Hz has been detected at the frequency throttle input to the ECM.	Severe derate in power output of the engine. Limp home power only.
151 110 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.
153 105 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 ECM. No engine protection for intake manifold air temperature.
154 105 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.
155 105 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 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.
187 3510 4	Sensor Supply 2 Circuit - Voltage Below Normal, or Shorted to Low Source. Low voltage detected at the sensor supply number 2 circuit.	Engine power derate.
195 111 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.
196 111 4	Coolant Level Sensor 1 Circuit - Voltage Below Normal, or Shorted to Low Source. Low signal voltage detected at engine coolant level circuit.	None on performance.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
197 111 18	Coolant Level - Data Valid but Below Normal Operational Range - Moderately Severe Level. Low coolant level has been detected.	Possible power derate and possible engine shutdown if the Engine Protection Shutdown feature is enabled.
221 108 3	Barometric Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source. High signal voltage detected at barometric pressure circuit.	Engine power derate.
222 108 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 3510 3	Sensor Supply 2 Circuit - Voltage Above Normal, or Shorted to High Source. High voltage detected at sensor supply number 2 circuit.	Engine power derate.
234 190 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.
235 111 1	Coolant Level - Data Valid but Below Normal Operational Range - Most Severe Level. Low engine coolant level detected.	Engine protection shutdown.
238 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 3511 3	Sensor Supply 3 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected on the 5 volt sensor supply circuit to the engine speed sensor.	Possible hard starting and rough running.
241 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.
245 647 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 may stay on continuously or not run at all.
271 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 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.
281 1347 7	Fuel pump pressurizing assembly 1 - Mechanical system not responding properly or out of adjustment.	Engine will not run or possible low power.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
285 639 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.	At least one multiplexed device will not operate properly.
286 639 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 91 19	SAE J1939 multiplexed accelerator pedal or lever sensor system - received network data In error. The OEM vehicle electronic control unit (VECM) detected a fault with its accelerator pedal.	Engine may only idle or engine will not accelerate to full speed.
288 974 19	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Position Sensor Circuit - Received Network Data In Error. The OEM vehicle electronic control unit (VECM) 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.
292 441 14	Auxiliary temperature Sensor Input 1 - Special instructions.	Possible engine power derate.
293 441 3	Auxiliary temperature sensor input 1 circuit - Voltage above normal, or shorted to high source. High signal voltage or open circuit detected at the OEM auxiliary temperature circuit.	None on performance.
294 441 4	Auxiliary temperature sensor input 1 circuit - Voltage below normal, or shorted to low source. Low signal voltage detected at the OEM auxiliary temperature circuit.	None on performance.
295 108 2	Barometric Pressure - Data Erratic, Intermittent, or Incorrect. An error in the barometric pressure sensor signal was detected by the ECM.	Engine power derate.
296 1388 14	Auxiliary pressure sensor input 2 - Special instructions.	Possible engine power derate.
297 1388 3	Auxiliary pressure sensor input 2 circuit - Voltage above normal, or shorted to high source. High signal voltage detected at the OEM pressure circuit.	None on performance.
298 1388 4	Auxiliary pressure sensor input 2 circuit - Voltage below normal, or shorted to low source. Low signal voltage or open circuit detected at the OEM pressure circuit.	None on performance.
319 251 2	Real time clock power interrupt - Data erratic, intermittent, or incorrect. Real time clock lost power.	None on performance. Data in the ECM will not have accurate time and date information.
322 651 5	Injector solenoid driver cylinder 1 circuit - Current below normal, or open circuit. Current detected at injector 1 when voltage is turned OFF.	The current to the injector is shut OFF. The engine can possibly misfire or run rough.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
323 656 5	Injector solenoid driver cylinder 5 circuit - Current below normal, or open circuit. Current detected at injector 5 when voltage is turned OFF.	The current to the injector is shut OFF. The engine can possibly misfire or run rough.
324 653 5	Injector solenoid driver cylinder 3 circuit - Current below normal, or open circuit. Current detected at injector 3 when voltage is turned OFF.	The current to the injector is shut OFF. The engine can possibly misfire or run rough.
325 656 5	Injector solenoid driver cylinder 6 circuit - Current below normal, or open circuit. Current detected at injector 6 when voltage is turned OFF.	The current to the injector is shut OFF. The engine can possibly misfire or run rough.
331 652 5	Injector solenoid driver cylinder 2 circuit - Current below normal, or open circuit. Current detected at injector 2 when voltage is turned OFF.	The current to the injector is shut OFF. The engine can possibly misfire or run rough.
332 654 5	Injector solenoid driver cylinder 4 circuit - Current below normal, or open circuit. Current detected at injector 4 when voltage is turned OFF.	The current to the injector is shut OFF. The engine can possibly misfire or run rough.
334 110 2	Engine coolant temperature - Data erratic, intermittent, or incorrect. The engine coolant temperature reading is not changing with engine operating conditions.	The ECM will estimate engine coolant temperature.
342 630 13	Electronic calibration code incompatibility - Out of calibration. An incompatible calibration has been detected in the ECM.	Possible no noticeable performance effects, engine dying, or hard starting.
343 629 12	Engine control module warning internal hardware failure - Bad intelligent device or component. Internal ECM failure.	No performance effects or possible severe power derate.
351 627 12	Injector power supply - Bad intelligent device or component. The ECM measured injector boost voltage is low.	Possible smoke, low power, engine misfire, and/ or engine will not start.
352 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 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.
415 100 1	Engine oil rifle pressure - Data valid but below normal operational range - Most severe level. Oil pressure signal indicates oil pressure below the 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.
418 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.
421 175 0	Engine Oil Temperature - Data Valid But Above Normal Operating Range - Most Severe Level. Engine oil temperature signal indicates engine oil temperature above engine protection critical limit.	Progressive speed derate increasing in severity from time of alert. If the Engine Protection Shutdown feature is enabled, engine will shut down 30 seconds after red STOP lamp starts flashing.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
426 639 2	SAE J1939 Data Link-Data Erratic, Intermittent, or Incorrect. Communication between the ECM and another device on the SAE J1939 data link has been lost.	None on performance. SAE J1939 data link devices possibly do not operate.
428 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 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.
431 558 2	Accelerator pedal or lever idle validation switch - Data erratic, intermittent, or incorrect. Voltage detected simultaneously on both idle validation and off-idle validation switches.	Engine will only idle.
432 558 13	Accelerator pedal or lever idle validation circuit - Out of calibration. Voltage at idle validation on-idle and off-idle circuit does not match accelerator pedal position.	Engine will only idle.
435 100 2	Engine oil rifle pressure - Data erratic, intermittent, or incorrect. An error in the engine oil pressure switch signal was detected by the ECM.	None on performance. No engine protection for oil pressure.
441 168 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.
442 168 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.
449 157 0	Injector metering rail 1 pressure - Data valid but above normal operational range - Most severe level.	None or possible engine noise associated with higher injection pressures (especially at idle or light load). Engine power is reduced.
451 157 3	Injector metering rail 1 pressure sensor circuit - Voltage above normal, or shorted to high source. High signal voltage detected at the rail fuel pressure sensor circuit.	Power and or speed derate.
452 157 4	Injector metering rail 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.
488 105 16	Intake manifold 1 temperature - Data valid but above normal operational range - Moderately severe level. Intake manifold air temperature signal indicates intake manifold air temperature is above the engine protection warning limit.	Progressive power derate increasing in severity from time of alert.
497 1377 2	Multiple unit synchronization switch - Data erratic, intermittent, or incorrect. Multiple unit synchronous ON/OFF switch and multiple unit synchronous complimentary ON/OFF switch have different values in the ECM.	Multiple unit synchronization feature is disabled.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
515 3514 3	Sensor Supply 6 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected on the +5 volt sensor supply circuit to the fuel rail pressure sensor.	Engine power derate.
516 3514 4	Sensor Supply 6 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected on the +5 volt sensor supply circuit to the fuel rail pressure sensor.	Engine power derate.
523 611 2	Auxiliary intermediate (PTO) speed switch validation - Data erratic, intermittent, or incorrect. The position of the intermediate speed control switch 1 does not match the position of the intermediate speed control validation switch.	Intermediate speed control switch may not operate correctly.
527 702 3	Auxiliary input/output 2 circuit - Voltage above normal, or shorted to high source. High signal voltage or open circuit has been detected at the auxiliary input/output 2 circuit.	None on performance.
528 93 2	Auxiliary alternate torque validation switch - Data erratic, intermittent, or incorrect. An error has been detected in the alternate torque switch circuit.	Torque curve setting defaults to default curve.
529 703 3	Auxiliary input/output 3 circuit - Voltage above normal, or shorted to high source. High signal voltage has been detected at the auxiliary input/output 3 circuit.	None on performance.
553 157 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). Possible reduced engine performance.
554 157 2	Injector metering rail 1 pressure - Data erratic, Intermittent, or incorrect. The ECM has detected that the fuel pressure signal is not changing.	Possibly hard to start, low power, or engine smoke.
555 101 16	Crankcase Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level. The crankcase breather filter requires maintenance.	None on performance.
556 101 0	Crankcase Pressure - Data Valid but Above Normal Operational Range - Most Severe Level. The crankcase breather filter requires maintenance.	None on performance.
559 157 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 or low power. Engine could possibly **not** start.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
584 677 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 not start or the engine will not have starter lockout protection. The engine will not have starter lockout protection.
585 677 4	Starter relay driver circuit - Voltage below normal, or shorted to low source. Low voltage detected at starter lockout circuit.	The engine will **not** have starter lockout protection.
595 103 0	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Moderately Severe Level. High turbocharger speed has been detected by the ECM.	Engine power derate. The ECM uses an estimated turbocharger speed.
596 167 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.
597 167 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.
598 167 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.
599 640 14	Auxiliary commanded dual output shutdown - Special instructions. The engine protection limit has been exceeded for the dual outputs calibrated limits.	Engine will shut down.
649 1378 31	Engine Oil Change Interval - Condition Exists. Change engine oil and filter.	Maintenance reminder **only**.
687 103 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.
689 190 2	Engine crankshaft speed/position - Data erratic, intermittent, or incorrect. The ECM has detected an error in the engine speed signal.	Possible reduced engine performance.
691 1172 3	Turbocharger 1 compressor inlet temperature circuit - Voltage above normal, or shorted to high source. High signal voltage detected at turbocharger compressor inlet air temperature circuit.	Engine power derate.
692 1172 4	Turbocharger 1 compressor inlet temperature circuit - Voltage below normal, or shorted to low source. Low signal voltage detected at turbocharger compressor inlet air temperature circuit.	Engine power derate.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
697 1136 3	Engine ECU Temperature Sensor Circuit - Voltage Above normal, or Shorted to High source. High signal voltage or open circuit detected at the internal ECM temperature sensor.	None on performance.
698 1136 4	Engine ECU Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source. Low signal voltage detected at the internal ECM temperature sensor.	None on performance.
731 723 7	Engine speed / position camshaft and crankshaft misalignment - Mechanical system not responding properly or out of adjustment. Engine position signal from the crankshaft position sensor and camshaft position sensor do not match.	Excessive smoke, hard start, and rough idle possible. Possible reduced engine performance.
778 723 2	Engine camshaft speed / position sensor - Data erratic, intermittent, or incorrect. The ECM has detected an error in the camshaft position sensor signal.	Possible reduced engine performance and/or reduced starting capability. Engine runs using primary engine position sensor.
779 703 11	Auxiliary equipment sensor input 3 - Root cause not known.	Possible engine derate.
1117 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 not 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 code information, trip information, and maintenance monitor data can be inaccurate.
1239 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 only.
1241 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 the power output of the engine. Limp home power only.
1242 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 only idle.
1515 91 19	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Received Network Data In Error. The J1939 multiplexing controller has indicated a malfunction of the multiplexed accelerator pedal.	The engine will only idle.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
1604 4796 31	Aftertreatment Diesel Oxidation Catalyst Missing - Condition Exists. The aftertreatment diesel oxidation catalyst is not present in the exhaust system.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1633 625 2	OEM datalink cannot transmit - Data erratic, intermittent, or incorrect. Communications within the OEM datalink network is intermittent.	Engine will only idle.
1691 100 18	Aftertreatment Diesel Oxidation Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level. The temperature increase across the aftertreatment catalyst is lower than expected.	Active aftertreatment diesel particulate filter regeneration will be disabled.
1695 3513 3	Sensor Supply 5 - Voltage Above Normal or Shorted to High Source. High voltage detected at sensor supply 5 circuit in the OEM harness.	Severe derate in power output of the engine. Limp home power only.
1696 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 only. Power Generation Engines : EGR valve actuation will disabled. Active and stationary regeneration will be disabled.
1843 101 3	Crankcase Pressure Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the crankcase pressure circuit.	None on performance.
1844 101 4	Crankcase Pressure Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the crankcase pressure circuit.	None on performance.
1852 97 16	Water-in-Fuel Indicator - Data Valid But Above Normal Operating Range - Moderately Severe Level. The water-in-fuel Indicator indicates that the water level is above warning level.	None on performance.
1866 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 autozero test.	EGR valve actuation will be disabled.
1879 3251 3	Aftertreatment Diesel 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 and stationary regeneration of the diesel particulate filter will be disabled.
1881 3251 4	Aftertreatment Diesel 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 and stationary regeneration of the diesel particulate filter will be disabled.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
1883 3251 2	Aftertreatment Diesel 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 and stationary regeneration of the diesel particulate filter will be disabled.
1896 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.
1898 641 13	VGT Actuator Controller - Out of Calibration. The VGT has failed the automatic calibration procedure at initial key ON.	Low intake manifold pressure. The VGT will be in the open position.
1911 157 0	Injector Metering Rail Number 1 Pressure - Data Valid But Above Normal Operational Range - Most Severe Level. The ECM has detected that fuel pressure in the rail fuel was higher than the commanded pressure.	None, or possible engine noise associated with higher injection pressures (especially at idle or light load) or possible power interruption associated with high-pressure relief valve reset.
1921 3251 0	Aftertreatment Diesel Particulate Filter Differential Pressure - Data Valid But Above Normal Operating 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 3251 0	Aftertreatment Diesel Particulate Filter Differential Pressure - Data Valid But Above Normal Operating Range - Most Severe Level. The soot load of the aftertreatment diesel particulate filter has exceeded the recommended limits. Engine protection derate is enabled.	Severe engine derate.
1938 3597 1	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 101 2	Crankcase Pressure - Data Erratic, Intermittent, or Incorrect. The ECM has detected that the crankcase pressure signal is reading an erratic value at initial key ON or during engine operation.	None on performance.
1961 2791 0	EGR Valve Control Circuit Calculated Over Temperature - Data Valid But Above Normal Operational Range - Least Severe Level. High EGR valve driver temperature has been detected.	EGR valve operation will be disabled.
1962 641 0	VGT Actuator Driver Over Temperature (Calculated) - Data Valid But Above Normal Operating Range - Least Severe Level. High internal VGT actuator temperature has been detected.	None on performance.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
1963 3482 7	Aftertreatment Fuel Shutoff Valve 1-Mechanical System Not Responding or Out of Adjustment. The aftertreatment fuel shutoff valve has been detected to be stuck closed.	Active aftertreatment diesel particulate filter regeneration will be disabled until the next key cycle.
1992 190 0	Engine Crankshaft Speed/Position - Data Valid But Above Normal Operating Range - Moderately Severe Level. Engine crankshaft speed/position signal indicates engine speed above engine protection limit.	Engine shutdown.
1993 4795 31	Aftertreatment Diesel Particulate Filter Missing - Condition Exists. The aftertreatment diesel particulate filter in the exhaust system is not present.	Active aftertreatment diesel particulate filter regeneration will be disabled.
2182 1072 3	Engine Brake Actuator Driver 1 Circuit - Voltage Above Normal or Shorted to High Source. High voltage or an open circuit detected at the engine brake solenoid number 1 signal circuit.	Engine brake on cylinders 1, 2, and 3 can not be activated.
2183 1072 4	Engine Brake Actuator Driver 1 Circuit - 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 not be activated.
2185 3512 3	Sensor supply 4 circuit - Voltage above normal, or shorted to high source. High voltage detected at 5 VDC sensor supply circuit to the accelerator pedal position sensor.	Engine will only idle.
2186 3512 4	Sensor supply 4 circuit - Voltage below normal, or shorted to low source. Low voltage detected at 5 VDC sensor supply circuit to the accelerator pedal position sensor.	Engine will only idle.
2195 703 14	Auxiliary Equipment Sensor Input Engine Protection Critical - Special Instructions. The emergency door of the vehicle has been detected open.	Engine will derate or shut down, depending on the engine protection settings.
2198 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 not interpreting the J1939 message from the ECM correctly.	VGT actuation will be disabled.
2265 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 may be difficult to start.
2266 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 27 4	EGR Valve Position Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage has been detected at the EGR valve position sensor circuit	EGR valve actuation will be disabled.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
2273 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 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.
2288 103 15	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Least Severe Level. High turbocharger speed has been detected by the ECM.	Engine power derate to lower the turbocharger speed.
2311 633 31	Electronic fuel injection control valve circuit - Condition exists. Fuel pump actuator circuit resistance too high or too low, or an intermittent connection has been detected.	Engine will run rough with low power.
2321 190 2	Engine crankshaft speed/position - Data erratic, intermittent, or incorrect. crankshaft engine speed sensor intermittent synchronization.	The 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 723 2	Engine camshaft speed / position sensor - Data erratic, intermittent, or incorrect. Camshaft engine speed sensor intermittent synchronization.	None on performance.
2347 2629 15	Turbocharger Compressor Outlet Temperature (Calculated) - Data Valid But Above Normal Operating 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 2791 5	EGR Valve Control Circuit - Current Below Normal or Open Circuit. Motor terminal or motor coil open circuit has been detected by the ECM.	EGR valve actuation will be disabled.
2353 2791 6	EGR Valve Control Circuit - Current Above Normal or Grounded Circuit. A short circuit to ground has been detected in the EGR valve motor circuit.	EGR valve actuation will be disabled.
2357 2791 7	EGR Valve Control Circuit - Mechanical System Not Responding or Out of Adjustment. The EGR valve motor has exceeded the duty cycle limit, indicating a stuck open EGR valve.	EGR valve actuation will be disabled.
2363 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.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
2367 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.
2372 95 16	Fuel Filter Differential Pressure - Data Valid But Above Normal Operational Range - Moderately Severe Level. Excessive fuel flow restriction to the high pressure fuel pump has been detected.	Engine can possibly have low power.
2373 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 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 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 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 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 can stay on continuously or **not** run at all.
2387 641 7	VGT Actuator Driver Circuit (Motor) - Mechanical System Not Responding 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 111 17	Coolant Level - Data Valid But Below Normal Operational Range - Least Severe Level. Low engine coolant level detected.	None on performance.
2449 641 13	VGT Actuator Controller - Out of Calibration. The VGT actuator has been installed incorrectly.	VGT actuation will be disabled.
2554 1209 2	Exhaust Gas Pressure - Data Erratic, Intermittent or Incorrect. The exhaust gas pressure sensor is reading an erratic value.	The ECM will estimate the exhaust gas pressure.
2555 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 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 heaters may be ON or OFF all the time.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
2557 697 3	Auxiliary PWM driver 1 circuit - Voltage above normal, or shorted to high source. High signal voltage detected at the analog torque circuit.	Can not control transmission.
2558 697 4	Auxiliary PWM driver 1 circuit - Voltage below normal, or shorted to low source. Low signal voltage detected at the analog torque circuit.	Can not control transmission.
2634 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 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 641 9	VGT Actuator Driver Circuit - Abnormal Update Rate. No communications on the J1939 data link between the engine ECM and the smart VGT controller.	The VGT will move to the default open position.
2637 5018 11	Aftertreatment Diesel Oxidation 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.
2639 3251 15	Aftertreatment Diesel Particulate Filter Differential Pressure - Data Valid But Above Normal Operating Range - Least Severe Level. The soot load of the aftertreatment diesel particulate filter has exceeded the recommended limits.	The aftertreatment diesel particulate filter lamp will be illuminated and will begin to flash as the severity of the soot load increases. Possible engine protection derate based on severity.
2732 4097 3	Aftertreatment Fuel Drain Valve Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the aftertreatment fuel drain valve circuit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
2733 4097 4	Aftertreatment Fuel Drain Valve Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the aftertreatment fuel drain valve circuit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
2741 3482 31	Aftertreatment Fuel Shutoff Valve 1 Swapped - Condition Exists. Aftertreatment fuel shutoff valve 1 and aftertreatment fuel drain valve wiring harness connections are reversed.	Active aftertreatment diesel particulate filter regeneration will be disabled.
2754 81 16	Engine Diesel Particulate Filter Intake Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level. Excessive black smoke has been detected exiting the engine and entering the aftertreatment diesel particulate filter.	None on performance
2764 1209 16	Exhaust Gas Pressure - Data Valid but Above Normal Operating Range - Moderately Severe Level. High exhaust gas pressure has been detected by the exhaust gas pressure sensor.	Fueling derate to bring exhaust gas pressure below the maximum operating limits.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
2765 2797 13	Engine Injector Bank 1 Barcodes - Out of Calibration. Invalid injector barcode information has been entered, or has not been entered at all.	None on performance.
2777 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 permit switch being disabled.	None on performance.
2878 4097 7	Aftertreatment Fuel Drain Valve - Mechanical System Not Responding Properly or Out of Adjustment. The aftertreatment fuel shutoff drain valve has been detected to be stuck closed.	Active aftertreatment diesel particulate filter regeneration will be disabled.
2961 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 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.
2973 102 2	Intake manifold 1 pressure - Data erratic, intermittent, or incorrect. The intake manifold pressure sensor is reading an erratic value.	The ECM will estimate the intake manifold pressure. Possible engine power derate.
3133 3610 3	Aftertreatment Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source. High signal voltage detected at the aftertreatment diesel particulate filter outlet pressure sensor circuit.	Active and stationary regeneration of the diesel particulate filter will be disabled.
3134 3610 4	Aftertreatment Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source. Low signal voltage detected at the aftertreatment diesel particulate filter outlet pressure sensor circuit.	Active and stationary regeneration of the diesel particulate filter will be disabled.
3135 3610 2	Aftertreatment Diesel Particulate Filter Outlet Pressure - Data Erratic, Intermittent or Incorrect. The aftertreatment diesel particulate filter outlet pressure sensor is reading an erratic value at initial key ON or during engine operation.	Active and stationary regeneration of the diesel particulate filter will be disabled.
3139 3667 3	Engine Air Shutoff Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the air shutoff circuit.	The engine air shutoff valve will be disabled.
3186 1623 9	Tachograph Output Shaft Speed - Abnormal Update Rate. No communication or an invalid data transfer rate has been detected on the J1939 data link between the ECM and the tachograph output shaft speed sensor.	None on performance.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
3213 1623 19	Tachograph Output Shaft Speed - Received Network Data In Error. The J1939 multiplexing controller has indicated a malfunction of the tachograph output shaft speed sensor.	None on performance.
3245 3936 7	Aftertreatment Diesel Particulate Filter System - Mechanical System Not Responding or Out of Adjustment. The aftertreatment diesel particulate filter has been damaged.	Active aftertreatment diesel particulate filter regeneration will be disabled.
3251 475 16	Aftertreatment Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level. The diesel oxidation catalyst intake temperature sensor reading has exceeded the maximum temperature limit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
3253 3242 16	Aftertreatment Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level. The aftertreatment diesel particulate filter intake temperature sensor reading has exceeded the maximum engine protection temperature limit.	Active and stationary aftertreatment diesel particulate filter regeneration will be disabled.
3254 3242 15	Aftertreatment Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe Level. The aftertreatment diesel particulate filter intake temperature sensor reading has exceeded the maximum engine protection temperature limit.	Active and stationary aftertreatment diesel particulate filter regeneration will be disabled.
3255 3246 16	Aftertreatment Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level. The aftertreatment diesel particulate filter outlet temperature sensor reading has exceeded the maximum engine protection temperature limit.	Active and stationary aftertreatment diesel particulate filter regeneration will be disabled.
3256 3246 15	Aftertreatment Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range - Least Severe Level. The aftertreatment diesel particulate filter outlet temperature sensor reading has exceeded the maximum engine protection temperature limit.	Active and stationary aftertreatment diesel particulate filter regeneration will be disabled.
3311 3242 0	Aftertreatment Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range - Most Severe Level. The aftertreatment diesel particulate filter intake temperature sensor reading has exceeded the maximum engine protection temperature limit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
3312 3246 0	Aftertreatment Diesel Particulate Filter Outlet Temperature - Data Valid but Above Normal Operating Range - Most Severe Level. The aftertreatment diesel particulate filter outlet temperature sensor reading has exceeded the maximum engine protection temperature limit.	The exhaust gas recirculation (EGR) valve operation will be disabled. Active aftertreatment diesel particulate filter regeneration will be disabled.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
3313 4765 4	Aftertreatment Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the catalyst intake sensor circuit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
3314 4765 3	Aftertreatment Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the catalyst intake temperature sensor circuit.	Active aftertreatment diesel particulate filter regeneration will be disabled.
3315 4765 2	Aftertreatment Diesel Oxidation Catalyst Intake Temperature - Data Erratic, Intermittent, or Incorrect. The aftertreatment diesel oxidation catalyst intake temperature sensor is not changing with engine operating conditions.	Active aftertreatment diesel particulate filter regeneration will be disabled. EGR valve operation will be disabled.
3316 3242 4	Aftertreatment Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the aftertreatment diesel particulate filter intake temperature sensor circuit.	The exhaust gas recirculation (EGR) valve operation will be disabled. Active aftertreatment diesel particulate filter regeneration will be disabled.
3317 3242 3	Aftertreatment Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage or open circuit detected at the aftertreatment diesel particulate filter intake temperature sensor circuit.	The exhaust gas recirculation (EGR) valve operation will be disabled. Active aftertreatment diesel particulate filter regeneration will be disabled.
3318 3242 2	Aftertreatment Diesel Particulate Filter Intake Temperature - Data Erratic, Intermittent, or Incorrect. The aftertreatment diesel particulate filter intake temperature is not changing with engine operating conditions.	EGR valve operation will be disabled. Active aftertreatment diesel particulate filter regeneration will be disabled.
3319 3246 3	Aftertreatment Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage or open circuit detected at the aftertreatment diesel particulate filter outlet temperature sensor circuit.	EGR valve operation will be disabled. Active aftertreatment diesel particulate filter regeneration will be disabled.
3321 3246 4	Aftertreatment Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the aftertreatment diesel particulate filter outlet temperature sensor circuit.	EGR valve operation will be disabled. Active aftertreatment diesel particulate filter regeneration will be disabled.
3322 3246 2	Aftertreatment Diesel Particulate Filter Outlet Temperature - Data Erratic, Intermittent, or Incorrect. The aftertreatment diesel particulate filter outlet temperature is not changing with engine operating conditions.	EGR valve operation will be disabled. Active aftertreatment diesel particulate filter regeneration will be disabled.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
3326 91 9	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Abnormal Update Rate. The ECM expected information from a multiplexed accelerator pedal or lever sensor but did not receive it soon enough or did not receive it at all.	Engine will only idle.
3328 191 9	Transmission Output Shaft Speed - Abnormal Update Rate. No communication or an invalid data transfer rate has been detected on the J1939 data link between the ECM and the transmission output shaft speed sensor.	None on performance.
3418 191 19	Transmission Output Shaft Speed - Received Network Data In Error. The J1939 multiplexing controller has indicated a malfunction of the transmission output shaft speed sensor.	None on performance.
3525 84 19	Wheel-Based Vehicle Speed - Received Network Data In Error. The J1939 multiplexing controller has indicated a malfunction of the wheel-based vehicle speed sensor.	None on performance.
3526 84 9	Wheel-Based Vehicle Speed - Abnormal Update Rate. No communication or an invalid data transfer rate has been detected on the J1939 data link between the ECM and the wheel-based vehicle speed sensor.	None on performance.
3527 558 19	Accelerator Pedal or Lever Idle Validation Switch - Received Network Data In Error. The J1939 multiplexing controller has indicated a malfunction of the accelerator pedal or lever idle validation switch.	The engine will only idle.
3528 558 9	Accelerator Pedal or Lever Idle Validation Switch - Abnormal Update Rate. No communication or an invalid data transfer rate has been detected on the J1939 data link between the ECM and the accelerator pedal or lever idle validation switch.	Engine will only idle.
3616 2633 7	Engine VGT Nozzle Position - Mechanical System Not Responding 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.
3697 630 12	Engine Control Module Calibration Memory - Bad Intelligent Device or Component. Error internal to the ECM related to engine software failures.	Engine may not start.
3724 168 17	Battery 1 Voltage - Data Valid But Below Normal Operating Range - Least Severe Level. Low voltage to the EGR valve device driver has been detected.	EGR valve actuation will be disabled.

※ Some fault codes are not applied to this machine.

Fault code J1939 SPN J1939 FMI	Reason	Effect (only when fault code is active)
3727 5571 7	High Pressure Common Rail Fuel Pressure Relief Valve - Mechanical System Not Responding or Out of Adjustment. The fuel rail high-pressure relief valve has opened at a lower than expected pressure.	Possible low power or power interruption associated with relief valve reset.
3737 1675 31	Engine Starter Mode Overcrank Protection - Condition Exists. The starter motor has been temporarily disabled in order to prevent starter damage.	Starter operation is prohibited until the starter motor has adequately cooled.
3741 5571 0	Injector Metering Rail Number 1 Pressure - Data Valid But Above Normal Operating Range - Most Severe Level. The ECM has detected fuel pressure in the rail fuel was higher than the commanded pressure.	Possible engine noise associated with higher injection pressures (especially at idle or light load) or possible power interruption associated with high-pressure relief valve reset.
3765 441 3	Auxiliary Temperature Sensor Input 1 - Voltage Above Normal or Shorted to High Source. High signal voltage or open circuit detected at the OEM auxiliary temperature circuit.	None on performance.
3766 441 4	Auxiliary Temperature Sensor Input 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the OEM auxiliary temperature circuit.	None on performance.

※ Some fault codes are not applied to this machine.