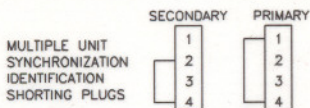


**RED** DC VOLTAGE  
**BLUE** INPUT SIGNALS  
**BLACK** GROUNDS, SHIELDS AND RETURNS  
**PURPLE** OUTPUT SIGNALS  
**GREEN** DATA LINKS

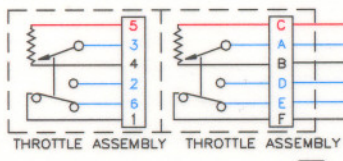
OEM RESPONSIBILITY



OEM CONNECTOR

REMOTE THROTTLE

REMOTE THROTTLE SWITCH



TACHOMETER

IDLE SHUTDOWN RELAY

ALTERNATE TORQUE SWITCH

AUXILIARY GOVERNOR SWITCH

INTERMEDIATE SPEED CONTROL SWITCH

ALTERNATE IDLE

INCREMENT / DECREMENT

ALTERNATE DROOP SWITCH

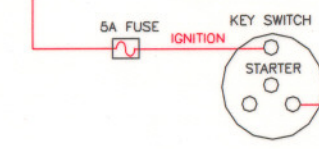
MULTIPLE UNIT ON/OFF

ENGINE PROTECTION

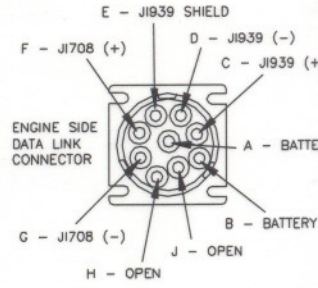
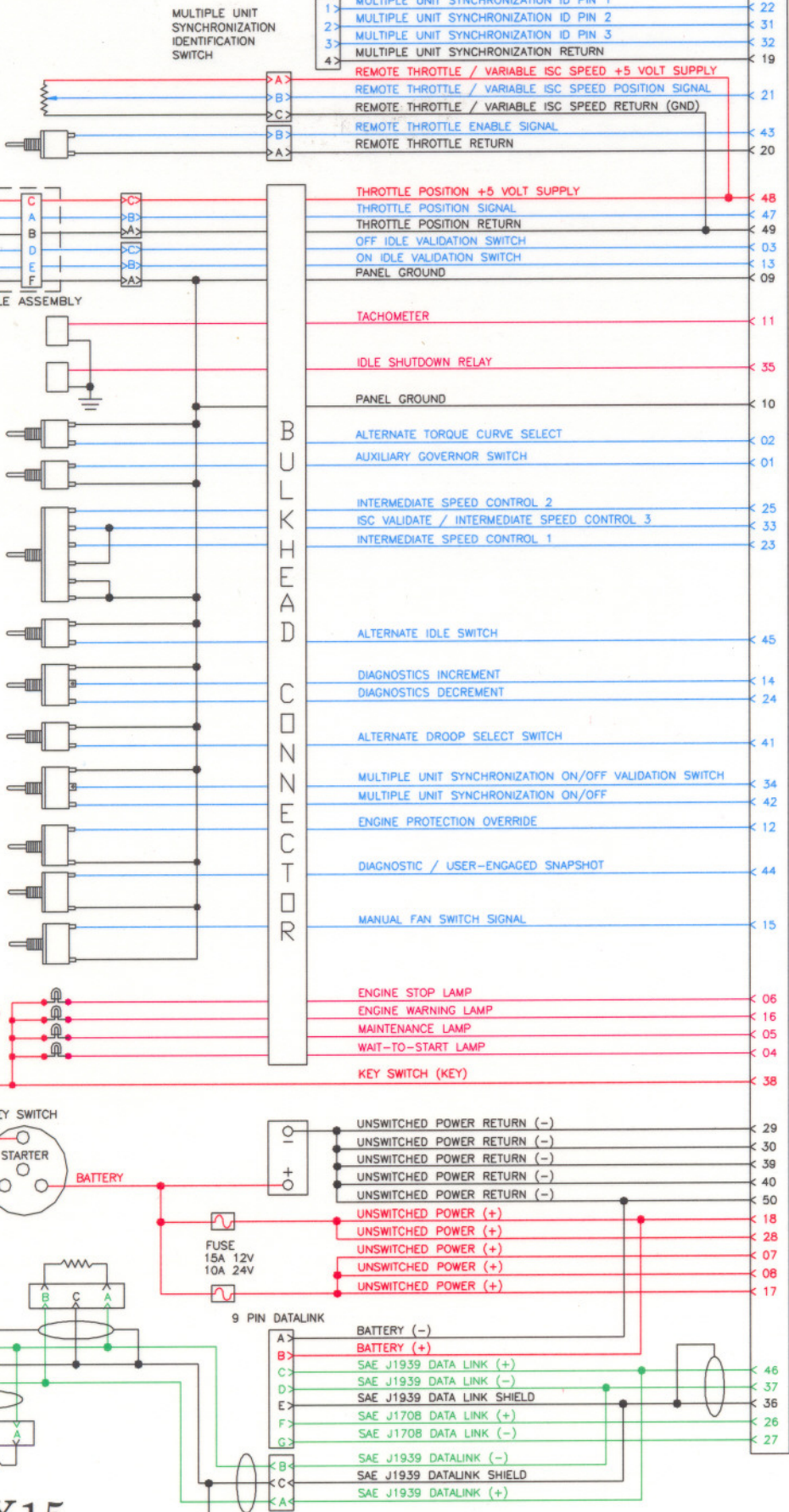
DIAGNOSTIC / USER-ENGAGED SNAPSHOT ON/OFF

MANUAL FAN ON/OFF

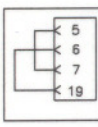
ENGINE STOP LAMP (RED)  
 ENGINE WARNING LAMP (YELLOW)  
 MAINTENANCE LAMP  
 WAIT TO START LAMP



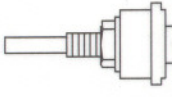
SERVICE TOOL CONNECTION



COOLANT LEVEL SENSOR SHORTING JUMPERS



COOLANT LEVEL SENSOR



BARBER SOLENOID

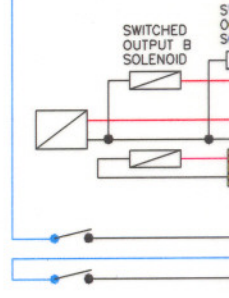
FAN

OEM SWITCH

AIR CONDITIONER PRESSURE SWITCH

MAGNETIC PICKUP SHAFT SPEED SENSOR

FREQUENCY THROTTLE



NOTE: SOME OF THE CIRCUITS SHOWN HERE WILL NOT BE ACTIVE IN ALL APPLICATIONS. CONSULT EQUIPMENT MANUFACTURER'S LITERATURE TO DETERMINE WHICH CIRCUITS ARE USED.



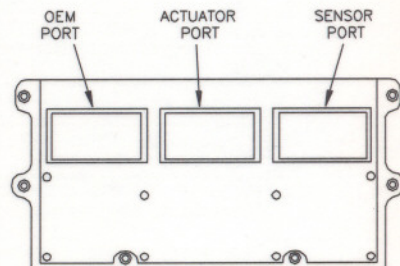
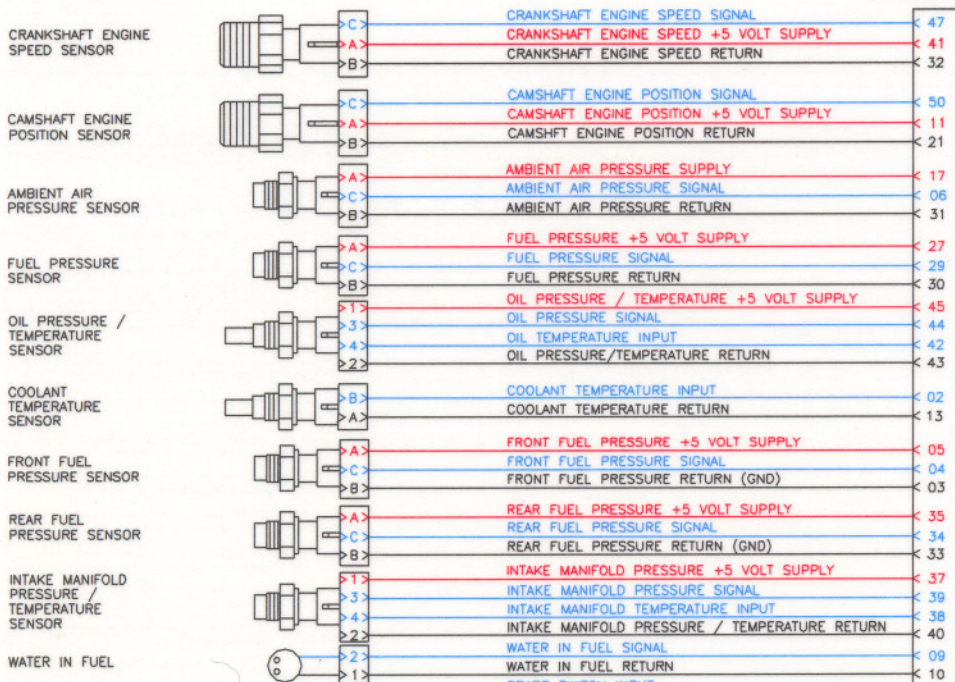
# QSX15 Wiring Diagram

Bulletin No. 3666414 (For ECM Part No. 3680509, 3681404, 3681405)

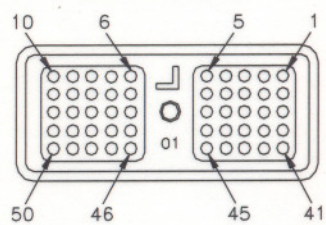
OEM RESPONSIBILITY

CUMMINS RESPONSIBILITY

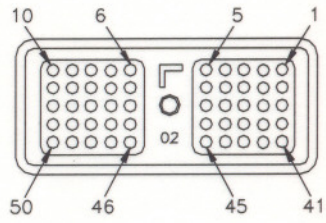
SENSOR CONNECTOR



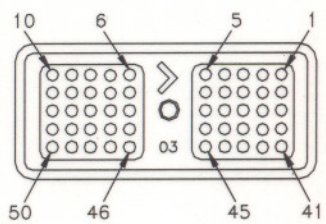
OEM CONNECTOR VIEW OF HARNESS CONNECTOR MATING FACE



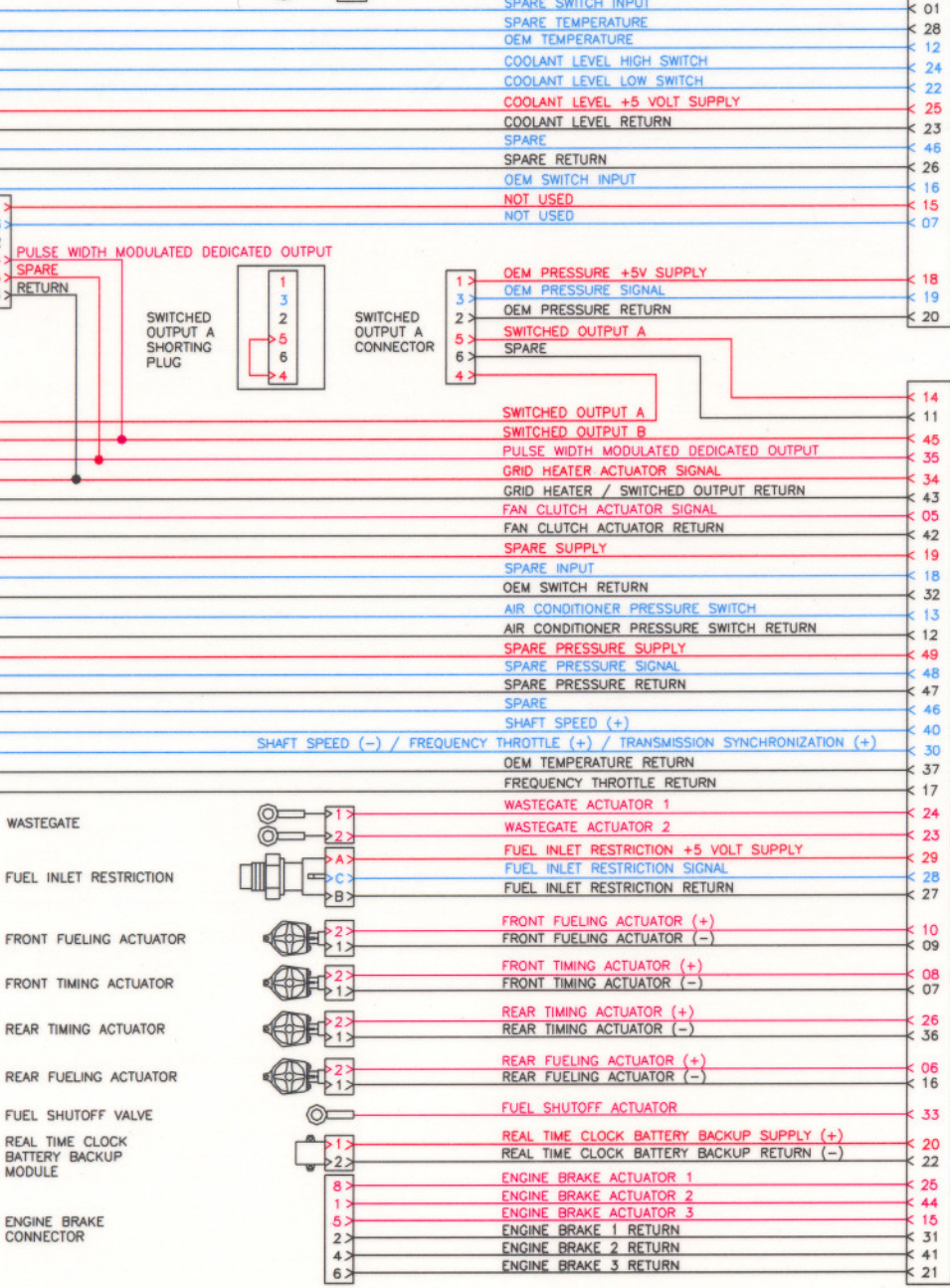
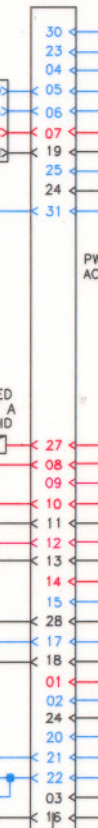
ACTUATOR CONNECTOR VIEW OF HARNESS CONNECTOR MATING FACE



SENSOR CONNECTOR VIEW OF HARNESS CONNECTOR MATING FACE



31 PIN-OEM CONNECTOR



CUMMINS RESPONSIBILITY

ACTUATOR CONNECTOR

NOT THE D



## ▲ WARNING ▲

This diagram is provided as a diagnostic tool for trained, experienced technicians only. Improper troubleshooting or repair can result in severe personal injury or death or property damage. See important instructions in Service Manual.

### ELECTRICAL SPECIFICATIONS

#### DATALINK

- Positive wire to chassis ground (J1587 only)  
2.5 to 5.0 VDC
- Negative wire to chassis ground (J1587 only)  
0.0 to 2.5 VDC

#### J1939 BACKBONE RESISTANCE

- Positive wire to return wire  
50 to 70  $\Omega$
- J1939 Termination Resistance  
110 to 130  $\Omega$

#### ALL CONTINUITY CHECKS

- OK (no open circuit) if  $< 10 \Omega$
- Water in Fuel sensor: 82k  $\Omega$  ( $\pm 1\%$  at 25 °C [77°F])

#### ALL SHORTS TO GROUND

- All other circuits OK, (no short circuit) if  $> 10 M\Omega$

#### SHORT CIRCUIT TO EXTERNAL VOLTAGE

- OK if  $< 1.5$  VDC

#### 5 V POWER SUPPLY

@ ECM

- 4.75 to 5.25 VDC

#### ECM CONNECTOR

- Retaining Cap Screw Torque = 3 N•m [25 in-lb]

#### SOLENOIDS

- Fuel Shutoff Valve and Wastegate Controller Actuator Solenoids
- Coil Resistance = 7 to 8  $\Omega$

#### Fueling Actuator Temperature

- Resistance =  
0.54 to 1.07  $\Omega$  = -17°C (0°F) to 54°C (130°F)  
0.67 to 1.20  $\Omega$  = 38°C (100°F) to 93°C (200°F).

#### Timing Actuator Temperature

- Resistance =  
0.87 to 1.73  $\Omega$  = -17°C (0°F) to 54°C (130°F)  
1.10 to 1.97  $\Omega$  = 38°C (100°F) to 93°C (200°F).

#### Air Compressor Solenoids

- Resistance = 11.0 to 20.0  $\Omega$ .

### SENSOR SPECIFICATIONS

#### OIL PRESSURE SENSOR

Torque (Threaded style) = 14 N•m [10 ft-lb]

Pressure (kPa)	Pressure [psia]	Voltage (VDC)
0	0	0.70 to 1.20
172.37	25	2.10 to 2.70
344.74	50	3.50 to 4.20
414.11	60	4.00 to 4.70

#### AMBIENT AIR PRESSURE SENSOR

Torque (Threaded style) = 14 N•m [10 ft-lb]

Altitude (m)	Altitude [ft]	Pressure (psia)	Voltage (VDC)
0 (sea level)	0	14.7	3.40 to 4.50
915	3000	13.2	2.80 to 3.80
1830	6000	11.8	2.20 to 3.25
2744	9000	10.5	1.70 to 2.70
3659	12000	9.35	1.20 to 2.20

#### ALL TEMPERATURE SENSORS

Torque (Threaded style) = 14 N•m [10 ft-lb]

Temperature (°C)	Temperature (°F)	Resistance ( $\Omega$ )
0	32	30k to 36k
25	77	9k to 11k
50	122	3k to 4k
75	167	1350 to 1500
100	212	600 to 675

#### FUEL PUMP INLET RESTRICTION SENSOR

Pressure (mmHg)	Pressure (in Hg)	Voltage (Low to High)
0	0	2.9 to 3.4
-76.2	-3	2.2 to 2.7
-152.4	-6	1.6 to 2.0
-228.6	-9	1.0 to 1.3
-304.8	-12	0.36 to 0.65

#### FUEL PRESSURE SENSOR

Torque = 14 N•m [10 ft-lb]

Pressure (kPa)	Pressure [psig]	Voltage (Low to High)
0	0	0.60 to 0.75
345	50	1.20 to 1.50
690	100	1.90 to 2.15
1380	200	3.15 to 3.50
1970	285	4.20 to 4.70

#### INTAKE MANIFOLD PRESSURE SENSOR

Torque (Threaded style) = 14 N•m [10 ft-lb]

Pressure (mmHg)	Pressure [inHg]	Pressure (psig)	Voltage (VDC)
0	0	0	0.75 to 1.20
646.48	25.45	12.5	1.60 to 2.10
1292.88	50.90	25	2.40 to 3.00
1939.36	76.35	37.5	3.25 to 3.85
2585.76	101.80	50	4.10 to 4.70

#### RAIL PRESSURE SENSORS, FRONT AND REAR

Torque = 14 N•m [10 ft-lb]

Pressure (kPa)	Pressure [psig]	Voltage (Low to High)
0	0	0.50 to 0.70
345	50	1.20 to 1.50
690	100	1.95 to 2.30
1380	200	3.40 to 3.80
2070	300	4.20 to 4.70

#### ENGINE POSITION SENSOR (CRANKSHAFT & CAMSHAFT)

Torque = 25 N•m [18 ft-lb]

On Metal = 3.5 to 5.0 VDC

Off Metal = 0.0 to 2.2 VDC

### VEHICLE SPEED SENSOR

Torque = 47 N•m [35 ft-lb]

First Coil Resistance = 750 to 1100 Ω

Second Coil Resistance = 1100 to 1500 Ω

### WATER IN FUEL SENSOR

Description

Probes in Water

Probes in Fuel

Voltage (VDC)

0.50 to 3.00

4.00 to 4.50

## QSX15 FAULT CODE INFORMATION

FAULT CODE LAMP	J1587 PID(P) SID(S) FMI	J1939 SPN(S) FMI	REASON	EFFECT (Only when fault code is active)
111 Red	S254 12	629 12	Error Internal to the ECM related to memory hardware failures or internal ECM voltage supply circuits.	Engine will <b>not</b> start.
115 Red	P190 2	190 2	No engine speed signal detected from the camshaft engine position sensor.	Engine may take longer to start.
121 Yellow	P190 10	190 10	No engine speed signal detected from the crankshaft engine position sensor.	Hard starting, low power, rough idle, or possible white smoke.
122 Yellow	P102 3	102 3	High voltage detected at the intake manifold pressure circuit.	Derate in power output of the engine.
123 Yellow	P102 4	102 4	Low voltage detected at intake manifold pressure circuit.	Derate in power output of the engine.
131 Red	P091 3	091 3	High voltage detected at throttle position signal circuit.	Severe derate (power and speed). Limp home power <b>only</b> .
132 Red	P091 4	091 4	Low voltage detected at throttle position sensor circuit.	Severe derate (power and speed). Limp home power <b>only</b> .
133 Red	P029 3	974 3	High voltage detected at remote throttle position signal circuit.	None on performance if remote throttle is <b>not</b> used.
134 Red	P029 4	974 4	Low voltage detected at remote throttle position signal circuit.	None on performance if remote throttle is <b>not</b> used.
135 Yellow	P100 3	100 3	High voltage detected at oil pressure circuit.	No engine protection for oil pressure.
141 Yellow	P100 4	100 4	Low voltage detected at oil pressure circuit.	No engine protection for oil pressure.
143 Yellow	P100 1	100 18	Oil pressure signal indicates oil pressure below the low oil pressure engine protection limit.	Progressive power and speed derate with increasing time after alert. If Engine Protection Shutdown feature is enabled, engine will shut down 30 seconds after the red lamp starts flashing.
144 Yellow	P110 3	110 3	High voltage detected at coolant temperature circuit.	Possible white smoke. Fan will stay on if controlled by ECM. No engine protection for coolant temperature.
145 Yellow	P110 4	110 4	Low voltage detected at coolant temperature circuit.	Possible white smoke. Fan will stay on if controlled by ECM. No engine protection for coolant temperature.
147 Red	P091 8	91 8	A frequency less than 100 Hz was detected at the frequency throttle signal pin of the actuator harness connector at the ECM.	Calibration dependent power and speed derate.
148 Red	P091 8	091 8	A frequency greater than 100 Hz was detected at the frequency throttle signal pin of the actuator harness connector at the ECM.	Calibration dependent power and speed derate.
151 Red	P110 0	110 0	Coolant temperature signal indicates coolant temperature is above 104 °C. (220 °F).	Progressive power derate with increasing time after alert. If Engine Protection Shutdown feature is enabled, engine will shut down 30 seconds after the red lamp starts flashing.
153 Yellow	P105 3	105 3	High voltage detected at intake manifold temperature circuit.	Possible white smoke. Fan will stay on if controlled by ECM. No engine protection for coolant temperature.
154 Yellow	P105 4	105 4	Low voltage detected at intake manifold temperature circuit.	Possible white smoke. Fan will stay on if controlled by ECM. No engine protection for coolant temperature.
155 Red	P105 0	105 0	Intake manifold air temperature signal indicates intake manifold temperature is above 93.3°C. (200°F).	Progressive power derate with increasing time after alert. If Engine Protection Shutdown feature is enabled, engine will shut down 30 seconds after the red lamp starts flashing.
187 Yellow	S232 4	620 4	Low voltage detected on the ECM voltage supply line to some sensors (VSEN2 supply).	Engine will run derated. No engine protection for oil pressure or coolant level.
211 None	S216 11	1484 31	Additional OEM or vehicle diagnostic codes have been logged. Check other ECMs for diagnostic codes.	None on engine performance.
212 Yellow	P175 3	175 3	High voltage detected at oil temperature circuit.	No engine protection for oil temperature.
213 Yellow	P175 4	175 4	Low voltage detected at oil temperature circuit.	No engine protection for oil temperature.
214 Red	P175 0	175 0	Oil temperature signal indicates oil temperature above 123.9°C. (255°F).	Progressive power derate with increasing time after alert. If Engine Protection Shutdown feature is enabled, engine will shut down 30 seconds after the red lamp starts flashing.
219 Maintenance	P017 1	1380 17	Low oil level was detected in the Centinel™ makeup oil tank.	None on performance. Centinel™ deactivated.
221 Yellow	P108 3	108 3	High voltage detected at ambient air pressure circuit.	Derate in power output of the engine.
222 Yellow	P108 4	108 4	Low voltage detected at ambient air pressure circuit.	Derate in power output of the engine.
223 Yellow	S085 4	1265 4	Incorrect voltage detected on the Centinel™ actuator circuit by the ECM.	None on performance. Centinel™ deactivated.
227 Yellow	S232 3	620 3	Low voltage detected on the ECM voltage supply line to some sensors (VSEN2 supply).	Engine will run derated. No engine protection for oil pressure or coolant level.
234 Red	P190 0	190 0	Engine speed signal indicates engine speed greater than 2650 rpm.	Fuel shutoff valve closed until engine speed falls to 2000 rpm.
235 Red	P111 1	111 1	Coolant level signal indicates coolant level is below normal range.	Progressive power derate with increasing time after alert. If Engine Protection Shutdown feature is enabled, engine will shut down 30 seconds after the red lamp starts flashing.
241 Yellow	P084 2	84 2	The ECM lost the vehicle speed signal.	Engine speed limited to "Max. Engine Speed without VSS" parameter value. Cruise control, gear-down protection, and road speed governor will <b>not</b> work (automotive <b>only</b> ).
242 Yellow	P084 10	84 10	Invalid or inappropriate vehicle speed signal detected. Signal indicates an intermittent connection or VSS tampering.	Engine speed limited to "Max. Engine Speed without VSS" parameter value. Cruise control, gear-down protection, and road speed governor will <b>not</b> work (automotive <b>only</b> ).
245 Yellow	S033 4	647 4	Less than (+) 6 VDC detected at fan clutch circuit when on indicates an excessive current draw from the ECM or faulty ECM output circuit.	The fan may stay on at all times.

FAULT CODE LAMP	J1587 PID(P) SID(S) FMI	J1939 SPN(S) FMI	REASON	EFFECT (Only when fault code is active)
254 Red	S017 4	632 4	Less than (+) 6 VDC detected at the fuel shutoff circuit when on, indicates an excessive current draw from the ECM or a faulty ECM output circuit.	ECM turns off fuel shutoff supply voltage. The engine will shut down.
255 Yellow	S017 3	632 3	Externally supplied voltage detected going to fuel shutoff solenoid supply circuit.	None on performance. Fuel shutoff valve stays open.
259 Yellow	S017 7	632 7	Fuel shutoff valve is stuck open mechanically or leaking.	Engine will run derated.
284 Yellow	S221 4	1043 4	Incorrect voltage detected on the ECM voltage supply line to the crankshaft engine position sensor.	Engine may <b>not</b> run or will run derated. Possible hard starting, low power, or white smoke.
285 Yellow	S231 9	639 9	The ECM expected information from a multiplexed device but did <b>not</b> receive it soon enough or did <b>not</b> receive it at all.	At least one multiplexed device will <b>not</b> operate properly.
286 Yellow	S231 13	639 13	The ECM expected information from a multiplexed device but <b>only</b> received a portion of the necessary information.	At least one multiplexed device will <b>not</b> operate properly.
287 Red	P091 2	91 19	The OEM vehicle electronic control unit (VECU) detected a fault with its throttle pedal.	The engine will <b>only</b> idle.
288 Red	P029 2	974 19	The OEM vehicle electronic control unit (VECU) detected a fault with its remote throttle.	The engine will <b>not</b> respond to the remote throttle.
293 Yellow	S154 3	1083 3	High voltage detected at the OEM temperature sensor signal pin of the 31-pin OEM connector.	No engine protection for OEM temperature.
294 Yellow	S154 4	1083 4	Low voltage detected at the OEM sensor signal pin of the 31-pin OEM connector.	No engine protection for OEM temperature.
295 Yellow	P108 2	108 2	An error in the ambient air pressure sensor signal was detected by the ECM.	Engine is derated to the no air setting.
297 Yellow	P223 3	1084 3	High voltage detected at the OEM pressure sensor signal pin of the 31-pin OEM connector.	No engine protection for OEM pressure.
298 Yellow	P223 4	1084 4	Low voltage detected at the OEM pressure sensor signal pin of the 31-pin OEM connector.	No engine protection for OEM pressure.
299 None	S117 11	1384 31	Engine shutdown by device other than keyswitch before proper engine cool down, resulting in filtered load factor above maximum shutdown threshold.	No action taken by the ECM.
319 Maintenance	P251 2	251 2	Real-time clock lost power.	None on performance. Data in the ECM will <b>not</b> have accurate time and date information.
341 Yellow	S253 12	630 2	Severe loss of data from the ECM.	Possible no noticeable performance effects OR engine dying OR hard starting. Fault information, trip information, and maintenance monitor data may be inaccurate.
343 Yellow	S254 12	629 12	Internal ECM error.	Possible none on performance or severe derate.
349 Yellow	S191 0	191 16	A frequency greater than calibrated threshold was detected at the tailshaft governor signal pin of the 31-pin OEM connector.	Calibration dependent power and speed derate.
352 Yellow	S232 4	1079 4	Low voltage detected on the ECM voltage supply line to some sensors (VSEN1 supply).	Engine is derated to no air setting.
378 Yellow	S018 5	633 5	Low current or open circuit detected at front fueling actuator circuit.	Engine will <b>only</b> run using the rear three cylinders.
379 Yellow	S018 6	633 6	High current detected at front fueling actuator circuit.	Engine will <b>only</b> run using the rear three cylinders.
386 Yellow	S232 3	1079 3	High voltage detected on the ECM voltage supply line to some sensors (VSEN1 supply).	Engine is derated to no air setting.
387 Yellow	P221 3	1043 3	High voltage detected on the ECM voltage supply line to the throttle(s) (VTP supply).	Engine will <b>only</b> idle.
394 Yellow	S020 5	635 5	Low current or open circuit detected at front timing actuator circuit.	Engine will <b>only</b> run using the rear three cylinders.
395 Yellow	S020 6	635 6	High current detected at front timing actuator circuit.	Engine will <b>only</b> run using the rear three cylinders.
396 Yellow	S083 5	1244 5	Low current or open circuit detected at rear fueling actuator circuit.	Engine will <b>only</b> run using the front three cylinders.
397 Yellow	S083 6	1244 6	High current detected at rear fueling actuator circuit.	Engine will <b>only</b> run using the front three cylinders.
398 Yellow	S084 5	1245 5	Low current or open circuit detected at rear timing actuator circuit.	Engine will <b>only</b> run using the front three cylinders.
399 Yellow	S084 6	1245 6	High current detected at rear timing actuator circuit.	Engine will <b>run</b> using the front three cylinders.
415 Red	P100 1	100 1	Oil pressure signal indicates oil pressure below the very low oil pressure engine protection limit.	Progressive power derate with increasing time after alert. If Engine Protection Shutdown feature is enabled, engine will shut down 30 seconds after the red lamp starts flashing.
418 Maintenance	P097 0	97 15	Water has been detected in the fuel filter.	Possible white smoke, loss of power, or hard starting.
419 Yellow	P102 2	1319 2	An error in the intake manifold pressure sensor signal was detected by the ECM.	Engine is derated to no air setting.
422 Yellow	P111 2	111 2	Voltage detected simultaneously on both the coolant level high and low signal circuits OR no voltage detected on both circuits.	No engine protection for coolant level.
426 None	S231 2	639 2	Communication between the ECM and the J1939 datalink has been lost.	None on performance. J1939 devices may <b>not</b> operate.
428 Yellow	P097 3	97 3	High voltage detected at water-in-fuel sensor.	None on performance.
429 Yellow	P097 4	097 4	Low voltage detected at water-in-fuel sensor.	None on performance.
431 Yellow	S230 2	558 2	Voltage detected simultaneously on both the idle validation off-idle and on-idle circuits	None on performance.
432 Red	P230 13	558 13	Voltage detected at idle validation on-idle circuit when voltage at throttle position circuit indicates the pedal is <b>not</b> at idle OR voltage detected at idle validation off-idle circuit when voltage at throttle position circuit indicates the pedal is at idle.	Engine will <b>only</b> idle.
433 Yellow	P102 2	102 2	Voltage signal at intake manifold pressure circuit indicates high intake manifold pressure but other engine characteristics indicate intake manifold pressure <b>must</b> be low.	Derate to no air setting.

FAULT CODE LAMP	J1587 PID(P) SID(S) FMI	J1939 SPN(S) FMI	REASON	EFFECT (Only when fault code is active)
434 Yellow	S251 2	627 2	Supply voltage to the ECM fell below (+) 6.2 VDC for a fraction of a second OR the ECM was not allowed to power down correctly (retain battery voltage for 30 seconds after keyswitch off)	Possible no noticeable performance effects OR possibility of engine dying OR hard starting. Fault information, trip information, and maintenance monitor data may be inaccurate.
435 Yellow	P100 2	100 2	An error in the oil pressure sensor signal was detected by the ECM.	None on performance. No engine protection for oil pressure.
441 Yellow	P168 1	168 18	Battery voltage below normal operating level.	Possible no noticeable performance effects OR possibility of rough idle
442 Yellow	P168 0	168 16	Battery voltage above normal operating level.	None on performance.
443 Yellow	S221 4	1043 4	Low voltage detected on the ECM voltage supply line to the throttle(s) (VTP supply).	Engine will <b>only</b> idle.
449 Yellow	P094 0	94 16	Excessive fuel supply pressure was detected at the fuel pressure sensor.	Engine may have black smoke and will run derated.
451 Yellow	P157 3	157 3	High voltage detected on the front rail pressure sensor circuit.	Engine will run derated.
452 Yellow	P157 4	157 4	Low voltage detected on the front rail pressure sensor circuit.	Engine will run derated.
466 Yellow	S032 4	1188 4	Less than 6 VDC detected at the wastegate actuator #1 circuit when it indicates an excessive current draw from the ECM or faulty ECM output circuit.	Engine will run derated.
482 Yellow	P094 1	94 18	Low fuel supply pressure was detected at the fuel pressure sensor.	Engine may <b>not</b> start, may have low power, may have white smoke, or run rough.
483 Yellow	P129 3	1349 3	High voltage detected on the rear rail pressure sensor circuit.	Engine will run derated.
484 Yellow	P129 4	1349 4	Low voltage detected on the rear rail pressure sensor circuit.	Engine will run derated.
485 Yellow	P129 0	1349 16	Unexpectedly high rail pressure was detected on the rear three cylinders.	Engine will return to idle speed, then may only idle or shut down.
486 Yellow	P129 1	1349 18	Unexpectedly low rail pressure was detected on the rear three cylinders.	Low power or rough idle.
489 Yellow	P191 1	191 18	Auxiliary speed frequency on input pin indicates that the frequency is below a calibration dependent threshold.	Engine will <b>only</b> idle.
496 Yellow	S221 11	1043 11	Incorrect voltage detected on the ECM voltage supply line to the camshaft engine position sensor.	Engine may <b>not</b> run, be hard to start, or will run derated.
527 Yellow	S154 P040 3	702 3	Less than (+) 17.0 VDC detected at the dual output A signal pin of the 31-pin OEM connector.	No action taken by the ECM.
528 Yellow	P093 2	93 2	Less than (+) 17.0 VDC detected at the dual output B signal pin of the 31-pin OEM connector.	No action taken by the ECM.
529 Yellow	S051 3	703 3	Less than (+) 17.0 VDC detected at the dual output B signal pin at the ECM.	No action taken by the ECM.
546 Yellow	P094 3	94 3	High voltage detected on the fuel pressure sensor circuit.	Engine will run derated.
547 Yellow	P094 4	94 4	Low voltage detected at the fuel pressure sensor circuit.	Engine will run derated.
551 Yellow	S230 4	558 4	No voltage detected simultaneously on both the idle validation off-idle and on-idle circuits.	Engine will <b>only</b> idle.
553 Yellow	P157 0	157 16	Unexpectedly high rail pressure was detected on the front three cylinders.	Engine will return to idle speed, then may <b>only</b> idle or shut down.
559 Yellow	P157 1	157 18	Unexpectedly low rail pressure was detected on the front three cylinders.	Low power or rough idle.
581 Yellow	P015 3	1381 3	High voltage detected at the fuel inlet restriction sensor signal pin.	Fuel inlet restriction monitor deactivated.
582 Yellow	P015 4	1381 4	Low voltage detected at the fuel inlet restriction sensor signal pin.	Fuel inlet restriction monitor deactivated.
583 Yellow	P015 1	1381 18	Restriction has been detected at the fuel pump inlet.	Fuel inlet restriction monitor warning is set.
595 Yellow	P103 0	103 16	Turbocharger overspeed protection fault.	Engine will run derated.
596 Yellow	P167 0	167 16	High battery voltage detected by the battery voltage monitor feature.	Yellow lamp will be lit until high battery voltage condition is corrected.
597 Yellow	P167 1	167 18	ICON™ has restarted the engine three times within three hours due to a low battery voltage (automotive <b>only</b> ) OR low battery voltage detected by battery voltage monitor feature.	Yellow lamp will be lit until high battery voltage condition is corrected. The ECM may increase idle speed and deactivate idle decrement switch if idle speedup is enabled. The engine will run continuously if ICON™ is active (automotive <b>only</b> ).
598 Red	P167 1	167 1	Very low battery voltage detected by the battery voltage monitor feature.	Red lamp lit until very low battery voltage condition is corrected.
611 None	S151 11	1383 31	Engine shutdown by operator before proper engine cool down resulting in filtered load factor above maximum shutdown threshold.	No action by the ECM is taken.
753 Yellow	S064 2	723 2	Engine position signal from the camshaft and crankshaft engine position sensors do <b>not</b> match up.	Low power, rough idle, or possible white smoke.
755 Yellow	P157 7	157	Incorrect fueling was detected on the front three cylinders.	Engine will misfire.
758 Yellow	P129 7	1349 7	Incorrect fueling was detected on the rear three cylinders.	Engine will misfire.
951 None	P166 2	166 2	A power imbalance between cylinders was detected by the ECM.	Engine may have rough idle or misfire.

Bulletin No. 3666414