

2023/02/23

Diagnostic Trouble Codes (M0107940-29)

SMCS - 1900

i09725213

## Diagnostic Trouble Codes in J1939 Order

Table 1 lists the diagnostic trouble codes that apply to the engines that are covered in this manual. The codes are listed in J1939 order. Use the electronic service tool to determine the codes that are active or logged. Then refer to the appropriate troubleshooting procedure for more information.

Table 1

List of Diagnostic Trouble Codes	
J1939 Code and Description	Troubleshooting Procedure
27-3 EGR #1 Valve Position : Voltage Above Normal	Troubleshooting, "Valve Position - Test"
27-4 EGR #1 Valve Position : Voltage Below Normal	Troubleshooting, "Valve Position - Test"
29-2 Accelerator Pedal Position #2 : Erratic, Intermittent, or Incorrect	Troubleshooting, "Switch Circuits - Test (Multiposition Throttle Switch)"
29-3 Accelerator Pedal Position #3 : Voltage Above Normal	Troubleshooting, "Speed Control - Test (Analog)" or Troubleshooting, "Speed Control - Test (PWM)"
29-4 Accelerator Pedal Position #3 : Voltage Below Normal	Troubleshooting, "Speed Control - Test (Analog)" or Troubleshooting, "Speed Control - Test (PWM)"
29-8 Accelerator Pedal Position #2 : Abnormal Frequency, Pulse Width, or Period	Troubleshooting, "Speed Control - Test (PWM)"
51-3 Engine Throttle Position : Voltage Above Normal	Troubleshooting, "Valve Position - Test"
51-4 Engine Throttle	Troubleshooting, "Valve Position - Test"

Position : Voltage Below Normal	
91-2	
Accelerator Pedal Position #1 : Erratic, Intermittent, or Incorrect	Troubleshooting, "Switch Circuits - Test (Multiposition Throttle Switch)"
91-3	
Accelerator Pedal Position #1 : Voltage Above Normal	Troubleshooting, "Speed Control - Test (Analog)" or Troubleshooting, "Speed Control - Test (PWM)"
91-4	
Accelerator Pedal Position #1 : Voltage Below Normal	Troubleshooting, "Speed Control - Test (Analog)" or Troubleshooting, "Speed Control - Test (PWM)"
91-8	
Accelerator Pedal Position #1 : Abnormal Frequency, Pulse Width, or Period	Troubleshooting, "Speed Control - Test (PWM)"
97-3	
Water In Fuel Indicator : Voltage Above Normal	Troubleshooting, "Water in Fuel - Test"
97-15	
Water In Fuel Indicator : High - least severe (1)	Troubleshooting, "Fuel Contains Water"
97-16	
Water In Fuel Indicator : High - moderate severity (2)	Troubleshooting, "Fuel Contains Water"
98-1	
Engine Oil Level : Low - most severe (3)	Troubleshooting, "Oil Level Is Low"
98-17	
Engine Oil Level : Low - least severe (1)	Troubleshooting, "Oil Level Is Low"
98-18	
Engine Oil Level : Low - moderate severity (2)	Troubleshooting, "Oil Level Is Low"
100-1	
Engine Oil Pressure : Low - most severe (3)	Troubleshooting, "Oil Pressure Is Low"

100–2	
Engine Oil Pressure : Erratic, Intermittent, or Incorrect	Troubleshooting, "Switch Circuits - Test (Oil Pressure Switch)"
102–16	
Engine Intake	
Manifold #1 Pressure : High - moderate severity (2)	Troubleshooting, "Intake Manifold Air Pressure Is High"
102–18	
Engine Intake	
Manifold #1 Pressure : Low - moderate severity (2)	Troubleshooting, "Intake Manifold Air Pressure Is Low"
105–0	
Engine Intake	
Manifold #1	
Temperature : High - most severe (3)	Troubleshooting, "Intake Manifold Air Temperature Is High"
105–3	
Engine Intake	
Manifold #1	
Temperature : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
105–4	
Engine Intake	
Manifold #1	
Temperature : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
105–15	
Engine Intake	
Manifold #1	
Temperature : High - least severe (1)	Troubleshooting, "Intake Manifold Air Temperature Is High"
105–16	
Engine Intake	
Manifold #1	
Temperature : High - moderate severity (2)	Troubleshooting, "Intake Manifold Air Temperature Is High"
107–3	
Engine Air Filter 1	
Differential Pressure : Voltage Above Normal	Troubleshooting, "Switch Circuits - Test (Air Filter Restriction Switch)"
107–4	
Engine Air Filter 1	
Differential Pressure : Voltage Below Normal	Troubleshooting, "Switch Circuits - Test (Air Filter Restriction Switch)"

107–15	
Engine Air Filter 1	
Differential Pressure	Troubleshooting, "Inlet Air Is Restricted"
high - least severe	
(1)	
107–16	
Engine Air Filter 1	
Differential Pressure	Troubleshooting, "Inlet Air Is Restricted"
high - moderate	
severity (2)	
108–12	
Barometric Pressure :	Troubleshooting, "Sensor Signal (Analog, Active) - Test (Fuel Rail Pressure Sensor and Intake Manifold Air Pressure Sensor)"
Failure	
110–0	
Engine Coolant	
Temperature : High -	Troubleshooting, "Coolant Temperature Is High"
most severe (3)	
110–3	
Engine Coolant	
Temperature : Voltage Above	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
Normal	
110–4	
Engine Coolant	
Temperature : Voltage Below	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
Normal	
110–15	
Engine Coolant	
Temperature : High - least severe (1)	Troubleshooting, "Coolant Temperature Is High"
110–16	
Engine Coolant	
Temperature : High - moderate severity (2)	Troubleshooting, "Coolant Temperature Is High"
111–1	
Engine Coolant Level	
: Low - most severe (3)	Troubleshooting, "Coolant Level Is Low"
111–17	
Engine Coolant Level	
: Low - least severe (1)	Troubleshooting, "Coolant Level Is Low"
111–18	
Engine Coolant Level	
: Low - moderate severity (2)	Troubleshooting, "Coolant Level Is Low"
157–3	
Engine Injector	
Metering Rail #1	Troubleshooting, "Sensor Signal (Analog, Active) - Test (Fuel Rail Pressure Sensor and Intake Manifold Air Pressure Sensor)"

Pressure : Voltage Above Normal	
157-4 Engine Injector Metering Rail #1	Troubleshooting, "Sensor Signal (Analog, Active) - Test (Fuel Rail Pressure Sensor and Intake Manifold Air Pressure Sensor)"
Pressure : Voltage Below Normal	
157-12 Engine Injector Metering Rail #1	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
Pressure : Failure	
157-16 Engine Injector Metering Rail #1	Troubleshooting, "Fuel Rail Pressure Problem"
Pressure : High - moderate severity (2)	
157-18 Engine Injector Metering Rail #1	Troubleshooting, "Fuel Rail Pressure Problem"
Pressure : Low - moderate severity (2)	
168-15 Battery Potential / Power Input #1 : High - least severe (1)	Troubleshooting, "Electrical Power Supply - Test"
168-17 Battery Potential / Power Input #1 : Low - least severe (1)	Troubleshooting, "Electrical Power Supply - Test"
168-31 Battery Potential / Power Input #1	Troubleshooting, "Battery Problem"
172-3 Engine Air Inlet Temperature : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
172-4 Engine Air Inlet Temperature : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
174-3 Engine Fuel Temperature 1 : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
174-4 Engine Fuel Temperature 1 :	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"

Voltage Below Normal	
174–16	
Engine Fuel	
Temperature 1 : High - moderate severity (2)	Troubleshooting, "Fuel Temperature Is High"
177–0	
Transmission Oil	
Temperature : High - most severe (3)	Troubleshooting, "Transmission Oil Temperature Is High"
177–3	
Transmission Oil	
Temperature : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
177–4	
Transmission Oil	
Temperature : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
177–15	
Transmission Oil	
Temperature : High - least severe (1)	Troubleshooting, "Transmission Oil Temperature Is High"
177–16	
Transmission Oil	
Temperature : High - moderate severity (2)	Troubleshooting, "Transmission Oil Temperature Is High"
190–0	
Engine Speed : High - most severe (3)	Troubleshooting, Engine Overspeeds
190–8	
Engine Speed : Abnormal Frequency, Pulse Width, or Period	Troubleshooting, Speed/Timing - Test
190–10	
Engine Speed : Abnormal Rate of Change	Troubleshooting, Engine Speed - Test
190–15	
Engine Speed : High - least severe (1)	Troubleshooting, Engine Overspeeds
411–3	
EGR Differential Pressure : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test (DPF Differential/Inlet Pressure Sensor and NRS Differential/Inlet Pressure Sensor)"
411–4	
EGR Differential	Troubleshooting, "Sensor Signal (Analog, Active) - Test (DPF Differential/Inlet Pressure Sensor and NRS Differential/Inlet Pressure

Pressure : Voltage Below Normal	411–13	Troubleshooting, Sensor Calibration Required - Test
EGR Differential Pressure : Out of Calibration	412–3	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
EGR Temperature : Voltage Above Normal	412–4	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
EGR Temperature : Voltage Below Normal	412–5	Troubleshooting, "NRS Exhaust Gas Temperature Is High"
EGR Temperature : High - least severe (1)	412–6	Troubleshooting, "NRS Exhaust Gas Temperature Is High"
EGR Temperature : High - moderate severity (2)	441–0	Troubleshooting depends on the function of the auxiliary temperature sensor which is defined by the OEM for the application.
Auxiliary Temperature #1 : High - most severe (3)	441–3	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
Auxiliary Temperature #1 : Voltage Above Normal	441–4	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
Auxiliary Temperature #1 : Voltage Below Normal	441–5	Troubleshooting depends on the function of the auxiliary temperature sensor which is defined by the OEM for the application.
Auxiliary Temperature #1 : High - least severe (1)	441–6	Troubleshooting depends on the function of the auxiliary temperature sensor which is defined by the OEM for the application.
Accelerator Pedal #1 Low Idle Switch : Erratic, Intermittent, or Incorrect	558–2	Troubleshooting, "Idle Validation - Test"
Engine Idle Shutdown has Shutdown Engine	593–31	Troubleshooting, "Engine Shutdown While Idling"

594-0	
Engine Idle	
Shutdown Driver Alert	Troubleshooting, "Engine Shutdown While Idling"
Mode : High - most severe (3)	
594-31	
Engine Idle	
Shutdown Driver Alert	Troubleshooting, "Engine Shutdown While Idling"
Mode	
626-5	
Engine Start Enable	
Device 1 : Current Below Normal	Troubleshooting, "Ether Starting Aid - Test"
626-6	
Engine Start Enable	
Device 1 : Current Above Normal	Troubleshooting, "Ether Starting Aid - Test"
630-2	
Calibration Memory : Erratic, Intermittent, or Incorrect	Troubleshooting, "Configuration Parameters"
631-2	
Personality Module : Erratic, Intermittent, or Incorrect	Troubleshooting, "ECM Software - Install"
637-11	
Engine Timing Sensor : Other Failure Mode	Troubleshooting, "Speed/Timing - Test"
639-9	
J1939 Network #1 : Abnormal Update Rate	Troubleshooting, "CAN Data Link - Test"
639-14	
J1939 Network #1 : Special Instruction	Troubleshooting, "Data Link Configuration Status - Test"
651-2	
Engine Injector Cylinder #01 : Erratic, Intermittent, or Incorrect	Troubleshooting, "Injector Data Incorrect - Test"
651-5	
Engine Injector Cylinder #01 : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
651-6	
Engine Injector Cylinder #01 : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"

652-2	
Engine Injector	
Cylinder #02 : Erratic,	Troubleshooting, "Injector Data Incorrect - Test"
Intermittent, or	
Incorrect	
652-5	
Engine Injector	
Cylinder #02 :	Troubleshooting, "Injector Solenoid - Test"
Current Below	
Normal	
652-6	
Engine Injector	
Cylinder #02 :	Troubleshooting, "Injector Solenoid - Test"
Current Above	
Normal	
653-2	
Engine Injector	
Cylinder #03 : Erratic,	Troubleshooting, "Injector Data Incorrect - Test"
Intermittent, or	
Incorrect	
653-5	
Engine Injector	
Cylinder #03 :	Troubleshooting, "Injector Solenoid - Test"
Current Below	
Normal	
653-6	
Engine Injector	
Cylinder #03 :	Troubleshooting, "Injector Solenoid - Test"
Current Above	
Normal	
654-2	
Engine Injector	
Cylinder #04 : Erratic,	Troubleshooting, "Injector Data Incorrect - Test"
Intermittent, or	
Incorrect	
654-5	
Engine Injector	
Cylinder #04 :	Troubleshooting, "Injector Solenoid - Test"
Current Below	
Normal	
654-6	
Engine Injector	
Cylinder #04 :	Troubleshooting, "Injector Solenoid - Test"
Current Above	
Normal	
676-5	
Engine Glow Plug	
Relay : Current	Troubleshooting, "Glow Plug Starting Aid - Test"
Below Normal	
676-6	
Engine Glow Plug	Troubleshooting, "Glow Plug Starting Aid - Test"

Relay : Current Above Normal	
677-5	
Engine Starter Motor Relay Current Above Normal	Troubleshooting, "Relay - Test (Start Relay)"
677-6	
Engine Starter Motor Relay Current Below Normal	Troubleshooting, "Relay - Test (Start Relay)"
723-8	
Engine Speed Sensor #2 : Abnormal Frequency, Pulse Width, or Period	Troubleshooting, "Speed/Timing - Test"
970-31	
Engine Auxiliary Engine Shutdown Switch	This event code will be set when the remote emergency stop switch is activated. This event will prevent engine operation.
977-5	
Fan Drive State : Current Below Normal	Troubleshooting, "Cooling Fan Control - Test"
977-6	
Fan Drive State : Current Above Normal	Troubleshooting, "Cooling Fan Control - Test"
1075-5	
Engine Electric Lift Pump for Engine Fuel Supply : Current Below Normal	Troubleshooting, "Fuel Transfer Pump - Test"
1075-6	
Engine Electric Lift Pump for Engine Fuel Supply : Current Above Normal	Troubleshooting, "Fuel Transfer Pump - Test"
1076-5	
Engine Fuel Injection Pump Fuel Control Valve : Current Below Normal	Troubleshooting, "Fuel Control - Test"
1076-6	
Engine Fuel Injection Pump Fuel Control Valve : Current Above Normal	Troubleshooting, "Fuel Control - Test"
1188-3	
Engine Turbocharger #1 Wastegate	Troubleshooting, "Valve Position - Test"

Position : Voltage Above Normal	
1188-4	
Engine Turbocharger #1 Wastegate	Troubleshooting, "Valve Position - Test"
Position : Voltage Below Normal	
1188-7	
Engine Turbocharger #1 Wastegate Drive : Not Responding Properly	Troubleshooting, "Motorized Valve - Test"
1235-9	
J1939 Network #3 : Abnormal Update Rate	Troubleshooting, "CAN Data Link - Test"
1235-14	
J1939 Network #3 : Special Instruction	Troubleshooting, "Data Link Configuration Status - Test"
1387-0	
Auxiliary Pressure #1 : High - most severe (3)	Troubleshooting depends on the function of the auxiliary pressure sensor which is defined by the OEM for the application.
1387-1	
Auxiliary Pressure #1 : Low - most severe (3)	Troubleshooting depends on the function of the auxiliary pressure sensor which is defined by the OEM for the application.
1387-3	
Auxiliary Pressure #1 : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test (Fuel Rail Pressure Sensor and Intake Manifold Air Pressure Sensor)"
1387-4	
Auxiliary Pressure #1 : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test (Fuel Rail Pressure Sensor and Intake Manifold Air Pressure Sensor)"
1387-15	
Auxiliary Pressure #1 : High - least severe (1)	Troubleshooting depends on the function of the auxiliary pressure sensor which is defined by the OEM for the application.
1387-16	
Auxiliary Pressure #1 : High - moderate severity (2)	Troubleshooting depends on the function of the auxiliary pressure sensor which is defined by the OEM for the application.
1387-17	
Auxiliary Pressure #1 : Low - least severe (1)	Troubleshooting depends on the function of the auxiliary pressure sensor which is defined by the OEM for the application.
1387-18	
Auxiliary Pressure #1 : Low - moderate severity (2)	Troubleshooting depends on the function of the auxiliary pressure sensor which is defined by the OEM for the application.

1639-17	Troubleshooting, "Cooling Fan Speed - Test"
Fan Speed : Low - least severe (1)	
1664-31	Troubleshooting, "Engine Overcrank Occurrence"
Engine Automatic Start Failed	
1761-1	
Aftertreatment #1	
DEF Tank Volume #1 : Low - most severe (3)	Troubleshooting, "DEF Tank Level Is Low"
1761-2	
Aftertreatment #1	
DEF Tank Volume #1 : Erratic, Intermittent, or Incorrect	Troubleshooting, "DEF Tank Sensor - Test"
1761-12	
Aftertreatment #1	
DEF Tank Volume #1 : Failure	Troubleshooting, "DEF Tank Sensor - Test"
1761-17	
Aftertreatment #1	
DEF Tank Volume #1 : Low - least severe (1)	Troubleshooting, "DEF Tank Level Is Low"
1761-18	
Aftertreatment #1	
DEF Tank Volume #1 : Low - moderate severity (2)	Troubleshooting, "DEF Tank Level Is Low"
2630-3	
Engine Charge Air Cooler Outlet Temperature : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
2630-4	
Engine Charge Air Cooler Outlet Temperature : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
2659-7	
EGR Mass Flow Rate : Not Responding Properly	Troubleshooting, "NRS Mass Flow Rate Problem"
2791-5	
EGR Valve Control : Current Below Normal	Troubleshooting, "Motorized Valve - Test"

2791-6		
EGR Valve Control : Current Above Normal	Troubleshooting, "Motorized Valve - Test"	
2791-7		
EGR Valve Control : Not Responding Properly	Troubleshooting, "Motorized Valve - Test"	
2882-2		
Engine Alternate Rating Select : Erratic, Intermittent, or Incorrect	Troubleshooting, "Mode Selection - Test"	
2970-2		
Accelerator Pedal #2 Low Idle Switch : Erratic, Intermittent, or Incorrect	Troubleshooting, "Idle Validation - Test"	
3031-7		
Aftertreatment #1 DEF Tank Temperature : Not Responding Properly	Troubleshooting, "DEF Tank Temperature Is Low"	
3031-12		
Aftertreatment #1 DEF Tank Temperature : Failure	Troubleshooting, "DEF Tank Sensor - Test"	
3031-16		
Aftertreatment #1 DEF Tank Temperature : High - moderate severity (2)	Troubleshooting, "DEF Tank Temperature Is High"	
3031-18		
Aftertreatment #1 DEF Tank Temperature : Low - moderate severity (2)	Troubleshooting, "DEF Tank Temperature Is Low"	
3064-13		
Aftertreatment Diesel Particulate Filter System Monitor - Out of Calibration	<p>This diagnostic code indicates that an ECM has been replaced and the "Aftertreatment #1 DPF Life Remaining" has not been updated. Update via an ECM replacement file (If the ECM being replaced were able to still communicate with the electronic service tool). Refer to Troubleshooting, ECM - Replace. If the ECM being replaced were not able to communicate with the electronic service tool, run the DPF Ash Load Calibration procedure. Once the Aftertreatment #1 DPF Life Remaining value has been provided, or calculated via the calibration procedure, then this diagnostic code will be automatically cleared.</p>	
3216-12		
Aftertreatment #1 Intake NOx : Failure	Troubleshooting, "Sensor (Data Link Type) - Test"	

3217-16	Troubleshooting, "Clean Emissions Module Has High Oxygen Level"
Aftertreatment #1 Intake O2 : High - moderate severity (2)	
3226-12	Troubleshooting, "Sensor (Data Link Type) - Test"
Aftertreatment #1 Outlet NOx : Failure	
3227-16	Troubleshooting, "Clean Emissions Module Has High Oxygen Level"
Aftertreatment #1 Outlet O2 : High - moderate severity (2)	
3242-18	Troubleshooting, "Diesel Particulate Filter Temperature Is Low"
Aftertreatment #1 DPF Intake Temperature : Low - moderate severity (2)	
3251-1	Troubleshooting, "Diesel Particulate Filter Has Low Inlet Pressure"
Aftertreatment #1 DPF Differential Pressure : Low - most severe (3)	
3251-3	Troubleshooting, "Sensor Signal (Analog, Active) - Test (DPF Differential/Inlet Pressure Sensor and NRS Differential/Inlet Pressure Sensor)"
Aftertreatment #1 DPF Differential Pressure : Voltage Above Normal	
3251-4	Troubleshooting, "Sensor Signal (Analog, Active) - Test (DPF Differential/Inlet Pressure Sensor and NRS Differential/Inlet Pressure Sensor)"
Aftertreatment #1 DPF Differential Pressure : Voltage Below Normal	
3251-13	Troubleshooting, "Sensor Calibration Required - Test"
Aftertreatment #1 DPF Differential Pressure : Out of Calibration	
3251-16	Troubleshooting, "Diesel Particulate Filter Collects Excessive Soot"
Aftertreatment #1 DPF Differential Pressure High: Moderate Severity (2)	
3251-18	Troubleshooting, "Diesel Particulate Filter Has Low Inlet Pressure"
Aftertreatment #1 DPF Differential Pressure : Low - moderate severity (2)	

3358-3	Troubleshooting, "Sensor Signal (Analog, Active) - Test (DPF Differential/Inlet Pressure Sensor and NRS Differential/Inlet Pressure Sensor)"
3358-4	Troubleshooting, "Sensor Signal (Analog, Active) - Test (DPF Differential/Inlet Pressure Sensor and NRS Differential/Inlet Pressure Sensor)"
EGR Inlet Pressure : Voltage Above Normal	
3358-13	Troubleshooting, "Sensor Calibration Required - Test"
EGR Inlet Pressure : Out of Calibration	
3361-5	Troubleshooting, "DEF Injector - Test"
Aftertreatment #1 DEF Dosing Unit : Current Below Normal	
3361-6	Troubleshooting, "DEF Injector - Test"
Aftertreatment #1 DEF Dosing Unit : Current Above Normal	
3361-7	Troubleshooting, "DEF Module Does Not Respond"
Aftertreatment #1 DEF Dosing Unit : Not Responding Properly	
3362-14	Troubleshooting, "DEF Does Not Purge"
Aftertreatment #1 DEF Dosing Unit Input Lines : Special Instruction	
3363-5	Troubleshooting, "Coolant Diverter - Test"
Aftertreatment #1 DEF Tank Heater : Current Below Normal	
3363-6	Troubleshooting, "Coolant Diverter - Test"
Aftertreatment #1 DEF Tank Heater : Current Above Normal	
3369-9	Troubleshooting, "CAN Data Link - Test"
Network Service Status 1: Abnormal Update Rate	
3464-5	Troubleshooting, "Motorized Valve - Test"
Engine Throttle Actuator 1 Control Command : Current Below Normal	

3464-6	Troubleshooting, "Motorized Valve - Test"
Engine Throttle Actuator 1 Control Command : Current Above Normal	
3464-7	Troubleshooting, "Motorized Valve - Test"
Engine Throttle Actuator 1 Control Command : Not Responding Properly	
3509-3	Troubleshooting, "Sensor Supply - Test"
Sensor Supply Voltage 1 : Voltage Above Normal	
3509-4	Troubleshooting, "Sensor Supply - Test"
Sensor Supply Voltage 1 : Voltage Below Normal	
3510-3	Troubleshooting, "Sensor Supply - Test"
Sensor Supply Voltage 2 : Voltage Above Normal	
3510-4	Troubleshooting, "Sensor Supply - Test"
Sensor Supply Voltage 2 : Voltage Below Normal	
3516-2	Troubleshooting, "DEF Tank Sensor - Test"
Aftertreatment #1 DEF Concentration : Erratic, Intermittent, or Incorrect	
3516-11	Troubleshooting, "NOx Conversion Is Low"
Aftertreatment #1 DEF Concentration : Other Failure Mode	
3516-12	Troubleshooting, "DEF Tank Sensor - Test"
Aftertreatment #1 DEF Concentration : Failure	
3516-15	Troubleshooting, "NOx Conversion Is Low"
Aftertreatment #1 DEF Concentration : High - least severe (1)	
3516-18	Troubleshooting, "NOx Conversion Is Low"
Aftertreatment #1 DEF Concentration : Low - moderate severity (2)	
3563-3	Troubleshooting, "Sensor Signal (Analog, Active) - Test (Fuel Rail Pressure Sensor and Intake Manifold Air Pressure Sensor)"
Engine Intake	

Manifold #1 Absolute Pressure : Voltage Above Normal

3563-4

Engine Intake Manifold #1 Absolute Pressure : Voltage Below Normal

3563-13

Engine Intake Manifold #1 Absolute Pressure : Out of Calibration

3609-3

DPF #1 Intake Pressure : Voltage Above Normal

3609-4

DPF #1 Intake Pressure : Voltage Below Normal

3609-13

DPF #1 Intake Pressure : Out of Calibration

3714-31

Diesel Particulate Filter Active Regeneration Inhibited Due to Temporary System Lockout

3715-31

Diesel Particulate Filter Active Regeneration Inhibited Due to Permanent System Lockout

3719-0

DPF #1 Soot Loading Percent : High - most severe (3)

3719-16

DPF #1 Soot Loading Percent : High - moderate severity (2)

4206-9

TSC1 Message Counter : Incorrect

Troubleshooting, "Sensor Signal (Analog, Active) - Test (Fuel Rail Pressure Sensor and Intake Manifold Air Pressure Sensor)"

Troubleshooting, "Sensor Calibration Required - Test"

Troubleshooting, "Sensor Signal (Analog, Active) - Test (DPF Differential/Inlet Pressure Sensor and NRS Differential/Inlet Pressure Sensor)"

Troubleshooting, "Sensor Signal (Analog, Active) - Test (DPF Differential/Inlet Pressure Sensor and NRS Differential/Inlet Pressure Sensor)"

Troubleshooting, "Sensor Calibration Required - Test"

Troubleshooting, "Diesel Particulate Filter Collects Excessive Soot"

The ECM has detected an incorrect counter value from the application over TSC1. The engine will be derated.

Fully power-down the application. If the fault persists after the application has been restarted, contact the Dealer Solutions Network (DSN).

4207-9 TSC1 Message Checksum : Incorrect	The ECM has detected an incorrect checksum value from the application over TSC1. The engine will be derated. Fully power-down the application. If the fault persists after the application has been restarted, contact the Dealer Solutions Network (DSN).
4212-5 Fan Drive Bypass Command Status: Current Below Normal	Troubleshooting, "Cooling Fan Control - Test"
4212-6 Fan Drive Bypass Command Status: Current Above Normal	Troubleshooting, "Cooling Fan Control - Test"
4212-13 Fan Drive Bypass Command Status: Out of Calibration	Troubleshooting, "Cooling Fan - Calibrate"
4334-3 Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure: Voltage Above Normal	Troubleshooting, "DEF Pump Pressure Sensor - Test"
4334-4 Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure: Voltage Below Normal	Troubleshooting, "DEF Pump Pressure Sensor - Test"
4334-7 Aftertreatment 1 Diesel Exhaust Fluid Doser Absolute Pressure: Not Responding Properly	Troubleshooting, "DEF Pressure Is Low"
4334-15 Aftertreatment #1 DEF #1 Pressure (absolute) : High - least severe (1)	Troubleshooting, "DEF Pressure Is High"
4334-16 Aftertreatment #1 DEF #1 Pressure (absolute) : High - moderate severity (2)	Troubleshooting, "DEF Pressure Is High"
4334-18 Aftertreatment #1 DEF #1 Pressure (absolute) : Low -	Troubleshooting, "DEF Pressure Is Low"

moderate severity (2)	
4337-5	
Aftertreatment #1	
DEF Doser #1	Troubleshooting, "DEF Pump Motor - Test"
Temperature : Current Below Normal	
4337-6	
Aftertreatment #1	
DEF Doser #1	Troubleshooting, "DEF Pump Motor - Test"
Temperature : Current Above Normal	
4337-8	
Aftertreatment #1	
DEF Doser #1	Troubleshooting, "DEF Pump - Replace"
Temperature : Abnormal Frequency, Pulse Width, or Period	
4354-5	
Aftertreatment #1	
DEF Line Heater #1 : Current Below Normal	Troubleshooting, "DEF Line Heater - Test"
4354-6	
Aftertreatment #1	
DEF Line Heater #1 : Current Above Normal	Troubleshooting, "DEF Line Heater - Test"
4355-5	
Aftertreatment #1	
DEF Line Heater #2 : Current Below Normal	Troubleshooting, "DEF Line Heater - Test"
4355-6	
Aftertreatment #1	
DEF Line Heater #2 : Current Above Normal	Troubleshooting, "DEF Line Heater - Test"
4356-5	
Aftertreatment #1	
DEF Line Heater #3 : Current Below Normal	Troubleshooting, "DEF Line Heater - Test"
4356-6	
Aftertreatment #1	
DEF Line Heater #3 : Current Above Normal	Troubleshooting, "DEF Line Heater - Test"

4360-10 Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Abnormal Rate of Change	Troubleshooting, "SCR Catalyst Has Incorrect Inlet Temperature"
4360-16 Aftertreatment #1 SCR Catalyst Intake Gas Temperature : High - moderate severity (2)	Troubleshooting, "SCR Catalyst Has Incorrect Inlet Temperature"
4360-17 Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Low - least severe (1)	Troubleshooting, "SCR Catalyst Has Incorrect Inlet Temperature"
4360-18 Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Low - moderate severity (2)	Troubleshooting, "SCR Catalyst Has Incorrect Inlet Temperature"
4364-2 Aftertreatment #1 SCR Catalyst Conversion Efficiency : Erratic, Intermittent, or Incorrect	Troubleshooting, "NOx Conversion Is Low"
4364-18 Aftertreatment #1 SCR Catalyst Conversion Efficiency : Low - moderate severity (2)	Troubleshooting, "NOx Conversion Is Low"
4374-3 Aftertreatment #1 DEF Pump #1 Motor Speed : Voltage Above Normal	Troubleshooting, "DEF Pump Motor - Test"
4374-4 Aftertreatment #1 DEF Pump #1 Motor Speed : Voltage Below Normal	Troubleshooting, "DEF Pump Motor - Test"
4374-5 Aftertreatment #1 DEF Pump #1 Motor Speed : Current Below Normal	Troubleshooting, "DEF Pump Motor - Test"

4374-6	
Aftertreatment #1	
DEF Pump #1 Motor	Troubleshooting, "DEF Pump Motor - Test"
Speed : Current	
Above Normal	
4374-8	
Aftertreatment #1	
DEF Pump #1 Motor	Troubleshooting, "DEF Pump - Replace"
Speed : Abnormal	
Frequency, Pulse	
Width, or Period	
4376-5	
Aftertreatment #1	
DEF Return Valve :	Troubleshooting, "DEF Return Valve - Test"
Current Below	
Normal	
4376-6	
Aftertreatment #1	
DEF Return Valve :	Troubleshooting, "DEF Return Valve - Test"
Current Above	
Normal	
4376-7	
Aftertreatment #1	
DEF Return Valve :	Troubleshooting, "DEF Return Valve - Test"
Not Responding	
Properly	
4376-14	
Aftertreatment #1	
DEF Return Valve :	Troubleshooting, "DEF Return Valve - Test"
Special Instruction	
4750-3	
EGR Cooler Inlet	
Temperature :	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
Voltage Above	
Normal	
4750-4	
EGR Cooler Inlet	
Temperature :	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
Voltage Below	
Normal	
4765-17	
Aftertreatment #1	
Diesel Oxidation	
Catalyst Intake Gas	
Temperature : Low -	
least severe (1)	Troubleshooting, "Diesel Oxidation Catalyst Has Incorrect Inlet Temperature"
5246-0	
Aftertreatment SCR	
Operator Inducement	
Severity : High - most	
severe (3)	Troubleshooting, "SCR Warning System Problem"

5246-15	
Aftertreatment SCR Operator Inducement Severity : High - least severe (1)	Troubleshooting, "SCR Warning System Problem"
5246-16	
Aftertreatment SCR Operator Inducement Severity : High - moderate severity (2)	Troubleshooting, "SCR Warning System Problem"
5298-17	
Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency : Low - least severe (1)	Troubleshooting, "Diesel Oxidation Catalyst Has Low Conversion Efficiency"
5392-31	
Aftertreatment #1 DEF Dosing Unit #1 Loss of Prime	Troubleshooting, "DEF Pressure Is Low"
5421-5	
Engine Turbocharger Wastegate Actuator #1 : Current Below Normal	Troubleshooting, "Motorized Valve - Test"
5421-6	
Engine Turbocharger Wastegate Actuator #1 : Current Above Normal	Troubleshooting, "Motorized Valve - Test"
5571-0	
High Pressure Common Rail Fuel Pressure Relief Valve : High - most severe (3)	Troubleshooting, "Fuel Rail Pressure Problem"
5742-12	
Aftertreatment Diesel Particulate Filter Temperature Sensor Module : Failure	Troubleshooting, "Sensor (Data Link Type) - Test"
5743-12	
Aftertreatment 1 SCR Temperature Sensor Module : Failure	Troubleshooting, "Sensor (Data Link Type) - Test"
5758-11	
Aftertreatment #1 Intake Gas Sensor Power Supply : Other Failure Mode	Troubleshooting, "NOx Sensor Supply - Test"

5826-0	Troubleshooting, "Aftertreatment Warning System Problem"
Emission Control System Operator Inducement Severity (3)	
5826-15	Troubleshooting, "Aftertreatment Warning System Problem"
Emission Control System Operator Inducement Severity (1)	
5826-16	Troubleshooting, "Aftertreatment Warning System Problem"
Emission Control System Operator Inducement Severity (2)	
5759-11	Troubleshooting, "NOx Sensor Supply - Test"
Aftertreatment #1	
Outlet Gas Sensor	
Power Supply : Other	
Failure Mode	
5798-7	Troubleshooting, "DEF Tank Temperature Is Low"
Aftertreatment #1	
DEF Dosing Unit	
Heater Temperature :	
Not Responding Properly	
5965-5	Troubleshooting, "Relay - Test (SCR Main Relay)"
Aftertreatment #1	
DEF Control Module	
Relay Control :	
Current Below Normal	
5965-6	Troubleshooting, "Relay - Test (SCR Main Relay)"
Aftertreatment #1	
DEF Control Module	
Relay Control :	
Current Above Normal	
7032-31	Troubleshooting, "Diesel Particulate Filter Collects Excessive Soot"
Aftertreatment System Has	
Shutdown Engine	
7105-31	Troubleshooting, "NOx Conversion Is Low"
Aftertreatment #1	
Inconsistent Configuration	
Detected	
7343-31	Troubleshooting, "SCR Inducement Emergency Override"
SCR Operator	
Inducement Override	
Renewal Required	

8631-17	Troubleshooting, Turbocharger - Clean
8631-18	Troubleshooting, Turbocharger - Clean
12853-0	Troubleshooting, Ether Actuation Occurrence Is Excessive

## Particulate Control Diagnostics

EU Stage V regulations mandate that a Particulate Control Diagnostic (PCD) fault must be raised if the system detects complete removal of the aftertreatment system, or loss of the particulate aftertreatment function. PCD's behave as regular Diagnostic Trouble Codes and standard troubleshooting procedures should be followed. Table 2 is for reference only.

Table 2

Diagnostic Trouble Codes for Particulate Control Diagnostics	
J1939 Code and Description	Troubleshooting Procedure
105-3 Engine Intake Manifold #1 Temperature : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
105-4 Engine Intake Manifold #1 Temperature : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
3251-3 Aftertreatment #1 DPF Differential Pressure : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
3251-4 Aftertreatment #1 DPF Differential Pressure : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
3251-13 Aftertreatment #1 DPF Differential Pressure : Out of Calibration	Troubleshooting, "Sensor Calibration Required - Test"
3251-18 Aftertreatment #1 DPF Differential Pressure : Low - moderate severity (2)	Troubleshooting, "Diesel Particulate Filter Has Low Inlet Pressure"
3563-3 Engine Intake Manifold #1 Absolute Pressure : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
3563-4 Engine Intake Manifold #1 Absolute Pressure : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"

3563-13	Troubleshooting, "Sensor Calibration Required - Test"
Engine Intake Manifold #1 Absolute Pressure : Out of Calibration	
3609-3	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
DPF #1 Intake Pressure : Voltage Above Normal	
3609-4	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
DPF #1 Intake Pressure : Voltage Below Normal	
3609-13	Troubleshooting, "Sensor Calibration Required - Test"
DPF #1 Intake Pressure : Out of Calibration	

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