

Display Panel Fault Codes

Purpose:

To provide the operator and the technician with information that will aid in the diagnosis of operational problems that may occur.

Normal Operation:

During normal operation the display panel will show the hours of operation on the engine.

A fault code will be displayed when any controller detects a problem, and any one or more parts of that circuit is not operating properly.

The fault code will be displayed that will help identify the problem. If more than one fault exists, the codes can be

viewed by momentarily activating the display mode switch to scroll through all active codes. Each fault will have to be corrected and cleared should there be multiple faults.

Once a code has been displayed, it can be matched to the fault code chart to explain what the display panel logic is reading as a problem, and what corrective action is needed to positively identify and correct the source of the fault.

Diagnostic Mode Operation:

In depth fault codes and information may be accessed through the display panel. [See Entering Diagnostic and Calibration Modes](#) and [see Diagnostic Trouble Codes Overview](#) in Section 40, Group 35.

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Diagnostic Trouble Codes Overview

SPN.FMI Codes

Diagnostic Trouble Codes (DTC) are based on the CAN ISO and J1939 SAE Standards. These are worldwide standards for automotive and off-highway vehicles and are controlled by an ISO industry committee. There are two main parts that make up a DTC:

SPN (Suspect Parameter Number)—this is intended to identify where the problem exists. An example is 94 which the standard defines as Fuel Delivery System. Any vehicles using the 94 in the DTC will therefore be defining a problem with the fuel delivery system. The list of possible SPNs is too large to provide here, but basically, codes in the lower numbers (at this time, below 5000) are assigned numbers that are set standards. SPNs that contain 6 digits, such as 524255 are called proprietary, and are set up in blocks. An example would be 520000—540000 which might be assigned to John Deere Waterloo to use for parameters that are not already defined. At some point, if these proprietary numbers are approved by SAE and the CAN committee, they may be assigned a lower number and become available industry-wide.

FMI (Failure Mode Indicator)—this is a standard set of numbers that defines how the SPN failed. FMIs are defined by the J1939 standard.

By combining the SPN and FMI, the code 94.03 would mean the Fuel Delivery System input voltage is high. With the universal standard, this would apply to any CAN based vehicle.

Failure Modes:

FMI	Condition
00	Data valid but above normal operating range—most severe level
01	Data valid but below normal operational range—most severe level
02	Data erratic, intermittent or incorrect
03	Voltage above normal, or shorted to high source
04	Voltage below normal, or shorted to low source
05	Current below normal or open circuit
06	Current above normal or grounded circuit
07	Mechanical system not responding or out of adjustment
08	Abnormal frequency or pulse width or period
09	Abnormal update rate
10	Abnormal rate of change
11	Root cause not known
12	Bad intelligent device or component
13	Out of calibration
14	Special instructions
15	Data valid but above normal operating range—least severe level
16	Data valid but above normal operating range—moderately severe level
17	Data valid but below normal operating range—least severe level
18	Data valid but below normal operating range—moderately severe level
19	Received network data in error
20-30	Reserved for SAE assignment
31	Too long

Level 1 Codes (Display Panel)

In addition to the SPN.FMI codes, the display panel will display a code corresponding to an error to inform the operator of a problem. This code will correlate to the SPN portion of the error, but will not reveal the Failure Mode Indicator (i.e. - will reveal what component that is having trouble, but not necessarily what the specific problem is). The format for Level 1 codes is ERRXXX where XXX is the error.

For example, an error code of ERR202 would translate to SPN.FMI codes of ECU 105.0, ECU 105.3, ECU 105.4, ECU 105.15, or ECU 105.16.

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Diagnostic Trouble Codes by Controller

Diagnostic Mode 2

LRRRLR

These addresses are for all IT4 4x20 tractors.

Turn signal inputs will be used for scrolling through the connected controllers list and a controller is selected by a click on "Display Mode Input."

Turn signal inputs will be used for scrolling through the DTCs.

Right turn signal will be used to increment the DTCs and left turn signal to decrement the DTCs.

When the "Display Mode Input" is activated for up to 2 seconds, the module will exit this mode to normal mode. The module will be in normal mode to activate this mode.

Instrument Control Cluster (ICC):

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Warning Light	Vehicle Response to Code	Vehicle Recovery
628	Program Memory	14	EOL EEPROM defaults size does not match what the Application expected	ERR 51	Service Alert	Function Degraded	Reprogram
628	Program Memory	31	EOL Compatibility Code mismatch OR EOL number of faults are incorrect - The structure of the data in the EOL data is different than that expected by the application	ERR 53	Service Alert	Function Degraded	Reprogram
521601	End Of Line File - EOL	31	New EOL Data Detected - Old Configuration is stored in EEPROM and a newer configuration has been detected in Flash. Cycle the power	ERR 54	Service Alert	Function Degraded	Recycle key switch and configure the unit
524264	Checksum error - normal mode	31	EEPROM Checksum failure - data invalid	ERR 55	Stop	Function Degraded	Follow troubleshooting procedure
2003	Source Address 3	9	TCU not responding	ERR 57	Service Alert	Function Degraded	Follow troubleshooting procedure
522000	Controller Data Structure Mismatch	31	TCU Compatibility Code mismatch - TCU Data structure does not match what ICC application is expecting	ERR 58	Service Alert	Function Degraded	Reprogram
2003	Source Address 3	12	VIN stored in TCU does not match the VIN stored in ICC	ERR 59	Service Alert	Indicator/Alarm Only	Reprogram
2370	Right Turn Signal Lights	6	Right turn output shorted to ground	ERR 60	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure

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Service Codes

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Warning Light	Vehicle Response to Code	Vehicle Recovery
2370	Right Turn Signal Lights	5	Right turn output shorted to battery or open circuit	ERR 61	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
2368	Left Turn Signal Lights	6	Left turn output shorted to ground	ERR 62	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
2368	Left Turn Signal Lights	5	Left turn output shorted to battery or open circuit	ERR 63	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
523633	Right amber flasher lights	6	Right Amber output shorted to ground	ERR 64	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
523633	Right amber flasher lights	5	Right Amber output shorted to battery or open circuit	ERR 65	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
523629	Left amber flasher lights	6	Left Amber output shorted to ground	ERR 66	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
523629	Left amber flasher lights	5	Left Amber output shorted to battery or open circuit	ERR 67	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
2807	Engine Fuel Shutoff 2 Control	6	Pull-in Coil output is shorted to ground	ERR 68	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
2807	Engine Fuel Shutoff 2 Control	5	Pull-in Coil output is shorted to battery or open circuit	ERR 69	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
632	Engine Fuel Shutoff 1 Control	6	Hold-in Coil cutout is shorted to ground	ERR 70	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
632	Engine Fuel Shutoff 1 Control	5	Hold-in Coil cutout is shorted to battery or open circuit	ERR 71	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
677	Engine Starter Motor Relay	6	Starter output is shorted to ground	ERR 72	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
677	Engine Starter Motor Relay	5	Starter output is shorted to battery or open circuit	ERR 73	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
2808	Keypad	3	Display Mode switch is stuck ON - switch used to navigate user menus is defective	ERR 74	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
520194	VIN Mismatch	12	Invalid or not programmed EEPROM VIN	ERR 75	Service Alert	Function Degraded	Reprogram
520193	Controller Mismatch	31	VIN type does not match the unit type stored in EOL/Application - wrong hardware/app on vehicle	ERR 76	Service Alert	Indicator/Alarm Only	Reprogram

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Service Codes

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Warning Light	Vehicle Response to Code	Vehicle Recovery
523438	Serial EEPROM access	31	Internal EEPROM access error	ERR 78	Stop	Function Degraded	Follow troubleshooting procedure
247	Engine Total Hours of Operation	9	Engine Hour meter data is missing or abnormal update rate over CAN network	ERR 79	Service Alert	Function Degraded	Follow troubleshooting procedure
247	Engine Total Hours of Operation	31	Engine Hour meter data does not match with ICC hour meter	ERR 80	Service Alert	Indicator/Alarm Only	Follow troubleshooting procedure
190	Engine Speed	9	Engine speed data is missing or abnormal update rate over CAN network.	ERR 81	Service Alert	Function Degraded	Follow troubleshooting procedure
2000	Source Address 0	9	ECU not responding	ERR 82	Service Alert	Function Degraded	Follow troubleshooting procedure
628	Controller #1	12	ICC not programmed or programmed incorrectly. Running from Boot Block.	ERR 83	Stop	Function Disabled (OFF)	Follow troubleshooting procedure
110	Engine Coolant Temperature	0	Coolant temperature is in the red zone. "TEMPHI" will be displayed instead of Level 1 Text.	ERR 84	Stop	Function Degraded	Follow troubleshooting procedure
110	Engine Coolant Temperature	4	The coolant temperature sensor is short circuited or grounded.	ERR 85	Service Alert	Function Degraded	Follow troubleshooting procedure
110	Engine Coolant Temperature	9	Coolant Temperature data is missing or abnormal update rate over CAN network.	ERR 86	Service Alert	Function Degraded	Follow troubleshooting procedure

Transmission Control Unit (TCU):

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Warning Light	Vehicle Response to Code	Vehicle Recovery
523590	Machine Drive Forward	31	Both the forward and reverse pedals are depressed simultaneously. Release both the pedals. Depress one pedal at a time.	ERR 01	Service Alert	Defaults to Neutral	Follow troubleshooting procedure
523590	Machine Drive Forward	3	Forward Pedal sensor input is above normal operating range or short to 5V.	ERR 02	Service Alert	Defaults to Neutral	Follow troubleshooting procedure

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Service Codes

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Warning Light	Vehicle Response to Code	Vehicle Recovery
523590	Machine Drive Forward	4	Forward Pedal sensor input is below normal operating range or short to ground.	ERR 02	Service Alert	Defaults to Neutral	Follow troubleshooting procedure
523590	Machine Drive Forward	13	Forward pedal sensor input is out of calibration.	ERR 02	Service Alert	Defaults to Neutral	Calibrate
523591	Machine Drive Reverse	3	Reverse Pedal sensor input is above normal operating range or short to 5V.	ERR 03	Service Alert	Defaults to Neutral	Follow troubleshooting procedure
523591	Machine Drive Reverse	4	Reverse Pedal sensor input is below normal operating range or short to ground.	ERR 03	Service Alert	Defaults to Neutral	Follow troubleshooting procedure
523591	Machine Drive Reverse	13	Reverse pedal sensor input is out of calibration.	ERR 03	Service Alert	Defaults to Neutral	Calibrate
190	Engine Speed	9	Engine speed data is missing or abnormal update rate over CAN network.	ERR 04	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
597	Brake Switch	31	Cruise is set while the brake (switch) is ON.	ERR 05	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
84	Wheel-Based Vehicle Speed	8	MFWD Speed is missing or abnormal update rate.	ERR 06	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
599	Cruise Control Set Switch	3	Set switch is stuck to 12V.	ERR 07	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
91	Accelerator Pedal Position 1	3	Throttle Sensor input is above normal operating range or short to 5V.	ERR 08	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
91	Accelerator Pedal Position 1	4	Throttle Sensor input is below normal operating range or short to ground.	ERR 08	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
91	Accelerator Pedal Position 1	9	Abnormal or missing Throttle data over CAN network.	ERR 08	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
91	Accelerator Pedal Position 1	13	Throttle Sensor input is out of calibration.	ERR 08	Service Alert	Function Disabled (OFF)	Calibrate
596	Cruise Control Enable Switch	31	Both Cruise control enable switch and Max Speed switch are ON.	ERR 09	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
629	Controller #1	12	TCU not programmed or programmed incorrectly. Running from Boot Block.	ERR 10	Stop	Function Disabled (OFF)	Follow troubleshooting procedure

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Service Codes

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Warning Light	Vehicle Response to Code	Vehicle Recovery
599	Cruise Control Set Switch	31	Both Set and Resume switch are ON.	ERR 11	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
601	Cruise Control Resume Switch	31	Both Set and Resume switch are ON.	ERR 11	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
3509	Sensor Supply Voltage 1	3	The sensor supply voltage (5V) is above normal or shorted to 12V.	ERR 12	Stop	Function Disabled (OFF)	Follow troubleshooting procedure
3509	Sensor Supply Voltage 1	4	The sensor supply voltage (5V) is below normal or shorted to ground.	ERR 12	Stop	Function Disabled (OFF)	Follow troubleshooting procedure
524069	Machine drive valve reverse	5	The reverse valve coil calculated resistance is more than expected (open circuit).	ERR 13	Service Alert	Function Degraded	Follow troubleshooting procedure
524069	Machine drive valve reverse	6	The reverse valve coil calculated resistance is less than expected (short circuit).	ERR 13	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
524069	Machine drive valve reverse	13	Reverse valve coil not calibrated	ERR 13	Stop	Function Disabled (OFF)	Calibrate
524071	Machine drive valve forward	5	The forward valve coil calculated resistance is more than expected (open circuit).	ERR 14	Service Alert	Function Degraded	Follow troubleshooting procedure
524071	Machine drive valve forward	6	The forward valve coil calculated resistance is less than expected (short circuit).	ERR 14	Service Alert	Function Disabled (OFF)	Follow troubleshooting procedure
524071	Machine drive valve forward	13	Forward valve coil not calibrated	ERR 14	Stop	Function Disabled (OFF)	Calibrate
1504	Operator seat switch	31	The seat switch is open while either of the pedals are depressed. Operator in the seat before depressing a pedal	ERR 15	Service Alert	Defaults to Neutral	Follow troubleshooting procedure

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Service Codes

Engine Control Unit (ECU):

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Tech Manual Description	Warning Light	Vehicle Response to Code	Vehicle Recovery
91	Accelerator Pedal Position 1	3	Primary Throttle shorted to high source	ERR 200	Throttle #1 Signal Out of Range High	Service Alert	Function Degraded	Follow troubleshooting procedures
91	Accelerator Pedal Position 1	4	Primary Throttle open or shorted to ground	ERR 200	Throttle #1 Signal Out of Range Low	Service Alert	Function Degraded	Follow troubleshooting procedures
91	Accelerator Pedal Position 1	7	Primary Throttle calibration procedure failed	ERR 200		Service Alert	Function Degraded	Follow troubleshooting procedures
91	Accelerator Pedal Position 1	13	Primary Throttle needs calibration	ERR 200		Service Alert	Function Degraded	Calibrate
94	Engine Fuel Delivery Pressure	3	Voltage from fuel pressure sensor is higher than normal temperature sensor range.	ERR 201	Low Pressure Fuel Signal Out of Range High	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
94	Engine Fuel Delivery Pressure	4	Voltage from fuel pressure sensor is lower than normal temperature sensor range.	ERR 201	Low Pressure Fuel Signal Out of Range Low	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
94	Engine Fuel Delivery Pressure	17	Fuel Pressure at inlet to high pressure pump is too low.	ERR 201	High Pressure Fuel System-Pressure Signal Slightly Low	Service Alert	Function Degraded	Follow troubleshooting procedures
105	Engine Intake Manifold 1 Temperature	0	Manifold air temperature is above highest threshold spec.	ERR 202	Intake Manifold Air Temperature Signal Extremely High	Stop	Derate - Max Fuel Limited	Enters Come-Home Mode Automatically
105	Engine Intake Manifold 1 Temperature	3	The voltage from the manifold air temperature sensor is higher than normal sensor range.	ERR 202	Intake Manifold Air Temperature Signal Out of Range High	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
105	Engine Intake Manifold 1 Temperature	4	The voltage from the manifold air temperature sensor is lower than normal sensor range.	ERR 202	Intake Manifold Air Temperature Signal Out of Range Low	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
105	Engine Intake Manifold 1 Temperature	15	Manifold air temperature is above spec.	ERR 202	Intake Manifold Air Temperature Signal Slightly High	Service Alert	Indicator/Alarm Only	Acknowledge Alarm

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Service Codes

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Tech Manual Description	Warning Light	Vehicle Response to Code	Vehicle Recovery
105	Engine Intake Manifold 1 Temperature	16	Manifold air temperature is above spec.	ERR 202	Intake Manifold Air Temperature Signal Moderately High	Service Alert	Derate - Max Fuel Limited	Enters Come-Home Mode Automatically
110	Engine Coolant Temperature	0	Coolant temperature is above highest threshold.	ERR 203	Engine Coolant Temperature Signal Extremely High	Stop	Derate - Max Fuel Limited	Enters Come-Home Mode Automatically
110	Engine Coolant Temperature	3	The voltage from the coolant temperature sensor is higher than the normal sensor range.	ERR 203	Engine Coolant Temperature Signal Out of Range High	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
110	Engine Coolant Temperature	4	The voltage from the coolant temperature sensor is lower than normal sensor range.	ERR 203	Engine Coolant Temperature Signal Out of Range Low	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
110	Engine Coolant Temperature	15	Coolant temperature is above the lowest threshold.	ERR 203	Engine Coolant Temperature Signal Slightly High	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
110	Engine Coolant Temperature	16	Coolant temperature is above mid threshold.	ERR 203	Engine Coolant Temperature Signal Moderately High	Service Alert	Derate - Max Fuel Limited	Enters Come-Home Mode Automatically
158	Key Switch Battery Potential	17	The ECU internal voltage did not turn off after the switched battery signal when low.	ERR 204	ECU Power Down Error	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
174	Engine Fuel Temperature	3	The voltage from the fuel temperature sensors higher than the normal sensor range.	ERR 205		Service Alert	Indicator/Alarm Only	Acknowledge Alarm
174	Engine Fuel Temperature	4	The voltage from the fuel temperature sensor is lower than normal sensor range.	ERR 205	Fuel Temperature Signal Out of Range Low	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
189	Engine Rated Speed	0	Engine speed limited to low idle due to another fault.	ERR 206	Engine Speed Derate Condition Exists	Service Alert	Function Degraded	Follow troubleshooting procedures
636	Engine Position Sensor	2	Noise is being detected on the engine position sensor.	ERR 207	Engine Position Sensor Signal Invalid	Service Alert	Function Degraded	Follow troubleshooting procedures

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Service Codes

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Tech Manual Description	Warning Light	Vehicle Response to Code	Vehicle Recovery
636	Engine Position Sensor	5	Cam Position Sensor open circuit.	ERR 207	Engine Position Sensor Circuit Has High Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures
636	Engine Position Sensor	6	Cam Position Sensor shorted to ground or across sensor.	ERR 207	Engine Position Sensor Circuit Has Low Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures
636	Engine Position Sensor	8	The signal from the engine position sensor in the high pressure pump is missing.	ERR 207	Engine Position Sensor Signal Missing	Service Alert	Function Degraded	Follow troubleshooting procedures
636	Engine Position Sensor	10	The signal from the engine position sensor in the high pressure pump does not have the proper pulse pattern.	ERR 207	Engine Position Signal Rate of Change Abnormal	Service Alert	Function Degraded	Follow troubleshooting procedures
3597	Power Supply	1	Injector Power supply is out of specification for various reasons. The initial pull in current is too low or the hold current is incorrect.	ERR 208		Service Alert	Indicator/Alarm Only	Acknowledge Alarm
3597	Power Supply	18	Injector Power supply is out of specification for various reasons. The initial pull in current is too low or the hold current is incorrect.	ERR 208		Service Alert	Indicator/Alarm Only	Acknowledge Alarm
637	Engine Timing Sensor	2	Noise is being detected on the engine position sensor on the crank shaft.	ERR 209	Engine Timing Sensor Signal Invalid	Service Alert	Function Degraded	Follow troubleshooting procedures
637	Engine Timing Sensor	5	Crank Position Sensor open circuit.	ERR 209	Engine Position Sensor Circuit Has High Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures
637	Engine Timing Sensor	6	Crank Position Sensor short to ground or across sensor.	ERR 209	Engine Position Sensor Circuit Has Low Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures

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Service Codes

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Tech Manual Description	Warning Light	Vehicle Response to Code	Vehicle Recovery
637	Engine Timing Sensor	7	The relationship between the two engine position signals is not correct.	ERR 209	Engine Timing and Position Signals Out of Sync	Service Alert	Function Degraded	Follow troubleshooting procedures
637	Engine Timing Sensor	8	The signal from the engine position sensor on the crank shaft missing.	ERR 209	Engine Timing Sensor Signal Missing	Service Alert	Function Degraded	Follow troubleshooting procedures
637	Engine Timing Sensor	10	The signal from the engine position sensor on the crank shaft does not have the proper pulse pattern.	ERR 209	Crank Timing Signal Rate of Change Abnormal	Service Alert	Function Degraded	Follow troubleshooting procedures
629	Controller #1	12	ECU not programmed or programmed incorrectly.	ERR 210	ECU Programming Error	Stop	Engine Shuts Down	Reprogram
651	Engine Injector Cylinder #01	5	The current to the injector in cylinder #1 is less than expected.	ERR 211	Injector # 1 Circuit Has High Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures
651	Engine Injector Cylinder #01	6	The current to the injector in cylinder #1 increases too rapidly.	ERR 211	Injector # 1 Has Low Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures
651	Engine Injector Cylinder #01	13	Calibration for injector in cylinder #1 not valid.	ERR 211	Injector # 1 Calibration Fault	Service Alert	Function Degraded	Calibrate
652	Engine Injector Cylinder #02	5	The current to the injector in cylinder #2 is less than expected.	ERR 212	Injector # 2 Circuit Has High Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures
652	Engine Injector Cylinder #02	6	The current to the injector in cylinder #2 increases too rapidly.	ERR 212	Injector # 2 Has Low Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures
652	Engine Injector Cylinder #02	13	Calibration for injector in cylinder #2 not valid.	ERR 212	Injector # 2 Calibration Fault	Service Alert	Function Degraded	Calibrate
653	Engine Injector Cylinder #03	5	The current to the injector in cylinder #3 is less than expected.	ERR 213	Injector # 3 Circuit Has High Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures
653	Engine Injector Cylinder #03	6	The current to the injector in cylinder #3 increases too rapidly.	ERR 213	Injector # 3 Circuit Has Low Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures

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Service Codes

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Tech Manual Description	Warning Light	Vehicle Response to Code	Vehicle Recovery
653	Engine Injector Cylinder #03	13	Calibration for injector in cylinder #3 not valid	ERR 213	Injector # 3 Calibration Fault	Service Alert	Function Degraded	Calibrate
654	Engine Injector Cylinder #04	5	The current to the injector in cylinder #4 is less than expected.	ERR 214	Injector # 4 Circuit Has High Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures
654	Engine Injector Cylinder #04	6	The current to the injector in cylinder #4 increases too rapidly.	ERR 214	Injector # 4 Circuit Has Low Resistance	Service Alert	Function Degraded	Follow troubleshooting procedures
654	Engine Injector Cylinder #04	13	Calibration for injector in cylinder #4 not valid.	ERR 214	Injector # 4 Calibration Fault	Service Alert	Function Degraded	Calibrate
1136	Engine ECU Temperature (see also SPN 21)	0	Internal temperature of the ECU is above spec - Most severe	ERR 215		Stop	Derate - Max Speed Limited	Enters Come-Home Mode Automatically
1136	Engine ECU Temperature (see also SPN 21)	16	Internal temperature of the ECU is above spec.	ERR 215		Service Alert	Indicator/Alarm Only	Acknowledge Alarm
1569	Engine Protection Torque Derate	31	One of the derate conditions exists on the engine.	ERR 216		Service Alert	Indicator/Alarm Only	Acknowledge Alarm
3510	Sensor Supply Voltage 2	3	The sensor supply voltage #2 is too high	ERR 217		Service Alert	Indicator/Alarm Only	Acknowledge Alarm
3510	Sensor Supply Voltage 2	4	The sensor supply voltage #2 is too low.	ERR 217		Service Alert	Indicator/Alarm Only	Acknowledge Alarm
3511	Sensor Supply Voltage 3	3	The sensor supply voltage #3 is too high.	ERR 218		Service Alert	Function Degraded	Follow troubleshooting procedures
3511	Sensor Supply Voltage 3	4	The sensor supply voltage #3 is too high.	ERR 218		Service Alert	Function Degraded	Follow troubleshooting procedures
2003	Source Address 3	9	Message TSC1 from TCU is timed out	ERR 219		Service Alert	Function Degraded	Follow troubleshooting procedures
676	Engine Glow Plug Relay	3	Glow plug relay output is high when the relay is not energized by the ECU for more than 2 minutes.	ERR 220	Glow Plug Signal Received When Not Expected	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
676	Engine Glow Plug Relay	5	Glow plug relay output is low when the relay is energized by the ECU.	ERR 220	Glow Plug Signal Not Received When Expected	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
2023	Source Address 23	9	Message ETCP1 from ICC is timed out	ERR 221		Service Alert	Function Degraded	Follow troubleshooting procedures

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Service Codes

SPN No.	SPN Name	FMI No.	Code Description	Level 1 Text	Tech Manual Description	Warning Light	Vehicle Response to Code	Vehicle Recovery
611	System Diagnostic Code #1	3	The injector drive circuit has detected a short to battery on the injector lines.	ERR 222	Injector Shorted to Power	Service Alert	Function Degraded	Follow troubleshooting procedures
611	System Diagnostic Code #1	4	The injector drive circuit has detected a short to ground on the injector lines.	ERR 222	Injector Shorted to Ground	Service Alert	Function Degraded	Follow troubleshooting procedures
108	Barometric Pressure	2	Barometric Pressure sensor reading unreasonable.	ERR 223	Barometric Pressure Signal Invalid	Service Alert	Indicator/Alarm Only	Acknowledge Alarm
237	Vehicle Identification Number	31	VIN Messages are missing or other controllers in network are not committed in the required time.	ERR 224	VIN Security Messages Missing	Service Alert	Derate - Max Speed Limited	Reprogram

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Readings Codes Overview

The readings, whether displayed in Service ADVISOR™ or on the display panel, are shown live—voltages, pressures, positions, etc. These are shown for reference, diagnostics, adjustment, or calibration purposes.

Each control unit has a series of memory addresses with a specific component reading assigned to it. For example, on the display panel, it would show an address for the ICC of “3” and alternately show the value of “1” for MPH being selected.

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It is recommended that Service ADVISOR be used to take readings as multiple components can be checked simultaneously. The display panel can show only one reading at a time. High and low values will not be shown. In addition, the display panel cannot access a specific memory address directly (they must be accessed sequentially). The address and value will display alternately.

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