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Engine Fault Codes

Depressing the diagnostic button will generate a series of blink codes. Count the blinks and use the correct diagnostic chart to determine the fault.

- [ISL & ISC Engine Fault Codes](#)
- [Pre 2002 ISM Engine Codes](#)
- [Post 2002 ISM Engine Codes w/EGR Systems](#)
- [ISX Engine Fault Codes](#)

 • Most problems must occur for a total of at least two (2) seconds before the "Check Engine" light comes on and a code is stored.

• If a problem goes away, the "Check Engine" light will turn off, but the code will remain stored in the ECM and can be found using a reader.

• Code 25 means no codes were stored at all.

Diagnostic switch location



The most common location for the diagnostic switch is under the dashboard cowl. Here you will typically find two (2) Momentary Switches, the normal arrangement is:

- Left = Engine
- Right = ABS Diagnostics (or Transmission Diagnostics for coaches pre ABS)

If there is a 3rd switch, on a separate panel, it is the momentary ground for the [Javalina tank calibration](#).

ENGINE DIAGNOSTICS						
ACTIVE FAULTS						
CODE	DESCRIPTION	/UPDATE				
96 9	FUEL LEVEL					
T FAULT: NONE						
HISTORY						
CODE	DESCRIPTION	MILES	TMP	LB	RPM	DAT
96 9	FUEL LEVEL	/UPDATE	56932	125	40	633 6-01
96 9	FUEL LEVEL	/UPDATE	56932	125	0	0 6-01
96 9	FUEL LEVEL	/UPDATE	56932	160	0	0 6-01
96 9	FUEL LEVEL	/UPDATE	0	0	23	710 6-01
96 9	FUEL LEVEL	/UPDATE	56932	167	0	0 6-01
96 9	FUEL LEVEL	/UPDATE	0	0	17	723 6-01

New coaches will have this function conveniently integrated into the dash electronics (VMS/Glass Dash/etc.). Simply navigate to the proper screen and when you get it will have all error codes it has ever had along with the date and time the error was recorded. Check your [VMS Owners Manual](#) for the correct navigation path.

Pre 2002 ISM Engine Fault Codes

Code	Meaning
11	Electronic Control Module (ECM Microprocessor)
115	Engine Position Sensor
121	Engine Position Sensor
122	Intake Manifold Pressure Sensor Circuit
123	Intake Manifold Pressure Sensor Circuit
131	Accelerator Pedal Position Sensor Circuit
132	Accelerator Pedal Position Sensor Circuit
133	Remote Accelerator Pedal or Lever Position Sensor Circuit
134	Remote Accelerator Pedal or Lever Position Sensor Circuit
135	Engine Oil Pressure Sensor Circuit
141	Engine Oil Pressure Sensor Circuit
144	Engine Coolant Temperature Sensor Circuit
145	Engine Coolant Temperature Sensor Circuit
147	Frequency Throttle Control
148	Frequency Throttle Control
153	Intake Manifold Air Temperature Sensor Circuit
154	Intake Manifold Air Temperature Sensor Circuit
187	Sensor Supply Voltage
198	ICON Lamp
199	ICON Lamp
212	Engine Oil Temperature Sensor Circuit
213	Oil Temperature Sensor Circuit
216	Wet Tank Pressure Sensor Circuit
217	Wet Tank Pressure Sensor Circuit
218	Wet Tank Pressure Sensor Circuit
221	Ambient Air Pressure Sensor Circuit
222	Ambient Air Pressure Sensor Circuit
223	Burn Valve Solenoid Fault
227	Sensor Supply Voltage

Code	Meaning
234	Engine Overspeed
235	Engine Coolant Level - Engine Protection
237	Multiple Unit Synchronization (soft coupled Marine)
241	Vehicle Speed Sensor Circuit
242	Vehicle Speed Sensor Circuit
245	Engine Fan Clutch Supply Circuit
249	Ambient Air Temperature Sensor Circuit
254	Fuel Shutoff Solenoid Supply Circuit
255	Fuel Shutoff Solenoid Supply Circuit
256	Ambient Air Temperature Sensor Circuit
285	SAE J1939 Data Link Multiplexing
286	SAE J1939 Data Link Multiplexing
293	OEM Temperature Sensor Circuit
294	OEM Temperature Sensor Circuit
295	Ambient Air Pressure Sensor
297	OEM Pressure Sensor Circuit
298	OEM Pressure Sensor Circuit
311	Injector Circuit
312	Injector Circuit
313	Injector Circuit
314	Injector Circuit
315	Injector Circuit
319	Real Time Clock Power Circuit
321	Injector Circuit
322	Injector Circuit
323	Injector Circuit
324	Injector Circuit
325	Injector Circuit
331	Injector Circuit
332	Injector Circuit
338	Ignition Bus Relay Circuit
339	Ignition Bus Relay Circuit
341	Unswitched Battery Supply Circuit
343	Electronic Control Module (ECM)
349	Auxiliary Speed Governor Circuit
352	Sensor Voltage Supply
359	ICON Engine Auto Start Failure
386	Sensor Voltage Supply
387	Accelerator Pedal Voltage Supply
388	Engine Brake Supply Circuit
392	Engine Brake Supply Circuit
419	Intake Manifold Pressure Sensor
422	Coolant Level Sensor Circuit
426	SAE J1939 Data Link Communication
428	Water In Fuel (WIF Sensor Circuit)
429	Water In Fuel (WIF Sensor Circuit)

Code	Meaning
431	Idle Validation Switch Choice
	iss Idle Validation Switch Circuit - Integrated Switch and Sensor Type
	niss Idle Validation Switch Circuit - Non-Integrated Switch and Sensor Type
	sss Idle Validation Switch Circuit - Solid State Switch and Sensor Type
432	Accelerator Pedal Circuit
433	Intake Manifold Pressure Sensor Circuit
434	Unswitched Battery Supply Circuit
435	Oil Pressure Sensor
441	Unswitched Battery Supply Circuit
442	Unswitched Battery Supply Circuit
443	Accelerator Pedal Voltage Supply
465	Wastegate Actuator No. 1 Circuit
466	Wastegate Actuator No. 1 Circuit
469	ICON Cab Thermostat Circuit
472	Crankcase Oil Level Sensor Circuit
474	Starter Solenoid Lockout Relay Driver Circuit
475	Electronic Air Compressor Governor Circuit
476	Electronic Air Compressor Governor Circuit
489	Auxiliary Speed Input Error
491	Wastegate Actuator No. 2 Circuit
492	Wastegate Actuator No. 2 Circuit
527	Switched Output A Error
528	Switched Output B Error
529	Switched Output C Error
536	Autoshift Low Gear Actuator (Lockout Solenoid)
537	Autoshift High Gear Actuator (Lockout Solenoid)
538	Autoshift Neutral Actuator
541	ICON Starter Relay Input Circuit
544	Top 2 Transmission Circuit / Mechanical System Failure
551	Idle Validation Switch Choice
	iss Idle Validation Switch Circuit - Integrated Switch and Sensor Type
	ivs Idle Validation Switch Circuit - Non-Integrated Switch and Sensor Type
	sss Idle Validation Switch Circuit - Solid State Switch and Sensor Type
581	Fuel Inlet Restriction Sensor Circuit
582	Fuel Inlet Restriction Sensor Circuit
583	Fuel Inlet Restriction Sensor Circuit
588	ICON Starter Relay Input Circuit
589	Engine Start Alarm Circuit
596	Voltage Monitor / High Voltage
597	Voltage Monitor / Low Voltage
598	Battery Voltage Monitor / Very Low Voltage
2291	Vehicle Speed Sensor Circuit

Source: <https://www.truck-manuals.net/cummins/>

Post 2002 ISM Engine Fault Codes (EGR Systems)

Code	Meaning		
111	Engine Control Module Critical Internal Failure - Bad Intelligent Device or Component		
122	Intake Manifold Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source		
123	Intake Manifold Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source		
131	Accelerator Pedal Position Sensor Circuit - Shorted High		
132	Accelerator Pedal or Lever Position Sensor Circuit - Voltage Below Normal or Shorted to Low Source		
133	Remote Accelerator Pedal or Lever Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source		
134	Remote Accelerator Pedal or Lever Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source		
135	Oil Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source		
141	Oil Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source		
143	Oil Pressure Low - Data Valid but Below Normal Operational Range - Moderately Severe Level		
144	Coolant Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source		
145	Coolant Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source		
151	Coolant Temperature High - Data Valid but Above Normal Operational Range - Most Severe Level		
153	Intake Manifold Air Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source		
154	Intake Manifold Air Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source		
155	Intake Manifold Air Temperature High - Data Valid but Above Normal Operational Range - Most Severe Level		
187	Sensor Supply Voltage Number 2 Circuit - Voltage Below Normal or Shorted to Low Source		
195	Coolant Level Sensor Circuit - Choice <table border="1"> <tr> <td>2 wire Coolant Level Sensor Circuit — Voltage Above Normal or Shorted to High Source</td> </tr> <tr> <td>3 wire Coolant Level Sensor Circuit — Voltage Above Normal or Shorted to High Source</td> </tr> </table>	2 wire Coolant Level Sensor Circuit — Voltage Above Normal or Shorted to High Source	3 wire Coolant Level Sensor Circuit — Voltage Above Normal or Shorted to High Source
2 wire Coolant Level Sensor Circuit — Voltage Above Normal or Shorted to High Source			
3 wire Coolant Level Sensor Circuit — Voltage Above Normal or Shorted to High Source			
196	Coolant Level Sensor Circuit - Choice <table border="1"> <tr> <td>2 wire Coolant Level Sensor Circuit — Voltage Below Normal or Shorted to Low Source</td> </tr> <tr> <td>3 wire Coolant Level Sensor Circuit — Voltage Below Normal or Shorted to Low Source</td> </tr> </table>	2 wire Coolant Level Sensor Circuit — Voltage Below Normal or Shorted to Low Source	3 wire Coolant Level Sensor Circuit — Voltage Below Normal or Shorted to Low Source
2 wire Coolant Level Sensor Circuit — Voltage Below Normal or Shorted to Low Source			
3 wire Coolant Level Sensor Circuit — Voltage Below Normal or Shorted to Low Source			
197	Coolant Level Low - Data Valid but Below Normal Operational Range - Moderately Severe Level		
212	Oil Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source		
213	Oil Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source		
214	Oil Temperature High - Data Valid but Above Normal Operational Range - Most Severe Level		
219	Oil Level Number 2 (Remote Low - Data Valid but Below Normal Operational Range - Least Severe Level		
221	Barometric Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source		
222	Barometric Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source		
223	Oil Burn Valve Solenoid Circuit - Voltage Below Normal, or Shorted to Low Source		
224	Oil Burn Valve Solenoid Circuit - Voltage Above Normal, or Shorted to High Source		
227	Sensor Supply Voltage Number 2 Circuit - Voltage Above Normal or Shorted to High Source		
234	Engine Speed High - Data Valid but Above Normal Operational Range - Most Severe Level		
235	Coolant Level Low - Data Valid but Below Normal Operational Range - Most Severe Level		
241	Vehicle Speed Sensor Circuit - Data Erratic, Intermittent, or Incorrect		
242	Vehicle Speed Sensor Circuit Tampering Has Been Detected - Abnormal Rate of Change		
245	Fan Control Circuit - Voltage Below Normal or Shorted to Low Source		
249	Ambient Air Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source		
254	Fuel Shutoff Valve Circuit - Voltage Below Normal, or Shorted to Low Source		
255	Fuel Shutoff Valve Circuit - Voltage Above Normal, or Shorted to High Source		
256	Ambient Air Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source		
259	Engine Fuel Shutoff Valve Stuck Open - Mechanical System not Responding Properly or Out of Adjustment		
285	SAE J1939 Multiplexing PGN Timeout Error - Abnormal Update Rate		

Code	Meaning
286	SAE J1939 Multiplexing Configuration Error - Out of Calibration
287	SAE J1939 Multiplexing Accelerator Pedal or Lever Sensor System Error - Received Network Data Error
288	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Data Error - Received Network Data Error
295	Barometric Air Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
311	Injector Solenoid Cylinder Number 1 Circuit - Current Above Normal, or Grounded Circuit
312	Injector Solenoid Cylinder Number 5 Circuit - Current Above Normal, or Grounded Circuit
313	Injector Solenoid Cylinder Number 3 Circuit - Current Above Normal, or Grounded Circuit
314	Injector Solenoid Cylinder Number 6 Circuit - Current Above Normal, or Grounded Circuit
315	Injector Solenoid Cylinder Number 2 Circuit - Current Above Normal, or Grounded Circuit
321	Injector Solenoid Cylinder Number 4 Circuit - Current Above Normal, or Grounded Circuit
322	Injector Solenoid Cylinder Number 1 Circuit - Current Below Normal or Open Circuit
323	Injector Solenoid Cylinder Number 5 Circuit - Current Below Normal or Open Circuit
324	Injector Solenoid Cylinder Number 3 Circuit - Current Below Normal or Open Circuit
325	Injector Solenoid Cylinder Number 6 Circuit - Current Below Normal or Open Circuit
331	Injector Solenoid Cylinder Number 2 Circuit - Current Below Normal or Open Circuit
332	Injector Solenoid Cylinder Number 4 Circuit - Current Below Normal or Open Circuit
338	Idle Shutdown Vehicle Accessories Relay Circuit - Voltage Above Normal, or Shorted to High Source
339	Idle Shutdown Vehicle Accessories Relay Circuit - Voltage Below Normal, or Shorted to Low Source
341	Engine Control Module Data Lost - Data Erratic, Intermittent, or Incorrect
343	Engine Control Module Warning Internal Hardware Failure - Bad Intelligent Device or Component
352	Sensor Supply Voltage Number 1 Circuit - Voltage Below Normal or Shorted to Low Source
386	Sensor Supply Voltage Number 1 Circuit - Voltage Above Normal or Shorted to High Source
387	Accelerator Pedal or Lever Position Sensor Supply Voltage Circuit - Voltage Above Normal or Shorted to High Source
415	Oil Pressure Low - Data Valid but Below Normal Operational Range - Most Severe Level
418	Water-In-Fuel Indicator High - Data Valid but Above Normal Operational Range - Least Severe Level
428	Water-In-Fuel Sensor Circuit - Voltage Above Normal or Shorted to High Source
429	Water-In-Fuel Sensor Circuit - Voltage Below Normal or Shorted to Low Source
431	Idle Validation Switch Circuit Choice <ul style="list-style-type: none"> iss Idle Validation Switch Circuit - Integrated Switch and Sensor Type niss Idle Validation Switch Circuit - Non-Integrated Switch and Sensor Type sss Idle Validation Switch Circuit - Solid-State Switch and Sensor Type
432	Accelerator Pedal or Lever Idle Validation Circuit - Out of Calibration
433	Intake Manifold Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
434	Power Lost without Ignition Off - Data Erratic, Intermittent, or Incorrect
435	Oil Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
443	Accelerator Pedal or Lever Position Sensor Supply Voltage Circuit - Voltage Below Normal or Shorted to Low Source
551	Idle Validation Switch Circuit Choice <ul style="list-style-type: none"> iss Idle Validation Switch Circuit - Integrated Switch and Sensor Type niss Idle Validation Switch Circuit - Non-Integrated Switch and Sensor Type sss Idle Validation Switch Circuit - Solid-State Switch and Sensor Type
584	Starter Relay Circuit - Voltage Above Normal or Shorted to High Source
585	Starter Relay Circuit - Voltage Below Normal or Shorted to Low Source
595	Turbocharger Number 1 Speed High - Data Valid but Above Normal Operational Range - Moderately Severe Level

Code	Meaning
596	Electrical Charging System Voltage High - Data Valid but Above Normal Operational Range - Moderately Severe Level
597	Electrical Charging System Voltage Low - Data Valid but Below Normal Operational Range - Moderately Severe Level
598	Electrical Charging System Voltage Low - Data Valid but Below Normal Operational Range - Most Severe Level
649	Change Lubricating Oil and Filter - Condition Exists
687	Turbocharger Number 1 Speed Low - Data Valid but Below Normal Operational Range - Moderately Severe Level
689	Primary Engine Speed Sensor Error - Data Erratic, Intermittent, or Incorrect
691	Turbocharger Number 1 Compressor Inlet Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source
692	Turbocharger Number 1 Compressor Inlet Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source
778	Engine Speed Sensor (Camshaft Error - Data Erratic, Intermittent or Incorrect
784	Loss of Communication with Adaptive Cruise Control - Data Erratic, Intermittent or Incorrect
951	Cylinder Power Imbalance Between Cylinders - Data Erratic, Intermittent, or Incorrect
1119	Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level
1137	Hall Effect Speed Sensors Connected Incorrectly - Condition Exists
1228	EGR Valve Position Sensor Circuit - Data Erratic, Intermittent, or Incorrect
1943	Ambient Air Density - Data Valid But Below Normal Operational Range - Least Severe Level
2197	OEM Temperature Sensor Engine Protection Warning - Root Cause Not Known
2271	EGR Valve Position Circuit - Voltage Above Normal, or Shorted to High Source
2272	EGR Valve Position Circuit - Voltage Below Normal, or Shorted to Low Source
2273	EGR Valve Delta Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
2274	EGR Valve Delta Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
2346	Turbocharger Turbine Inlet Temperature (Calculated - Data Valid but Above Normal Operational Range - Least Severe Level
2347	Turbocharger Compressor Outlet Temperature (Calculated - Data Valid but Above Normal Operational Range - Least Severe Level
2348	EGR Valve Position Failed Automatic Calibration Procedure - Out of Calibration
2349	EGR Valve Control Circuit - Current Below Normal, or Open Circuit
2351	EGR Valve Control Circuit - Voltage Below Normal, or Shorted to Low Source
2352	EGR Valve Control Circuit - Voltage Above Normal, or Shorted to High Source
2353	EGR Valve Control Circuit - Current Above Normal, or Grounded Circuit
2357	EGR Valve Control - Mechanical System Not Responding Properly, or Out of Adjustment
	105-fc2359 EGR Differential Pressure Sensor - Data Valid but Above Normal Operating Range - Moderately Severe Level
2362	Engine Brake Actuator Circuit Number 1 - Voltage Below Normal or Shorted to Low Source
2363	Engine Brake Actuator Circuit Number 2 - Voltage Below Normal or Shorted to Low Source
2366	Engine Brake Actuator Circuit Number 1 - Voltage Above Normal or Shorted to High Source
2367	Engine Brake Actuator Circuit Number 2 - Voltage Above Normal or Shorted to High Source
2373	Exhaust Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
2374	Exhaust Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
2375	EGR Gas Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
2376	EGR Gas Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
2377	Fan Control Circuit - Voltage Above Normal or Shorted to High Source
2384	VGT Actuator - Voltage Below Normal or Shorted to Low Source

Code	Meaning
2385	VGT Actuator - Voltage Above Normal or Shorted to High Source
2554	Exhaust Pressure Sensor Circuit - Data Erratic, Intermittent or Incorrect
2961	EGR Temperature - Data Valid but Above Normal Operational Range - Least Severe Level
2962	EGR Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level
2963	Engine Coolant Temperature High - Data Valid but Above Normal Operational Range - Least Severe Level
2964	Intake Manifold Temperature High - Data Valid but Above Normal Operational Range - Least Severe Level
2973	Intake Manifold Pressure Sensor Circuit - Data Erratic, Intermittent or Incorrect
9121	EGR Valve Actuator Over Temperature / Calculated - Data Valid but Above Normal Operational Range - Least Severe Level

Source: <https://truck-manuals.jimdo.com/cummins-fault-codes/cummins-ism-fault-codes/>

ISX Engine Fault Codes

Code	Meaning
111	Electronic Control Module Critical Internal Failure - Bad Intelligent Device or Component
115	Engine Magnetic Speed / Position Lost Both of Two Signals - Data Erratic, Intermittent, or Incorrect
122	Intake Manifold 1 Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
123	Intake Manifold 1 Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
125	Intake Manifold 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level
131	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Above Normal, or Shorted to High Source
132	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source
133	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Above Normal, or Shorted to High Source
134	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Below Normal, or Shorted to Low Source
135	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage Above Normal, or Shorted to High Source
141	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
143	Engine Oil Rifle Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level
144	Engine Coolant Temperature 1 Sensor Circuit - Voltage Above Normal, or Shorted to High Source
145	Engine Coolant Temperature 1 Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
146	Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level
151	Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Most Severe Level
153	Intake Manifold 1 Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
154	Intake Manifold 1 Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
155	Intake Manifold 1 Temperature - Data Valid but Above Normal Operational Range - Most Severe Level
187	Sensor Supply 2 Circuit Choice
	ism Sensor Supply 2 Circuit - Voltage Below Normal, or Shorted to Low Source
	isx Sensor Supply 2 Circuit - Voltage Below Normal, or Shorted to Low Source
195	Coolant Level Sensor 1 Circuit Choice
	2 wire Coolant Level Sensor 1 Circuit - Voltage Above Normal, or Shorted to High Source
	3 wire Coolant Level Sensor 1 Circuit - Voltage Above Normal, or Shorted to High Source
196	Coolant Level Sensor 1 Circuit Choice
	2 wire Coolant Level Sensor 1 Circuit - Voltage Below Normal, or Shorted to Low Source
	3 wire Coolant Level Sensor 1 Circuit - Voltage Below Normal, or Shorted to Low Source
197	Coolant Level - Data Valid but Below Normal Operational Range - Moderately Severe Level
212	Engine Oil Temperature Sensor 1 Circuit - Voltage Above Normal, or Shorted to High Source
213	Engine Oil Temperature Sensor 1 Circuit - Voltage Below Normal, or Shorted to Low Source

Code	Meaning
214	Engine Oil Temperature High - Data Valid but Above Normal Operational Range - Most Severe Level
221	Barometric Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
222	Barometric Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
227	Sensor Supply 2 Circuit - Voltage Above Normal, or Shorted to High Source
234	Engine Crankshaft Speed/Position - Data Valid but Above Normal Operational Range - Most Severe Level
238	Sensor Supply 3 Circuit - Voltage Below Normal, or Shorted to Low Source
241	Wheel-Based Vehicle Speed - Data Erratic, Intermittent or Incorrect
242	Wheel-Based Vehicle Speed Sensor Circuit Tampering Has Been Detected - Abnormal Rate of Change
245	Fan Control Circuit - Voltage Below Normal or Shorted to Low Source
249	Ambient Air Temperature Sensor 1 Circuit - Voltage Above Normal, or Shorted to High Source
254	Engine Fuel Shutoff Valve Driver Circuit - Voltage Below Normal, or Shorted to Low Source
255	Engine Fuel Shutoff Valve Driver Circuit - Voltage Above Normal, or Shorted to High Source
256	Ambient Air Temperature Sensor 1 Circuit - Voltage Below Normal, or Shorted to Low Source
257	Engine Fuel shutoff Valve Driver - Mechanical System Not Responding Properly or Out of Adjustment
263	Engine Fuel Temperature Sensor 1 Circuit - Voltage Above Normal, or Shorted to High Source
265	Engine Fuel Temperature Sensor 1 Circuit - Voltage Below Normal, or Shorted to Low Source
285	SAE J1939 Multiplexing PGN Timeout Error - Abnormal Update Rate
286	SAE J1939 Multiplexing Configuration Error - Out of Calibration
287	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Received Network Data In Error
288	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Position Sensor System - Received Network Data In Error
295	Barometric Pressure - Data Erratic, Intermittent, or Incorrect
311	Injector Solenoid Driver Cylinder 1 Circuit - Current Above Normal, or Grounded Circuit
312	Injector Solenoid Driver Cylinder 5 Circuit - Current Above Normal, or Grounded Circuit
313	Injector Solenoid Driver Cylinder 3 Circuit - Current Above Normal, or Grounded Circuit
314	Injector Solenoid Driver Cylinder 6 Circuit - Current Above Normal, or Grounded Circuit
315	Injector Solenoid Driver Cylinder 2 Circuit - Current Above Normal, or Grounded Circuit
319	Real Time Clock Power Interrupt - Data Erratic, Intermittent, or Incorrect
321	Injector Solenoid Driver Cylinder 4 Circuit - Current Above Normal, or Grounded Circuit
322	Injector Solenoid Driver Cylinder 1 Circuit - Current Below Normal, or Open Circuit
323	Injector Solenoid Driver Cylinder 5 Circuit - Current Below Normal, or Open Circuit
324	Injector Solenoid Driver Cylinder 3 Circuit - Current Below Normal, or Open Circuit
325	Injector Solenoid Driver Cylinder 6 Circuit - Current Below Normal, or Open Circuit
331	Injector Solenoid Driver Cylinder 2 Circuit - Current Below Normal, or Open Circuit
332	Injector Solenoid Driver Cylinder 4 Circuit - Current Below Normal, or Open Circuit
338	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage Above Normal, or Shorted to High Source
339	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage Below Normal, or Shorted to Low Source
343	Engine Control Module Warning Internal Hardware Failure - Bad Intelligent Device or Component
346	Engine Control Module Calibration Memory Software - Bad Intelligent Device or Component
351	Injector Power Supply - Bad Intelligent Device or Component
352	Sensor Supply 1 Circuit - Voltage Below Normal, or Shorted to Low Source
386	Sensor Supply 1 Circuit - Voltage Above Normal, or Shorted to High Source
415	Engine Oil Rifle Pressure - Data Valid but Below Normal Operational Range - Most Severe Level
418	Water in Fuel Indicator - Data Valid but Above Normal Operational Range - Least Severe Level
427	SAE J1939 Datalink - Abnormal Update Rate
428	Water-in-Fuel Indicator Sensor Circuit - Voltage Above Normal, or Shorted to High Source

Code	Meaning
429	Water-in-Fuel Indicator Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
435	Engine Oil Rifle Pressure - Data Erratic, Intermittent, or Incorrect
441	Battery 1 Voltage - Data Valid but Below Normal Operational Range - Moderately Severe Level
442	Battery 1 Voltage - Data Valid but Above Normal Operational Range - Moderately Severe Level
546	Fuel Delivery Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
547	Fuel Delivery Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
555	Crankcase Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
556	Crankcase Pressure - Data Valid but Above Normal Operational Range - Most Severe Level
584	Starter Relay Driver Circuit - Voltage Above Normal, or Shorted to High Source
585	Starter Relay Driver Circuit - Voltage Below Normal, or Shorted to Low Source
596	Electrical Charging System Voltage - Data Valid but Above Normal Operational Range - Moderately Severe Level
597	Electrical Charging System Voltage - Data Valid but Below Normal Operational Range - Moderately Severe Level
598	Electrical Charging System Voltage - Data Valid but Below Normal Operational Range - Most Severe Level
649	Engine Oil Change Interval - Condition Exists
686	Turbocharger 1 Speed - Data Erratic, Intermittent, or Incorrect
687	Turbocharger 1 Speed - Data Valid but Below Normal Operational Range - Moderately Severe Level
689	Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect
	ism Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect
	isx Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect
691	Turbocharger 1 Compressor Inlet Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
692	Turbocharger 1 Compressor Inlet Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
697	ECM Internal Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
698	ECM Internal Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
731	Engine Speed / Position Camshaft and Crankshaft Misalignment - Mechanical System Not Responding Properly or Out of Adjustment
778	Engine Camshaft Speed/Position Sensor Choice
	ism Engine Camshaft Speed/Position Sensor - Data Erratic, Intermittent, or Incorrect
	isx Engine Camshaft Speed/Position Sensor - Data Erratic, Intermittent, or Incorrect
784	Adaptive Cruise Control Mode - Data Erratic, Intermittent, or Incorrect
1117	Power Supply Lost With Ignition On - Data Erratic, Intermittent, or Incorrect
1239	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Above Normal, or Shorted to High Source
1241	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Below Normal, or Shorted to Low Source
1242	Accelerator Pedal or Lever Position Sensor 1 and 2 - Data Erratic, Intermittent, or Incorrect
1663	Catalyst Inlet Temperature Sensor Swapped with Outlet - Condition Exists
1664	Catalyst Missing - Condition Exists
1665	Aftertreatment Exhaust Gas Temperature 1 Circuit - Voltage Below Normal, or Shorted to Low Source
1666	Aftertreatment Exhaust Gas Temperature 1 Circuit - Voltage Above Normal, or Shorted to High Source
1667	Aftertreatment Exhaust Gas Temperature 1 - Data Erratic, Intermittent, or Incorrect
1674	Aftertreatment Exhaust Gas Temperature 2 Circuit - Voltage Below Normal, or Shorted to Low Source
1675	Aftertreatment Exhaust Gas Temperature 2 Circuit - Voltage Above Normal, or Shorted to High Source
1676	Aftertreatment Exhaust Gas Temperature 2 - Data Erratic, Intermittent, or Incorrect
1691	Catalyst Efficiency - Out of Calibration
1695	Sensor Supply 5 - Voltage Above Normal, or Shorted to High Source

Code	Meaning
1696	Sensor Supply 5 - Voltage Below Normal, or Shorted to Low Source
1843	Crankcase Pressure Circuit - Voltage Above Normal, or Shorted to High Source
1844	Crankcase Pressure Circuit - Voltage Below Normal, or Shorted to Low Source
1866	Exhaust Gas Recirculation Valve Delta Pressure - Data Erratic, Intermittent, or Incorrect
1876	Aftertreatment Exhaust Gas Temperature 3 Circuit - Voltage Above Normal, or Shorted to High Source
1877	Aftertreatment Exhaust Gas Temperature 3 Circuit - Voltage Below Normal, or Shorted to Low Source
1878	Aftertreatment Exhaust Gas Temperature 3 - Data Erratic, Intermittent, or Incorrect
1879	Aftertreatment Particulate Filter Differential Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
1881	Aftertreatment Particulate Filter Differential Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
1883	Aftertreatment Particulate Filter Differential Pressure Sensor - Data Erratic, Intermittent, or Incorrect
1893	EGR Valve Control Circuit - Abnormal Update Rate
1895	EGR Valve Controller - Bad Intelligent Device or Component
1896	EGR Valve Controller - Out of Calibration
1899	Exhaust Gas Recirculation Valve Delta Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
1921	Aftertreatment Particulate Filter Differential Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
1922	Aftertreatment Particulate Filter Differential Pressure - Data Valid but Above Normal Operational Range - Most Severe Level
1923	Aftertreatment Fuel shutoff Valve 1 Circuit - Voltage Above Normal, or Shorted to High Source
1924	Aftertreatment Fuel Shutoff Valve 1 Circuit - Voltage Below Normal, or Shorted to Low Source
1925	Aftertreatment Fuel Shutoff Valve 1 - Data Erratic, Intermittent, or Incorrect
1926	Aftertreatment Fuel Pressure Sensor - Data Erratic, Intermittent, or Incorrect
1927	Aftertreatment Fuel Pressure Sensor - Voltage Above Normal, or Shorted to High Source
1928	Aftertreatment Fuel Pressure Sensor - Voltage Below Normal, or Shorted to Low Source
1932	Aftertreatment Fuel Injector 1 - Data Erratic, Intermittent, or Incorrect
1933	ECU Power Output Supply Voltage 2 - Data Valid but Above Normal Operational Range - Moderately Severe Level
1934	ECU Power Output Supply Voltage 2 - Data Valid but Below Normal Operational Range - Moderately Severe Level
1935	EGR Actuator Driver Circuit - Root Cause Not Known
1938	ECU Power Output Supply Voltage 1 - Data Valid but Below Normal Operational Range - Moderately Severe Level
1942	Crankcase Pressure - Data Erratic, Intermittent, or Incorrect
1943	Ambient Air Density - Data Valid but Below Normal Operational Range - Least Severe Level
1961	EGR Valve Control Circuit Calculated Over Temperature - Data Valid but Above Normal Operational Range - Least Severe Level
1962	VGT Actuator Driver Over Temperature (Calculated - Data Valid but Above Normal Operational Range - Least Severe Level
1963	Aftertreatment Fuel Shutoff Valve 1 - Mechanical System Not Responding Properly or Out of Adjustment
1966	Aftertreatment Exhaust Gas Temperature 1 - Data Valid but Above Normal Operational Range - Most Severe Level
1968	Aftertreatment Exhaust Gas Temperature 2 - Data Valid but Above Normal Operational Range - Moderately Severe Level
1969	Aftertreatment Exhaust Gas Temperature 2 - Data Valid but Above Normal Operational Range - Most Severe Level

Code	Meaning
1972	Aftertreatment Exhaust Gas Temperature 3 - Data Valid but Above Normal Operational Range - Moderately Severe Level
1973	Aftertreatment Exhaust Gas Temperature 3 - Data Valid but Above Normal Operational Range - Most Severe Level
1974	Crankcase Pressure - Data Valid but Above Normal Operational Range - Least Severe Level
1977	Aftertreatment Fuel Injector 1 Circuit - Current Below Normal, or Open Circuit
1981	Aftertreatment Particulate Filter Differential Pressure - Data Valid but Above Normal Operational Range - Least Severe Level
1993	Aftertreatment Particulate Filter Missing - Condition Exists
2182	Engine Brake Actuator Driver 1 Circuit - Voltage Above Normal, or Shorted to High Source
2183	Engine Brake Actuator Driver 1 Circuit - Voltage Below Normal, or Shorted to Low Source
2185	Sensor Supply 4 Circuit - Voltage Above Normal, or Shorted to High Source
2186	Sensor Supply 4 Circuit - Voltage Below Normal, or Shorted to Low Source
2195	Auxiliary Equipment Sensor Input 3 Engine Protection Critical - Special Instructions
2198	VGT Actuator Driver Circuit - Root Cause Not Known
2215	Fuel Pump Delivery Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level
2216	Fuel Pump Delivery Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
2272	EGR Valve Position Circuit - Voltage Below Normal, or Shorted to Low Source
2273	Exhaust Gas Recirculation Valve Delta Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
2274	Exhaust Gas Recirculation Valve Delta Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
2288	Turbocharger 1 Speed - Data Valid but Above Normal Operational Range - Least Severe Level
2311	Electronic Fuel Injection Control Valve Circuit - Condition Exists
2312	Timing Actuator Driver Circuit - Condition Exists
2313	Fuel Control Valve Solenoid Driver 2 Circuit - Condition Exists
2314	Engine Timing Actuator Driver 2 Circuit Error - Condition Exists
2321	Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect
2322	Engine Camshaft Speed/Position Sensor - Data Erratic, Intermittent, or Incorrect
2345	Turbocharger 1 Speed - Abnormal Rate of Change
2346	Turbocharger Turbine Inlet Temperature (Calculated - Data Valid but Above Normal Operational Range - Least Severe Level)
2347	Turbocharger Compressor Outlet Temperature (Calculated - Data Valid but Above Normal Operational Range - Least Severe Level)
2349	EGR Valve Control Circuit - Current Below Normal, or Open Circuit
2351	EGR Valve Control Circuit - Voltage Below Normal, or Shorted to Low Source
2357	EGR Valve Control Circuit - Mechanical System Not Responding Properly or Out of Adjustment
2359	Exhaust Gas Recirculation Valve Delta Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
2363	Engine Brake Actuator Driver Output 2 Circuit Choice
	ism Engine Brake Actuator Driver Output 2 Circuit - Voltage Below Normal, or Shorted to Low Source
	isx Engine Brake Actuator Driver Output 2 Circuit - Voltage Below Normal, or Shorted to Low Source
2365	Engine Brake Actuator Driver Output 3 Circuit - Voltage Below Normal, or Shorted to Low Source
2367	Engine Brake Actuator Driver Output 2 Circuit Choice
	ism Engine Brake Actuator Driver Output 2 Circuit - Voltage Above Normal, or Shorted to High Source
	isx Engine Brake Actuator Driver Output 2 Circuit - Voltage Above Normal, or Shorted to High Source
2368	Engine Brake Actuator Driver Output 3 Circuit - Voltage Above Normal, or Shorted to High Source

Code	Meaning
2372	Fuel Filter Differential Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
2373	Exhaust Gas Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
2374	Exhaust Gas Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
2375	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
2376	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
2377	Fan Control Circuit - Voltage Above Normal, or Shorted to High Source
2387	VGT Actuator Driver Circuit (Motor - Mechanical System Not Responding Properly, or Out of Adjustment
2412	Fan Speed - Data Erratic, Intermittent, or Incorrect
2448	Coolant Level - Data Valid but Below Normal Operational Range - Least Severe Level
2449	VGT Actuator Controller - Out of Calibration
2451	Turbocharger Turbine Inlet Temperature (Calculated - Data Valid but Above Normal Operational Range - Moderately Severe Level
2551	Injector Metering Rail 2 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
2552	Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
2554	Exhaust Gas Pressure - Data Erratic, Intermittent, or Incorrect
2634	VGT Actuator Controller - Bad Intelligent Device or Component
2635	VGT Actuator Driver Circuit - Condition Exists
2636	VGT Actuator Driver Circuit - Abnormal Update Rate
2637	Catalyst Face Plugged - Root Cause Not Known
2638	Catalyst Efficiency - Out of Calibration
2639	Aftertreatment Particulate Filter Differential Pressure - Data Valid but Above Normal Operational Range - Least Severe Level
2646	Engine Coolant Temperature - Condition Exists
2659	Engine Coolant Temperature - Condition Exists
2728	Aftertreatment Fuel Injector 1 - Data Valid but Above Normal Operational Range - Moderately Severe Level
2732	Aftertreatment Fuel Drain Valve Circuit - Voltage Above Normal or Shorted to High Source
2733	Aftertreatment Fuel Drain Valve Circuit - Voltage Below Normal or Shorted to Low Source
2738	Start Enable Device 1 Circuit (Ether Injection - Voltage Above Normal or Shorted to High Source
2739	Start Enable Device 1 Circuit (Ether Injection - Voltage Below Normal or Shorted to Low Source
2741	Aftertreatment Fuel Shutoff Valve 1 Swapped - Condition Exists
2742	Aftertreatment Exhaust Gas Temperature 2 - Data Valid but Below Normal Operational Range - Least Severe Level
2743	Aftertreatment Exhaust Gas Temperature 2 - Data Valid but Below Normal Operational Range - Moderately Severe Level
2754	Engine Particulate Filter Inlet Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
2764	Exhaust Gas Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
2774	Engine Exhaust Gas Recirculation (EGR System - Condition Exists
2777	Particulate Trap Active Regeneration Inhibited Due to Inhibit Switch - Condition Exists
2789	Engine Coolant Temperature - Data Valid but Below Normal Operational Range - Moderately Severe Level
2813	EGR Valve Control - Special Instructions
2878	Aftertreatment Fuel Drain Valve - Mechanical System Not Responding Properly or Out of Adjustment
2879	Aftertreatment Fuel Drain Valve - Data Erratic, Intermittent, or Incorrect
2881	Aftertreatment Fuel Pressure Sensor - Data Valid but Below Normal Operational Range - Least Severe Level
2961	Exhaust Gas Recirculation Temperature - Data Valid but Above Normal Operational Range - Least Severe Level

Code	Meaning
2962	Exhaust Gas Recirculation Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level
2963	Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Least Severe Level
2964	Intake Manifold 1 Temperature - Data Valid but Above Normal Operational Range - Least Severe Level
2973	Intake Manifold 1 Pressure - Data Erratic, Intermittent, or Incorrect

Source: <https://truck-manuals.jimdo.com/cummins-fault-codes/cummins-isx-fault-codes/>

ISL & ISC Engine Fault Codes

Code	Meaning
0001	Exhaust Gas Pressure Sensor Number 1 Circuit - Voltage Above Normal, or Shorted to High Source
0002	Exhaust Gas Pressure Sensor Number 1 Circuit - Voltage Below Normal, or Shorted to Low Source
0003	Exhaust Gas Pressure Sensor Number 1 Circuit - Data Erratic, Intermittent, or Incorrect
0004	Exhaust Gas Temperature Sensor Number 1 Circuit - Data Erratic, Intermittent, or Incorrect
0005	Exhaust Gas Temperature Sensor Number 1 Circuit - Voltage Below Normal, or Shorted to Low Source
0006	Exhaust Gas Temperature Sensor Number 1 Circuit - Voltage Above Normal, or Shorted to High Source
111	Engine Control Module Critical Internal Failure - Bad Intelligent Device or Component
115	Engine Magnetic Crankshaft Speed/Position Lost Both of Two Signals - Data Erratic, Intermittent, or Incorrect
122	Intake Manifold Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source
123	Intake Manifold Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source
124	Intake Manifold One Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
131	Accelerator Pedal or Lever Position Sensor Circuit - Shorted High
132	Accelerator Pedal or Lever Position Sensor Circuit - Voltage Below Normal or Shorted to Low Source
133	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Above Normal, or Shorted to High Source
134	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Below Normal, or Shorted to Low Source
135	Oil Pressure Sensor Choice
	auto Oil Pressure Sensor Circuit — Voltage Above Normal or Shorted to High Source
	mar Oil Pressure Sensor Circuit — Voltage Above Normal or Shorted to High Source
141	Oil Pressure Sensor Circuit Choice
	auto Oil Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source
	mar Oil Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source
143	Oil Pressure Low Choice
	b Oil Pressure Low - Data Valid but Below Normal Operational Range - Moderately Severe Level
	bm Oil Pressure Low - Data Valid but Below Normal Operational Range - Moderately Severe Level
144	Coolant Temperature Sensor Circuit Choice
	b Engine Coolant Temperature 1 Sensor Circuit - Voltage Above Normal or Shorted to High Source
	bm Engine Coolant Temperature 1 Sensor Circuit - Voltage Above Normal or Shorted to High Source
145	Engine Coolant Temperature 1 Sensor Circuit Choice
	b Engine Coolant Temperature 1 Sensor Circuit - Voltage Below Normal or Shorted to Low Source
	bm Engine Coolant Temperature 1 Sensor Circuit - Voltage Below Normal or Shorted to Low Source
146	Engine Coolant Temperature Choice
	b Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level
	bm Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level
147	Accelerator Pedal or Lever Position 1 Sensor Circuit Frequency - Data Valid but Below Normal Operational Range - Most Severe Level

Code	Meaning
148	Accelerator Pedal or Lever Position Sensor One - Data Valid but Above Normal Operational Range - Most Severe level
151	Engine Coolant Temperature Choice
	b Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Most Severe Level
	bm Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Most Severe Level
153	Intake Manifold Air Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source
154	Intake Manifold Air Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source
155	Intake Manifold 1 Temperature Choice
	b Intake Manifold 1 Temperature - Data Valid but Above Normal Operational Range - Most Severe Level
	bm Engine Coolant Temperature 1 Sensor Circuit — Voltage Above Normal or Shorted to High Source
187	Sensor Supply Voltage Number 2 Circuit Choice
	b Sensor Supply Voltage Number 2 Circuit - Voltage Below Normal or Shorted to Low Source
	bm Sensor Supply 2 Circuit - Voltage Below Normal, or Shorted to Low Source
195	Coolant Level Sensor 1 Circuit - Choice
	2 wire Coolant Level Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source
	3 wire Coolant Level Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source
196	Coolant Level Sensor 1 Circuit - Choice
	2 wire Coolant Level Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source
	3 wire Coolant Level Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source
197	Coolant Level Low - Data Valid but Below Normal Operational Range - Moderately Severe Level
221	Barometric Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source
222	Barometric Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source
227	Sensor Supply Voltage Number 2 Circuit Choice
	b Sensor Supply Voltage Number 2 Circuit - Voltage Above Normal or Shorted to High Source
	bm Sensor Supply 2 Circuit - Voltage Above Normal or Shorted to High Source
234	Engine Crankshaft Speed/Position Choice
	b Engine Crankshaft Speed/Position — Data Valid but Above Normal Operational Range - Most Severe Level
	bm Engine Crankshaft Speed/Position — Data Valid but Above Normal Operational Range - Most Severe Level
235	Coolant Level Low - Data Valid but Below Normal Operational Range - Most Severe Level
237	External Speed Command Input (Multiple Unit Synchronization - Data Erratic, Intermittent, or Incorrect
238	Sensor Supply 3 Circuit - Voltage Below Normal, or Shorted to Low Source
241	Vehicle Speed Sensor Circuit - Data Erratic, Intermittent, or Incorrect
242	Vehicle Speed Sensor Circuit Tampering Has Been Detected - Abnormal Rate of Change
245	Fan Control Circuit - Voltage Below Normal or Shorted to Low Source
253	Engine Oil Level - Data Valid But Below Normal Operational Range - Most Severe Level
268	Injector Metering Rail 1 Pressure - Data Erratic, Intermittent, or Incorrect
269	Antitheft Password Valid Indicator - Data Erratic, Intermittent, or Incorrect
271	High Fuel Pressure Solenoid Valve Circuit Choice
	b High Fuel Pressure Solenoid Valve Circuit - Voltage Below Normal or Shorted to Low Source
	cl High Fuel Pressure Solenoid Valve Circuit - Voltage Below Normal or Shorted to Low Source
272	High Fuel Pressure Solenoid Valve Circuit Choice
	b High Fuel Pressure Solenoid Valve Circuit - Voltage Above Normal or Shorted to High Source
	cl High Fuel Pressure Solenoid Valve Circuit - Voltage Above Normal or Shorted to High Source
275	Fuel Pumping Element Number 1 (Front - Mechanical System Not Responding Properly or Out of Adjustment
281	Fault Pump Pressurizing Assembly 1 - Mechanical System Not Responding Properly or Out of Adjustment

Code	Meaning
284	Engine Speed/Position Sensor (Crankshaft Supply Voltage Circuit - Voltage Below Normal or Shorted to Low Source
285	SAE J1939 Multiplexing PGN Timeout Error - Abnormal Update Rate
286	SAE J1939 Multiplexing Configuration Error - Out of Calibration
287	SAE J1939 Multiplexing Accelerator Pedal or Lever Sensor System Error - Received Network Data Error
288	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Data Error - Received Network Data Error
291	Proprietary Datalink Error (OEM/Vehicle Datalink - Abnormal Update Rate
292	Auxiliary Temperature Sensor Input 1 - Special Instructions
293	Auxiliary Temperature Sensor Input 1 - Voltage Above Normal, or Shorted to High Source
294	Auxiliary Temperature Sensor Input 1 Circuit - Voltage Below Normal, or Shorted to Low Source
295	Barometric Pressure - Data Erratic, Intermittent, or Incorrect
296	Auxiliary Pressure Sensor Input 1 - Special Instructions
	a Auxiliary Pressure Sensor Input 1 - Special Instructions
	lrv Crankcase Pressure - Data Above Normal Operational Range - Severe Level
297	Auxiliary Pressure Sensor Input 1 Circuit - Voltage Above Normal, or Shorted to High Source
298	Auxiliary Pressure Sensor Input 1 Circuit - Voltage Below Normal, or Shorted to Low Source
319	Real Time Clock Power Interrupt - Data Erratic, Intermittent, or Incorrect
322	Injector Solenoid Driver Cylinder 1 Circuit - Current Below Normal, or Open Circuit
323	Injector Solenoid Driver Cylinder 5 Circuit - Current Below Normal, or Open Circuit
324	Injector Solenoid Driver Cylinder 3 Circuit - Current Below Normal, or Open Circuit
325	Injector Solenoid Driver Cylinder 6 Circuit - Current Below Normal, or Open Circuit
331	Injector Solenoid Cylinder Number 2 Circuit - Current Below Normal or Open Circuit
332	Injector Solenoid Cylinder Number 4 Circuit - Current Below Normal or Open Circuit
334	Engine Coolant Temperature - Data Erratic, Intermittent, or Incorrect
341	Engine Control Module Data Lost - Data Erratic, Intermittent, or Incorrect
342	Electronic Calibration Code Incompatibility - Out of Calibration
343	Engine Control Module Warning Internal Hardware Failure - Bad Intelligent Device or Component
351	Injector Power Supply — Bad Intelligent Device or Component
352	Sensor Supply Voltage Number 1 Circuit - Voltage Below Normal or Shorted to Low Source
386	Sensor Supply Voltage Number 1 Circuit - Voltage Above Normal or Shorted to High Source
387	Accelerator Pedal or Lever Position Sensor Supply Voltage Circuit - Voltage Above Normal or Shorted to High Source
412	SAE J1587/J1922 Data Link - Can Not Transmit
415	Engine Oil Rifle Pressure Choice
	sn Engine Oil Rifle Pressure - Data Valid but Below Normal Operational Range - Most Severe Level
	sw Engine Oil Rifle Pressure - Data Valid but Below Normal Operational Range - Most Severe Level
418	Water-In-Fuel Indicator - Data Valid but Above Normal Operational Range - Least Severe Level
426	SAE J1939 Data Link - Cannot Transmit
427	SAE J1939 Datalink - Abnormal Update Rate
428	Water-In-Fuel Sensor Circuit - Voltage Above Normal or Shorted to High Source
429	Water-In-Fuel Sensor Circuit - Voltage Below Normal or Shorted to Low Source
431	Idle Validation Switch Circuit Choice
	iss Accelerator Pedal or Lever Idle Validation Circuit - Data Erratic, Intermittent, or Incorrect
	niss Accelerator Pedal or Lever Idle Validation Circuit - Data Erratic, Intermittent, or Incorrect
	sss Accelerator Pedal or Lever Idle Validation Circuit - Data Erratic, Intermittent, or Incorrect
432	Accelerator Pedal or Lever Idle Validation Circuit - Out of Calibration

Code	Meaning
433	Intake Manifold Pressure Sensor Circuit - Data Incorrect
434	Power Supply Lost With Ignition On - Data Erratic, Intermittent or Incorrect
435	Oil Pressure Switch Sensor Circuit - Data Erratic, Intermittent or Incorrect
436	Intake Manifold 1 Temperature - Data Erratic, Intermittent, or Incorrect
441	Battery 1 Voltage - Data Valid but Below Normal Operational Range - Moderately Severe Level
442	Battery 1 Voltage - Data Valid but Below Normal Operational Range - Moderately Severe Level
443	Accelerator Pedal or Lever Position Sensor Supply Voltage Circuit — Voltage Below Normal or Shorted to Low Source
449	Fuel Pressure High Choice
	b Injector Metering Rail Number 1 Pressure - Data Valid But Above Normal Operating Range - Most Severe Level
	cl Injector Metering Rail Number 1 Pressure - Data Valid But Above Normal Operating Range - Most Severe Level
451	Injector Metering Rail Number 1 Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source
452	Injector Metering Rail Number 1 Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source
471	Engine Oil Level - Data Valid But Below Normal Operational Range - Least Severe Level
488	Intake Manifold 1 Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level
497	Multiple Unit Synchronization Switch - Data Erratic, Intermittent, or Incorrect
498	Engine Oil Level Sensor Circuit - Voltage Above Normal, or Shorted to High Source
499	Engine Oil Level Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
523	Auxiliary Intermediate (PTO Speed Switch Validation - Data Erratic, Intermittent, or Incorrect0
527	Auxiliary Input/Out Two Circuit Voltage Above Normal or Shorted to High Source
528	Auxiliary Alternate Torque Validation Switch - Data Erratic, Intermittent, or Incorrect
529	Auxiliary Input/Output Three Circuit - Voltage Above Normal, or Shorted to High Source
545	Turbocharger 1 Wastegate Control - Mechanical System Not Responding Properly or Out of Adjustment
551	Idle Validation Switch Circuit Choice
	iss Accelerator Pedal or Lever Idle Validation Circuit - Voltage Below Normal or Shorted to Low Source
	niss Accelerator Pedal or Lever Idle Validation Circuit - Voltage Below Normal or Shorted to Low Source
	sss Accelerator Pedal or Lever Idle Validation Circuit - Voltage Below Normal or Shorted to Low Source
553	Injector Metering Rail One Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
554	Injector Metering Rail 1 Pressure - Data Erratic, Intermittent, or Incorrect
559	Fuel Pump Delivery Pressure Low Choice
	b Fuel Pump Delivery Pressure Low - Data Valid but Below Normal Operational Range - Moderately Severe Level
	cl Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level
584	Starter Relay Circuit - Voltage Above Normal or Shorted to High Source
585	Starter Relay Circuit - Voltage Below Normal or Shorted to Low Source
595	Turbocharger Number 1 Speed High Choice
	b Turbocharger Number 1 Speed High - Warning Level
	cl Turbocharger Number 1 Speed High - Data Valid but Above Normal Operational Range - Moderately Severe Level
596	Electrical Charging System Voltage High - Data Valid but Above Normal Operational Range - Moderately Severe Level
597	Electrical Charging System Voltage Low - Data Valid but Below Normal Operational Range - Moderately Severe Level

Code	Meaning
598	Electrical Charging System Voltage Low - Data Valid but Below Normal Operational Range - Most Severe Level
599	Auxiliary Commanded Dual Output Shutdown - Special Instructions
649	Change Lubricating Oil and Filter - Condition Exists
687	Turbocharger Speed Sensor Choice <ul style="list-style-type: none"> b Turbocharger Speed Sensor - Below Normal Operating Range cl Turbocharger Number 1 Speed Low - Data Valid but Below Normal Operating Range - Moderately Severe Level
688	Engine Oil Level - Data Valid But Above Normal Operational Range - Most Severe Level
689	Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect
691	Turbocharger Number 1 Compressor Inlet Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source
692	Turbocharger Number 1 Compressor Inlet Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source
731	Engine Speed/Position Sensors Choice <ul style="list-style-type: none"> b Engine Speed Sensor/Position Camshaft and Crankshaft Misalignment - Mechanical System Not Responding Properly or Out of Adjustment bm Engine Speed Sensor/Position Camshaft and Crankshaft Misalignment - Mechanical System Not Responding Properly or Out of Adjustment
757	Electronic Control Module Data Lost - Condition Exists
778	Engine Speed Sensor (Camshaft Error - Data Erratic, Intermittent or Incorrect
779	Auxiliary Equipment Sensor Input Number 3 (OEM Switch - Root Cause Not Known)
784	Adaptive Cruise Control - Error
951	Cylinder Power Imbalance Detected
957	EGR Valve Position - Data Erratic, Intermittent, or Incorrect
958	VGT Position Sensor - Data Erratic, Intermittent, or Incorrect
1117	Power Lost Without Ignition Off Choice <ul style="list-style-type: none"> auto Power Lost Without Ignition Off - Data Erratic, Intermittent or Incorrect mar Power Lost Without Ignition Off - Data Erratic, Intermittent or Incorrect
1139	Injector Solenoid Driver Cylinder 1 - Mechanical System Not Responding Properly or Out of Adjustment
1141	Injector Solenoid Driver Cylinder 2 - Mechanical System Not Responding Properly or Out of Adjustment
1142	Injector Solenoid Driver Cylinder 3 - Mechanical System Not Responding Properly or Out of Adjustment
1143	Injector Solenoid Driver Cylinder 4 - Mechanical System Not Responding Properly or Out of Adjustment
1144	Injector Solenoid Driver Cylinder 5 - Mechanical System Not Responding Properly or Out of Adjustment
1145	Injector Solenoid Driver Cylinder 6 - Mechanical System Not Responding Properly or Out of Adjustment
1228	EGR Valve Position - Data Erratic, Intermittent, or Incorrect
1229	VGT Position Sensor - Data Erratic, Intermittent, or Incorrect
1239	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Above Normal or Shorted to High Source
1241	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Below Normal or Shorted to Low Source
1242	Accelerator Pedal or Lever Position Sensor 1 and 2 - Data Erratic, Intermittent, or Incorrect
1633	Komnet Datalink Cannot Transmit - Data Erratic, Intermittent, or Incorrect
1639	Auxiliary Equipment Sensor Input Number 3 (OEM Switch - Root Cause Not Known)
1654	Engine Misfire Cylinder 1 - Condition Exists
1655	Engine Misfire Cylinder 2 - Condition Exists
1656	Engine Misfire Cylinder 3 - Condition Exists
1657	Engine Misfire Cylinder 4 - Condition Exists
1658	Engine Misfire Cylinder 5 - Condition Exists

Code	Meaning
1659	Engine Misfire Cylinder 6 - Condition Exists
1663	Catalyst Inlet Temperature Sensor Swapped with Outlet - Condition Exists
1664	Catalyst Missing - Condition Exists
1665	Exhaust Gas Temperature 1 Circuit - Voltage Below Normal, or Shorted to Low Source
1666	Exhaust Gas Temperature Circuit 1 - Voltage Above Normal, or Shorted to Low Source
1667	Exhaust Gas Temperature 1 - Data Erratic, Intermittent, or Incorrect
1668	Catalyst Tank Level Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
1669	Catalyst Tank Level Sensor Circuit - Voltage Above Normal, or Shorted to High Source
1671	Catalyst Tank Level - Data Valid but Below Normal Operational Range - Moderately Severe Level.
1673	Catalyst Tank Level - Data Erratic, Intermittent, or Incorrect
1674	Exhaust Gas Temperature 2 Circuit - Voltage Below Normal, or Shorted to Low Source
1675	Exhaust Gas Temperature 2 Circuit - Voltage Above Normal, or Shorted to Low Source
1676	Exhaust Gas Temperature 2 - Data Erratic, Intermittent, or Incorrect
1677	Catalyst Tank Temperature - Voltage Below Normal, or Shorted to Low Source
1678	Catalyst Tank Temperature - Voltage Above Normal, or Shorted to High Source
1679	Catalyst Tank Temperature - Data Erratic, Intermittent, or Incorrect
1681	Dosing Control Unit - Bad Intelligent Device or Component
1682	Catalyst Reagent Dosing Unit Input Lines - Condition Exists
1683	Catalyst Tank Heater Circuit - Voltage Above Normal, or Shorted to High Source
1684	Catalyst Tank Heater Circuit - Voltage Above Normal, or Shorted to High Source
1687	Catalyst Over Temperature - Data Valid but Above Normal Operational Range - Most Severe Level
1689	Real-Time Clock Power Interrupt - Data Erratic, Intermittent or Incorrect
1692	Aftertreatment Outlet NOx Sensor - Voltage Below Normal or Shorted to Low Source
1694	Aftertreatment Outlet NOx Sensor - Data Erratic, Intermittent, or Incorrect
1697	Aftertreatment #1 Air Enable Actuator - Voltage Above Normal, or Shorted to High Source
1698	Aftertreatment #1 Air Enable Actuator - Voltage Below Normal, or Shorted to Low Source
1699	Catalyst Tank Level Sensor - Data Erratic, Intermittent, or Incorrect
1711	Dosing Control Unit Datalink - Abnormal Update Rate
1712	Catalyst Tank Heater Circuit - Data Valid But Below Normal Operating Range - Moderately Severe Level
1713	Catalyst Tank Heater Circuit - Data Valid But Above Normal Operating Range - Moderately Severe Level
1716	Auxiliary Temperature Sensor Input 1 Circuit - Root Cause Not Known
1717	Exhaust Gas Temperature 1 - Data Valid but Above Normal Operational Range - Least Severe Level
1718	Engine Misfire for Multiple Cylinders - Condition Exists
1848	Intake Manifold 1 Temperature - Abnormal Rate of Change
1849	Exhaust Gas Temperature 1 - Abnormal Rate of Change
1851	Exhaust Gas Temperature 2 - Abnormal Rate of Change
1892	Wheel-Based Vehicle Speed - Data Valid but Below Normal Operational Range - Moderately Severe Level
1911	Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Most Severe Level
2183	Engine Brake Actuator Driver 1 Circuit - Voltage Below Normal, or Shorted to Low Source
2185	Sensor Supply Voltage 4 Circuit - Voltage Above Normal or Shorted to High Source
2186	Sensor Supply Voltage 4 Circuit - Voltage Below Normal or Shorted to Low Source
2215	Fuel Pump Delivery Pressure Low Choice
	b Fuel Pump Delivery Pressure Low - Data Valid but Below Normal Operational Range - Moderately Severe Level
	cl Fuel Pump Delivery Pressure Low - Data Valid but Below Normal Operational Range - Moderately Severe Level

Code	Meaning
2216	Fuel Pump Delivery Pressure High Choice
	b Fuel Pump Delivery Pressure High - Data Valid but Above Normal Operational Range - Moderately Severe Level
	cl Fuel Pump Delivery Pressure High - Data Valid but Above Normal Operational Range - Moderately Severe Level
2217	Engine Control Module Calibration Program Memory (RAM Corruption - Condition Exists
2249	Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Most Severe Level
2265	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage Above Normal or Shorted to High Source
2266	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage Below Normal or Shorted to Low Source
2271	EGR Valve Position Sensor Circuit - Voltage Above Normal or shorted to High Source
2272	EGR Valve Position Sensor Circuit - Voltage Below normal or Shorted to Low Source
2273	EGR Valve Differential Pressure Sensor Circuit - Shorted High
2274	EGR Valve Differential Pressure Sensor Circuit - Shorted Low
2292	Fuel Inlet Meter Device - Data Valid but Above Normal Operational Range - Moderately Severe Level
2293	Fuel Inlet Meter Device Flow Demand Lower Than Expected - Data Valid but Below Normal Operational Range - Moderately Severe Level
2311	Fueling Actuator Number 1 Circuit Error Conditions Exists
2321	Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect
2322	Backup Engine Speed/Position Sensor Number 2 - Data Erratic, Intermittent, or Incorrect
2345	Turbocharger Speed Choice
	b Turbocharger Speed - Invalid Rate of Change Detected
	cl Turbocharger Speed Invalid Rate of Change detected - Abnormal Rate of Change
2346	Exhaust Gas Temperature Choice
	b Exhaust Gas Temperature - Data Above Normal
	cl Turbocharger Turbine Inlet Temperature (Calculated - Data Valid but Above Normal Operational Range - Least Severe Level
2347	Turbocharger Compressor Outlet Temperature Choice
	b Turbocharger Compressor Outlet Temperature - Data Above Normal
	cl Turbocharger Compressor Outlet Air Temperature (Calculated - Data Valid but Above Normal Range
2348	EGR Valve Failed Automatic Calibration Procedure
2349	EGR Valve Control Circuit - Current Below Normal or Open Circuit
2351	EGR Valve Control Circuit - Voltage Below Normal or Shorted to Low Source
2352	EGR Valve Control Circuit - Voltage Above Normal or Shorted to High Source
2353	EGR Valve Control Circuit - Current Above Normal or Grounded Circuit
2357	EGR Valve Control - Mechanical System Not Responding Properly or Out of Adjustment
2359	EGR Differential Pressure Sensor - Data Valid But Above Normal Operating Range - Moderately Severe Level
2362	Engine Brake Actuator Circuit Number 1 - Voltage Below Normal or Shorted to Low Source
2363	Engine Brake Actuator Circuit Number 2 - Voltage Below Normal or Shorted to Low Source
2366	Engine Brake Actuator Circuit Number 1 - Voltage Above Normal or Shorted to High Source
2367	Engine Brake Actuator Circuit Number 2 - Voltage Above Normal or Shorted to High Source
2373	Exhaust Gas Pressure Sensor Circuit - Shorted High
2374	Exhaust Gas Pressure Sensor Circuit - Shorted Low
2375	Exhaust Gas Recirculation (EGR Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source
2376	Recirculation Exhaust Gas Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source
2377	Fan Control Circuit - Voltage Above Normal or Shorted to High Source
2381	Turbocharger Position Sensor Circuit - Shorted High

Code	Meaning
2382	Turbocharger Position Sensor Circuit - Shorted Low
2383	Variable Geometry Turbocharger Actuator Circuit - Current Below Normal, or Open Circuit
2384	VGT Actuator Choice <ul style="list-style-type: none"> b VGT Actuator - Voltage Below Normal or Shorted to Low Source cl VGT Actuator Driver Circuit - Voltage Below Normal, or Shorted to Low Source
2385	VGT Actuator Choice <ul style="list-style-type: none"> b VGT Actuator - Voltage Above Normal or Shorted to High Source cl VGT Actuator Driver Circuit - Voltage Above Normal, or Shorted to High Source
2386	Turbocharger Actuator Motor Circuit - Current Above Normal
2387	Turbocharger Actuator Motor - Mechanical System Not Responding Properly
2388	Variable Geometry Turbocharger Actuator Position Failed Automatic Calibration Procedure - Out of Calibration
2554	Exhaust Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
2555	Intake Air Heater Number 1 Circuit - Voltage Above Normal or Shorted to High Source
2556	Intake Air Heater Number 1 Circuit - Voltage Below Normal or Shorted to Low Source
2557	Auxiliary PWM Driver Number 1 - Voltage Above Normal or Shorted to High Source
2558	Auxiliary PWM Driver Number 1 - Voltage Below Normal or Shorted to Low Source
2659	Engine Coolant Temperature - Condition Exists
2771	Aftertreatment Outlet NOx Sensor - Abnormal Update Rate
2772	Aftertreatment Outlet NOx - Data Valid but Above Normal Operational Range - Least Severe Level
2773	Aftertreatment Outlet NOx - Data Valid but Above Normal Operational Range - Most Severe Level
2961	EGR Temperature - Data Valid But Above Normal Operating Range, Least Severe Level
2962	EGR Temperature - Data Valid But Above Normal Operating Range, Moderately Severe Level
2963	Engine Coolant Temperature High - Data Valid but Above Normal Operational Range - Least Severe Level
2964	Intake Manifold Temperature High - Data Valid but Above Normal Operational Range - Least Severe Level
2973	Intake Manifold Pressure Sensor Circuit - Data Erratic, Intermittent or Incorrect
2976	Dosing Control Unit Temperature - Data Erratic, Intermittent, or Incorrect
9121	EGR Valve Actuator Over Temperature (Calculated - Data Above Normal Range)
9122	Variable Geometry Turbocharger Actuator Over Temperature

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