



Service Information System

Previous Screen

Welcome: n050px7

◀ Product: NO EQUIPMENT SELECTED
 Model: NO EQUIPMENT SELECTED
 Configuration: NO EQUIPMENT SELECTED

Troubleshooting C4.4 and C7.1 Engines

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Diagnostic Trouble Codes

SMCS - 1900

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.

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Table 1

List of Diagnostic Trouble Codes		
J1939 Code and Description	CDL Code and Description	Troubleshooting Procedure
29-2 Accelerator Pedal Position #2 : Erratic, Intermittent, or Incorrect	774-2 Secondary Throttle Position Sensor : Erratic, Intermittent, or Incorrect	Troubleshooting, "Switch Circuits - Test (Multiposition Throttle Switch)"
29-3 Accelerator Pedal Position #2 : Voltage Above Normal	774-3 Secondary Throttle Position	Troubleshooting, "Speed Control - Test (Analog) / Speed Control - Test (PWM)"

	Sensor : Voltage Above Normal	
29-4 Accelerator Pedal Position #2 : Voltage Below Normal	774-4 Secondary Throttle Position Sensor : Voltage Below Normal	Troubleshooting, "Speed Control - Test (Analog) / Speed Control - Test (PWM)"
29-8 Accelerator Pedal Position #2 : Abnormal Frequency, Pulse Width, or Period	774-8 Secondary Throttle Position Sensor : Abnormal Frequency, Pulse Width, or Period	Troubleshooting, "Speed Control - Test (PWM)"
91-2 Accelerator Pedal Position #1 : Erratic, Intermittent, or Incorrect	91-2 Throttle Position Sensor : Erratic, Intermittent, or Incorrect	Troubleshooting, "Switch Circuits - Test (Multiposition Throttle Switch)"
91-3 Accelerator Pedal Position #1 : Voltage Above Normal	91-3 Throttle Position Sensor : Voltage Above Normal	Troubleshooting, "Speed Control - Test (Analog) / Speed Control - Test (PWM)"
91-4 Accelerator Pedal Position #1 : Voltage Below Normal	91-4 Throttle Position Sensor : Voltage Below Normal	Troubleshooting, "Speed Control - Test (Analog) / Speed Control - Test (PWM)"
91-8 Accelerator Pedal Position #1 : Abnormal Frequency, Pulse Width, or Period	91-8 Throttle Position Sensor : Abnormal Frequency, Pulse Width, or Period	Troubleshooting, "Speed Control - Test (PWM)"
97-3 Water In Fuel Indicator : Voltage Above Normal	3547-3 Water in Fuel System Switch : Voltage Above Normal	Troubleshooting, "Water in Fuel - Test"
100-3 Engine Oil Pressure : Voltage Above Normal	100-3 Engine Oil Pressure Sensor : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
100-4 Engine Oil Pressure : Voltage Below Normal	100-4 Engine Oil Pressure Sensor : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
105-3 Engine Intake Manifold #1 Temperature : Voltage Above Normal	172-3 Intake Manifold Air Temperature Sensor : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
105-4 Engine Intake Manifold #1 Temperature : Voltage Below Normal	172-4 Intake Manifold Air Temperature Sensor : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"

107-3 Engine Air Filter 1 Differential Pressure : Voltage Above Normal	582-3 Air Filter Differential Pressure Switch voltage above normal	Troubleshooting, "Switch Circuits - Test (Air Filter Restriction Switch)"
107-4 Engine Air Filter 1 Differential Pressure : Voltage Below Normal	582-4 Air Filter Differential Pressure Switch voltage below normal	Troubleshooting, "Switch Circuits - Test (Air Filter Restriction Switch)"
110-3 Engine Coolant Temperature : Voltage Above Normal	110-3 Engine Coolant Temperature Sensor : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
110-4 Engine Coolant Temperature : Voltage Below Normal	110-4 Engine Coolant Temperature Sensor : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
157-3 Engine Injector Metering Rail #1 Pressure : Voltage Above Normal	1797-3 Fuel Rail Pressure Sensor : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
157-4 Engine Injector Metering Rail #1 Pressure : Voltage Below Normal	1797-4 Fuel Rail Pressure Sensor : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
168-2 Battery Potential / Power Input #1 : Erratic, Intermittent, or Incorrect	168-2 Electrical System Voltage : Erratic, Intermittent, or Incorrect	Troubleshooting, "Electrical Power Supply - Test"
168-3 Battery Potential / Power Input #1 : Voltage Above Normal	168-3 Electrical System Voltage : Voltage Above Normal	Troubleshooting, "Electrical Power Supply - Test"
168-4 Battery Potential / Power Input #1 : Voltage Below Normal	168-4 Electrical System Voltage : Voltage Below Normal	Troubleshooting, "Electrical Power Supply - Test"
174-3 Engine Fuel Temperature 1 : Voltage Above Normal	174-3 Fuel Temperature Sensor voltage above normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
174-4 Engine Fuel Temperature 1 : Voltage Below Normal	174-4 Fuel Temperature Sensor voltage below normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"

190-8 Engine Speed : Abnormal Frequency, Pulse Width, or Period	190-8 Engine Speed Sensor : Abnormal Frequency, Pulse Width, or Period	Troubleshooting, "Speed/Timing - Test"
441-3 Auxiliary Temperature #1 : Voltage Above Normal	1836-3 Auxiliary Temperature Sensor voltage above normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
441-4 Auxiliary Temperature #1 : Voltage Below Normal	1836-4 Auxiliary Temperature Sensor voltage below normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
558-2 Accelerator Pedal #1 Low Idle Switch : Erratic, Intermittent, or Incorrect	1634-2 Idle Validation Switch #1 : Erratic, Intermittent, or Incorrect	Troubleshooting, "Idle Validation - Test"
626-5 Engine Start Enable Device 1 : Current Below Normal	2417-5 Ether Injection Control Solenoid : Current Below Normal	Troubleshooting, "Ether Starting Aid - Test"
626-6 Engine Start Enable Device 1 : Current Above Normal	2417-6 Ether Injection Control Solenoid : Current Above Normal	Troubleshooting, "Ether Starting Aid - Test"
630-2 Calibration Memory : Erratic, Intermittent, or Incorrect	268-2 Programmed Parameter Fault : Erratic, Intermittent, or Incorrect	Troubleshooting, "Configuration Parameters"
631-2 Calibration Module : Erratic, Intermittent, or Incorrect	253-2 Personality Module erratic, intermittent or incorrect	Troubleshooting, "ECM Software - Install"
637-11 Engine Timing Sensor : Other Failure Mode	261-11 Engine Timing Offset fault	Troubleshooting, "Speed/Timing - Test"
639-9 J1939 Network #1 : Abnormal Update Rate	247-9 SAE J1939 Data Link : Abnormal Update Rate	Troubleshooting, "CAN Data Link - Test"
639-14 J1939 Network #1 : Special Instruction	247-14 SAE J1939 Data Link : Special Instruction	Troubleshooting, "Data Link Configuration Status - Test"
651-5 Engine Injector Cylinder #01 : Current Below Normal	1-5 Cylinder #1 Injector : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"

651-6 Engine Injector Cylinder #01 : Current Above Normal	1-6 Cylinder #1 Injector : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"
652-5 Engine Injector Cylinder #02 : Current Below Normal	2-5 Cylinder #2 Injector : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
652-6 Engine Injector Cylinder #02 : Current Above Normal	2-6 Cylinder #2 Injector : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"
653-5 Engine Injector Cylinder #03 : Current Below Normal	3-5 Cylinder #3 Injector : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
653-6 Engine Injector Cylinder #03 : Current Above Normal	3-6 Cylinder #3 Injector : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"
654-5 Engine Injector Cylinder #04 : Current Below Normal	4-5 Cylinder #4 Injector : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
654-6 Engine Injector Cylinder #04 : Current Above Normal	4-6 Cylinder #5 Injector : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"
655-5 Engine Injector Cylinder #05 : Current Below Normal	5-5 Cylinder #5 Injector : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
655-6 Engine Injector Cylinder #05 : Current Above Normal	5-6 Cylinder #4 Injector : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"
656-5 Engine Injector Cylinder #06 : Current Below Normal	6-5 Cylinder #6 Injector : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
656-6 Engine Injector Cylinder #06 : Current Above Normal	6-6 Cylinder #6 Injector : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"
676-5 Engine Glow Plug Relay : Current Below Normal	2246-5 Glow Plug Start Aid Relay : Current Below Normal	Troubleshooting, "Glow Plug Starting Aid - Test"
676-6 Engine Glow Plug Relay : Current Above Normal	2246-6 Glow Plug Start Aid Relay : Current Above Normal	Troubleshooting, "Glow Plug Starting Aid - Test"

677-5 Engine Glow Plug Relay : Current Below Normal	444-5 Starter Motor Relay : Current Below Normal	Troubleshooting, "Relay - Test (Start Relay)"
677-6 Engine Glow Plug Relay : Current Above Normal	444-6 Starter Motor Relay : Current Above Normal	Troubleshooting, "Relay - Test (Start Relay)"
678-3 ECU 8 Volts DC Supply : Voltage Above Normal	41-3 8 Volt DC Supply : Voltage Above Normal	Troubleshooting, "Sensor Supply - Test"
678-4 ECU 8 Volts DC Supply : Voltage Below Normal	41-4 8 Volt DC Supply : Voltage Below Normal	Troubleshooting, "Sensor Supply - Test"
723-8 Engine Speed Sensor #2 : Abnormal Frequency, Pulse Width, or Period	342-8 Secondary Engine Speed Sensor : Abnormal Frequency, Pulse Width, or Period	Troubleshooting, "Speed/Timing - Test"
1076-5 Engine Fuel Injection Pump Fuel Control Valve : Current Below Normal	18-5 Fuel Control Valve : Current Below Normal	Troubleshooting, "Solenoid Valve - Test"
1076-6 Engine Fuel Injection Pump Fuel Control Valve : Current Above Normal	18-6 Fuel Control Valve : Current Above Normal	Troubleshooting, "Solenoid Valve - Test"
1188-5 Engine Turbocharger #1 Wastegate Drive : Current Below Normal	526-5 Turbo Wastegate Drive : Current Below Normal	Troubleshooting, "Solenoid Valve - Test"
1188-6 Engine Turbocharger #1 Wastegate Drive : Current Above Normal	526-6 Turbo Wastegate Drive : Current Above Normal	Troubleshooting, "Solenoid Valve - Test"
1196-2 Anti-theft Component Status States : Erratic, Intermittent, or Incorrect	1639-2 Machine Security System Module erratic, intermittent or incorrect	Troubleshooting, "CAN Data Link - Test"
1196-9 Anti-theft Component Status States : Special Instruction	1639-9 Machine Security System Module abnormal update rate	Troubleshooting, "CAN Data Link - Test"
2630-3 Engine Charge Air Cooler	3372-3 Engine Charge Air Cooler #1	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"

Outlet Temperature : Voltage Above Normal	Outlet Temperature Sensor : Voltage Above Normal	
2630-4 Engine Charge Air Cooler Outlet Temperature : Voltage Below Normal	3372-4 Engine Charge Air Cooler #1 Outlet Temperature Sensor : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
2882-2 Engine Alternate Rating Select : Erratic, Intermittent, or Incorrect	1743-2 Engine Operation Mode Selector Switch : Erratic, Intermittent, or Incorrect	Troubleshooting, "Mode Selection - Test"
2970-2 Accelerator Pedal #2 Low Idle Switch : Erratic, Intermittent, or Incorrect	1635-2 Idle Validation Switch #2 : Erratic, Intermittent, or Incorrect	Troubleshooting, "Idle Validation - Test"
3509-3 Sensor Supply Voltage 1 : Voltage Above Normal	262-3 5 Volt Sensor DC Power Supply : Voltage Above Normal	Troubleshooting, "Sensor Supply - Test"
3509-4 Sensor Supply Voltage 1 : Voltage Below Normal	262-4 5 Volt Sensor DC Power Supply : Voltage Below Normal	Troubleshooting, "Sensor Supply - Test"
3563-3 Engine Intake Manifold #1 Absolute Pressure : Voltage Above Normal	1785-3 Intake Manifold Pressure Sensor : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
3563-4 Engine Intake Manifold #1 Absolute Pressure : Voltage Below Normal	1785-4 Intake Manifold Pressure Sensor : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
3563-13 Engine Intake Manifold #1 Absolute Pressure : Out of Calibration	1785-13 Intake Manifold Pressure Sensor : Out of Calibration	Troubleshooting, "Sensor Calibration Required - Test"

Diagnostic Trouble Codes in Cat Data Link (CDL) Code Order

Table 2 lists the diagnostic trouble codes that apply to the engines that are covered in this manual. The codes are listed in CDL code 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 2

List of Diagnostic Trouble Codes		
CDL Code and Description	J1939 Code and Description	Troubleshooting Procedure
1-5 Cylinder #1 Injector : Current Below Normal	651-5 Engine Injector Cylinder #01 : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
1-6 Cylinder #1 Injector : Current Above Normal	651-6 Engine Injector Cylinder #01 : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"
2-5 Cylinder #2 Injector : Current Below Normal	652-5 Engine Injector Cylinder #02 : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
2-6 Cylinder #2 Injector : Current Above Normal	652-6 Engine Injector Cylinder #02 : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"
3-5 Cylinder #3 Injector : Current Below Normal	653-5 Engine Injector Cylinder #03 : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
3-6 Cylinder #3 Injector : Current Above Normal	653-6 Engine Injector Cylinder #03 : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"
4-5 Cylinder #4 Injector : Current Below Normal	654-5 Engine Injector Cylinder #04 : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
4-6 Cylinder #5 Injector : Current Above Normal	654-6 Engine Injector Cylinder #04 : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"
5-5 Cylinder #5 Injector : Current Below Normal	655-5 Engine Injector Cylinder #05 : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
5-6 Cylinder #4 Injector : Current Above Normal	655-6 Engine Injector Cylinder #05 : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"
6-5 Cylinder #6 Injector : Current Below Normal	656-5 Engine Injector Cylinder #06 : Current Below Normal	Troubleshooting, "Injector Solenoid - Test"
6-6 Cylinder #6 Injector : Current Above Normal	656-6 Engine Injector Cylinder #06 : Current Above Normal	Troubleshooting, "Injector Solenoid - Test"

18-5 Fuel Control Valve : Current Below Normal	1076-5 Engine Fuel Injection Pump Fuel Control Valve : Current Below Normal	Troubleshooting, "Solenoid Valve - Test"
18-6 Fuel Control Valve : Current Above Normal	1076-6 Engine Fuel Injection Pump Fuel Control Valve : Current Above Normal	Troubleshooting, "Solenoid Valve - Test"
41-3 8 Volt DC Supply : Voltage Above Normal	678-3 ECU 8 Volts DC Supply : Voltage Above Normal	Troubleshooting, "Sensor Supply - Test"
41-4 8 Volt DC Supply : Voltage Below Normal	678-4 ECU 8 Volts DC Supply : Voltage Below Normal	Troubleshooting, "Sensor Supply - Test"
91-2 Throttle Position Sensor : Erratic, Intermittent, or Incorrect	91-2 Accelerator Pedal Position #1 : Erratic, Intermittent, or Incorrect	Troubleshooting, "Switch Circuits - Test (Multiposition Throttle Switch)"
91-3 Throttle Position Sensor : Voltage Above Normal	91-3 Accelerator Pedal Position #1 : Voltage Above Normal	Troubleshooting, "Speed Control - Test (Analog) / Speed Control - Test (PWM)"
91-4 Throttle Position Sensor : Voltage Below Normal	91-4 Accelerator Pedal Position #1 : Voltage Below Normal	Troubleshooting, "Speed Control - Test (Analog) / Speed Control - Test (PWM)"
91-8 Throttle Position Sensor : Abnormal Frequency, Pulse Width, or Period	91-8 Accelerator Pedal Position #1 : Abnormal Frequency, Pulse Width, or Period	Troubleshooting, "Speed Control - Test (PWM)"
100-3 Engine Oil Pressure Sensor : Voltage Above Normal	100-3 Engine Oil Pressure : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
100-4 Engine Oil Pressure Sensor : Voltage Below Normal	100-4 Engine Oil Pressure : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
110-3 Engine Coolant Temperature Sensor : Voltage Above Normal	110-3 Engine Coolant Temperature : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
110-4 Engine Coolant Temperature	110-4 Engine Coolant Temperature : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"

Sensor : Voltage Below Normal		
168-2 Electrical System Voltage : Erratic, Intermittent, or Incorrect	168-2 Battery Potential / Power Input #1 : Erratic, Intermittent, or Incorrect	Troubleshooting, "Electrical Power Supply - Test"
168-3 Electrical System Voltage : Voltage Above Normal	168-3 Battery Potential / Power Input #1 : Voltage Above Normal	Troubleshooting, "Electrical Power Supply - Test"
168-4 Electrical System Voltage : Voltage Below Normal	168-4 Battery Potential / Power Input #1 : Voltage Below Normal	Troubleshooting, "Electrical Power Supply - Test"
171-4 Ambient Air Temperature Sensor voltage below normal	-	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
172-3 Intake Manifold Air Temperature Sensor : Voltage Above Normal	105-3 Engine Intake Manifold #1 Temperature : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
172-4 Intake Manifold Air Temperature Sensor : Voltage Below Normal	105-4 Engine Intake Manifold #1 Temperature : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
174-3 Fuel Temperature Sensor voltage above normal	174-3 Engine Fuel Temperature 1 : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
174-4 Fuel Temperature Sensor voltage below normal	174-4 Engine Fuel Temperature 1 : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
190-8 Engine Speed Sensor : Abnormal Frequency, Pulse Width, or Period	190-8 Engine Speed : Abnormal Frequency, Pulse Width, or Period	Troubleshooting, "Speed/Timing - Test"
246-9 Proprietary CAN Data Link abnormal update rate	-	Troubleshooting, "CAN Data Link - Test"
246-14 Proprietary CAN Data Link special instruction	-	Troubleshooting, "Data Link Configuration Status - Test"

247-9 SAE J1939 Data Link : Abnormal Update Rate	639-9 J1939 Network #1 : Abnormal Update Rate	Troubleshooting, "CAN Data Link - Test"
247-14 SAE J1939 Data Link : Special Instruction	639-14 J1939 Network #1 : Special Instruction	Troubleshooting, "Data Link Configuration Status - Test"
248-9 Cat Data Link : Abnormal Update	-	Troubleshooting, "Data Link - Test"
253-2 Personality Module erratic, intermittent or incorrect	631-2 Calibration Module : Erratic, Intermittent, or Incorrect	Troubleshooting, "ECM Software - Install"
261-11 Engine Timing Offset fault	637-11 Engine Timing Sensor : Other Failure Mode	Troubleshooting, "Speed/Timing - Test"
262-3 5 Volt Sensor DC Power Supply : Voltage Above Normal	3509-3 Sensor Supply Voltage 1 : Voltage Above Normal	Troubleshooting, "Sensor Supply - Test"
262-4 5 Volt Sensor DC Power Supply : Voltage Below Normal	3509-4 Sensor Supply Voltage 1 : Voltage Below Normal	Troubleshooting, "Sensor Supply - Test"
266-3 Crank Without Injection Input voltage above normal	-	Troubleshooting, "Shutdown - Test"
266-4 Crank Without Injection Input voltage below normal	-	Troubleshooting, "Shutdown - Test"
267-3 Remote Shutdown Input voltage above normal	-	Troubleshooting, "Shutdown - Test"
267-4 Remote Shutdown Input voltage below normal	-	Troubleshooting, "Shutdown - Test"
268-2 Programmed Parameter Fault : Erratic, Intermittent, or Incorrect	630-2 Calibration Memory : Erratic, Intermittent, or Incorrect	Troubleshooting, "Configuration Parameters"
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289-3 Fuel Pressure Sensor - Before Fuel Filter voltage above normal		Troubleshooting, "Sensor Signal (Analog, Active) - Test"
289-4 Fuel Pressure Sensor - Before Fuel Filter voltage below normal	-	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
296-9 Transmission Control abnormal update rate	-	Troubleshooting, "CAN Data Link - Test"
296-14 Transmission Control special instruction	-	Troubleshooting, "Data Link Configuration Status - Test"
342-8 Secondary Engine Speed Sensor : Abnormal Frequency, Pulse Width, or Period	723-8 Engine Speed Sensor #2 : Abnormal Frequency, Pulse Width, or Period	Troubleshooting, "Speed/Timing - Test"
444-5 Starter Motor Relay : Current Below Normal	677-5 Engine Starter Motor Relay : Current Below Normal	Troubleshooting, "Relay - Test (Start Relay)"
444-6 Starter Motor Relay : Current Above Normal	677-6 Engine Starter Motor Relay : Current Above Normal	Troubleshooting, "Relay - Test (Start Relay)"
460-3 Fuel Pressure Sensor - After Fuel Filter voltage above normal	-	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
460-4 Fuel Pressure Sensor - After Fuel Filter voltage below normal	-	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
485-5 Engine Fan Reversing Solenoid : Current Below Normal	-	Troubleshooting, "Cooling Fan Reversing - Test"
485-6 Engine Fan Reversing Solenoid : Current Above Normal	-	Troubleshooting, "Cooling Fan Reversing - Test"
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486-3 Engine Fan Reverse Switch voltage above normal		Troubleshooting, "Cooling Fan Reversing - Test"
486-4 Engine Fan Reverse Switch voltage below normal	-	Troubleshooting, "Cooling Fan Reversing - Test"
526-5 Turbo Wastegate Drive : Current Below Normal	1188-5 Engine Turbocharger #1 Wastegate Drive : Current Below Normal	Troubleshooting, "Solenoid Valve - Test"
526-6 Turbo Wastegate Drive : Current Above Normal	1188-6 Engine Turbocharger #1 Wastegate Drive : Current Above Normal	Troubleshooting, "Solenoid Valve - Test"
582-3 Air Filter Differential Pressure Switch voltage above normal	107-3 Engine Air Filter 1 Differential Pressure : Voltage Above Normal	Troubleshooting, "Switch Circuits - Test (Air Filter Restriction Switch)"
582-4 Air Filter Differential Pressure Switch voltage below normal	107-4 Engine Air Filter 1 Differential Pressure : Voltage Below Normal	Troubleshooting, "Switch Circuits - Test (Air Filter Restriction Switch)"
588-9 Monitor System Display abnormal update rate	-	Troubleshooting, "CAN Data Link - Test"
588-14 Monitor System Display special instruction	-	Troubleshooting, "Data Link Configuration Status - Test"
600-3 Hydraulic Oil Temperature Sensor voltage above normal	-	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
600-4 Hydraulic Oil Temperature Sensor voltage below normal	-	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
774-2 Secondary Throttle Position Sensor : Erratic, Intermittent, or Incorrect	29-2 Accelerator Pedal Position #2 : Erratic, Intermittent, or Incorrect	Troubleshooting, "Switch Circuits - Test (Multiposition Throttle Switch)"
1076-5 Engine Cooling Fan Bypass	-	Troubleshooting, "Cooling Fan Control - Test"

Solenoid current below normal		
1076-6 Engine Cooling Fan Bypass Solenoid current above normal	-	Troubleshooting, "Cooling Fan Control - Test"
1551-13 Engine Demand Fan System out of calibration	-	Troubleshooting, "Cooling Fan - Calibrate"
1603-9 Machine Control Module abnormal update rate	-	Troubleshooting, "CAN Data Link - Test"
1603-14 Machine Control Module special instruction	-	Troubleshooting, "Data Link Configuration Status - Test"
1627-5 Fuel Pump Relay current below normal	-	Troubleshooting, "Relay - Test (Electric Fuel Lift Pump)"
1627-6 Fuel Pump Relay current above normal	-	Troubleshooting, "Relay - Test (Electric Fuel Lift Pump)"
1634-2 Idle Validation Switch #1 : Erratic, Intermittent, or Incorrect	558-2 Accelerator Pedal #1 Low Idle Switch : Erratic, Intermittent, or Incorrect	Troubleshooting, "Idle Validation - Test"
1635-2 Idle Validation Switch #2 : Erratic, Intermittent, or Incorrect	2970-2 Accelerator Pedal #2 Low Idle Switch : Erratic, Intermittent, or Incorrect	Troubleshooting, "Idle Validation - Test"
1639-2 Machine Security System Module erratic, intermittent or incorrect	1196-2 Anti-theft Component Status States : Special Instruction	Troubleshooting, "CAN Data Link - Test"
1639-9 Machine Security System Module abnormal update rate	1196-9 Anti-theft Component Status States : Special Instruction	Troubleshooting, "CAN Data Link - Test"
1743-2 Engine Operation Mode Selector Switch : Erratic, Intermittent, or Incorrect	2882-2 Engine Alternate Rating Select : Erratic, Intermittent, or Incorrect	Troubleshooting, "Mode Selection - Test"

1785-3 Intake Manifold Pressure Sensor : Voltage Above Normal	3563-3 Engine Intake Manifold #1 Absolute Pressure : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
1785-4 Intake Manifold Pressure Sensor : Voltage Below Normal	3563-4 Engine Intake Manifold #1 Absolute Pressure : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
1785-13 Intake Manifold Pressure Sensor : Out of Calibration	3563-13 Engine Intake Manifold #1 Absolute Pressure : Out of Calibration	Troubleshooting, "Sensor Calibration Required - Test"
1797-3 Fuel Rail Pressure Sensor : Voltage Above Normal	157-3 Engine Injector Metering Rail #1 Pressure : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
1797-4 Fuel Rail Pressure Sensor : Voltage Below Normal	157-4 Engine Injector Metering Rail #1 Pressure : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
1836-3 Auxiliary Temperature Sensor voltage above normal	441-3 Auxiliary Temperature #1 : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
1836-4 Auxiliary Temperature Sensor voltage below normal	441-4 Auxiliary Temperature #1 : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
2246-5 Glow Plug Start Aid Relay : Current Below Normal	676-5 Engine Glow Plug Relay : Current Below Normal	Troubleshooting, "Glow Plug Starting Aid - Test"
2246-6 Glow Plug Start Aid Relay : Current Above Normal	676-6 Engine Glow Plug Relay : Current Above Normal	Troubleshooting, "Glow Plug Starting Aid - Test"
2247-3 Fuel Transfer Pump Intake Pressure Sensor voltage above normal	-	Troubleshooting, "Sensor Signal (Analog, Active) - Test"
2247-4 Fuel Transfer Pump Intake Pressure Sensor voltage below normal	-	Troubleshooting, "Sensor Signal (Analog, Active) - Test"

2417-5 Ether Injection Control Solenoid : Current Below Normal	626-5 Engine Start Enable Device 1 : Current Below Normal	Troubleshooting, "Ether Starting Aid - Test"
2417-6 Ether Injection Control Solenoid : Current Above Normal	626-6 Engine Start Enable Device 1 : Current Above Normal	Troubleshooting, "Ether Starting Aid - Test"
3372-3 Engine Charge Air Cooler #1 Outlet Temperature Sensor : Voltage Above Normal	2630-3 Engine Charge Air Cooler Outlet Temperature : Voltage Above Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
3372-4 Engine Charge Air Cooler #1 Outlet Temperature Sensor : Voltage Below Normal	2630-4 Engine Charge Air Cooler Outlet Temperature : Voltage Below Normal	Troubleshooting, "Sensor Signal (Analog, Passive) - Test"
3467-5 Main Power Relay : Current Below Normal	-	Troubleshooting, "Relay - Test (ECM Main Relay)"
3467-6 Main Power Relay : Current Above Normal	-	Troubleshooting, "Relay - Test (ECM Main Relay)"
3547-3 Water in Fuel System Switch : Voltage Above Normal	97-3 Water In Fuel Indicator : Voltage Above Normal	Troubleshooting, "Water in Fuel - Test"

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