Table of Contents

1 Foreword

This information has all error codes of HYUNDAI CONSTRUCTION EQUIPMENT.

Recommend to find codes by searching SPN number.

Enigne
- C : Cummins
- M : Mitsubish
- P : Perkins
- S : Scania
- Y : Yanmar

Machine type
- E : Excavator
- L : Loader
- F : Fork lift

Continuing improvements in the design of this machine can lead to changes in detail which may not be reflected in this manual. Consult Hyundai or your Hyundai distributor for the latest available information for your machine or for questions regarding information in this manual.

For TSG (Trouble Shooting Guide), please visit Hi-MATE which has the latest information of Error code and TSG.

Hi-MATE : https://himate.hyundai-ce.com/

2 SPN 1~

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	1	*	*	E	Short circuit in governor motor system
TCU	10	*	*	E	Short circuit in hour-meter system
TCU	10	*	*	L	LOGICAL ERROR AT DIRECTION SELECT SIGNAL 3RD SHIFT LEVER
ECM	100	17	S	E	Oil pressure sensor, pressure too low and engine protective action
ECM	100	17	S	L	Oil pressure sensor, pressure too low and engine protective action
MCU	100	1	*	F	Engine Oil Pressure Below Normal Range
ECM	100	1	C	E	Engine Oil Rifle Pressure - Data valid but below normal operational range - Most Severe Level
ECM	100	1	C	L	Engine Oil Rifle Pressure - Data valid but below normal operational range - Most Severe Level
ECM	100	1	P	E	Engine Oil Pressure : Low - most severe (3)
ECM	100	1	P	L	Engine Oil Pressure : Low - most severe (3)
ECM	100	1	S	E	Oil pressure sensor, pressure too low
ECM	100	1	S	L	Oil pressure sensor, pressure too low
ECM	100	1	Y	E	Low oil pressure fault alarm
ECM	100	1	Y	L	Low oil pressure fault alarm
ECM	100	4	S	F	Gage pressure of oil in engine lubrication system as provided by oil pump.
ECM	100	18	C	E	Engine Oil Rifle Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	100	18	C	L	Engine Oil Rifle Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	100	18	P	E	Engine Oil Pressure : Low moderate severity (2)
ECM	100	18	P	L	Engine Oil Pressure : Low moderate severity (2)
ECM	100	18	S	E	Oil pressure sensor, pressure below normal
ECM	100	18	S	L	Oil pressure sensor, pressure below normal
ECM	100	18	C	F	Engine Oil Rifle Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level. Engine oil pressure signal indicates engine oil pressure is below the engine protection warning limit.
ECM	100	2	C	F	Engine Oil Rifle Pressure - Data erratic, intermittent or incorrect
ECM	100	4	C	F	Engine Oil Pressure : Oil Pressure Sensor Circuit -Voltage Below Normal, or Shorted to Low Source
ECM	100	17	P	E	Engine Oil Pressure: Low - least severe (1)
ECM	100	17	P	L	Engine Oil Pressure: Low - least severe (1)
ECM	100	2	C	E	Engine Oil Rifle Pressure - Data erratic, intermittent or incorrect
ECM	100	2	C	L	Engine Oil Rifle Pressure - Data erratic, intermittent or incorrect
ECM	100	2	P	E	Engine Oil Pressure: Erratic, Intermittent, or Incorrect
ECM	100	2	P	L	Engine Oil Pressure: Erratic, Intermittent, or Incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	100	2	S	E	Oil pressure sensor, faulty
ECM	100	2	S	L	Oil pressure sensor, faulty
ECM	100	3	C	E	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage above normal, or shorted to high source
ECM	100	3	C	L	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage above normal, or shorted to high source
ECM	100	3	P	E	Engine Oil Pressure Sensor : Voltage Above Normal
ECM	100	3	P	L	Engine Oil Pressure Sensor : Voltage Above Normal
ECM	100	3	S	E	Oil pressure sensor, short circuit to +24V
ECM	100	3	S	L	Oil pressure sensor, short circuit to +24V
ECM	100	4	C	E	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage below normal, or shorted to low source
ECM	100	4	C	L	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage below normal, or shorted to low source
ECM	100	4	P	E	Engine Oil Pressure Sensor : Voltage Below Normal
ECM	100	4	P	L	Engine Oil Pressure Sensor : Voltage Below Normal
ECM	100	4	S	E	Oil pressure sensor, short circuit to ground
ECM	100	4	S	L	Oil pressure sensor, short circuit to ground
ECM	100	4	Y	E	Oil pressure switch open circuit
ECM	100	4	Y	L	Oil pressure switch open circuit
ECM	100	0	S	F	Gage pressure of oil in engine lubrication system as provided by oil pump.
ECM	100	1	C	F	Engine Oil Pressure Low – Warning
ECM	100	1	S	F	Gage pressure of oil in engine lubrication system as provided by oil pump.
ECM	100	13	S	F	Oil pressure sensor, pressure not plausible
ECM	100	16	S	F	Oil pressure sensor, pressure above normal
ECM	100	17	S	F	Oil pressure sensor, pressure too low and engine protective action
ECM	100	18	S	F	Oil pressure sensor, pressure below normal
ECM	100	2	S	F	Gage pressure of oil in engine lubrication system as provided by oil pump.
ECM	100	3	C	F	High voltage detected at oil pressure sensor signal pin 33 of the engine harness.
ECM	100	3	S	F	Gage pressure of oil in engine lubrication system as provided by oil pump.
ECM	100	13	S	E	Oil pressure sensor, pressure not plausible
ECM	100	13	S	L	Oil pressure sensor, pressure not plausible
ECM	100	16	S	E	Oil pressure sensor, pressure above normal
ECM	100	16	S	L	Oil pressure sensor, pressure above normal
ECM	101	0	C	E	Crankcase Pressure - Data valid but above normal operational range - Most Severe Level

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	101	0	C	L	Crankcase Pressure - Data valid but above normal operational range - Most Severe Level
MCU	101	3	*	E	Hydraulic Oil Temperature-Voltage Above Normal, Or Shorted To High Source
MCU	101	3	*	L	Hydraulic Oil Temperature-Voltage Above Normal, Or Shorted To High Source
MCU	101	4	*	E	Hydraulic Oil Temperature Sensor Circuit - Voltage Below Normal, or shorted to Low Source
MCU	101	4	*	L	Hydraulic Oil Temperature Sensor Circuit - Voltage Below Normal, or shorted to Low Source
ECM	101	0	C	F	Crankcase Pressure - Data valid but above normal operational range - Most Severe Level
ECM	101	15	C	F	Crankcase Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	101	16	C	F	Crankcase Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	101	2	C	F	Crankcase Pressure - Data erratic, intermittent or incorrect
ECM	101	3	C	F	Crankcase Pressure Circuit - Voltage above normal, or shorted to high source
ECM	101	4	C	F	Crankcase Pressure Circuit - Voltage below normal, or shorted to low source
ECM	101	15	C	E	Crankcase Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	101	15	C	L	Crankcase Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	101	16	C	E	Crankcase Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	101	16	C	L	Crankcase Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	101	3	C	E	Crankcase Pressure Circuit - Voltage above normal, or shorted to high source
ECM	101	3	C	L	Crankcase Pressure Circuit - Voltage above normal, or shorted to high source
ECM	101	4	C	E	Crankcase Pressure Circuit - Voltage below normal, or shorted to low source
ECM	101	4	C	L	Crankcase Pressure Circuit - Voltage below normal, or shorted to low source
MCU	101	3	*	F	Hydraulic Oil Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source (or Open Circuit)
MCU	101	4	*	F	Hydraulic Oil Temperature Sensor Circuit - Voltage Below Normal, or shorted to Low Source
ECM	101	2	C	E	Crankcase Pressure - Data erratic, intermittent or incorrect
ECM	101	2	C	L	Crankcase Pressure - Data erratic, intermittent or incorrect
Warning	102	*	*	F	(Warning) Hydraulic Oil Temperature High
Warning	102	*	*	E	(Warning) Hydraulic Oil Temperature high
Warning	102	*	*	L	(Warning) Hydraulic Oil Temperature High

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	102	13	Y	E	EGR low pressure side pressure sensor error (abnormal learning value)
ECM	102	13	Y	L	EGR low pressure side pressure sensor error (abnormal learning value)
ECM	102	10	C	F	Intake Manifold 1 Pressure - Abnormal rate of change
ECM	102	18	C	F	Low Intake Manifold Pressure Left Bank
ECM	102	16	C	E	Intake Manifold 1 Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	102	16	C	L	Intake Manifold 1 Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	102	16	P	E	Engine Intake Manifold #1 Pressure : High - moderate severity (2)
ECM	102	16	P	L	Engine Intake Manifold #1 Pressure : High - moderate severity (2)
ECM	102	16	S	E	Boost pressure above normal
ECM	102	16	S	L	Boost pressure above normal
ECM	102	18	C	E	Intake Manifold 1 Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	102	18	C	L	Intake Manifold 1 Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	102	18	P	E	Engine Intake Manifold #1 Pressure : Low - moderate severity (2)
ECM	102	18	P	L	Engine Intake Manifold #1 Pressure : Low - moderate severity (2)
ECM	102	18	S	E	Boost pressure, lower than reference at part load
ECM	102	18	S	L	Boost pressure, lower than reference at part load
ECM	102	20	P	E	Engine Intake Manifold #1 Pressure: Data Drifted High
ECM	102	20	P	L	Engine Intake Manifold #1 Pressure: Data Drifted High
ECM	102	20	S	E	Boost pressure, too high not plausible
ECM	102	20	S	L	Boost pressure, too high not plausible
ECM	102	21	P	E	Engine Intake Manifold #1 Pressure: Data Drifted Low
ECM	102	21	P	L	Engine Intake Manifold #1 Pressure: Data Drifted Low
ECM	102	21	S	E	Boost pressure, too low not plausible
ECM	102	21	S	L	Boost pressure, too low not plausible
ECM	102	3	C	E	Intake Manifold 1 Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	102	3	C	L	Intake Manifold 1 Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	102	3	P	E	Engine Intake Manifold #1 Pressure: Voltage Above Normal
ECM	102	3	P	L	Engine Intake Manifold #1 Pressure: Voltage Above Normal
ECM	102	3	S	E	Boost pressure sensor, short circuit to +24V
ECM	102	3	S	L	Boost pressure sensor, short circuit to +24V
ECM	102	3	Y	E	EGR low pressure side pressure sensor error (voltage high)

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	102	3	Y	L	EGR low pressure side pressure sensor error (voltage high)
ECM	102	4	C	E	Intake Manifold 1 Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	102	4	C	L	Intake Manifold 1 Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	102	4	P	E	Engine Intake Manifold #1 Pressure: Voltage Below Normal
ECM	102	4	P	L	Engine Intake Manifold #1 Pressure: Voltage Below Normal
ECM	102	4	S	E	Boost pressure sensor, short circuit to ground
ECM	102	4	S	L	Boost pressure sensor, short circuit to ground
ECM	102	4	Y	E	EGR low pressure side pressure sensor error (voltage low)
ECM	102	4	Y	L	EGR low pressure side pressure sensor error (voltage low)
ECM	102	7	S	E	Boost pressure, too low
ECM	102	7	S	L	Boost pressure, too low
ECM	102	8	S	E	Boost pressure sensor, faulty
ECM	102	8	S	L	Boost pressure sensor, faulty
ECM	102	0	C	F	Intake manifold pressure signal indicates intake manifold pressure has exceeded the maximum limit for the given engine rating.
ECM	102	0	S	F	Boost pressure higher than reference
ECM	102	1	S	F	Boost pressure lower than reference
ECM	102	0	S	E	Boost pressure higher than reference
ECM	102	10	S	F	Boost pressure sensor, faulty
ECM	102	0	S	L	Boost pressure higher than reference
ECM	102	1	S	E	Boost pressure lower than reference
ECM	102	15	S	F	Boost pressure sensor and exhaust pressure sensor do not correlate
ECM	102	1	S	L	Boost pressure lower than reference
ECM	102	16	C	F	High Intake Manifold Pressure Left Bank
ECM	102	16	S	F	Boost pressure above normal
ECM	102	18	S	F	Boost pressure, lower than reference at part load
ECM	102	10	C	E	Intake Manifold 1 Pressure - Abnormal rate of change
ECM	102	2	C	F	Intake Manifold Pressure Sensor Circuit - data incorrect
ECM	102	10	C	L	Intake Manifold 1 Pressure - Abnormal rate of change
ECM	102	2	S	F	The gage pressure measurement of the air intake manifold.
ECM	102	20	S	F	Boost pressure, too high not plausible
ECM	102	21	S	F	Boost pressure, too low not plausible
ECM	102	3	C	F	High voltage detected at the boost pressure sensor signal pin-45 of the engine harness.
ECM	102	3	S	F	Boost pressure sensor, short circuit to +24V
ECM	102	4	C	F	Low voltage detected at the boost pressure sensor signal pin 45 of the engine harness.
ECM	102	4	S	F	Boost pressure sensor, short circuit to ground

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	102	5	S	F	The gage pressure measurement of the air intake manifold.
ECM	102	7	S	F	Boost pressure, too low
ECM	102	8	S	F	Boost pressure sensor, faulty
ECM	102	10	S	E	Boost pressure sensor, faulty
ECM	102	9	S	F	Boost pressure, not plausible
ECM	102	10	S	L	Boost pressure sensor, faulty
ECM	102	15	S	E	Boost pressure sensor and exhaust pressure sensor do not correlate
ECM	102	15	S	L	Boost pressure sensor and exhaust pressure sensor do not correlate
ECM	102	2	C	E	Intake Manifold 1 Pressure - Data erratic, intermittent or incorrect
ECM	102	2	C	L	Intake Manifold 1 Pressure - Data erratic, intermittent or incorrect
ECM	102	9	S	E	Boost pressure, not plausible
ECM	102	9	S	L	Boost pressure, not plausible
ECM	103	0	S	E	Turbine excessive overspeed
ECM	103	0	S	L	Turbine excessive overspeed
ECM	103	0	C	F	Turbocharger Number 1 speed high - warning level. High turbocharger speed has been detected.
ECM	103	10	C	F	Turbocharger speed invalid rate of change detected - Abnormal Rate of Change
ECM	103	15	C	F	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	103	16	C	F	Turbocharger #1 Speed High - warning level
ECM	103	18	C	F	Turbocharger number 1 speed low - warning level. Low turbocharger speed detected by the ECM.
ECM	103	2	C	F	Turbocharger 1 Speed - Data erratic, intermittent or incorrect
ECM	103	10	C	E	Turbocharger speed invalid rate of change detected - Abnormal Rate of Change
ECM	103	10	C	L	Turbocharger speed invalid rate of change detected - Abnormal Rate of Change
ECM	103	16	C	E	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	103	16	C	L	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	103	18	C	E	Turbocharger 1 Speed - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	103	18	C	L	Turbocharger 1 Speed - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	103	2	C	E	Turbocharger 1 Speed - Data erratic, intermittent or incorrect
ECM	103	2	C	L	Turbocharger 1 Speed - Data erratic, intermittent or incorrect
ECM	103	2	S	E	Turbine speed sensor, faulty
ECM	103	2	S	L	Turbine speed sensor, faulty
ECM	103	3	S	E	Turbine speed sensor, short circuit to +24V
ECM	103	3	S	L	Turbine speed sensor, short circuit to +24V
ECM	103	4	S	E	Turbine speed sensor, short circuit to ground
ECM	103	4	S	L	Turbine speed sensor, short circuit to ground

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	103	5	S	E	Turbine speed sensor, open load
ECM	103	5	S	L	Turbine speed sensor, open load
ECM	103	0	S	F	Turbine excessive overspeed
ECM	103	2	S	F	Turbine speed sensor, faulty
ECM	103	20	S	F	Turbine speed sensor above model, not plausible
ECM	103	21	S	F	Turbine speed sensor below model, not plausible
ECM	103	3	S	F	Turbine speed sensor, short circuit to +24V
ECM	103	4	S	F	Turbine speed sensor, short circuit to ground
ECM	103	5	S	F	Turbine speed sensor, open load
ECM	103	15	C	E	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	103	9	S	F	Turbine speed not plausible
ECM	103	15	C	L	Turbocharger 1 Speed - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	103	20	S	E	Turbine speed sensor above model, not plausible
ECM	103	20	S	L	Turbine speed sensor above model, not plausible
ECM	103	21	S	E	Turbine speed sensor below model, not plausible
ECM	103	21	S	L	Turbine speed sensor below model, not plausible
ECM	103	9	S	E	Turbine speed not plausible
ECM	103	9	S	L	Turbine speed not plausible
ECM	104	18	C	E	Engine Turbocharger Lube Oil Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	104	18	C	L	Engine Turbocharger Lube Oil Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
Warning	104	*	*	E	(Warning) Overload
ECM	104	18	C	F	Engine Turbocharger Lube Oil Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	1041	2	P	E	Start Signal Indicator: Erratic, Intermittent, or Incorrect
ECM	1041	2	P	L	Start Signal Indicator: Erratic, Intermittent, or Incorrect
ECM	1043	3	C	F	Accelerator Pedal or Lever Position Sensor Supply Voltage Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at sensor supply circuit for the accelerator pedal or lever position sensor.
ECM	1043	4	C	F	Accelerator Pedal or Lever Position Sensor Supply Voltage Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at sensor supply circuit to the accelerator pedal or lever position sensor.
ECM	1043	11	C	F	Engine Speed/Position Sensor #2 (Camshaft) Supply Voltage
ECM	105	0	C	F	Intake Manifold Temperature #1 High – Critical
MCU	105	0	*	E	Working Pilot Pressure-Data Valid But Above Normal Operational Range

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	105	0	*	L	Working Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	105	1	*	E	Working Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	105	1	*	L	Working Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	105	4	*	E	Working Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	105	4	*	L	Working Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
ECM	105	15	C	F	Intake Manifold Temperature High - Data Valid but Above Normal Operational Range - Least Severe Level. Intake manifold air temperature signal indicates intake manifold air temperature above engine protection warning limit.
ECM	105	16	C	F	Intake Manifold Temperature High – Warningl
ECM	105	18	C	F	Intake Manifold 1 Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	105	2	C	F	Intake Manifold 1 Temperature Data Erratic, Intermittent, or Incorrect. The intake manifold temperature sensor is reading an erratic value at initial key-on.
ECM	105	3	C	F	Intake Manifold Temperature Sensor #1 Circuit - shorted high
ECM	105	4	C	F	Low voltage detected at the intake manifold temperature sensor circuit.
ECM	105	0	C	E	Intake Manifold 1 Temperature - Data valid but above normal operational range - Most Severe Level
ECM	105	0	C	L	Intake Manifold 1 Temperature - Data valid but above normal operational range - Most Severe Level
ECM	105	0	P	E	Engine Intake Manifold #1 Temperature : High - most severe (3)
ECM	105	0	P	L	Engine Intake Manifold #1 Temperature : High - most severe (3)
ECM	105	0	S	E	Boost temp sensor excessive high
ECM	105	0	S	L	Boost temp sensor excessive high
ECM	105	1	S	E	Boost temp sensor excessive low
ECM	105	1	S	L	Boost temp sensor excessive low
ECM	105	2	C	E	Intake Manifold 1 Temperature - Data erratic, intermittent or incorrect
ECM	105	2	C	L	Intake Manifold 1 Temperature - Data erratic, intermittent or incorrect
ECM	105	2	S	E	Boost temp sensor, faulty
ECM	105	2	S	L	Boost temp sensor, faulty
ECM	105	3	C	E	Intake Manifold 1 Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	105	3	C	L	Intake Manifold 1 Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	105	3	P	E	Engine Intake Manifold #1 Temperature : Voltage Above Normal
ECM	105	3	P	L	Engine Intake Manifold #1 Temperature : Voltage Above Normal
ECM	105	3	S	E	Boost temp sensor, short circuit to +24V
ECM	105	3	S	L	Boost temp sensor, short circuit to +24V

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	105	3	Y	E	Intake manifold temperature sensor error (voltage high)
ECM	105	3	Y	L	Intake manifold temperature sensor error (voltage high)
ECM	105	4	C	E	Intake Manifold 1 Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	105	4	C	L	Intake Manifold 1 Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	105	4	P	E	Engine Intake Manifold #1 Temperature : Voltage Below Normal
ECM	105	4	P	L	Engine Intake Manifold #1 Temperature : Voltage Below Normal
ECM	105	4	S	E	Boost temp sensor, short circuit to ground
ECM	105	4	S	L	Boost temp sensor, short circuit to ground
ECM	105	4	Y	E	Intake manifold temperature sensor error (voltage low)
ECM	105	4	Y	L	Intake manifold temperature sensor error (voltage low)
ECM	105	0	S	F	Boost temp sensor excessive high
ECM	105	1	S	F	Boost temp sensor excessive low
ECM	105	15	S	F	Boost temperature to high for longer period
ECM	105	15	C	E	Intake Manifold 1 Temperature - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	105	15	C	L	Intake Manifold 1 Temperature - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	105	15	P	E	Engine Intake Manifold #1 Temperature : High - least severe (1)
ECM	105	15	P	L	Engine Intake Manifold #1 Temperature : High - least severe (1)
ECM	105	15	S	E	Boost temperature to high for longer period
ECM	105	16	S	F	Boost temperature above normal
ECM	105	15	S	L	Boost temperature to high for longer period
ECM	105	16	C	E	Intake Manifold 1 Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	105	17	S	F	Boost temperature below ambient, not plausible
ECM	105	16	C	L	Intake Manifold 1 Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	105	16	P	E	Engine Intake Manifold #1 Temperature : High - moderate severity (2)
ECM	105	16	P	L	Engine Intake Manifold #1 Temperature : High - moderate severity (2)
ECM	105	2	S	F	Boost temp sensor, faulty
ECM	105	16	S	E	Boost temperature above normal
ECM	105	20	S	F	Boost temperature to high, not plausible
ECM	105	16	S	L	Boost temperature above normal
ECM	105	17	S	E	Boost temperature below ambient, not plausible
ECM	105	21	S	F	Boost temperature to low, not plausible
ECM	105	17	S	L	Boost temperature below ambient, not plausible
ECM	105	3	S	F	Boost temp sensor, short circuit to +24V

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	105	4	S	F	Boost temp sensor, short circuit to ground
ECM	105	18	C	E	Intake Manifold 1 Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	105	9	S	F	Boost temperature above ambient, not plausible
ECM	105	18	C	L	Intake Manifold 1 Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	105	20	S	E	Boost temperature to high, not plausible
ECM	105	20	S	L	Boost temperature to high, not plausible
ECM	105	21	S	E	Boost temperature to low, not plausible
ECM	105	21	S	L	Boost temperature to low, not plausible
ECM	105	9	S	E	Boost temperature above ambient, not plausible
ECM	105	9	S	L	Boost temperature above ambient, not plausible
MCU	105	2	*	E	Working Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	105	2	*	L	Working Pilot Pressure-Data Erratic, Intermittent Or Incorrect
ECM	107	16	C	E	Engine Air Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	107	16	C	L	Engine Air Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	107	16	P	E	Engine Air Filter 1 Differential Pressure: High - moderate severity (2)
ECM	107	16	P	L	Engine Air Filter 1 Differential Pressure: High - moderate severity (2)
ECM	107	15	C	F	Engine Air Filter Differential Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	107	16	C	F	Engine Air Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	107	1	S	E	Air filter clogged
ECM	107	1	S	L	Air filter clogged
ECM	107	15	C	E	Engine Air Filter Differential Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	107	15	C	L	Engine Air Filter Differential Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	107	15	P	E	Engine Air Filter 1 Differential Pressure: High - least severe (1)
ECM	107	15	P	L	Engine Air Filter 1 Differential Pressure: High - least severe (1)
ECM	107	2	P	E	Engine Air Filter 1 Differential Pressure: Erratic, Intermittent, or Incorrect
ECM	107	2	P	L	Engine Air Filter 1 Differential Pressure: Erratic, Intermittent, or Incorrect
ECM	107	2	S	E	Air filter control switch broken
ECM	107	2	S	L	Air filter control switch broken

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	107	3	P	E	Engine Air Filter 1 Differential Pressure : Voltage Above Normal
ECM	107	3	P	L	Engine Air Filter 1 Differential Pressure : Voltage Above Normal
ECM	107	4	P	E	Engine Air Filter 1 Differential Pressure : Voltage Below Normal
ECM	107	4	P	L	Engine Air Filter 1 Differential Pressure : Voltage Below Normal
ECM	107	1	S	F	Air filter clogged
ECM	107	2	S	F	Air filter control switch broken
ECM	107 2	3	C	F	Engine Brake Actuator Circuit #1 - Voltage Above Normal or Shorted to High Source. Open circuit or high voltage detected at the engine brake solenoid number 1 signal circuit.
ECM	107 2	3	C	E	Engine Brake Actuator Driver 1 Circuit - Voltage above normal, or shorted to high source
ECM	107 2	3	C	L	Engine Brake Actuator Driver 1 Circuit - Voltage above normal, or shorted to high source
ECM	107 2	4	C	E	Engine Brake Actuator Driver 1 Circuit - Voltage below normal, or shorted to low source
ECM	107 2	4	C	L	Engine Brake Actuator Driver 1 Circuit - Voltage below normal, or shorted to low source
ECM	107 2	11	C	F	Less than 6 VDC detected at the engine brake circuit 1 when on indicates an excessive current draw from the electronic control module (ECM) or faulty ECM output circuit.
ECM	107 2	4	C	F	Engine Brake Output # 1 : Engine Brake Actuator Driver 1 Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	107 3	3	C	E	Engine Brake Actuator Driver Output 2 Circuit - Voltage above normal, or shorted to high source
ECM	107 3	3	C	L	Engine Brake Actuator Driver Output 2 Circuit - Voltage above normal, or shorted to high source
ECM	107 3	4	C	E	Engine Brake Actuator Driver Output 2 Circuit - Voltage below normal, or shorted to low source
ECM	107 3	4	C	L	Engine Brake Actuator Driver Output 2 Circuit - Voltage below normal, or shorted to low source
ECM	107 3	11	C	F	Less than 6 VDC detected at engine brake circuit 2 when on indicates an excessive current draw from the electronic control module (ECM) or a faulty ECM output circuit.
ECM	107 3	3	C	F	Engine Compression Brake Output # 2 : Engine Brake Actuator Circuit #2 - Voltage Above Normal, or Shorted to High Source
ECM	107 3	4	C	F	Engine Compression Brake Output # 2 : Engine Brake Actuator Circuit #2 - Voltage Below Normal, or Shorted to Low Source
ECM	107 5	3	C	E	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage above normal, or shorted to high source
ECM	107 5	3	C	L	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage above normal, or shorted to high source
ECM	107 5	4	C	E	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage below normal, or shorted to low source
ECM	107 5	4	C	L	Electric Lift Pump for Engine Fuel Supply Circuit - Voltage below normal, or shorted to low source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	107 5	5	P	E	Engine Electric Lift Pump for Engine Fuel Supply : Current Below Normal
ECM	107 5	5	P	L	Engine Electric Lift Pump for Engine Fuel Supply : Current Below Normal
ECM	107 5	6	P	E	Engine Electric Lift Pump for Engine Fuel Supply : Current Above Normal
ECM	107 5	6	P	L	Engine Electric Lift Pump for Engine Fuel Supply : Current Above Normal
ECM	107 5	11	C	F	Fuel Priming Pump Control Circuit - shorted high/low
ECM	107 5	3	C	F	Electric Lift Pump for Engine Fuel : Fuel Priming Pump Control Signal Circuit - Voltage Above Normal, or Shorted to High Source
ECM	107 5	4	C	F	Electric Lift Pump for Engine Fuel : Fuel Priming Pump Control Signal Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	107 6	3	C	F	Fuel Pump Control Module, Fuel Control Valve Circuit - shorted high
ECM	107 6	5	P	E	Engine Fuel Injection Pump Fuel Control Valve: Current Below Normal
ECM	107 6	5	P	L	Engine Fuel Injection Pump Fuel Control Valve: Current Below Normal
ECM	107 6	6	P	E	Engine Fuel Injection Pump Fuel Control Valve : Current Above Normal
ECM	107 6	6	P	L	Engine Fuel Injection Pump Fuel Control Valve : Current Above Normal
ECM	107 6	12	C	F	Fuel Metering Solenoid - bad device
ECM	107 6	13	C	F	The electronic control module (ECM) detected a failure in the injection control valve identifier circuit.
ECM	107 6	4	C	F	Fuel Pump Control Module, Fuel Control Valve Circuit - shorted low
ECM	107 6	7	C	F	Fuel Pump Control Module, Fuel Control Valve - mechanically stuck
ECM	107 6	2	P	E	Engine Fuel Injection Pump Fuel Control Valve: Erratic, Intermittent, or Incorrect
ECM	107 6	2	P	L	Engine Fuel Injection Pump Fuel Control Valve: Erratic, Intermittent, or Incorrect
ECM	107 7	3	C	F	Fuel Pump Control Module, Fuel Shutoff Error
ECM	107 7	11	C	F	Fuel Pump Control Module, Idle Validation Error
ECM	107 7	12	C	F	Fuel Pump Control Module, Self-Test Error
ECM	107 7	13	C	F	Fuel Pump Control Module, Fueling or Engine Speed Mismatch
ECM	107 7	14	C	F	Fuel System Leakage error
ECM	107 7	2	C	F	Fuel Pump Control Module, Supply Voltage Circuit - data incorrect
ECM	107 7	4	C	F	Fuel Pump Control Module, Supply Voltage Circuit - shorted low
ECM	107 7	7	C	F	Fuel Pump Control Module, Stuck Relay Error
ECM	107 7	9	C	F	Fuel Pump Control Module, CAN Communication Error - abnormal update rate
ECM	107 8	11	C	F	Fuel Pump Control Module, Increment Angle Time Sensor Error
ECM	107 8	2	C	F	Fuel Pump Control Module, Engine Synchronization Error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1078	8	C	F	Fuel Pump Control Module, Timing Error
ECM	1079	3	C	F	Sensor Supply Voltage number 1 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at sensor supply number 1 circuit.
ECM	1079	4	C	F	Sensor Supply Voltage Number 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at sensor supply number 1 circuit.
ECM	108	10	Y	E	Atmospheric pressure sensor error (characteristic error)
ECM	108	10	Y	L	Atmospheric pressure sensor error (characteristic error)
MCU	108	0	*	E	Travel Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	108	0	*	L	Travel Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	108	1	*	E	Travel Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	108	1	*	L	Travel Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	108	4	*	E	Travel Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	108	4	*	L	Travel Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
ECM	108	2	C	E	Barometric Pressure - Data erratic, intermittent or incorrect
ECM	108	2	C	L	Barometric Pressure - Data erratic, intermittent or incorrect
ECM	108	2	S	E	Ambient Pressure Sensor Error via CAN
ECM	108	2	S	L	Ambient Pressure Sensor Error via CAN
ECM	108	3	C	E	Barometric Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	108	3	C	L	Barometric Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	108	3	P	E	Barometric Pressure: Voltage Above Normal
ECM	108	3	P	L	Barometric Pressure: Voltage Above Normal
ECM	108	3	S	E	Ambient Pressure Sensor, short circuit to +24V
ECM	108	3	S	L	Ambient Pressure Sensor, short circuit to +24V
ECM	108	3	Y	E	Atmospheric pressure sensor error (voltage high)
ECM	108	3	Y	L	Atmospheric pressure sensor error (voltage high)
ECM	108	4	C	E	Barometric Pressure Sensor Circuit - Voltage above normal, or shorted to low source
ECM	108	4	C	L	Barometric Pressure Sensor Circuit - Voltage above normal, or shorted to low source
ECM	108	4	P	E	Barometric Pressure: Voltage Below Normal
ECM	108	4	P	L	Barometric Pressure: Voltage Below Normal
ECM	108	4	S	E	Ambient Pressure Sensor, short circuit to ground
ECM	108	4	S	L	Ambient Pressure Sensor, short circuit to ground
ECM	108	4	Y	E	Atmospheric pressure sensor error (voltage low)

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	108	4	Y	L	Atmospheric pressure sensor error (voltage low)
ECM	108	15	S	F	Ambient Pressure Sensor and Exhaust Pressure Sensor do not correlate
ECM	108	16	S	F	Ambient Pressure above normal
ECM	108	2	C	F	Ambient Air Pressure Sensor Circuit - data incorrect
ECM	108	2	S	F	Ambient Pressure Sensor Error via CAN
ECM	108	20	S	F	Ambient Pressure too high, not plausible
ECM	108	21	S	F	Ambient Pressure too low, not plausible
ECM	108	3	C	F	Ambient Air Pressure Sensor Circuit – shorted high
ECM	108	3	S	F	Ambient Pressure Sensor, short circuit to +24V
ECM	108	4	C	F	Low voltage detected at the ambient air pressure circuit.
ECM	108	4	S	F	Ambient Pressure Sensor, short circuit to ground
ECM	108	16	S	E	Ambient Pressure above normal
ECM	108	16	S	L	Ambient Pressure above normal
ECM	108	20	S	E	Ambient Pressure too high, not plausible
ECM	108	20	S	L	Ambient Pressure too high, not plausible
MCU	108	2	*	E	Travel Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	108	2	*	L	Travel Pilot Pressure-Data Erratic, Intermittent Or Incorrect
ECM	108	15	S	E	Ambient Pressure Sensor and Exhaust Pressure Sensor do not correlate
ECM	108	15	S	L	Ambient Pressure Sensor and Exhaust Pressure Sensor do not correlate
ECM	108	21	S	E	Ambient Pressure too low, not plausible
ECM	108	21	S	L	Ambient Pressure too low, not plausible
ECM	1080	3	C	F	Sensor Supply 2 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at sensor supply number 2 circuit.
ECM	1080	4	C	F	Sensor Supply Voltage Number 2 Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at the sensor supply number 2 circuit.
ECM	1081	19	C	F	Engine Wait to Start Lamp - Received Network Data In Error
ECM	1081	31	C	F	Engine Wait to Start Lamp - Condition Exists
ECM	1081	7	C	F	Engine Wait to Start Lamp - Mechanical system not responding or out of adjustment
ECM	1081	9	C	F	Engine Wait to Start Lamp - Abnormal update rate
ECM	1081	5	P	E	Engine Wait to Start Lamp : Current Below Normal
ECM	1081	5	P	L	Engine Wait to Start Lamp : Current Below Normal
ECM	1081	6	P	E	Engine Wait to Start Lamp : Current Above Normal
ECM	1081	6	P	L	Engine Wait to Start Lamp : Current Above Normal

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1081	7	C	E	Engine Wait to Start Lamp - Mechanical system not responding or out of adjustment
ECM	1081	7	C	L	Engine Wait to Start Lamp - Mechanical system not responding or out of adjustment
ECM	1081	19	C	E	Engine Wait to Start Lamp - Received Network Data In Error
ECM	1081	19	C	L	Engine Wait to Start Lamp - Received Network Data In Error
ECM	1081	31	C	E	Engine Wait to Start Lamp - Condition Exists
ECM	1081	31	C	L	Engine Wait to Start Lamp - Condition Exists
ECM	1081	9	C	E	Engine Wait to Start Lamp - Abnormal update rate
ECM	1081	9	C	L	Engine Wait to Start Lamp - Abnormal update rate
ECM	1083	14	C	F	Auxiliary Temperature Sensor Input # 1 Engine Protection - Critical
ECM	1083	3	C	F	High voltage detected at the OEM temperature sensor signal pin of the 31-pin OEM connector.
ECM	1083	4	C	F	Auxiliary Temperature Sensor Input # 1 Circuit – shorted low
ECM	1084	14	C	F	Auxiliary Pressure Sensor Input # 2 Engine Protection - Critical
ECM	1084	3	C	F	High voltage detected at the original equipment manufacturers (OEM) pressure sensor signal.
ECM	1084	4	C	F	Low voltage detected at the original equipment manufacturers (OEM) pressure sensor signal.
ECM	1086	2	S	F	Electrical fault on the parking brake pressure sensor
ECM	1086	2	S	E	Electrical fault on the parking brake pressure sensor
ECM	1086	2	S	L	Electrical fault on the parking brake pressure sensor
ECM	109	3	C	F	Coolant Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
ECM	109	4	C	F	Coolant Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	109	18	C	E	Coolant Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	109	18	C	L	Coolant Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	109	3	C	E	Coolant Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	109	3	C	L	Coolant Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	109	4	C	E	Coolant Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	109	4	C	L	Coolant Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	109	18	C	F	Engine Coolant Pressure Low – Warning
TCU	11	*	*	E	Accel dial circuit is shorted to Vcc(5V) or battery(+)
TCU	11	*	*	L	LOGICAL ERROR AT GEAR RANGE SIGNAL
TCU	11	*	*	F	LOGICAL ERROR AT GEAR RANGE SIGNAL

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	110	0	C	E	Engine Coolant Temperature - Data valid but above normal operational range - Most Severe Level
ECM	110	0	C	L	Engine Coolant Temperature - Data valid but above normal operational range - Most Severe Level
ECM	110	0	P	E	Engine Coolant Temperature : High - most severe (3)
ECM	110	0	P	L	Engine Coolant Temperature : High - most severe (3)
ECM	110	0	S	E	Engine temperature, excessive high
ECM	110	0	S	L	Engine temperature, excessive high
ECM	110	0	Y	E	Engine coolant temperature high (overheat)
ECM	110	0	Y	L	Engine coolant temperature high (overheat)
ECM	110	16	S	E	Engine temperature, too high
ECM	110	16	S	L	Engine temperature, too high
ECM	110	14	C	F	Engine Coolant Temperature - Special Instructions
ECM	110	0	C	F	Coolant temperature signal indicates coolant temperature has exceeded the engine protection limit.
ECM	110	16	C	F	Engine Coolant Temperature High – Warning
ECM	110	18	C	F	Engine Coolant Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	110	2	C	F	Engine Coolant Temperature : Coolant Temperature Sensor Circuit - Data Erratic, Intermittent, or Incorrect
ECM	110	3	C	F	High voltage detected at the coolant temperature circuit.
ECM	110	6	C	F	Engine Coolant Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level. Engine coolant temperature signal indicates engine coolant temperature is above engine protection warning limit.
ECM	110	16	C	E	Engine Coolant Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	110	16	C	L	Engine Coolant Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	110	16	P	E	Engine Coolant Temperature: High - moderate severity (2)
ECM	110	16	P	L	Engine Coolant Temperature: High - moderate severity (2)
ECM	110	17	S	E	Engine temp sensor, temp below normal or VGT-temp above normal
ECM	110	17	S	L	Engine temp sensor, temp below normal or VGT-temp above normal
ECM	110	18	C	E	Engine Coolant Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	110	18	C	L	Engine Coolant Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	110	18	S	E	Engine temp sensor, temp above normal or VGT-temp below normal
ECM	110	18	S	L	Engine temp sensor, temp above normal or VGT-temp below normal
ECM	110	2	C	E	Engine Coolant Temperature - Data erratic, intermittent or incorrect
ECM	110	2	C	L	Engine Coolant Temperature - Data erratic, intermittent or incorrect
ECM	110	2	S	E	Engine temp sensor fault

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	110	2	S	L	Engine temp sensor fault
ECM	110	3	C	E	Engine Coolant Temperature 1 Sensor Circuit - Voltage above normal, or shorted to high source
ECM	110	3	C	L	Engine Coolant Temperature 1 Sensor Circuit - Voltage above normal, or shorted to high source
ECM	110	3	P	E	Engine Coolant Temperature: Voltage Above Normal
ECM	110	3	P	L	Engine Coolant Temperature: Voltage Above Normal
ECM	110	3	S	E	Engine temp sensor, short circuit to +24V
ECM	110	3	S	L	Engine temp sensor, short circuit to +24V
ECM	110	3	Y	E	Engine coolant temperature sensor error (voltage high)
ECM	110	3	Y	L	Engine coolant temperature sensor error (voltage high)
ECM	110	4	C	E	Engine Coolant Temperature 1 Sensor Circuit - Voltage below normal, or shorted to low source
ECM	110	4	C	L	Engine Coolant Temperature 1 Sensor Circuit - Voltage below normal, or shorted to low source
ECM	110	4	P	E	Engine Coolant Temperature: Voltage Below Normal
ECM	110	4	P	L	Engine Coolant Temperature: Voltage Below Normal
ECM	110	4	S	E	Engine temp sensor, short circuit to ground
ECM	110	4	S	L	Engine temp sensor, short circuit to ground
ECM	110	4	Y	E	Engine coolant temperature sensor error (voltage low)
ECM	110	4	Y	L	Engine coolant temperature sensor error (voltage low)
ECM	110	8	S	E	Engine temp sensor, stuck
ECM	110	8	S	L	Engine temp sensor, stuck
ECM	110	9	S	E	Engine temp sensor, faulty
ECM	110	9	S	L	Engine temp sensor, faulty
ECM	110	0	S	F	Engine temperature, excessive high
ECM	110	1	S	F	Engine temperature too low
ECM	110	10	S	F	Engine temperature is not plausble
ECM	110	1	S	E	Engine temperature too low
ECM	110	1	S	L	Engine temperature too low
ECM	110	10	S	E	Engine temperature is not plausble
ECM	110	10	S	L	Engine temperature is not plausble
ECM	110	16	S	F	Engine temperature, too high
ECM	110	17	S	F	Engine temp sensor, temp below normal or VGT-temp above normal
ECM	110	18	S	F	Engine temp sensor, temp above normal or VGT-temp below normal
ECM	110	2	S	F	Engine temp sensor fault
ECM	110	14	C	E	Engine Coolant Temperature - Special Instructions
ECM	110	20	S	F	Engine Coolant Water Temperature Too High
ECM	110	14	C	L	Engine Coolant Temperature - Special Instructions
ECM	110	21	S	F	Coolant Temperature Below Thermostat Regulating Temperature
ECM	110	3	S	F	Engine temp sensor, short circuit to +24V

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	110	31	C	F	Engine Coolant Temperature - Condition Exists
ECM	110	4	C	F	Engine Coolant Temperature Sensor Circuit - shorted low
ECM	110	4	S	F	Engine temp sensor, short circuit to ground
ECM	110	8	S	F	Engine temp sensor, stuck
ECM	110	9	S	F	Engine temp sensor, faulty
ECM	110	15	C	E	Engine Coolant Temperature - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	110	15	C	L	Engine Coolant Temperature - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	110	15	P	E	Engine Coolant Temperature: High - least severe (1)
ECM	110	15	P	L	Engine Coolant Temperature: High - least severe (1)
ECM	110	20	S	E	Engine Coolant Water Temperature Too High
ECM	110	20	S	L	Engine Coolant Water Temperature Too High
ECM	110	15	C	F	Engine Coolant Temperature : Engine Coolant Temperature High - Data Valid but Above Normal Operational Range - Least Severe Level
ECM	110	21	S	E	Coolant Temperature Below Thermostat Regulating Temperature
ECM	110	21	S	L	Coolant Temperature Below Thermostat Regulating Temperature
ECM	110	31	C	E	Engine Coolant Temperature - Condition Exists
ECM	110	31	C	L	Engine Coolant Temperature - Condition Exists
ECM	1108	14	S	F	Overridden due to other fault
ECM	1108	14	S	E	Overridden due to other fault
ECM	1108	14	S	L	Overridden due to other fault
ECM	1109	0	C	F	Engine Protection System Approaching Shutdown - Data valid but above normal operational range - Most
ECM	1109	0	C	E	Engine Protection System Approaching Shutdown - Data valid but above normal operational range - Most
ECM	1109	0	C	L	Engine Protection System Approaching Shutdown - Data valid but above normal operational range - Most
ECM	111	1	S	E	Coolant level too low
ECM	111	1	S	L	Coolant level too low
ECM	111	17	C	F	Coolant Level - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	111	18	C	F	Coolant Level - Data Valid but Below Normal Operational Range - Moderately Severe Level. Low engine coolant level detected (Cummins-Loader) 111-18
ECM	111	19	C	F	Coolant Level Sensor - Received Network Data in Error
ECM	111	9	C	F	SAE J1939 Multiplexing PGN Timeout Error - Abnormal update rate
ECM	111	1	C	E	Coolant Level - Data valid but below normal operational range - Most Severe Level

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	111	1	C	L	Coolant Level - Data valid but below normal operational range - Most Severe Level
ECM	111	1	P	E	Engine coolant level : Low - most severe (3)
ECM	111	1	P	L	Engine coolant level : Low - most severe (3)
ECM	111	18	C	E	Coolant Level - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	111	18	C	L	Coolant Level - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	111	18	P	E	Engine Coolant Level : Low - moderate severity (2)
ECM	111	18	P	L	Engine Coolant Level : Low - moderate severity (2)
ECM	111	3	C	E	Coolant Level Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	111	3	C	L	Coolant Level Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	111	3	S	E	Coolant level sensor, short circuit to +24
ECM	111	3	S	L	Coolant level sensor, short circuit to +24
ECM	111	4	C	E	Coolant Level Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	111	4	C	L	Coolant Level Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	111	4	S	E	Coolant level sensor, short circuit to ground
ECM	111	4	S	L	Coolant level sensor, short circuit to ground
ECM	111	1	C	F	Coolant level signal at pin 27 and pin 37 of the engine harness indicates coolant level is low.
ECM	111	1	S	F	Coolant level too low
ECM	111	17	C	E	Coolant Level - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	111	17	C	L	Coolant Level - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	111	17	M	E	Engine coolant level : Low - least severe (1)
ECM	111	2	C	F	Voltage detected simultaneously on both the coolant level high and low signal pins 27 and 37 of the engine harness or no voltage detected on either pin.
ECM	111	17	M	L	Engine coolant level : Low - least severe (1)
ECM	111	3	C	F	Coolant Level Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at engine coolant level circuit. (Cummins-Excavator) 111-3
ECM	111	3	S	F	Coolant level sensor, short circuit to +24
ECM	111	4	C	F	Coolant Level Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the engine coolant level circuit (Cummins-Excavator) 111-4
ECM	111	4	S	F	Coolant level sensor, short circuit to ground
ECM	111	17	P	E	Engine coolant level : Low - least severe (1)

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	111	17	P	L	Engine coolant level : Low - least severe (1)
ECM	111	19	C	E	Coolant Level Sensor - Received Network Data in Error
ECM	111	19	C	L	Coolant Level Sensor - Received Network Data in Error
ECM	111	2	C	E	Coolant Level - Data erratic, intermittent or incorrect
ECM	111	2	C	L	Coolant Level - Data erratic, intermittent or incorrect
ECM	111	9	C	E	Coolant Level Sensor - Abnormal Update Rate
ECM	111	9	C	L	Coolant Level Sensor - Abnormal Update Rate
ECM	1110	14	S	F	Engine Stop due to other fault
ECM	1110	2	S	F	Status signal which indicates whether or not the engine protection system has shutdown the engine.
ECM	1110	14	S	E	Engine Stop due to other fault
ECM	1110	14	S	L	Engine Stop due to other fault
ECM	1110	31	P	E	Engine Protection System has Shutdown Engine
ECM	1110	31	P	L	Engine Protection System has Shutdown Engine
ECM	1112	3	C	E	Engine Brake Actuator Driver 3 Circuit - Voltage above normal, or shorted to high source
ECM	1112	3	C	L	Engine Brake Actuator Driver 3 Circuit - Voltage above normal, or shorted to high source
ECM	1112	4	C	E	Engine Brake Actuator Driver Output 3 Circuit - Voltage below normal, or shorted to low source
ECM	1112	4	C	L	Engine Brake Actuator Driver Output 3 Circuit - Voltage below normal, or shorted to low source
ECM	1112	11	C	F	
ECM	1112	3	C	F	Engine Brake Output # 3 : Engine Brake Actuator Driver 3 Circuit - Voltage Above Normal, or Shorted to High Source
ECM	1112	4	C	F	Engine Brake Output # 3 : Engine Brake Actuator Driver Output 3 Circuit Voltage Below Normal, or Shorted to Low Source
ECM	1127	7	C	F	Engine Turbocharger 1 Boost Pressure - Mechanical system not responding or out of adjustment
ECM	1127	16	P	E	Engine Turbocharger 1 Boost Pressure : High - moderate severity (2)
ECM	1127	16	P	L	Engine Turbocharger 1 Boost Pressure : High - moderate severity (2)
ECM	1127	18	P	E	Engine Turbocharger 1 Boost Pressure: Low - moderate severity (2)
ECM	1127	18	P	L	Engine Turbocharger 1 Boost Pressure: Low - moderate severity (2)
ECM	1127	7	C	E	Engine Turbocharger 1 Boost Pressure - Mechanical system not responding or out of adjustment
ECM	1127	7	C	L	Engine Turbocharger 1 Boost Pressure - Mechanical system not responding or out of adjustment
ECM	1129	4	C	F	Right Bank Intake Manifold Pressure Sensor Circuit Failed Low
ECM	1129	16	C	F	High Intake Manifold Pressure Right Bank

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1129	18	C	F	Low Intake Manifold Pressure Right Bank
ECM	1129	3	C	F	Right Bank Intake Manifold Pressure Sensor Circuit Failed High
ECM	113	2	C	F	OEM Alternate Droop Switch Validation - data incorrect
ECM	1131	0	C	F	High Intake Manifold Temp - Left Bank Rear
ECM	1131	10	C	F	Rapid Rise in Intake Manifold Temperature LBR
ECM	1131	3	C	F	Left Bank Rear Intake Manifold Temp Sensor Circuit Failed High
ECM	1131	4	C	F	Left Bank Rear Intake Manifold Temp Sensor Circuit Failed Low
ECM	1132	0	C	F	High Intake Manifold Temperature - Right Bank Front
ECM	1132	10	C	F	Rapid Rise in Intake Manifold Temperature RBF
ECM	1132	3	C	F	Right Bank Front Intake Manifold Temperature Sensor Circuit Failed High
ECM	1132	4	C	F	Right Bank Front Intake Manifold Temperature Sensor Circuit Failed Low
ECM	1133	0	C	F	High Intake Manifold Temperature - Right Bank Rear
ECM	1133	10	C	F	Rapid Rise in Intake Manifold Temperature RBR
ECM	1133	3	C	F	Right Bank Rear Intake Manifold Temperature Sensor Circuit Failed High
ECM	1133	4	C	F	Right Bank Rear Intake Manifold Temperature Sensor Circuit Failed Low
ECM	1136	2	C	F	Engine ECU Temperature - Data erratic, intermittent or incorrect
ECM	1136	3	C	F	Engine ECU Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	1136	3	C	E	Engine ECU Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	1136	3	C	L	Engine ECU Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	1136	4	C	E	Engine ECU Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	1136	4	C	L	Engine ECU Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	1136	2	C	E	Engine ECU Temperature - Data erratic, intermittent or incorrect
ECM	1136	2	C	L	Engine ECU Temperature - Data erratic, intermittent or incorrect
ECM	1136	4	C	F	Sensor Circuit -Voltage : ECM Internal Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	1137	0	C	F	High #1 LB Cylinder Exhaust Temperature
ECM	1137	4	C	F	Cyl #1 LB Exhaust Temp Sens Failed Low
ECM	1137	16	C	F	High #1 LB Cylinder Power
ECM	1137	18	C	F	Low #1 LB Cylinder Power
ECM	1138	0	C	F	High #2 LB Cylinder Exhaust Temperature

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1138	4	C	F	Cyl #2 LB Exhaust Temp Sens Failed Low
ECM	1138	16	C	F	High #2 LB Cylinder Power
ECM	1138	18	C	F	Low #2 LB Cylinder Power
ECM	1139	0	C	F	High #3 LB Cylinder Exhaust Temperature
ECM	1139	16	C	F	High #3 LB Cylinder Power
ECM	1139	18	C	F	Low #3 LB Cylinder Power
ECM	1139	4	C	F	Cyl #3 LB Exhaust Temp Sens Failed Low
ECM	1140	0	C	F	High #4 LB Cylinder Exhaust Temperature
ECM	1140	4	C	F	Cyl #4 LB Exhaust Temp Sens Failed Low
ECM	1140	16	C	F	High #4 LB Cylinder Power
ECM	1140	18	C	F	Low #4 LB Cylinder Power
ECM	1141	0	C	F	High #5 LB Cylinder Exhaust Temperature
ECM	1141	4	C	F	Cyl #5 LB Exhaust Temp Sens Failed Low
ECM	1141	16	C	F	High #5 LB Cylinder Power
ECM	1141	18	C	F	Low #5 LB Cylinder Power
ECM	1142	0	C	F	High #6 LB Cylinder Exhaust Temperature
ECM	1142	4	C	F	Cyl #6 LB Exhaust Temp Sens Failed Low
ECM	1142	16	C	F	High #6 LB Cylinder Power
ECM	1142	18	C	F	Low #6 LB Cylinder Power
ECM	1143	0	C	F	High #7 LB Cylinder Exhaust Temperature
ECM	1143	30	C	F	High #1 RB Cylinder Exhaust Temperature
ECM	1143	4	C	F	Cyl #7 LB Exhaust Temp Sens Failed Low
ECM	1143	16	C	F	High #7 LB Cylinder Power
ECM	1143	18	C	F	Low #7 LB Cylinder Power
ECM	1143	45	C	F	Low #1 RB Cylinder Power
ECM	1144	0	C	F	High #8 LB Cylinder Exhaust Temperature
ECM	1144	30	C	F	High #2 RB Cylinder Exhaust Temperature
ECM	1144	4	C	F	Cyl #8 LB Exhaust Temp Sens Failed Low
ECM	1144	16	C	F	High #8 LB Cylinder Power
ECM	1144	18	C	F	Low #8 LB Cylinder Power
ECM	1144	45	C	F	Low #2 RB Cylinder Power
ECM	1145	30	C	F	High #3 RB Cylinder Exhaust Temperature
ECM	1145	45	C	F	Low #3 RB Cylinder Power

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1145	60	C	F	Low #1 RB Cylinder Power
ECM	1146	30	C	F	High #4 RB Cylinder Exhaust Temperature
ECM	1146	45	C	F	Low #4 RB Cylinder Power
ECM	1146	60	C	F	Low #2 RB Cylinder Power
ECM	1147	30	C	F	High #5 RB Cylinder Exhaust Temperature
ECM	1147	45	C	F	Low #5 RB Cylinder Power
ECM	1147	60	C	F	Low #3 RB Cylinder Power
ECM	1148	30	C	F	High #6 RB Cylinder Exhaust Temperature
ECM	1148	45	C	F	Low #6 RB Cylinder Power
ECM	1148	60	C	F	Low #4 RB Cylinder Power
ECM	1149	60	C	F	Low #5 RB Cylinder Power
ECM	1150	0	C	F	High #7 RB Cylinder Exhaust Temperature
ECM	1150	60	C	F	Low #6 RB Cylinder Power
ECM	1151	0	C	F	High #8 RB Cylinder Exhaust Temperature
ECM	1151	4	C	F	Cyl #7 RB Exhaust Temp Sens Failed Low
ECM	1151	18	C	F	Low #7 RB Cylinder Power
ECM	1152	4	C	F	Cyl #8 RB Exhaust Temp Sens Failed Low
ECM	1152	18	C	F	Low #8 RB Cylinder Power
ECM	1153	0	C	F	High #9 LB Cylinder Exhaust Temperature
ECM	1153	4	C	F	Exhaust Gas Temperature Sensor Circuit Failed Low Cyl # 9 RB
ECM	1154	0	C	F	High #9 RB Cylinder Exhaust Temperature
ECM	1154	4	C	F	Exhaust Gas Temperature Sensor Circuit Failed Low Cyl # 9 LB
ECM	1172	19	C	F	Turbocharger 1 Compressor Intake Temperature Sensor - Received Network Data In Error
ECM	1172	2	C	F	Turbocharger 1 Compressor Intake Temperature - Data erratic, intermittent or incorrect
ECM	1172	3	C	F	Turbocharger Number 1 Compressor Inlet Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the turbocharger compressor inlet air temperature circuit.
ECM	1172	9	C	F	Turbocharger 1 Compressor Intake Temperature Sensor - Abnormal update rate
ECM	1172	19	C	E	Turbocharger 1 Compressor Intake Temperature Sensor - Received Network Data In Error
ECM	1172	19	C	L	Turbocharger 1 Compressor Intake Temperature Sensor - Received Network Data In Error
ECM	1172	2	C	E	Turbocharger 1 Compressor Intake Temperature - Data erratic, intermittent or incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1172	2	C	L	Turbocharger 1 Compressor Intake Temperature - Data erratic, intermittent or incorrect
ECM	1172	3	C	E	Turbocharger 1 Compressor Intake Temperature Circuit - Voltage above normal, or shorted to high source
ECM	1172	3	C	L	Turbocharger 1 Compressor Intake Temperature Circuit - Voltage above normal, or shorted to high source
ECM	1172	4	C	E	Turbocharger 1 Compressor Intake Temperature Circuit - Voltage below normal, or shorted to low source
ECM	1172	4	C	L	Turbocharger 1 Compressor Intake Temperature Circuit - Voltage below normal, or shorted to low source
ECM	1172	9	C	E	Turbocharger 1 Compressor Intake Temperature Sensor - Abnormal update rate
ECM	1172	9	C	L	Turbocharger 1 Compressor Intake Temperature Sensor - Abnormal update rate
ECM	1172	0	C	F	High Turbo Compressor Inlet Temp LB
ECM	1172	4	C	F	LBR Turbo Comp Inlet Temp Sens Failed Low
ECM	1173	16	C	F	High Turbo Compressor Inlet Temp RB
ECM	1173	3	C	F	RBF Turbo Comp Inlet Temp Sens Failed High
ECM	1174	4	C	F	RBR Turbo Comp Inlet Temp Sens Failed Low
ECM	1176	1	C	F	Turbocharger 1 Compressor Intake Pressure - Data valid but below normal operational range - Most Severe Level
ECM	1176	18	C	F	Turbocharger 1 Compressor Intake Pressure - Data Valid But Below Normal Operating Range - Moderately
ECM	1176	19	C	F	Turbocharger 1 Compressor Intake Pressure - Received Network Data In Error
ECM	1176	2	C	F	Turbocharger 1 Compressor Intake Pressure - Data erratic, intermittent or incorrect
ECM	1176	3	C	F	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage above normal, or shorted to high source
ECM	1176	4	C	F	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage below normal, or shorted to low source
ECM	1176	9	C	F	Turbocharger 1 Compressor Intake Pressure - Abnormal update rate
ECM	1176	1	C	E	Turbocharger 1 Compressor Intake Pressure - Data valid but below normal operational range - Most Severe Level
ECM	1176	1	C	L	Turbocharger 1 Compressor Intake Pressure - Data valid but below normal operational range - Most Severe Level
ECM	1176	18	C	E	Turbocharger 1 Compressor Intake Pressure - Data Valid But Below Normal Operating Range - Moderately
ECM	1176	18	C	L	Turbocharger 1 Compressor Intake Pressure - Data Valid But Below Normal Operating Range - Moderately
ECM	1176	19	C	E	Turbocharger 1 Compressor Intake Pressure - Received Network Data In Error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1176	19	C	L	Turbocharger 1 Compressor Intake Pressure - Received Network Data In Error
ECM	1176	2	C	E	Turbocharger 1 Compressor Intake Pressure - Data erratic, intermittent or incorrect
ECM	1176	2	C	L	Turbocharger 1 Compressor Intake Pressure - Data erratic, intermittent or incorrect
ECM	1176	3	C	E	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage above normal, or shorted to high source
ECM	1176	3	C	L	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage above normal, or shorted to high source
ECM	1176	4	C	E	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage below normal, or shorted to low source
ECM	1176	4	C	L	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage below normal, or shorted to low source
ECM	1176	9	C	E	Turbocharger 1 Compressor Intake Pressure - Abnormal update rate
ECM	1176	9	C	L	Turbocharger 1 Compressor Intake Pressure - Abnormal update rate
ECM	1180	0	C	F	Turbocharger #1 Turbine Inlet Temperature High - warning level
ECM	1188	7	C	F	Turbocharger 1 Wastegate Control Mechanical System Not Responding Properly or Out of Adjustment. Intake manifold pressure has exceeded the maximum limit for the given engine rating.
ECM	1188	5	P	E	Engine Turbocharger Wastegate Actuator 1 Position : Current Below Normal
ECM	1188	5	P	L	Engine Turbocharger Wastegate Actuator 1 Position : Current Below Normal
ECM	1188	6	P	E	Engine Turbocharger Wastegate Actuator 1 Position : Current Above Normal
ECM	1188	6	P	L	Engine Turbocharger Wastegate Actuator 1 Position : Current Above Normal
ECM	1188	3	C	F	High voltage detected at the wastegate actuator number 1 circuit when no voltage was being supplied by the electronic control module (ECM).
ECM	1188	4	C	F	Turbocharger #1 Wastegate Control Circuit - shorted low
ECM	1189	3	C	E	Engine Turbocharger Wastegate Actuator 2 Position Circuit - Voltage Above Normal or Shorted to High Source
ECM	1189	3	C	L	Engine Turbocharger Wastegate Actuator 2 Position Circuit - Voltage Above Normal or Shorted to High Source
ECM	1189	4	C	E	Engine Turbocharger Wastegate Actuator 2 Position Circuit - Voltage Below Normal or Shorted to Low Source
ECM	1189	4	C	L	Engine Turbocharger Wastegate Actuator 2 Position Circuit - Voltage Below Normal or Shorted to Low Source
ECM	1189	3	C	F	High voltage detected at the wastegate actuator number 2 circuit when no voltage was being supplied by the electronic control module (ECM).
ECM	1189	4	C	F	Less than + 6 VDC detected at the wastegate actuator number 2 circuit when activated indicates an excessive current draw from the electronic control module (ECM) or faulty ECM output circuit.
ECM	1194	13	C	E	Anti-theft Encryption Seed - Out of Calibration
ECM	1194	13	C	L	Anti-theft Encryption Seed - Out of Calibration
ECM	1194	13	C	F	Anti-theft Encryption Seed - Out of Calibration
ECM	1195	2	C	E	Antitheft Password Valid Indicator - Data erratic, intermittent or incorrect
ECM	1195	2	C	L	Antitheft Password Valid Indicator - Data erratic, intermittent or incorrect
ECM	1195	2	C	F	Antitheft Password Valid Indicator Data Erratic, Intermittent, or Incorrect. Engine ignition attempt without authorization from immobilizer anti-theft device.
TCU	12	*	*	E	P1 pressure sensor circuit is shorted to power supply(24V) line
TCU	12	*	*	L	LOGICAL ERROR AT DIRECTION SELECT SIGNAL
TCU	12	*	*	F	LOGICAL ERROR AT DIRECTION SELECT SIGNAL
MCU	120	0	*	E	Main Pump 1 (P1) Pressure-Data Valid But Above Normal Operational Range
MCU	120	0	*	L	Main Pump 1 (P1) Pressure-Data Valid But Above Normal Operational Range
MCU	120	1	*	E	Main Pump 1 (P1) Pressure-Data Valid But Below Normal Operational Range
MCU	120	1	*	L	Main Pump 1 (P1) Pressure-Data Valid But Below Normal Operational Range
MCU	120	4	*	E	Main Pump 1 (P1) Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	120	4	*	L	Main Pump 1 (P1) Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	120	2	*	E	Main Pump 1 (P1) Pressure-Data Erratic, Intermittent Or Incorrect
MCU	120	2	*	L	Main Pump 1 (P1) Pressure-Data Erratic, Intermittent Or Incorrect
ECM	1202	2	Y	E	Immobilizer error (system)
ECM	1202	2	Y	L	Immobilizer error (system)
ECM	1208	3	C	F	Pre Filter Oil Pressure Sensor Circuit Failed High
ECM	1209	13	Y	E	EGR high pressure side pressure sensor error (abnormal learning value)
ECM	1209	13	Y	L	EGR high pressure side pressure sensor error (abnormal learning value)
ECM	1209	16	C	F	Exhaust Gas Pressure 1 - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	1209	2	C	F	Exhaust Gas Pressure 1 - Data erratic, intermittent or incorrect
ECM	1209	3	C	F	Exhaust gas pressure sensor circuit - shorted high. High voltage detected at the exhaust gas pressure sensor circuit.
ECM	1209	4	C	F	Exhaust gas pressure sensor circuit - shorted low. Low voltage detected on the exhaust gas pressure sensor exhaust circuit.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1209	15	C	E	Exhaust Pressure 1 - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	1209	15	C	L	Exhaust Pressure 1 - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	1209	16	C	E	Exhaust Gas Pressure 1 - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	1209	16	C	L	Exhaust Gas Pressure 1 - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	1209	3	C	E	Exhaust Gas Pressure Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	1209	3	C	L	Exhaust Gas Pressure Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	1209	3	P	E	Engine Exhaust Gas Pressure: Voltage Above Normal
ECM	1209	3	P	L	Engine Exhaust Gas Pressure: Voltage Above Normal
ECM	1209	3	Y	E	EGR high pressure side pressure sensor error (voltage high)
ECM	1209	3	Y	L	EGR high pressure side pressure sensor error (voltage high)
ECM	1209	4	C	E	Exhaust Gas Pressure Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	1209	4	C	L	Exhaust Gas Pressure Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	1209	4	P	E	Engine Exhaust Gas Pressure: Voltage Below Normal
ECM	1209	4	P	L	Engine Exhaust Gas Pressure: Voltage Below Normal
ECM	1209	4	Y	E	EGR high pressure side pressure sensor error (voltage low)
ECM	1209	4	Y	L	EGR high pressure side pressure sensor error (voltage low)
ECM	1209	2	C	E	Exhaust Gas Pressure 1 - Data erratic, intermittent or incorrect
ECM	1209	2	C	L	Exhaust Gas Pressure 1 - Data erratic, intermittent or incorrect
MCU	121	0	*	E	Main Pump 2 (P2) Pressure-Data Valid But Above Normal Operational Range
MCU	121	0	*	L	Main Pump 2 (P2) Pressure-Data Valid But Above Normal Operational Range
MCU	121	1	*	E	Main Pump 2 (P2) Pressure-Data Valid But Below Normal Operational Range
MCU	121	1	*	L	Main Pump 2 (P2) Pressure-Data Valid But Below Normal Operational Range
MCU	121	4	*	E	Main Pump 2 (P2) Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	121	4	*	L	Main Pump 2 (P2) Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	121	2	*	E	Main Pump 2 (P2) Pressure-Data Erratic, Intermittent Or Incorrect
MCU	121	2	*	L	Main Pump 2 (P2) Pressure-Data Erratic, Intermittent Or Incorrect
ECM	1213	9	C	F	Malfunction Indicator Lamp - Abnormal update rate
ECM	1213	9	C	E	Malfunction Indicator Lamp - Abnormal update rate

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1213	9	C	L	Malfunction Indicator Lamp - Abnormal update rate
MCU	122	0	*	E	Overload Pressure-Data Valid But Above Normal Operational Range
MCU	122	0	*	L	Overload Pressure-Data Valid But Above Normal Operational Range
MCU	122	1	*	E	Overload Pressure-Data Valid But Below Normal Operational Range
MCU	122	1	*	L	Overload Pressure-Data Valid But Below Normal Operational Range
MCU	122	4	*	E	Overload Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	122	4	*	L	Overload Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	122	2	*	E	Overload Pressure-Data Erratic, Intermittent Or Incorrect
MCU	122	2	*	L	Overload Pressure-Data Erratic, Intermittent Or Incorrect
ECM	1221	14	P	E	Continuously Monitored Systems Support/Status ; Special Instruction
ECM	1221	14	P	L	Continuously Monitored Systems Support/Status ; Special Instruction
ECM	1221	2	P	E	Continuously Monitored Systems Support/Status ; Erratic, Intermittent, or Incorrect
ECM	1221	2	P	L	Continuously Monitored Systems Support/Status ; Erratic, Intermittent, or Incorrect
MCU	123	0	*	E	Main Pump 1 Regulator Pressure-Data Valid But Above Normal Operational Range
MCU	123	0	*	L	Main Pump 1 Regulator Pressure-Data Valid But Above Normal Operational Range
MCU	123	1	*	E	Main Pump 1 Regulator Pressure-Data Valid But Below Normal Operational Range
MCU	123	1	*	L	Main Pump 1 Regulator Pressure-Data Valid But Below Normal Operational Range
MCU	123	4	*	E	Main Pump 1 Regulator Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	123	4	*	L	Main Pump 1 Regulator Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	123	2	*	E	Main Pump 1 Regulator Pressure-Data Erratic, Intermittent Or Incorrect
MCU	123	2	*	L	Main Pump 1 Regulator Pressure-Data Erratic, Intermittent Or Incorrect
ECM	1231	2	C	F	J1939 Network #2 - Data erratic, intermittent or incorrect
ECM	1231	2	C	E	J1939 Network #2 - Data erratic, intermittent or incorrect
ECM	1231	2	C	L	J1939 Network #2 - Data erratic, intermittent or incorrect
ECM	1235	14	P	E	J1939 Network #3 - Special Instruction
ECM	1235	14	P	L	J1939 Network #3 - Special Instruction
ECM	1235	9	P	E	J1939 Network #3 - Abnormal Update Rate
ECM	1235	9	P	L	J1939 Network #3 - Abnormal Update Rate
ECM	1235	2	C	F	J1939 Network #3 - Data erratic, intermittent or incorrect
ECM	1235	2	C	E	J1939 Network #3 - Data erratic, intermittent or incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1235	2	C	L	J1939 Network #3 - Data erratic, intermittent or incorrect
ECM	1239	0	P	E	Engine Fuel Leakage 1 : High - most severe (3)
ECM	1239	0	P	L	Engine Fuel Leakage 1 : High - most severe (3)
ECM	1239	16	C	E	Engine Fuel Leakage - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	1239	16	C	L	Engine Fuel Leakage - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	1239	16	C	F	Engine Fuel Leakage - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	1239	7	S	F	Fuel Rail pressure, small volume leak
ECM	1239	7	S	E	Fuel Rail pressure, small volume leak
ECM	1239	7	S	L	Fuel Rail pressure, small volume leak
MCU	124	0	*	E	Main Pump 2 Regulator Pressure-Data Valid But Above Normal Operational Range
MCU	124	0	*	L	Main Pump 2 Regulator Pressure-Data Valid But Above Normal Operational Range
MCU	124	1	*	E	Main Pump 2 Regulator Pressure-Data Valid But Below Normal Operational Range
MCU	124	1	*	L	Main Pump 2 Regulator Pressure-Data Valid But Below Normal Operational Range
MCU	124	4	*	E	Main Pump 2 Regulator Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	124	4	*	L	Main Pump 2 Regulator Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	124	2	*	E	Main Pump 2 Regulator Pressure-Data Erratic, Intermittent Or Incorrect
MCU	124	2	*	L	Main Pump 2 Regulator Pressure-Data Erratic, Intermittent Or Incorrect
ECM	1244	5	C	F	Fueling Actuator #2 Circuit - open circuit
ECM	1244	6	C	F	Fueling Actuator #2 Circuit - grounded circuit
ECM	1245	5	C	F	Timing Actuator #2 Circuit - open circuit
ECM	1245	6	C	F	Timing Actuator #2 Circuit - grounded circuit
MCU	125	0	*	E	Pilot Pump Pressure-Data Valid But Above Normal Operational Range
MCU	125	0	*	L	Pilot Pump Pressure-Data Valid But Above Normal Operational Range
MCU	125	1	*	E	Pilot Pump Pressure-Data Valid But Below Normal Operational Range
MCU	125	1	*	L	Pilot Pump Pressure-Data Valid But Below Normal Operational Range
MCU	125	4	*	E	Pilot Pump Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	125	4	*	L	Pilot Pump Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	125	2	*	E	Pilot Pump Pressure-Data Erratic, Intermittent Or Incorrect
MCU	125	2	*	L	Pilot Pump Pressure-Data Erratic, Intermittent Or Incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1264	0	C	F	Engine Blowby - Warning Level
ECM	1264	16	C	F	Engine Blowby - Warning Level
ECM	1264	3	C	F	Crankcase Blowby Pressure Sensor Circuit - shorted high
ECM	1264	4	C	F	Crankcase Blowby Pressure Sensor Circuit - shorted low
ECM	1265	4	C	F	Engine Oil Burn Valve Solenoid Circuit – shorted low
ECM	1266	4	C	F	Engine Oil Replacement Valve Solenoid Circuit - shorted low
ECM	1267	3	C	E	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage above normal, or shorted to high source
ECM	1267	3	C	L	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage above normal, or shorted to high source
ECM	1267	4	C	E	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage below normal, or shorted to low source
ECM	1267	4	C	L	Idle Shutdown Vehicle Accessories Relay Driver Circuit - Voltage below normal, or shorted to low source
ECM	1267	3	C	F	High voltage detected at the ignition bus relay output circuit (ignition relay positive (+)) when low voltage was expected by the ECM.
ECM	1267	4	C	F	Less than 6 VDC detected at the ignition bus relay output circuit when the high voltage was expected by the ECM.
MCU	127	0	*	E	Boom Up Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	127	0	*	L	Boom Up Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	127	1	*	E	Boom Up Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	127	1	*	L	Boom Up Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	127	4	*	E	Boom Up Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	127	4	*	L	Boom Up Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	127	2	*	E	Boom Up Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	127	2	*	L	Boom Up Pilot Pressure-Data Erratic, Intermittent Or Incorrect
ECM	1279	4	C	E	Ignition Coil Cylinder 12 - Voltage Below Normal or Shorted to Low Source
ECM	1279	4	C	L	Ignition Coil Cylinder 12 - Voltage Below Normal or Shorted to Low Source
ECM	1279	5	P	E	Engine Ignition Coil #12
ECM	1279	5	P	L	Engine Ignition Coil #12
MCU	128	0	*	E	Boom Down Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	128	0	*	L	Boom Down Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	128	1	*	E	Boom Down Pilot Pressure-Data Valid But Below Normal Operational Range

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	128	1	*	L	Boom Down Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	128	4	*	E	Boom Down Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	128	4	*	L	Boom Down Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	128	2	*	E	Boom Down Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	128	2	*	L	Boom Down Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	129	0	*	E	Arm In Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	129	0	*	L	Arm In Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	129	1	*	E	Arm In Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	129	1	*	L	Arm In Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	129	4	*	E	Arm In Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	129	4	*	L	Arm In Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	129	2	*	E	Arm In Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	129	2	*	L	Arm In Pilot Pressure-Data Erratic, Intermittent Or Incorrect
TCU	13	*	*	E	P2 pressure sensor circuit is shorted to power supply(24V) line
TCU	13	*	*	L	LOGICAL ERROR AT ENGINE DERATING DEVICE
TCU	13	*	*	F	LOGICAL ERROR AT ENGINE DERATING DEVICE
MCU	130	0	*	E	Arm out pilot pressure-Data Valid But Above Normal Operational
MCU	130	0	*	L	Arm out pilot pressure-Data Valid But Above Normal Operational
MCU	130	1	*	E	Arm out pilot pressure-Data Valid But Below Normal Operational Range
MCU	130	1	*	L	Arm out pilot pressure-Data Valid But Below Normal Operational Range
MCU	130	4	*	E	Arm out pilot pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	130	4	*	L	Arm out pilot pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	130	2	*	E	Arm out pilot pressure-Data Erratic, Intermittent Or Incorrect
MCU	130	2	*	L	Arm out pilot pressure-Data Erratic, Intermittent Or Incorrect
ECM	131	10	S	E	Exhaust pressure sensor and ambient pressure sensor do not correlate
ECM	131	10	S	L	Exhaust pressure sensor and ambient pressure sensor do not correlate
ECM	131	15	S	E	Exhaust pressure, high exhaust pressure during normal fueling
ECM	131	15	S	L	Exhaust pressure, high exhaust pressure during normal fueling
ECM	131	3	S	E	Exhaust pressure sensor, short circuit to +24V
ECM	131	3	S	L	Exhaust pressure sensor, short circuit to +24V
ECM	131	4	S	E	Exhaust pressure sensor, short circuit to ground or open load

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	131	4	S	L	Exhaust pressure sensor, short circuit to ground or open load
ECM	131	9	S	E	Exhaust pressure sensor, stuck
ECM	131	9	S	L	Exhaust pressure sensor, stuck
MCU	131	0	*	E	Bucket In pilot pressure-Data Valid But Above Normal Operational Range
MCU	131	0	*	L	Bucket In pilot pressure-Data Valid But Above Normal Operational Range
MCU	131	1	*	E	Bucket In pilot pressure-Data Valid But Below Normal Operational Range
MCU	131	1	*	L	Bucket In pilot pressure-Data Valid But Below Normal Operational Range
MCU	131	4	*	E	Bucket In pilot pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	131	4	*	L	Bucket In pilot pressure-Voltage Below Normal, Or Shorted To Low Source
ECM	131	10	S	F	Exhaust pressure sensor and ambient pressure sensor do not correlate
ECM	131	15	S	F	Exhaust pressure, high exhaust pressure during normal fueling
ECM	131	16	S	F	Exhaust pressure, high exhaust pressure during motoring, no fueling
ECM	131	18	S	F	Exhaust pressure, low exhaust pressure during exhaust brake
ECM	131	2	S	F	Exhaust pressure sensor, not plausible
ECM	131	16	S	E	Exhaust pressure, high exhaust pressure during motoring, no fueling
ECM	131	20	S	F	Exhaust pressure too high, not plausible
ECM	131	16	S	L	Exhaust pressure, high exhaust pressure during motoring, no fueling
ECM	131	18	S	E	Exhaust pressure, low exhaust pressure during exhaust brake
ECM	131	21	S	F	Exhaust pressure too low, not plausible
ECM	131	18	S	L	Exhaust pressure, low exhaust pressure during exhaust brake
ECM	131	3	S	F	Exhaust pressure sensor, short circuit to +24V
ECM	131	4	S	F	Exhaust pressure sensor, short circuit to ground or open load
ECM	131	2	S	E	Exhaust pressure sensor, not plausible
ECM	131	7	S	F	Exhaust pressure sensor and boost pressure sensor do not correlate
ECM	131	2	S	L	Exhaust pressure sensor, not plausible
ECM	131	20	S	E	Exhaust pressure too high, not plausible
ECM	131	8	S	F	Exhaust pressure sensor, faulty
ECM	131	20	S	L	Exhaust pressure too high, not plausible
ECM	131	9	S	F	Exhaust pressure sensor, stuck
ECM	131	21	S	E	Exhaust pressure too low, not plausible
ECM	131	21	S	L	Exhaust pressure too low, not plausible
ECM	131	7	S	E	Exhaust pressure sensor and boost pressure sensor do not correlate
ECM	131	7	S	L	Exhaust pressure sensor and boost pressure sensor do not correlate

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	131	8	S	E	Exhaust pressure sensor, faulty
ECM	131	8	S	L	Exhaust pressure sensor, faulty
MCU	131	2	*	E	Bucket In pilot pressure-Data Erratic, Intermittent Or Incorrect
MCU	131	2	*	L	Bucket In pilot pressure-Data Erratic, Intermittent Or Incorrect
ECM	1318	9	C	F	Exhaust Port Temperature Bank Imbalance
ECM	1319	2	C	F	Intake Manifold Boost Pressure Imbalance
ECM	132	2	C	F	Engine Intake Air Mass Flow - Data Erratic, Intermittent, or Incorrect
ECM	132	3	C	F	Engine Intake Air Mass Flow Sensor Circuit - Voltage Above Normal or Shorted to High Source
ECM	132	4	C	F	Engine Intake Air Mass Flow Circuit - Voltage Below Normal or Shorted to Low Source
ECM	132	0	S	E	Mass flow sensor, short circuit to +24V
ECM	132	0	S	L	Mass flow sensor, short circuit to +24V
ECM	132	1	S	E	Mass flow sensor, short circuit to ground or open load
ECM	132	1	S	L	Mass flow sensor, short circuit to ground or open load
ECM	132	2	C	E	Engine Intake Air Mass Flow - Data Erratic, Intermittent, or Incorrect
ECM	132	2	C	L	Engine Intake Air Mass Flow - Data Erratic, Intermittent, or Incorrect
ECM	132	2	S	E	Mass flow sensor, faulty
ECM	132	2	S	L	Mass flow sensor, faulty
ECM	132	20	C	E	Engine Intake Air Mass Flow - Data Not Rational - Drifted High
ECM	132	20	C	L	Engine Intake Air Mass Flow - Data Not Rational - Drifted High
ECM	132	21	C	E	Engine Intake Air Mass Flow - Data Not Rational - Drifted Low
ECM	132	21	C	L	Engine Intake Air Mass Flow - Data Not Rational - Drifted Low
ECM	132	3	C	E	Engine Intake Air Mass Flow Sensor Circuit - Voltage Above Normal or Shorted to High Source
ECM	132	3	C	L	Engine Intake Air Mass Flow Sensor Circuit - Voltage Above Normal or Shorted to High Source
ECM	132	3	S	E	Mass flow sensor, supply
ECM	132	3	S	L	Mass flow sensor, supply
ECM	132	4	C	E	Engine Intake Air Mass Flow Circuit - Voltage Below Normal or Shorted to Low Source
ECM	132	4	C	L	Engine Intake Air Mass Flow Circuit - Voltage Below Normal or Shorted to Low Source
ECM	132	4	S	E	Mass flow sensor, sdaptation under low threshold
ECM	132	4	S	L	Mass flow sensor, sdaptation under low threshold
ECM	132	5	S	E	Mass flow sensor, adaptation over high threshold
ECM	132	5	S	L	Mass flow sensor, adaptation over high threshold
ECM	132	7	S	E	Mass flow sensor, stuck
ECM	132	7	S	L	Mass flow sensor, stuck
ECM	132	0	S	F	Mass flow sensor, short circuit to +24V

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	132	1	S	F	Mass flow sensor, short circuit to ground or open load
ECM	132	2	S	F	Mass flow sensor, faulty
ECM	132	3	S	F	Mass flow sensor, supply
ECM	132	4	S	F	Mass flow sensor, sdaptation under low threshold
ECM	132	5	S	F	Mass flow sensor, adaptation over high threshold
ECM	132	7	S	F	Mass flow sensor, stuck
ECM	1321	2	C	F	Either low voltage detected when + 12 VDC are commanded or voltage detected when no voltage is commanded.
ECM	1322	31	C	E	Engine Misfire for Multiple Cylinders - Condition Exists
ECM	1322	31	C	L	Engine Misfire for Multiple Cylinders - Condition Exists
ECM	1322	7	S	E	Random/Multiple Cylinder Misfire Detected
ECM	1322	7	S	L	Random/Multiple Cylinder Misfire Detected
ECM	1322	31	C	F	Engine Misfire for Multiple Cylinders Condition Exists. Engine misfire has been detected in multiple cylinder numbers.
ECM	1322	7	S	F	Random/Multiple Cylinder Misfire Detected
ECM	1323	31	C	E	Engine Misfire Cylinder 1 - Condition Exists
ECM	1323	31	C	L	Engine Misfire Cylinder 1 - Condition Exists
ECM	1323	7	S	E	Cylinder 1 Misfire Detected
ECM	1323	7	S	L	Cylinder 1 Misfire Detected
ECM	1323	31	C	F	Engine Misfire Cylinder 1- Condition Exists. Engine misfire has been detected in cylinder number 1.
ECM	1323	0	C	F	High #1 LB Cylinder Power
ECM	1323	7	S	F	Cylinder 1 Misfire Detected
ECM	1324	31	C	E	Engine Misfire Cylinder 2 - Condition Exists
ECM	1324	31	C	L	Engine Misfire Cylinder 2 - Condition Exists
ECM	1324	7	S	E	Cylinder 2 Misfire Detected
ECM	1324	7	S	L	Cylinder 2 Misfire Detected
ECM	1324	31	C	F	Engine Misfire Cylinder 2 - Condition Exists. Engine misfire has been detected in cylinder number 2.
ECM	1324	0	C	F	High #2 LB Cylinder Power
ECM	1324	7	S	F	Cylinder 2 Misfire Detected
ECM	1325	31	C	E	Engine Misfire Cylinder 3 - Condition Exists
ECM	1325	31	C	L	Engine Misfire Cylinder 3 - Condition Exists
ECM	1325	7	S	E	Cylinder 3 Misfire Detected
ECM	1325	7	S	L	Cylinder 3 Misfire Detected
ECM	1325	31	C	F	Engine Misfire Cylinder 3 - Condition Exists. Engine misfire has been detected in cylinder number 3.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1325	0	C	F	High #3 LB Cylinder Power
ECM	1325	7	S	F	Cylinder 3 Misfire Detected
ECM	1326	31	C	E	Engine Misfire Cylinder 4 - Condition Exists
ECM	1326	31	C	L	Engine Misfire Cylinder 4 - Condition Exists
ECM	1326	7	S	E	Cylinder 4 Misfire Detected
ECM	1326	7	S	L	Cylinder 4 Misfire Detected
ECM	1326	31	C	F	Engine Misfire Cylinder 4 - Condition Exists. Engine misfire has been detected in cylinder number 4.
ECM	1326	0	C	F	High #4 LB Cylinder Power
ECM	1326	7	S	F	Cylinder 4 Misfire Detected
ECM	1327	31	C	E	Engine Misfire Cylinder 5 - Condition Exists
ECM	1327	31	C	L	Engine Misfire Cylinder 5 - Condition Exists
ECM	1327	7	S	E	Cylinder 5 Misfire Detected
ECM	1327	7	S	L	Cylinder 5 Misfire Detected
ECM	1327	31	C	F	Engine Misfire Cylinder 5 - Condition Exists. Engine misfire has been detected in cylinder number 5.
ECM	1327	0	C	F	High #5 LB Cylinder Power
ECM	1327	7	S	F	Cylinder 5 Misfire Detected
ECM	1328	31	C	E	Engine Misfire Cylinder 6 - Condition Exists
ECM	1328	31	C	L	Engine Misfire Cylinder 6 - Condition Exists
ECM	1328	31	C	F	Engine Misfire Cylinder 6 - Condition Exists. Engine misfire has been detected in cylinder number 6.
ECM	1328	0	C	F	High #6 LB Cylinder Power
ECM	1328	7	S	F	Engine misfire detected in cylinder
ECM	1329	0	C	F	High #1 RB Cylinder Power
ECM	1329	1	C	F	Low #1 RB Cylinder Power
ECM	1329	7	S	F	Engine misfire detected in cylinder
MCU	133	0	*	E	Arm In/Out & Bucket In Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	133	0	*	L	Arm In/Out & Bucket In Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	133	1	*	E	Arm In/Out & Bucket In Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	133	1	*	L	Arm In/Out & Bucket In Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	133	4	*	E	Arm In/Out & Bucket In Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	133	4	*	L	Arm In/Out & Bucket In Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	133	2	*	E	Arm In/Out & Bucket In Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	133	2	*	L	Arm In/Out & Bucket In Pilot Pressure-Data Erratic, Intermittent Or Incorrect
ECM	1330	0	C	F	High #2 RB Cylinder Power
ECM	1330	7	S	F	Engine misfire detected in cylinder
ECM	1331	0	C	F	High #3 RB Cylinder Power
ECM	1332	0	C	F	High #4 RB Cylinder Power
ECM	1333	0	C	F	High #5 RB Cylinder Power
ECM	1334	0	C	F	High #6 RB Cylinder Power
ECM	1340	16	C	F	High Power – Cylinder # 9 Left Bank
ECM	1340	18	C	F	Low Power – Cylinder # 9 Left Bank
ECM	1341	16	C	F	High Power – Cylinder # 9 Right Bank
ECM	1341	18	C	F	Low Power – Cylinder # 9 Right Bank
ECM	1347	3	C	F	Engine Fuel Pump Pressurizing Assembly 1 Circuit - Voltage above normal, or shorted to high source
ECM	1347	4	C	F	High Fuel Pressure Solenoid Valve Circuit - Voltage Below Normal or Shorted to Low Source. Electronic fuel control actuator shorted low.
ECM	1347	3	C	E	Engine Fuel Pump Pressurizing Assembly 1 Circuit - Voltage above normal, or shorted to high source
ECM	1347	3	C	L	Engine Fuel Pump Pressurizing Assembly 1 Circuit - Voltage above normal, or shorted to high source
ECM	1347	4	C	E	Engine Fuel Pump Pressurizing Assembly 1 Circuit - Voltage below normal, or shorted to low source
ECM	1347	4	C	L	Engine Fuel Pump Pressurizing Assembly 1 Circuit - Voltage below normal, or shorted to low source
ECM	1347	7	C	E	Engine Fuel Pump Pressurizing Assembly 1 - Mechanical system not responding or out of adjustment
ECM	1347	7	C	L	Engine Fuel Pump Pressurizing Assembly 1 - Mechanical system not responding or out of adjustment
ECM	1347	7	C	F	Front Pumping Element. The electronic control module (ECM) has detected a malfunction in the front pumping element.
ECM	1348	3	C	F	High Fuel Pressure Solenoid Valve #2 Circuit - shorted high
ECM	1348	4	C	F	High Fuel Pressure Solenoid Valve #2 Circuit - shorted low
ECM	1348	7	C	F	The electronic control module (ECM) has detected a malfunction in the rear pumping element.
ECM	1349	3	C	F	Injector Metering Rail 2 Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	1349	4	C	F	Injector Metering Rail 2 Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	1349	3	C	E	Injector Metering Rail 2 Pressure Sensor Circuit - Voltage above normal, or shorted to high source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1349	3	C	L	Injector Metering Rail 2 Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	1349	4	C	E	Injector Metering Rail 2 Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	1349	4	C	L	Injector Metering Rail 2 Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	1349	16	C	F	Injector Metering Rail #2 Pressure High - Warning
ECM	1349	18	C	F	Injector Metering Rail #2 Pressure Low - Warning
ECM	1349	7	C	F	Injector Metering Rail #2 Pressure Malfunction
MCU	135	0	*	E	Swing Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	135	0	*	L	Swing Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	135	1	*	E	Swing Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	135	1	*	L	Swing Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	135	4	*	E	Swing Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	135	4	*	L	Swing Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
ECM	135	4	C	F	Fuel Pump Delivery Pressure Sensor Circuit - shorted low
MCU	135	2	*	E	Swing Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	135	2	*	L	Swing Pilot Pressure-Data Erratic, Intermittent Or Incorrect
ECM	1351	3	C	F	High voltage or an open circuit detected at the electronic air compressor governor actuator circuit.
ECM	1351	4	C	F	Low voltage was detected on the electronic air compressor circuit when high voltage was expected.
MCU	137	0	*	E	Attachment Flow Control EPPR Valve Pressure-Data Valid But Above Normal Operational Range
MCU	137	0	*	L	Attachment Flow Control EPPR Valve Pressure-Data Valid But Above Normal Operational Range
MCU	137	1	*	E	Attachment Flow Control EPPR Valve Pressure-Data Valid But Below Normal Operational Range
MCU	137	1	*	L	Attachment Flow Control EPPR Valve Pressure-Data Valid But Below Normal Operational Range
MCU	137	4	*	E	Attachment Flow Control EPPR Valve Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	137	4	*	L	Attachment Flow Control EPPR Valve Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	137	2	*	E	Attachment Flow Control EPPR Valve Pressure-Data Erratic, Intermittent Or Incorrect
MCU	137	2	*	L	Attachment Flow Control EPPR Valve Pressure-Data Erratic, Intermittent Or Incorrect
ECM	1377	2	C	F	Multiple Unit Synchronization Switch Circuit - data incorrect
ECM	1377	2	C	E	Multiple Unit Synchronization Switch - Data erratic, intermittent or incorrect
ECM	1377	2	C	L	Multiple Unit Synchronization Switch - Data erratic, intermittent or incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1378	0	C	F	Change Lubricating Oil and Filter
ECM	1378	31	C	E	Engine Oil Change Interval - Condition Exists
ECM	1378	31	C	F	Engine Oil Change Interval Change : Lubricating Oil and Filter - Condition Exists
ECM	1378	31	C	L	Engine Oil Change Interval - Condition Exists
MCU	138	0	*	E	Attachment Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	138	0	*	L	Attachment Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	138	1	*	E	Attachment Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	138	1	*	L	Attachment Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	138	4	*	E	Attachment Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	138	4	*	L	Attachment Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	138	2	*	E	Attachment Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	138	2	*	L	Attachment Pilot Pressure-Data Erratic, Intermittent Or Incorrect
ECM	1380	1	C	F	Low Oil Level in the Centinel make-up oil tank
ECM	1380	17	C	F	Low Oil Level in the Centinel make-up oil tank
ECM	1380	2	C	F	Either high or low voltage detected on the crankcase oil level sensor circuit by the electronic control module (ECM).
ECM	1381	18	C	F	Fuel Supply Pump Inlet Pressure Low - warning level
ECM	1381	3	C	F	Fuel Supply Pump Inlet Pressure Sensor Circuit - shorted high
ECM	1381	4	C	F	Fuel Supply Pump Inlet Pressure Sensor Circuit – shorted low
ECM	1383	31	C	F	Engine Shut Down Hot - Condition Exists
ECM	1383	31	C	E	Engine Shut Down Hot - Condition Exists
ECM	1383	31	C	L	Engine Shut Down Hot - Condition Exists
ECM	1384	31	C	F	Engine Shutdown Commanded by J1939
ECM	1387	14	C	F	OEM pressure signal at pin 48 of the OEM harness indicates pressure outside the engine protection limit.
ECM	1387	3	C	E	Auxiliary Pressure Sensor Input 1 Circuit - Voltage above normal, or shorted to high source
ECM	1387	3	C	L	Auxiliary Pressure Sensor Input 1 Circuit - Voltage above normal, or shorted to high source
ECM	1387	4	C	E	Auxiliary Pressure Sensor Input 1 Circuit - Voltage below normal, or shorted to low source
ECM	1387	4	C	L	Auxiliary Pressure Sensor Input 1 Circuit - Voltage below normal, or shorted to low source
ECM	1387	11	C	F	Auxiliary Equipment Sensor Input # 2 (OEM Pressure Sensor) Engine Protection – Warning

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1387	3	C	F	Auxiliary Pressure Sensor Input # 2 Circuit – shorted high
ECM	1387	4	C	F	Auxiliary Pressure Sensor Input # 2 Circuit – shorted low
ECM	1388	14	C	F	Crankcase Pressure - Data Above Normal Operational Range - Severe Level.
ECM	1388	14	C	E	Auxiliary Pressure Sensor Input 2 - Special Instructions
ECM	1388	14	C	L	Auxiliary Pressure Sensor Input 2 - Special Instructions
ECM	1388	3	C	E	Auxiliary Pressure Sensor Input 2 Circuit - Voltage above normal, or shorted to high source
ECM	1388	3	C	L	Auxiliary Pressure Sensor Input 2 Circuit - Voltage above normal, or shorted to high source
ECM	1388	4	C	E	Auxiliary Pressure Sensor Input 2 Circuit - Voltage below normal, or shorted to low source
ECM	1388	4	C	L	Auxiliary Pressure Sensor Input 2 Circuit - Voltage below normal, or shorted to low source
ECM	1388	3	C	F	Auxiliary Pressure : Auxiliary Pressure Sensor Input # 2 Circuit - Voltage Above Normal, or Shorted to High Source
ECM	1388	4	C	F	Auxiliary Pressure : Auxiliary Pressure Sensor Input # 2 Circuit - Voltage Below Normal, or Shorted to Low Source
MCU	139	0	*	E	Option Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	139	0	*	L	Option Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	139	1	*	E	Option Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	139	1	*	L	Option Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	139	4	*	E	Option Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	139	4	*	L	Option Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	139	2	*	E	Option Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	139	2	*	L	Option Pilot Pressure-Data Erratic, Intermittent Or Incorrect
ECM	1399	3	C	F	Auxiliary Pressure Sensor Input 1 Circuit - Voltage Above Normal, or Shorted to High Source. High signal voltage detected at the OEM pressure circuit.
TCU	14	*	*	E	P3 pressure sensor circuit is shorted to power supply(24V) line
TCU	14	*	*	L	LOGICAL ERROR AT PARKBRAKE STATUS
TCU	14	*	*	F	LOGICAL ERROR AT PARKBRAKE STATUS
MCU	140	5	*	E	Main Pump EPPR Valve Current-Current Below Normal Or Open Circuit
MCU	140	5	*	L	Main Pump EPPR Valve Current-Current Below Normal Or Open Circuit
MCU	140	6	*	E	Main Pump EPPR Valve Current-Current Above Normal Or Grounded Circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	140	6	*	L	Main Pump EPPR Valve Current-Current Above Normal Or Grounded Circuit
MCU	141	5	*	E	Boom Priority (Against Swing) EPPR Valve Current -Current Below Normal Or Open Circuit
MCU	141	5	*	L	Boom Priority (Against Swing) EPPR Valve Current -Current Below Normal Or Open Circuit
MCU	141	6	*	E	Boom Priority (Against Swing) EPPR Valve Current -Current Above Normal Or Grounded Circuit
MCU	141	6	*	L	Boom Priority (Against Swing) EPPR Valve Current -Current Above Normal Or Grounded Circuit
MCU	143	5	*	E	Travel EPPR Valve Current-Current Below Normal Or Open Circuit
MCU	143	5	*	L	Travel EPPR Valve Current-Current Below Normal Or Open Circuit
MCU	143	6	*	E	Travel EPPR Valve Current-Current Above Normal Or Grounded Circuit
MCU	143	6	*	L	Travel EPPR Valve Current-Current Above Normal Or Grounded Circuit
MCU	144	5	*	E	Attachment Flow Valve Current-Current Below Normal Or Open Circuit
MCU	144	5	*	L	Attachment Flow Valve Current-Current Below Normal Or Open Circuit
MCU	144	6	*	E	Attachment Flow Valve Current-Current Above Normal Or Grounded Circuit
MCU	144	6	*	L	Attachment Flow Valve Current-Current Above Normal Or Grounded Circuit
ECM	1442	3	S	F	Inlet metering valve 1, short circuit to +24V
ECM	1442	5	S	F	Inlet metering valve 1, short circuit to ground
ECM	1442	3	S	E	Inlet metering valve 1, short circuit to +24V
ECM	1442	3	S	L	Inlet metering valve 1, short circuit to +24V
ECM	1442	5	S	E	Inlet metering valve 1, short circuit to ground
ECM	1442	5	S	L	Inlet metering valve 1, short circuit to ground
ECM	1442	10	S	F	Inlet metering valve 1, calculated resistance error
ECM	1442	2	S	F	Inlet metering valve 1, faulty
ECM	1442	7	S	F	Inlet metering valve 1, stuck
ECM	1442	8	S	F	Inlet metering valve 1, plausible leakage
ECM	1442	2	S	E	Inlet metering valve 1, faulty
ECM	1442	2	S	L	Inlet metering valve 1, faulty
ECM	1442	7	S	E	Inlet metering valve 1, stuck
ECM	1442	7	S	L	Inlet metering valve 1, stuck
ECM	1442	8	S	E	Inlet metering valve 1, plausible leakage
ECM	1442	8	S	L	Inlet metering valve 1, plausible leakage
ECM	1442	10	S	E	Inlet metering valve 1, calculated resistance error
ECM	1442	10	S	L	Inlet metering valve 1, calculated resistance error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1443	1	S	E	Mechanical dump dalve, opened
ECM	1443	1	S	L	Mechanical dump dalve, opened
ECM	1443	6	S	E	Mechanical dump valve, tripped
ECM	1443	6	S	L	Mechanical dump valve, tripped
ECM	1443	1	S	F	Mechanical dump dalve, opened
ECM	1443	6	S	F	Mechanical dump valve, tripped
MCU	145	5	*	E	Cooling Fan EPPR Valve Current-Current Below Normal Or Open Circuit
MCU	145	5	*	L	Cooling Fan EPPR Valve Current-Current Below Normal Or Open Circuit
MCU	145	6	*	E	Cooling Fan EPPR Valve Current-Current Above Normal Or Grounded Circuit
MCU	145	6	*	L	Cooling Fan EPPR Valve Current-Current Above Normal Or Grounded Circuit
MCU	145	5	*	F	Engine Cooling Fan EPPR Valve Circuit - Current Below Normal, or Open Circuit
MCU	145	6	*	F	Engine Cooling Fan EPPR Valve Circuit - Current Above Normal
ECM	1483	2	S	F	EMS internal error
ECM	1483	8	S	F	EMS Memory or TPU Error
ECM	1483	9	S	F	Camshaft TPU Supervision Error
ECM	1483	2	S	E	EMS internal error
ECM	1483	2	S	L	EMS internal error
ECM	1483	8	S	E	EMS Memory or TPU Error
ECM	1483	8	S	L	EMS Memory or TPU Error
ECM	1483	9	S	E	Camshaft TPU Supervision Error
ECM	1483	9	S	L	Camshaft TPU Supervision Error
ECM	1483	11	S	F	Software Watchdog Reset
ECM	1483	12	S	F	Hardware watchdog error
ECM	1483	11	S	E	Software Watchdog Reset
ECM	1483	11	S	L	Software Watchdog Reset
ECM	1483	12	S	E	Hardware watchdog error
ECM	1483	12	S	L	Hardware watchdog error
ECM	1484	31	C	E	Additional Auxiliary Diagnostic Codes logged - Condition Exists
ECM	1484	31	C	L	Additional Auxiliary Diagnostic Codes logged - Condition Exists
ECM	1484	10	S	F	CAN message CRUISE CONTROL/ VEHICLE SPEED from coordinator timeout
ECM	1484	16	S	F	CAN message from EMSX, invalid data

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1484	18	S	F	CAN message from EMSX, invalid data
ECM	1484	19	S	F	CAN message DLN6 from coordinator timeout
ECM	1484	10	S	E	CAN message CRUISE CONTROL/ VEHICLE SPEED from coordinator timeout
ECM	1484	20	S	F	CAN message timout from EMSX
ECM	1484	10	S	L	CAN message CRUISE CONTROL/ VEHICLE SPEED from coordinator timeout
ECM	1484	18	S	E	CAN message from EMSX, invalid data
ECM	1484	21	S	F	CAN message timout from EMSX
ECM	1484	18	S	L	CAN message from EMSX, invalid data
ECM	1484	19	S	E	CAN message DLN6 from coordinator timeout
ECM	1484	9	S	F	CAN message DLN1 from coordinator timeout
ECM	1484	19	S	L	CAN message DLN6 from coordinator timeout
ECM	1484	20	S	E	CAN message timout from EMSX
ECM	1484	20	S	L	CAN message timout from EMSX
ECM	1484	21	S	E	CAN message timout from EMSX
ECM	1484	21	S	L	CAN message timout from EMSX
ECM	1484	9	S	E	CAN message DLN1 from coordinator timeout
ECM	1484	9	S	L	CAN message DLN1 from coordinator timeout
ECM	1484	16	S	E	CAN message from EMSX, invalid data
ECM	1484	16	S	L	CAN message from EMSX, invalid data
ECM	1484	31	C	F	Additional Auxiliary Diagnostic Codes logged - Condition Exists
ECM	1485	14	P	E	ECM Main relay: Special Instruction
ECM	1485	14	P	L	ECM Main relay: Special Instruction
ECM	1485	7	P	E	ECM Main Relay: Not Responding Properly
ECM	1485	7	P	L	ECM Main Relay: Not Responding Properly
ECM	1485	7	Y	E	Main relay contact sticking
ECM	1485	7	Y	L	Main relay contact sticking
ECM	1485	16	S	F	SCR main unit, power switched off too early
ECM	1485	18	S	F	SCR main unit, power switched off too late
ECM	1485	18	S	E	SCR main unit, power switched off too late
ECM	1485	18	S	L	SCR main unit, power switched off too late
ECM	1485	2	Y	E	main relay early opening
ECM	1485	2	Y	L	main relay early opening
ECM	1485	16	S	E	SCR main unit, power switched off too early

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1485	16	S	L	SCR main unit, power switched off too early
TCU	15	*	*	L	LOGICAL ERROR AT DIRECTION SELECT SIGNAL 2. SHIFT LEVER
TCU	15	*	*	F	LOGICAL ERROR AT DIRECTION SELECT SIGNAL 2. SHIFT LEVER
MCU	150	5	*	E	Left Rotate Valve Current-Current Below Normal Or Open Circuit
MCU	150	5	*	L	Left Rotate Valve Current-Current Below Normal Or Open Circuit
MCU	150	6	*	E	Left Rotate Valve Current-Current Above Normal Or Grounded Circuit
MCU	150	6	*	L	Left Rotate Valve Current-Current Above Normal Or Grounded Circuit
MCU	151	5	*	E	Right Rotate Valve Current-Current Below Normal Or Open Circuit
MCU	151	5	*	L	Right Rotate Valve Current-Current Below Normal Or Open Circuit
MCU	151	6	*	E	Right Rotate Valve Current-Current Above Normal Or Grounded Circuit
MCU	151	6	*	L	Right Rotate Valve Current-Current Above Normal Or Grounded Circuit
MCU	152	5	*	E	Left Tilt Valve Current-Current Below Normal Or Open Circuit
MCU	152	5	*	L	Left Tilt Valve Current-Current Below Normal Or Open Circuit
MCU	152	6	*	E	Left Tilt Valve Current-Current Above Normal Or Grounded Circuit
MCU	152	6	*	L	Left Tilt Valve Current-Current Above Normal Or Grounded Circuit
ECM	152	2	P	E	Number Of ECU Resets: Erratic, Intermittent, or Incorrect
ECM	152	2	P	L	Number Of ECU Resets: Erratic, Intermittent, or Incorrect
MCU	153	5	*	E	Right Tilt Valve Current-Current Below Normal Or Open Circuit
MCU	153	5	*	L	Right Tilt Valve Current-Current Below Normal Or Open Circuit
MCU	153	6	*	E	Right Tilt Valve Current-Current Above Normal Or Grounded Circuit
MCU	153	6	*	L	Right Tilt Valve Current-Current Above Normal Or Grounded Circuit
ECM	156	3	C	F	Fuel Timing Pressure Sensor Circuit - shorted high
ECM	156	4	C	F	Fuel Timing Pressure Sensor Circuit - shorted low
ECM	156	0	S	E	Fuel rail pressure is excessively above command
ECM	156	0	S	L	Fuel rail pressure is excessively above command
ECM	156	1	S	E	Fuel rail pressure is excessively below command
ECM	156	1	S	L	Fuel rail pressure is excessively below command
ECM	156	18	S	E	Fuel rail pressure is too low during cranking
ECM	156	18	S	L	Fuel rail pressure is too low during cranking
ECM	156	2	S	E	Fuel rail pressure sensor, faulty
ECM	156	2	S	L	Fuel rail pressure sensor, faulty
ECM	156	3	S	E	Fuel rail pressure sensor, short circuit to +24V or open load
ECM	156	3	S	L	Fuel rail pressure sensor, short circuit to +24V or open load
ECM	156	4	S	E	Fuel rail pressure sensor, short circuit to ground

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	156	4	S	L	Fuel rail pressure sensor, short circuit to ground
ECM	156	8	S	E	Fuel rail pressure sensor, stuck
ECM	156	8	S	L	Fuel rail pressure sensor, stuck
ECM	156	0	S	F	Fuel rail pressure is excessively above command
ECM	156	1	S	F	Fuel rail pressure is excessively below command
ECM	156	18	S	F	Fuel rail pressure is too low during cranking
ECM	156	2	C	F	Fuel Timing Pressure or Timing Actuator Stuck
ECM	156	2	S	F	Fuel rail pressure sensor, faulty
ECM	156	3	S	F	Fuel rail pressure sensor, short circuit to +24V or open load
ECM	156	4	S	F	Fuel rail pressure sensor, short circuit to ground
ECM	156	8	S	F	Fuel rail pressure sensor, stuck
ECM	156	9	S	F	Fuel rail pressure is lagging
ECM	156	9	S	E	Fuel rail pressure is lagging
ECM	156	9	S	L	Fuel rail pressure is lagging
ECM	1563	2	C	F	Control Module Identification Input State Error - Data erratic, intermittent or incorrect
ECM	1563	2	C	E	Control Module Identification Input State Error - Data erratic, intermittent or incorrect
ECM	1563	2	C	L	Control Module Identification Input State Error - Data erratic, intermittent or incorrect
ECM	1569	14	C	E	Engine Protection Torque Derate - Special Instructions
ECM	1569	14	C	L	Engine Protection Torque Derate - Special Instructions
ECM	1569	31	C	E	Engine Protection Torque Derate - Condition Exists
ECM	1569	31	C	L	Engine Protection Torque Derate - Condition Exists
ECM	1569	31	C	F	Engine Protection Torque Derate - Condition Exists
ECM	1569	14	S	E	Torque reduction due to other fault
ECM	1569	14	S	L	Torque reduction due to other fault
ECM	1569	14	S	F	Torque reduction due to other fault
ECM	157	0	C	E	Injector Metering Rail 1 Pressure - Data valid but above normal operational range - Most Severe Level
ECM	157	0	C	L	Injector Metering Rail 1 Pressure - Data valid but above normal operational range - Most Severe Level
ECM	157	0	P	E	Engine Injector Metering Rail #1 Pressure : High - most severe (3) —
ECM	157	0	P	L	Engine Injector Metering Rail #1 Pressure : High - most severe (3) —
ECM	157	0	Y	E	Rail pressure too high
ECM	157	0	Y	L	Rail pressure too high
ECM	157	15	C	E	Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	157	15	C	L	Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	157	15	Y	E	Rail pressure deviation error (high rail pressure)

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	157	15	Y	L	Rail pressure deviation error (high rail pressure)
ECM	157	16	C	E	Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	157	16	C	L	Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	157	16	P	E	Engine Injector Metering Rail #1 Pressure : High - moderate severity (2)
ECM	157	16	P	L	Engine Injector Metering Rail #1 Pressure : High - moderate severity (2)
ECM	157	16	Y	E	PLV open valve
ECM	157	16	Y	L	PLV open valve
ECM	157	18	C	E	Injector Metering Rail 1 Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	157	18	C	L	Injector Metering Rail 1 Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	157	18	M	E	Low fuel rail pressure
ECM	157	18	M	L	Low fuel rail pressure
ECM	157	18	P	E	Engine Injector Metering Rail #1 Pressure: Low - moderate severity (2)
ECM	157	18	P	L	Engine Injector Metering Rail #1 Pressure: Low - moderate severity (2)
ECM	157	18	Y	E	Rail pressure deviation error (low rail pressure)
ECM	157	18	Y	L	Rail pressure deviation error (low rail pressure)
ECM	157	0	C	F	Injector Metering Rail Number 1 Pressure - Data Valid But Above Normal Operating Range - Most Severe Level. Fuel pressure signal indicates that fuel pressure has exceeded the maximum limit for the given engine rating.
ECM	157	1	C	F	Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Most Severe Level. The ECM has detected that fuel pressure is lower than commanded pressure. 157-1
ECM	157	15	C	F	Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	157	18	C	F	Injector Metering Rail #1 Pressure Low – Data Valid but Below Normal Operational Range - Moderately Severe Level
ECM	157	2	C	F	Fuel Pressure Sensor Error - Data Erratic, Intermittent, or Incorrect
ECM	157	3	C	F	Injector Metering Rail 1 Pressure : Injector Metering Rail #1 Pressure Sensor Circuit Voltage Above Normal, or Shorted to High Source (157-3)
ECM	157	4	C	F	Injector Metering Rail Number 1 Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source. Low signal voltage detected at the rail fuel pressure sensor circuit 157-4
ECM	157	7	C	F	Injector Metering Rail 1 Pressure - Mechanical system not responding or out of adjustment

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	157	1	C	E	Injector Metering Rail 1 Pressure - Data valid but below normal operational range - Most Severe Level
ECM	157	1	C	L	Injector Metering Rail 1 Pressure - Data valid but below normal operational range - Most Severe Level
ECM	157	10	P	E	Engine Injector Metering Rail #1 Pressure : Abnormal Update Rate
ECM	157	10	P	L	Engine Injector Metering Rail #1 Pressure : Abnormal Update Rate
ECM	157	12	P	E	Engine Injector Metering Rail #1 Pressure : Failure
ECM	157	12	P	L	Engine Injector Metering Rail #1 Pressure : Failure
ECM	157	17	P	E	Engine Injector Metering Rail #1 Pressure : Low - least severe (1) —
ECM	157	17	P	L	Engine Injector Metering Rail #1 Pressure : Low - least severe (1) —
ECM	157	2	C	E	Injector Metering Rail 1 Pressure - Data erratic, intermittent or incorrect
ECM	157	2	C	L	Injector Metering Rail 1 Pressure - Data erratic, intermittent or incorrect
ECM	157	2	P	E	Engine Injector Metering Rail #1 Pressure : Erratic, Intermittent, or Incorrect
ECM	157	2	P	L	Engine Injector Metering Rail #1 Pressure : Erratic, Intermittent, or Incorrect
ECM	157	3	C	E	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	157	3	C	L	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	157	3	M	E	Common rail pressure sensor open/ short to + batt
ECM	157	3	M	L	Common rail pressure sensor open/ short to + batt
ECM	157	3	P	E	Engine Injector Metering Rail #1 Pressure: Voltage Above Normal
ECM	157	3	P	L	Engine Injector Metering Rail #1 Pressure: Voltage Above Normal
ECM	157	3	Y	E	Rain pressure sensor error (voltage high)
ECM	157	3	Y	L	Rain pressure sensor error (voltage high)
ECM	157	4	C	E	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	157	4	C	L	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	157	4	M	E	Common rail pressure sensor short to ground
ECM	157	4	M	L	Common rail pressure sensor short to ground
ECM	157	4	P	E	Engine Injector Metering Rail #1 Pressure: Voltage Below Normal
ECM	157	4	P	L	Engine Injector Metering Rail #1 Pressure: Voltage Below Normal
ECM	157	4	Y	E	Rain pressure sensor error (voltage low)
ECM	157	4	Y	L	Rain pressure sensor error (voltage low)
ECM	157	7	C	E	Injector Metering Rail 1 Pressure - Mechanical system not responding or out of adjustment
ECM	157	7	C	L	Injector Metering Rail 1 Pressure - Mechanical system not responding or out of adjustment

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	157	16	C	F	Injector Metering Rail #1 Pressure High - warning level
ECM	1590	2	C	F	Adaptive Cruise Control Mode - Data erratic, intermittent or incorrect
ECM	1590	2	C	E	Adaptive Cruise Control Mode - Data erratic, intermittent or incorrect
ECM	1590	2	C	L	Adaptive Cruise Control Mode - Data erratic, intermittent or incorrect
TCU	16	*	*	E	Governor motor circuit is open or shorted to ground
TCU	16	*	*	L	LOGICAL ERROR AT AXLE CONNECTION
TCU	16	*	*	F	LOGICAL ERROR AT AXLE CONNECTION
ECM	1623	13	C	F	Tachograph Output Shaft Speed - Out of Calibration
ECM	1623	19	C	F	Tachograph Output Shaft Speed - Received Network Data In Error
ECM	1623	9	C	F	Tachograph Output Shaft Speed - Abnormal update rate
ECM	1623	13	C	E	Tachograph Output Shaft Speed - Out of Calibration
ECM	1623	13	C	L	Tachograph Output Shaft Speed - Out of Calibration
ECM	1623	19	C	E	Tachograph Output Shaft Speed - Received Network Data In Error
ECM	1623	19	C	L	Tachograph Output Shaft Speed - Received Network Data In Error
ECM	1623	9	C	E	Tachograph Output Shaft Speed - Abnormal update rate
ECM	1623	9	C	L	Tachograph Output Shaft Speed - Abnormal update rate
ECM	1632	31	C	E	Engine Torque Limit Feature - Condition Exists
ECM	1632	31	C	L	Engine Torque Limit Feature - Condition Exists
ECM	1632	14	C	F	Engine Torque Limit Feature - Special Instructions
ECM	1632	31	C	F	Engine Torque Limit Feature - Condition Exists
ECM	1632	14	C	E	Engine Torque Limit Feature - Special Instructions
ECM	1632	14	C	L	Engine Torque Limit Feature - Special Instructions
ECM	1632	2	S	F	Torque limit rating described in the current record.
ECM	1639	1	C	E	Fan Speed - Data Valid but Below Normal Operational Range - Most Severe Level
ECM	1639	1	C	L	Fan Speed - Data Valid but Below Normal Operational Range - Most Severe Level
ECM	1639	17	C	E	Fan Speed - Data Valid but Below Normal Operational Range - Most Severe Level
ECM	1639	17	C	L	Fan Speed - Data Valid but Below Normal Operational Range - Most Severe Level
ECM	1639	0	C	F	Fan Speed - Data Valid but Above Normal Operational Range - Most Severe Level
ECM	1639	1	C	F	Fan Speed - Data Valid but Below Normal Operational Range - Most Severe Level
ECM	1639	0	C	E	Fan Speed - Data Valid but Above Normal Operational Range - Most Severe Level
ECM	1639	0	C	L	Fan Speed - Data Valid but Above Normal Operational Range - Most Severe Level

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1639	3	S	E	Fan speed sensor, short circuit to +24V
ECM	1639	3	S	L	Fan speed sensor, short circuit to +24V
ECM	1639	4	S	E	Fan speed sensor supply too low
ECM	1639	4	S	L	Fan speed sensor supply too low
ECM	1639	8	S	E	Fan speed sensor circuit no signal
ECM	1639	8	S	L	Fan speed sensor circuit no signal
ECM	1639	15	C	E	Fan Speed - Data Valid but Above Normal Operational Range - Least Severe Level
ECM	1639	15	C	L	Fan Speed - Data Valid but Above Normal Operational Range - Least Severe Level
ECM	1639	17	P	E	Fan Speed : Low - least severe(1)
ECM	1639	17	P	L	Fan Speed : Low - least severe(1)
ECM	1639	3	S	F	Fan speed sensor, short circuit to +24V
ECM	1639	4	S	F	Fan speed sensor supply too low
ECM	1639	8	S	F	Fan speed sensor circuit no signal
ECM	1639	2	C	E	Fan Speed ? Data Erratic, Intermittent, or Incorrect
ECM	1639	2	C	L	Fan Speed ? Data Erratic, Intermittent, or Incorrect
MCU	164	4	*	E	Working Cutoff Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	164	4	*	L	Working Cutoff Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	164	6	*	E	Working Cutoff Relay-Current Above Normal Or Grounded Circuit
MCU	164	6	*	L	Working Cutoff Relay-Current Above Normal Or Grounded Circuit
MCU	166	4	*	E	Power Boost Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	166	4	*	L	Power Boost Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	166	6	*	E	Power Boost Solenoid-Current Above Normal Or Grounded Circuit
MCU	166	6	*	L	Power Boost Solenoid-Current Above Normal Or Grounded Circuit
ECM	166	14	P	E	Engine Rated Power: Special Instuction
ECM	166	14	P	L	Engine Rated Power: Special Instuction
ECM	166	2	C	E	Cylinder Power Imbalance Between Cylinders - Data Erratic, Intermittent, or Incorrect
ECM	166	2	C	L	Cylinder Power Imbalance Between Cylinders - Data Erratic, Intermittent, or Incorrect
ECM	166	2	P	E	Engine Rated Power: Erratic, Intermittent, or Incorrect
ECM	166	2	P	L	Engine Rated Power: Erratic, Intermittent, or Incorrect
ECM	166	2	C	F	Cylinder Power : Cylinder Power Imbalance Between Cylinders Data Erratic, Intermittent, or Incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1661	4	C	E	Engine Automatic Start Lamp Driver Circuit - Voltage Above Normal, or Shorted to High Source
ECM	1661	4	C	L	Engine Automatic Start Lamp Driver Circuit - Voltage Above Normal, or Shorted to High Source
ECM	1661	4	C	F	Engine Automatic Start Lamp : Engine Automatic Start Lamp Driver Circuit Voltage Above Normal, or Shorted to High Source
ECM	1668	2	C	F	J1939 Network #4 - Data erratic, intermittent or incorrect
ECM	1668	2	C	E	J1939 Network #4 - Data erratic, intermittent or incorrect
ECM	1668	2	C	L	J1939 Network #4 - Data erratic, intermittent or incorrect
ECM	167	1	C	F	Electrical Charging System Voltage Low - Critical Level
ECM	167	1	C	E	Electrical Charging System Voltage Low – Data Valid but Below Normal Operational Range - Most Severe Level
ECM	167	1	C	L	Electrical Charging System Voltage Low – Data Valid but Below Normal Operational Range - Most Severe Level
ECM	167	1	Y	E	Charge alarm
ECM	167	1	Y	L	Charge alarm
ECM	167	10	S	E	Alternator 2, signal not plausible
ECM	167	10	S	L	Alternator 2, signal not plausible
ECM	167	16	C	E	Electrical Charging System Voltage High – Data Valid but Above Normal Operational Range - Moderately Severe Level
ECM	167	16	C	L	Electrical Charging System Voltage High – Data Valid but Above Normal Operational Range - Moderately Severe Level
ECM	167	18	C	E	Electrical Charging System Voltage Low – Data Valid but Below Normal Operational Range - Moderately Severe Level
ECM	167	18	C	L	Electrical Charging System Voltage Low – Data Valid but Below Normal Operational Range - Moderately Severe Level
ECM	167	3	S	E	Alternator actuator, short circuit to +24V
ECM	167	3	S	L	Alternator actuator, short circuit to +24V
ECM	167	4	S	E	Alternator actuator, short circuit to ground
ECM	167	4	S	L	Alternator actuator, short circuit to ground
ECM	167	5	S	E	Alternator actuator, open load
ECM	167	5	S	L	Alternator actuator, open load
ECM	167	5	Y	E	Charge switch open circuit
ECM	167	5	Y	L	Charge switch open circuit
ECM	167	9	S	E	Alternator 1, signal not plausible
ECM	167	9	S	L	Alternator 1, signal not plausible
MCU	167	4	*	E	Travel Speed Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	167	4	*	L	Travel Speed Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	167	6	*	E	Travel Speed Solenoid-Current Above Normal Or Grounded Circuit
MCU	167	6	*	L	Travel Speed Solenoid-Current Above Normal Or Grounded Circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	167	10	S	F	Alternator 2, signal not plausible
ECM	167	16	C	F	Electrical Charging System Voltage High - warning level
ECM	167	161	C	F	High battery voltage detected by the battery voltage monitor feature.
ECM	167	18	C	F	Electrical Charging System Voltage Low - Warning Level
ECM	167	2	S	F	Alternator actuator, faulty
ECM	167	3	S	F	Alternator actuator, short circuit to +24V
ECM	167	4	S	F	Alternator actuator, short circuit to ground
ECM	167	5	S	F	Alternator actuator, open load
ECM	167	6	S	F	Electrical potential measured at the charging system output. The charging system may be any device charging the batteries. This includes alternators, generators, solid state charger and other charging devices.
ECM	167	9	S	F	Alternator 1, signal not plausible
ECM	167	2	S	E	Alternator actuator, faulty
ECM	167	2	S	L	Alternator actuator, faulty
ECM	1675	31	C	F	Engine Starter Mode Overcrank Protection - Condition Exists
ECM	1675	12	S	F	Immobiliser error
ECM	1675	13	S	F	Software Incompatibility With Vehicle Immoblilizer Control Module
ECM	1675	19	S	F	Lost Communication With Vehicle Immobilizer Control Module
ECM	1675	2	S	F	Immobiliser - EMS and EMSX
ECM	1675	9	S	F	Invalid Data Received From Vehicle Control Module
ECM	1675	12	S	E	Immobiliser error
ECM	1675	12	S	L	Immobiliser error
ECM	1675	13	S	E	Software Incompatibility With Vehicle Immoblilizer Control Module
ECM	1675	13	S	L	Software Incompatibility With Vehicle Immoblilizer Control Module
ECM	1675	19	S	E	Lost Communication With Vehicle Immobilizer Control Module
ECM	1675	19	S	L	Lost Communication With Vehicle Immobilizer Control Module
ECM	1675	2	S	E	Immobiliser - EMS and EMSX
ECM	1675	2	S	L	Immobiliser - EMS and EMSX
ECM	1675	31	C	E	Engine Starter Mode Overcrank Protection - Condition Exists
ECM	1675	31	C	L	Engine Starter Mode Overcrank Protection - Condition Exists
ECM	1675	9	S	E	Invalid Data Received From Vehicle Control Module
ECM	1675	9	S	L	Invalid Data Received From Vehicle Control Module
ECM	168	16	S	F	Battery voltage above 32 V
ECM	168	17	C	F	[C2ST] Battery 1 Voltage - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	168	0	S	E	Battery voltage above 47 V for 1 s
ECM	168	0	S	L	Battery voltage above 47 V for 1 s
ECM	168	1	S	E	Battery voltage below 9 V for 0.5 s
ECM	168	1	S	L	Battery voltage below 9 V for 0.5 s

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	168	15	C	E	Battery 1 Voltage - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	168	15	C	L	Battery 1 Voltage - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	168	15	S	E	Battery voltage too high for SCR main unit
ECM	168	15	S	L	Battery voltage too high for SCR main unit
ECM	168	16	C	E	Battery 1 Voltage - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	168	16	C	L	Battery 1 Voltage - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	168	16	S	E	Battery voltage above 32 V
ECM	168	16	S	L	Battery voltage above 32 V
ECM	168	17	C	E	Battery 1 Voltage - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	168	17	C	L	Battery 1 Voltage - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	168	17	S	E	Battery voltage too low for SCR main unit
ECM	168	17	S	L	Battery voltage too low for SCR main unit
ECM	168	18	C	E	Battery 1 Voltage - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	168	18	C	L	Battery 1 Voltage - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	168	18	S	E	Battery voltage below 21 V
ECM	168	18	S	L	Battery voltage below 21 V
ECM	168	3	P	E	Battery Potential / Power Input #1 : Voltage Above Normal
ECM	168	3	P	L	Battery Potential / Power Input #1 : Voltage Above Normal
ECM	168	4	P	E	Battery Potential / Power Input 1 : Voltage Above Normal
ECM	168	4	P	L	Battery Potential / Power Input 1 : Voltage Above Normal
ECM	168	4	S	E	Battery voltage 1 for engine control unit is low
ECM	168	4	S	L	Battery voltage 1 for engine control unit is low
ECM	168	5	S	E	Battery voltage 2 for engine control unit is low
ECM	168	5	S	L	Battery voltage 2 for engine control unit is low
MCU	168	4	*	E	Attachment Pressure Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	168	4	*	L	Attachment Pressure Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	168	6	*	E	Attachment Pressure Solenoid-Current Above Normal Or Grounded Circuit
MCU	168	6	*	L	Attachment Pressure Solenoid-Current Above Normal Or Grounded Circuit
ECM	168	0	C	F	Battery #1 Voltage High – Warning
ECM	168	0	S	F	Battery voltage above 47 V for 1 s
ECM	168	1	C	F	Voltage detected at electronic control module (ECM) power supply pins 38, 39, 40, and 50 of the engine harness indicates ECM supply voltage fell below (+) 6 VDC.
ECM	168	1	S	F	Battery voltage below 9 V for 0.5 s
ECM	168	15	S	F	Battery voltage too high for SCR main unit
ECM	168	16	C	F	Battery voltage above normal operating level.
ECM	168	17	S	F	Battery voltage too low for SCR main unit
ECM	168	18	C	F	Battery #1 Voltage Low - Warning
ECM	168	18	S	F	Battery voltage below 21 V
ECM	168	4	S	F	Battery voltage 1 for engine control unit is low
ECM	168	5	S	F	Battery voltage 2 for engine control unit is low
ECM	168 9	2	C	F	
MCU	169	4	*	E	Attachment Conflux Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	169	4	*	L	Attachment Conflux Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	169	6	*	E	Attachment Conflux Solenoid-Current Above Normal Or Grounded Circuit
MCU	169	6	*	L	Attachment Conflux Solenoid-Current Above Normal Or Grounded Circuit
TCU	17	*	*	E	Potentiometer motor circuit is open or shorted to ground
TCU	17	*	*	L	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 1
TCU	17	*	*	F	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 1
MCU	170	4	*	E	Arm Regeneration Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	170	4	*	L	Arm Regeneration Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	170	6	*	E	Arm Regeneration Solenoid-Current Above Normal Or Grounded Circuit
MCU	170	6	*	L	Arm Regeneration Solenoid-Current Above Normal Or Grounded Circuit
ECM	171	19	C	F	Ambient Air Temperature - Received Network Data In Error
ECM	171	2	C	F	Ambient Air Temperature - Data erratic, intermittent or incorrect
ECM	171	3	C	F	Ambient Air Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	171	4	C	F	Ambient Air Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	171	9	C	F	Ambient Air Temperature - Abnormal update rate
ECM	171	1	S	E	Ambient temperature low or boost temperature high
ECM	171	1	S	L	Ambient temperature low or boost temperature high
ECM	171	17	S	E	Ambient temperature sensors correlation error
ECM	171	17	S	L	Ambient temperature sensors correlation error
ECM	171	18	S	E	Ambient temperature sensors correlation error
ECM	171	18	S	L	Ambient temperature sensors correlation error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	171	2	C	E	Ambient Air Temperature - Data erratic, intermittent or incorrect
ECM	171	2	C	L	Ambient Air Temperature - Data erratic, intermittent or incorrect
ECM	171	2	S	E	Ambient temperature sensor, faulty
ECM	171	2	S	L	Ambient temperature sensor, faulty
ECM	171	20	S	E	Temperature sensor before compressor low or ambient temperature sensor high
ECM	171	20	S	L	Temperature sensor before compressor low or ambient temperature sensor high
ECM	171	21	S	E	Temperature sensor before compressor high or ambient temperature sensor low
ECM	171	21	S	L	Temperature sensor before compressor high or ambient temperature sensor low
ECM	171	3	C	E	Ambient Air Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	171	3	C	L	Ambient Air Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	171	3	S	E	Ambient temperature sensor error via CAN
ECM	171	3	S	L	Ambient temperature sensor error via CAN
ECM	171	4	C	E	Ambient Air Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	171	4	C	L	Ambient Air Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	171	4	S	E	Ambient temperature sensor error via CAN
ECM	171	4	S	L	Ambient temperature sensor error via CAN
ECM	171	7	S	E	Ambient temperature sensor stuck
ECM	171	7	S	L	Ambient temperature sensor stuck
MCU	171	4	*	E	Attachment Safety Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	171	4	*	L	Attachment Safety Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	171	6	*	E	Attachment Safety Solenoid-Current Above Normal Or Grounded Circuit
MCU	171	6	*	L	Attachment Safety Solenoid-Current Above Normal Or Grounded Circuit
ECM	171	0	S	F	Ambient temperature sensors correlation error
ECM	171	1	S	F	Ambient temperature low or boost temperature high
ECM	171	0	S	E	Ambient temperature sensors correlation error
ECM	171	15	S	F	Ambient temperature sensors correlation error
ECM	171	0	S	L	Ambient temperature sensors correlation error
ECM	171	15	S	E	Ambient temperature sensors correlation error
ECM	171	16	S	F	Ambient temperature high or boost temperature low
ECM	171	15	S	L	Ambient temperature sensors correlation error
ECM	171	17	S	F	Ambient temperature sensors correlation error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	171	18	S	F	Ambient temperature sensors correlation error
ECM	171	19	S	F	Ambient temperature sensor signal defect
ECM	171	2	S	F	Ambient temperature sensor, faulty
ECM	171	20	S	F	Temperature sensor before compressor low or ambient temperature sensor high
ECM	171	21	S	F	Temperature sensor before compressor high or ambient temperature sensor low
ECM	171	3	S	F	Ambient temperature sensor error via CAN
ECM	171	4	S	F	Ambient temperature sensor error via CAN
ECM	171	7	S	F	Ambient temperature sensor stuck
ECM	171	9	S	F	CAN message AMBIENT CONDITION from coordinator timeout
ECM	171	16	S	E	Ambient temperature high or boost temperature low
ECM	171	16	S	L	Ambient temperature high or boost temperature low
ECM	171	19	C	E	Ambient Air Temperature - Received Network Data In Error
ECM	171	19	C	L	Ambient Air Temperature - Received Network Data In Error
ECM	171	19	S	E	Ambient temperature sensor signal defect
ECM	171	19	S	L	Ambient temperature sensor signal defect
ECM	171	9	C	E	Ambient Air Temperature - Abnormal update rate
ECM	171	9	C	L	Ambient Air Temperature - Abnormal update rate
ECM	171	9	S	E	CAN message AMBIENT CONDITION from coordinator timeout
ECM	171	9	S	L	CAN message AMBIENT CONDITION from coordinator timeout
ECM	172	3	P	E	Engine Air Inlet Temperature: Voltage Above Normal
ECM	172	3	P	L	Engine Air Inlet Temperature: Voltage Above Normal
ECM	172	3	S	E	Air inlet temp sensor, short circuit to +24V
ECM	172	3	S	L	Air inlet temp sensor, short circuit to +24V
ECM	172	3	Y	E	Ambient coolant temperature sensor error (voltage high)
ECM	172	3	Y	L	Ambient coolant temperature sensor error (voltage high)
ECM	172	4	P	E	Engine Air Inlet Temperature: Voltage Below Normal
ECM	172	4	P	L	Engine Air Inlet Temperature: Voltage Below Normal
ECM	172	4	S	E	Air inlet temp sensor, short circuit to ground
ECM	172	4	S	L	Air inlet temp sensor, short circuit to ground
ECM	172	4	Y	E	Ambient coolant temperature sensor error (voltage low)
ECM	172	4	Y	L	Ambient coolant temperature sensor error (voltage low)
ECM	172	7	S	E	Air inlet temp sensor, stuck
ECM	172	7	S	L	Air inlet temp sensor, stuck
MCU	172	4	*	E	Boom Up Lever Detent Solenoid-Voltage Below Normal, Or Shorted To Low Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	172	4	*	L	Boom Up Lever Detent Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	172	6	*	E	Boom Up Lever Detent Solenoid-Current Above Normal Or Grounded Circuit
MCU	172	6	*	L	Boom Up Lever Detent Solenoid-Current Above Normal Or Grounded Circuit
ECM	172	2	S	F	Air inlet temp sensor, faulty
ECM	172	3	S	F	Air inlet temp sensor, short circuit to +24V
ECM	172	4	S	F	Air inlet temp sensor, short circuit to ground
ECM	172	7	S	F	Air inlet temp sensor, stuck
ECM	172	2	S	E	Air inlet temp sensor, faulty
ECM	172	2	S	L	Air inlet temp sensor, faulty
MCU	172	4	*	F	Boom Up Lever Detent Solenoid Circuit - Voltage Below Normal, or Shorted to Low Source (or Open Circuit)
MCU	172	6	*	F	Boom Up Lever Detent Solenoid Circuit - Current Above Normal
ECM	173	4	Y	E	Exhaust manifold temperature sensor error (voltage low)
ECM	173	4	Y	L	Exhaust manifold temperature sensor error (voltage low)
ECM	173	3	P	E	Engine Exhaust Gas Temperature : Voltage Above Normal
ECM	173	3	P	L	Engine Exhaust Gas Temperature : Voltage Above Normal
ECM	173	3	Y	E	Exhaust manifold temperature sensor error (voltage high)
ECM	173	3	Y	L	Exhaust manifold temperature sensor error (voltage high)
ECM	173	4	P	E	Engine Exhaust Gas Temperature : Voltage Below Normal
ECM	173	4	P	L	Engine Exhaust Gas Temperature : Voltage Below Normal
MCU	173	4	*	E	Boom Down Lever Detent Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	173	4	*	L	Boom Down Lever Detent Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	173	6	*	E	Boom Down Lever Detent Solenoid-Current Above Normal Or Grounded Circuit
MCU	173	6	*	L	Boom Down Lever Detent Solenoid-Current Above Normal Or Grounded Circuit
MCU	173	4	*	F	Boom Down Lever Detent Solenoid Circuit - Voltage Below Normal, or Shorted to Low Source (or Open Circuit)
MCU	173	6	*	F	Boom Down Lever Detent Solenoid Circuit - Current Above Normal
ECM	174	16	C	F	Engine Fuel Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	174	3	C	F	Engine Fuel Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	174	4	C	F	Engine Fuel Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	174	0	C	E	Engine Fuel Temperature - Data valid but above normal operational range - Most Severe Level

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	174	0	C	L	Engine Fuel Temperature - Data valid but above normal operational range - Most Severe Level
ECM	174	0	Y	E	Fuel temperature high
ECM	174	0	Y	L	Fuel temperature high
ECM	174	16	C	E	Engine Fuel Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	174	16	C	L	Engine Fuel Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	174	16	P	E	Engine Fuel Temperature 1 : High - Moderate Severity(2)
ECM	174	16	P	L	Engine Fuel Temperature 1 : High - Moderate Severity(2)
ECM	174	3	C	E	Engine Fuel Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	174	3	C	L	Engine Fuel Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	174	3	P	E	Engine Fuel Temperature 1 : Voltage Above Normal
ECM	174	3	P	L	Engine Fuel Temperature 1 : Voltage Above Normal
ECM	174	3	Y	E	Fuel temperature sensor error (voltage high)
ECM	174	3	Y	L	Fuel temperature sensor error (voltage high)
ECM	174	4	C	E	Engine Fuel Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	174	4	C	L	Engine Fuel Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	174	4	P	E	Engine Fuel Temperature 1 : Voltage Below Normal
ECM	174	4	P	L	Engine Fuel Temperature 1 : Voltage Below Normal
ECM	174	4	Y	E	Fuel temperature sensor error (voltage low)
ECM	174	4	Y	L	Fuel temperature sensor error (voltage low)
MCU	174	4	*	E	Bucket Lever Detent Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	174	4	*	L	Bucket Lever Detent Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	174	6	*	E	Bucket Lever Detent Solenoid-Current Above Normal Or Grounded Circuit
MCU	174	6	*	L	Bucket Lever Detent Solenoid-Current Above Normal Or Grounded Circuit
ECM	174	0	C	F	Engine Fuel Temperature - Data valid but above normal operational range - Most Severe Level
ECM	174	11	C	F	Fuel Temperature Sensor Circuit - data out-of-range
ECM	174	2	C	F	
ECM	174	2	C	E	Engine Fuel Temperature - Data erratic, intermittent or incorrect
ECM	174	2	C	L	Engine Fuel Temperature - Data erratic, intermittent or incorrect
MCU	174	4	*	F	Bucket Lever Detent Solenoid Circuit - Voltage Below Normal, or Shorted to Low Source (or Open Circuit)

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	174	6	*	F	Bucket Lever Detent Solenoid Circuit - Current Above Normal
ECM	175	0	C	E	Engine Oil Temperature - Data valid but above normal operational range - Most Severe Level
ECM	175	0	C	L	Engine Oil Temperature - Data valid but above normal operational range - Most Severe Level
ECM	175	16	C	F	Engine Oil Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	175	3	C	F	Engine Oil Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	175	4	C	F	Engine Oil Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	175	11	S	E	Oil temp sensor, faulty
ECM	175	11	S	L	Oil temp sensor, faulty
ECM	175	16	C	E	Engine Oil Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	175	16	C	L	Engine Oil Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	175	3	C	E	Engine Oil Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	175	3	C	L	Engine Oil Temperature Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	175	3	S	E	Oil temp sensor, short circuit to +24V
ECM	175	3	S	L	Oil temp sensor, short circuit to +24V
ECM	175	4	C	E	Engine Oil Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	175	4	C	L	Engine Oil Temperature Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	175	4	S	E	Oil temp sensor, short circuit to ground
ECM	175	4	S	L	Oil temp sensor, short circuit to ground
ECM	175	11	S	F	Oil temp sensor, faulty
ECM	175	3	S	F	Oil temp sensor, short circuit to +24V
ECM	175	4	S	F	Oil temp sensor, short circuit to ground
ECM	175	2	C	E	Engine Oil Temperature - Data erratic, intermittent or incorrect
ECM	175	2	C	L	Engine Oil Temperature - Data erratic, intermittent or incorrect
MCU	175	1	*	E	Pump Flow Conflux Solenoid-Data Valid But Below Normal Operational Range
MCU	175	1	*	L	Pump Flow Conflux Solenoid-Data Valid But Below Normal Operational Range
MCU	175	4	*	E	Pump Flow Conflux Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	175	4	*	L	Pump Flow Conflux Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	175	6	*	E	Pump Flow Conflux Solenoid-Current Above Normal Or Grounded Circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	175	6	*	L	Pump Flow Conflux Solenoid-Current Above Normal Or Grounded Circuit
ECM	175	0	C	F	Oil Temperature : Engine Oil Temperature -Data Valid but Above Normal Operational Range - Most Severe Level
ECM	175	2	C	F	Oil Temperature : Engine Oil Temperature - Data Erratic, Intermittent, or Incorrect
MCU	176	1	*	E	Pump Flow Sync. Solenoid-Data Valid But Below Normal Operational Range
MCU	176	1	*	L	Pump Flow Sync. Solenoid-Data Valid But Below Normal Operational Range
MCU	176	4	*	E	Pump Flow Sync. Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	176	4	*	L	Pump Flow Sync. Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	176	6	*	E	Pump Flow Sync. Solenoid-Current Above Normal Or Grounded Circuit
MCU	176	6	*	L	Pump Flow Sync. Solenoid-Current Above Normal Or Grounded Circuit
ECM	176 1	1	C	F	Catalyst Tank Level Data Valid but Below Normal Operational Range Most Severe Level. No catalyst solution has been detected in the catalyst solution tank.
ECM	176 1	10	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Abnormal Rate of Change
ECM	176 1	11	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Root Cause Not Known
ECM	176 1	13	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Out of Calibration
ECM	176 1	17	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	176 1	18	C	F	Catalyst Tank Level Data Valid but Below Normal Operational Range Moderately Severe Level. Low catalyst solution level has been detected in the catalyst solution tank.
ECM	176 1	2	C	F	Catalyst Tank Level Sensor Data Erratic, Intermittent, or Incorrect. Catalyst solution level is not changing with engine operating conditions.
ECM	176 1	3	C	F	Catalyst Tank Level Sensor Circuit Voltage Above Normal, or Shorted to High Source. High signal voltage detected at the catalyst tank level sensor circuit.
ECM	176 1	4	C	F	Catalyst Tank Level Sensor Circuit Voltage Below Normal, or Shorted to Low Source. Low signal voltage detected at the catalyst tank level sensor circuit.
ECM	176 1	5	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Current below normal or open circuit
ECM	176 1	6	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Current above normal or grounded circuit
ECM	176 1	1	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data valid but below normal operational range -Most Severe Level

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1761	1	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data valid but below normal operational range -Most Severe Level
ECM	1761	1	P	E	Catalyst Tank Level : Low - most severe (3)
ECM	1761	1	P	L	Catalyst Tank Level : Low - most severe (3)
ECM	1761	1	S	E	Reductant tank, empty
ECM	1761	1	S	L	Reductant tank, empty
ECM	1761	12	P	E	Aftertreatment #1 Diesel Exhaust Fluid Tank Level : Failure
ECM	1761	12	P	L	Aftertreatment #1 Diesel Exhaust Fluid Tank Level : Failure
ECM	1761	18	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	1761	18	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	1761	18	P	E	Aftertreatment #1 DEF Tank Volume : Low - moderate severity (1)
ECM	1761	18	P	L	Aftertreatment #1 DEF Tank Volume : Low - moderate severity (1)
ECM	1761	18	S	E	Reductant tank, low level
ECM	1761	18	S	L	Reductant tank, low level
ECM	1761	2	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Data erratic, intermittent or incorrect
ECM	1761	2	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Data erratic, intermittent or incorrect
ECM	1761	2	P	E	Aftertreatment #1 Diesel Exhaust Fluid Tank Level : Erratic Intermittent or Incorrect
ECM	1761	2	P	L	Aftertreatment #1 Diesel Exhaust Fluid Tank Level : Erratic Intermittent or Incorrect
ECM	1761	2	S	E	Reductant tank level sensor, short circuit to ground
ECM	1761	2	S	L	Reductant tank level sensor, short circuit to ground
ECM	1761	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Voltage above normal, or shorted to high source
ECM	1761	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Voltage above normal, or shorted to high source
ECM	1761	3	S	E	Reductant tank level sensor, short circuit to +24V
ECM	1761	3	S	L	Reductant tank level sensor, short circuit to +24V
ECM	1761	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Voltage below normal, or shorted to low source
ECM	1761	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Voltage below normal, or shorted to low source
ECM	1761	4	S	E	Fault in the reductant level sensor.
ECM	1761	4	S	L	Fault in the reductant level sensor.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1761	5	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Current below normal or open circuit
ECM	1761	5	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Current below normal or open circuit
ECM	1761	5	S	E	Reductant tank level sensor, open circuit
ECM	1761	5	S	L	Reductant tank level sensor, open circuit
ECM	1761	6	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Current above normal or grounded circuit
ECM	1761	6	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Current above normal or grounded circuit
ECM	1761	6	S	E	Fault on voltage supply to reductant pick-up unit.
ECM	1761	6	S	L	Fault on voltage supply to reductant pick-up unit.
ECM	1761	8	S	E	The reductant level in the reductant tank is falling too quickly.
ECM	1761	8	S	L	The reductant level in the reductant tank is falling too quickly.
ECM	1761	0	S	F	A special catalyst uses a chemical reagent to reach legal requirement for NOX emissions. This parameter indicates the reagent level within that catalyst tank.
ECM	1761	1	S	F	Reductant tank, empty
ECM	1761	10	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Abnormal Rate of Change
ECM	1761	10	S	F	Aftertreatment Diesel Exhaust Fluid Tank Level
ECM	1761	10	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Abnormal Rate of Change
ECM	1761	10	S	E	The consumption of reductant is low.
ECM	1761	10	S	L	The consumption of reductant is low.
ECM	1761	11	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Root Cause Not Known
ECM	1761	11	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Root Cause Not Known
ECM	1761	13	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Out of Calibration
ECM	1761	13	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Out of Calibration
ECM	1761	17	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	1761	17	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	1761	17	P	E	Aftertreatment #1 DEF Tank Volume : Low - least severe (1)
ECM	1761	17	S	F	Aftertreatment Diesel Exhaust Fluid Tank Level
ECM	1761	17	P	L	Aftertreatment #1 DEF Tank Volume : Low - least severe (1)
ECM	1761	18	S	F	Reductant tank, low level

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	1761	17	S	E	The level of reductant in the reductant tank is low.
ECM	1761	19	S	F	Aftertreatment Diesel Exhaust Fluid Tank Level
ECM	1761	17	S	L	The level of reductant in the reductant tank is low.
ECM	1761	2	S	F	Reductant tank level sensor, short circuit to ground
ECM	1761	3	S	F	Reductant tank level sensor, short circuit to +24V
ECM	1761	4	S	F	Aftertreatment Diesel Exhaust Fluid Tank Level
ECM	1761	5	S	F	Reductant tank level sensor, open circuit
ECM	1761	6	S	F	Aftertreatment Diesel Exhaust Fluid Tank Level
ECM	1761	8	S	F	Aftertreatment Diesel Exhaust Fluid Tank Level
ECM	1761	19	S	E	CAN communication to the reductant pick-up unit is interrupted.
ECM	1761	19	S	L	CAN communication to the reductant pick-up unit is interrupted.
ECM	1761	9	C	E	SAE J1939 Multiplexing PGN Timeout Error - Abnormal update rate
ECM	1761	9	C	L	SAE J1939 Multiplexing PGN Timeout Error - Abnormal update rate
MCU	179	4	*	E	Breaker Operator Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	179	4	*	L	Breaker Operator Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	179	6	*	E	Breaker Operator Solenoid-Current Above Normal Or Grounded Circuit
MCU	179	6	*	L	Breaker Operator Solenoid-Current Above Normal Or Grounded Circuit
TCU	18	*	*	E	Pump EPPR valve circuit is open or shorted to ground
TCU	18	*	*	L	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 1
TCU	18	*	*	F	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 1
ECM	1800	16	C	E	Battery Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	1800	16	C	L	Battery Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	1800	18	C	E	Battery Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	1800	18	C	L	Battery Temperature - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	1800	16	C	F	Battery Temperature : Battery Temperature - Data Valid but Above Normal Operational Range - Moderately Severe Level
ECM	1800	18	C	F	Battery Temperature : Battery Temperature - Data Valid but Below Normal Operational Range - Moderately Severe Level
MCU	181	4	*	E	Cooling Fan Reverse Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	181	4	*	L	Cooling Fan Reverse Solenoid-Voltage Below Normal, Or Shorted To Low Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	181	6	*	E	Cooling Fan Reverse Solenoid-Current Above Normal Or Grounded Circuit
MCU	181	6	*	L	Cooling Fan Reverse Solenoid-Current Above Normal Or Grounded Circuit
MCU	181	4	*	F	Engine Cooling Fan Reverse Solenoid Circuit - Voltage Below Normal, or Shorted to Low Source (or Open Circuit)
MCU	181	6	*	F	Engine Cooling Fan Reverse Solenoid Circuit - Current Above Normal
ECM	1818	31	C	E	Roll Over Protection Brake Control Active - Condition Exists
ECM	1818	31	C	L	Roll Over Protection Brake Control Active - Condition Exists
ECM	1818	31	C	F	Roll Over Protection Brake Control Active - Condition Exists
MCU	183	4	*	E	Cooling Fan Reverse Driving Status-Voltage Below Normal, Or Shorted To Low Source
MCU	183	4	*	L	Cooling Fan Reverse Driving Status-Voltage Below Normal, Or Shorted To Low Source
MCU	183	6	*	E	Cooling Fan Reverse Driving Status-Current Above Normal Or Grounded Circuit
MCU	183	6	*	L	Cooling Fan Reverse Driving Status-Current Above Normal Or Grounded Circuit
MCU	183	4	*	F	Engine Cooling Fan Reverse Driving Status Signal Circuit - Voltage Below Normal, or Shorted to Low Source (or Open Circuit)
MCU	183	6	*	F	Engine Cooling Fan Reverse Driving Status Signal Circuit - Current Above Normal
Warning	184	*	*	L	(Warning) Steering Main Pump Pressure Low
Warning	184	*	*	F	(Warning) Steering Main Pump Pressure Low
Warning	185	*	*	L	(Warning) Emergency Steering Active
Warning	185	*	*	F	(Warning) Emergency Steering Active
MCU	187	4	*	E	Emergency Steering Pump Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	187	4	*	L	Emergency Steering Pump Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	187	6	*	E	Emergency Steering Pump Relay-Current Above Normal Or Grounded Circuit
MCU	187	6	*	L	Emergency Steering Pump Relay-Current Above Normal Or Grounded Circuit
MCU	187	4	*	F	Emergency Steering Pump Relay Circuit - Voltage Below Normal, or Shorted to Low Source (or Open Circuit)
MCU	187	6	*	F	Emergency Steering Pump Relay Circuit . Current Above Normal
ECM	188	16	C	F	Engine Speed At Idle - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	188	18	C	F	Engine Speed At Idle - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	188	16	C	E	Engine Speed At Idle - Data Valid But Above Normal Operating Range - Moderately Severe Level

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	188	16	C	L	Engine Speed At Idle - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	188	18	C	E	Engine Speed At Idle - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	188	18	C	L	Engine Speed At Idle - Data Valid But Below Normal Operating Range - Moderately Severe Level
MCU	188	5	*	E	Attachment Flow EPPR 1 Vlave-Voltage Below Normal, Or Shorted To Low Source
MCU	188	5	*	L	Attachment Flow EPPR 1 Vlave-Voltage Below Normal, Or Shorted To Low Source
MCU	188	6	*	E	Attachment Flow EPPR 1 Vlave-Current Above Normal Or Grounded Circuit
MCU	188	6	*	L	Attachment Flow EPPR 1 Vlave-Current Above Normal Or Grounded Circuit
ECM	188	14	S	F	Idle due to other fault
ECM	188	14	S	E	Idle due to other fault
ECM	188	14	S	L	Idle due to other fault
MCU	189	5	*	E	Attachment Flow EPPR 2 Vlave-Voltage Below Normal, Or Shorted To Low Source
MCU	189	5	*	L	Attachment Flow EPPR 2 Vlave-Voltage Below Normal, Or Shorted To Low Source
MCU	189	6	*	E	Attachment Flow EPPR 2 Vlave-Current Above Normal Or Grounded Circuit
MCU	189	6	*	L	Attachment Flow EPPR 2 Vlave-Current Above Normal Or Grounded Circuit
TCU	19	*	*	L	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 1
TCU	19	*	*	F	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 1
ECM	190	11	C	E	Engine Speed - Root Cause Not Known, engine speed sensor may not work, Shut down
ECM	190	11	C	L	Engine Speed - Root Cause Not Known
ECM	190	0	C	E	Engine Crankshaft Speed/Position - Data valid but above normal operational range - Most Severe Level
ECM	190	0	C	L	Engine Crankshaft Speed/Position - Data valid but above normal operational range - Most Severe Level
ECM	190	0	P	E	Engine Speed : High - most severe(3)
ECM	190	0	P	L	Engine Speed : High - most severe(3)
ECM	190	0	S	E	Severe overspeed has occured
ECM	190	0	S	L	Severe overspeed has occured
ECM	190	0	C	F	Engine Crankshaft Speed/Position - Data valid but above normal operational range - Most Severe Level
ECM	190	16	C	F	Engine Crankshaft Speed/Position - Data Valid but Above Normal Operational Range - Moderately Severe Level. Engine crankshaft speed/position SIGNAL indicates engine speed above engine protection limit.
ECM	190	16	S	F	Overspeed protection, over speed
ECM	190	2	C	F	Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect. Loss of signal from crankshaft sensor.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	190	10	S	E	Overspeed protection, fast over speed
ECM	190	10	S	L	Overspeed protection, fast over speed
ECM	190	14	C	E	Engine Crankshaft Speed/Position - Special Instructions
ECM	190	14	C	L	Engine Crankshaft Speed/Position - Special Instructions
ECM	190	16	C	E	Engine Crankshaft Speed/Position - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	190	16	C	L	Engine Crankshaft Speed/Position - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	190	16	S	E	Overspeed protection, over speed
ECM	190	16	S	L	Overspeed protection, over speed
ECM	190	16	Y	E	Overspeed
ECM	190	16	Y	L	Overspeed
ECM	190	20	S	E	Engine overspeed, value to high
ECM	190	20	S	L	Engine overspeed, value to high
ECM	190	8	P	E	Engine Speed : Abnormal Frequency, Pulse Width, or Period
ECM	190	8	P	L	Engine Speed : Abnormal Frequency, Pulse Width, or Period
ECM	190	0	S	F	Severe overspeed has occured
ECM	190	10	C	F	Engine Speed/Position Sensor Circuit - lost one of two signals from the magnetic pickup sensor
ECM	190	10	S	F	Overspeed protection, fast over speed
ECM	190	10	C	E	Engine Speed/Position Sensor Circuit - lost one of two signals from the magnetic pickup sensor
ECM	190	10	C	L	Engine Speed/Position Sensor Circuit - lost one of two signals from the magnetic pickup sensor
ECM	190	15	P	E	Engine Speed : High - least severe (1)
ECM	190	15	S	F	Engine speed has been above the limit
ECM	190	15	P	L	Engine Speed : High - least severe (1)
ECM	190	15	S	E	Engine speed has been above the limit
ECM	190	15	S	L	Engine speed has been above the limit
ECM	190	2	S	F	Actual engine speed which is calculated over a minimum crankshaft angle of 720 degrees divided by the number of cylinders.
ECM	190	20	S	F	Engine overspeed, value to high
ECM	190	4	C	F	
ECM	190	2	C	E	Engine Crankshaft Speed/Position - Data erratic, intermittent or incorrect
ECM	190	2	C	L	Engine Crankshaft Speed/Position - Data erratic, intermittent or incorrect
ECM	191	19	C	F	Transmission Output Shaft Speed - Received Network Data In Error
ECM	191	9	C	F	Transmission Output Shaft Speed - Abnormal update rate
ECM	191	0	C	F	The auxiliary speed or auxiliary pressure indicates the frequency is above a calibrated threshold value.
ECM	191	1	C	F	Transmission Output Shaft (Aux Gov) Speed Low – Warning

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	191	16	C	F	Transmission Output Shaft (Tail-shaft) Speed High – Warning
ECM	191	16	C	E	Transmission Output Shaft Speed - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	191	18	C	F	Auxiliary speed frequency on input pin indicates the frequency is below a calibration-dependent threshold.
ECM	191	16	C	L	Transmission Output Shaft Speed - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	191	18	C	E	Transmission Output Shaft Speed - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	191	18	C	L	Transmission Output Shaft Speed - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	191	19	C	E	Transmission Output Shaft Speed - Received Network Data In Error
ECM	191	19	C	L	Transmission Output Shaft Speed - Received Network Data In Error
ECM	191	9	C	E	Transmission Output Shaft Speed - Abnormal update rate
ECM	191	9	C	L	Transmission Output Shaft Speed - Abnormal update rate
MCU	196	0	*	E	Attachment Flow EPPR 1 Pressure - Data Valid But Above Normal Operational Range
MCU	196	0	*	L	Attachment Flow EPPR 1 Pressure - Data Valid But Above Normal Operational Range
MCU	196	1	*	E	Attachment Flow EPPR 1 Pressure - Data Valid But Below Normal Operational Range
MCU	196	1	*	L	Attachment Flow EPPR 1 Pressure - Data Valid But Below Normal Operational Range
MCU	196	4	*	E	Attachment Flow EPPR 1 Pressure - Voltage Below Normal, Or Shorted To Low Source
MCU	196	4	*	L	Attachment Flow EPPR 1 Pressure - Voltage Below Normal, Or Shorted To Low Source
TCU	1A	*	*	L	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 2
TCU	1A	*	*	F	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 2
TCU	1B	*	*	L	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 2
TCU	1B	*	*	F	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 2
TCU	1C	*	*	L	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 2
TCU	1C	*	*	F	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 2
TCU	1D	*	*	L	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 3
TCU	1D	*	*	F	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 3
TCU	1E	*	*	L	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 3
TCU	1E	*	*	F	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 3
TCU	1F	*	*	L	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 3

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	1F	*	*	F	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 3

3 SPN 2~

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	2	*	*	E	Potentiometer circuit is shorted to Vcc(5V) or battery(+)
TCU	20	*	*	E	Travel speed solenoid circuit is open or shorted to ground
MCU	200	0	*	E	P1 & P2 EPPR Valve Pressure (Measurement)-Data Valid But Above Normal Operational Range
MCU	200	0	*	L	P1 & P2 EPPR Valve Pressure (Measurement)-Data Valid But Above Normal Operational Range
MCU	200	1	*	E	P1 & P2 EPPR Valve Pressure (Measurement)-Data Valid But Below Normal Operational Range
MCU	200	1	*	L	P1 & P2 EPPR Valve Pressure (Measurement)-Data Valid But Below Normal Operational Range
MCU	200	4	*	E	P1 & P2 EPPR Valve Pressure (Measurement)-Voltage Below Normal, Or Shorted To Low Source
MCU	200	4	*	L	P1 & P2 EPPR Valve Pressure (Measurement)-Voltage Below Normal, Or Shorted To Low Source
MCU	200	0	*	F	Pump EPPR 2nd Pressure Sensor Data Above Normal Range (or Open Circuit)
MCU	200	1	*	F	Pump EPPR 2nd Pressure Sensor Data Below Normal Range
MCU	200	2	*	E	P1 & P2 EPPR Valve Pressure (Measurement)-Data Erratic, Intermittent Or Incorrect
MCU	200	2	*	F	Pump EPPR 2nd Pressure Sensor Data Error
MCU	200	2	*	L	P1 & P2 EPPR Valve Pressure (Measurement)-Data Erratic, Intermittent Or Incorrect
MCU	200	4	*	F	Pump EPPR 2nd Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
MCU	2000	1	*	E	RMS Step 1-Satellite/mobile communication link failure
MCU	2000	1	*	L	RMS Step 1-Satellite/mobile communication link failure
MCU	2000	5	*	E	RMS Step 0-Incorrect satellite/mobile antenna connection
MCU	2000	5	*	L	RMS Step 0-Incorrect satellite/mobile antenna connection
MCU	2001	1	*	E	RMS Step 1-GPS position update failure
MCU	2001	1	*	L	RMS Step 1-GPS position update failure
MCU	2001	5	*	E	RMS Step 0-Incorrect GPS antenna connection
MCU	2001	5	*	L	RMS Step 0-Incorrect GPS antenna connection
MCU	2002	1	*	E	RMS Step 2-Test message transmission failure
MCU	2002	1	*	L	RMS Step 2-Test message transmission failure
MCU	2003	19	*	E	RMS Step 3-Failure in receiving current gauge request
MCU	2003	19	*	L	RMS Step 3-Failure in receiving current gauge request
MCU	2003	2	*	E	RMS Step 3-Failure in transmitting current gauge reply
MCU	2003	2	*	L	RMS Step 3-Failure in transmitting current gauge reply
MCU	2004	0	*	E	RMS Step 4
MCU	2004	0	*	L	RMS Step 4
MCU	2005	0	*	E	RMS Step 5
MCU	2005	0	*	L	RMS Step 5
ECM	2006	9	C	F	Source Address 6 - Abnormal Update Rate
ECM	2006	9	C	E	Source Address 6 - Abnormal Update Rate
ECM	2006	9	C	L	Source Address 6 - Abnormal Update Rate
MCU	202	0	*	E	Steering Main Pump Pressure-Data Valid But Above Normal Operational Range
MCU	202	0	*	L	Steering Main Pump Pressure-Data Valid But Above Normal Operational Range
MCU	202	1	*	E	Steering Main Pump Pressure-Data Valid But Below Normal Operational Range
MCU	202	1	*	L	Steering Main Pump Pressure-Data Valid But Below Normal Operational Range
MCU	202	4	*	E	Steering Main Pump Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	202	4	*	L	Steering Main Pump Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	202	0	*	F	Steering Main Pump Pressure Sensor Data Above Normal Range (or Open Circuit)
MCU	202	1	*	F	Steering Main Pump Pressure Sensor Data Below Normal Range
MCU	202	2	*	E	Steering Main Pump Pressure-Data Erratic, Intermittent Or Incorrect
MCU	202	2	*	F	Steering Main Pump Pressure Sensor Data Error
MCU	202	2	*	L	Steering Main Pump Pressure-Data Erratic, Intermittent Or Incorrect
MCU	202	4	*	F	Steering Main Pump Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
MCU	203	0	*	E	Emergency Steering Pump Pressure-Data Valid But Above Normal Operational Range
MCU	203	0	*	L	Emergency Steering Pump Pressure-Data Valid But Above Normal Operational Range
MCU	203	1	*	E	Emergency Steering Pump Pressure-Data Valid But Below Normal Operational Range
MCU	203	1	*	L	Emergency Steering Pump Pressure-Data Valid But Below Normal Operational Range
MCU	203	4	*	E	Emergency Steering Pump Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	203	4	*	L	Emergency Steering Pump Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	203	0	*	F	Emergency Steering Pump Pressure Sensor Data Above Normal Range (or Open Circuit)
MCU	203	1	*	F	Emergency Steering Pump Pressure Sensor Data Below Normal Range
MCU	203	2	*	E	Emergency Steering Pump Pressure-Data Erratic, Intermittent Or Incorrect
MCU	203	2	*	F	Emergency Steering Pump Pressure Sensor Data Error
MCU	203	2	*	L	Emergency Steering Pump Pressure-Data Erratic, Intermittent Or Incorrect

continued.....
.....continued

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	203	4	*	F	Emergency Steering Pump Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
MCU	204	0	*	E	Boom Cylinder Head Pressure-Data Valid But Above Normal Operational Range
MCU	204	0	*	L	Boom Cylinder Head Pressure-Data Valid But Above Normal Operational Range
MCU	204	1	*	E	Boom Cylinder Head Pressure-Data Valid But Below Normal Operational Range
MCU	204	1	*	L	Boom Cylinder Head Pressure-Data Valid But Below Normal Operational Range
MCU	204	4	*	E	Boom Cylinder Head Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	204	4	*	L	Boom Cylinder Head Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	204	0	*	F	Boom Cylinder Pressure Sensor Data Above Normal Range (or Open Circuit)
MCU	204	1	*	F	Boom Cylinder Pressure Sensor Data Below Normal Range
MCU	204	2	*	E	Boom Cylinder Head Pressure-Data Erratic, Intermittent Or Incorrect
MCU	204	2	*	F	Boom Cylinder Pressure Sensor Data Error
MCU	204	2	*	L	Boom Cylinder Head Pressure-Data Erratic, Intermittent Or Incorrect
MCU	204	4	*	F	Boom Cylinder Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
MCU	205	0	*	E	Boom Cylinder Rod Pressure-Data Valid But Above Normal Operational Range
MCU	205	0	*	L	Boom Cylinder Rod Pressure-Data Valid But Above Normal Operational Range
MCU	205	1	*	E	Boom Cylinder Rod Pressure-Data Valid But Below Normal Operational Range
MCU	205	1	*	L	Boom Cylinder Rod Pressure-Data Valid But Below Normal Operational Range
MCU	205	4	*	E	Boom Cylinder Rod Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	205	4	*	L	Boom Cylinder Rod Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	205	0	*	F	Bucket Cylinder Pressure Sensor Data Above Normal Range (or Open Circuit)
MCU	205	1	*	F	Bucket Cylinder Pressure Sensor Data Below Normal Range
MCU	205	2	*	E	Boom Cylinder Rod Pressure-Data Erratic, Intermittent Or Incorrect
MCU	205	2	*	F	Bucket Cylinder Pressure Sensor Data Error
MCU	205	2	*	L	Boom Cylinder Rod Pressure-Data Erratic, Intermittent Or Incorrect
MCU	205	4	*	F	Bucket Cylinder Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
TCU	21	*	*	E	Power boost solenoid circuit is open or shorted to ground
TCU	21	*	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH CUTOFF INPUT

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	21	*	*	F	S.C. TO BATTERY VOLTAGE AT CLUTCH CUTOFF INPUT
MCU	218	4	*	E	Boom Up Floatin Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	218	4	*	L	Boom Up Floatin Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	218	6	*	E	Boom Up Floatin Solenoid-Current Above Normal Or Grounded Circuit
MCU	218	6	*	L	Boom Up Floatin Solenoid-Current Above Normal Or Grounded Circuit
ECM	2185	3	C	F	Sensor Supply Voltage 4 Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at +5 volt sensor supply circuit to the accelerator pedal position sensor.
MCU	219	4	*	E	Boom Down Floating Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	219	4	*	L	Boom Down Floating Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	219	6	*	E	Boom Down Floating Solenoid-Current Above Normal Or Grounded Circuit
MCU	219	6	*	L	Boom Down Floating Solenoid-Current Above Normal Or Grounded Circuit
TCU	22	*	*	E	Max flow solenoid circuit is open or shorted to ground
ECM	22	3	C	E	Extended Crankcase Blow-by Pressure Circuit - Voltage Above Normal, or Shorted to High Source
ECM	22	3	C	L	Extended Crankcase Blow-by Pressure Circuit - Voltage Above Normal, or Shorted to High Source
ECM	22	4	C	E	Extended Crankcase Blow-by Pressure Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	22	4	C	L	Extended Crankcase Blow-by Pressure Circuit - Voltage Below Normal, or Shorted to Low Source
TCU	22	*	*	L	S.C. TO GROUND OR O.C. AT CLUTCH CUTOFF INPUT
TCU	22	*	*	F	S.C. TO GROUND OR O.C. AT CLUTCH CUTOFF INPUT
ECM	22	3	C	F	Crankcase Pressure : Extended Crankcase Blow - by Pressure Circuit Voltage Above Normal, or Shorted to High Source
ECM	22	4	C	F	Crankcase Pressure : Extended Crankcase Blow - by Pressure Circuit Voltage Below Normal, or Shorted to Low Source
MCU	220	4	*	E	Boom Down Pliot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	220	4	*	L	Boom Down Pliot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	220	6	*	E	Boom Down Pliot Pressure-Current Above Normal Or Grounded Circuit
MCU	220	6	*	L	Boom Down Pliot Pressure-Current Above Normal Or Grounded Circuit
MCU	221	5	*	E	ATT Relief Setting EPPR 1 Valve-Voltage Below Normal, Or Shorted To Low Source
MCU	221	5	*	L	ATT Relief Setting EPPR 1 Valve-Voltage Below Normal, Or Shorted To Low Source
MCU	221	6	*	E	ATT Relief Setting EPPR 1 Valve-Current Above Normal Or Grounded Circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	221	6	*	L	ATT Relief Setting EPPR 1 Valve-Current Above Normal Or Grounded Circuit
MCU	222	5	*	E	ATT Relief Setting EPPR 2 Valve-Voltage Below Normal, Or Shorted To Low Source
MCU	222	5	*	L	ATT Relief Setting EPPR 2 Valve-Voltage Below Normal, Or Shorted To Low Source
MCU	222	6	*	E	ATT Relief Setting EPPR 2 Valve-Current Above Normal Or Grounded Circuit
MCU	222	6	*	L	ATT Relief Setting EPPR 2 Valve-Current Above Normal Or Grounded Circuit
TCU	23	*	*	L	S.C. TO BATTERY VOLTAGE AT LOAD SENSOR INPUT
TCU	23	*	*	F	S.C. TO BATTERY VOLTAGE AT LOAD SENSOR INPUT
EH-CU	2304	5	*	L	Boom Up EPPR Valve Input Current Below Normal or Open Circuit
EH-CU	2304	6	*	L	Boom Up EPPR Valve Input Current Above Normal or Grounded Circuit
EH-CU	2304	0	*	L	Boom Up EPPR Valve Input Value Above Normal Operation Range
EH-CU	2304	1	*	L	Boom Up EPPR Valve Input Value Below Normal Operation Range
EH-CU	2304	14	*	L	Boom Up EPPR Valve Block Parameter Invalid
EH-CU	2305	5	*	L	Boom Down EPPR Valve Input Current Below Normal or Open Circuit
EH-CU	2305	6	*	L	Boom Down EPPR Valve Input Current Above Normal or Grounded Circuit
EH-CU	2305	0	*	L	Boom Down EPPR Valve Input Value Above Normal Operation Range
EH-CU	2305	1	*	L	Boom Down EPPR Valve Input Value Below Normal Operation Range
EH-CU	2305	14	*	L	Boom Down EPPR Valve Block Parameter Invalid
EH-CU	2306	5	*	L	Bucket In EPPR Valve Input Current Below Normal or Open Circuit
EH-CU	2306	6	*	L	Bucket In EPPR Valve Input Current Above Normal or Grounded Circuit
EH-CU	2306	0	*	L	Bucket In EPPR Valve Input Value Above Normal Operation Range
EH-CU	2306	1	*	L	Bucket In EPPR Valve Input Value Below Normal Operation Range
EH-CU	2306	14	*	L	Bucket In EPPR Valve Block Parameter Invalid
EH-CU	2307	5	*	L	Bucket Dump EPPR Valve Input Current Below Normal or Open Circuit
EH-CU	2307	6	*	L	Bucket Dump EPPR Valve Input Current Above Normal or Grounded Circuit
EH-CU	2307	0	*	L	Bucket Dump EPPR Valve Input Value Above Normal Operation Range
EH-CU	2307	1	*	L	Bucket Dump EPPR Valve Input Value Below Normal Operation Range
EH-CU	2307	14	*	L	Bucket Dump EPPR Valve Block Parameter Invalid
EH-CU	2308	0	*	L	Aux. Up EPPR Valve Input Value Above Normal Operation Range
EH-CU	2308	1	*	L	Aux. Up EPPR Valve Input Value Below Normal Operation Range
EH-CU	2308	14	*	L	Aux. Up EPPR Valve Block Parameter Invalid
EH-CU	2308	5	*	L	Aux. Up EPPR Valve Input Current Below Normal or Open Circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
EH-CU	2308	6	*	L	Aux. Up EPPR Valve Input Current Above Normal or Grounded Circuit
EH-CU	2309	0	*	L	Aux. Down EPPR Valve Input Data Above Normal Operation Range
EH-CU	2309	1	*	L	Aux. Down EPPR Valve Input Data Below Normal Operation Range
EH-CU	2309	14	*	L	Aux. Down EPPR Valve Block Parameter Invalid
EH-CU	2309	5	*	L	Aux. Down EPPR Valve Input Current Below Normal or Open Circuit
EH-CU	2309	6	*	L	Aux. Down EPPR Valve Input Current Above Normal or Grounded Circuit
EH-CU	2311	0	*	L	Boom Joystick Position Input Value Above Normal Operation Range
EH-CU	2311	1	*	L	Boom Joystick Position Input Value Below Normal Operation Range
EH-CU	2311	2	*	L	Boom Joystick Position Signal Error
EH-CU	2311	3	*	L	Boom Joystick Position Input Voltage Above Normal or Shorted to High Source
EH-CU	2311	4	*	L	Boom Joystick Position Input Voltage Below Normal or Shorted to Low Source
EH-CU	2311	13	*	L	Boom Joystick Position Control Block Out of Calibration
EH-CU	2311	14	*	L	Boom Joystick Position Control Block Parameter Invalid
EH-CU	2311	31	*	L	Boom Joysitck Position Signal Redundancy Lost
EH-CU	2313	0	*	L	Bucket Joystick Position Input Value Above Normal Operation Range
EH-CU	2313	1	*	L	Bucket Joystick Position Input Value Below Normal Operation Range
EH-CU	2313	2	*	L	Bucket Joystick Position Signal Error
EH-CU	2313	3	*	L	Bucket Joystick Position Input Voltage Above Normal or Shorted to High Source
EH-CU	2313	4	*	L	Bucket Joystick Position Input Voltage Below Normal or Shorted to Low Source
EH-CU	2313	13	*	L	Bucket Joystick Position Control Block Out of Calibration
EH-CU	2313	14	*	L	Bucket Joystick Position Control Block Parameter Invalid
EH-CU	2313	31	*	L	Bucket Joysitck Position Signal Redundancy Lost
EH-CU	2315	0	*	L	Aux Joystick Position Input Value Above Normal Operation Range
EH-CU	2315	1	*	L	Aux Joystick Position Input Value Below Normal Operation Range
EH-CU	2315	13	*	L	Aux Joystick Position Control Block Out of Calibration
EH-CU	2315	14	*	L	Aux Joystick Position Control Block Parameter Invalid
EH-CU	2315	2	*	L	Aux Joystick Position Signal Error
EH-CU	2315	3	*	L	Aux Joystick Position Input Voltage Above Normal or Shorted to High Source
EH-CU	2315	31	*	L	Aux Joysitck Position Signal Redundancy Lost
EH-CU	2315	4	*	L	Aux Joystick Position Input Voltage Below Normal or Shorted to Low Source
EH-CU	2317	9	*	L	Communication Timeout between EH-CU and Steering Joystick

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
EHCU	2319	2	*	L	Steering Joystick Position Signal Error
EHCU	2320	2	*	L	Steering Joystick - FNR Enable Switch Error
EHCU	2321	2	*	L	Steering Joystick - Foward Switch Error
EHCU	2322	2	*	L	Steering Joystick - Neutral Switch Error
EHCU	2323	2	*	L	Steering Joystick - Reverse Switch Error
EHCU	2324	2	*	L	Steering Joystick - Kick Down Switch Error
EHCU	2325	2	*	L	Steering Joystick - Steering On Switch Error
EHCU	2326	5	*	L	PVE Coil Power Current Below Normal or Open Circuit
EHCU	2326	6	*	L	PVE Coil Power Current Above Normal or Grounded Circuit
EHCU	2327	0	*	L	PVE Coil PWM Duty Cycle Input Value Above Normal Operation Range
EHCU	2327	1	*	L	PVE Coil PWM Duty Cycle Input Value Below Normal Operation Range
EHCU	2327	14	*	L	PVE Coil PWM Duty Cycle Control Block Parameter Invalid
EHCU	2327	5	*	L	PVE Coil PWM Duty Cycle Current Below Normal or Open Circuit
EHCU	2327	6	*	L	PVE Coil PWM Duty Cycle Current Above Normal or Grounded Circuit
EHCU	2328	0	*	L	EHCU Sensor Power Voltage High
EHCU	2328	1	*	L	EHCU Sensor Power Voltage Low
EHCU	2328	3	*	L	EHCU Sensor Power Voltage Above Normal or Shorted to High Source
EHCU	2328	4	*	L	EHCU Sensor Power Voltage Below Normal or Shorted to Low Source
EHCU	2329	0	*	L	EHCU Power Voltage High
EHCU	2329	1	*	L	EHCU Power Voltage Low
EHCU	2329	11	*	L	EHCU Safety CPU Error
EHCU	2331	9	*	L	Communication Timeout between EHCU and MCU
EHCU	2332	9	*	L	Communication Timeout between EHCU and Working Joystick
EHCU	2333	9	*	L	Communication Timeout between EHCU and TCU
EHCU	2334	0	*	L	Steering Pilot Pressure Sensor Data Above Normal Range
EHCU	2334	1	*	L	Steering Pilot Pressure Sensor Data Below Normal Range
EHCU	2335	14	*	L	Steering Proportional Valve Start Position Error
EHCU	2335	2	*	L	Steering Proportional Valve Moving Position Error
ECM	234	2	S	F	The EMS and EEC control units are incompatible
ECM	234	2	S	E	The EMS and EEC control units are incompatible
ECM	234	2	S	L	The EMS and EEC control units are incompatible
ECM	234	19	S	F	Wrong CAN version transmitted by COO
ECM	234	19	S	E	Wrong CAN version transmitted by COO

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	234	19	S	L	Wrong CAN version transmitted by COO
EHCU	2346	12	*	L	Inaccuracy of CRC value of SASA sensor CAN data
EHCU	2346	9	*	L	Communication Timeout between EHCU and SASA sensor
ECM	237	13	C	F	Vehicle Identification Number - Out of Calibration
ECM	237	2	C	F	Vehicle Identification Number - Data erratic, intermittent or incorrect
ECM	237	31	C	F	Vehicle Identification Number - Condition Exists
ECM	237	13	C	E	Vehicle Identification Number - Out of Calibration
ECM	237	13	C	L	Vehicle Identification Number - Out of Calibration
ECM	237	13	Y	E	VI reception data error
ECM	237	13	Y	L	VI reception data error
ECM	237	2	C	E	Vehicle Identification Number - Data erratic, intermittent or incorrect
ECM	237	2	C	L	Vehicle Identification Number - Data erratic, intermittent or incorrect
ECM	237	31	C	E	Vehicle Identification Number - Condition Exists
ECM	237	31	C	L	Vehicle Identification Number - Condition Exists
ECM	237	31	Y	E	VI reception timeout
ECM	237	31	Y	L	VI reception timeout
TCU	24	*	*	L	S.C. TO GROUND OR O.C. AT LOAD SENSOR INPUT
TCU	24	*	*	F	S.C. TO GROUND OR O.C. AT LOAD SENSOR INPUT
TCU	25	*	*	E	Hour-meter circuit is open or shorted to ground
TCU	25	*	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT TRANSMISSION SUMP TEMPERATURE SENSOR INPUT
TCU	25	*	*	F	S.C. TO BATTERY VOLTAGE OR O.C. AT TRANSMISSION SUMP TEMPERATURE SENSOR INPUT
ECM	251	2	C	E	Real Time Clock - Data erratic, intermittent or incorrect
ECM	251	2	C	L	Real Time Clock - Data erratic, intermittent or incorrect
ECM	251	2	C	F	Real Time Clock Power : Real Time Clock Power Interrupt - Data Erratic, Intermittent, or Incorrect
TCU	26	*	*	E	Accel dial circuit is open or shorted to ground
TCU	26	*	*	L	S.C. TO GROUND AT TRANSMISSION SUMP TEMPERATURE SENSOR INPUT
TCU	26	*	*	F	S.C. TO GROUND AT TRANSMISSION SUMP TEMPERATURE SENSOR INPUT
ECM	2609	3	S	E	AC compressor actuator, short circuit to +24V
ECM	2609	3	S	L	AC compressor actuator, short circuit to +24V
ECM	2609	4	S	E	AC compressor actuator, short circuit to ground
ECM	2609	4	S	L	AC compressor actuator, short circuit to ground
ECM	2609	5	S	E	AC compressor actuator, open load
ECM	2609	5	S	L	AC compressor actuator, open load
ECM	2609	2	S	F	AC compressor actuator, faulty

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	2609	3	S	F	AC compressor actuator, short circuit to +24V
ECM	2609	4	S	F	AC compressor actuator, short circuit to ground
ECM	2609	5	S	F	AC compressor actuator, open load
ECM	2609	2	S	E	AC compressor actuator, faulty
ECM	2609	2	S	L	AC compressor actuator, faulty
ECM	2623	3	C	E	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage above normal, or shorted to high source
ECM	2623	3	C	L	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage above normal, or shorted to high source
ECM	2623	4	C	E	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage below normal, or shorted to low source
ECM	2623	4	C	L	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage below normal, or shorted to low source
ECM	2623	3	C	F	Accelerator Pedal Position : Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Above Normal, or Shorted to High Source
ECM	2623	4	C	F	Accelerator Pedal Position : Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	2629	15	C	F	Turbocharger Compressor Outlet Temperature (Calculated) - Data Valid But Above Normal Operating Range
ECM	2629	15	C	E	Turbocharger Compressor Outlet Temperature (Calculated) - Data Valid But Above Normal Operating Range
ECM	2629	15	C	L	Turbocharger Compressor Outlet Temperature (Calculated) - Data Valid But Above Normal Operating Range
ECM	2630	2	C	F	Engine Charge Air Cooler Outlet Temperature - Data erratic, intermittent or incorrect
ECM	2630	3	C	F	Engine Charge Air Cooler Outlet Temperature - Voltage above normal, or shorted to high source
ECM	2630	4	C	F	Engine Charge Air Cooler Outlet Temperature - Voltage below normal, or shorted to low source
ECM	2630	2	C	E	Engine Charge Air Cooler Outlet Temperature - Data erratic, intermittent or incorrect
ECM	2630	2	C	L	Engine Charge Air Cooler Outlet Temperature - Data erratic, intermittent or incorrect
ECM	2630	3	C	E	Engine Charge Air Cooler Outlet Temperature - Voltage above normal, or shorted to high source
ECM	2630	3	C	L	Engine Charge Air Cooler Outlet Temperature - Voltage above normal, or shorted to high source
ECM	2630	4	C	E	Engine Charge Air Cooler Outlet Temperature - Voltage below normal, or shorted to low source
ECM	2630	4	C	L	Engine Charge Air Cooler Outlet Temperature - Voltage below normal, or shorted to low source
ECM	2633	7	C	F	Engine VGT Nozzle Position - Mechanical system not responding or out of adjustment
ECM	2633	7	C	E	Engine VGT Nozzle Position - Mechanical system not responding or out of adjustment
ECM	2633	7	C	L	Engine VGT Nozzle Position - Mechanical system not responding or out of adjustment

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	2634	3	C	F	Power Relay Driver Circuit - Voltage above normal, or shorted to high source
ECM	2634	4	C	F	Power Relay Driver Circuit - Voltage below normal, or shorted to low source
ECM	2634	3	C	E	Power Relay Driver Circuit - Voltage above normal, or shorted to high source
ECM	2634	3	C	L	Power Relay Driver Circuit - Voltage above normal, or shorted to high source
ECM	2634	4	C	E	Power Relay Driver Circuit - Voltage below normal, or shorted to low source
ECM	2634	4	C	L	Power Relay Driver Circuit - Voltage below normal, or shorted to low source
ECM	2659	7	P	E	Engine Exhaust Gas Recirculation(EGR) Mass Flow Rate - Not Responding Properly
ECM	2659	7	P	L	Engine Exhaust Gas Recirculation(EGR) Mass Flow Rate - Not Responding Properly
ECM	27	13	C	F	EGR valve failed automatic calibration procedure - out of calibration.
ECM	27	2	C	F	EGR Valve Position - Data erratic, intermittent, or incorrect. Intermittent EGR position information is being received by the electronic control module (ECM).
ECM	27	3	C	F	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit - Voltage Above Normal or Shorted to High Source. High signal voltage detected at the EGR valve position sensor circuit.
ECM	27	4	C	F	Exhaust Gas Recirculation (EGR) valve position circuit - voltage below normal or shorted to low source. Low signal voltage detected at the EGR valve position sensor circuit.
ECM	27	3	P	E	Engine Exhaust Gas Recirculation Valve Position : Voltage Above Normal
ECM	27	3	P	L	Engine Exhaust Gas Recirculation Valve Position : Voltage Above Normal
ECM	27	4	C	E	EGR Valve Position Circuit - Voltage below normal, or shorted to low source
ECM	27	4	C	L	EGR Valve Position Circuit - Voltage below normal, or shorted to low source
ECM	27	4	P	E	Engine Exhaust Gas Recirculation Valve Position : Voltage Below Normal
ECM	27	4	P	L	Engine Exhaust Gas Recirculation Valve Position : Voltage Below Normal
TCU	27	*	*	E	P1 pressure sensor circuit is open or shorted to ground
TCU	27	*	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT RETARDER / TORQUE-CONVERTER TEMPERATURE SENSOR INPUT
ECM	27	2	C	E	EGR Valve Position - Data erratic, intermittent or incorrect
ECM	27	2	C	L	EGR Valve Position - Data erratic, intermittent or incorrect
TCU	27	*	*	F	S.C. TO BATTERY VOLTAGE OR O.C. AT RETARDER / TORQUE-CONVERTER TEMPERATURE SENSOR INPUT
ECM	2789	15	C	F	Turbocharger Turbine Inlet Temperature (Calculated) - Data Valid but

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					Above Normal Operational Range – Least Severe Level
ECM	2789	0	C	E	Turbocharger Turbine Intake Temperature - Data Valid But Above Normal Operating Range - Most Severe Level
ECM	2789	0	C	L	Turbocharger Turbine Intake Temperature - Data Valid But Above Normal Operating Range - Most Severe Level
ECM	2789	15	C	E	Turbocharger Turbine Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe
ECM	2789	15	C	L	Turbocharger Turbine Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe
ECM	2789	16	C	E	Turbocharger Turbine Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	2789	16	C	L	Turbocharger Turbine Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	2789	16	C	F	Turbocharger Turbine Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	2790	15	C	F	Turbocharger Compressor Outlet Temperature (Calculated) - Data Valid but Above Normal Operational Range – Least Severe Level
ECM	2791	13	C	F	EGR Valve Controller - Out of Calibration
ECM	2791	3	C	F	EGR Valve Control Circuit - Voltage Above Normal or Shorted to High Source. High voltage detected at the EGR valve motor circuit.
ECM	2791	4	C	F	EGR Valve Control Circuit - Voltage Below Normal or Shorted to Low Source. Low voltage detected at the EGR valve motor circuit.
ECM	2791	5	C	F	EGR Valve Control Circuit - Current Below Normal or Open Circuit. High voltage or open circuit detected at the EGR valve motor circuit.
ECM	2791	7	C	F	Exhaust Gas Recirculation (EGR) Valve Control - Mechanical System Not Responding Properly or Out of Adjustment. EGR valve motor does not respond or is slow to respond.
ECM	2791	9	C	F	EGR Valve Control Circuit - Abnormal update rate
ECM	2791	0	Y	E	EGR overvoltage error
ECM	2791	0	Y	L	EGR overvoltage error
ECM	2791	1	Y	E	EGR low voltage error
ECM	2791	1	Y	L	EGR low voltage error
ECM	2791	10	S	E	NOx Exceedence - Incorrect EGR Flow
ECM	2791	10	S	L	NOx Exceedence - Incorrect EGR Flow
ECM	2791	12	Y	E	Disconnection in EGR motor coils
ECM	2791	12	Y	L	Disconnection in EGR motor coils
ECM	2791	15	C	E	EGR Valve Control Circuit Over Temperature - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	2791	15	C	L	EGR Valve Control Circuit Over Temperature - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	2791	16	S	E	NOx Exceedence - Deactivation of EGR
ECM	2791	16	S	L	NOx Exceedence - Deactivation of EGR

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	2791	2	S	E	EGR actuator, control error
ECM	2791	2	S	L	EGR actuator, control error
ECM	2791	20	S	E	EGR higher than desired
ECM	2791	20	S	L	EGR higher than desired
ECM	2791	21	S	E	EGR lower than desired
ECM	2791	21	S	L	EGR lower than desired
ECM	2791	3	S	E	EGR actuator, short circuit to +24V
ECM	2791	3	S	L	EGR actuator, short circuit to +24V
ECM	2791	4	S	E	EGR actuator, short circuit to ground
ECM	2791	4	S	L	EGR actuator, short circuit to ground
ECM	2791	5	C	E	EGR Valve Control Circuit - Current below normal or open circuit
ECM	2791	5	C	L	EGR Valve Control Circuit - Current below normal or open circuit
ECM	2791	5	P	E	Engine Exhaust Gas Recirculation (EGR) Valve Control: Current Below Normal
ECM	2791	5	P	L	Engine Exhaust Gas Recirculation (EGR) Valve Control: Current Below Normal
ECM	2791	5	S	E	EGR actuator, stuck open
ECM	2791	5	S	L	EGR actuator, stuck open
ECM	2791	6	C	E	EGR Valve Control Circuit - Current above normal or grounded circuit
ECM	2791	6	C	L	EGR Valve Control Circuit - Current above normal or grounded circuit
ECM	2791	6	P	E	Engine Exhaust Gas Recirculation (EGR) Valve Control: Current Above Normal
ECM	2791	6	P	L	Engine Exhaust Gas Recirculation (EGR) Valve Control: Current Above Normal
ECM	2791	7	C	E	EGR Valve Control Circuit - Mechanical system not responding or out of adjustment
ECM	2791	7	C	L	EGR Valve Control Circuit - Mechanical system not responding or out of adjustment
ECM	2791	7	P	E	Engine Exhaust Gas Recirculation (EGR) Valve Control: Not Responding Properly
ECM	2791	7	P	L	Engine Exhaust Gas Recirculation (EGR) Valve Control: Not Responding Properly
ECM	2791	7	S	E	EGR actuator, stuck close
ECM	2791	7	S	L	EGR actuator, stuck close
ECM	2791	7	Y	E	EGR feedback error
ECM	2791	7	Y	L	EGR feedback error
ECM	2791	9	C	E	EGR Valve Control Circuit - Abnormal update rate
ECM	2791	9	C	L	EGR Valve Control Circuit - Abnormal update rate
ECM	2791	9	Y	E	EGR ECM data error
ECM	2791	9	Y	L	EGR ECM data error
ECM	2791	10	S	F	NOx Exceedence - Incorrect EGR Flow
ECM	2791	11	S	F	EGR system faulty
ECM	2791	11	S	E	EGR system faulty
ECM	2791	11	S	L	EGR system faulty
ECM	2791	15	C	F	Exhaust Gas Recirculation (EGR) Valve Actuator Over Temperature (Calculated) - Data Above Normal Range - least severe level.
ECM	2791	16	S	F	NOx Exceedence - Deactivation of EGR

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	2791	2	S	F	EGR actuator, control error
ECM	2791	20	S	F	EGR higher than desired
ECM	2791	21	S	F	EGR lower than desired
ECM	2791	3	S	F	EGR actuator, short circuit to +24V
ECM	2791	4	S	F	EGR actuator, short circuit to ground
ECM	2791	5	S	F	EGR actuator, stuck open
ECM	2791	7	S	F	EGR actuator, stuck close
ECM	2791	13	C	E	EGR Valve Controller - Out of Calibration
ECM	2791	8	S	F	The EGR valve is responding too slow
ECM	2791	13	C	L	EGR Valve Controller - Out of Calibration
ECM	2791	8	S	E	The EGR valve is responding too slow
ECM	2791	8	S	L	The EGR valve is responding too slow
ECM	2795	13	C	F	Variable Geometry Turbocharger actuator position failed automatic calibration procedure - out of calibration.
ECM	2795	2	C	F	VGT Position Sensor - Data erratic, intermittent, or incorrect. Intermittent variable geometry turbocharger (VGT) position information is being received by the electronic control module (ECM).
ECM	2795	4	C	F	Turbocharger position sensor circuit - shorted high. High signal voltage detected at the turbocharger position sensor circuit.
ECM	2797	13	C	F	Engine Injector Bank 1 Barcodes - Out of Calibration
ECM	2797	3	S	E	Injector group A, short circuit to +24V
ECM	2797	3	S	L	Injector group A, short circuit to +24V
ECM	2797	4	S	E	Injector group A, short circuit to ground
ECM	2797	4	S	L	Injector group A, short circuit to ground
ECM	2797	5	S	E	Injector drive voltage, faulty
ECM	2797	5	S	L	Injector drive voltage, faulty
ECM	2797	6	P	E	Engine Injector Group 1 : Current Above Normal
ECM	2797	6	P	L	Engine Injector Group 1 : Current Above Normal
ECM	2797	6	Y	E	Injector drive circuit (Bank 1) short circuit (4TN : Common circuit for No. 1, No. 4 and all 3TN cylinders)
ECM	2797	6	Y	L	Injector drive circuit (Bank 1) short circuit (4TN : Common circuit for No. 1, No. 4 and all 3TN cylinders)
ECM	2797	7	P	E	Engine Injector Group 1 : Not Responding Properly
ECM	2797	7	P	L	Engine Injector Group 1 : Not Responding Properly
ECM	2797	13	C	E	Engine Injector Bank 1 Barcodes - Out of Calibration
ECM	2797	2	S	F	Injector group A, short circuit to other bank
ECM	2797	13	C	L	Engine Injector Bank 1 Barcodes - Out of Calibration
ECM	2797	3	S	F	Injector group A, short circuit to +24V
ECM	2797	4	S	F	Injector group A, short circuit to ground
ECM	2797	5	S	F	Injector drive voltage, faulty
ECM	2797	2	S	E	Injector group A, short circuit to other bank
ECM	2797	8	S	F	Injector group A, injection error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	2797	2	S	L	Injector group A, short circuit to other bank
ECM	2797	8	S	E	Injector group A, injection error
ECM	2797	8	S	L	Injector group A, injection error
ECM	2798	2	S	E	Injector group B, short circuit to other bank
ECM	2798	2	S	L	Injector group B, short circuit to other bank
ECM	2798	3	S	E	Injector group B, short circuit +24V
ECM	2798	3	S	L	Injector group B, short circuit +24V
ECM	2798	4	S	E	Injector group B, short circuit ground
ECM	2798	4	S	L	Injector group B, short circuit ground
ECM	2798	6	P	E	Engine Injector Group 2 : Current Above Normal
ECM	2798	6	P	L	Engine Injector Group 2 : Current Above Normal
ECM	2798	6	Y	E	Injector drive circuit (Bank 2) short circuit (4TN : Circuit for No. 2 and 3 cylinders)
ECM	2798	6	Y	L	Injector drive circuit (Bank 2) short circuit (4TN : Circuit for No. 2 and 3 cylinders)
ECM	2798	2	S	F	Injector group B, short circuit to other bank
ECM	2798	3	S	F	Injector group B, short circuit +24V
ECM	2798	4	S	F	Injector group B, short circuit ground
ECM	2798	8	S	F	Injection error, group B
ECM	2798	8	S	E	Injection error, group B
ECM	2798	8	S	L	Injection error, group B
TCU	28	*	*	E	P2 pressure sensor circuit is open or shorted to ground
TCU	28	*	*	L	S.C. TO GROUND AT RETARDER / TORQUECONVERTER TEMPERATURE SENSOR INPUT
ECM	28	0	Y	E	Accelerator sensor 3 error (foot pedal in open position)
ECM	28	0	Y	L	Accelerator sensor 3 error (foot pedal in open position)
ECM	28	1	Y	E	Accelerator sensor 3 error (foot pedal in closed position)
ECM	28	1	Y	L	Accelerator sensor 3 error (foot pedal in closed position)
ECM	28	3	Y	E	Accelerator sensor 2 error (Voltage high)
ECM	28	3	Y	L	Accelerator sensor 2 error (Voltage high)
ECM	28	4	Y	E	Accelerator sensor 2 error (Voltage low)
ECM	28	4	Y	L	Accelerator sensor 2 error (Voltage low)
TCU	28	*	*	F	S.C. TO GROUND AT RETARDER / TORQUECONVERTER TEMPERATURE SENSOR INPUT
ECM	2802	31	C	E	Electronic Control Module data lost - Condition Exists
ECM	2802	31	C	L	Electronic Control Module data lost - Condition Exists
ECM	2802	31	C	F	Electronic Control Module : Electronic Control Module data lost - Condition Exists
ECM	2840	12	P	E	ECU Instance: Failure
ECM	2840	12	P	L	ECU Instance: Failure
ECM	2840	14	P	E	ECU Instance: Special Instruction
ECM	2840	14	P	L	ECU Instance: Special Instruction
ECM	2858	13	S	E	EMS, Default EOL Data in E2

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	2858	13	S	L	EMS, Default EOL Data in E2
ECM	2858	13	S	F	Machine Data Configuration
ECM	2859	13	S	E	EMS, Default Barcoding Data in E2
ECM	2859	13	S	L	EMS, Default Barcoding Data in E2
ECM	2860	13	S	E	EMS internal software error
ECM	2860	13	S	L	EMS internal software error
ECM	2861	13	S	E	EMS Configuration for Automatic Clutch Faulty
ECM	2861	13	S	L	EMS Configuration for Automatic Clutch Faulty
ECM	2862	13	S	E	Internal software error
ECM	2862	13	S	L	Internal software error
ECM	2880	3	P	E	Engine Operator Primary Intermediate Speed Select: Voltage Above Normal
ECM	2880	3	P	L	Engine Operator Primary Intermediate Speed Select: Voltage Above Normal
ECM	2880	4	P	E	Engine Operator Primary Intermediate Speed Select: Voltage Below Normal
ECM	2880	4	P	L	Engine Operator Primary Intermediate Speed Select: Voltage Below Normal
ECM	2880	2	P	E	Engine Operator Primary Intermediate Speed Select: Erratic, Intermittent, or Incorrect
ECM	2880	2	P	L	Engine Operator Primary Intermediate Speed Select: Erratic, Intermittent, or Incorrect
ECM	2882	2	P	E	Engine Alternate Rating Select : Erratic, Intermittent, or Incorrect
ECM	2882	2	P	L	Engine Alternate Rating Select : Erratic, Intermittent, or Incorrect
ECM	2884	9	C	F	Engine Auxiliary Governor Switch - Abnormal update rate
ECM	2884	9	C	E	Engine Auxiliary Governor Switch - Abnormal update rate
ECM	2884	9	C	L	Engine Auxiliary Governor Switch - Abnormal update rate
ECM	29	3	C	F	High voltage detected at the remote throttle position signal circuit.
ECM	29	4	C	F	Low voltage detected at the remote throttle position signal circuit.
ECM	29	2	P	E	Accelerator Pedal Position 2 : Erratic, Intermittent or Incorrect
ECM	29	2	P	L	Accelerator Pedal Position 2 : Erratic, Intermittent or Incorrect
ECM	29	3	P	E	Accelerator Pedal Position 2 : Voltage Above Normal
ECM	29	3	P	L	Accelerator Pedal Position 2 : Voltage Above Normal
ECM	29	3	Y	E	Accelerator sensor 3 error (Voltage high)
ECM	29	3	Y	L	Accelerator sensor 3 error (Voltage high)
ECM	29	4	P	E	Accelerator Pedal Position 2 : Voltage Below Normal
ECM	29	4	P	L	Accelerator Pedal Position 2 : Voltage Below Normal
ECM	29	4	Y	E	Accelerator sensor 3 error (Voltage low)
ECM	29	4	Y	L	Accelerator sensor 3 error (Voltage low)
TCU	29	*	*	E	P3 pressure sensor circuit is open or shorted to ground
TCU	29	*	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT PARKING BRAKE SENSOR INPUT

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	29	8	P	E	Accelerator Pedal Position 2 : Abnormal Frequency, Pulse width or Period
ECM	29	8	P	L	Accelerator Pedal Position 2 : Abnormal Frequency, Pulse width or Period
ECM	29	8	Y	E	Pulse accelerator sensor error (pulse communication)
ECM	29	8	Y	L	Pulse accelerator sensor error (pulse communication)
TCU	29	*	*	F	S.C. TO BATTERY VOLTAGE OR O.C. AT PARKING BRAKE SENSOR INPUT
ECM	2900	19	C	E	Transmission Engine Crank Enable - Received Network Data in Error
ECM	2900	19	C	L	Transmission Engine Crank Enable - Received Network Data in Error
ECM	2900	9	C	E	Transmission Engine Crank Enable - Abnormal Update Rate
ECM	2900	9	C	L	Transmission Engine Crank Enable - Abnormal Update Rate
ECM	2950	3	Y	E	Power short circuit of throttle valve drive H bridge output 1
ECM	2950	3	Y	L	Power short circuit of throttle valve drive H bridge output 1
ECM	2950	4	Y	E	GND short circuit of throttle valve drive H bridge output 1
ECM	2950	4	Y	L	GND short circuit of throttle valve drive H bridge output 1
ECM	2950	5	Y	E	No-load of throttle valve drive H bridge circuit
ECM	2950	5	Y	L	No-load of throttle valve drive H bridge circuit
ECM	2950	6	Y	E	Overload on the drive H bridge circuit of throttle valve
ECM	2950	6	Y	L	Overload on the drive H bridge circuit of throttle valve
ECM	2951	3	Y	E	VB Power short circuit of throttle valve drive H bridge output 2
ECM	2951	3	Y	L	VB Power short circuit of throttle valve drive H bridge output 2
ECM	2951	4	Y	E	GND short circuit of throttle valve drive H bridge output 2
ECM	2951	4	Y	L	GND short circuit of throttle valve drive H bridge output 2
ECM	2970	2	P	E	Accelerator Pedal 2 Low Idle Switch : Erratic, Intermittent, or Incorrect
ECM	2970	2	P	L	Accelerator Pedal 2 Low Idle Switch : Erratic, Intermittent, or Incorrect
ECM	2971	6	C	F	Exhaust Gas Recirculation (EGR) valve control circuit - current above normal or grounded circuit. Excess current detected at the EGR valve motor output circuit.
ECM	2975	6	C	F	Turbocharger actuator motor circuit - current is above normal. Excessive current detected at the turbocharger actuator motor circuit.
ECM	2975	7	C	F	Turbocharger actuator motor - the mechanical system is not responding properly or is out of adjustment. Turbocharger actuator is not responding or is slow to respond.
ECM	2978	9	C	F	Estimated Engine Parasitic Losses - Percent Torque - Abnormal update rate
ECM	2978	9	C	E	Estimated Engine Parasitic Losses - Percent Torque - Abnormal update rate
ECM	2978	9	C	L	Estimated Engine Parasitic Losses - Percent Torque - Abnormal update rate

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	2981	3	C	F	Coolant Pressure 2 Circuit - Voltage Above Normal, or Shorted to High Source
ECM	2981	18	C	E	Coolant Pressure 2 - Data Valid but Below Normal Operational Range - Moderately Severe Level
ECM	2981	18	C	L	Coolant Pressure 2 - Data Valid but Below Normal Operational Range - Moderately Severe Level
ECM	2981	3	C	E	Coolant Pressure 2 Circuit - Voltage Above Normal, or Shorted to High Source
ECM	2981	3	C	L	Coolant Pressure 2 Circuit - Voltage Above Normal, or Shorted to High Source
ECM	2981	4	C	E	Coolant Pressure 2 Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	2981	4	C	L	Coolant Pressure 2 Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	2981	18	C	F	Coolant Pressure : Coolant Pressure 2 - Data Valid but Below Normal Operational Range - Moderately Severe Level
ECM	2981	4	C	F	Coolant Pressure : Coolant Pressure 2 Circuit - Voltage Below Normal, or Shorted to Low Source
TCU	2A	*	*	L	S.C. TO GROUND PARKING BRAKE SENSOR INPUT
TCU	2A	*	*	F	S.C. TO GROUND PARKING BRAKE SENSOR INPUT
TCU	2B	*	*	L	INCHSENSOR-SIGNAL MISMATCH
TCU	2B	*	*	F	INCHSENSOR-SIGNAL MISMATCH
TCU	2C	*	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT DLM TRACTION ADJUST DASHBOARD DEVICE INPUT
TCU	2C	*	*	F	S.C. TO BATTERY VOLTAGE OR O.C. AT DLM TRACTION ADJUST DASHBOARD DEVICE INPUT
TCU	2D	*	*	L	S.C. TO GROUND DLM TRACTION ADJUST DASHBOARD DEVICE INPUT
TCU	2D	*	*	F	S.C. TO GROUND DLM TRACTION ADJUST DASHBOARD DEVICE INPUT
TCU	2E	*	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT DLM STEERING ANGLE SENSOR INPUT
TCU	2E	*	*	F	S.C. TO BATTERY VOLTAGE OR O.C. AT DLM STEERING ANGLE SENSOR INPUT
TCU	2F	*	*	L	S.C. TO GROUND DLM STEERING ANGLE SENSOR INPUT
TCU	2F	*	*	F	S.C. TO GROUND DLM STEERING ANGLE SENSOR INPUT

4 SPN 3~

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	3	*	*	E	Short circuit in pump EPPR valve system
MCU	301	3	*	E	Fuel Level -Voltage Above Normal, Or Shorted To High Source
MCU	301	3	*	L	Fuel Level -Voltage Above Normal, Or Shorted To High Source
MCU	301	4	*	E	Fuel Level -Voltage Below Normal, Or Shorted To Low Source
MCU	301	4	*	L	Fuel Level -Voltage Below Normal, Or Shorted To Low Source
MCU	301	3	*	F	Fuel Level Sensor Circuit - Voltage Above Normal, or Shorted to High Source (or Open Circuit)
MCU	301	4	*	F	Fuel Level Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
Warning	303	*	*	E	(Warning) Fuel level low
Warning	303	*	*	L	(Warning) Fuel level low
Warning	303	*	*	F	(Warning) Fuel level low
ECM	3031	11	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Root Cause Not Known
ECM	3031	13	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Out of Calibration
ECM	3031	2	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Data erratic, intermittent or incorrect
ECM	3031	3	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage above normal, or shorted to high source
ECM	3031	4	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage below normal, or shorted to low source
ECM	3031	5	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor Circuit - Current below normal or open circuit
ECM	3031	6	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor Circuit - Current above normal or grounded circuit
ECM	3031	9	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Abnormal Update Rate
ECM	3031	0	S	E	SCR main unit, high temperature low limit exceedence
ECM	3031	0	S	L	SCR main unit, high temperature low limit exceedence
ECM	3031	12	P	E	Aftertreatment #1 DEF Tant Temperature - Failure
ECM	3031	12	P	L	Aftertreatment #1 DEF Tant Temperature - Failure
ECM	3031	16	P	E	Aftertreatment #1 DEF Tant Temperature : High - moderate severity (2)
ECM	3031	16	P	L	Aftertreatment #1 DEF Tant Temperature : High - moderate severity (2)
ECM	3031	18	P	E	Aftertreatment #1 DEF Tant Temperature : Low - moderate severity (2)
ECM	3031	18	P	L	Aftertreatment #1 DEF Tant Temperature : Low - moderate severity (2)
ECM	3031	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage above normal, or shorted to high source
ECM	3031	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage above normal, or shorted to high source
ECM	3031	3	S	E	Fault in the reductant tank temperature sensor.
ECM	3031	3	S	L	Fault in the reductant tank temperature sensor.
ECM	3031	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage below normal, or shorted to low source
ECM	3031	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage below normal, or shorted to low source
ECM	3031	4	S	E	The EEC control unit indicates a short circuit to ground for the pins connected to the reductant tank temperature sensor.
ECM	3031	4	S	L	The EEC control unit indicates a short circuit to ground for the pins connected to the reductant tank temperature sensor.
ECM	3031	5	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor Circuit - Current below normal or open circuit
ECM	3031	5	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor Circuit - Current below normal or open circuit
ECM	3031	6	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor Circuit - Current above normal or grounded circuit
ECM	3031	6	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor Circuit - Current above normal or grounded circuit
ECM	3031	7	P	E	Aftertreatment #1 DEF Tant Temperature - Not Responding Properly
ECM	3031	7	P	L	Aftertreatment #1 DEF Tant Temperature - Not Responding Properly
ECM	3031	0	S	F	SCR main unit, high temperature low limit exceedence
ECM	3031	1	S	F	Aftertreatment Diesel Exhaust Fluid Tank Temperature
ECM	3031	1	S	E	The reductant tank temperature sensor indicates incorrect values.
ECM	3031	1	S	L	The reductant tank temperature sensor indicates incorrect values.
ECM	3031	11	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Root Cause Not Known
ECM	3031	11	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Root Cause Not Known
ECM	3031	13	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Out of Calibration
ECM	3031	13	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Out of Calibration
ECM	3031	3	S	F	Aftertreatment Diesel Exhaust Fluid Tank Temperature
ECM	3031	4	S	F	Aftertreatment Diesel Exhaust Fluid Tank Temperature
ECM	3031	6	S	F	Temperature of the reagent in the storage tank.

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3031	2	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Data erratic, intermittent or incorrect
ECM	3031	2	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Data erratic, intermittent or incorrect
ECM	3031	9	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Abnormal Update Rate
ECM	3031	9	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Abnormal Update Rate
MCU	304	3	*	E	Engine Coolant Temperature-Voltage Above Normal, Or Shorted To High Source
MCU	304	3	*	L	Engine Coolant Temperature-Voltage Above Normal, Or Shorted To High Source
MCU	304	4	*	E	Engine Coolant Temperature-Voltage Below Normal, Or Shorted To Low Source
MCU	304	4	*	L	Engine Coolant Temperature-Voltage Below Normal, Or Shorted To Low Source
MCU	304	3	*	F	Engine Coolant Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source (or Open Circuit)
MCU	304	4	*	F	Engine Coolant Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
Warning	305	*	*	F	(Warning) Engine Coolant Temperature High
Warning	305	*	*	E	(Warning) Engine Coolant Temperature high
Warning	305	*	*	L	(Warning) Engine Coolant Temperature High
ECM	3050	0	C	F	Catalyst Over Temperature - Data Valid but Above Normal Operational Range - Most Severe Level. Very high temperatures have been detected in the aftertreatment system.
ECM	3050	31	C	F	Catalyst Missing Condition Exists. The aftertreatment catalyst in the exhaust system is not present.
ECM	3060	18	C	F	Engine Cooling System Monitor - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3060	18	C	E	Engine Cooling System Monitor - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3060	18	C	L	Engine Cooling System Monitor - Data Valid But Below Normal Operating Range - Moderately Severe Level
Warning	307	*	*	E	(Warning) Engine Coolant level low
TCU	31	*	*	E	Engine preheater circuit is open or shorted to ground
TCU	31	*	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT ENGINE SPEED INPUT
TCU	31	*	*	F	S.C. TO BATTERY VOLTAGE OR O.C. AT ENGINE SPEED INPUT
MCU	310	8	*	E	Engine Speed-Abnormal Frequency Or Pulse Width Or Period
MCU	310	8	*	L	Engine Speed-Abnormal Frequency Or Pulse Width Or Period
MCU	310	8	*	F	Engine Speed Signal Error . Abnormal Frequency or Pulse Width
Warning	313	*	*	E	(Warning) Engine Oil Pressure low
Warning	313	*	*	L	(Warning) Engine Oil Pressure Low

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
Warning	313	*	*	F	(Warning) Engine Oil Pressure Low
Warning	315	*	*	E	(Warning) Engine Oil filter clog
Warning	317	*	*	F	(Warning) Air Cleaner Clog
Warning	317	*	*	E	(Warning) Air Cleaner Clog
Warning	317	*	*	L	(Warning) Air Cleaner Clog
MCU	318	8	*	E	Cooling Fan Speed-Abnormal Frequency Or Pulse Width Or Period
MCU	318	8	*	L	Cooling Fan Speed-Abnormal Frequency Or Pulse Width Or Period
MCU	318	8	*	F	Engine Cooling Fan Speed Signal Error . Abnormal Frequency or Pulse Width
Warning	319	*	*	F	(Warning) Engine Stop
Warning	319	*	*	E	(Warning) Engine Stop
Warning	319	*	*	L	(Warning) Engine Stop
TCU	32	*	*	E	Travel alarm buzzer circuit is open or shorted to ground
TCU	32	*	*	L	S.C. TO GROUND AT ENGINE SPEED INPUT
TCU	32	*	*	F	S.C. TO GROUND AT ENGINE SPEED INPUT
Warning	320	*	*	E	(Warning) Engine Check
Warning	320	*	*	L	(Warning) Engine Check
Warning	320	*	*	F	(Warning) Engine Check
ECM	3216	10	C	F	Aftertreatment 1 Intake NOx Sensor - Abnormal rate of change
ECM	3216	13	C	F	Aftertreatment 1 Intake NOx - Out of Calibration
ECM	3216	16	C	F	Aftertreatment 1 Intake NOx - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	3216	2	C	F	Aftertreatment 1 Intake NOx Sensor - Data erratic, intermittent or incorrect
ECM	3216	20	C	F	Aftertreatment 1 Intake NOx Sensor - Data not Rational - Drifted High
ECM	3216	4	C	F	Aftertreatment 1 Intake NOx Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3216	9	C	F	Aftertreatment 1 Intake NOx Sensor - Abnormal update rate
ECM	3216	10	C	E	Aftertreatment 1 Intake NOx Sensor - Abnormal rate of change
ECM	3216	10	C	L	Aftertreatment 1 Intake NOx Sensor - Abnormal rate of change
ECM	3216	10	S	E	NOx sensor upstream, stuck
ECM	3216	10	S	L	NOx sensor upstream, stuck
ECM	3216	11	P	E	Aftertreatment #1 Intake NOx - Other Failure Mode
ECM	3216	11	P	L	Aftertreatment #1 Intake NOx - Other Failure Mode
ECM	3216	16	C	E	Aftertreatment 1 Intake NOx - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	3216	16	C	L	Aftertreatment 1 Intake NOx - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	3216	17	S	E	NOx sensor upstream, low signal
ECM	3216	17	S	L	NOx sensor upstream, low signal
ECM	3216	18	S	E	NOx sensor upstream, too low value
ECM	3216	18	S	L	NOx sensor upstream, too low value
ECM	3216	2	S	E	NOx sensor T131 upstream of the SCR catalytic converter indicates incorrect values.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3216	2	S	L	NOx sensor T131 upstream of the SCR catalytic converter indicates incorrect values.
ECM	3216	20	C	E	Aftertreatment 1 Intake NOx Sensor - Data not Rational - Drifted High
ECM	3216	20	C	L	Aftertreatment 1 Intake NOx Sensor - Data not Rational - Drifted High
ECM	3216	20	S	E	NOx sensor upstream, not plausible
ECM	3216	20	S	L	NOx sensor upstream, not plausible
ECM	3216	4	C	E	Aftertreatment 1 Intake NOx Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3216	4	C	L	Aftertreatment 1 Intake NOx Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3216	4	S	E	NOx sensor upstream, internal fault or open circuit
ECM	3216	4	S	L	NOx sensor upstream, internal fault or open circuit
ECM	3216	5	P	E	Aftertreatment #1 Intake NOx - Current Below Normal
ECM	3216	5	P	L	Aftertreatment #1 Intake NOx - Current Below Normal
ECM	3216	5	S	E	NOx sensor upstream, open circuit
ECM	3216	5	S	L	NOx sensor upstream, open circuit
ECM	3216	6	P	E	Aftertreatment #1 Intake NOx - Current Above Normal
ECM	3216	6	P	L	Aftertreatment #1 Intake NOx - Current Above Normal
ECM	3216	6	S	E	Fault in the voltage supply to NOx sensor T131 upstream of the SCR catalytic converter.
ECM	3216	6	S	L	Fault in the voltage supply to NOx sensor T131 upstream of the SCR catalytic converter.
ECM	3216	7	P	E	Aftertreatment #1 Intake NOx - Not Responding Properly
ECM	3216	7	P	L	Aftertreatment #1 Intake NOx - Not Responding Properly
ECM	3216	7	S	E	NOx sensor upstream, internal fault
ECM	3216	7	S	L	NOx sensor upstream, internal fault
ECM	3216	8	S	E	NOx sensor upstream of catalytic converter
ECM	3216	8	S	L	NOx sensor upstream of catalytic converter
ECM	3216	9	C	E	Aftertreatment 1 Intake NOx Sensor - Abnormal update rate
ECM	3216	9	C	L	Aftertreatment 1 Intake NOx Sensor - Abnormal update rate
ECM	3216	9	S	E	NOx sensor upstream of catalytic converter
ECM	3216	9	S	L	NOx sensor upstream of catalytic converter
ECM	3216	10	S	F	NOx sensor upstream, stuck
ECM	3216	17	S	F	NOx sensor upstream, low signal
ECM	3216	18	S	F	NOx sensor upstream, too low value
ECM	3216	13	C	E	Aftertreatment 1 Intake NOx - Out of Calibration
ECM	3216	19	S	F	NOx sensor upstream error via CAN
ECM	3216	13	C	L	Aftertreatment 1 Intake NOx - Out of Calibration
ECM	3216	19	S	E	NOx sensor upstream error via CAN
ECM	3216	19	S	L	NOx sensor upstream error via CAN
ECM	3216	2	S	F	Aftertreatment Intake NOx
ECM	3216	20	S	F	NOx sensor upstream, not plausible

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3216	2	C	E	Aftertreatment 1 Intake NOx Sensor - Data erratic, intermittent or incorrect
ECM	3216	2	C	L	Aftertreatment 1 Intake NOx Sensor - Data erratic, intermittent or incorrect
ECM	3216	4	S	F	NOx sensor upstream, internal fault or open circuit
ECM	3216	5	S	F	NOx sensor upstream, open circuit
ECM	3216	6	S	F	Aftertreatment Intake NOx
ECM	3216	7	S	F	NOx sensor upstream, internal fault
ECM	3216	8	S	F	NOx sensor upstream of catalytic converter
ECM	3216	9	S	F	NOx sensor upstream of catalytic converter
ECM	3216	21	C	E	Aftertreatment 1 Intake NOx Sensor - Data not Rational - Drifted High
ECM	3216	21	C	L	Aftertreatment 1 Intake NOx Sensor - Data not Rational - Drifted High
ECM	3217	2	C	F	Aftertreatment Intake Oxygen Sensor - Data erratic, intermittent or incorrect
ECM	3217	12	P	E	Aftertreatment #1 Intake 02 : Failure
ECM	3217	12	P	L	Aftertreatment #1 Intake 02 : Failure
ECM	3217	13	P	E	Aftertreatment #1 Intake 02 : Out of Calibration
ECM	3217	13	P	L	Aftertreatment #1 Intake 02 : Out of Calibration
ECM	3217	16	P	E	Aftertreatment #1 Intake O2 : High - moderate severity (2)
ECM	3217	16	P	L	Aftertreatment #1 Intake O2 : High - moderate severity (2)
ECM	3217	20	C	E	Aftertreatment Intake Oxygen Sensor - Data Not Rational - Drifted High
ECM	3217	20	C	L	Aftertreatment Intake Oxygen Sensor - Data Not Rational - Drifted High
ECM	3217	21	C	E	Aftertreatment Intake Oxygen Sensor - Data Not Rational - Drifted Low
ECM	3217	21	C	L	Aftertreatment Intake Oxygen Sensor - Data Not Rational - Drifted Low
ECM	3217	3	P	E	Aftertreatment #1 Intake 02 : Voltage Above Normal
ECM	3217	3	P	L	Aftertreatment #1 Intake 02 : Voltage Above Normal
ECM	3217	4	P	E	Aftertreatment #1 Intake 02 : Voltage Below Normal
ECM	3217	4	P	L	Aftertreatment #1 Intake 02 : Voltage Below Normal
ECM	3217	5	P	E	Aftertreatment #1 Intake 02 : Current Below Normal
ECM	3217	5	P	L	Aftertreatment #1 Intake 02 : Current Below Normal
ECM	3217	6	P	E	Aftertreatment #1 Intake 02 : Current Above Normal
ECM	3217	6	P	L	Aftertreatment #1 Intake 02 : Current Above Normal
ECM	3217	15	P	E	Aftertreatment #1 Intake 02 : High - least severe (1)
ECM	3217	15	P	L	Aftertreatment #1 Intake 02 : High - least severe (1)
ECM	3217	2	C	E	Aftertreatment Intake Oxygen Sensor - Data erratic, intermittent or incorrect
ECM	3217	2	C	L	Aftertreatment Intake Oxygen Sensor - Data erratic, intermittent or incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3218	2	C	F	Aftertreatment 1 Intake NOx Sensor Power Supply - Data erratic, intermittent or incorrect
ECM	3218	12	P	E	Aftertreatment #1 Intake NOx : failure
ECM	3218	12	P	L	Aftertreatment #1 Intake NOx : failure
ECM	3218	2	C	E	Aftertreatment 1 Intake NOx Sensor Power Supply - Data erratic, intermittent or incorrect
ECM	3218	2	C	L	Aftertreatment 1 Intake NOx Sensor Power Supply - Data erratic, intermittent or incorrect
ECM	3219	15	P	E	Aftertreatment #1 Intake Gas Sensor at Temperature: High -least severe (1)
ECM	3219	15	P	L	Aftertreatment #1 Intake Gas Sensor at Temperature: High -least severe (1)
ECM	3219	17	P	E	Aftertreatment #1 Intake Gas Sensor at Temperature: Low -least severe (1)
ECM	3219	17	P	L	Aftertreatment #1 Intake Gas Sensor at Temperature: Low -least severe (1)
MCU	322	3	*	E	Engine Preheat Relay-Voltage Above Normal, Or Shorted To High Source
MCU	322	3	*	L	Engine Preheat Relay-Voltage Above Normal, Or Shorted To High Source
MCU	322	4	*	E	Engine Preheat Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	322	4	*	L	Engine Preheat Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	322	6	*	E	Engine Preheat Relay-Current Above Normal Or Grounded Circuit
MCU	322	6	*	L	Engine Preheat Relay-Current Above Normal Or Grounded Circuit
MCU	322	4	*	F	Engine Preheat Relay Circuit . Voltage Below Normal, or Shorted to Low Source (or Open Circuit)
MCU	322	6	*	F	Engine Preheat Relay Circuit - Current Above Normal
ECM	3222	3	P	E	Aftertreatment #1 Intake Gas Sensor Heater: Voltage Above Normal
ECM	3222	3	P	L	Aftertreatment #1 Intake Gas Sensor Heater: Voltage Above Normal
ECM	3222	4	P	E	Aftertreatment #1 Intake Gas Sensor Heater: Voltage Below Normal
ECM	3222	4	P	L	Aftertreatment #1 Intake Gas Sensor Heater: Voltage Below Normal
ECM	3222	5	P	E	Aftertreatment #1 Intake Gas Sensor Heater: Current Below Normal
ECM	3222	5	P	L	Aftertreatment #1 Intake Gas Sensor Heater: Current Below Normal
ECM	3226	11	C	E	Aftertreatment 1 Outlet NOx Sensor - Root Cause Not Known
ECM	3226	11	C	L	Aftertreatment 1 Outlet NOx Sensor - Root Cause Not Known
ECM	3226	0	C	F	Aftertreatment Outlet NOx - Data Valid but Above Normal Operational Range - Most Severe Level. The engine NOx output is higher than recommended levels.
ECM	3226	10	C	F	Aftertreatment 1 Outlet NOx Sensor - Abnormal rate of change
ECM	3226	13	C	F	Aftertreatment 1 Outlet NOx Sensor - Out of Calibration

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3226	15	C	F	Aftertreatment Outlet NOx - Data Valid but Above Normal Operational Range - Least Severe Level. The engine NOx output is higher than recommended levels.
ECM	3226	2	C	F	Aftertreatment 1 Outlet NOx Sensor - Data erratic, intermittent or incorrect
ECM	3226	20	C	F	Aftertreatment 1 Outlet NOx Sensor - Data not Rational - Drifted High
ECM	3226	4	C	F	Aftertreatment 1 Outlet NOx Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3226	9	C	F	Aftertreatment 1 Outlet NOx Sensor - Abnormal update rate
ECM	3226	10	C	E	Aftertreatment 1 Outlet NOx Sensor - Abnormal rate of change
ECM	3226	10	C	L	Aftertreatment 1 Outlet NOx Sensor - Abnormal rate of change
ECM	3226	10	S	E	NOx sensor downstream, stuck
ECM	3226	10	S	L	NOx sensor downstream, stuck
ECM	3226	11	P	E	
ECM	3226	11	P	L	
ECM	3226	12	P	E	
ECM	3226	12	P	L	
ECM	3226	17	S	E	NOx sensor downstream, low signal
ECM	3226	17	S	L	NOx sensor downstream, low signal
ECM	3226	18	S	E	NOx sensor downstream, too low value
ECM	3226	18	S	L	NOx sensor downstream, too low value
ECM	3226	19	S	E	NOx sensor downstream of the catalytic converter
ECM	3226	19	S	L	NOx sensor downstream of the catalytic converter
ECM	3226	2	C	E	Aftertreatment 1 Outlet NOx Sensor - Data Erratic, Intermittant, or Incorrect.
ECM	3226	2	C	L	Aftertreatment 1 Outlet NOx Sensor - Data Erratic, Intermittant, or Incorrect.
ECM	3226	2	S	E	Nox sensor downstream, Implausible signal
ECM	3226	2	S	L	Nox sensor downstream, Implausible signal
ECM	3226	20	C	E	Aftertreatment 1 Outlet NOx Sensor - Data not Rational - Drifted High
ECM	3226	20	C	L	Aftertreatment 1 Outlet NOx Sensor - Data not Rational - Drifted High
ECM	3226	20	S	E	NOx sensor downstream, not plausible
ECM	3226	20	S	L	NOx sensor downstream, not plausible
ECM	3226	4	C	E	Aftertreatment Outlet NOx Sensor Circuit- Voltage below normal or shorted to low source
ECM	3226	4	C	L	Aftertreatment Outlet NOx Sensor Circuit- Voltage below normal or shorted to low source
ECM	3226	4	S	E	NOx sensor downstream, internal fault or open circuit
ECM	3226	4	S	L	NOx sensor downstream, internal fault or open circuit
ECM	3226	5	P	E	Aftertreatment #1 Outlet NOx : Current Below Normal
ECM	3226	5	P	L	Aftertreatment #1 Outlet NOx : Current Below Normal

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3226	5	S	E	NOx sensor downstream, open circuit
ECM	3226	5	S	L	NOx sensor downstream, open circuit
ECM	3226	6	P	E	Aftertreatment #1 Outlet NOx : Current Above Normal
ECM	3226	6	P	L	Aftertreatment #1 Outlet NOx : Current Above Normal
ECM	3226	6	S	E	Fault in the voltage supply to NOx sensor T115 downstream of the SCR catalytic converter.
ECM	3226	6	S	L	Fault in the voltage supply to NOx sensor T115 downstream of the SCR catalytic converter.
ECM	3226	7	C	E	Aftertreatment 1 Outlet NOx Sensor Closed Loop Operation - Condition Exists
ECM	3226	7	C	L	Aftertreatment 1 Outlet NOx Sensor Closed Loop Operation - Condition Exists
ECM	3226	7	P	E	Aftertreatment #1 Outlet NOx : Not Responding Properly
ECM	3226	7	P	L	Aftertreatment #1 Outlet NOx : Not Responding Properly
ECM	3226	7	S	E	NOx sensor downstream, internal fault
ECM	3226	7	S	L	NOx sensor downstream, internal fault
ECM	3226	9	C	E	Aftertreatment 1 Outlet NOx Sensor - Abnormal update rate
ECM	3226	9	C	L	Aftertreatment 1 Outlet NOx Sensor - Abnormal update rate
ECM	3226	9	S	E	NOx sensor downstream of the SCR catalytic converter
ECM	3226	9	S	L	NOx sensor downstream of the SCR catalytic converter
ECM	3226	10	S	F	NOx sensor downstream, stuck
ECM	3226	17	S	F	NOx sensor downstream, low signal
ECM	3226	18	S	F	NOx sensor downstream, too low value
ECM	3226	19	S	F	NOx sensor downstream of the catalytic converter
ECM	3226	2	S	F	Aftertreatment Outlet NOx
ECM	3226	20	S	F	NOx sensor downstream, not plausible
ECM	3226	13	C	E	Aftertreatment 1 Outlet NOx Sensor - Out of Calibration
ECM	3226	13	C	L	Aftertreatment 1 Outlet NOx Sensor - Out of Calibration
ECM	3226	3	S	F	Aftertreatment Outlet NOx
ECM	3226	4	S	F	NOx sensor downstream, internal fault or open circuit
ECM	3226	5	S	F	NOx sensor downstream, open circuit
ECM	3226	6	S	F	Aftertreatment Outlet NOx
ECM	3226	7	S	F	NOx sensor downstream, internal fault
ECM	3226	21	C	E	Aftertreatment 1 Outlet NOx Sensor - Data not Rational - Drifted High
ECM	3226	8	S	F	NOx sensor downstream error via CAN
ECM	3226	21	C	L	Aftertreatment 1 Outlet NOx Sensor - Data not Rational - Drifted High
ECM	3226	9	S	F	NOx sensor downstream of the SCR catalytic converter
ECM	3226	8	S	E	NLev.4 sensor downstream error via CAN

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3226	8	S	L	NLev.4 sensor downstream error via CAN
ECM	3227	9	C	F	Aftertreatment Outlet Oxygen Sensor Circuit - Abnormal update rate
ECM	3227	16	P	E	Aftertreatment #1 Outlet O2 : High - moderate severity (2)
ECM	3227	16	P	L	Aftertreatment #1 Outlet O2 : High - moderate severity (2)
ECM	3227	20	C	E	Aftertreatment Outlet Oxygen - Data Not Rational - Drifted High
ECM	3227	20	C	L	Aftertreatment Outlet Oxygen - Data Not Rational - Drifted High
ECM	3227	21	C	E	Aftertreatment Outlet Oxygen - Data Not Rational - Drifted Low
ECM	3227	21	C	L	Aftertreatment Outlet Oxygen - Data Not Rational - Drifted Low
ECM	3227	9	C	E	Aftertreatment Outlet Oxygen Sensor Circuit - Abnormal update rate
ECM	3227	9	C	L	Aftertreatment Outlet Oxygen Sensor Circuit - Abnormal update rate
ECM	3228	2	C	F	Aftertreatment 1 Outlet NOx Sensor Power Supply - Data erratic, intermittent or incorrect
ECM	3228	2	C	E	Aftertreatment 1 Outlet NOx Sensor Power Supply - Data erratic, intermittent or incorrect
ECM	3228	2	C	L	Aftertreatment 1 Outlet NOx Sensor Power Supply - Data erratic, intermittent or incorrect
ECM	3234	2	C	F	Aftertreatment Outlet NOx Sensor - Data Erratic, Intermittent, or Incorrect. An incorrect NOx sensor reading has been detected by the aftertreatment outlet NOx sensor.
ECM	3234	4	C	F	Aftertreatment NOx Sensor - Voltage Below Normal, or Shorted to Low Source. Out-of-range battery voltage has been detected by the aftertreatment outlet NOx sensor.
ECM	3234	9	C	F	Aftertreatment Outlet NOx Sensor - Abnormal Update Rate. No communications or valid data transfer rate detected on the J1939 datalink between the ECM and the aftertreatment outlet NOx sensor.
ECM	3241	19	S	F	CAN Error from Exhaust Temperature Sensors
ECM	3241	10	C	F	
ECM	3241	2	C	F	Exhaust Gas Temperature 1 Data Erratic, Intermittent, or Incorrect. The exhaust gas temperature #1 sensor is not changing with engine operating conditions.
ECM	3241	3	C	F	Exhaust Gas Temperature 1 Circuit Voltage Above Normal, or Shorted to Low Source. High signal voltage detected at the catalyst inlet temperature sensor circuit
ECM	3241	31	C	F	Catalyst Inlet Temperature Sensor Swapped with Outlet Condition Exists. The inlet and outlet catalyst temperature sensor connections are swapped.
ECM	3241	4	C	F	Exhaust Gas Temperature 1 Circuit Voltage Below Normal, or Shorted to Low Source. Low signal voltage detected at the catalyst inlet temperature sensor circuit.
ECM	3241	10	S	E	Upstream catalyst temperature sensor not plausible, not plausible
ECM	3241	10	S	L	Upstream catalyst temperature sensor not plausible, not plausible
ECM	3241	2	S	E	Upstream catalyst temperature sensor not plausible, not plausible

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3241	2	S	L	Upstream catalyst temperature sensor not plausible, not plausible
ECM	3241	4	S	E	Upstream catalyst temperature sensor not plausible, short circuit
ECM	3241	4	S	L	Upstream catalyst temperature sensor not plausible, short circuit
ECM	3241	5	S	E	Upstream catalyst temperature sensor not plausible, open circuit
ECM	3241	5	S	L	Upstream catalyst temperature sensor not plausible, open circuit
ECM	3241	8	S	E	Upstream catalyst temperature sensor not plausible, to high
ECM	3241	8	S	L	Upstream catalyst temperature sensor not plausible, to high
ECM	3241	10	S	F	Upstream catalyst temperature sensor not plausible, not plausible
ECM	3241	11	S	F	Aftertreatment Exhaust Gas Temperature
ECM	3241	11	S	E	The exhaust gas temperature sensor upstream of the oxidation catalytic converter indicates incorrect values.
ECM	3241	12	S	F	Aftertreatment Exhaust Gas Temperature
ECM	3241	11	S	L	The exhaust gas temperature sensor upstream of the oxidation catalytic converter indicates incorrect values.
ECM	3241	15	C	F	Exhaust Gas Temperature 1 Data Valid but Above Normal Operational Range Least Severe Level. High catalyst inlet temperature has been detected.
ECM	3241	12	S	E	The exhaust gas temperature sensor upstream of the oxidation catalytic converter indicates incorrect values.
ECM	3241	16	S	F	Upstream catalyst temperature too high
ECM	3241	12	S	L	The exhaust gas temperature sensor upstream of the oxidation catalytic converter indicates incorrect values.
ECM	3241	16	S	E	Upstream catalyst temperature too high
ECM	3241	18	S	F	Upstream catalyst temperature sensor not plausible, to low
ECM	3241	16	S	L	Upstream catalyst temperature too high
ECM	3241	18	S	E	Upstream catalyst temperature sensor not plausible, to low
ECM	3241	18	S	L	Upstream catalyst temperature sensor not plausible, to low
ECM	3241	2	S	F	Upstream catalyst temperature sensor not plausible, not plausible
ECM	3241	19	S	E	CAN Error from Exhaust Temperature Sensors
ECM	3241	3	S	F	Upstream catalyst temperature sensor not plausible, to high
ECM	3241	19	S	L	CAN Error from Exhaust Temperature Sensors
ECM	3241	4	S	F	Upstream catalyst temperature sensor not plausible, short circuit
ECM	3241	5	S	F	Upstream catalyst temperature sensor not plausible, open circuit
ECM	3241	3	S	E	Upstream catalyst temperature sensor not plausible, to high
ECM	3241	6	S	F	Aftertreatment Exhaust Gas Temperature

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3241	3	S	L	Upstream catalyst temperature sensor not plausible, to high
ECM	3241	8	S	F	Upstream catalyst temperature sensor not plausible, to high
ECM	3241	6	S	E	The exhaust gas temperature sensor upstream of the oxidation catalytic converter indicates incorrect values.
ECM	3241	6	S	L	The exhaust gas temperature sensor upstream of the oxidation catalytic converter indicates incorrect values.
ECM	3242	0	P	E	Particulate Trap Intake Gas Temperature : High - most severe (3)
ECM	3242	0	P	L	Particulate Trap Intake Gas Temperature : High - most severe (3)
ECM	3242	0	S	E	Upstream DPF temperature sensor, too high
ECM	3242	0	S	L	Upstream DPF temperature sensor, too high
ECM	3242	16	C	F	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range
ECM	3242	7	S	F	Upstream DPF temperature sensor, not plausible
ECM	3242	9	S	F	Upstream DPF temperature sensor, not plausible
ECM	3242	0	C	E	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data valid but above normal operation
ECM	3242	0	C	L	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data valid but above normal operation
ECM	3242	0	Y	E	DPF inlet temperature sensor error (high temperature)
ECM	3242	0	Y	L	DPF inlet temperature sensor error (high temperature)
ECM	3242	15	C	F	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range
ECM	3242	3	C	F	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3242	4	C	F	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3242	15	C	E	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range
ECM	3242	15	C	L	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range
ECM	3242	16	C	E	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range
ECM	3242	16	C	L	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range
ECM	3242	16	S	E	Upstream DPF temperature too high during regeneration
ECM	3242	16	S	L	Upstream DPF temperature too high during regeneration
ECM	3242	18	P	E	Aftertreatment #1 DPF Intake Gas Temperature : Low - moderate severity (2)

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3242	18	P	L	Aftertreatment #1 DPF Intake Gas Temperature : Low - moderate severity (2)
ECM	3242	19	S	E	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	19	S	L	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	2	C	E	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data erratic, intermittent or incorrect
ECM	3242	2	C	L	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data erratic, intermittent or incorrect
ECM	3242	3	C	E	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3242	3	C	L	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3242	3	P	E	Particulate Trap Intake Gas Temperature : Voltage Above Normal
ECM	3242	3	P	L	Particulate Trap Intake Gas Temperature : Voltage Above Normal
ECM	3242	3	S	E	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	3	S	L	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	3	Y	E	DPF inlet temperature sensor error (voltage high)
ECM	3242	3	Y	L	DPF inlet temperature sensor error (voltage high)
ECM	3242	4	C	E	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3242	4	C	L	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3242	4	P	E	Particulate Trap Intake Gas Temperature : Voltage Below Normal
ECM	3242	4	P	L	Particulate Trap Intake Gas Temperature : Voltage Below Normal
ECM	3242	4	S	E	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	4	S	L	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	4	Y	E	DPF inlet temperature sensor error (voltage low)
ECM	3242	4	Y	L	DPF inlet temperature sensor error (voltage low)
ECM	3242	7	S	E	Upstream DPF temperature sensor, not plausible
ECM	3242	7	S	L	Upstream DPF temperature sensor, not plausible
ECM	3242	9	S	E	Upstream DPF temperature sensor, not plausible
ECM	3242	9	S	L	Upstream DPF temperature sensor, not plausible
ECM	3242	0	S	F	Upstream DPF temperature sensor, to high
ECM	3242	10	S	F	Upstream DPF temperature too high during normal condition

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3242	10	S	E	Upstream DPF temperature too high during normal condition
ECM	3242	11	S	F	Aftertreatment Diesel Particulate Filter Intake Gas Temperature
ECM	3242	10	S	L	Upstream DPF temperature too high during normal condition
ECM	3242	11	S	E	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	12	S	F	Aftertreatment Diesel Particulate Filter Intake Gas Temperature
ECM	3242	11	S	L	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	16	S	F	Upstream DPF temperature too high during regeneration
ECM	3242	12	S	E	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	12	S	L	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	19	S	F	Aftertreatment Diesel Particulate Filter Intake Gas Temperature
ECM	3242	3	S	F	Aftertreatment Diesel Particulate Filter Intake Gas Temperature
ECM	3242	4	S	F	Aftertreatment Diesel Particulate Filter Intake Gas Temperature
ECM	3242	17	P	E	Aftertreatment #1 DPF Intake Gas Temperature : Low - least severe (1)
ECM	3242	5	S	F	Aftertreatment Diesel Particulate Filter Intake Gas Temperature
ECM	3242	17	P	L	Aftertreatment #1 DPF Intake Gas Temperature : Low - least severe (1)
ECM	3242	5	S	E	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	6	S	F	Aftertreatment Diesel Particulate Filter Intake Gas Temperature
ECM	3242	5	S	L	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	6	S	E	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3242	6	S	L	The exhaust gas temperature sensor upstream of the particulate filter indicates incorrect values.
ECM	3245	6	S	E	Fault in the voltage supply to the exhaust gas temperature sensors for exhaust gas aftertreatment.
ECM	3245	6	S	L	Fault in the voltage supply to the exhaust gas temperature sensors for exhaust gas aftertreatment.
ECM	3245	19	S	F	Auxiliary Temperature Sensor Error on CAN
ECM	3245	3	S	F	Aftertreatment Exhaust Gas Temperature
ECM	3245	4	S	F	Aftertreatment Exhaust Gas Temperature
ECM	3245	6	S	F	Aftertreatment Exhaust Gas Temperature
ECM	3245	19	S	E	Auxiliary Temperature Sensor Error on CAN
ECM	3245	19	S	L	Auxiliary Temperature Sensor Error on CAN
ECM	3246	0	C	F	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data valid but above normal operation

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3246	15	S	F	Downstream DPF temperature too high during normal condition
ECM	3246	16	C	F	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	3246	9	S	F	Downstream exhaust temperature sensor, not plausible
ECM	3246	0	C	E	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data valid but above normal operation
ECM	3246	0	C	L	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data valid but above normal operation
ECM	3246	15	C	F	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	3246	2	C	F	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data erratic, intermittent or incorrect
ECM	3246	3	C	F	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3246	4	C	F	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3246	15	C	E	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	3246	15	C	L	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	3246	15	S	E	Downstream DPF temperature too high during normal condition
ECM	3246	15	S	L	Downstream DPF temperature too high during normal condition
ECM	3246	16	C	E	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	3246	16	C	L	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	3246	16	S	E	Downstream DPF temperature too high during regeneration
ECM	3246	16	S	L	Downstream DPF temperature too high during regeneration
ECM	3246	19	S	E	The exhaust gas temperature sensor downstream of the particulate filter indicates incorrect values.
ECM	3246	19	S	L	The exhaust gas temperature sensor downstream of the particulate filter indicates incorrect values.
ECM	3246	2	C	E	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data erratic, intermittent or incorrect
ECM	3246	2	C	L	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data erratic, intermittent or incorrect
ECM	3246	3	C	E	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3246	3	C	L	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3246	3	S	E	Exhaust temperature sensor after SCR catalytic converter, short circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3246	3	S	L	Exhaust temperature sensor after SCR catalytic converter, short circuit
ECM	3246	4	C	E	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3246	4	C	L	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3246	4	S	E	Exhaust temperature sensor after SCR catalytic converter, open circuit
ECM	3246	4	S	L	Exhaust temperature sensor after SCR catalytic converter, open circuit
ECM	3246	11	S	F	Aftertreatment Diesel Particulate Filter Outlet Gas Temperature
ECM	3246	11	S	E	The exhaust gas temperature sensor downstream of the particulate filter indicates incorrect values.
ECM	3246	12	S	F	Aftertreatment Diesel Particulate Filter Outlet Gas Temperature
ECM	3246	11	S	L	The exhaust gas temperature sensor downstream of the particulate filter indicates incorrect values.
ECM	3246	16	S	F	Downstream DPF temperature too high during regeneration
ECM	3246	19	S	F	Aftertreatment Diesel Particulate Filter Outlet Gas Temperature
ECM	3246	12	S	E	The exhaust gas temperature sensor downstream of the particulate filter indicates incorrect values.
ECM	3246	2	S	F	Downstream DPF temperature sensor error
ECM	3246	12	S	L	The exhaust gas temperature sensor downstream of the particulate filter indicates incorrect values.
ECM	3246	3	S	F	Exhaust temperature sensor after SCR catalytic converter, short circuit
ECM	3246	4	S	F	Exhaust temperature sensor after SCR catalytic converter, open circuit
ECM	3246	2	S	E	Downstream DPF temperature sensor error
ECM	3246	5	S	F	Aftertreatment Diesel Particulate Filter Outlet Gas Temperature
ECM	3246	2	S	L	Downstream DPF temperature sensor error
ECM	3246	5	S	E	The exhaust gas temperature sensor downstream of the particulate filter indicates incorrect values.
ECM	3246	6	S	F	Aftertreatment Diesel Particulate Filter Outlet Gas Temperature
ECM	3246	5	S	L	The exhaust gas temperature sensor downstream of the particulate filter indicates incorrect values.
ECM	3246	6	S	E	The exhaust gas temperature sensor downstream of the particulate filter indicates incorrect values.
ECM	3246	6	S	L	The exhaust gas temperature sensor downstream of the particulate filter indicates incorrect values.
ECM	3246	9	S	E	Downstream exhaust temperature sensor, not plausible
ECM	3246	9	S	L	Downstream exhaust temperature sensor, not plausible
ECM	3249	10	C	F	Exhaust Gas Temperature 2 Abnormal Rate of Change. The catalyst outlet temperature sensor is not responding to a change in engine operating conditions.
ECM	3249	17	C	F	Aftertreatment Exhaust Gas Temperature 2 - Data Valid But Below

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					Normal Operating Range - Least Severe Level
ECM	3249	18	C	F	Aftertreatment Exhaust Gas Temperature 2 - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3249	2	C	F	Exhaust Gas Temperature 2 Data Erratic, Intermittent, or Incorrect. The exhaust gas temperature #2 sensor is not changing with engine operating conditions.
ECM	3249	3	C	F	Exhaust Gas Temperature 2 Circuit Voltage Above Normal, or Shorted to Low Source. High signal voltage detected at the catalyst outlet temperature sensor circuit.
ECM	3249	4	C	F	Exhaust Gas Temperature 2 Circuit Voltage Below Normal, or Shorted to Low Source. Low signal voltage detected at the catalyst exhaust temperature sensor circuit.
ECM	3249	18	C	E	Aftertreatment Exhaust Gas Temperature 2 - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3249	18	C	L	Aftertreatment Exhaust Gas Temperature 2 - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3249	3	S	E	Fault on the exhaust gas temperature sensor upstream of the SCR catalytic converter.
ECM	3249	3	S	L	Fault on the exhaust gas temperature sensor upstream of the SCR catalytic converter.
ECM	3249	4	S	E	Fault on the exhaust gas temperature sensor upstream of the SCR catalytic converter.
ECM	3249	4	S	L	Fault on the exhaust gas temperature sensor upstream of the SCR catalytic converter.
ECM	3249	3	S	F	Aftertreatment Exhaust Gas Temperature
ECM	3249	4	S	F	Aftertreatment Exhaust Gas Temperature
ECM	3249	17	C	E	Aftertreatment Exhaust Gas Temperature 2 - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	3249	17	C	L	Aftertreatment Exhaust Gas Temperature 2 - Data Valid But Below Normal Operating Range - Least Severe Level
MCU	325	4	*	F	Fuel Warmer Relay Circuit - Voltage Below Normal, or Shorted to Low Source (or Open Circuit)
MCU	325	3	*	E	Fuel Warmer Relay-Voltage Above Normal, Or Shorted To High Source
MCU	325	3	*	L	Fuel Warmer Relay-Voltage Above Normal, Or Shorted To High Source
MCU	325	4	*	E	Fuel Warmer Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	325	4	*	L	Fuel Warmer Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	325	6	*	E	Fuel Warmer Relay-Current Above Normal Or Grounded Circuit
MCU	325	6	*	L	Fuel Warmer Relay-Current Above Normal Or Grounded Circuit
MCU	325	6	*	F	Fuel Warmer Relay Circuit . Current Above Normal
ECM	3250	0	Y	E	DPF intermediate temperature sensor temperature rise error (post-injection failure)

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3250	0	Y	L	DPF intermediate temperature sensor temperature rise error (post-injection failure)
ECM	3250	1	Y	E	DPF intermediate temperature sensor temperature too low
ECM	3250	1	Y	L	DPF intermediate temperature sensor temperature too low
ECM	3250	3	Y	E	DPF intermediate temperature sensor error (voltage high)
ECM	3250	3	Y	L	DPF intermediate temperature sensor error (voltage high)
ECM	3250	4	Y	E	DPF intermediate temperature sensor error (voltage low)
ECM	3250	4	Y	L	DPF intermediate temperature sensor error (voltage low)
ECM	3251	0	P	E	Particulate Trap Differential Pressure : High - most severe (3)
ECM	3251	0	P	L	Particulate Trap Differential Pressure : High - most severe (3)
ECM	3251	0	C	F	Aftertreatment Diesel Particulate Filter Differential Pressure - Data valid but above normal Operating Range
ECM	3251	0	C	E	Aftertreatment Diesel Particulate Filter Differential Pressure - Data valid but above normal Operating Range
ECM	3251	0	C	L	Aftertreatment Diesel Particulate Filter Differential Pressure - Data valid but above normal Operating Range
ECM	3251	0	Y	E	DPF differential pressure sensor differential pressure rise error
ECM	3251	0	Y	L	DPF differential pressure sensor differential pressure rise error
ECM	3251	13	Y	E	DPF differential pressure sensor error (abnormal learning value)
ECM	3251	13	Y	L	DPF differential pressure sensor error (abnormal learning value)
ECM	3251	7	P	E	Particulate Trap Differential Pressure : Not Responding Properly
ECM	3251	7	P	L	Particulate Trap Differential Pressure : Not Responding Properly
ECM	3251	7	S	E	Differential pressure sensor over particulate filter, faulty
ECM	3251	7	S	L	Differential pressure sensor over particulate filter, faulty
ECM	3251	15	C	F	Aftertreatment Diesel Particulate Filter Differential Pressure - Data valid but above normal Operating Range
ECM	3251	16	C	F	Aftertreatment Diesel Particulate Filter Differential Pressure - Data Valid But Above Normal Operating Range
ECM	3251	2	C	F	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor - Data erratic, intermittent or incorrect
ECM	3251	3	C	F	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor Circuit - Voltage above normal
ECM	3251	4	C	F	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor Circuit - Voltage below normal
ECM	3251	16	C	E	Aftertreatment Diesel Particulate Filter Differential Pressure - Data Valid But Above Normal Operating Range
ECM	3251	16	C	L	Aftertreatment Diesel Particulate Filter Differential Pressure - Data Valid But Above Normal Operating Range
ECM	3251	16	P	E	Particulate Trap Differential Pressure : High - moderate severity (2) —
ECM	3251	16	P	L	Particulate Trap Differential Pressure : High - moderate severity (2) —

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3251	18	P	E	Particulate Trap Differential Pressure : Low - moderate severity (2)
ECM	3251	18	P	L	Particulate Trap Differential Pressure : Low - moderate severity (2)
ECM	3251	2	S	E	Particulate filter is missing
ECM	3251	2	S	L	Particulate filter is missing
ECM	3251	3	C	E	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor Circuit - Voltage above normal
ECM	3251	3	C	L	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor Circuit - Voltage above normal
ECM	3251	3	P	E	Particulate Trap Differential Pressure : Voltage Above Normal
ECM	3251	3	P	L	Particulate Trap Differential Pressure : Voltage Above Normal
ECM	3251	3	S	E	Fault in the particulate filter differential pressure sensor
ECM	3251	3	S	L	Fault in the particulate filter differential pressure sensor
ECM	3251	3	Y	E	DPF differential pressure sensor error (voltage high)
ECM	3251	3	Y	L	DPF differential pressure sensor error (voltage high)
ECM	3251	4	C	E	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor Circuit - Voltage below normal
ECM	3251	4	C	L	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor Circuit - Voltage below normal
ECM	3251	4	P	E	Particulate Trap Differential Pressure : Voltage Below Normal
ECM	3251	4	P	L	Particulate Trap Differential Pressure : Voltage Below Normal
ECM	3251	4	S	E	Fault in the particulate filter differential pressure sensor
ECM	3251	4	S	L	Fault in the particulate filter differential pressure sensor
ECM	3251	4	Y	E	DPF differential pressure sensor error (voltage low)
ECM	3251	4	Y	L	DPF differential pressure sensor error (voltage low)
ECM	3251	10	C	E	Aftertreatment 1 Diesel Particulate Filter Differential Pressure - Abnormal Rate of Change
ECM	3251	10	C	L	Aftertreatment 1 Diesel Particulate Filter Differential Pressure - Abnormal Rate of Change
ECM	3251	10	P	E	Particulate Trap Differential Pressure : Abnormal Rate of Change
ECM	3251	10	P	L	Particulate Trap Differential Pressure : Abnormal Rate of Change
ECM	3251	15	C	E	Aftertreatment Diesel Particulate Filter Differential Pressure - Data valid but above normal Operating Range
ECM	3251	15	C	L	Aftertreatment Diesel Particulate Filter Differential Pressure - Data valid but above normal Operating Range
ECM	3251	17	P	E	Particulate Trap Differential Pressure : Low - least severe (1)
ECM	3251	17	P	L	Particulate Trap Differential Pressure : Low - least severe (1)
ECM	3251	2	S	F	Particulate filter is missing
ECM	3251	3	S	F	Fault in the filter system
ECM	3251	4	S	F	Fault in the filter system
ECM	3251	7	S	F	Differential pressure sensor over particulate filter, faulty

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3251	2	C	E	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor - Data erratic, intermittent or incorrect
ECM	3251	8	S	F	Differential pressure sensor not plausible
ECM	3251	2	C	L	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor - Data erratic, intermittent or incorrect
ECM	3251	8	S	E	Differential pressure sensor not plausible
ECM	3251	9	S	F	Differential pressure sensor over particulate filter, not plausible
ECM	3251	8	S	L	Differential pressure sensor not plausible
ECM	3251	9	S	E	Differential pressure sensor over particulate filter, not plausible
ECM	3251	9	S	L	Differential pressure sensor over particulate filter, not plausible
ECM	3255	9	C	F	Aftertreatment 2 Intake Nox Sensor - Abnormal update rate
ECM	3255	9	C	E	Aftertreatment 2 Intake NOx Sensor - Abnormal update rate
ECM	3255	9	C	L	Aftertreatment 2 Intake NOx Sensor - Abnormal update rate
ECM	3265	9	C	F	Aftertreatment 2 Outlet NOx - Abnormal Update Rate
ECM	3265	9	C	E	Aftertreatment 2 Outlet NOx - Abnormal Update Rate
ECM	3265	9	C	L	Aftertreatment 2 Outlet NOx - Abnormal Update Rate
MCU	327	4	*	E	Anti-Restart Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	327	4	*	L	Anti-Restart Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	327	6	*	E	Anti-Restart Relay-Current Above Normal Or Grounded Circuit
MCU	327	6	*	L	Anti-Restart Relay-Current Above Normal Or Grounded Circuit
MCU	327	4	*	F	Anti-Restart Relay Circuit - Voltage Below Normal, or Shorted to Low Source (or Open Circuit)
MCU	327	6	*	F	Anti-Restart Relay Circuit . Current Above Normal
ECM	3275	19	S	E	The EEC control unit for exhaust gas aftertreatment has lost contact with the exhaust gas temperature sensor upstream of the SCR catalytic converter.
ECM	3275	19	S	L	The EEC control unit for exhaust gas aftertreatment has lost contact with the exhaust gas temperature sensor upstream of the SCR catalytic converter.
ECM	3275	0	S	F	Exhaust gas temperature upstream
ECM	3275	1	S	F	Exhaust gas temperature upstream
ECM	3275	11	S	F	Exhaust gas temperature upstream
ECM	3275	12	S	F	Exhaust gas temperature upstream
ECM	3275	19	S	F	EEC unit has no contact with sensors
ECM	3275	2	S	F	Exhaust gas temperature upstream
ECM	3275	3	S	F	Exhaust gas temperature upstream
ECM	3275	4	S	F	Exhaust gas temperature upstream
ECM	3275	5	S	F	Exhaust gas temperature upstream
ECM	3275	6	S	F	Exhaust gas temperature upstream
ECM	3275	9	S	F	EEC unit has no contact with sensors
ECM	3279	19	S	E	The EEC control unit for exhaust gas aftertreatment has lost contact

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					with the exhaust gas temperature sensors.
ECM	3279	19	S	L	The EEC control unit for exhaust gas aftertreatment has lost contact with the exhaust gas temperature sensors.
ECM	3279	2	S	E	Electrical fault in the exhaust gas temperature sensors for exhaust gas aftertreatment.
ECM	3279	2	S	L	Electrical fault in the exhaust gas temperature sensors for exhaust gas aftertreatment.
ECM	3279	19	S	F	EEC unit has no contact with sensors
ECM	3279	2	S	F	Electrical fault in the sensors
ECM	3279	8	S	F	Electrical fault in the sensors
ECM	3279	8	S	E	The exhaust gas temperature sensors for exhaust gas aftertreatment indicate incorrect values.
ECM	3279	9	S	F	Electrical fault in the sensors
ECM	3279	8	S	L	The exhaust gas temperature sensors for exhaust gas aftertreatment indicate incorrect values.
ECM	3279	9	S	E	The exhaust gas temperature sensors for exhaust gas aftertreatment indicate incorrect values.
ECM	3279	9	S	L	The exhaust gas temperature sensors for exhaust gas aftertreatment indicate incorrect values.
TCU	33	*	*	E	Alternator circuit is open or shorted to ground
TCU	33	*	*	L	LOGICAL ERROR AT ENGINE SPEED INPUT
TCU	33	*	*	F	LOGICAL ERROR AT ENGINE SPEED INPUT
ECM	3340	3	S	E	Intercooler pressure sensor, short circuit to ground
ECM	3340	3	S	L	Intercooler pressure sensor, short circuit to ground
ECM	3340	4	S	E	Intercooler pressure sensor, short circuit to +24
ECM	3340	4	S	L	Intercooler pressure sensor, short circuit to +24
ECM	3340	1	S	F	Intercooler temperature, too low
ECM	3340	1	S	E	Intercooler temperature, too low
ECM	3340	10	S	F	Intercooler pressure sensor, not plausible
ECM	3340	1	S	L	Intercooler temperature, too low
ECM	3340	10	S	E	Intercooler pressure sensor, not plausible
ECM	3340	15	S	F	Intercooler pressure, above normal
ECM	3340	10	S	L	Intercooler pressure sensor, not plausible
ECM	3340	15	S	E	Intercooler pressure, above normal
ECM	3340	16	S	F	Intercooler pressure, above normal
ECM	3340	15	S	L	Intercooler pressure, above normal
ECM	3340	16	S	E	Intercooler pressure, above normal
ECM	3340	20	S	F	Intercooler pressure too high
ECM	3340	16	S	L	Intercooler pressure, above normal
ECM	3340	20	S	E	Intercooler pressure too high
ECM	3340	21	S	F	Intercooler pressure too low
ECM	3340	20	S	L	Intercooler pressure too high
ECM	3340	3	S	F	Intercooler pressure sensor, short circuit to ground

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3340	4	S	F	Intercooler pressure sensor, short circuit to +24
ECM	3340	21	S	E	Intercooler pressure too low
ECM	3340	7	S	F	Intercooler pressure sensor, stuck
ECM	3340	21	S	L	Intercooler pressure too low
ECM	3340	7	S	E	Intercooler pressure sensor, stuck
ECM	3340	9	S	F	Intercooler pressure sensor, not plausible
ECM	3340	7	S	L	Intercooler pressure sensor, stuck
ECM	3340	9	S	E	Intercooler pressure sensor, not plausible
ECM	3340	9	S	L	Intercooler pressure sensor, not plausible
ECM	3353	3	C	F	Alternator 1 Status - Voltage Above Normal, or Shorted to High Source
ECM	3353	4	C	F	Alternator 1 Status - Voltage Below Normal, or Shorted to Low Source
ECM	3353	3	C	E	Alternator 1 Status - Voltage Above Normal, or Shorted to High Source
ECM	3353	3	C	L	Alternator 1 Status - Voltage Above Normal, or Shorted to High Source
ECM	3353	4	C	E	Alternator 1 Status - Voltage Below Normal, or Shorted to Low Source
ECM	3353	4	C	L	Alternator 1 Status - Voltage Below Normal, or Shorted to Low Source
ECM	3358	10	P	E	Engine Exhaust Gas Recirculation 1 Intake Pressure : Abnormal Rate of Change
ECM	3358	10	P	L	Engine Exhaust Gas Recirculation 1 Intake Pressure : Abnormal Rate of Change
ECM	3358	13	P	E	Engine Exhaust Gas Recirculation Inlet Pressure : Out of Calibration
ECM	3358	13	P	L	Engine Exhaust Gas Recirculation Inlet Pressure : Out of Calibration
ECM	3358	3	P	E	Engine Exhaust Gas Recirculation Inlet Pressure : Voltage Above Normal
ECM	3358	3	P	L	Engine Exhaust Gas Recirculation Inlet Pressure : Voltage Above Normal
ECM	3358	4	P	E	Engine Exhaust Gas Recirculation Inlet Pressure : Voltage Below Normal
ECM	3358	4	P	L	Engine Exhaust Gas Recirculation Inlet Pressure : Voltage Below Normal
ECM	3360	6	S	F	SCR main unit, system voltage error
ECM	3360	0	S	E	SCR system adaptation have reached max values
ECM	3360	0	S	L	SCR system adaptation have reached max values
ECM	3360	1	S	E	SCR system adaptation have reached min values
ECM	3360	1	S	L	SCR system adaptation have reached min values
ECM	3360	10	S	E	EEC3 System has demanded SCR minor functional failure actions
ECM	3360	10	S	L	EEC3 System has demanded SCR minor functional failure actions
ECM	3360	14	P	E	Aftertreatment #1 DEF Controller : Special Instruction
ECM	3360	14	P	L	Aftertreatment #1 DEF Controller : Special Instruction
ECM	3360	16	S	E	SCR main unit, internal supply voltage high

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3360	16	S	L	SCR main unit, internal supply voltage high
ECM	3360	19	S	E	SCR main unit, communication error
ECM	3360	19	S	L	SCR main unit, communication error
ECM	3360	3	P	E	Aftertreatment #1 DEF Controller : Voltage Above Normal
ECM	3360	3	P	L	Aftertreatment #1 DEF Controller : Voltage Above Normal
ECM	3360	3	S	E	SCR main unit, ventilation valve test, short to battery
ECM	3360	3	S	L	SCR main unit, ventilation valve test, short to battery
ECM	3360	5	S	E	SCR main unit, ventilation valve test, open load
ECM	3360	5	S	L	SCR main unit, ventilation valve test, open load
ECM	3360	6	S	E	SCR main unit, system voltage error
ECM	3360	6	S	L	SCR main unit, system voltage error
ECM	3360	9	P	E	Aftertreatment #1 DEF Controller : Abnormal Update Rate
ECM	3360	9	P	L	Aftertreatment #1 DEF Controller : Abnormal Update Rate
ECM	3360	9	S	E	EEC3 has demanded SCR Major functional failure reductant dosing stopped actions
ECM	3360	9	S	L	EEC3 has demanded SCR Major functional failure reductant dosing stopped actions
ECM	3360	0	S	F	SCR system adaptation have reached max values
ECM	3360	1	S	F	SCR system adaptation have reached min values
ECM	3360	10	S	F	EEC3 System has demanded "SCR minor functional failure" actions
ECM	3360	12	S	F	SCR main unit, error
ECM	3360	16	S	F	SCR main unit, internal supply voltage high
ECM	3360	19	S	F	SCR main unit, communication error
ECM	3360	12	S	E	SCR main unit, error
ECM	3360	2	S	F	EEC3 System has demanded "SCR Hazardous major functional failure" actions
ECM	3360	12	S	L	SCR main unit, error
ECM	3360	3	S	F	SCR main unit, ventilation valve test, short to battery
ECM	3360	2	S	E	EEC3 System has demanded SCR Hazardous major functional failure actions
ECM	3360	2	S	L	EEC3 System has demanded SCR Hazardous major functional failure actions
ECM	3360	4	P	E	Aftertreatment #1 DEF Controller : Voltage Below Normal
ECM	3360	4	S	F	SCR main unit, internal supply voltage low
ECM	3360	4	P	L	Aftertreatment #1 DEF Controller : Voltage Below Normal
ECM	3360	5	S	F	SCR main unit, ventilation valve test, open load
ECM	3360	4	S	E	SCR main unit, internal supply voltage low
ECM	3360	7	S	F	SCR main unit, ignition switch plausible error
ECM	3360	4	S	L	SCR main unit, internal supply voltage low

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3360	9	S	F	EEC3 has demanded "SCR Major functional failure reductant dosing stopped" actions
ECM	3360	7	S	E	SCR main unit, ignition switch plausible error
ECM	3360	7	S	L	SCR main unit, ignition switch plausible error
ECM	3361	1	C	F	
ECM	3361	12	C	F	Catalyst Dosing Control Unit Bad Intelligent Device or Component. An internal error has been detected in the catalyst dosing control unit.
ECM	3361	2	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Temperature - Data erratic, intermittent or incorrect
ECM	3361	3	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage above normal, or shorted to high source
ECM	3361	4	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage below normal, or shorted to low source
ECM	3361	9	C	F	Dosing Control Unit Data Link Abnormal Update Rate. Data Link communications between the ECM and the Dosing Control Unit have been interrupted.
ECM	3361	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage above normal, or shorted to high source
ECM	3361	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage above normal, or shorted to high source
ECM	3361	3	S	E	SCR reductant dosing valve, short circuit to battery
ECM	3361	3	S	L	SCR reductant dosing valve, short circuit to battery
ECM	3361	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage below normal, or shorted to low source
ECM	3361	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage below normal, or shorted to low source
ECM	3361	4	S	E	Fault in reductant doser injection valve.
ECM	3361	4	S	L	Fault in reductant doser injection valve.
ECM	3361	5	P	E	Aftertreatment #1 DEF Dosing Unit : Current Below Normal
ECM	3361	5	P	L	Aftertreatment #1 DEF Dosing Unit : Current Below Normal
ECM	3361	5	S	E	SCR reductant dosing valve, open circuit
ECM	3361	5	S	L	SCR reductant dosing valve, open circuit
ECM	3361	6	P	E	Aftertreatment #1 DEF Dosing Unit : Current Above Normal
ECM	3361	6	P	L	Aftertreatment #1 DEF Dosing Unit : Current Above Normal
ECM	3361	6	S	E	Fault in reductant doser injection valve.
ECM	3361	6	S	L	Fault in reductant doser injection valve.
ECM	3361	10	S	F	SCR main unit, reductant pressure not plausible
ECM	3361	10	S	E	SCR main unit, reductant pressure not plausible
ECM	3361	10	S	L	SCR main unit, reductant pressure not plausible
ECM	3361	2	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Temperature - Data erratic, intermittent or incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3361	2	S	F	Reductant doser injection valve
ECM	3361	2	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Temperature - Data erratic, intermittent or incorrect
ECM	3361	3	S	F	SCR reductant dosing valve, short circuit to battery
ECM	3361	4	S	F	Reductant doser injection valve
ECM	3361	5	S	F	SCR reductant dosing valve, open circuit
ECM	3361	6	S	F	Reductant doser injection valve
ECM	3361	2	S	E	Fault in reductant doser injection valve.
ECM	3361	2	S	L	Fault in reductant doser injection valve.
ECM	3362	31	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Input Lines - Condition Exists
ECM	3362	0	S	E	The reductant pressure has been above the permitted level.
ECM	3362	0	S	L	The reductant pressure has been above the permitted level.
ECM	3362	1	S	E	Required reductant pressure cannot be reached.
ECM	3362	1	S	L	Required reductant pressure cannot be reached.
ECM	3362	2	S	E	SCR reductant pressure, error
ECM	3362	2	S	L	SCR reductant pressure, error
ECM	3362	0	S	F	Reductant pressure
ECM	3362	1	S	F	Reductant pressure
ECM	3362	2	S	F	SCR reductant pressure, error
ECM	3362	31	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Input Lines - Condition Exists
ECM	3362	31	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Input Lines - Condition Exists
ECM	3363	16	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	3363	18	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3363	3	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage above normal, or shorted to high source
ECM	3363	4	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage below normal, or shorted to low source
ECM	3363	7	C	F	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Mechanical system not responding or out of adjustment
ECM	3363	0	S	E	SCR main unit, reductant heater, circuit high
ECM	3363	0	S	L	SCR main unit, reductant heater, circuit high
ECM	3363	16	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	3363	16	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	3363	16	S	E	SCR main unit, high temperature high limit exceeded
ECM	3363	16	S	L	SCR main unit, high temperature high limit exceeded

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3363	17	S	E	SCR reductant tank temperatur too low
ECM	3363	17	S	L	SCR reductant tank temperatur too low
ECM	3363	18	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3363	18	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3363	18	S	E	SCR main unit, low temperature limit exceeded
ECM	3363	18	S	L	SCR main unit, low temperature limit exceeded
ECM	3363	2	S	E	SCR main unit, reductant heater, open load
ECM	3363	2	S	L	SCR main unit, reductant heater, open load
ECM	3363	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage above normal, or shorted to high source
ECM	3363	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage above normal, or shorted to high source
ECM	3363	3	S	E	SCR main unit, internal heating pump, short circuit to battery
ECM	3363	3	S	L	SCR main unit, internal heating pump, short circuit to battery
ECM	3363	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage below normal, or shorted to low source
ECM	3363	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage below normal, or shorted to low source
ECM	3363	4	S	E	SCR main unit, reductant temperature sensor circuit low
ECM	3363	4	S	L	SCR main unit, reductant temperature sensor circuit low
ECM	3363	5	P	E	Aftertreatment #1 DEF Tank Heater : Current Below Normal
ECM	3363	5	P	L	Aftertreatment #1 DEF Tank Heater : Current Below Normal
ECM	3363	5	S	E	SCR main unit, internal heating pump, open load
ECM	3363	5	S	L	SCR main unit, internal heating pump, open load
ECM	3363	6	P	E	Aftertreatment #1 DEF Tank Heater : Current Above Normal
ECM	3363	6	P	L	Aftertreatment #1 DEF Tank Heater : Current Above Normal
ECM	3363	6	S	E	The heater of the reductant doser has consumed more power than permitted.
ECM	3363	6	S	L	The heater of the reductant doser has consumed more power than permitted.
ECM	3363	8	S	E	SCR main unit, reductant heater, circuit performance
ECM	3363	8	S	L	SCR main unit, reductant heater, circuit performance
ECM	3363	0	S	F	SCR main unit, reductant heater, circuit high
ECM	3363	15	S	F	SCR reagent tank temperature too high
ECM	3363	16	S	F	SCR main unit, high temperature high limit exceeded
ECM	3363	17	S	F	SCR reductant tank temperatur too low

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3363	18	S	F	SCR main unit, low temperature limit exceeded
ECM	3363	2	S	F	SCR main unit, reductant heater, open load
ECM	3363	3	S	F	SCR main unit, internal heating pump, short circuit to battery
ECM	3363	4	S	F	SCR main unit, reductant temperature sensor circuit low
ECM	3363	5	S	F	SCR main unit, internal heating pump, open load
ECM	3363	6	S	F	Reductant doser fault
ECM	3363	15	S	E	SCR reagent tank temperature too high
ECM	3363	15	S	L	SCR reagent tank temperature too high
ECM	3363	8	S	F	SCR main unit, reductant heater, circuit performance
ECM	3363	7	C	E	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Mechanical system not responding or out of adjustment
ECM	3363	7	C	L	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Mechanical system not responding or out of adjustment
ECM	3364	1	C	E	Aftertreatment Diesel Exhaust Fluid Quality - Data valid but below normal operational range - Most Severe Level
ECM	3364	1	C	L	Aftertreatment Diesel Exhaust Fluid Quality - Data valid but below normal operational range - Most Severe Level
ECM	3364	11	C	E	Aftertreatment Diesel Exhaust Fluid Quality - Root Cause Not Known
ECM	3364	11	C	L	Aftertreatment Diesel Exhaust Fluid Quality - Root Cause Not Known
ECM	3364	1	C	F	Aftertreatment Diesel Exhaust Fluid Quality - Data valid but below normal operational range - Most Severe Level
ECM	3364	10	C	F	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal Rate of Change
ECM	3364	11	C	F	Aftertreatment Diesel Exhaust Fluid Quality - Root Cause Not Known
ECM	3364	12	C	F	Aftertreatment Diesel Exhaust Fluid Quality Sensor - Bad intelligent device or component
ECM	3364	13	C	F	Aftertreatment Diesel Exhaust Fluid Quality - Out of Calibration
ECM	3364	15	C	F	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	3364	18	C	F	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Below Normal Operating Range - Moderate Severe Level
ECM	3364	19	C	F	Aftertreatment Diesel Exhaust Fluid Quality - Received Network Data In Error
ECM	3364	2	C	F	Aftertreatment Diesel Exhaust Fluid Quality - Data erratic, intermittent or incorrect
ECM	3364	3	C	F	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3364	4	C	F	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3364	5	C	F	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Current below normal or open circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3364	6	C	F	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Current above normal or grounded circuit
ECM	3364	7	C	F	Aftertreatment Diesel Exhaust Fluid Quality Sensor - Mechanical system not responding or out of adjustment
ECM	3364	9	C	F	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal update rate
ECM	3364	10	C	E	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal Rate of Change
ECM	3364	10	C	L	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal Rate of Change
ECM	3364	12	C	E	Aftertreatment Diesel Exhaust Fluid Quality Sensor - Bad intelligent device or component
ECM	3364	12	C	L	Aftertreatment Diesel Exhaust Fluid Quality Sensor - Bad intelligent device or component
ECM	3364	13	C	E	Aftertreatment Diesel Exhaust Fluid Quality - Out of Calibration
ECM	3364	13	C	L	Aftertreatment Diesel Exhaust Fluid Quality - Out of Calibration
ECM	3364	15	C	E	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	3364	15	C	L	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	3364	18	C	E	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3364	18	C	L	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3364	3	C	E	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3364	3	C	L	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3364	4	C	E	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3364	4	C	L	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3364	5	C	E	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Current below normal or open circuit
ECM	3364	5	C	L	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Current below normal or open circuit
ECM	3364	6	C	E	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Current above normal or grounded circuit
ECM	3364	6	C	L	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Current above normal or grounded circuit
ECM	3364	7	C	E	Aftertreatment Diesel Exhaust Fluid Quality Sensor - Mechanical system not responding or out of adjustment
ECM	3364	7	C	L	Aftertreatment Diesel Exhaust Fluid Quality Sensor - Mechanical system not responding or out of adjustment
ECM	3364	9	C	E	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal update rate
ECM	3364	9	C	L	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal update rate

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3364	2	C	E	Aftertreatment Diesel Exhaust Fluid Quality - Data erratic, intermittent or incorrect
ECM	3364	2	C	L	Aftertreatment Diesel Exhaust Fluid Quality - Data erratic, intermittent or incorrect
MCU	339	3	*	E	Accelerator Pedal Position 1-Voltage Above Normal, Or Shorted To High Source
MCU	339	3	*	L	Accelerator Pedal Position 1-Voltage Above Normal, Or Shorted To High Source
MCU	339	4	*	E	Accelerator Pedal Position 1-Voltage Below Normal, Or Shorted To Low Source
MCU	339	4	*	L	Accelerator Pedal Position 1-Voltage Below Normal, Or Shorted To Low Source
TCU	34	*	*	E	Controller input voltage is below 18V
TCU	34	*	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT TURBINE SPEED INPUT
TCU	34	*	*	F	S.C. TO BATTERY VOLTAGE OR O.C. AT TURBINE SPEED INPUT
MCU	340	3	*	E	Potentiometer Voltage for Engine Governor Actuator-Voltage Above Normal, Or Shorted To High Source
MCU	340	3	*	L	Potentiometer Voltage for Engine Governor Actuator-Voltage Above Normal, Or Shorted To High Source
MCU	340	4	*	E	Potentiometer Voltage for Engine Governor Actuator-Voltage Below Normal, Or Shorted To Low Source
MCU	340	4	*	L	Potentiometer Voltage for Engine Governor Actuator-Voltage Below Normal, Or Shorted To Low Source
MCU	341	5	*	E	Motor Driving Status for Engine Governor Actuator-Current Below Normal Or Open Circuit
MCU	341	5	*	L	Motor Driving Status for Engine Governor Actuator-Current Below Normal Or Open Circuit
MCU	341	6	*	E	Motor Driving Status for Engine Governor Actuator-Current Above Normal Or Grounded Circuit
MCU	341	6	*	L	Motor Driving Status for Engine Governor Actuator-Current Above Normal Or Grounded Circuit
MCU	343	3	*	E	Accelerator Pedal Position 2-Voltage Above Normal, Or Shorted To High Source
MCU	343	3	*	L	Accelerator Pedal Position 2-Voltage Above Normal, Or Shorted To High Source
MCU	343	4	*	E	Accelerator Pedal Position 2-Voltage Below Normal, Or Shorted To Low Source
MCU	343	4	*	L	Accelerator Pedal Position 2-Voltage Below Normal, Or Shorted To Low Source
ECM	3449	3	C	F	Catalyst Tank Heater Circuit Voltage Above Normal, or Shorted to High Source. High signal voltage detected at the catalyst tank heater relay sensor circuit.
MCU	346	3	*	E	Engine Power Mode Selector Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	346	3	*	L	Engine Power Mode Selector Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	346	4	*	E	Engine Power Mode Selector Voltage-Voltage Below Normal, Or Shorted To Low Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	346	4	*	L	Engine Power Mode Selector Voltage-Voltage Below Normal, Or Shorted To Low Source
MCU	346	3	*	F	Engine Power Mode Selector Circuit . Voltage Above Normal, or Shorted to High Source (or Open Circuit)
MCU	346	4	*	F	Engine Power Mode Selector Circuit . Voltage Below Normal, or Shorted to Low Source
ECM	3464	3	C	E	Electronic Throttle Control Actuator Driver Circuit-Voltage above normal, or shorted to high source
ECM	3464	3	C	L	Electronic Throttle Control Actuator Driver Circuit-Voltage above normal, or shorted to high source
ECM	3464	3	S	E	Throttle Actuator, short circuit to +24V
ECM	3464	3	S	L	Throttle Actuator, short circuit to +24V
ECM	3464	4	C	E	Electronic Throttle Control Actuator Driver Circuit-Voltage above normal, or shorted to low source
ECM	3464	4	C	L	Electronic Throttle Control Actuator Driver Circuit-Voltage above normal, or shorted to low source
ECM	3464	4	S	E	Throttle Actuator, short circuit
ECM	3464	4	S	L	Throttle Actuator, short circuit
ECM	3464	5	C	E	Electronic Throttle Control Actuator Driver Circuit- Current Below Normal or Open Circuit
ECM	3464	5	C	L	Electronic Throttle Control Actuator Driver Circuit- Current Below Normal or Open Circuit
ECM	3464	5	S	E	Throttle Actuator, slow response
ECM	3464	5	S	L	Throttle Actuator, slow response
ECM	3464	6	S	E	Throttle Actuator Control System - Forced Limited Power
ECM	3464	6	S	L	Throttle Actuator Control System - Forced Limited Power
ECM	3464	7	C	E	Electronic Throttle Control Actuator - Mechanical System Not Responding or Out of Adjustment
ECM	3464	7	C	L	Electronic Throttle Control Actuator - Mechanical System Not Responding or Out of Adjustment
ECM	3464	7	S	E	Throttle, stuck in open position
ECM	3464	7	S	L	Throttle, stuck in open position
ECM	3464	8	S	E	Throttle, stuck in closed position
ECM	3464	8	S	L	Throttle, stuck in closed position
ECM	3464	2	S	F	Throttle, control error
ECM	3464	3	S	F	Throttle Actuator, short circuit to +24V
ECM	3464	4	S	F	Throttle Actuator, short circuit
ECM	3464	5	S	F	Throttle Actuator, slow response
ECM	3464	6	S	F	Throttle Actuator Control System - Forced Limited Power
ECM	3464	7	S	F	Throttle, stuck in open position
ECM	3464	8	S	F	Throttle, stuck in closed position
ECM	3464	2	S	E	Throttle, control error
ECM	3464	2	S	L	Throttle, control error
ECM	3471	10	S	E	The fuel pressure in the valve block for exhaust gas aftertreatment is too high when the fuel valve for the fuel injection nozzle is open.
ECM	3471	10	S	L	The fuel pressure in the valve block for exhaust gas aftertreatment is too

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					high when the fuel valve for the fuel injection nozzle is open.
ECM	3471	2	S	E	Electrical fault in the fuel valve circuit.
ECM	3471	2	S	L	Electrical fault in the fuel valve circuit.
ECM	3471	3	S	E	Electrical fault in the fuel valve circuit. Short circuit to battery voltage in the circuit.
ECM	3471	3	S	L	Electrical fault in the fuel valve circuit. Short circuit to battery voltage in the circuit.
ECM	3471	4	S	E	Electrical fault in the fuel valve circuit. Short circuit to ground in the circuit.
ECM	3471	4	S	L	Electrical fault in the fuel valve circuit. Short circuit to ground in the circuit.
ECM	3471	5	S	E	Electric fault on the fuel valve in valve block V184. The circuit is open.
ECM	3471	5	S	L	Electric fault on the fuel valve in valve block V184. The circuit is open.
ECM	3471	9	S	E	The fuel pressure in the valve block for exhaust gas aftertreatment V184 does not increase compared to the air pressure in the system when the fuel valve has been opened.
ECM	3471	9	S	L	The fuel pressure in the valve block for exhaust gas aftertreatment V184 does not increase compared to the air pressure in the system when the fuel valve has been opened.
ECM	3471	10	S	F	Fault in doser valve
ECM	3471	2	S	F	Reductant doser fault
ECM	3471	3	S	F	Fault in doser valve
ECM	3471	4	S	F	Fault in doser valve
ECM	3471	5	S	F	Fault in doser valve
ECM	3471	9	S	F	Fault in doser valve
ECM	3472	2	S	E	Electrical fault in the circuit for the air control valve.
ECM	3472	2	S	L	Electrical fault in the circuit for the air control valve.
ECM	3472	3	S	E	Electrical fault in the circuit for the air control valve. Short circuit to battery voltage in the circuit.
ECM	3472	3	S	L	Electrical fault in the circuit for the air control valve. Short circuit to battery voltage in the circuit.
ECM	3472	4	S	E	Electrical fault in the circuit for the air control valve to the fuel injection nozzle. Short circuit to ground in the circuit.
ECM	3472	4	S	L	Electrical fault in the circuit for the air control valve to the fuel injection nozzle. Short circuit to ground in the circuit.
ECM	3472	5	S	E	Electrical fault in the circuit for the air control valve to the fuel injection nozzle. The circuit is open.
ECM	3472	5	S	L	Electrical fault in the circuit for the air control valve to the fuel injection nozzle. The circuit is open.
ECM	3472	9	S	E	The air pressure in the valve block for exhaust gas aftertreatment is not increasing even though the air control valve is open.
ECM	3472	9	S	L	The air pressure in the valve block for exhaust gas aftertreatment is not increasing even though the air control valve is open.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3472	2	S	F	Fault in doser valve
ECM	3472	3	S	F	Fault in doser valve
ECM	3472	4	S	F	Fault in doser valve
ECM	3472	5	S	F	Fault in doser valve
ECM	3472	9	S	F	Fault in doser valve
ECM	3480	17	C	F	Aftertreatment Fuel Pressure Sensor - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	3480	2	C	F	Aftertreatment Fuel Pressure Sensor - Data erratic, intermittent or incorrect
ECM	3480	3	C	F	Aftertreatment Fuel Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3480	4	C	F	Aftertreatment Fuel Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3480	10	S	E	The air and fuel pressure sensor in the valve block V184 displays too low a value compared to the atmospheric pressure sensor and differential pressure sensors.
ECM	3480	10	S	L	The air and fuel pressure sensor in the valve block V184 displays too low a value compared to the atmospheric pressure sensor and differential pressure sensors.
ECM	3480	17	C	E	Aftertreatment Fuel Pressure Sensor - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	3480	17	C	L	Aftertreatment Fuel Pressure Sensor - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	3480	2	C	E	Aftertreatment Fuel Pressure Sensor - Data erratic, intermittent or incorrect
ECM	3480	2	C	L	Aftertreatment Fuel Pressure Sensor - Data erratic, intermittent or incorrect
ECM	3480	2	S	E	Fault in the sensor which measures the air and fuel pressure in the valve block for exhaust gas aftertreatment.
ECM	3480	2	S	L	Fault in the sensor which measures the air and fuel pressure in the valve block for exhaust gas aftertreatment.
ECM	3480	3	C	E	Aftertreatment Fuel Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3480	3	C	L	Aftertreatment Fuel Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3480	3	S	E	Fault in the pressure sensor which measures the air and fuel pressure in the valve block for exhaust gas aftertreatment V184.
ECM	3480	3	S	L	Fault in the pressure sensor which measures the air and fuel pressure in the valve block for exhaust gas aftertreatment V184.
ECM	3480	4	C	E	Aftertreatment Fuel Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3480	4	C	L	Aftertreatment Fuel Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3480	4	S	E	Fault in the pressure sensor which measures the air and fuel pressure in the valve block for exhaust gas aftertreatment V184.
ECM	3480	4	S	L	Fault in the pressure sensor which measures the air and fuel pressure

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					in the valve block for exhaust gas aftertreatment V184.
ECM	3480	8	S	E	The air pressure is too high when the air control valve in the valve block for exhaust gas aftertreatment is open.
ECM	3480	8	S	L	The air pressure is too high when the air control valve in the valve block for exhaust gas aftertreatment is open.
ECM	3480	9	S	E	The air pressure in the valve block for exhaust gas aftertreatment is not increasing even though the air control valve is open.
ECM	3480	9	S	L	The air pressure in the valve block for exhaust gas aftertreatment is not increasing even though the air control valve is open.
ECM	3480	10	S	F	Reductant circuit pressure
ECM	3480	2	S	F	Fault in doser valve
ECM	3480	3	S	F	Fault in dose valve sensor
ECM	3480	4	S	F	Fault in dose valve sensor
ECM	3480	8	S	F	Reductant circuit pressure
ECM	3480	9	S	F	Reductant circuit pressure
ECM	3481	16	C	F	Aftertreatment Fuel Rate - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	3481	16	C	E	Aftertreatment Fuel Rate - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	3481	16	C	L	Aftertreatment Fuel Rate - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	3482	13	C	F	Aftertreatment Fuel Shutoff Valve Swapped - Out of Calibration
ECM	3482	16	C	F	Aftertreatment Fuel Shutoff Valve - Data Valid But Above Normal Operating Range - Moderately Severe
ECM	3482	2	C	F	Aftertreatment Fuel Shutoff Valve - Data erratic, intermittent or incorrect
ECM	3482	3	C	F	Aftertreatment Fuel Shutoff Valve Circuit - Voltage above normal, or shorted to high source
ECM	3482	4	C	F	Aftertreatment Fuel Shutoff Valve Circuit - Voltage below normal, or shorted to low source
ECM	3482	7	C	F	Aftertreatment Fuel Shutoff Valve - Mechanical system not responding or out of adjustment
ECM	3482	13	C	E	Aftertreatment Fuel Shutoff Valve Swapped - Out of Calibration
ECM	3482	13	C	L	Aftertreatment Fuel Shutoff Valve Swapped - Out of Calibration
ECM	3482	16	C	E	Aftertreatment Fuel Shutoff Valve - Data Valid But Above Normal Operating Range - Moderately Severe
ECM	3482	16	C	L	Aftertreatment Fuel Shutoff Valve - Data Valid But Above Normal Operating Range - Moderately Severe
ECM	3482	2	C	E	Aftertreatment Fuel Shutoff Valve - Data erratic, intermittent or incorrect
ECM	3482	2	C	L	Aftertreatment Fuel Shutoff Valve - Data erratic, intermittent or incorrect
ECM	3482	3	C	E	Aftertreatment Fuel Shutoff Valve Circuit - Voltage above normal, or shorted to high source
ECM	3482	3	C	L	Aftertreatment Fuel Shutoff Valve Circuit - Voltage above normal, or shorted to high source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3482	4	C	E	Aftertreatment Fuel Shutoff Valve Circuit - Voltage below normal, or shorted to low source
ECM	3482	4	C	L	Aftertreatment Fuel Shutoff Valve Circuit - Voltage below normal, or shorted to low source
ECM	3482	7	C	E	Aftertreatment Fuel Shutoff Valve - Mechanical system not responding or out of adjustment
ECM	3482	7	C	L	Aftertreatment Fuel Shutoff Valve - Mechanical system not responding or out of adjustment
ECM	3485	2	S	E	SCR main unit, air pressure sensor after orifice circuit supply
ECM	3485	2	S	L	SCR main unit, air pressure sensor after orifice circuit supply
ECM	3485	3	S	E	SCR main unit, air pressure sensor after orifice circuit high
ECM	3485	3	S	L	SCR main unit, air pressure sensor after orifice circuit high
ECM	3485	4	S	E	SCR main unit, air pressure sensor after orifice circuit low
ECM	3485	4	S	L	SCR main unit, air pressure sensor after orifice circuit low
ECM	3485	7	S	E	SCR, air circuit blocked
ECM	3485	7	S	L	SCR, air circuit blocked
ECM	3485	1	S	F	SCR main unit, air pressure too low
ECM	3485	1	S	E	SCR main unit, air pressure too low
ECM	3485	18	S	F	EEC, air supply low
ECM	3485	1	S	L	SCR main unit, air pressure too low
ECM	3485	2	S	F	SCR main unit, air pressure sensor after orifice circuit supply
ECM	3485	18	S	E	EEC, air supply low
ECM	3485	20	S	F	SCR main unit, air pressure sensor after orifice plausible error
ECM	3485	18	S	L	EEC, air supply low
ECM	3485	3	S	F	SCR main unit, air pressure sensor after orifice circuit high
ECM	3485	4	S	F	SCR main unit, air pressure sensor after orifice circuit low
ECM	3485	7	S	F	SCR, air circuit blocked
ECM	3485	20	S	E	SCR main unit, air pressure sensor after orifice plausible error
ECM	3485	9	S	F	SCR main unit, air pressure sensor after orifice performance
ECM	3485	20	S	L	SCR main unit, air pressure sensor after orifice plausible error
ECM	3485	9	S	E	SCR main unit, air pressure sensor after orifice performance
ECM	3485	9	S	L	SCR main unit, air pressure sensor after orifice performance
ECM	3489	3	C	F	Aftertreatment #1 Air Enable Actuator Voltage Above Normal, or Shorted to High Source. High signal voltage has been detected at the catalyst air solenoid circuit.
ECM	3489	4	C	F	Aftertreatment #1 Air Enable Actuator Voltage Below Normal, or Shorted to Low Source. Low signal voltage has been detected at the catalyst air solenoid circuit.
ECM	3490	3	C	F	Aftertreatment Purge Air Actuator Circuit - Voltage above normal, or shorted to high source
ECM	3490	4	C	F	Aftertreatment Purge Air Actuator Circuit - Voltage below normal, or shorted to low source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3490	7	C	F	Aftertreatment Purge Air Actuator - Mechanical system not responding or out of adjustment
ECM	3490	3	C	E	Aftertreatment Purge Air Actuator Circuit - Voltage above normal, or shorted to high source
ECM	3490	3	C	L	Aftertreatment Purge Air Actuator Circuit - Voltage above normal, or shorted to high source
ECM	3490	4	C	E	Aftertreatment Purge Air Actuator Circuit - Voltage below normal, or shorted to low source
ECM	3490	4	C	L	Aftertreatment Purge Air Actuator Circuit - Voltage below normal, or shorted to low source
ECM	3490	7	C	E	Aftertreatment Purge Air Actuator - Mechanical system not responding or out of adjustment
ECM	3490	7	C	L	Aftertreatment Purge Air Actuator - Mechanical system not responding or out of adjustment
TCU	35	*	*	E	Controller input voltage is over 38V
TCU	35	*	*	L	S.C. TO GROUND AT TURBINE SPEED INPUT
TCU	35	*	*	F	S.C. TO GROUND AT TURBINE SPEED INPUT
ECM	3509	3	C	F	Sensor Supply Voltage #1 Circuit – Voltage Above Normal, or Shorted to High Source
ECM	3509	4	C	F	Sensor Supply Voltage #1 Circuit – Voltage Below Normal, or Shorted to Low Source
ECM	3509	2	P	E	Sensor Supply Voltage 1 : Erratic, Intermittent, or Incorrect
ECM	3509	2	P	L	Sensor Supply Voltage 1 : Erratic, Intermittent, or Incorrect
ECM	3509	3	C	E	Sensor Supply 1 Circuit - Voltage above normal, or shorted to high source
ECM	3509	3	C	L	Sensor Supply 1 Circuit - Voltage above normal, or shorted to high source
ECM	3509	3	P	E	Sensor Supply Voltage 1 : Voltage Above Normal
ECM	3509	3	P	L	Sensor Supply Voltage 1 : Voltage Above Normal
ECM	3509	4	C	E	Sensor Supply 1 Circuit - Voltage below normal, or shorted to low source
ECM	3509	4	C	L	Sensor Supply 1 Circuit - Voltage below normal, or shorted to low source
ECM	3509	4	P	E	Sensor Supply Voltage 1 : Voltage Below Normal
ECM	3509	4	P	L	Sensor Supply Voltage 1 : Voltage Below Normal
ECM	3510	3	C	F	Sensor Supply Voltage #2 Circuit – Voltage Above Normal, or Shorted to High Source
ECM	3510	4	C	F	Sensor Supply Voltage #2 Circuit – Voltage Below Normal, or Shorted to Low Source
ECM	3510	2	P	E	Sensor Supply Voltage 2 : Erratic, Intermittent, or Incorrect
ECM	3510	2	P	L	Sensor Supply Voltage 2 : Erratic, Intermittent, or Incorrect
ECM	3510	3	C	E	Sensor Supply 2 Circuit - Voltage above normal, or shorted to high source
ECM	3510	3	C	L	Sensor Supply 2 Circuit - Voltage above normal, or shorted to high source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3510	3	P	E	Sensor Supply Voltage 2 : Voltage Above Normal
ECM	3510	3	P	L	Sensor Supply Voltage 2 : Voltage Above Normal
ECM	3510	4	C	E	Sensor Supply 2 Circuit - Voltage below normal, or shorted to low source
ECM	3510	4	C	L	Sensor Supply 2 Circuit - Voltage below normal, or shorted to low source
ECM	3510	4	P	E	Sensor Supply Voltage 2 : Voltage Below Normal
ECM	3510	4	P	L	Sensor Supply Voltage 2 : Voltage Below Normal
ECM	3511	3	C	F	Sensor Supply Voltage #3 Circuit - Voltage Above Normal, or Shorted to High Source
ECM	3511	4	C	F	Sensor Supply Voltage #3 Circuit – Voltage Below Normal, or Shorted to Low Source
ECM	3511	2	P	E	Sensor Supply Voltage 3 : Erratic, Intermittent, or Incorrect
ECM	3511	2	P	L	Sensor Supply Voltage 3 : Erratic, Intermittent, or Incorrect
ECM	3511	3	C	E	Sensor Supply 3 Circuit - Voltage above normal, or shorted to high source
ECM	3511	3	C	L	Sensor Supply 3 Circuit - Voltage above normal, or shorted to high source
ECM	3511	3	P	E	Sensor Supply Voltage 3 : Voltage Above Normal
ECM	3511	3	P	L	Sensor Supply Voltage 3 : Voltage Above Normal
ECM	3511	4	C	E	Sensor Supply 3 Circuit - Voltage below normal, or shorted to low source
ECM	3511	4	C	L	Sensor Supply 3 Circuit - Voltage below normal, or shorted to low source
ECM	3511	4	P	E	Sensor Supply Voltage 3 : Voltage Below Normal
ECM	3511	4	P	L	Sensor Supply Voltage 3 : Voltage Below Normal
ECM	3512	3	C	F	Sensor Supply Voltage #4 Circuit – Voltage Above Normal, or Shorted to High Source
ECM	3512	4	C	F	Sensor Supply Voltage #4 Circuit – Voltage Below Normal, or Shorted to Low Source
ECM	3512	3	C	E	Sensor Supply 4 Circuit - Voltage above normal, or shorted to high source
ECM	3512	3	C	L	Sensor Supply 4 Circuit - Voltage above normal, or shorted to high source
ECM	3512	3	P	E	Sensor Supply Voltage 4 : Voltage Above Normal
ECM	3512	3	P	L	Sensor Supply Voltage 4 : Voltage Above Normal
ECM	3512	4	C	E	Sensor Supply 4 Circuit - Voltage below normal, or shorted to low source
ECM	3512	4	C	L	Sensor Supply 4 Circuit - Voltage below normal, or shorted to low source
ECM	3512	4	P	E	Sensor Supply Voltage 4 : Voltage Below Normal
ECM	3512	4	P	L	Sensor Supply Voltage 4 : Voltage Below Normal

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3513	3	C	F	Sensor Supply 5 - Voltage above normal, or shorted to high source
ECM	3513	4	C	F	Sensor Supply 5 - Voltage below normal, or shorted to low source
ECM	3513	3	C	E	Sensor Supply 5 - Voltage above normal, or shorted to high source
ECM	3513	3	C	L	Sensor Supply 5 - Voltage above normal, or shorted to high source
ECM	3513	4	C	E	Sensor Supply 5 - Voltage below normal, or shorted to low source
ECM	3513	4	C	L	Sensor Supply 5 - Voltage below normal, or shorted to low source
ECM	3514	3	C	F	Sensor Supply 6 Circuit - Voltage above normal, or shorted to high source
ECM	3514	4	C	F	Sensor Supply 6 Circuit - Voltage below normal, or shorted to low source
ECM	3514	3	C	E	Sensor Supply 6 Circuit - Voltage above normal, or shorted to high source
ECM	3514	3	C	L	Sensor Supply 6 Circuit - Voltage above normal, or shorted to high source
ECM	3514	4	C	E	Sensor Supply 6 Circuit - Voltage below normal, or shorted to low source
ECM	3514	4	C	L	Sensor Supply 6 Circuit - Voltage below normal, or shorted to low source
ECM	3515	11	C	E	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Root Cause Not Known
ECM	3515	11	C	L	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Root Cause Not Known
ECM	3515	10	C	F	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Abnormal Rate of Change
ECM	3515	2	C	F	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Data erratic, intermittent or incorrect
ECM	3515	3	C	F	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3515	4	C	F	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3515	5	C	F	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Current below normal or open circuit
ECM	3515	6	C	F	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Current above normal or grounded
ECM	3515	2	C	E	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Data erratic, intermittent or incorrect
ECM	3515	2	C	L	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Data erratic, intermittent or incorrect
ECM	3515	2	S	E	Fault in the reductant doser temperature sensor and pressure sensor.
ECM	3515	2	S	L	Fault in the reductant doser temperature sensor and pressure sensor.
ECM	3515	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3515	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit -

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					Voltage above normal, or shorted to high source
ECM	3515	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3515	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3515	5	C	E	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Current below normal or open circuit
ECM	3515	5	C	L	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Current below normal or open circuit
ECM	3515	6	C	E	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Current above normal or grounded
ECM	3515	6	C	L	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 Sensor Circuit - Current above normal or grounded
ECM	3515	2	S	F	Reductant doser temperature
ECM	3515	10	C	E	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Abnormal Rate of Change
ECM	3515	10	C	L	Aftertreatment 1 Diesel Exhaust Fluid Temperature 2 - Abnormal Rate of Change
ECM	3516	12	P	E	Aftertreatment #1 DEF Concentration : Failure
ECM	3516	12	P	L	Aftertreatment #1 DEF Concentration : Failure
ECM	3516	16	P	E	Aftertreatment #1 DEF Concentration : High - moderate severity (2)
ECM	3516	16	P	L	Aftertreatment #1 DEF Concentration : High - moderate severity (2)
ECM	3516	18	P	E	Aftertreatment #1 DEF Concentration : Low - moderate severity (2)
ECM	3516	18	P	L	Aftertreatment #1 DEF Concentration : Low - moderate severity (2)
ECM	3516	2	P	E	Aftertreatment #1 DEF Concentration : Erratic, Intermittent, or Incorrect
ECM	3516	2	P	L	Aftertreatment #1 DEF Concentration : Erratic, Intermittent, or Incorrect
ECM	3516	2	S	E	The reductant pick-up unit indicates an internal fault in the reductant sensor.
ECM	3516	2	S	L	The reductant pick-up unit indicates an internal fault in the reductant sensor.
ECM	3516	2	S	F	Reductant pick up fault
Warning	352	*	*	E	(Warning) Engine DPF Clog
Warning	352	*	*	L	(Warning) Engine DPF Clog
Warning	352	*	*	F	(Warning) Engine DPF Clog
ECM	3521	11	C	E	Aftertreatment 1 Diesel Exhaust Fluid Property - Root Cause Not Known
ECM	3521	11	C	L	Aftertreatment 1 Diesel Exhaust Fluid Property - Root Cause Not Known
ECM	3521	31	C	F	Aftertreatment 1 Diesel Exhaust Fluid Property - Condition Exists
ECM	3521	11	C	F	Aftertreatment 1 Diesel Exhaust Fluid Property - Root Cause Not Known
ECM	3521	31	C	E	Aftertreatment 1 Diesel Exhaust Fluid Property - Condition Exists
ECM	3521	31	C	L	Aftertreatment 1 Diesel Exhaust Fluid Property - Condition Exists

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3555	17	C	F	Ambient Air Density - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	3555	17	C	E	Ambient Air Density - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	3555	17	C	L	Ambient Air Density - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	3556	18	C	F	Aftertreatment Doser - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3556	2	C	F	Aftertreatment Doser - Data erratic, intermittent or incorrect
ECM	3556	5	C	F	Aftertreatment Doser Circuit - Current below normal or open circuit.
ECM	3556	7	C	F	Aftertreatment Doser - Mechanical system not responding or out of adjustment
ECM	3556	18	C	E	Aftertreatment Doser - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3556	18	C	L	Aftertreatment Doser - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3556	2	C	E	Aftertreatment Doser - Data erratic, intermittent or incorrect
ECM	3556	2	C	L	Aftertreatment Doser - Data erratic, intermittent or incorrect
ECM	3556	5	C	E	Aftertreatment Doser Circuit - Current below normal or open circuit.
ECM	3556	5	C	L	Aftertreatment Doser Circuit - Current below normal or open circuit.
ECM	3556	7	C	E	Aftertreatment Doser - Mechanical system not responding or out of adjustment
ECM	3556	7	C	L	Aftertreatment Doser - Mechanical system not responding or out of adjustment
ECM	3563	13	P	E	Engine Intake Manifold #1 Absolute Pressure : Out of Calibration
ECM	3563	13	P	L	Engine Intake Manifold #1 Absolute Pressure : Out of Calibration
ECM	3563	17	S	E	Boost pressure sensor and ambient pressure sensor do not correlate
ECM	3563	17	S	L	Boost pressure sensor and ambient pressure sensor do not correlate
ECM	3563	3	P	E	Engine Intake Manifold #1 Absolute Pressure : Voltage Above Normal
ECM	3563	3	P	L	Engine Intake Manifold #1 Absolute Pressure : Voltage Above Normal
ECM	3563	4	P	E	Engine Intake Manifold #1 Absolute Pressure : Voltage Below Normal
ECM	3563	4	P	L	Engine Intake Manifold #1 Absolute Pressure : Voltage Below Normal
ECM	3563	11	S	F	Boost pressure sensor and ambient pressure sensor do not correlate
ECM	3563	11	S	E	Boost pressure sensor and ambient pressure sensor do not correlate
ECM	3563	15	S	F	Boost pressure sensor and ambient pressure sensor do not correlate
ECM	3563	11	S	L	Boost pressure sensor and ambient pressure sensor do not correlate
ECM	3563	17	S	F	Boost pressure sensor and ambient pressure sensor do not correlate
ECM	3563	15	S	E	Boost pressure sensor and ambient pressure sensor do not correlate
ECM	3563	15	S	L	Boost pressure sensor and ambient pressure sensor do not correlate
ECM	3583	21	P	E	Common AC Auxiliaries Breaker

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3583	21	P	L	Common AC Auxiliaries Breaker
ECM	3597	12	C	F	Injector Power Supply - Bad intelligent device or component
ECM	3597	18	C	F	ECU Power Output Supply Voltage 1 - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3597	2	C	F	Power Supply Lost With Ignition On - Data erratic, intermittent or incorrect
ECM	3597	3	C	F	ECU Power Output Supply Voltage 1 - Voltage above normal, or shorted to high source
ECM	3597	4	C	F	ECU Power Output Supply Voltage 1 - Voltage below normal, or shorted to low source
ECM	3597	17	C	E	ECU Power Output Supply Voltage 1 - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3597	17	C	L	ECU Power Output Supply Voltage 1 - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3597	18	C	E	ECU Power Output Supply Voltage 1 - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3597	18	C	L	ECU Power Output Supply Voltage 1 - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	3597	3	C	E	ECU Power Output Supply Voltage 1 - Voltage above normal, or shorted to high source
ECM	3597	3	C	L	ECU Power Output Supply Voltage 1 - Voltage above normal, or shorted to high source
ECM	3597	4	C	E	ECU Power Output Supply Voltage 1 - Voltage below normal, or shorted to low source
ECM	3597	4	C	L	ECU Power Output Supply Voltage 1 - Voltage below normal, or shorted to low source
ECM	3597	12	C	E	Injector Power Supply - Bad intelligent device or component
ECM	3597	12	C	L	Injector Power Supply - Bad intelligent device or component
ECM	3597	2	C	E	Power Supply Lost With Ignition On - Data erratic, intermittent or incorrect
ECM	3597	2	C	L	Power Supply Lost With Ignition On - Data erratic, intermittent or incorrect
TCU	36	*	*	E	Communication error with cluster
TCU	36	*	*	L	LOGICAL ERROR AT TURBINE SPEED INPUT
TCU	36	*	*	F	LOGICAL ERROR AT TURBINE SPEED INPUT
TCU	360	*	*	E	Water In Fuel Indicator, SPN97, HCESPN360
TCU	360	*	*	L	Water In Fuel Indicator, SPN97, HCESPN360
TCU	360	*	*	F	Water In Fuel Indicator, SPN97, HCESPN360
ECM	3607	2	S	E	Incorrect EMS shutdown
ECM	3607	2	S	L	Incorrect EMS shutdown
ECM	3607	8	S	E	The EEC control unit has been shut down incorrectly.
ECM	3607	8	S	L	The EEC control unit has been shut down incorrectly.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3607	2	S	F	Incorrect EMS shutdown
ECM	3607	8	S	F	Incorrect EEC shutdown
ECM	3609	3	Y	E	DPF high pressure side pressure sensor error (voltage high)
ECM	3609	3	Y	L	DPF high pressure side pressure sensor error (voltage high)
ECM	3609	4	Y	E	DPF high pressure side pressure sensor error (voltage low)
ECM	3609	4	Y	L	DPF high pressure side pressure sensor error (voltage low)
ECM	3610	2	C	F	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure - Data erratic, intermittent or incorrect
ECM	3610	3	C	F	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3610	4	C	F	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3610	3	C	E	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3610	3	C	L	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	3610	4	C	E	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3610	4	C	L	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	3610	10	C	E	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure - Abnormal Rate of Change
ECM	3610	10	C	L	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure - Abnormal Rate of Change
ECM	3610	2	C	E	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure - Data erratic, intermittent or incorrect
ECM	3610	2	C	L	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure - Data erratic, intermittent or incorrect
ECM	3667	2	C	F	Engine Air Shutoff Status - Data erratic, intermittent or incorrect
ECM	3667	7	C	F	Engine Air Shutoff - Mechanical System Not Responding or Out of Adjustment
ECM	3667	2	C	E	Engine Air Shutoff Status - Data erratic, intermittent or incorrect
ECM	3667	2	C	L	Engine Air Shutoff Status - Data erratic, intermittent or incorrect
ECM	3667	7	C	E	Engine Air Shutoff - Mechanical System Not Responding or Out of Adjustment
ECM	3667	7	C	L	Engine Air Shutoff - Mechanical System Not Responding or Out of Adjustment
ECM	3667	3	C	F	Engine Air Shutoff Circuit - Voltage above normal, or shorted to high source
ECM	3667	4	C	F	Engine Air Shutoff Circuit - Voltage below normal, or shorted to low source
ECM	3667	3	C	E	Engine Air Shutoff Circuit - Voltage above normal, or shorted to high source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3667	3	C	L	Engine Air Shutoff Circuit - Voltage above normal, or shorted to high source
ECM	3667	31	C	E	Engine Air Shutoff - Condition Exists
ECM	3667	31	C	L	Engine Air Shutoff - Condition Exists
ECM	3667	4	C	E	Engine Air Shutoff Circuit - Voltage below normal, or shorted to low source
ECM	3667	4	C	L	Engine Air Shutoff Circuit - Voltage below normal, or shorted to low source
ECM	3673	3	S	E	Throttle Position Sensor 2, short circuit to +24V
ECM	3673	3	S	L	Throttle Position Sensor 2, short circuit to +24V
ECM	3673	4	S	E	Throttle Position Sensor 2, short circuit to ground
ECM	3673	4	S	L	Throttle Position Sensor 2, short circuit to ground
ECM	3673	3	S	F	Throttle Position Sensor 2, short circuit to +24V
ECM	3673	4	S	F	Throttle Position Sensor 2, short circuit to ground
ECM	3695	2	C	F	Aftertreatment Regeneration Inhibit Switch - Data erratic, intermittent or incorrect
ECM	3695	14	Y	E	Reset regeneration is inhibited
ECM	3695	14	Y	L	Reset regeneration is inhibited
ECM	3695	2	C	E	Aftertreatment Regeneration Inhibit Switch - Data erratic, intermittent or incorrect
ECM	3695	2	C	L	Aftertreatment Regeneration Inhibit Switch - Data erratic, intermittent or incorrect
ECM	3697	5	P	E	Particulate Trap Lamp Command: Current Below Normal
ECM	3697	5	P	L	Particulate Trap Lamp Command: Current Below Normal
ECM	3697	6	P	E	Particulate Trap Lamp Command : Current Above Normal
ECM	3697	6	P	L	Particulate Trap Lamp Command : Current Above Normal
ECM	3698	5	P	E	Exhaust System High Temperature Lamp Command: Current Below Normal
ECM	3698	5	P	L	Exhaust System High Temperature Lamp Command: Current Below Normal
ECM	3698	6	P	E	Exhaust System High Temperature Lamp Command : Current Above Normal
ECM	3698	6	P	L	Exhaust System High Temperature Lamp Command : Current Above Normal
TCU	37	*	*	E	Engine speed sensor circuit is open or shorted to ground
TCU	37	*	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT INTERNAL SPEED INPUT
TCU	37	*	*	F	S.C. TO BATTERY VOLTAGE OR O.C. AT INTERNAL SPEED INPUT
ECM	3702	5	P	E	Diesel Particulate Filter Active Regeneration Inhibited Status : Current Below Normal
ECM	3702	5	P	L	Diesel Particulate Filter Active Regeneration Inhibited Status : Current Below Normal
ECM	3702	6	P	E	Diesel Particulate Filter Active Regeneration Inhibited Status : Current Above Normal

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3702	6	P	L	Diesel Particulate Filter Active Regeneration Inhibited Status : Current Above Normal
ECM	3703	31	C	F	Particulate Trap Active Regeneration Inhibited Due to Inhibit Switch - Condition Exists
ECM	3703	31	C	E	Particulate Trap Active Regeneration Inhibited Due to Inhibit Switch - Condition Exists
ECM	3703	31	C	L	Particulate Trap Active Regeneration Inhibited Due to Inhibit Switch - Condition Exists
ECM	3713	31	C	F	Diesel Particulate Filter Active Regeneration Inhibited Due to System Timeout - Condition Exists
ECM	3713	31	C	E	Diesel Particulate Filter Active Regeneration Inhibited Due to System Timeout - Condition Exists
ECM	3713	31	C	L	Diesel Particulate Filter Active Regeneration Inhibited Due to System Timeout - Condition Exists
ECM	3719	0	P	E	Aftertreatment 1 Diesel Particulate Filter Soot Load Percent: High - most severe (3》
ECM	3719	0	P	L	Aftertreatment 1 Diesel Particulate Filter Soot Load Percent: High - most severe (3》
ECM	3719	7	Y	E	Recovery regeneration is inhibited
ECM	3719	7	Y	L	Recovery regeneration is inhibited
ECM	3719	9	Y	E	Recovery regeneration failure
ECM	3719	9	Y	L	Recovery regeneration failure
ECM	3719	0	Y	E	backup mode
ECM	3719	0	Y	L	backup mode
ECM	3719	16	P	E	Aftertreatment 1 Diesel Particulate Filter Soot Load Percent: High - moderate severity (2)
ECM	3719	16	P	L	Aftertreatment 1 Diesel Particulate Filter Soot Load Percent: High - moderate severity (2)
ECM	3719	16	Y	E	Stationary regeneration standby
ECM	3719	16	Y	L	Stationary regeneration standby
ECM	3720	0	Y	E	Ash cleaning request 2
ECM	3720	0	Y	L	Ash cleaning request 2
ECM	3720	15	C	E	Aftertreatment 1 Diesel Particulate Filter Ash Load Percent - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	3720	15	C	L	Aftertreatment 1 Diesel Particulate Filter Ash Load Percent - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	3720	16	Y	E	Ash cleaning request 1
ECM	3720	16	Y	L	Ash cleaning request 1
ECM	3750	31	C	F	Diesel Particulate Filter 1 Conditions Not Met for Active Regeneration - Condition Exists
ECM	3750	31	C	E	Diesel Particulate Filter 1 Conditions Not Met for Active Regeneration - Condition Exists
ECM	3750	31	C	L	Diesel Particulate Filter 1 Conditions Not Met for Active Regeneration - Condition Exists
ECM	3750	14	C	E	Diesel Particulate Filter 1 Conditions Not Met for Active Regeneration ? Condition Exists
ECM	3750	14	C	L	Diesel Particulate Filter 1 Conditions Not Met for Active Regeneration ? Condition Exists
TCU	38	*	*	L	S.C. TO GROUND AT INTERNAL SPEED INPUT

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	38	*	*	F	S.C. TO GROUND AT INTERNAL SPEED INPUT
ECM	3822	9	S	E	The actuator for EGR valve M28 reports that the engine performance has been limited.
ECM	3822	9	S	L	The actuator for EGR valve M28 reports that the engine performance has been limited.
ECM	3822	15	S	E	The electric motor temperature for the actuator for EGR valve M28 has been above 125¡ÆC for more than 10 minutes or above 130¡ÆC for more than 3 seconds.
ECM	3822	15	S	L	The electric motor temperature for the actuator for EGR valve M28 has been above 125¡ÆC for more than 10 minutes or above 130¡ÆC for more than 3 seconds.
ECM	3822	16	S	E	EGR SRA reports a running conditions warning for high temp or low voltage.
ECM	3822	16	S	L	EGR SRA reports a running conditions warning for high temp or low voltage.
ECM	3822	18	S	E	The actuator for EGR valve M28 reports that the supply voltage is too low.
ECM	3822	18	S	L	The actuator for EGR valve M28 reports that the supply voltage is too low.
ECM	3822	2	S	E	The EGR valve actuator M28 reports that the damper does not move as expected or does not move at all.
ECM	3822	2	S	L	The EGR valve actuator M28 reports that the damper does not move as expected or does not move at all.
ECM	3822	20	S	E	EGR position sensor, voltage shows large variation in open position
ECM	3822	20	S	L	EGR position sensor, voltage shows large variation in open position
ECM	3822	21	S	E	EGR position sensor, voltage shows large variation in closed position
ECM	3822	21	S	L	EGR position sensor, voltage shows large variation in closed position
ECM	3822	3	S	E	EGR position sensor, short circuit to +24V
ECM	3822	3	S	L	EGR position sensor, short circuit to +24V
ECM	3822	4	S	E	EGR position sensor, short circuit to ground
ECM	3822	4	S	L	EGR position sensor, short circuit to ground
ECM	3822	12	S	F	EGR SRA reports it has a continuous fault.
ECM	3822	12	S	E	EGR SRA reports it has a continuous fault.
ECM	3822	13	S	F	EGR position sensor, not plausible
ECM	3822	12	S	L	EGR SRA reports it has a continuous fault.
ECM	3822	16	S	F	EGR SRA reports a running conditions warning for high temp or low voltage.
ECM	3822	13	S	E	EGR position sensor, not plausible
ECM	3822	19	S	F	EGR CAN timeout
ECM	3822	13	S	L	EGR position sensor, not plausible
ECM	3822	20	S	F	EGR position sensor, voltage shows large variation in open position
ECM	3822	21	S	F	EGR position sensor, voltage shows large variation in closed position

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3822	3	S	F	EGR position sensor, short circuit to +24V
ECM	3822	4	S	F	EGR position sensor, short circuit to ground
ECM	3822	19	S	E	EGR CAN timeout
ECM	3822	7	S	F	EGR SRA reports a warning during Learn Stops.
ECM	3822	19	S	L	EGR CAN timeout
ECM	3822	7	S	E	EGR SRA reports a warning during Learn Stops.
ECM	3822	8	S	F	EGR position sensor, outside the permitted range
ECM	3822	7	S	L	EGR SRA reports a warning during Learn Stops.
ECM	3822	8	S	E	EGR position sensor, outside the permitted range
ECM	3822	8	S	L	EGR position sensor, outside the permitted range
ECM	3826	18	C	F	Aftertreatment 1 Diesel Exhaust Fluid Average Consumption - Data Valid But Below Normal Operating Range
ECM	3826	18	C	E	Aftertreatment 1 Diesel Exhaust Fluid Average Consumption - Data Valid But Below Normal Operating Range
ECM	3826	18	C	L	Aftertreatment 1 Diesel Exhaust Fluid Average Consumption - Data Valid But Below Normal Operating Range
TCU	39	*	*	E	Governor motor does not stop at a target position
TCU	39	*	*	L	LOGICAL ERROR AT INTERNAL SPEED INPUT
TCU	39	*	*	F	LOGICAL ERROR AT INTERNAL SPEED INPUT
ECM	3936	2	S	E	Particulate filter, clogged
ECM	3936	2	S	L	Particulate filter, clogged
ECM	3936	6	S	E	Particulate filter, ash level too high
ECM	3936	6	S	L	Particulate filter, ash level too high
ECM	3936	14	C	F	Aftertreatment Diesel Particulate Filter System - Special Instructions
ECM	3936	14	C	E	Aftertreatment Diesel Particulate Filter System - Special Instructions
ECM	3936	14	C	L	Aftertreatment Diesel Particulate Filter System - Special Instructions
ECM	3936	15	C	F	Aftertreatment 1 Diesel Particulate Filter System - Data Valid But Above Normal Operating Range - Level
ECM	3936	7	C	F	Aftertreatment 1 Diesel Particulate Filter System - Mechanical system not responding or out of adjustment
ECM	3936	10	S	E	Exhaust temperature sensors, not plausible
ECM	3936	10	S	L	Exhaust temperature sensors, not plausible
ECM	3936	15	C	E	Aftertreatment 1 Diesel Particulate Filter System - Data Valid But Above Normal Operating Range - Level
ECM	3936	15	C	L	Aftertreatment 1 Diesel Particulate Filter System - Data Valid But Above Normal Operating Range - Level
ECM	3936	7	C	E	Aftertreatment 1 Diesel Particulate Filter System - Mechanical system not responding or out of adjustment
ECM	3936	7	C	L	Aftertreatment 1 Diesel Particulate Filter System - Mechanical system not responding or out of adjustment

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	3936	10	S	F	Exhaust temperature sensors, not plausible
ECM	3936	2	S	F	Particulate filter, clogged
ECM	3936	6	S	F	Particulate filter, ash level too high
TCU	3A	*	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT OUTPUT SPEED INPUT
TCU	3A	*	*	F	S.C. TO BATTERY VOLTAGE OR O.C. AT OUTPUT SPEED INPUT
TCU	3B	*	*	L	S.C. TO GROUND AT OUTPUT SPEED INPUT
TCU	3B	*	*	F	S.C. TO GROUND AT OUTPUT SPEED INPUT
TCU	3C	*	*	L	LOGICAL ERROR AT OUTPUT SPEED INPUT
TCU	3C	*	*	F	LOGICAL ERROR AT OUTPUT SPEED INPUT
TCU	3D	*	*	L	TURBINE SPEED ZERO DOESN'T FIT TO OTHER SPEED SIGNALS
TCU	3D	*	*	F	TURBINE SPEED ZERO DOESN'T FIT TO OTHER SPEED SIGNALS
TCU	3E	*	*	L	OUTPUT SPEED ZERO DOESN'T FIT TO OTHER PEED SIGNALS
TCU	3E	*	*	F	OUTPUT SPEED ZERO DOESN'T FIT TO OTHER PEED SIGNALS

5 SPN 4~

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	40	*	*	L	GEAR RANGE RESTRICTION SIGNAL
TCU	40	*	*	E	There is more than 500 rpm difference between target speed and actual speed
TCU	40	*	*	F	GEAR RANGE RESTRICTION SIGNAL
ECM	4090	0	S	E	NOx level after catalytic converter too high
ECM	4090	0	S	L	NOx level after catalytic converter too high
ECM	4090	16	S	E	SCR main unit, NOx level too high
ECM	4090	16	S	L	SCR main unit, NOx level too high
ECM	4090	0	S	F	NOx level after catalytic converter too high
ECM	4090	11	S	F	NOx Exceedence - Root Cause Unknown
ECM	4090	16	S	F	SCR main unit, NOx level too high
ECM	4090	2	S	F	Indicates that On-Board Diagnostics has determined that the limits for NOx in the exhaust stream have been exceeded, but the root cause cannot be determined by the OBD system.
ECM	4090	11	S	E	NOx Exceedence - Root Cause Unknown
ECM	4090	11	S	L	NOx Exceedence - Root Cause Unknown
ECM	4094	31	C	F	NOx limits exceeded due to Insufficient Reagent Quality - Condition Exists
ECM	4094	31	C	E	NOx limits exceeded due to Insufficient Reagent Quality - Condition Exists
ECM	4094	31	C	L	NOx limits exceeded due to Insufficient Reagent Quality - Condition Exists
ECM	4095	2	S	E	NOx Exceedence - Interruption of Reagent Dosing Activity
ECM	4095	2	S	L	NOx Exceedence - Interruption of Reagent Dosing Activity
ECM	4095	2	S	F	NOx Exceedence - Interruption of Reagent Dosing Activity
ECM	4096	31	C	F	Aftertreatment Diesel Exhaust Fluid Tank Empty - Condition Exists
ECM	4096	2	S	E	NOx Exceedence - Empty Reagent Tank
ECM	4096	2	S	L	NOx Exceedence - Empty Reagent Tank
ECM	4096	31	C	E	Aftertreatment Diesel Exhaust Fluid Tank Empty - Condition Exists
ECM	4096	31	C	L	Aftertreatment Diesel Exhaust Fluid Tank Empty - Condition Exists
ECM	4096	2	S	F	NOx Exceedence - Empty Reagent Tank
ECM	4097	3	C	F	Aftertreatment Fuel Drain Valve Circuit - Voltage above normal, or shorted to high source
ECM	4097	4	C	F	Aftertreatment Fuel Drain Valve Circuit - Voltage below normal, or shorted to low source
ECM	4097	7	C	F	Aftertreatment Fuel Drain Valve - Mechanical system not responding or out of adjustment
ECM	4097	3	C	E	Aftertreatment Fuel Drain Valve Circuit - Voltage above normal, or shorted to high source
ECM	4097	3	C	L	Aftertreatment Fuel Drain Valve Circuit - Voltage above normal, or shorted to high source
ECM	4097	4	C	E	Aftertreatment Fuel Drain Valve Circuit - Voltage below normal, or shorted to low source
ECM	4097	4	C	L	Aftertreatment Fuel Drain Valve Circuit - Voltage below normal, or shorted to low source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4097	7	C	E	Aftertreatment Fuel Drain Valve - Mechanical system not responding or out of adjustment
ECM	4097	7	C	L	Aftertreatment Fuel Drain Valve - Mechanical system not responding or out of adjustment
TCU	41	*	*	E	Hydraulic oil temperature sensor circuit is shorted to ground
TCU	41	*	*	L	TCU RECEIVES MESSAGES 'GEAR RANGE SELECT(ZF_3_IDENT)' AND 'FRONT WHEEL DRIVE STATUS' (V_IDENT_FWD) ALTHOUGH CONFIGURATION STATES THAT FWD CONTROLLER IS NOT INSTALLED
TCU	41	*	*	F	TCU RECEIVES MESSAGES 'GEAR RANGE SELECT(ZF_3_IDENT)' AND 'FRONT WHEEL DRIVE STATUS' (V_IDENT_FWD) ALTHOUGH CONFIGURATION STATES THAT FWD CONTROLLER IS NOT INSTALLED
ECM	411	16	C	F	Exhaust Gas Recirculation (EGR) Differential Pressure Sensor - Data Valid but Above Normal Operating Range - Moderately Severe Level. EGR differential pressure sensor failed automatic calibration procedure or EGR differential pressure reading not valid for engine operating conditions.
ECM	411	2	C	F	Exhaust Gas Recirculation Valve Delta Pressure - Data erratic, intermittent or incorrect
ECM	411	3	C	F	Exhaust Gas Recirculation Differential Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	411	4	C	F	EGR valve differential pressure sensor circuit - shorted low. Low signal voltage detected on the EGR valve differential pressure sensor circuit.
ECM	411	13	P	E	Exhaust Gas Recirculation Differential Pressure -Out of Calibration
ECM	411	13	P	L	Exhaust Gas Recirculation Differential Pressure -Out of Calibration
ECM	411	2	C	E	Exhaust Gas Recirculation Differential Pressure - Data erratic, intermittent or incorrect
ECM	411	2	C	L	Exhaust Gas Recirculation Differential Pressure - Data erratic, intermittent or incorrect
ECM	411	2	P	E	EGR Differential Pressure - Erratic, Intermittent or Incorrect
ECM	411	2	P	L	EGR Differential Pressure - Erratic, Intermittent or Incorrect
ECM	411	3	C	E	Exhaust Gas Recirculation Differential Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	411	3	C	L	Exhaust Gas Recirculation Differential Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	411	3	P	E	EGR Differential Pressure - Voltage Above Normal
ECM	411	3	P	L	EGR Differential Pressure - Voltage Above Normal
ECM	411	4	C	E	Exhaust Gas Recirculation Differential Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	411	4	C	L	Exhaust Gas Recirculation Differential Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	411	4	P	E	EGR Differential Pressure - Voltage below normal
ECM	411	4	P	L	EGR Differential Pressure - Voltage below normal
ECM	411	11	C	F	Auxiliary Temperature Sensor Input 1 Circuit - Root Cause Not Known. High temperature detected by the OEM tem-

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					perature sensor or by the engine coolant temperature sensor.
ECM	412	15	C	F	Exhaust Gas Recirculation (EGR) temperature - Data Valid but Above Normal Operating Range, Least Severe Level.
ECM	412	16	C	F	EGR Temperature - Data Valid But Above Normal Operating Range, Moderately Severe Level.
ECM	412	2	C	F	Exhaust Gas Recirculation Temperature - Data erratic, intermittent or incorrect
ECM	412	15	C	E	Exhaust Gas Recirculation Temperature - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	412	15	C	L	Exhaust Gas Recirculation Temperature - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	412	15	P	E	Exhaust Gas Recirculation Temperature : High - least severe(1)
ECM	412	15	P	L	Exhaust Gas Recirculation Temperature : High - least severe(1)
ECM	412	16	C	E	Exhaust Gas Recirculation Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	412	16	C	L	Exhaust Gas Recirculation Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	412	16	P	E	Exhaust Gas Recirculation Temperature : High - moderate severity (2)
ECM	412	16	P	L	Exhaust Gas Recirculation Temperature : High - moderate severity (2)
ECM	412	2	C	E	Exhaust Gas Recirculation Temperature - Data erratic, intermittent or incorrect
ECM	412	2	C	L	Exhaust Gas Recirculation Temperature - Data erratic, intermittent or incorrect
ECM	412	3	C	E	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	412	3	C	L	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	412	3	P	E	Exhaust Gas Recirculation Differential Pressure -Out of Calibration
ECM	412	3	P	L	Exhaust Gas Recirculation Differential Pressure -Out of Calibration
ECM	412	3	Y	E	EGR gas temperature sensor error (voltage high)
ECM	412	3	Y	L	EGR gas temperature sensor error (voltage high)
ECM	412	4	C	E	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	412	4	C	L	Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	412	4	P	E	Exhaust Gas Recirculation Temperature - Voltage below normal
ECM	412	4	P	L	Exhaust Gas Recirculation Temperature - Voltage below normal
ECM	412	4	Y	E	EGR gas temperature sensor error (voltage low)
ECM	412	4	Y	L	EGR gas temperature sensor error (voltage low)
ECM	412	3	C	F	Exhaust Gas Recirculation Temperature : Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage Above Normal, or Shorted to High Source
ECM	412	4	C	F	Exhaust Gas Recirculation Temperature : Exhaust Gas Recirculation Temperature Sensor Circuit - Voltage Below Normal, or Shorted to Low Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4182	4	C	F	Generator Output Frequency Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source
ECM	4182	4	C	E	Generator Output Frequency Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source
ECM	4182	4	C	L	Generator Output Frequency Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source
ECM	4183	4	C	F	Droop Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source
ECM	4183	4	C	E	Droop Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source
ECM	4183	4	C	L	Droop Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source
ECM	4184	4	C	F	Gain Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source
ECM	4184	4	C	E	Gain Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source
ECM	4184	4	C	L	Gain Adjust Potentiometer Circuit - Voltage below normal, or shorted to low source
ECM	4185	31	C	F	Overspeed Shutdown Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4185	31	C	E	Overspeed Shutdown Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4185	31	C	L	Overspeed Shutdown Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4186	31	C	E	Low Oil Pressure (LOP) Shutdown Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4186	31	C	L	Low Oil Pressure (LOP) Shutdown Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4187	31	C	F	High Engine Temperature (HET) Shutdown Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4187	31	C	E	High Engine Temperature (HET) Shutdown Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4187	31	C	L	High Engine Temperature (HET) Shutdown Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4188	31	C	F	Pre-Low Oil Pressure Warning Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4188	31	C	E	Pre-Low Oil Pressure Warning Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4188	31	C	L	Pre-Low Oil Pressure Warning Relay Driver Diagnostic has detected an error - Condition Exists
TCU	42	*	*	E	Fuel level sensor circuit is shorted to ground
ECM	4201	10	S	E	Engine position sensor 1, position diff
ECM	4201	10	S	L	Engine position sensor 1, position diff
ECM	4201	2	S	E	Engine position sensor 1, faulty
ECM	4201	2	S	L	Engine position sensor 1, faulty
ECM	4201	7	S	E	Engine position sensor 1, faulty
ECM	4201	7	S	L	Engine position sensor 1, faulty
ECM	4201	10	S	F	Engine position sensor 1, position diff
ECM	4201	2	S	F	Engine position sensor 1, faulty

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4201	4	S	F	Engine position sensor 1, too weak signal
ECM	4201	7	S	F	Engine position sensor 1, faulty
ECM	4201	4	S	E	Engine position sensor 1, too weak signal
ECM	4201	8	S	F	Engine position sensor 1, Gap Puls or Sync error
ECM	4201	4	S	L	Engine position sensor 1, too weak signal
ECM	4201	8	S	E	Engine position sensor 1, Gap Puls or Sync error
ECM	4201	9	S	F	Engine position sensor 1, time out
ECM	4201	8	S	L	Engine position sensor 1, Gap Puls or Sync error
ECM	4201	9	S	E	Engine position sensor 1, time out
ECM	4201	9	S	L	Engine position sensor 1, time out
ECM	4202	2	S	F	Engine speed sensor faulty
ECM	4202	2	S	E	Engine speed sensor faulty
ECM	4202	2	S	L	Engine speed sensor faulty
ECM	4223	31	C	F	Pre-High Engine Temperature Warning Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4223	31	C	E	Pre-High Engine Temperature Warning Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4223	31	C	L	Pre-High Engine Temperature Warning Relay Driver Diagnostic has detected an error - Condition Exists
ECM	4225	2	S	E	Failure in the NOx control monitoring system
ECM	4225	2	S	L	Failure in the NOx control monitoring system
ECM	4225	2	S	F	Failure in the NOx control monitoring system
ECM	4257	12	Y	E	Injector drive IC error
ECM	4257	12	Y	L	Injector drive IC error
TCU	43	*	*	E	Coolant temperature sensor circuit is shorted to ground
ECM	4301	10	S	E	The fuel pressure in the exhaust gas aftertreatment valve block V184 is too high when the fuel injection valve V185 is open.
ECM	4301	10	S	L	The fuel pressure in the exhaust gas aftertreatment valve block V184 is too high when the fuel injection valve V185 is open.
ECM	4301	2	S	E	Fault in injection valve for exhaust gas aftertreatment V185.
ECM	4301	2	S	L	Fault in injection valve for exhaust gas aftertreatment V185.
ECM	4301	3	S	E	Fault in injection valve for exhaust gas aftertreatment V185.
ECM	4301	3	S	L	Fault in injection valve for exhaust gas aftertreatment V185.
ECM	4301	4	S	E	Fault in injection valve for exhaust gas aftertreatment V185.
ECM	4301	4	S	L	Fault in injection valve for exhaust gas aftertreatment V185.
ECM	4301	5	S	E	Fault in injection valve for exhaust gas aftertreatment V185.
ECM	4301	5	S	L	Fault in injection valve for exhaust gas aftertreatment V185.
ECM	4301	6	S	E	Fault in injection valve for exhaust gas aftertreatment V185.
ECM	4301	6	S	L	Fault in injection valve for exhaust gas aftertreatment V185.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4301	7	S	E	Leakage in the injection valve V185 or in the pipes to the injection valve.
ECM	4301	7	S	L	Leakage in the injection valve V185 or in the pipes to the injection valve.
ECM	4301	9	S	E	The fuel pressure in the valve block for exhaust gas aftertreatment does not fall when the fuel injection valve has been opened.
ECM	4301	9	S	L	The fuel pressure in the valve block for exhaust gas aftertreatment does not fall when the fuel injection valve has been opened.
ECM	4301	10	S	F	Reductant doser fault
ECM	4301	2	S	F	Reductant doser fault
ECM	4301	3	S	F	Reductant doser fault
ECM	4301	4	S	F	Reductant doser fault
ECM	4301	5	S	F	Reductant doser fault
ECM	4301	6	S	F	Reductant doser fault
ECM	4301	7	S	F	Reductant doser fault
ECM	4301	9	S	F	Reductant doser fault
ECM	4331	18	C	F	Aftertreatment SCR Actual Dosing Reagent Quantity - Data Valid But Below Normal Operating Range - Mo
ECM	4331	18	C	E	Aftertreatment SCR Actual Dosing Reagent Quantity - Data Valid But Below Normal Operating Range - Mo
ECM	4331	18	C	L	Aftertreatment SCR Actual Dosing Reagent Quantity - Data Valid But Below Normal Operating Range - Mo
ECM	4334	16	C	F	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data Valid But Above Normal Operating Range
ECM	4334	18	C	F	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data Valid But Below Normal Operating Range
ECM	4334	2	C	F	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data erratic, intermittent or incorrect
ECM	4334	3	C	F	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Voltage above normal, or shorted to high source
ECM	4334	4	C	F	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Voltage below normal, or shorted to low source
ECM	4334	0	S	E	SCR reductant pressure error
ECM	4334	0	S	L	SCR reductant pressure error
ECM	4334	1	S	E	EEC3 has demanded SCR Hazardous functional failure reductant dosing stopped actions
ECM	4334	1	S	L	EEC3 has demanded SCR Hazardous functional failure reductant dosing stopped actions
ECM	4334	10	S	E	The reductant pressure is too low or too high when the reductant pump is shut off.
ECM	4334	10	S	L	The reductant pressure is too low or too high when the reductant pump is shut off.
ECM	4334	15	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	4334	15	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	4334	15	S	E	The reductant pressure is too high even though the reductant pump is shut off.
ECM	4334	15	S	L	The reductant pressure is too high even though the reductant pump is shut off.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4334	16	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data Valid But Above Normal Operating Range
ECM	4334	16	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data Valid But Above Normal Operating Range
ECM	4334	16	P	E	Aftertreatment #1 DEF#1 Pressure(absolute) : High - moderate severity (2)
ECM	4334	16	P	L	Aftertreatment #1 DEF#1 Pressure(absolute) : High - moderate severity (2)
ECM	4334	17	S	E	The reductant pressure is too low when the reductant pump is shut off.
ECM	4334	17	S	L	The reductant pressure is too low when the reductant pump is shut off.
ECM	4334	18	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data Valid But Below Normal Operating Range
ECM	4334	18	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data Valid But Below Normal Operating Range
ECM	4334	18	P	E	Aftertreatment #1 DEF#1 Pressure(absolute) : Low - moderate severity (2)
ECM	4334	18	P	L	Aftertreatment #1 DEF#1 Pressure(absolute) : Low - moderate severity (2)
ECM	4334	2	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data erratic, intermittent or incorrect
ECM	4334	2	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Data erratic, intermittent or incorrect
ECM	4334	2	S	E	Urea pressure sensor, plausible error during start-up
ECM	4334	2	S	L	Urea pressure sensor, plausible error during start-up
ECM	4334	21	P	E	Aftertreatment #1 DEF#1 Pressure(absolute) : Data Drifted Low
ECM	4334	21	P	L	Aftertreatment #1 DEF#1 Pressure(absolute) : Data Drifted Low
ECM	4334	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Voltage above normal, or shorted to high source
ECM	4334	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Voltage above normal, or shorted to high source
ECM	4334	3	P	E	Aftertreatment #1 DEF#1 Pressure(absolute) : Voltage Above Normal
ECM	4334	3	P	L	Aftertreatment #1 DEF#1 Pressure(absolute) : Voltage Above Normal
ECM	4334	3	S	E	Urea pressure sensor, SRC high
ECM	4334	3	S	L	Urea pressure sensor, SRC high
ECM	4334	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Voltage below normal, or shorted to low source
ECM	4334	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor - Voltage below normal, or shorted to low source
ECM	4334	4	P	E	Aftertreatment #1 DEF#1 Pressure(absolute) : Voltage Below Normal
ECM	4334	4	P	L	Aftertreatment #1 DEF#1 Pressure(absolute) : Voltage Below Normal
ECM	4334	4	S	E	Urea pressure sensor, SRC low
ECM	4334	4	S	L	Urea pressure sensor, SRC low
ECM	4334	5	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor Circuit - Current Below Normal or Open Circuit
ECM	4334	5	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor Circuit - Current Below Normal or Open Circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4334	7	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pressure - Mechanical System Not Responding or Out of Adjustment
ECM	4334	7	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pressure - Mechanical System Not Responding or Out of Adjustment
ECM	4334	8	S	E	Urea pressure sensor, pressure too high not plausible
ECM	4334	8	S	L	Urea pressure sensor, pressure too high not plausible
ECM	4334	0	S	F	SCR reductant pressure error
ECM	4334	1	S	F	EEC3 has demanded "SCR Hazardous functional failure reductant dosing stopped" actions
ECM	4334	10	S	F	Reductant circuit pressure
ECM	4334	15	S	F	Reductant circuit pressure
ECM	4334	16	S	F	Reductant pressure
ECM	4334	17	S	F	Reductant circuit pressure
ECM	4334	2	S	F	Urea pressure sensor, plausible error during start-up
ECM	4334	3	S	F	Urea pressure sensor, SRC high
ECM	4334	4	S	F	Urea pressure sensor, SRC low
ECM	4334	6	S	F	The SCR dosing reagent absolute pressure (measured closest to dosing valve) for aftertreatment system 1 (exhaust bank 1).
ECM	4334	8	S	F	Urea pressure sensor, pressure too high not plausible
ECM	4334	20	P	E	Aftertreatment #1 DEF#1 Pressure(absolute) : Data Drifted High
ECM	4334	20	P	L	Aftertreatment #1 DEF#1 Pressure(absolute) : Data Drifted High
ECM	4337	1	S	E	The reductant doser temperature sensor indicates values which are too low.
ECM	4337	1	S	L	The reductant doser temperature sensor indicates values which are too low.
ECM	4337	10	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature - Abnormal Rate of Change
ECM	4337	2	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature - Data erratic, intermittent or incorrect
ECM	4337	3	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature Sensor - Voltage Above Normal, or Shorted to High Source
ECM	4337	4	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature Sensor - Voltage below normal, or shorted to low source
ECM	4337	10	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature - Abnormal Rate of Change
ECM	4337	10	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature - Abnormal Rate of Change
ECM	4337	2	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature - Data erratic, intermittent or incorrect
ECM	4337	2	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature - Data erratic, intermittent or incorrect
ECM	4337	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature Sensor - Voltage Above Normal, or Shorted to High Source
ECM	4337	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature Sensor - Voltage Above Normal, or Shorted to High Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4337	3	S	E	The reductant doser temperature sensor indicates incorrect values.
ECM	4337	3	S	L	The reductant doser temperature sensor indicates incorrect values.
ECM	4337	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature Sensor - Voltage below normal, or shorted to low source
ECM	4337	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature Sensor - Voltage below normal, or shorted to low source
ECM	4337	1	S	F	Reductant doser temperature
ECM	4337	2	S	F	The SCR dosing reagent temperature (measured closest to dosing valve) for aftertreatment system 1 (exhaust bank 1).
ECM	4337	3	S	F	Reductant doser temperature
ECM	4337	6	S	F	The SCR dosing reagent temperature (measured closest to dosing valve) for aftertreatment system 1 (exhaust bank 1).
ECM	4339	31	C	F	Aftertreatment 1 SCR Feedback Control Status - Condition Exists
ECM	4339	31	C	E	Aftertreatment 1 SCR Feedback Control Status - Condition Exists
ECM	4339	31	C	L	Aftertreatment 1 SCR Feedback Control Status - Condition Exists
ECM	4339	7	C	E	Aftertreatment 1 SCR Feedback Control Status - Mechanical System Not Responding or Out of Adjustment
ECM	4339	7	C	L	Aftertreatment 1 SCR Feedback Control Status - Mechanical System Not Responding or Out of Adjustment
ECM	4340	3	C	F	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage above normal, or shorted to high source
ECM	4340	4	C	F	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage below normal, or shorted to low source
ECM	4340	5	C	F	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Current below normal or open circuit
ECM	4340	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage above normal, or shorted to high source
ECM	4340	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage above normal, or shorted to high source
ECM	4340	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage below normal, or shorted to low source
ECM	4340	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage below normal, or shorted to low source
ECM	4340	5	C	E	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Current below normal or open circuit
ECM	4340	5	C	L	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Current below normal or open circuit
ECM	4341	2	S	E	Fault in the reductant heater for reductant hose 1 (H25).
ECM	4341	2	S	L	Fault in the reductant heater for reductant hose 1 (H25).
ECM	4341	3	S	E	Fault in the reductant heater for reductant hose 1 (H25).
ECM	4341	3	S	L	Fault in the reductant heater for reductant hose 1 (H25).
ECM	4341	4	S	E	Fault in the reductant heater for reductant hose 1 (H25).
ECM	4341	4	S	L	Fault in the reductant heater for reductant hose 1 (H25).

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4341	5	S	E	Fault in the reductant heater for reductant hose 1 (H25).
ECM	4341	5	S	L	Fault in the reductant heater for reductant hose 1 (H25).
ECM	4341	6	S	E	The reductant heater for reductant hose 1 (H25) has consumed more power than permitted.
ECM	4341	6	S	L	The reductant heater for reductant hose 1 (H25) has consumed more power than permitted.
ECM	4341	2	S	F	Reductant hose fault
ECM	4341	3	S	F	Reductant hose fault
ECM	4341	4	S	F	Reductant hose fault
ECM	4341	5	S	F	Reductant hose fault
ECM	4341	6	S	F	Reductant hose fault
ECM	4342	3	C	F	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage above normal, or shorted to high source
ECM	4342	4	C	F	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage below normal, or shorted to low source
ECM	4342	5	C	F	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Current below normal or open circuit
ECM	4342	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage above normal, or shorted to high source
ECM	4342	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage above normal, or shorted to high source
ECM	4342	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage below normal, or shorted to low source
ECM	4342	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage below normal, or shorted to low source
ECM	4342	5	C	E	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Current below normal or open circuit
ECM	4342	5	C	L	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Current below normal or open circuit
ECM	4343	2	S	E	Fault in the reductant heater for reductant hose 2 (H26).
ECM	4343	2	S	L	Fault in the reductant heater for reductant hose 2 (H26).
ECM	4343	3	S	E	Fault in the reductant heater for reductant hose 2 (H26).
ECM	4343	3	S	L	Fault in the reductant heater for reductant hose 2 (H26).
ECM	4343	4	S	E	Fault in the reductant heater for reductant hose 2 (H26).
ECM	4343	4	S	L	Fault in the reductant heater for reductant hose 2 (H26).
ECM	4343	5	S	E	Fault in the reductant heater for reductant hose 2 (H26).
ECM	4343	5	S	L	Fault in the reductant heater for reductant hose 2 (H26).
ECM	4343	6	S	E	The reductant heater for reductant hose 2 (H26) has consumed more power than permitted.
ECM	4343	6	S	L	The reductant heater for reductant hose 2 (H26) has consumed more power than permitted.
ECM	4343	2	S	F	Reductant hose fault
ECM	4343	3	S	F	Reductant hose fault
ECM	4343	4	S	F	Reductant hose fault
ECM	4343	5	S	F	Reductant hose fault

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4343	6	S	F	Reductant hose fault
ECM	4344	3	C	F	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage above normal, or shorted to high source
ECM	4344	4	C	F	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage below normal, or shorted to low source
ECM	4344	5	C	F	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Current below normal or open circuit
ECM	4344	3	C	E	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage above normal, or shorted to high source
ECM	4344	3	C	L	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage above normal, or shorted to high source
ECM	4344	4	C	E	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage below normal, or shorted to low source
ECM	4344	4	C	L	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage below normal, or shorted to low source
ECM	4344	5	C	E	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Current below normal or open circuit
ECM	4344	5	C	L	Aftertreatment Diesel Exhaust Fluid Line Heater 3 Circuit - Current below normal or open circuit
ECM	4345	2	S	E	Fault in the reductant heater for reductant hose 3 (H27).
ECM	4345	2	S	L	Fault in the reductant heater for reductant hose 3 (H27).
ECM	4345	3	S	E	Fault in the reductant heater for reductant hose 3 (H27).
ECM	4345	3	S	L	Fault in the reductant heater for reductant hose 3 (H27).
ECM	4345	4	S	E	Fault in the reductant heater for reductant hose 3 (H27).
ECM	4345	4	S	L	Fault in the reductant heater for reductant hose 3 (H27).
ECM	4345	5	S	E	Fault in the reductant heater for reductant hose 3 (H27).
ECM	4345	5	S	L	Fault in the reductant heater for reductant hose 3 (H27).
ECM	4345	6	S	E	The reductant heater for reductant hose 3 (H27) has consumed more power than permitted.
ECM	4345	6	S	L	The reductant heater for reductant hose 3 (H27) has consumed more power than permitted.
ECM	4345	2	S	F	Reductant hose fault
ECM	4345	3	S	F	Reductant hose fault
ECM	4345	4	S	F	Reductant hose fault
ECM	4345	5	S	F	Reductant hose fault
ECM	4345	6	S	F	Reductant hose fault
ECM	4347	2	S	E	Electrical fault in the reductant heater for reductant hose 4 (H28).
ECM	4347	2	S	L	Electrical fault in the reductant heater for reductant hose 4 (H28).
ECM	4347	3	S	E	Fault in the reductant heater for reductant hose 4 (H28).
ECM	4347	3	S	L	Fault in the reductant heater for reductant hose 4 (H28).
ECM	4347	4	S	E	Fault in the reductant heater for reductant hose 4 (H28).
ECM	4347	4	S	L	Fault in the reductant heater for reductant hose 4 (H28).
ECM	4347	5	S	E	Fault in the reductant heater for reductant hose 4 (H28).

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4347	5	S	L	Fault in the reductant heater for reductant hose 4 (H28).
ECM	4347	6	S	E	The reductant heater for reductant hose 4 (H28) has consumed more power than permitted.
ECM	4347	6	S	L	The reductant heater for reductant hose 4 (H28) has consumed more power than permitted.
ECM	4347	2	S	F	Reductant heater fault
ECM	4347	3	S	F	Reductant heater fault
ECM	4347	4	S	F	Reductant heater fault
ECM	4347	5	S	F	Reductant heater fault
ECM	4347	6	S	F	Reductant heater fault
ECM	4353	31	C	E	Aftertreatment 1 Diesel Exhaust Fluid Doser Heating Mode Request - Condition Exists
ECM	4353	31	C	L	Aftertreatment 1 Diesel Exhaust Fluid Doser Heating Mode Request - Condition Exists
ECM	4354	5	P	E	Aftertreatment #1 DEF Line Heater #1 : Current Below Normal
ECM	4354	5	P	L	Aftertreatment #1 DEF Line Heater #1 : Current Below Normal
ECM	4354	6	P	E	Aftertreatment #1 DEF Line Heater #1 : Current Above Normal
ECM	4354	6	P	L	Aftertreatment #1 DEF Line Heater #1 : Current Above Normal
ECM	4355	5	P	E	Aftertreatment #1 DEF Line Heater #2 : Current Below Normal
ECM	4355	5	P	L	Aftertreatment #1 DEF Line Heater #2 : Current Below Normal
ECM	4355	6	P	E	Aftertreatment #1 DEF Line Heater #2 : Current Above Normal
ECM	4355	6	P	L	Aftertreatment #1 DEF Line Heater #2 : Current Above Normal
ECM	4356	5	P	E	Aftertreatment #1 DEF Line Heater #3 : Current Below Normal
ECM	4356	5	P	L	Aftertreatment #1 DEF Line Heater #3 : Current Below Normal
ECM	4356	6	P	E	Aftertreatment #1 DEF Line Heater #3 : Current Above Normal
ECM	4356	6	P	L	Aftertreatment #1 DEF Line Heater #3 : Current Above Normal
ECM	4360	0	C	E	Aftertreatment 1 SCR Intake Temperature - Data valid but above normal operational range - Most Severe Level
ECM	4360	0	C	L	Aftertreatment 1 SCR Intake Temperature - Data valid but above normal operational range - Most Severe Level
ECM	4360	0	C	F	Aftertreatment 1 SCR Intake Temperature - Data valid but above normal operational range - Most Severe Level
ECM	4360	16	C	F	Aftertreatment 1 SCR Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	4360	15	C	F	Aftertreatment 1 SCR Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe
ECM	4360	2	C	F	Aftertreatment 1 SCR Intake Temperature Sensor - Data erratic, intermittent or incorrect
ECM	4360	3	C	F	Aftertreatment 1 SCR Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	4360	4	C	F	Aftertreatment 1 SCR Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4360	16	C	E	Aftertreatment 1 SCR Intake Temperature - Data Valid But Above Normal Op-

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					erating Range - Moderately Severe Level
ECM	4360	16	C	L	Aftertreatment 1 SCR Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	4360	16	P	E	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : High - moderate severity (2)
ECM	4360	16	P	L	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : High - moderate severity (2)
ECM	4360	18	P	E	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Low - moderate severity (2)
ECM	4360	18	P	L	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Low - moderate severity (2)
ECM	4360	3	C	E	Aftertreatment 1 SCR Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	4360	3	C	L	Aftertreatment 1 SCR Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	4360	3	P	E	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Voltage Above Normal
ECM	4360	3	P	L	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Voltage Above Normal
ECM	4360	4	C	E	Aftertreatment 1 SCR Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4360	4	C	L	Aftertreatment 1 SCR Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4360	4	P	E	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Voltage Below Normal
ECM	4360	4	P	L	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Voltage Below Normal
ECM	4360	15	C	E	Aftertreatment 1 SCR Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe
ECM	4360	15	C	L	Aftertreatment 1 SCR Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe
ECM	4360	17	P	E	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Low - least severe (1)
ECM	4360	17	P	L	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Low - least severe (1)
ECM	4360	2	C	E	Aftertreatment 1 SCR Intake Temperature Sensor - Data erratic, intermittent or incorrect
ECM	4360	2	C	L	Aftertreatment 1 SCR Intake Temperature Sensor - Data erratic, intermittent or incorrect
ECM	4360	20	P	E	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Data Drifted High
ECM	4360	20	P	L	Aftertreatment #1 SCR Catalyst Intake Gas Temperature : Data Drifted High
ECM	4363	0	C	E	Aftertreatment 1 SCR Outlet Temperature - Data valid but above normal operational range - Most Severe
ECM	4363	0	C	L	Aftertreatment 1 SCR Outlet Temperature - Data valid but above normal operational range - Most Severe
ECM	4363	0	C	F	Aftertreatment 1 SCR Outlet Temperature - Data valid but above normal operational range - Most Severe

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4363	16	C	F	Aftertreatment 1 SCR Outlet Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	4363	16	C	E	Aftertreatment 1 SCR Outlet Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	4363	16	C	L	Aftertreatment 1 SCR Outlet Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	4363	2	C	F	Aftertreatment 1 SCR Outlet Temperature Sensor - Data erratic, intermittent or incorrect
ECM	4363	3	C	F	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	4363	4	C	F	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4363	3	C	E	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	4363	3	C	L	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	4363	4	C	E	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4363	4	C	L	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4363	2	C	E	Aftertreatment 1 SCR Outlet Temperature Sensor - Data erratic, intermittent or incorrect
ECM	4363	2	C	L	Aftertreatment 1 SCR Outlet Temperature Sensor - Data erratic, intermittent or incorrect
ECM	4364	18	C	F	Aftertreatment SCR Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	4364	18	C	E	Aftertreatment SCR Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	4364	18	C	L	Aftertreatment SCR Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	4364	18	P	E	Aftertreatment #1 SCR Catalyst Conversion Efficiecy : Low - moderate severity (2)
ECM	4364	18	P	L	Aftertreatment #1 SCR Catalyst Conversion Efficiecy : Low - moderate severity (2)
ECM	4364	31	C	E	Aftertreatment 1 SCR Conversion Efficiency - Condition Exists
ECM	4364	31	C	L	Aftertreatment 1 SCR Conversion Efficiency - Condition Exists
ECM	4364	17	C	E	Aftertreatment SCR Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	4364	17	C	L	Aftertreatment SCR Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	4364	2	P	E	Aftertreatment #1 SCR Catalyst Conversion Efficiecy : Erratic, Intermittent ,or Incorrcet
ECM	4364	2	P	L	Aftertreatment #1 SCR Catalyst Conversion Efficiecy : Erratic, Intermittent ,or Incorrcet

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4374	0	S	E	Reductant pump fault, pump speed too high
ECM	4374	0	S	L	Reductant pump fault, pump speed too high
ECM	4374	1	S	E	Reductant pump fault, pump speed too low
ECM	4374	1	S	L	Reductant pump fault, pump speed too low
ECM	4374	16	S	E	The reductant pump needs to run more slowly than expected to maintain the correct reductant pressure.
ECM	4374	16	S	L	The reductant pump needs to run more slowly than expected to maintain the correct reductant pressure.
ECM	4374	17	S	E	The reductant pump needs to run more quickly than expected to maintain the correct reductant pressure.
ECM	4374	17	S	L	The reductant pump needs to run more quickly than expected to maintain the correct reductant pressure.
ECM	4374	2	S	E	The EEC control unit for exhaust gas aftertreatment does not receive a signal from the reductant pump about the current rotational speed.
ECM	4374	2	S	L	The EEC control unit for exhaust gas aftertreatment does not receive a signal from the reductant pump about the current rotational speed.
ECM	4374	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pump 1 Motor Speed Circuit - Voltage Above Normal or Shorted to High Source
ECM	4374	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pump 1 Motor Speed Circuit - Voltage Above Normal or Shorted to High Source
ECM	4374	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pump 1 Motor Speed Circuit - Voltage Below Normal or Shorted to Low Source
ECM	4374	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pump 1 Motor Speed Circuit - Voltage Below Normal or Shorted to Low Source
ECM	4374	4	S	E	Short circuit to ground in the voltage supply circuit for the reductant pump.
ECM	4374	4	S	L	Short circuit to ground in the voltage supply circuit for the reductant pump.
ECM	4374	5	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pump 1 Motor Speed Circuit - Current Below Normal or Open Circuit
ECM	4374	5	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pump 1 Motor Speed Circuit - Current Below Normal or Open Circuit
ECM	4374	5	P	E	Aftertreatment #1 DEF Pump #1 Motor Speed : Current Below Normal
ECM	4374	5	P	L	Aftertreatment #1 DEF Pump #1 Motor Speed : Current Below Normal
ECM	4374	5	S	E	Fault in the reductant pump control and voltage supply circuit.
ECM	4374	5	S	L	Fault in the reductant pump control and voltage supply circuit.
ECM	4374	6	P	E	Aftertreatment #1 DEF Pump #1 Motor Speed : Current Above Normal
ECM	4374	6	P	L	Aftertreatment #1 DEF Pump #1 Motor Speed : Current Above Normal
ECM	4374	6	S	E	Fault in the reductant pump voltage supply circuit.
ECM	4374	6	S	L	Fault in the reductant pump voltage supply circuit.
ECM	4374	7	S	E	The reductant pressure does not increase and the reductant pump rotational speed sensor indicates too low a value.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4374	7	S	L	The reductant pressure does not increase and the reductant pump rotational speed sensor indicates too low a value.
ECM	4374	0	S	F	Reductant pump fault, pump speed too high
ECM	4374	1	S	F	Reductant pump fault, pump speed too low
ECM	4374	16	S	F	Reductant pump speed
ECM	4374	17	S	F	Reductant pump speed
ECM	4374	2	S	F	Reductant pump no contact with EEC
ECM	4374	3	S	F	Rotational speed of the motor driving a pump for reagent used in an aftertreatment system.
ECM	4374	4	S	F	Reductant pump voltage supply
ECM	4374	5	S	F	Reductant pump voltage supply
ECM	4374	6	S	F	Reductant pump voltage supply
ECM	4374	7	S	F	Reductant circuit pressure
ECM	4375	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pump Command Circuit - Voltage Above Normal or Shorted to High Source
ECM	4375	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pump Command Circuit - Voltage Above Normal or Shorted to High Source
ECM	4375	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Pump Command Circuit - Voltage Below Normal or Shorted to Low Source
ECM	4375	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Pump Command Circuit - Voltage Below Normal or Shorted to Low Source
ECM	4376	3	C	F	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage above normal, or shorted to high source
ECM	4376	4	C	F	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage below normal, or shorted to low source
ECM	4376	7	C	F	Aftertreatment Diesel Exhaust Fluid Return Valve - Mechanical system not responding or out of adjust
ECM	4376	3	C	E	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage above normal, or shorted to high source
ECM	4376	3	C	L	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage above normal, or shorted to high source
ECM	4376	4	C	E	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage below normal, or shorted to low source
ECM	4376	4	C	L	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage below normal, or shorted to low source
ECM	4376	7	C	E	Aftertreatment Diesel Exhaust Fluid Return Valve - Mechanical system not responding or out of adjust
ECM	4376	7	C	L	Aftertreatment Diesel Exhaust Fluid Return Valve - Mechanical system not responding or out of adjust
ECM	4377	12	P	E	Aftertreatment #1 Outlet NH3 : Failure
ECM	4377	12	P	L	Aftertreatment #1 Outlet NH3 : Failure
ECM	4380	2	P	E	Aftertreatment 1 Outlet NH3 Gas Sensor Power In Range : Erratic, Intermittent, or Incorrect
ECM	4380	2	P	L	Aftertreatment 1 Outlet NH3 Gas Sensor Power In Range : Erratic, Intermittent, or Incorrect
ECM	441	3	C	F	Auxiliary Temperature Sensor Input # 1 Circuit - Voltage Above Normal, or Shorted to High Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	441	4	C	F	Auxiliary Temperature Sensor Input # 1 Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	441	14	C	E	Auxiliary Temperature Sensor Input 1 - Special Instructions
ECM	441	14	C	L	Auxiliary Temperature Sensor Input 1 - Special Instructions
ECM	441	3	C	E	Auxiliary Temperature Sensor Input 1 Circuit - Voltage above normal, or shorted to high source
ECM	441	3	C	L	Auxiliary Temperature Sensor Input 1 Circuit - Voltage above normal, or shorted to high source
ECM	441	4	C	E	Auxiliary Temperature Sensor Input 1 Circuit - Voltage below normal, or shorted to low source
ECM	441	4	C	L	Auxiliary Temperature Sensor Input 1 Circuit - Voltage below normal, or shorted to low source
ECM	441	14	C	F	Auxiliary Temperature 1 : Auxiliary Temperature Sensor Input 1 - Special Instructions
ECM	442	3	C	F	Auxiliary Temperature Sensor Input 2 Circuit - Voltage above normal, or shorted to high source
ECM	442	4	C	F	Auxiliary Temperature Sensor Input 2 Circuit - Voltage below normal, or shorted to low source
ECM	442	3	C	E	Auxiliary Temperature Sensor Input 2 Circuit - Voltage above normal, or shorted to high source
ECM	442	3	C	L	Auxiliary Temperature Sensor Input 2 Circuit - Voltage above normal, or shorted to high source
ECM	442	4	C	E	Auxiliary Temperature Sensor Input 2 Circuit - Voltage below normal, or shorted to low source
ECM	442	4	C	L	Auxiliary Temperature Sensor Input 2 Circuit - Voltage below normal, or shorted to low source
ECM	4427	2	S	E	The reductant pick-up unit indicates an internal fault in the temperature sensor.
ECM	4427	2	S	L	The reductant pick-up unit indicates an internal fault in the temperature sensor.
ECM	4427	2	S	F	Reductant pick up fault
ECM	4490	19	C	F	Specific Humidity Sensor - Received Network Data In Error
ECM	4490	9	C	F	Specific Humidity Sensor - Abnormal update rate
ECM	4490	9	C	E	Specific Humidity Sensor - Abnormal update rate
ECM	4490	9	C	L	Specific Humidity Sensor - Abnormal update rate
ECM	4490	19	C	E	Specific Humidity Sensor - Received Network Data In Error
ECM	4490	19	C	L	Specific Humidity Sensor - Received Network Data In Error
TCU	45	*	*	E	Hydraulic oil temperature sensor circuit is open or shorted to battery(+)
TCU	46	*	*	E	Fuel level sensor circuit is open or shorted to battery(+)
ECM	46	1	S	F	Low air pressure signal from APS
ECM	46	19	S	F	CAN message timeout from APS
ECM	46	2	C	F	Voltage at wet tank pressure signal indicates wet tank pressure is too high or too low.
ECM	46	3	C	F	High voltage detected at air compressor wet tank pressure signal circuit.
ECM	46	4	C	F	Low voltage detected at air compressor wet tank pressure sensor.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	46	1	S	E	Low air pressure signal from APS
ECM	46	1	S	L	Low air pressure signal from APS
ECM	46	19	S	E	CAN message timeout from APS
ECM	46	19	S	L	CAN message timeout from APS
TCU	47	*	*	E	Coolant temperature sensor circuit is open or shorted to battery(+)
ECM	4765	16	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range
ECM	4765	16	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range
ECM	4765	16	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range
ECM	4765	13	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Swapped - Out of Calibration
ECM	4765	2	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data erratic, intermittent or incorrect
ECM	4765	3	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	4765	4	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4765	13	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Swapped - Out of Calibration
ECM	4765	13	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Swapped - Out of Calibration
ECM	4765	3	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	4765	3	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	4765	3	P	E	Aftertreatment #1 Diesel Oxidation Catalyst Intake Gas Temperature : Voltage Above Normal
ECM	4765	3	P	L	Aftertreatment #1 Diesel Oxidation Catalyst Intake Gas Temperature : Voltage Above Normal
ECM	4765	4	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4765	4	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4765	4	P	E	Aftertreatment #1 Diesel Oxidation Catalyst Intake Gas Temperature : Voltage Below Normal
ECM	4765	4	P	L	Aftertreatment #1 Diesel Oxidation Catalyst Intake Gas Temperature : Voltage Below Normal
ECM	4765	17	P	E	Aftertreatment #1 Diesel Oxidation Catalyst Intake Gas Temperature : Low - least severe (1)
ECM	4765	17	P	L	Aftertreatment #1 Diesel Oxidation Catalyst Intake Gas Temperature : Low - least severe (1)
ECM	4765	2	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data erratic, intermittent or incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4765	2	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data erratic, intermittent or incorrect
ECM	4766	0	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Most Severe Level
ECM	4766	0	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Most Severe Level
ECM	4766	16	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	4766	16	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	4766	16	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	4766	0	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Most Severe Level
ECM	4766	2	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Erratic, Intermittent, or Incorrect
ECM	4766	3	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4766	4	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4766	3	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	4766	3	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit - Voltage above normal, or shorted to high source
ECM	4766	4	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4766	4	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature Sensor Circuit - Voltage below normal, or shorted to low source
ECM	4766	15	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	4766	15	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	4766	2	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Erratic, Intermittent, or Incorrect
ECM	4766	2	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Outlet Gas Temperature - Data Erratic, Intermittent, or Incorrect
ECM	4782	0	S	E	Particulate filter is clogged, hazardous
ECM	4782	0	S	L	Particulate filter is clogged, hazardous
ECM	4782	16	S	E	Particulate filter is clogged, major
ECM	4782	16	S	L	Particulate filter is clogged, major
ECM	4782	0	S	F	Particulate filter is clogged, hazardous
ECM	4782	16	S	F	Particulate filter is clogged, major

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4783	12	P	E	DPF #1 Average Soot Signal : Failure
ECM	4783	12	P	L	DPF #1 Average Soot Signal : Failure
ECM	4783	13	P	E	Diesel Particulate Filter #1 Mean Soot Sognal : Calibration Required
ECM	4783	13	P	L	Diesel Particulate Filter #1 Mean Soot Sognal : Calibration Required
ECM	4783	19	P	E	Diesel Particulate Filter #1 Mean Soot Sognal : Data Error
ECM	4783	19	P	L	Diesel Particulate Filter #1 Mean Soot Sognal : Data Error
ECM	4783	3	P	E	DPF #1 Average Soot Signal : Voltage Above Normal
ECM	4783	3	P	L	DPF #1 Average Soot Signal : Voltage Above Normal
ECM	4783	4	P	E	DPF #1 Average Soot Signal : Voltage Below Normal
ECM	4783	4	P	L	DPF #1 Average Soot Signal : Voltage Below Normal
ECM	4783	9	P	E	Diesel Particulate Filter #1 Mean Soot Sognal : Abnormal update Rate
ECM	4783	9	P	L	Diesel Particulate Filter #1 Mean Soot Sognal : Abnormal update Rate
ECM	4783	21	P	E	DPF #1 Average Soot Signal : Data Drifted Low
ECM	4783	21	P	L	DPF #1 Average Soot Signal : Data Drifted Low
ECM	4792	14	C	F	Aftertreatment 1 SCR Catalyst System - Special Instructions
ECM	4792	14	C	E	Aftertreatment 1 SCR Catalyst System - Special Instructions
ECM	4792	14	C	L	Aftertreatment 1 SCR Catalyst System - Special Instructions
ECM	4792	7	C	F	Aftertreatment SCR Catalyst System - Mechanical system not responding or out of adjustment
ECM	4792	7	C	E	Aftertreatment SCR Catalyst System - Mechanical system not responding or out of adjustment
ECM	4792	7	C	L	Aftertreatment SCR Catalyst System - Mechanical system not responding or out of adjustment
ECM	4793	31	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Missing - Condition Exists
ECM	4793	31	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Missing - Condition Exists
ECM	4793	31	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Missing - Condition Exists
ECM	4794	31	C	F	Aftertreatment 1 SCR Catalyst System Missing - Condition Exists
ECM	4794	31	C	E	Aftertreatment 1 SCR Catalyst System Missing - Condition Exists
ECM	4794	31	C	L	Aftertreatment 1 SCR Catalyst System Missing - Condition Exists
ECM	4795	31	C	F	Aftertreatment Diesel Particulate Filter Missing - Condition Exists
ECM	4795	31	C	E	Aftertreatment 1 Diesel Particulate Filter Missing - Condition Exists
ECM	4795	31	C	L	Aftertreatment 1 Diesel Particulate Filter Missing - Condition Exists
ECM	4796	31	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Missing - Condition Exists
ECM	4796	31	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Missing - Condition Exists
ECM	4796	31	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Missing - Condition Exists
ECM	4809	16	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature - Data

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					Valid But Above Normal Operating Range
ECM	4809	13	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Swapped - Out of Calibration
ECM	4809	2	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature - Data erratic, intermittent or incorrect
ECM	4809	3	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage above normal
ECM	4809	4	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage below normal
ECM	4809	13	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Swapped - Out of Calibration
ECM	4809	13	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Swapped - Out of Calibration
ECM	4809	16	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range
ECM	4809	16	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range
ECM	4809	16	S	E	Upstream exhaust temperature sensor, above limit
ECM	4809	16	S	L	Upstream exhaust temperature sensor, above limit
ECM	4809	18	S	E	Upstream exhaust temperature sensor, below limit
ECM	4809	18	S	L	Upstream exhaust temperature sensor, below limit
ECM	4809	3	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage above normal
ECM	4809	3	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage above normal
ECM	4809	4	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage below normal
ECM	4809	4	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage below normal
ECM	4809	7	S	E	Upstream exhaust temperature sensor, stuck
ECM	4809	7	S	L	Upstream exhaust temperature sensor, stuck
ECM	4809	16	S	F	Upstream exhaust temperature sensor, above limit
ECM	4809	18	S	F	Upstream exhaust temperature sensor, below limit
ECM	4809	2	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature - Data erratic, intermittent or incorrect
ECM	4809	2	S	F	Upstream exhaust temperature sensor error
ECM	4809	2	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Intake Temperature - Data erratic, intermittent or incorrect
ECM	4809	7	S	F	Upstream exhaust temperature sensor, stuck
ECM	4809	2	S	E	Upstream exhaust temperature sensor error
ECM	4809	8	S	F	Upstream exhaust temperature sensor error
ECM	4809	2	S	L	Upstream exhaust temperature sensor error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4809	8	S	E	Upstream exhaust temperature sensor error
ECM	4809	9	S	F	Upstream exhaust temperature sensor, not plausible
ECM	4809	8	S	L	Upstream exhaust temperature sensor error
ECM	4809	9	S	E	Upstream exhaust temperature sensor, not plausible
ECM	4809	9	S	L	Upstream exhaust temperature sensor, not plausible
ECM	4810	0	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data valid but above normal operating Range –Most Severe level
ECM	4810	16	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	4810	15	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	4810	2	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data erratic, intermittent or incorrect
ECM	4810	3	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature Sensor Circuit - Voltage above normal
ECM	4810	4	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature Sensor Circuit - Voltage below normal
ECM	4810	0	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data valid but above normal operating Range –Most Severe level
ECM	4810	0	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data valid but above normal operating Range –Most Severe level
ECM	4810	15	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	4810	15	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	4810	16	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	4810	16	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data Valid But Above Normal Operating Range
ECM	4810	2	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data erratic, intermittent or incorrect
ECM	4810	2	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature - Data erratic, intermittent or incorrect
ECM	4810	3	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature Sensor Circuit - Voltage above normal
ECM	4810	3	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature Sensor Circuit - Voltage above normal
ECM	4810	4	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature Sensor Circuit - Voltage below normal
ECM	4810	4	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Outlet Temperature Sensor Circuit - Voltage below normal
ECM	4810	18	S	F	Upstream exhaust temperature too low during regeneration

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	4810	9	S	F	Particulate filter, temperature drop not plausible
ECM	4810	18	S	E	Upstream exhaust temperature too low during regeneration
ECM	4810	18	S	L	Upstream exhaust temperature too low during regeneration
ECM	4810	9	S	E	Particulate filter, temperature drop not plausible
ECM	4810	9	S	L	Particulate filter, temperature drop not plausible
ECM	4814	10	S	E	Coolant pump speed sensor, no signal
ECM	4814	10	S	L	Coolant pump speed sensor, no signal
ECM	4814	2	S	E	Coolant water pump actuator, faulty
ECM	4814	2	S	L	Coolant water pump actuator, faulty
ECM	4814	3	S	E	Coolant water pump actuator, short circiut on high side
ECM	4814	3	S	L	Coolant water pump actuator, short circiut on high side
ECM	4814	4	S	E	Coolant water pump actuator, short circiut on low side
ECM	4814	4	S	L	Coolant water pump actuator, short circiut on low side
ECM	4814	7	S	E	Coolant pump speed sensor, stuck
ECM	4814	7	S	L	Coolant pump speed sensor, stuck
ECM	4814	10	S	F	Coolant pump speed sensor, no signal
ECM	4814	2	S	F	Coolant water pump actuator, faulty
ECM	4814	3	S	F	Coolant water pump actuator, short circiut on high side
ECM	4814	4	S	F	Coolant water pump actuator, short circiut on low side
ECM	4814	7	S	F	Coolant pump speed sensor, stuck
ECM	4814	8	S	F	Electrically controlled coolant pump
ECM	4814	8	S	E	Electrically controlled coolant pump
ECM	4814	8	S	L	Electrically controlled coolant pump
ECM	4863	21	P	E	Special Ignitor Loop 36 - Resistance
ECM	4863	21	P	L	Special Ignitor Loop 36 - Resistance
TCU	49	*	*	E	Engine preheater circuit shorted to battery(+)

6 SPN 5~

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	5	*	*	E	Short circuit in travel speed solenoid system
TCU	50	*	*	L	FMR1 TIMEOUT
TCU	50	*	*	F	FMR1 TIMEOUT
MCU	5000	12	*	L	LOGICAL ERROR AT GEAR RANGE SIGNAL TCU detected a wrong signal combination for the gear range
MCU	5001	12	*	L	LOGICAL ERROR AT DIRECTION SELECT SIGNAL 3RD SHIFT LEVER TCU detected a wrong signal combination for the direction
MCU	501	0	*	E	Transmission Oil Pressure-Data Valid But Above Normal Operational Range
MCU	501	0	*	L	Transmission Oil Pressure-Data Valid But Above Normal Operational Range
MCU	501	1	*	E	Transmission Oil Pressure-Data Valid But Below Normal Operational Range
MCU	501	1	*	L	Transmission Oil Pressure-Data Valid But Below Normal Operational Range
MCU	501	4	*	E	Transmission Oil Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	501	4	*	L	Transmission Oil Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	501	2	*	E	Transmission Oil Pressure-Data Erratic, Intermittent Or Incorrect
MCU	501	2	*	L	Transmission Oil Pressure-Data Erratic, Intermittent Or Incorrect
MCU	5010	12	*	L	LOGICAL ERROR AT DIRECTION SELECT SIGNAL TCU detected a wrong signal combination for the direction
ECM	5018	11	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Face Plugged - Root Cause Not Known
ECM	5018	11	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Face Plugged - Root Cause Not Known
ECM	5018	11	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Face Plugged - Root Cause Not Known
ECM	5019	2	C	F	Engine Exhaust Gas Recirculation Outlet Pressure - Data erratic, intermittent or incorrect
ECM	5019	3	C	F	Engine Exhaust Gas Recirculation Outlet Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	5019	4	C	F	Engine Exhaust Gas Recirculation Outlet Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	5019	3	C	E	Engine Exhaust Gas Recirculation Outlet Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	5019	3	C	L	Engine Exhaust Gas Recirculation Outlet Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	5019	4	C	E	Engine Exhaust Gas Recirculation Outlet Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	5019	4	C	L	Engine Exhaust Gas Recirculation Outlet Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	5019	2	C	E	Engine Exhaust Gas Recirculation Outlet Pressure - Data erratic, intermittent or incorrect
ECM	5019	2	C	L	Engine Exhaust Gas Recirculation Outlet Pressure - Data erratic, intermittent or incorrect
Warning	502	*	*	E	(Warning) Transmission Oil Pressure low
ECM	5024	10	C	F	Aftertreatment 1 Intake NOx Sensor Heater - Abnormal rate of change
ECM	5024	10	C	E	Aftertreatment 1 Intake NOx Sensor Heater - Abnormal rate of change
ECM	5024	10	C	L	Aftertreatment 1 Intake NOx Sensor Heater - Abnormal rate of change
MCU	503	0	*	F	Brake Oil Pressure Sensor Data Above Normal Range (or Open Circuit)
MCU	503	1	*	F	Brake Oil Pressure Sensor Data Below Normal Range
MCU	503	2	*	F	Brake Oil Pressure Sensor Data Error
MCU	503	4	*	F	Brake Oil Pressure Sensor Circuit . Voltage Below Normal, or Shorted to Low Source
MCU	503	0	*	E	Brake Oil Pressure (Accumulator)-Data Valid But Above Normal Operational Range
MCU	503	0	*	L	Brake Oil Pressure (Accumulator)-Data Valid But Above Normal Operational Range
MCU	503	1	*	E	Brake Oil Pressure (Accumulator)-Data Valid But Below Normal Operational Range
MCU	503	1	*	L	Brake Oil Pressure (Accumulator)-Data Valid But Below Normal Operational Range
MCU	503	4	*	E	Brake Oil Pressure (Accumulator)-Voltage Below Normal, Or Shorted To Low Source
MCU	503	4	*	L	Brake Oil Pressure (Accumulator)-Voltage Below Normal, Or Shorted To Low Source
MCU	503	2	*	E	Brake Oil Pressure (Accumulator)-Data Erratic, Intermittent Or Incorrect
MCU	503	2	*	L	Brake Oil Pressure (Accumulator)-Data Erratic, Intermittent Or Incorrect
ECM	5031	10	C	F	Aftertreatment 1 Outlet NOx Sensor Heater - Abnormal rate of change
ECM	5031	10	C	E	Aftertreatment 1 Outlet NOx Sensor Heater - Abnormal rate of change
ECM	5031	10	C	L	Aftertreatment 1 Outlet NOx Sensor Heater - Abnormal rate of change
Warning	504	*	*	E	(Warning) Brake Pressure low
Warning	504	*	*	L	(Warning) Brake Oil Pressure Low
Warning	504	*	*	F	(Warning) Brake Oil Pressure Low
MCU	5040	12	*	L	LOGICAL ERROR AT DIRECTION SELECT SIGNAL 2. SHIFT LEVER TCU detected a wrong signal combination for the direction
MCU	505	0	*	E	Working Brake Pressure (Foot Pedal)-Data Valid But Above Normal Operational Range
MCU	505	0	*	L	Working Brake Pressure (Foot Pedal)-Data Valid But Above Normal Operational Range

continued.....

.....continued

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	505	1	*	E	Working Brake Pressure (Foot Pedal)-Data Valid But Below Normal Operational Range
MCU	505	1	*	L	Working Brake Pressure (Foot Pedal)-Data Valid But Below Normal Operational Range
MCU	505	4	*	E	Working Brake Pressure (Foot Pedal)-Voltage Below Normal, Or Shorted To Low Source
MCU	505	4	*	L	Working Brake Pressure (Foot Pedal)-Voltage Below Normal, Or Shorted To Low Source
MCU	505	2	*	E	Working Brake Pressure (Foot Pedal)-Data Erratic, Intermittent Or Incorrect
MCU	505	2	*	L	Working Brake Pressure (Foot Pedal)-Data Erratic, Intermittent Or Incorrect
ECM	5055	18	P	E	Engine Oil Viscosity : Low - moderate severity (2)
ECM	5055	18	P	L	Engine Oil Viscosity : Low - moderate severity (2)
ECM	5055	17	P	E	Engine Oil Viscosity : Low - least severe (1)
ECM	5055	17	P	L	Engine Oil Viscosity : Low - least severe (1)
MCU	506	3	*	E	Working Brake Status ? Indicator Lamp-Voltage Above Normal, Or Shorted To High Source
MCU	506	3	*	L	Working Brake Status ? Indicator Lamp-Voltage Above Normal, Or Shorted To High Source
MCU	506	4	*	E	Working Brake Status ? Indicator Lamp-Voltage Below Normal, Or Shorted To Low Source
MCU	506	4	*	L	Working Brake Status ? Indicator Lamp-Voltage Below Normal, Or Shorted To Low Source
MCU	507	0	*	E	Parking Oil Pressure-Data Valid But Above Normal Operational Range
MCU	507	0	*	L	Parking Oil Pressure-Data Valid But Above Normal Operational Range
MCU	507	1	*	E	Parking Oil Pressure-Data Valid But Below Normal Operational Range
MCU	507	1	*	L	Parking Oil Pressure-Data Valid But Below Normal Operational Range
MCU	507	4	*	E	Parking Oil Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	507	4	*	L	Parking Oil Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	507	0	*	F	Parking Oil Pressure Sensor Data Above Normal Range (or Open Circuit)
MCU	507	1	*	F	Parking Oil Pressure Sensor Data Below Normal Range
MCU	507	2	*	E	Parking Oil Pressure-Data Erratic, Intermittent Or Incorrect
MCU	507	2	*	F	Parking Oil Pressure Sensor Data Error
MCU	507	2	*	L	Parking Oil Pressure-Data Erratic, Intermittent Or Incorrect
MCU	507	4	*	F	Parking Oil Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
MCU	5090	3	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH CUTOFF / INCHPEDAL INPUT - the measured voltage is too high
MCU	5090	4	*	L	S.C. TO GROUND OR O.C. AT CLUTCH CUTOFF / INCHPEDAL INPUT - the measured voltage is too low

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5097	3	C	F	Engine Brake Active Lamp - Voltage Above Normal, or Shorted to High Source
ECM	5097	4	C	F	Engine Brake Active Lamp - Voltage below normal, or shorted to low source
ECM	5097	3	C	E	Engine Brake Active Lamp - Voltage Above Normal, or Shorted to High Source
ECM	5097	3	C	L	Engine Brake Active Lamp - Voltage Above Normal, or Shorted to High Source
ECM	5097	4	C	E	Engine Brake Active Lamp - Voltage below normal, or shorted to low source
ECM	5097	4	C	L	Engine Brake Active Lamp - Voltage below normal, or shorted to low source
ECM	5099	5	P	E	Engine Oil Pressure Low Lamp Data - Current Below Normal
ECM	5099	5	P	L	Engine Oil Pressure Low Lamp Data - Current Below Normal
ECM	5099	6	P	E	Engine Oil Pressure Low Lamp Data - Current Above Normal
ECM	5099	6	P	L	Engine Oil Pressure Low Lamp Data - Current Above Normal
ECM	51	2	C	E	Engine Intake Throttle Actuator Position Sensor - Data Erratic, Intermittent, or Incorrect
ECM	51	2	C	L	Engine Intake Throttle Actuator Position Sensor - Data Erratic, Intermittent, or Incorrect
ECM	51	3	C	E	Engine Intake Throttle Actuator Position Sensor Circuit- Voltage above normal, or shorted to high source
ECM	51	3	C	L	Engine Intake Throttle Actuator Position Sensor Circuit- Voltage above normal, or shorted to high source
ECM	51	3	P	E	Engine Throttle Valve 1 Position : Voltage Above Normal
ECM	51	3	P	L	Engine Throttle Valve 1 Position : Voltage Above Normal
ECM	51	3	S	E	Throttle Position Sensor 1, short circuit to +24
ECM	51	3	S	L	Throttle Position Sensor 1, short circuit to +24
ECM	51	3	Y	E	Intake throttle position sensor error (voltage high)
ECM	51	3	Y	L	Intake throttle position sensor error (voltage high)
ECM	51	4	C	E	Engine Intake Throttle Actuator Position Sensor Circuit- Voltage above normal, or shorted to low source
ECM	51	4	C	L	Engine Intake Throttle Actuator Position Sensor Circuit- Voltage above normal, or shorted to low source
ECM	51	4	P	E	Engine Throttle Valve 1 Position : Voltage Below Normal
ECM	51	4	P	L	Engine Throttle Valve 1 Position : Voltage Below Normal
ECM	51	4	S	E	Throttle Position Sensor 1, short circuit to ground
ECM	51	4	S	L	Throttle Position Sensor 1, short circuit to ground
ECM	51	4	Y	E	Intake throttle position sensor error (voltage low)
ECM	51	4	Y	L	Intake throttle position sensor error (voltage low)
TCU	51	*	*	E	Boom priority solenoid circuit is open or shorted to ground

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	51	*	*	L	FMR2 TIMEOUT
ECM	51	0	S	F	The position of the valve used to regulate the supply of a fluid, usually air or fuel/air mixture, to an engine.
ECM	51	1	S	F	The position of the valve used to regulate the supply of a fluid, usually air or fuel/air mixture, to an engine.
ECM	51	2	S	F	The position of the valve used to regulate the supply of a fluid, usually air or fuel/air mixture, to an engine.
ECM	51	3	S	F	The position of the valve used to regulate the supply of a fluid, usually air or fuel/air mixture, to an engine.
ECM	51	4	S	F	The position of the valve used to regulate the supply of a fluid, usually air or fuel/air mixture, to an engine.
ECM	51	5	S	F	The position of the valve used to regulate the supply of a fluid, usually air or fuel/air mixture, to an engine.
ECM	51	7	S	F	Throttle Position Sensor, not plausible
ECM	51	7	S	E	Throttle Position Sensor, not plausible
ECM	51	8	S	F	Endpoints of throttle position sensor are out of range
ECM	51	7	S	L	Throttle Position Sensor, not plausible
ECM	51	8	S	E	Endpoints of throttle position sensor are out of range
ECM	51	9	S	F	Throttle Position Sensor, correlation error
ECM	51	8	S	L	Endpoints of throttle position sensor are out of range
ECM	51	9	S	E	Throttle Position Sensor, correlation error
ECM	51	9	S	L	Throttle Position Sensor, correlation error
TCU	51	*	*	F	FMR2 TIMEOUT
MCU	5110	3	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT TRANSMISSION SUMP TEMPERATURE SENSOR INPUT - the measured voltage is too high
MCU	5110	4	*	L	S.C. TO GROUND AT TRANSMISSION SUMP TEMPERATURE SENSOR INPUT - the measured voltage is too low
MCU	5120	3	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT RETARDER / TORQUECONVERTER TEMPERATURE SENSOR INPUT - the measured voltage is too high
MCU	5120	4	*	L	S.C. TO GROUND AT RETARDER / TORQUECONVERTER TEMPERATURE SENSOR INPUT - the measured voltage is too low
ECM	5125	3	C	F	Sensor Supply 7 Circuit - Voltage above normal, or shorted to high source
ECM	5125	4	C	F	Sensor Supply 7 Circuit - Voltage below normal, or shorted to low source
ECM	5125	3	C	E	Sensor Supply 7 Circuit - Voltage above normal, or shorted to high source
ECM	5125	3	C	L	Sensor Supply 7 Circuit - Voltage above normal, or shorted to high source
ECM	5125	4	C	E	Sensor Supply 7 Circuit - Voltage below normal, or shorted to low source
ECM	5125	4	C	L	Sensor Supply 7 Circuit - Voltage below normal, or shorted to low source
ECM	513	4	C	F	Engine Brake Driver #1 Circuit - shorted low

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	514	4	*	E	Parking Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	514	4	*	L	Parking Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	514	6	*	E	Parking Relay-Current Above Normal Or Grounded Circuit
MCU	514	6	*	L	Parking Relay-Current Above Normal Or Grounded Circuit
MCU	5140	12	*	L	LOGICAL ERROR AT ENGINE SPEED INPUT TCU measures a engine speed over a threshold and the next moment the measured speed is zero
MCU	5140	3	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT ENGINE SPEED INPUT TCU measures a voltage higher than 7.00 V at speed input pin
MCU	5140	4	*	L	S.C. TO GROUND AT ENGINE SPEED INPUT TCU measures a voltage less than 0.45V at speed input pin
MCU	5150	12	*	L	LOGICAL ERROR AT TURBINE SPEED INPUT TCU measures a turbine speed over a threshold and at the next moment the measured speed is zero
MCU	5150	3	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT TURBINE SPEED INPUT TCU measures a voltage higher than 7.00V at speed input pin
MCU	5150	4	*	L	S.C. TO GROUND AT TURBINE SPEED INPUT TCU measures a voltage less than 0.45V at speed input pin
MCU	5160	12	*	L	LOGICAL ERROR AT INTERNAL SPEED INPUT TCU measures a internal speed over a threshold and at the next moment the measured speed is zero
MCU	5160	3	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT INTERNAL SPEED INPUT TCU measures a voltage higher than 7.00V at speed input pin
MCU	5160	4	*	L	S.C. TO GROUND AT INTERNAL SPEED INPUT TCU measures a voltage less than 0.45V at speed input pin
MCU	517	4	*	E	Traveling Cutoff Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	517	4	*	L	Traveling Cutoff Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	517	6	*	E	Traveling Cutoff Relay-Current Above Normal Or Grounded Circuit
MCU	517	6	*	L	Traveling Cutoff Relay-Current Above Normal Or Grounded Circuit
MCU	5170	12	*	L	LOGICAL ERROR AT OUTPUT SPEED INPUT TCU measures a output speed over a threshold and at the next moment the measured speed is zero
MCU	5170	3	*	L	S.C. TO BATTERY VOLTAGE OR O.C. AT OUTPUT SPEED INPUT TCU measures a voltage higher than 12.5V at speed input pin
MCU	5170	4	*	L	S.C. TO GROUND AT OUTPUT SPEED INPUT TCU measures a voltage less than 1.00V at speed input pin
MCU	5180	2	*	L	OUTPUT SPEED ZERO DOESN'T FIT TO OTHER SPEED SIGNALS if transmission is not neutral and the shifting has finished, TCU measures outputspeed zero and turbine speed or internal speed not equal to zero.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	52	0	C	E	Coolant Temperature 2 - Data Valid but Above Normal Operational Range - Most Severe Level
ECM	52	0	C	L	Coolant Temperature 2 - Data Valid but Above Normal Operational Range - Most Severe Level
ECM	52	16	C	E	Coolant Temperature 2 - Data Valid but Above Normal Operational Range - Moderately Severe Level
ECM	52	16	C	L	Coolant Temperature 2 - Data Valid but Above Normal Operational Range - Moderately Severe Level
ECM	52	3	C	E	Coolant Temperature 2 Sensor Circuit - Voltage Above Normal, or Shorted to High Source
ECM	52	3	C	L	Coolant Temperature 2 Sensor Circuit - Voltage Above Normal, or Shorted to High Source
ECM	52	4	C	E	Coolant Temperature 2 Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	52	4	C	L	Coolant Temperature 2 Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
TCU	52	*	*	L	EAMODUL1 TIMEOUT
TCU	52	*	*	F	EAMODUL1 TIMEOUT
ECM	52	0	C	F	Coolant Temperature : Coolant Temperature 2 - Data Valid but Above Normal Operational Range - Most Severe Level
ECM	52	16	C	F	Coolant Temperature : Coolant Temperature 2 - Data Valid but Above Normal Operational Range - Moderately Severe Level
ECM	52	3	C	F	Coolant Temperature : Coolant Temperature 2 Sensor Circuit - Voltage Above Normal, or Shorted to High Source
ECM	52	4	C	F	Coolant Temperature : Coolant Temperature 2 Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
MCU	520	3	*	E	Ram Lock Status ? Indicator Lamp-Voltage Above Normal, Or Shorted To High Source
MCU	520	3	*	L	Ram Lock Status ? Indicator Lamp-Voltage Above Normal, Or Shorted To High Source
MCU	520	4	*	E	Ram Lock Status ? Indicator Lamp-Voltage Below Normal, Or Shorted To Low Source
MCU	520	4	*	L	Ram Lock Status ? Indicator Lamp-Voltage Below Normal, Or Shorted To Low Source
ECM	520199	3	C	E	Cruise Control (Resistive) Signal Circuit - Voltage above normal, or shorted to high source
ECM	520199	3	C	L	Cruise Control (Resistive) Signal Circuit - Voltage above normal, or shorted to high source
ECM	520199	4	C	E	Cruise Control (Resistive) Signal Circuit - Voltage below normal, or shorted to low source
ECM	520199	4	C	L	Cruise Control (Resistive) Signal Circuit - Voltage below normal, or shorted to low source
ECM	520199	3	C	F	Cruise Control : Cruise Control (Resistive) Signal Circuit - Voltage Above Normal, or Shorted to High Source
ECM	520199	4	C	F	Cruise Control : Cruise Control (Resistive) Signal Circuit - Voltage Below Normal, or Shorted to Low Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	520286	11	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Root Cause Not Known
ECM	520286	4	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Below Normal or Shorted to Low Source
ECM	520320	7	C	F	Crankcase Depression Valve - Mechanical system not responding or out of adjustment
ECM	520320	7	C	E	Crankcase Depression Valve - Mechanical system not responding or out of adjustment
ECM	520320	7	C	L	Crankcase Depression Valve - Mechanical system not responding or out of adjustment
ECM	520332	3	C	F	Cruise Control (Resistive) #2 Signal Circuit - Voltage above normal, or shorted to high source
ECM	520332	4	C	F	Cruise Control (Resistive) #2 Signal Circuit - Voltage below normal, or shorted to low source
ECM	520332	3	C	E	Cruise Control (Resistive) #2 Signal Circuit - Voltage above normal, or shorted to high source
ECM	520332	3	C	L	Cruise Control (Resistive) #2 Signal Circuit - Voltage above normal, or shorted to high source
ECM	520332	4	C	E	Cruise Control (Resistive) #2 Signal Circuit - Voltage below normal, or shorted to low source
ECM	520332	4	C	L	Cruise Control (Resistive) #2 Signal Circuit - Voltage below normal, or shorted to low source
ECM	520435	12	C	F	Glow Plug Module - Bad intelligent device or component
ECM	520435	12	C	E	Glow Plug Module - Bad intelligent device or component
ECM	520435	12	C	L	Glow Plug Module - Bad intelligent device or component
ECM	520595	2	C	F	Closed Crankcase Ventilation System Pressure - Data erratic, intermittent or incorrect
ECM	520595	3	C	F	Closed Crankcase Ventilation System Pressure Sensor - Voltage Above Normal, or Shorted to High Source
ECM	520595	4	C	F	Closed Crankcase Ventilation System Pressure Sensor - Voltage below normal, or shorted to low source
ECM	520595	3	C	E	Closed Crankcase Ventilation System Pressure Sensor - Voltage Above Normal, or Shorted to High Source
ECM	520595	3	C	L	Closed Crankcase Ventilation System Pressure Sensor - Voltage Above Normal, or Shorted to High Source
ECM	520595	4	C	E	Closed Crankcase Ventilation System Pressure Sensor - Voltage below normal, or shorted to low source
ECM	520595	4	C	L	Closed Crankcase Ventilation System Pressure Sensor - Voltage below normal, or shorted to low source
ECM	520595	2	C	E	Closed Crankcase Ventilation System Pressure - Data erratic, intermittent or incorrect
ECM	520595	2	C	L	Closed Crankcase Ventilation System Pressure - Data erratic, intermittent or incorrect
ECM	520668	31	C	F	Aftertreatment 1 Outlet NOx Sensor Closed Loop Operation - Condition Exists

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	520668	31	C	E	Aftertreatment 1 Outlet NOx Sensor Closed Loop Operation- Condition Exists
ECM	520668	31	C	L	Aftertreatment 1 Outlet NOx Sensor Closed Loop Operation- Condition Exists
ECM	520716	3	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Above Normal, or Shorted to High Source
ECM	520716	4	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Below Normal, or Shorted to Low Source
ECM	520716	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Above Normal, or Shorted to High Source
ECM	520716	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Above Normal, or Shorted to High Source
ECM	520716	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Below Normal, or Shorted to Low Source
ECM	520716	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Below Normal, or Shorted to Low Source
ECM	520784	3	C	F	Fan Blade Pitch Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source
ECM	520784	4	C	F	Fan Blade Pitch Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	520784	5	C	F	Fan Blade Pitch - Mechanical system not responding or out of adjustment
ECM	520791	2	C	F	Engine Boost Curve Selection - Data erratic, intermittent or incorrect
ECM	520791	2	C	E	Engine Boost Curve Selection - Data erratic, intermittent or incorrect
ECM	520791	2	C	L	Engine Boost Curve Selection - Data erratic, intermittent or incorrect
ECM	520808	31	C	F	Engine Emergency Shutdown Switch Actived - Condition Exists
ECM	520808	31	C	E	Engine Emergency Shutdown Switch Actived - Condition Exists
ECM	520808	31	C	L	Engine Emergency Shutdown Switch Actived - Condition Exists
ECM	520809	31	C	F	Excessive Time Since Last Engine Air Shutoff Maintenance Test - Condition Exists
ECM	520809	31	C	E	Excessive Time Since Last Engine Air Shutoff Maintenance Test - Condition Exists
ECM	520809	31	C	L	Excessive Time Since Last Engine Air Shutoff Maintenance Test - Condition Exists
ECM	520826	12	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Bad Intelligent Device or Component
ECM	520826	16	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	520826	3	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Above Normal or Shorted to High Source
ECM	520826	9	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Abnormal Update Rate

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	520953	3	C	E	Aftertreatment Diesel Exhaust Fluid Dosing Unit Relay Feedback- Voltage Above Normal or Shorted to High Source.
ECM	520953	3	C	L	Aftertreatment Diesel Exhaust Fluid Dosing Unit Relay Feedback- Voltage Above Normal or Shorted to High Source.
ECM	520953	4	C	E	Aftertreatment Diesel Exhaust Fluid Dosing Unit Relay Feedback- Voltage Below Normal or Shorted to Low Source.
ECM	520953	4	C	L	Aftertreatment Diesel Exhaust Fluid Dosing Unit Relay Feedback- Voltage Below Normal or Shorted to Low Source.
ECM	520968	19	C	E	Machine Constrained Operation- Received Network Data in Error. The received J1939 datalink message was not valid.
ECM	520968	19	C	L	Machine Constrained Operation- Received Network Data in Error. The received J1939 datalink message was not valid.
ECM	520968	9	C	E	Machine Constrained Operation- Abnormal Update Rate. No Communication or an invalid data transfer rate has been detected on the J1939 data link between the ECM and the machine electronic control unit.
ECM	520968	9	C	L	Machine Constrained Operation- Abnormal Update Rate. No Communication or an invalid data transfer rate has been detected on the J1939 data link between the ECM and the machine electronic control unit.
ECM	521	2	C	F	Brake Pedal Position - Data erratic, intermittent or incorrect
ECM	521	2	C	E	Brake Pedal Position - Data erratic, intermittent or incorrect
ECM	521	2	C	L	Brake Pedal Position - Data erratic, intermittent or incorrect
ECM	521002	31	C	E	Engine Cranks Slowly - Condition Exists
ECM	521002	31	C	L	Engine Cranks Slowly - Condition Exists
ECM	521032	14	C	E	Aftertreatment System Assembly - Special Instructions
ECM	521032	14	C	L	Aftertreatment System Assembly - Special Instructions
MCU	5211	9	*	L	SPEEDLIMIT_PROP1 Timeout of CAN-message SpeedLimit_Prop1 from Vehicle controller
MCU	5212	9	*	L	SPEEDLIMIT_PROP2 Timeout of CAN-message SpeedLimit_Prop2 from Vehicle controller
ECM	522183	1	Y	E	EGR high temperature thermistor error
ECM	522183	1	Y	L	EGR high temperature thermistor error
ECM	522184	1	Y	E	EGR low temperature thermistor error
ECM	522184	1	Y	L	EGR low temperature thermistor error
ECM	522243	5	Y	E	Starting aid relay disconnection
ECM	522243	5	Y	L	Starting aid relay disconnection
ECM	522243	6	Y	E	Starting aid relay GND short circuit
ECM	522243	6	Y	L	Starting aid relay GND short circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	522323	0	Y	E	Air cleaner clogged alarm
ECM	522323	0	Y	L	Air cleaner clogged alarm
ECM	522329	0	Y	E	Water separator alarm
ECM	522329	0	Y	L	Water separator alarm
ECM	522400	2	Y	E	Crankshaft signal error
ECM	522400	2	Y	L	Crankshaft signal error
ECM	522400	5	Y	E	No signal from crankshaft
ECM	522400	5	Y	L	No signal from crankshaft
ECM	522401	2	Y	E	Camshaft signal error
ECM	522401	2	Y	L	Camshaft signal error
ECM	522401	5	Y	E	No signal from camshft
ECM	522401	5	Y	L	No signal from camshft
ECM	522401	7	Y	E	Angle offset error
ECM	522401	7	Y	L	Angle offset error
ECM	522571	3	Y	E	SCV (MPROP) L side VB short circuit
ECM	522571	3	Y	L	SCV (MPROP) L side VB short circuit
ECM	522571	6	Y	E	SCV (MPROP) L side GND short circuit
ECM	522571	6	Y	L	SCV (MPROP) L side GND short circuit
ECM	522572	11	Y	E	SCV (MPROP) pump overload error
ECM	522572	11	Y	L	SCV (MPROP) pump overload error
ECM	522572	6	Y	E	SCV (MPROP) drive current (high level)
ECM	522572	6	Y	L	SCV (MPROP) drive current (high level)
ECM	522573	0	Y	E	Excessive PM accumulation (method C)
ECM	522573	0	Y	L	Excessive PM accumulation (method C)
ECM	522574	0	Y	E	Excessive PM accumulation (method P)
ECM	522574	0	Y	L	Excessive PM accumulation (method P)
ECM	522575	7	Y	E	Regeneration failure (stationary regeneration failure)
ECM	522575	7	Y	L	Regeneration failure (stationary regeneration failure)
ECM	522576	12	Y	E	EEPROM memory reading error
ECM	522576	12	Y	L	EEPROM memory reading error
ECM	522577	11	Y	E	Regeneration failure (stationary regeneration not performed)
ECM	522577	11	Y	L	Regeneration failure (stationary regeneration not performed)
ECM	522578	12	Y	E	EEPROM memory writing error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	522578	12	Y	L	EEPROM memory writing error
ECM	522579	12	Y	E	Short circuit in EGR motor coils
ECM	522579	12	Y	L	Short circuit in EGR motor coils
ECM	522580	12	Y	E	EGR position sensor error
ECM	522580	12	Y	L	EGR position sensor error
ECM	522581	7	Y	E	EGR valve sticking error
ECM	522581	7	Y	L	EGR valve sticking error
ECM	522582	7	Y	E	EGR initialization error
ECM	522582	7	Y	L	EGR initialization error
ECM	522585	12	Y	E	CY 146 SPI communication fault
ECM	522585	12	Y	L	CY 146 SPI communication fault
ECM	522588	12	Y	E	Excessive voltage of supply 1
ECM	522588	12	Y	L	Excessive voltage of supply 1
ECM	522589	12	Y	E	Insufficient voltage of supply 1
ECM	522589	12	Y	L	Insufficient voltage of supply 1
ECM	522590	12	Y	E	Sensor supply voltage error 1
ECM	522590	12	Y	L	Sensor supply voltage error 1
ECM	522591	12	Y	E	Sensor supply voltage error 2
ECM	522591	12	Y	L	Sensor supply voltage error 2
ECM	522592	12	Y	E	Sensor supply voltage error 3
ECM	522592	12	Y	L	Sensor supply voltage error 3
ECM	522596	9	Y	E	TSC1 (SA1) reception timeout
ECM	522596	9	Y	L	TSC1 (SA1) reception timeout
ECM	522597	9	Y	E	TSC1 (SA2) reception timeout
ECM	522597	9	Y	L	TSC1 (SA2) reception timeout
ECM	522599	9	Y	E	Y_ECR1 reception timeout
ECM	522599	9	Y	L	Y_ECR1 reception timeout
ECM	522600	9	Y	E	Y_EC reception timeout
ECM	522600	9	Y	L	Y_EC reception timeout
ECM	522601	9	Y	E	Y_RSS reception timeout
ECM	522601	9	Y	L	Y_RSS reception timeout
ECM	522609	9	Y	E	Y_ETCP1 reception time out
ECM	522609	9	Y	L	Y_ETCP1 reception time out

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	522610	9	Y	E	CAN 1 (for EGR) : Reception time out
ECM	522610	9	Y	L	CAN 1 (for EGR) : Reception time out
ECM	522611	9	Y	E	CAN 1 (for exhaust throttle) : Reception time out
ECM	522611	9	Y	L	CAN 1 (for exhaust throttle) : Reception time out
ECM	522617	12	Y	E	EGR target value out of range
ECM	522617	12	Y	L	EGR target value out of range
ECM	522618	9	Y	E	EBC1 reception timeout
ECM	522618	9	Y	L	EBC1 reception timeout
ECM	522619	9	Y	E	Y_DPFIF reception timeout
ECM	522619	9	Y	L	Y_DPFIF reception timeout
ECM	522623	7	Y	E	Dual accelerator sensor error (open position)
ECM	522623	7	Y	L	Dual accelerator sensor error (open position)
ECM	522624	7	Y	E	Dual accelerator sensor error (closed position)
ECM	522624	7	Y	L	Dual accelerator sensor error (closed position)
ECM	522730	12	Y	E	Immobilizer error (CAN communication)
ECM	522730	12	Y	L	Immobilizer error (CAN communication)
ECM	522744	4	Y	E	Actuator drive circuit 1 short to ground
ECM	522744	4	Y	L	Actuator drive circuit 1 short to ground
ECM	522746	12	Y	E	Exhaust throttle (voltage fault)
ECM	522746	12	Y	L	Exhaust throttle (voltage fault)
ECM	522747	12	Y	E	Exhaust throttle (motor fault)
ECM	522747	12	Y	L	Exhaust throttle (motor fault)
ECM	522748	12	Y	E	Exhaust throttle (sensor system fault)
ECM	522748	12	Y	L	Exhaust throttle (sensor system fault)
ECM	522749	12	Y	E	Exhaust throttle (MPU fault)
ECM	522749	12	Y	L	Exhaust throttle (MPU fault)
ECM	522750	12	Y	E	Exhaust throttle (PCB fault)
ECM	522750	12	Y	L	Exhaust throttle (PCB fault)
ECM	522751	19	Y	E	Exhaust throttle (CAN fault)
ECM	522751	19	Y	L	Exhaust throttle (CAN fault)
ECM	522994	4	Y	E	Actuator drive circuit 2 short to ground
ECM	522994	4	Y	L	Actuator drive circuit 2 short to ground
ECM	523249	5	Y	E	Nosignal on both crankshaft and camshaft speed sensor

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	523249	5	Y	L	Nosignal on both crankshaft and camshaft speed sensor
ECM	523460	7	Y	E	Rail pressure fault (Operation time error during RPS limp home)
ECM	523460	7	Y	L	Rail pressure fault (Operation time error during RPS limp home)
ECM	523462	13	Y	E	Injector (No. 1 cylinder) correction value error
ECM	523462	13	Y	L	Injector (No. 1 cylinder) correction value error
ECM	523463	13	Y	E	Injector (No. 2 cylinder) correction value error
ECM	523463	13	Y	L	Injector (No. 2 cylinder) correction value error
ECM	523468	9	Y	E	Rail pressure fault (Controlled rail pressure error after PLV valve opening)
ECM	523468	9	Y	L	Rail pressure fault (Controlled rail pressure error after PLV valve opening)
ECM	523469	0	Y	E	Rail pressure fault (The times of PLV valve opening error)
ECM	523469	0	Y	L	Rail pressure fault (The times of PLV valve opening error)
ECM	523470	0	Y	E	Rail pressure fault (The time of PLV valve opening error)
ECM	523470	0	Y	L	Rail pressure fault (The time of PLV valve opening error)
ECM	523471	6	Y	E	Actuator drive circuit 3 short to ground
ECM	523471	6	Y	L	Actuator drive circuit 3 short to ground
ECM	523473	12	Y	E	AD converter fault 1
ECM	523473	12	Y	L	AD converter fault 1
ECM	523474	12	Y	E	AD converter fault 2
ECM	523474	12	Y	L	AD converter fault 2
ECM	523475	12	Y	E	External monitoring IC and CPU fault 1
ECM	523475	12	Y	L	External monitoring IC and CPU fault 1
ECM	523476	12	Y	E	External monitoring IC and CPU fault 2
ECM	523476	12	Y	L	External monitoring IC and CPU fault 2
ECM	523477	12	Y	E	ROM fault
ECM	523477	12	Y	L	ROM fault
ECM	523478	12	Y	E	Shutoff path fault 1
ECM	523478	12	Y	L	Shutoff path fault 1
ECM	523479	12	Y	E	Shutoff path fault 2
ECM	523479	12	Y	L	Shutoff path fault 2
ECM	523480	12	Y	E	Shutoff path fault 3
ECM	523480	12	Y	L	Shutoff path fault 3
ECM	523481	12	Y	E	Shutoff path fault 4
ECM	523481	12	Y	L	Shutoff path fault 4

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	523482	12	Y	E	Shutoff path fault 5
ECM	523482	12	Y	L	Shutoff path fault 5
ECM	523483	12	Y	E	Shutoff path fault 6
ECM	523483	12	Y	L	Shutoff path fault 6
ECM	523484	12	Y	E	Shutoff path fault 7
ECM	523484	12	Y	L	Shutoff path fault 7
ECM	523485	12	Y	E	Shutoff path fault 8
ECM	523485	12	Y	L	Shutoff path fault 8
ECM	523486	12	Y	E	Shutoff path fault 9
ECM	523486	12	Y	L	Shutoff path fault 9
ECM	523487	12	Y	E	Shutoff path fault 10
ECM	523487	12	Y	L	Shutoff path fault 10
ECM	523488	0	Y	E	Recognition error of engine speed
ECM	523488	0	Y	L	Recognition error of engine speed
ECM	523489	0	Y	E	Rail pressure fault (The actual rail pressure is too high during PRV limp home)
ECM	523489	0	Y	L	Rail pressure fault (The actual rail pressure is too high during PRV limp home)
ECM	523491	0	Y	E	Rail pressure fault (Injector B/F temperature error during PLV4 limp home)
ECM	523491	0	Y	L	Rail pressure fault (Injector B/F temperature error during PLV4 limp home)
ECM	524286	31	C	F	Aftertreatment 1 Diesel Oxidation Catalyst System- Special Instruction
ECM	524286	31	C	E	Aftertreatment 1 Diesel Oxidation Catalyst System- Special Instruction
ECM	524286	31	C	L	Aftertreatment 1 Diesel Oxidation Catalyst System- Special Instruction
ECM	5245	31	C	F	Aftertreatment SCR Operator Inducement Active - Condition Exists
ECM	5245	31	C	E	Aftertreatment SCR Operator Inducement Active - Condition Exists
ECM	5245	31	C	L	Aftertreatment SCR Operator Inducement Active - Condition Exists
ECM	5246	0	C	E	Aftertreatment SCR Operator Inducement - Data valid but above normal operational range - Most Severe level
ECM	5246	0	C	L	Aftertreatment SCR Operator Inducement - Data valid but above normal operational range - Most Severe level
ECM	5246	0	P	E	Aftertreatment SCR Operator Inducement Severity : High - most severe (3)
ECM	5246	0	P	L	Aftertreatment SCR Operator Inducement Severity : High - most severe (3)
ECM	5246	0	C	F	Aftertreatment SCR Operator Inducement - Data valid but above normal operational range - Most Severe level

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5246	15	P	E	Aftertreatment SCR Operator Inducement Severity: High - least severe(1)
ECM	5246	15	P	L	Aftertreatment SCR Operator Inducement Severity: High - least severe(1)
ECM	5246	16	P	E	Aftertreatment SCR Operator Inducement Severity: High - moderate severity (2)
ECM	5246	16	P	L	Aftertreatment SCR Operator Inducement Severity: High - moderate severity (2)
MCU	525	4	*	E	Ram Lock Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	525	4	*	L	Ram Lock Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	525	6	*	E	Ram Lock Solenoid-Current Above Normal Or Grounded Circuit
MCU	525	6	*	L	Ram Lock Solenoid-Current Above Normal Or Grounded Circuit
MCU	5260	9	*	L	DCT1 TIMEOUT Timeout of CAN-message DCT1 from display computer
MCU	527	4	*	E	Creep Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	527	4	*	L	Creep Solenoid-Voltage Below Normal, Or Shorted To Low Source
MCU	527	6	*	E	Creep Solenoid-Current Above Normal Or Grounded Circuit
MCU	527	6	*	L	Creep Solenoid-Current Above Normal Or Grounded Circuit
MCU	5270	9	*	L	JSS TIMEOUT Timeout of CAN-message JSS from Joystick Steering Controller
MCU	5271	9	*	L	DISPID1_TIMEOUT Timeout of CAN-message DISPID1 from display controller
MCU	5280	9	*	L	ENGINE CONF TIMEOUT Timeout of CAN-message ENGINE CONF from engine controller
ECM	5285	1	S	E	Boost temperature to high, not plausible
ECM	5285	1	S	L	Boost temperature to high, not plausible
ECM	5285	1	S	F	Boost temperature to high, not plausible
MCU	5290	9	*	L	EEC1 TIMEOUT Timeout of CAN-message EEC1 from EEC controller
ECM	5298	17	C	F	Aftertreatment Diesel Oxidation Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	5298	18	C	F	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	5298	17	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	5298	17	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	5298	17	P	E	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency : Low - least severe (1)
ECM	5298	17	P	L	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency : Low - least severe (1)
ECM	5298	18	C	E	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency - Data

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					Valid But Below Normal Operating Range - Moderately Severe Level
ECM	5298	18	C	L	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level
TCU	53	*	*	L	ABS TIMEOUT
TCU	53	*	*	F	ABS TIMEOUT
MCU	530	0	*	E	Travel Forward Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	530	0	*	L	Travel Forward Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	530	1	*	E	Travel Forward Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	530	1	*	L	Travel Forward Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	530	4	*	E	Travel Forward Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	530	4	*	L	Travel Forward Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	530	2	*	E	Travel Forward Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	530	2	*	L	Travel Forward Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	5300	9	*	L	EEC3 TIMEOUT Timeout of CAN-message EEC3 from EEC controller
MCU	531	0	*	E	Travel Reverse Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	531	0	*	L	Travel Reverse Pilot Pressure-Data Valid But Above Normal Operational Range
MCU	531	1	*	E	Travel Reverse Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	531	1	*	L	Travel Reverse Pilot Pressure-Data Valid But Below Normal Operational Range
MCU	531	4	*	E	Travel Reverse Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	531	4	*	L	Travel Reverse Pilot Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	531	2	*	E	Travel Reverse Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	531	2	*	L	Travel Reverse Pilot Pressure-Data Erratic, Intermittent Or Incorrect
MCU	5310	9	*	L	ENGINE SPEED LIMIT FUNCTION DURING GEARSHIFTS DOES NOT WORK PROPERLY
MCU	5313	12	*	L	INCHSENSOR-SIGNAL MISMATCH - the measured voltage from CCO and CCO2 signal don't match or are out of range
ECM	5319	31	C	E	Aftertreatment Diesel Particulate Filter Incomplete Regeneration - Condition Exists
ECM	5319	31	C	L	Aftertreatment Diesel Particulate Filter Incomplete Regeneration - Condition Exists
ECM	5319	31	P	E	Aftertreatment 1 Diesel Particulate Filter Incomplete Regeneration
ECM	5319	31	P	L	Aftertreatment 1 Diesel Particulate Filter Incomplete Regeneration

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5319	31	C	F	Aftertreatment Diesel Particulate Filter Incomplete Regeneration - Condition Exists
ECM	532	14	S	F	Increased idle due to other fault
ECM	532	14	S	E	Increased idle due to other fault
ECM	532	14	S	L	Increased idle due to other fault
ECM	5324	7	P	E	Engine Glow Plug 1 : Not Responding Properly
ECM	5324	7	P	L	Engine Glow Plug 1 : Not Responding Properly
ECM	5325	7	P	E	Engine Glow Plug 2 : Not Responding Properly
ECM	5325	7	P	L	Engine Glow Plug 2 : Not Responding Properly
ECM	5326	7	P	E	Engine Glow Plug 3 : Not Responding Properly
ECM	5326	7	P	L	Engine Glow Plug 3 : Not Responding Properly
ECM	5327	7	P	E	Engine Glow Plug 4 : Not Responding Properly
ECM	5327	7	P	L	Engine Glow Plug 4 : Not Responding Properly
ECM	5357	31	C	F	Engine Fuel Injection Quantity Error for Multiple Cylinders - Condition Exists
ECM	5357	31	C	E	Engine Fuel Injection Quantity Error for Multiple Cylinders - Condition Exists
ECM	5357	31	C	L	Engine Fuel Injection Quantity Error for Multiple Cylinders - Condition Exists
ECM	5357	31	P	E	Engine Fuel Injection Quantity Error for Multiple Cylinders
ECM	5357	31	P	L	Engine Fuel Injection Quantity Error for Multiple Cylinders
MCU	5360	2	*	L	CCO REQUEST SIGNAL CAN signal for CCO request is defective
Warning	537	*	*	F	(Warning) Transmission Oil Temperature High
Warning	537	*	*	L	(Warning) Transmission Oil Temperature High
Warning	538	*	*	L	(Warning) Transmission Check
Warning	538	*	*	F	(Warning) Transmission Check
ECM	5380	11	C	E	Engine Fuel Valve 1 - Root Cause Not Known
ECM	5380	11	C	L	Engine Fuel Valve 1 - Root Cause Not Known
ECM	5380	11	C	F	Engine Fuel Valve 1 - Root Cause Not Known
ECM	5380	13	C	F	Engine Fuel Valve 1 - Out of Calibration
ECM	5380	13	C	E	Engine Fuel Valve 1 - Out of Calibration
ECM	5380	13	C	L	Engine Fuel Valve 1 - Out of Calibration
MCU	5390	2	*	L	AEB REQUEST SIGNAL CAN signal for AEB request is defective
ECM	5392	31	P	E	Aftertreatment Diesel Exhaust Fluid Dosing Unit Loss of Prime
ECM	5392	31	P	L	Aftertreatment Diesel Exhaust Fluid Dosing Unit Loss of Prime
ECM	5394	5	C	F	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Current below normal or open circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5394	7	C	F	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Mechanical system not responding or out of adjustment
ECM	5394	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Circuit - Voltage Above Normal or Shorted to High Source
ECM	5394	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Circuit - Voltage Above Normal or Shorted to High Source
ECM	5394	5	C	E	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Current below normal or open circuit
ECM	5394	5	C	L	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Current below normal or open circuit
ECM	5394	7	C	E	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Mechanical system not responding or out of adjustment
ECM	5394	7	C	L	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Mechanical system not responding or out of adjustment
ECM	5394	2	C	F	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Data erratic, intermittent or incorrect
ECM	5394	2	C	E	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Data erratic, intermittent or incorrect
ECM	5394	2	C	L	Aftertreatment Diesel Exhaust Fluid Dosing Valve - Data erratic, intermittent or incorrect
ECM	5395	16	C	F	Engine Idle Fuel Quantity - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	5395	18	C	F	Engine Idle Fuel Quantity - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	5395	16	C	E	Engine Idle Fuel Quantity - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	5395	16	C	L	Engine Idle Fuel Quantity - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	5395	18	C	E	Engine Idle Fuel Quantity - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	5395	18	C	L	Engine Idle Fuel Quantity - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	5396	31	C	F	Engine Crankcase Ventilation Hose Disconnected - Condition Exists
ECM	5396	31	C	E	Engine Crankcase Ventilation Hose Disconnected - Condition Exists
ECM	5396	31	C	L	Engine Crankcase Ventilation Hose Disconnected - Condition Exists
ECM	5397	31	C	F	Aftertreatment Diesel Particulate Filter Regeneration too Frequent - Condition Exists
ECM	5397	31	C	E	Aftertreatment Diesel Particulate Filter Regeneration too Frequent - Condition Exists
ECM	5397	31	C	L	Aftertreatment Diesel Particulate Filter Regeneration too Frequent - Condition Exists
TCU	54	*	*	L	MDU1 TIMEOUT
TCU	54	*	*	F	MDU1 TIMEOUT
ECM	5401	2	S	E	EGR bypass actuator, faulty
ECM	5401	2	S	L	EGR bypass actuator, faulty
ECM	5401	3	S	E	EGR bypass actuator, short circuit high to +24V

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5401	3	S	L	EGR bypass actuator, short circuit high to +24V
ECM	5401	4	S	E	EGR bypass actuator, short circuit high to ground
ECM	5401	4	S	L	EGR bypass actuator, short circuit high to ground
ECM	5401	5	S	E	EGR bypass actuator, open load
ECM	5401	5	S	L	EGR bypass actuator, open load
ECM	5401	2	S	F	EGR bypass actuator, faulty
ECM	5401	3	S	F	EGR bypass actuator, short circuit high to +24V
ECM	5401	4	S	F	EGR bypass actuator, short circuit high to ground
ECM	5401	5	S	F	EGR bypass actuator, open load
ECM	5419	7	P	E	Engine Throttle Actuator #1 : Not Responding Properlyl
ECM	5419	7	P	L	Engine Throttle Actuator #1 : Not Responding Properlyl
ECM	5419	10	S	F	Throttle M42, control error
ECM	5419	10	S	E	Throttle M42, control error
ECM	5419	11	S	F	Throttle M42, internal fault
ECM	5419	10	S	L	Throttle M42, control error
ECM	5419	11	S	E	Throttle M42, internal fault
ECM	5419	12	S	F	Throttle M42, software execution error
ECM	5419	11	S	L	Throttle M42, internal fault
ECM	5419	12	S	E	Throttle M42, software execution error
ECM	5419	13	S	F	Throttle M42, unsuccessful learning of the reference position
ECM	5419	12	S	L	Throttle M42, software execution error
ECM	5419	13	S	E	Throttle M42, unsuccessful learning of the reference position
ECM	5419	14	S	F	Throttle M42 has detected a CAN timeout
ECM	5419	13	S	L	Throttle M42, unsuccessful learning of the reference position
ECM	5419	14	S	E	Throttle M42 has detected a CAN timeout
ECM	5419	16	S	F	Throttle M42, too high temperature
ECM	5419	14	S	L	Throttle M42 has detected a CAN timeout
ECM	5419	16	S	E	Throttle M42, too high temperature
ECM	5419	19	S	F	Throttle M42, CAN timeout
ECM	5419	16	S	L	Throttle M42, too high temperature
ECM	5419	19	S	E	Throttle M42, CAN timeout
ECM	5419	2	S	F	Throttle M42, CAN interface fault
ECM	5419	19	S	L	Throttle M42, CAN timeout
ECM	5419	2	S	E	Throttle M42, CAN interface fault
ECM	5419	3	S	F	Throttle M42, supply voltage fault
ECM	5419	2	S	L	Throttle M42, CAN interface fault
ECM	5419	3	S	E	Throttle M42, supply voltage fault
ECM	5419	31	S	F	Throttle M42, service mode enabled
ECM	5419	3	S	L	Throttle M42, supply voltage fault
ECM	5419	5	S	F	Throttle M42, current limited
ECM	5419	6	S	F	Throttle M42, overload
ECM	5419	31	S	E	Throttle M42, service mode enabled
ECM	5419	9	S	F	Throttle M42 has detected a CAN timeout

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5419	31	S	L	Throttle M42, service mode enabled
ECM	5419	9	S	E	Throttle M42 has detected a CAN timeout
ECM	5419	9	S	L	Throttle M42 has detected a CAN timeout
ECM	5419	5	P	E	Engine Throttle Actuator #1 : Current Below Normal
ECM	5419	5	P	L	Engine Throttle Actuator #1 : Current Below Normal
ECM	5419	5	S	E	Throttle M42, current limited
ECM	5419	5	S	L	Throttle M42, current limited
ECM	5419	6	P	E	Engine Throttle Actuator #1 : Current Above Normal
ECM	5419	6	P	L	Engine Throttle Actuator #1 : Current Above Normal
ECM	5419	6	S	E	Throttle M42, overload
ECM	5419	6	S	L	Throttle M42, overload
MCU	5420	2	*	L	STARTING GEAR SIGNAL CAN signal for starting gear is defective
ECM	5421	3	S	E	Wastegate actuator, short circuit to +24V
ECM	5421	3	S	L	Wastegate actuator, short circuit to +24V
ECM	5421	4	S	E	Wastegate actuator, short circuit
ECM	5421	4	S	L	Wastegate actuator, short circuit
ECM	5421	5	C	E	Engine Turbocharger 1 Wastegate Actuator 1 - Current Below Normal or Open Circuit
ECM	5421	5	C	L	Engine Turbocharger 1 Wastegate Actuator 1 - Current Below Normal or Open Circuit
ECM	5421	5	S	E	Wastegate actuator, short circuit to ground
ECM	5421	5	S	L	Wastegate actuator, short circuit to ground
ECM	5421	6	S	E	Wastegate actuator, short circuit
ECM	5421	6	S	L	Wastegate actuator, short circuit
ECM	5421	3	S	F	Wastegate actuator, short circuit to +24V
ECM	5421	4	S	F	Wastegate actuator, short circuit
ECM	5421	5	S	F	Wastegate actuator, short circuit to ground
ECM	5421	6	S	F	Wastegate actuator, short circuit
MCU	5430	2	*	L	ENGINGE TORQUE SIGNAL CAN signal for engine torque is defective
MCU	5431	9	*	L	ENGINE SPEED LIMIT FUNCTION DOES NOT WORK PROPERLY DURING STALL OR OUTPUT-SPEED LIMIT FUNCTION
MCU	5440	2	*	L	REFERENCE ENGINE TORQUE SIGNAL CAN signal for reference of engine torque is defective
MCU	5450	2	*	L	ACTUAL ENGINE TORQUE SIGNAL CAN signal for actual engine torque is defective
MCU	5470	2	*	L	EEC2 TIMEOUT Timeout of CAN-message EEC2 from EEC controller
MCU	5480	3	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH K1 the measured resistance value of the valve is out of limit, the voltage at K1 valve is too high.
MCU	5480	4	*	L	S.C. TO GROUND AT CLUTCH K1 the measured resistance value of the valve is out of limit, the voltage at K1 valve is too low.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	5480	5	*	L	O.C. AT CLUTCH K1 the measured resistance value of the valve is out of limit.
ECM	5484	3	C	F	Engine Fan Clutch 2 Control Circuit - Voltage above normal, or shorted to high source
ECM	5484	4	C	F	Engine Fan Clutch 2 Control Circuit - Voltage below normal, or shorted to low source
ECM	5484	3	C	E	Engine Fan Clutch 2 Control Circuit - Voltage above normal, or shorted to high source
ECM	5484	3	C	L	Engine Fan Clutch 2 Control Circuit - Voltage above normal, or shorted to high source
ECM	5484	4	C	E	Engine Fan Clutch 2 Control Circuit - Voltage below normal, or shorted to low source
ECM	5484	4	C	L	Engine Fan Clutch 2 Control Circuit - Voltage below normal, or shorted to low source
MCU	5490	3	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH K2 the measured resistance value of the valve is out of limit, the voltage at K2 valve is too high.
MCU	5490	4	*	L	S.C. TO GROUND AT CLUTCH K2 the measured resistance value of the valve is out of limit, the voltage at K2 valve is too low.
MCU	5490	5	*	L	O.C. AT CLUTCH K2 the measured resistance value of the valve is out of limit.
ECM	5491	3	C	F	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage above normal, or shorted to high source
ECM	5491	4	C	F	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage below normal, or shorted to low source
ECM	5491	7	C	F	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay - Mechanical system not responding or out of adjustment
ECM	5491	3	C	E	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage above normal, or shorted to high source
ECM	5491	3	C	L	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage above normal, or shorted to high source
ECM	5491	31	C	E	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay - Condition Exists
ECM	5491	31	C	L	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay - Condition Exists
ECM	5491	4	C	E	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage below normal, or shorted to low source
ECM	5491	4	C	L	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage below normal, or shorted to low source
ECM	5491	7	C	E	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay - Mechanical system not responding or out of adjustment
ECM	5491	7	C	L	Aftertreatment 1 Diesel Exhaust Fluid Line Heater Relay - Mechanical system not responding or out of adjustment
TCU	55	*	*	L	JSS TIMEOUT
TCU	55	*	*	F	FRONT WHEEL DRIVE STATUS TIMEOUT
MCU	5500	3	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH K3 the measured resistance value of the valve is out of limit, the voltage at K3 valve is too high.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	5500	4	*	L	S.C. TO GROUND AT CLUTCH K3 the measured resistance value of the valve is out of limit, the voltage at K3 valve is too low.
MCU	5500	5	*	L	O.C. AT CLUTCH K3 the measured resistance value of the valve is out of limit.
MCU	551	3	*	L	Clutch Cutoff Mode Selector Voltage – Voltage Above Normal, Or Shorted To High Source
MCU	551	4	*	L	Clutch Cutoff Mode Selector Voltage – Voltage Below Normal, Or Shorted To Low Source
MCU	551	3	*	F	Clutch Cutoff Mode Selector Circuit . Voltage Above Normal, or Shorted to High Source (or Open Circuit)
MCU	551	4	*	F	Clutch Cutoff Mode Selector Circuit . Voltage Below Normal, or Shorted to Low Source
MCU	5510	3	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH K4 the measured resistance value of the valve is out of limit, the voltage at K4 valve is too high.
MCU	5510	4	*	L	S.C. TO GROUND AT CLUTCH K4 the measured resistance value of the valve is out of limit, the voltage at K4 valve is too low.
MCU	5510	5	*	L	O.C. AT CLUTCH K4 the measured resistance value of the valve is out of limit.
MCU	552	3	*	L	Transmission Shift Mode Selector Voltage – Voltage Above Normal, Or Shorted To High Source
MCU	552	4	*	L	Transmission Shift Mode Selector Voltage – Voltage Below Normal, Or Shorted To Low Source
MCU	552	3	*	F	Transmission Shift Mode Selector Circuit . Voltage Above Normal, or Shorted to High Source (or Open Circuit)
MCU	552	4	*	F	Transmission Shift Mode Selector Circuit . Voltage Below Normal, or Shorted to Low Source
MCU	5520	3	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH KV the measured resistance value of the valve is out of limit, the voltage at KV valve is too high.
MCU	5520	4	*	L	S.C. TO GROUND AT CLUTCH KV the measured resistance value of the valve is out of limit, the voltage at KV valve is too low.
MCU	5520	5	*	L	O.C. AT CLUTCH KV the measured resistance value of the valve is out of limit.
MCU	5530	3	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH KR the measured resistance value of the valve is out of limit, the voltage at KR valve is too high.
MCU	5530	4	*	L	S.C. TO GROUND AT CLUTCH KR the measured resistance value of the valve is out of limit, the voltage at KR valve is too low.
MCU	5530	5	*	L	O.C. AT CLUTCH KR the measured resistance value of the valve is out of limit.
MCU	5535	3	*	L	S.C. TO BATTERY VOLTAGE AT DLM TRANSVERSAL OUTPUT TCU detected a wrong voltage at the output pin, that looks like a s.c. to battery voltage.
MCU	5535	4	*	L	S.C. TO GROUND AT DLM TRANSVERSAL OUTPUT TCU detected a wrong voltage at the output pin, that looks like a s.c. to vehicle ground.
MCU	5535	5	*	L	O.C. AT DLM TRANSVERSAL OUTPUT TCU detected a wrong voltage

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					at the output pin, that looks like a o.c. for this output pin
MCU	5540	3	*	L	S.C. TO BATTERY VOLTAGE AT CONVERTER CLUTCH (REGULATOR VALVE)
MCU	5540	4	*	L	S.C. TO GROUND AT CONVERTER CLUTCH (REGULATOR VALVE)
MCU	5540	5	*	L	O.C. AT CONVERTER CLUTCH (REGULATOR VALVE)
ECM	5543	12	S	E	Exhaust brake actuator, control fault
ECM	5543	12	S	L	Exhaust brake actuator, control fault
ECM	5543	13	S	E	Exhaust brake actuator, fault with stop position
ECM	5543	13	S	L	Exhaust brake actuator, fault with stop position
ECM	5543	15	S	E	Actuator for exhaust brake M4000 reports that the supply voltage is too low.
ECM	5543	15	S	L	Actuator for exhaust brake M4000 reports that the supply voltage is too low.
ECM	5543	16	S	E	Exhaust brake actuator, over temperature
ECM	5543	16	S	L	Exhaust brake actuator, over temperature
ECM	5543	18	S	E	The electric motor temperature for the actuator for exhaust brake M4000 has been above 125¡ÆC for more than 10 minutes or above 130¡ÆC for more than 3 seconds.
ECM	5543	18	S	L	The electric motor temperature for the actuator for exhaust brake M4000 has been above 125¡ÆC for more than 10 minutes or above 130¡ÆC for more than 3 seconds.
ECM	5543	2	S	E	Exhaust brake actuator, control fault
ECM	5543	2	S	L	Exhaust brake actuator, control fault
ECM	5543	21	S	E	Exhaust brake actuator, error
ECM	5543	21	S	L	Exhaust brake actuator, error
ECM	5543	3	S	E	Exhaust brake actuator, short circuit to +24V
ECM	5543	3	S	L	Exhaust brake actuator, short circuit to +24V
ECM	5543	4	S	E	Exhaust brake actuator, short circuit to ground
ECM	5543	4	S	L	Exhaust brake actuator, short circuit to ground
ECM	5543	5	S	E	Exhaust brake actuator, stuck in open position
ECM	5543	5	S	L	Exhaust brake actuator, stuck in open position
ECM	5543	6	S	E	Exhaust brake actuator, faulty
ECM	5543	6	S	L	Exhaust brake actuator, faulty
ECM	5543	7	S	E	Exhaust brake actuator, stuck in closed position
ECM	5543	7	S	L	Exhaust brake actuator, stuck in closed position
ECM	5543	9	S	E	The electric motor temperature for the actuator for exhaust brake M4000 has been above 125¡ÆC for more than 10 minutes or above 130¡ÆC for more than 3 seconds.
ECM	5543	9	S	L	The electric motor temperature for the actuator for exhaust brake M4000 has been above 125¡ÆC for more than 10 minutes or above 130¡ÆC for more than 3 seconds.
ECM	5543	12	S	F	Exhaust brake actuator, control fault

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5543	13	S	F	Exhaust brake actuator, fault with stop position
ECM	5543	16	S	F	Exhaust brake actuator, over temperature
ECM	5543	19	S	F	Exhaust brake actuator, CAN timeout
ECM	5543	2	S	F	Exhaust brake actuator, control fault
ECM	5543	21	S	F	Exhaust brake actuator, error
ECM	5543	3	S	F	Exhaust brake actuator, short circuit to +24V
ECM	5543	4	S	F	Exhaust brake actuator, short circuit to ground
ECM	5543	5	S	F	Exhaust brake actuator, stuck in open position
ECM	5543	6	S	F	Exhaust brake actuator, faulty
ECM	5543	7	S	F	Exhaust brake actuator, stuck in closed position
ECM	5543	19	S	E	Exhaust brake actuator, CAN timeout
ECM	5543	19	S	L	Exhaust brake actuator, CAN timeout
MCU	5560	3	*	L	S.C. TO BATTERY VOLTAGE AT RELAY REVERSE WARNING ALARM TCU detected a wrong voltage at the output pin, that looks like a s.c. to battery voltage
MCU	5560	4	*	L	S.C. TO GROUND AT RELAY REVERSE WARNING ALARM TCU detected a wrong voltage at the output pin, that looks like a s.c. to vehicle ground
MCU	5560	5	*	L	O.C. AT RELAY REVERSE WARNING ALARM TCU detected a wrong voltage at the output pin, that looks like a o.c. for this output pin
MCU	557	0	*	E	Brake Oil Charging Priority Pressure -Data Valid But Above Normal Operational Range
MCU	557	0	*	L	Brake Oil Charging Priority Pressure -Data Valid But Above Normal Operational Range
MCU	557	4	*	E	Brake Oil Charging Priority Pressure -Voltage Below Normal, Or Shorted To Low Source
MCU	557	4	*	L	Brake Oil Charging Priority Pressure -Voltage Below Normal, Or Shorted To Low Source
MCU	5570	3	*	L	S.C. TO BATTERY VOLTAGE AT RELAY STARTER INTERLOCK TCU detected a wrong voltage at the output pin, that looks like a s.c. to battery voltage
MCU	5570	4	*	L	S.C. TO GROUND AT RELAY STARTER INTERLOCK TCU detected a wrong voltage at the output pin, that looks like a s.c. to vehicle ground
MCU	5570	5	*	L	O.C. AT RELAY STARTER INTERLOCK TCU detected a wrong voltage at the output pin, that looks like a o.c. for this output pin
ECM	5571	7	C	E	High Pressure Common Rail Fuel Pressure Relief Valve - Mechanical system not responding or out of adjustment
ECM	5571	7	C	L	High Pressure Common Rail Fuel Pressure Relief Valve - Mechanical system not responding or out of adjustment
ECM	5571	7	P	E	High Pressure Common Rail Fuel Pressure Relief Valve : Not Responding Properly
ECM	5571	7	P	L	High Pressure Common Rail Fuel Pressure Relief Valve : Not Responding Properly

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5571	0	C	F	High Pressure Common Rail Fuel Pressure Relief Valve - Data valid but above normal operational range
ECM	5571	11	C	F	High Pressure Common Rail Fuel Pressure Relief Valve - Root Cause Not Known
ECM	5571	15	C	F	High Pressure Common Rail Fuel Pressure Relief Valve - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	5571	3	C	F	High Pressure Common Rail Fuel Pressure Relief Valve - Voltage Above Normal, or Shorted to High Source
ECM	5571	31	C	F	High Pressure Common Rail Fuel Pressure Relief Valve - Condition Exists
ECM	5571	4	C	F	High Pressure Common Rail Fuel Pressure Relief Valve - Voltage below normal, or shorted to low source
ECM	5571	7	C	F	High Pressure Common Rail Fuel Pressure Relief Valve - Mechanical system not responding or out of adjustment
ECM	5571	0	C	E	High Pressure Common Rail Fuel Pressure Relief Valve - Data valid but above normal operational range
ECM	5571	0	C	L	High Pressure Common Rail Fuel Pressure Relief Valve - Data valid but above normal operational range
ECM	5571	0	P	E	High Pressure Common Rail Fuel Pressure Relief Valve : High - most severe (3)
ECM	5571	0	P	L	High Pressure Common Rail Fuel Pressure Relief Valve : High - most severe (3)
ECM	5571	10	P	E	High Pressure Common Rail Fuel Pressure Relief Valve : Abnormal Rate of Change
ECM	5571	10	P	L	High Pressure Common Rail Fuel Pressure Relief Valve : Abnormal Rate of Change
ECM	5571	14	P	E	High Pressure Common Rail Fuel Pressure Relief Valve : Special Instruction
ECM	5571	14	P	L	High Pressure Common Rail Fuel Pressure Relief Valve : Special Instruction
ECM	5571	15	C	E	High Pressure Common Rail Fuel Pressure Relief Valve - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	5571	15	C	L	High Pressure Common Rail Fuel Pressure Relief Valve - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	5571	16	P	E	High Pressure Common Rail Fuel Pressure Relief Valve : High -moderate severity (2)
ECM	5571	16	P	L	High Pressure Common Rail Fuel Pressure Relief Valve : High -moderate severity (2)
ECM	5571	2	P	E	High Pressure Common Rail Fuel Pressure Relief Valve : Erratic, Intermittent, or Incorrect
ECM	5571	2	P	L	High Pressure Common Rail Fuel Pressure Relief Valve : Erratic, Intermittent, or Incorrect
ECM	5571	3	C	E	High Pressure Common Rail Fuel Pressure Relief Valve - Voltage Above Normal, or Shorted to High Source
ECM	5571	3	C	L	High Pressure Common Rail Fuel Pressure Relief Valve - Voltage Above Normal, or Shorted to High Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5571	4	C	E	High Pressure Common Rail Fuel Pressure Relief Valve - Voltage below normal, or shorted to low source
ECM	5571	4	C	L	High Pressure Common Rail Fuel Pressure Relief Valve - Voltage below normal, or shorted to low source
ECM	5571	11	C	E	High Pressure Common Rail Fuel Pressure Relief Valve - Root Cause Not Known
ECM	5571	11	C	L	High Pressure Common Rail Fuel Pressure Relief Valve - Root Cause Not Known
ECM	5571	31	C	E	High Pressure Common Rail Fuel Pressure Relief Valve - Condition Exists
ECM	5571	31	C	L	High Pressure Common Rail Fuel Pressure Relief Valve - Condition Exists
ECM	5576	14	P	E	Aftertreatment #1 Identification : Special Instruction
ECM	5576	14	P	L	Aftertreatment #1 Identification : Special Instruction
ECM	5576	2	P	E	Aftertreatment #1 Identification : Erratic, Intermittent, or Incorrect
ECM	5576	2	P	L	Aftertreatment #1 Identification : Erratic, Intermittent, or Incorrect
ECM	5576	8	P	E	Aftertreatment #1 Identification : Abnormal Frequency, Pulse Width, or Perod
ECM	5576	8	P	L	Aftertreatment #1 Identification : Abnormal Frequency, Pulse Width, or Perod
ECM	558	13	C	F	Voltage detected at idle validation on-idle circuit when voltage at throttle position circuit indicates the pedal is not at idle or voltage detected at idle validation off-idle circuit when voltage at throttle position circuit indicates the pedal is at rest.
ECM	558	19	C	F	Accelerator Pedal or Lever Idle Validation Switch - Received Network Data In Error
ECM	558	9	C	F	Accelerator Pedal or Lever Idle Validation Switch - Abnormal update rate
ECM	558	13	C	E	Accelerator Pedal or Lever Idle Validation Switch Circuit - Out of Calibration
ECM	558	13	C	L	Accelerator Pedal or Lever Idle Validation Switch Circuit - Out of Calibration
ECM	558	19	C	E	Accelerator Pedal or Lever Idle Validation Switch - Received Network Data In Error
ECM	558	19	C	L	Accelerator Pedal or Lever Idle Validation Switch - Received Network Data In Error
ECM	558	2	C	E	Accelerator Pedal or Lever Idle Validation Switch - Data erratic, intermittent or incorrect
ECM	558	2	C	L	Accelerator Pedal or Lever Idle Validation Switch - Data erratic, intermittent or incorrect
ECM	558	2	P	E	Accelerator Pedal 1 Low Idle Switch : Erratic, Intermittent, or Incorrect
ECM	558	2	P	L	Accelerator Pedal 1 Low Idle Switch : Erratic, Intermittent, or Incorrect
ECM	558	2	S	E	Low idle switch error state from coordinator
ECM	558	2	S	L	Low idle switch error state from coordinator
ECM	558	9	C	E	Accelerator Pedal or Lever Idle Validation Switch - Abnormal update rate

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	558	9	C	L	Accelerator Pedal or Lever Idle Validation Switch - Abnormal update rate
ECM	558	2	C	F	Accelerator Pedal or Lever Idle Validation Circuit - Data Erratic, Intermittent, or Incorrect
ECM	558	4	C	F	Accelerator Pedal or Lever Idle Validation Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	558	4	C	E	Accelerator Pedal or Lever Idle Validation Circuit- Voltage Below Normal, or Shorted to Low Source
ECM	558	4	C	L	Accelerator Pedal or Lever Idle Validation Circuit- Voltage Below Normal, or Shorted to Low Source
MCU	558	0	*	E	Differential Lock Pressure-Data Valid But Above Normal Operational Range
MCU	558	0	*	L	Differential Lock Pressure-Data Valid But Above Normal Operational Range
MCU	558	1	*	E	Differential Lock Pressure-Data Valid But Below Normal Operational Range
MCU	558	1	*	L	Differential Lock Pressure-Data Valid But Below Normal Operational Range
MCU	558	4	*	E	Differential Lock Pressure-Voltage Below Normal, Or Shorted To Low Source
MCU	558	4	*	L	Differential Lock Pressure-Voltage Below Normal, Or Shorted To Low Source
ECM	558	2	S	F	Low idle switch error state from coordinator
MCU	558	0	*	F	Differential Lock Pressure Sensor Data Above Normal Range (or Open Circuit)
MCU	558	1	*	F	Differential Lock Pressure Sensor Data Below Normal Range
MCU	558	2	*	E	Differential Lock Pressure-Data Erratic, Intermittent Or Incorrect
MCU	558	2	*	F	Differential Lock Pressure Sensor Data Error
MCU	558	2	*	L	Differential Lock Pressure-Data Erratic, Intermittent Or Incorrect
MCU	558	4	*	F	Differential Lock Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	5585	18	C	F	Engine Injector Metering Rail 1 Cranking Pressure - Data Valid But Below Normal Operating Range - Mo
ECM	5585	18	C	E	Engine Injector Metering Rail 1 Cranking Pressure - Data Valid But Below Normal Operating Range - Mo
ECM	5585	18	C	L	Engine Injector Metering Rail 1 Cranking Pressure - Data Valid But Below Normal Operating Range - Mo
ECM	5588	14	P	E	Propretary Network #2 : Special Instruction
ECM	5588	14	P	L	Propretary Network #2 : Special Instruction
ECM	559	10	S	F	Accelerator pedal/kick down switch, EMS and coordinator do not agree
ECM	559	10	S	E	Accelerator pedal/kick down switch, EMS and coordinator do not agree
ECM	559	2	S	F	Kickdown signal defect via CAN
ECM	559	10	S	L	Accelerator pedal/kick down switch, EMS and coordinator do not agree
ECM	559	2	S	E	Kickdown signal defect via CAN
ECM	559	9	S	F	Accelerator pedal kickdown CAN message, faulty

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	559	2	S	L	Kickdown signal defect via CAN
ECM	559	9	S	E	Accelerator pedal kickdown CAN message, faulty
ECM	559	9	S	L	Accelerator pedal kickdown CAN message, faulty
TCU	56	*	*	E	Travel alarm buzzer circuit is shorted to battery(+)
TCU	56	*	*	L	ENGINE CONF TIMEOUT
TCU	56	*	*	F	ENGINE CONF TIMEOUT
ECM	5603	31	C	E	Cruise Control Disable Command - Condition Exists
ECM	5603	31	C	F	Cruise Control Disable Command - Condition Exists
ECM	5603	31	C	L	Cruise Control Disable Command - Condition Exists
ECM	5603	9	C	E	Cruise Control Disable Command - Abnormal update rate
ECM	5603	9	C	F	Cruise Control Disable Command - Abnormal update rate
ECM	5603	9	C	L	Cruise Control Disable Command - Abnormal update rate
ECM	5605	31	C	E	Cruise Control Pause Command - Condition Exists
ECM	5605	31	C	F	Cruise Control Pause Command - Condition Exists
ECM	5605	31	C	L	Cruise Control Pause Command - Condition Exists
ECM	5607	7	C	E	Cruise Control System Command State - Mechanical System Not Responding or Out of Adjustment
ECM	5607	7	C	L	Cruise Control System Command State - Mechanical System Not Responding or Out of Adjustment
ECM	5625	2	C	F	Engine Exhaust Back Pressure Regulator Position - Data Erratic, Intermittent or Incorrect
ECM	5625	3	C	F	Engine Exhaust Back Pressure Regulator Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source
ECM	5625	4	C	F	Engine Exhaust Back Pressure Regulator Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	5625	2	C	E	Engine Exhaust Back Pressure Regulator Position - Data Erratic, Intermittent or Incorrect
ECM	5625	2	C	L	Engine Exhaust Back Pressure Regulator Position - Data Erratic, Intermittent or Incorrect
ECM	5625	3	C	E	Engine Exhaust Back Pressure Regulator Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source
ECM	5625	3	C	L	Engine Exhaust Back Pressure Regulator Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source
ECM	5625	3	P	E	Engine Exhaust Back Pressure Regulator Position : Voltage Above Normal
ECM	5625	3	P	L	Engine Exhaust Back Pressure Regulator Position : Voltage Above Normal
ECM	5625	4	C	E	Engine Exhaust Back Pressure Regulator Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	5625	4	C	L	Engine Exhaust Back Pressure Regulator Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5625	4	P	E	Engine Exhaust Back Pressure Regulator Position : Voltage Below Normal
ECM	5625	4	P	L	Engine Exhaust Back Pressure Regulator Position : Voltage Below Normal
ECM	5626	13	C	F	Engine Exhaust Back Pressure Regulator - Out of Calibration
ECM	5626	7	C	E	Engine Exhaust Back Pressure Regulator - Mechanical System Not Responding or Out of Adjustment
ECM	5626	7	C	L	Engine Exhaust Back Pressure Regulator - Mechanical System Not Responding or Out of Adjustment
ECM	5626	13	C	E	Engine Exhaust Back Pressure Regulator - Out of Calibration
ECM	5626	13	C	L	Engine Exhaust Back Pressure Regulator - Out of Calibration
ECM	563	9	C	F	Anti-Lock Braking (ABS) Controller - Abnormal update rate
ECM	563	31	C	F	Anti-Lock Braking (ABS) Active - Condition Exists
ECM	563	9	C	E	Anti-Lock Braking (ABS) Controller - Abnormal update rate
ECM	563	9	C	L	Anti-Lock Braking (ABS) Controller - Abnormal update rate
ECM	563	31	C	E	Anti-Lock Braking (ABS) Active - Condition Exists
ECM	563	31	C	L	Anti-Lock Braking (ABS) Active - Condition Exists
ECM	5631	0	P	E	Engine Throttle Valve 1 Differential Pressure
ECM	5631	0	P	L	Engine Throttle Valve 1 Differential Pressure
MCU	5660	2	*	L	SLIPPAGE AT CLUTCH K1 TCU calculates a differential speed at closed clutch K1. If this calculated value is out of range, TCU interprets this as slipping clutch.
MCU	5665	2	*	L	SLIPPAGE AT CLUTCH K2 TCU calculates a differential speed at closed clutch K2. If this calculated value is out of range, TCU interprets this as slipping clutch.
Warning	567	*	*	F	(Warning) WIF(Water In Fuel)
MCU	5670	2	*	L	SLIPPAGE AT CLUTCH K3 TCU calculates a differential speed at closed clutch K3. If this calculated value is out of range, TCU interprets this as slipping clutch.
MCU	5675	2	*	L	SLIPPAGE AT CLUTCH K4 TCU calculated a difference speed at TCU calculates a differential speed at closed clutch K4. If this calculated value is out of range, TCU interprets this as slipping clutch.
MCU	5680	2	*	L	SLIPPAGE AT CLUTCH KV TCU calculates a differential speed at closed clutch KV. If this calculated value is out of range, TCU interprets this as slipping clutch.
MCU	5685	2	*	L	SLIPPAGE AT CLUTCH KR TCU calculates a differential speed at closed clutch KR. If this calculated value is out of range, TCU interprets this as slipping clutch.
TCU	57	*	*	L	EEC1 TIMEOUT
TCU	57	*	*	F	EEC1 TIMEOUT
MCU	5700	0	*	L	OVERTEMP SUMP TCU measured a temperature in the oil sump that is over the allowed threshold.
ECM	5706	3	S	E	Fault in reductant pump control.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5706	3	S	L	Fault in reductant pump control.
ECM	5706	4	S	E	Fault in reductant pump control.
ECM	5706	4	S	L	Fault in reductant pump control.
ECM	5706	5	P	E	Aftertreatment #1 Diesel Exhaust Fluid Pump Heater : Current Below Normal
ECM	5706	5	P	L	Aftertreatment #1 Diesel Exhaust Fluid Pump Heater : Current Below Normal
ECM	5706	6	P	E	Aftertreatment #1 Diesel Exhaust Fluid Pump Heater : Current Above Normal
ECM	5706	6	P	L	Aftertreatment #1 Diesel Exhaust Fluid Pump Heater : Current Above Normal
ECM	5706	6	S	E	Fault in reductant pump control.
ECM	5706	6	S	L	Fault in reductant pump control.
ECM	5706	3	S	F	Reductant pump control
ECM	5706	4	S	F	Reductant pump control
ECM	5706	6	S	F	Reductant pump control
MCU	5730	0	*	L	DIFFERENTIAL PRESSURE OIL FILTER TCU measured a voltage at differential pressure switch out of the allowed range
MCU	5740	2	*	L	SLIPPAGE AT CONVERTER LOCK-UP CLUTCH TCU calculates a differential speed at closed converter lock-up clutch. If this calculated value is out of range, TCU interprets this as slipping clutch.
ECM	5741	2	C	F	Aftertreatment 1 Outlet Soot - Data erratic, intermittent or incorrect
ECM	5741	3	C	F	Aftertreatment 1 Outlet Soot Sensor - Voltage Above Normal, or Shorted to High Source
ECM	5741	4	C	F	Aftertreatment 1 Outlet Soot Sensor - Voltage below normal, or shorted to low source
ECM	5741	2	C	E	Aftertreatment 1 Outlet Soot - Data erratic, intermittent or incorrect
ECM	5741	2	C	L	Aftertreatment 1 Outlet Soot - Data erratic, intermittent or incorrect
ECM	5741	3	C	E	Aftertreatment 1 Outlet Soot Sensor - Voltage Above Normal, or Shorted to High Source
ECM	5741	3	C	L	Aftertreatment 1 Outlet Soot Sensor - Voltage Above Normal, or Shorted to High Source
ECM	5741	4	C	E	Aftertreatment 1 Outlet Soot Sensor - Voltage below normal, or shorted to low source
ECM	5741	4	C	L	Aftertreatment 1 Outlet Soot Sensor - Voltage below normal, or shorted to low source
ECM	5742	11	C	F	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Root Cause Not Known
ECM	5742	12	C	F	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Bad intelligent device or component
ECM	5742	16	C	F	Aftertreatment Diesel Particulate Filter Temperature Sensor Module- Data Valid But Above Normal Operating Range
ECM	5742	3	C	F	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage Above Normal, or Shorted to high source
ECM	5742	4	C	F	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage below normal, or shorted to low source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5742	9	C	F	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Abnormal update rate
ECM	5742	3	C	E	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage Above Normal, or Shorted to high source
ECM	5742	3	C	L	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage Above Normal, or Shorted to high source
ECM	5742	4	C	E	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage below normal, or shorted to low source
ECM	5742	4	C	L	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage below normal, or shorted to low source
ECM	5742	11	C	E	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Root Cause Not Known
ECM	5742	11	C	L	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Root Cause Not Known
ECM	5742	12	C	E	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Bad intelligent device or component
ECM	5742	12	C	L	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Bad intelligent device or component
ECM	5742	16	C	E	Aftertreatment Diesel Particulate Filter Temperature Sensor Module- Data Valid But Above Normal Operating Range
ECM	5742	16	C	L	Aftertreatment Diesel Particulate Filter Temperature Sensor Module- Data Valid But Above Normal Operating Range
ECM	5742	9	C	E	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Abnormal update rate
ECM	5742	9	C	L	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Abnormal update rate
ECM	5743	11	C	F	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Root Cause Not Known
ECM	5743	12	C	F	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Bad intelligent device or component
ECM	5743	16	C	F	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Data Valid But Above Normal
ECM	5743	3	C	F	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Voltage Above Normal, or Shorted to high source
ECM	5743	4	C	F	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Voltage below normal, or Shorted to low source
ECM	5743	9	C	F	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Abnormal update rate
ECM	5743	2	S	E	Reductant tank temperature sensor, not plausible
ECM	5743	2	S	L	Reductant tank temperature sensor, not plausible
ECM	5743	3	C	E	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Voltage Above Normal, or Shorted to high source
ECM	5743	3	C	L	Aftertreatment Selective Catalytic Reduction Temperature Sensor Mod-

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					ule - Voltage Above Normal, or Shorted to high source
ECM	5743	4	C	E	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Voltage below normal, or Shorted to low source
ECM	5743	4	C	L	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Voltage below normal, or Shorted to low source
ECM	5743	4	S	E	Reductant tank temperature sensor, short circuit
ECM	5743	4	S	L	Reductant tank temperature sensor, short circuit
ECM	5743	5	S	E	Reductant tank temperature sensor, open load
ECM	5743	5	S	L	Reductant tank temperature sensor, open load
ECM	5743	11	C	E	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Root Cause Not Known
ECM	5743	11	C	L	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Root Cause Not Known
ECM	5743	12	C	E	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Bad intelligent device or component
ECM	5743	12	C	L	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Bad intelligent device or component
ECM	5743	2	S	F	Reductant tank temperature sensor, not plausible
ECM	5743	4	S	F	Reductant tank temperature sensor, short circuit
ECM	5743	5	S	F	Reductant tank temperature sensor, open load
ECM	5743	16	C	E	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Data Valid But Above Normal
ECM	5743	16	C	L	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Data Valid But Above Normal
ECM	5743	9	C	E	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Abnormal update rate
ECM	5743	9	C	L	Aftertreatment Selective Catalytic Reduction Temperature Sensor Module - Abnormal update rate
ECM	5745	18	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Data Valid But Below Normal Operating Range
ECM	5745	3	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Voltage Above Normal, or Shorted to High
ECM	5745	4	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Voltage below normal, or shorted to low source
ECM	5745	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Voltage Above Normal, or Shorted to High
ECM	5745	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Voltage Above Normal, or Shorted to High
ECM	5745	3	S	E	SCR water valve, short circuit to battery
ECM	5745	3	S	L	SCR water valve, short circuit to battery
ECM	5745	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Voltage below normal, or shorted to low source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5745	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Voltage below normal, or shorted to low source
ECM	5745	5	S	E	SCR water valve, open load
ECM	5745	5	S	L	SCR water valve, open load
ECM	5745	17	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Data Valid But Below Normal Operating Range
ECM	5745	17	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Data Valid But Below Normal Operating Range
ECM	5745	3	S	F	SCR water valve, short circuit to battery
ECM	5745	5	S	F	SCR water valve, open load
ECM	5745	18	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Data Valid But Below Normal Operating Range
ECM	5745	18	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater - Data Valid But Below Normal Operating Range
MCU	5745	15	*	L	OVERSPEED OUTPUT TCU messures an transmission output speed above the defined threshold
ECM	5746	3	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay - Voltage Above Normal, or Shorted to high source
ECM	5746	4	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay - Voltage below normal, or shorted to low source
ECM	5746	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay - Voltage Above Normal, or Shorted to high source
ECM	5746	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay - Voltage Above Normal, or Shorted to high source
ECM	5746	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay - Voltage below normal, or shorted to low source
ECM	5746	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay - Voltage below normal, or shorted to low source
ECM	5747	10	C	F	Aftertreatment 1 Outlet Soot Sensor Heater - Abnormal rate of change
ECM	5747	3	C	F	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage Above Normal, or Shorted to High Source
ECM	5747	4	C	F	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage below normal, or shorted to low source
ECM	5747	10	C	E	Aftertreatment 1 Outlet Soot Sensor Heater - Abnormal rate of change
ECM	5747	10	C	L	Aftertreatment 1 Outlet Soot Sensor Heater - Abnormal rate of change
ECM	5747	3	C	E	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage Above Normal, or Shorted to High Source
ECM	5747	3	C	L	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage Above Normal, or Shorted to High Source
ECM	5747	4	C	E	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage below normal, or shorted to low source
ECM	5747	4	C	L	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage below normal, or shorted to low source
MCU	5751	0	*	L	ENGINE TORQUE OR ENGINE POWER OVERLOAD TCU calcu-

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					lates an engine torque or engine power above the defined thresholds
MCU	5752	0	*	L	TRANSMISSION OUTPUT TORQUE OVERLOAD TCU calculates an transmission output torque above the defined threshold
MCU	5755	15	*	L	TRANSMISSION INPUT TORQUE OVERLOAD TCU calculates an transmission input torque above the defined threshold.
ECM	5758	11	P	E	Aftertreatment #1 Intake Gas Sensor Power Supply : Other Failure Mode
ECM	5758	11	P	L	Aftertreatment #1 Intake Gas Sensor Power Supply : Other Failure Mode
ECM	5759	11	P	E	Aftertreatment #1 Outlet Gas Sensor Power Supply : Other Failure Mode
ECM	5759	11	P	L	Aftertreatment #1 Outlet Gas Sensor Power Supply : Other Failure Mode
MCU	5760	0	*	L	OVERTEMP CONVERTER OUTPUT TCU measured a oil temperature at the converter ouput that is over the allowed threshold.
MCU	5770	3	*	L	S.C. TO BATTERY VOLTAGE AT JOYSTICK STATUS INDICATOR TCU detected a wrong voltage at the output pin, that looks like a s.c. to battery voltage
MCU	5770	4	*	L	S.C. TO GROUND AT JOYSTICK STATUS INDICATOR TCU detected a wrong voltage at the output pin, that looks like a s.c. to vehicle ground
MCU	5770	5	*	L	O.C. AT JOYSTICK STATUS INDICATOR TCU detected a wrong voltage at the output pin, that looks like a o.c. for this output pin
ECM	5793	9	C	F	Desired Engine Fueling State - Abnormal Update Rate
ECM	5793	9	C	E	Desired Engine Fueling State - Abnormal Update Rate
ECM	5793	9	C	L	Desired Engine Fueling State - Abnormal Update Rate
ECM	5797	11	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Root Cause Not Known
ECM	5797	11	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Root Cause Not Known
ECM	5797	11	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Root Cause Not Known
ECM	5797	12	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Bad intelligent device
ECM	5797	16	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Data Valid But Above Normal Operating Range – Moderately Severe Level
ECM	5797	3	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Above Normal, or shorted to high source
ECM	5797	4	C	F	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Voltage below normal, or shorted to low source
ECM	5797	12	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Bad intelligent device
ECM	5797	12	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Bad intelligent device
ECM	5797	16	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					Module - Data Valid But Above Normal Operating Range – Moderately Severe Level
ECM	5797	16	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Data Valid But Above Normal Operating Range – Moderately Severe Level
ECM	5797	3	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Above Normal, or shorted to high source
ECM	5797	3	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Above Normal, or shorted to high source
ECM	5797	4	C	E	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Voltage below normal, or shorted to low source
ECM	5797	4	C	L	Aftertreatment Warm Up Diesel Oxidation Catalyst Temperature Sensor Module - Voltage below normal, or shorted to low source
ECM	5798	10	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature - Abnormal Rate of Change
ECM	5798	2	C	F	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature - Data erratic, intermittent or incorrect
ECM	5798	2	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature - Data erratic, intermittent or incorrect
ECM	5798	2	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature - Data erratic, intermittent or incorrect
ECM	5798	10	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature - Abnormal Rate of Change
ECM	5798	10	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature - Abnormal Rate of Change
TCU	58	*	*	E	Boom priority solenoid circuit is shorted to battery(+)
TCU	58	*	*	L	EEC3 TIMEOUT
TCU	58	*	*	F	EEC3 TIMEOUT
MCU	5800	9	*	L	ERC1 TIMEOUT Timeout of CAN-message ERC1 from EEC controller
MCU	5810	3	*	L	S.C. TO BATTERY VOLTAGE AT POWER SUPPLY FOR SENSORS TCU measures more than 6V at the pin AU1 (5V sensor supply)
MCU	5810	4	*	L	S.C. TO GROUND AT POWER SUPPLY FOR SENSORS TCU measures less than 4V at the pin AU1 (5V sensor supply)
MCU	5820	4	*	L	LOW VOLTAGE AT BATTERY measured voltage at power supply is lower than 10 V (12V device) / lower than 18 V (24V device)
ECM	5826	16	P	E	Emission Control System Operator Inducement Severity: High -moderate severity (2)
ECM	5826	16	P	L	Emission Control System Operator Inducement Severity: High -moderate severity (2)
ECM	5826	15	P	E	Emission Control System Operator Inducement Severity: High -least severe (1)
ECM	5826	15	P	L	Emission Control System Operator Inducement Severity: High -least severe (1)
MCU	5830	2	*	L	ERROR AT VALVE POWER SUPPLY VPS1 TCU switched on VPS1 and measured VPS1 is off or TCU

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					switched off VPS1 and measured VPS1 is still on
MCU	5830	3	*	L	HIGH VOLTAGE AT BATTERY measured voltage at power supply is higher than 18 V (12V device) / higher than 32.5 V (24V device)
ECM	5835	3	C	E	Aftertreatment 1 Outlet Soot Sensor - Voltage Above Normal, or Shorted to High Source
ECM	5835	3	C	L	Aftertreatment 1 Outlet Soot Sensor - Voltage Above Normal, or Shorted to High Source
ECM	5835	4	C	E	Aftertreatment 1 Outlet Soot Sensor - Voltage below normal, or shorted to low source
ECM	5835	4	C	L	Aftertreatment 1 Outlet Soot Sensor - Voltage below normal, or shorted to low source
ECM	5838	31	C	F	EGR Valve Malfunction - Condition Exists
ECM	5838	31	C	E	EGR Valve Malfunction - Condition Exists
ECM	5838	31	C	L	EGR Valve Malfunction - Condition Exists
ECM	5839	31	C	F	Diesel Exhaust Fluid Consumption Malfunction - Condition Exists
ECM	5839	31	C	E	Diesel Exhaust Fluid Consumption Malfunction - Condition Exists
ECM	5839	31	C	L	Diesel Exhaust Fluid Consumption Malfunction - Condition Exists
MCU	5840	2	*	L	ERROR VALVE POWER SUPPLY VPS2 TCU switched on VPS2 and measured VPS2 is off or TCU switched off
ECM	5840	31	C	F	Diesel Exhaust Fluid Dosing Malfunction - Condition Exists
ECM	5840	31	C	E	Diesel Exhaust Fluid Dosing Malfunction - Condition Exists
ECM	5840	31	C	L	Diesel Exhaust Fluid Dosing Malfunction - Condition Exists
ECM	5841	1	S	E	SCR main unit, reductant quality too low
ECM	5841	1	S	L	SCR main unit, reductant quality too low
ECM	5841	31	C	F	Diesel Exhaust Fluid Quality Malfunction - Condition Exists
ECM	5841	31	C	E	Diesel Exhaust Fluid Quality Malfunction - Condition Exists
ECM	5841	31	C	L	Diesel Exhaust Fluid Quality Malfunction - Condition Exists
ECM	5841	1	S	F	SCR main unit, reductant quality too low
ECM	5842	31	C	F	SCR Monitoring System Malfunction - Condition Exists
ECM	5842	14	C	E	SCR Monitoring System Malfunction - Special Instructions
ECM	5842	14	C	L	SCR Monitoring System Malfunction - Special Instructions
ECM	5842	31	C	E	SCR Monitoring System Malfunction - Condition Exists
ECM	5842	31	C	L	SCR Monitoring System Malfunction - Condition Exists
ECM	5848	12	C	E	Aftertreatment 1 SCR Intermediate NH3 Sensor - Bad Intelligent Device or Component
ECM	5848	12	C	L	Aftertreatment 1 SCR Intermediate NH3 Sensor - Bad Intelligent Device or Component
ECM	5848	13	C	E	Aftertreatment 1 SCR Intermediate NH3 Sensor - Out of Calibration

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	5848	13	C	L	Aftertreatment 1 SCR Intermediate NH3 Sensor - Out of Calibration
ECM	5848	4	C	E	Aftertreatment 1 SCR Intermediate NH3 Sensor - Voltage Below Normal or Shorted to Low Source
ECM	5848	4	C	L	Aftertreatment 1 SCR Intermediate NH3 Sensor - Voltage Below Normal or Shorted to Low Source
ECM	5851	16	C	E	Aftertreatment 1 SCR Intermediate NH3 Gas Sensor Power Supply - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	5851	16	C	L	Aftertreatment 1 SCR Intermediate NH3 Gas Sensor Power Supply - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	5851	18	C	E	Aftertreatment 1 SCR Intermediate NH3 Gas Sensor Power Supply - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	5851	18	C	L	Aftertreatment 1 SCR Intermediate NH3 Gas Sensor Power Supply - Data Valid But Below Normal Operating Range - Moderately Severe Level
MCU	5860	3	*	L	S.C. TO BATTERY VOLTAGE AT DISPLAY OUTPUT TCU sends data to the display and measures allways a high voltage level on the connector
MCU	5860	4	*	L	S.C. TO GROUND AT DISPLAY OUTPUT TCU sends data to the display and measures allways a high voltage level on the connector
MCU	5890	2	*	L	GENERAL EEPROM FAULT TCU can't read non volatile memory
TCU	59	*	*	L	ENGINE SPEED LIMIT FUNCTION DOES NOT WORK PROPERLY
TCU	59	*	*	F	TEST MODE SIGNAL
ECM	590	2	S	F	Status signal which indicates the current mode of operation of the idle shutdown timer system.
MCU	5900	13	*	L	CONFIGURATION LOST TCU has lost the correct configuration and can't control the transmission.
MCU	5910	13	*	L	APPLICATION ERROR something of this application is wrong
ECM	593	31	P	E	Engine Idle Shutdown has Shutdown Engine
ECM	593	31	P	L	Engine Idle Shutdown has Shutdown Engine
MCU	5930	7	*	L	CLUTCH FAILURE AEB was not able to adjust clutch filling parameters
MCU	5930	13	*	L	CLUTCH ADJUSTMENT DATA LOST OR INCHPEDAL CALIBRATION DATA LOST TCU was not able to read correct clutch adjustment parameters
ECM	594	31	P	E	Engine Idle Shutdown Driver Alert Mode
ECM	594	31	P	L	Engine Idle Shutdown Driver Alert Mode
MCU	5940	11	*	L	SUBSTITUTE CLUTCH CONTROL
ECM	596	13	C	F	Cruise Control Enable Switch - Out of Calibration
ECM	596	2	C	F	Cruise Control Enable Switch - Data erratic, intermittent or incorrect
ECM	596	7	C	F	Cruise Control Enable Switch - Mechanical system not responding or out of adjustment
ECM	596	13	C	E	Cruise Control Enable Switch - Out of Calibration
ECM	596	13	C	L	Cruise Control Enable Switch - Out of Calibration

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	596	2	C	E	Cruise Control Enable Switch - Data erratic, intermittent or incorrect
ECM	596	2	C	L	Cruise Control Enable Switch - Data erratic, intermittent or incorrect
ECM	596	7	C	E	Cruise Control Enable Switch - Mechanical system not responding or out of adjustment
ECM	596	7	C	L	Cruise Control Enable Switch - Mechanical system not responding or out of adjustment
ECM	5965	5	P	E	Aftertreatment #1 DEF Control Module Relay Control : Current Below Normal
ECM	5965	5	P	L	Aftertreatment #1 DEF Control Module Relay Control : Current Below Normal
ECM	5965	6	P	E	Aftertreatment #1 DEF Control Module Relay Control : Current Above Normal
ECM	5965	6	P	L	Aftertreatment #1 DEF Control Module Relay Control : Current Above Normal
ECM	5966	5	P	E	Aftertreatment #1 DEF Control Module Power Supply : Current Below Normal
ECM	5966	5	P	L	Aftertreatment #1 DEF Control Module Power Supply : Current Below Normal
ECM	5966	6	P	E	Aftertreatment #1 DEF Control Module Power Supply : Current Above Normal
ECM	5966	6	P	L	Aftertreatment #1 DEF Control Module Power Supply : Current Above Normal
ECM	597	3	C	F	Brake Switch Circuit - Voltage above normal, or shorted to high source
ECM	597	4	C	F	Brake Switch Circuit - Voltage below normal, or shorted to low source
ECM	597	3	C	E	Brake Switch Circuit - Voltage above normal, or shorted to high source
ECM	597	3	C	L	Brake Switch Circuit - Voltage above normal, or shorted to high source
ECM	597	4	C	E	Brake Switch Circuit - Voltage below normal, or shorted to low source
ECM	597	4	C	L	Brake Switch Circuit - Voltage below normal, or shorted to low source
ECM	597	2	S	E	Brake pedal signal defect via CAN
ECM	597	2	S	F	Brake pedal signal defect via CAN
ECM	597	2	S	L	Brake pedal signal defect via CAN
ECM	598	19	S	F	CAN-signal or engine shut-down command from OPC for automatic clutch failure, timeout
ECM	598	19	S	E	CAN-signal or engine shut-down command from OPC for automatic clutch failure, timeout
ECM	598	19	S	L	CAN-signal or engine shut-down command from OPC for automatic clutch failure, timeout
ECM	598	2	S	E	Clutch pedal signal defect via CAN
ECM	598	2	S	F	Clutch pedal signal defect via CAN
ECM	598	2	S	L	Clutch pedal signal defect via CAN
ECM	598	7	S	E	Excessive clutch slip
ECM	598	7	S	F	Excessive clutch slip
ECM	598	7	S	L	Excessive clutch slip
ECM	599	2	C	F	Cruise Control Set Switch - Data erratic, intermittent or incorrect
ECM	599	2	C	E	Cruise Control Set Switch - Data erratic, intermittent or incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	599	2	C	L	Cruise Control Set Switch - Data erratic, intermittent or incorrect
TCU	5A	*	*	L	PARKBRAKE STATUS SIGNAL
TCU	5A	*	*	F	PARKBRAKE STATUS SIGNAL
TCU	5B	*	*	L	SHIFT QUALITY SEL SIGNAL
TCU	5B	*	*	F	SHIFT QUALITY SEL SIGNAL
TCU	5C	*	*	L	AUTO DOWNSHIFT SIGNAL
TCU	5C	*	*	F	AUTO DOWNSHIFT SIGNAL
TCU	5D	*	*	L	MANUAL DOWNSHIFT SIGNAL
TCU	5D	*	*	F	MANUAL DOWNSHIFT SIGNAL
TCU	5E	*	*	L	CCO REQUEST SIGNAL
TCU	5E	*	*	F	CCO REQUEST SIGNAL
TCU	5F	*	*	L	SHIFT LEVER SIGNAL
TCU	5F	*	*	F	SHIFT LEVER SIGNAL

7 SPN 6~

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	6	*	*	E	Short circuit in travel boost solenoid system
TCU	60	*	*	L	ADDITIONAL BRAKE STATUS SIGNAL
TCU	60	*	*	F	ADDITIONAL BRAKE STATUS SIGNAL
ECM	608	2	C	F	SAE J1587/J1922 data link - can not transmit. Communication between the ECM and another device on the J1587/J1922 data link has been lost.
ECM	608	9	C	F	Data Communication error over the J1587 data link Circuit
ECM	609	2	C	F	Engine Control Module Identification Input State Error
ECM	609	2(J1587)	C	F	Error detected in the control synchronization of multiple engines.
TCU	61	*	*	L	AEB REQUEST SIGNAL
TCU	61	*	*	F	AEB REQUEST SIGNAL
ECM	611	15	C	F	Turbocharger compressor outlet temperature - data above normal. High turbocharger compressor outlet temperature has been calculated by the ECM.
ECM	611	2	C	F	Auxiliary Intermediate (PTO) Speed Switch Validation - Data Erratic, Intermittent, or Incorrect. The position of the intermediate speed control switch 1 does not match the position of the intermediate speed control validation switch.
ECM	611	31	C	F	Engine Control Module Data Lost - Condition Exits. Severe loss of data from the ECM.
ECM	611	4	C	F	Post-Filter Oil Pressure Sensor Circuit- Shorted Low
ECM	611	16	C	E	Fuel Inlet Meter Device - Data Valid but Above Normal Operational Range - Moderately Severe Level
ECM	611	16	C	L	Fuel Inlet Meter Device - Data Valid but Above Normal Operational Range - Moderately Severe Level
ECM	611	18	C	E	Fuel Inlet Meter Device flow demand lower than expected - Data Valid but Below Normal Operational Range - Moderately Severe Level
ECM	611	18	C	L	Fuel Inlet Meter Device flow demand lower than expected - Data Valid but Below Normal Operational Range - Moderately Severe Level
ECM	611	31	C	E	Operator Interface Mode Transition to Emergency Stop (Due to E-Stop) - Condition Exists
ECM	611	31	C	L	Operator Interface Mode Transition to Emergency Stop (Due to E-Stop) - Condition Exists
ECM	611	2	C	E	Auxiliary Intermediate (PTO) Speed Switch Validation - Data erratic, intermittent or incorrect
ECM	611	2	C	L	Auxiliary Intermediate (PTO) Speed Switch Validation - Data erratic, intermittent or incorrect
ECM	611	3	C	F	High voltage detected at the alarm circuit when low voltage was expected by the ECM.
ECM	611	7	C	F	Autoshift failure, at least three shift attempts were missed.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	611	16	C	F	Fuel Inlet Meter Device : Fuel Inlet Meter Device - Data Valid but Above Normal Operational Range - Moderately Severe Level
ECM	611	18	C	F	Fuel Inlet Meter Device : Fuel Inlet Meter Device flow demand lower than expected - Data Valid but Below Normal Operational Range - Moderately Severe Level
ECM	612	2	C	F	Engine Speed/Position Sensor Circuit lost both of two signals from the magnetic pickup sensor - Data Erratic, Intermittent, or incorrect
ECM	612	2	C	E	Engine Magnetic Speed/Position Lost Both of Two Signals - Data erratic, intermittent or incorrect
ECM	612	2	C	L	Engine Magnetic Speed/Position Lost Both of Two Signals - Data erratic, intermittent or incorrect
ECM	612	3	C	F	High voltage detected at the ICON lamp circuit when low voltage was expected by the ECM.
ECM	612	4	C	F	Less than 6 VDC (low voltage) detected at the ICON lamp circuit when high voltage was expected by the ECM.
ECM	613	14	C	F	OEM Component Failure
ECM	613	31	C	F	
ECM	614	2	C	F	
ECM	615	31	C	F	Incorrect voltage detected at the ICON starter relay/Interlock Circuit input circuit by the ECM.
TCU	62	*	*	L	PTO TORQUE SIGNAL
TCU	62	*	*	F	PTO TORQUE SIGNAL
ECM	620	1	C	F	
ECM	620	18	C	F	OEM Sensor Supply Voltage Low - Warning
ECM	620	3	C	F	High voltage detected on the internal electronic control module (ECM) supply wire to the sensors.
ECM	620	4	C	F	Low voltage detected on the internal electronic control module (ECM) supply line to some of the sensors.
ECM	623	4	C	E	Red Stop Lamp Driver Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	623	4	C	L	Red Stop Lamp Driver Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	623	5	P	E	Red Stop Lamp : Current Below Normal
ECM	623	5	P	L	Red Stop Lamp : Current Below Normal
ECM	623	6	P	E	Red Stop Lamp : Current Above Normal
ECM	623	6	P	L	Red Stop Lamp : Current Above Normal
ECM	623	4	C	F	Red Stop Lamp : Red Stop Lamp Driver Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	623464	13	Y	E	Injector (No. 3 cylinder) correction value error
ECM	623464	13	Y	L	Injector (No. 3 cylinder) correction value error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	623465	13	Y	E	Injector (No. 4 cylinder) correction value error
ECM	623465	13	Y	L	Injector (No. 4 cylinder) correction value error
ECM	624	5	P	E	Amber Warning Lamp : Current Below Normal
ECM	624	5	P	L	Amber Warning Lamp : Current Below Normal
ECM	624	6	P	E	Amber Warning Lamp : Current Above Normal
ECM	624	6	P	L	Amber Warning Lamp : Current Above Normal
ECM	625	9	C	F	Proprietary Datalink Error (OEM/Vehicle Datalink) - Abnormal update rate
ECM	625	9	C	E	Proprietary Datalink Error (OEM/Vehicle Datalink) - Abnormal update rate
ECM	625	9	C	L	Proprietary Datalink Error (OEM/Vehicle Datalink) - Abnormal update rate
ECM	625	2	C	F	Komnet Datalink Cannot Transmit - Data Erratic, Intermittent, or Incorrect. Communications within the OEM datalink network is intermittent.
ECM	626	1	C	F	Start Assist Device - Canister Empty (Ether Injection)
ECM	626	18	C	F	Start Enable Device 1 Canister Empty (Ether Injection) - Data Valid But Below Normal Operating Range
ECM	626	3	C	F	Start Enable Device 1 Circuit (Ether Injection) - Voltage above normal, or shorted to high source
ECM	626	4	C	F	Start Enable Device 1Circuit (Ether Injection) - Voltage below normal, or shorted to low source
ECM	626	18	C	E	Start Enable Device 1 Canister Empty (Ether Injection) - Data Valid But Below Normal Operating Range
ECM	626	18	C	L	Start Enable Device 1 Canister Empty (Ether Injection) - Data Valid But Below Normal Operating Range
ECM	626	3	C	E	Start Enable Device 1 Circuit (Ether Injection) - Voltage above normal, or shorted to high source
ECM	626	3	C	L	Start Enable Device 1 Circuit (Ether Injection) - Voltage above normal, or shorted to high source
ECM	626	4	C	E	Start Enable Device 1Circuit (Ether Injection) - Voltage below normal, or shorted to low source
ECM	626	4	C	L	Start Enable Device 1Circuit (Ether Injection) - Voltage below normal, or shorted to low source
ECM	626	5	P	E	Engine Start Enable Device 1 : Current Below Normal
ECM	626	5	P	L	Engine Start Enable Device 1 : Current Below Normal
ECM	626	6	P	E	Engine Start Enable Device 1 : Current Above Normal
ECM	626	6	P	L	Engine Start Enable Device 1 : Current Above Normal
ECM	626	11	C	F	Start Assist Device Control Circuit Error (Ether Injection)
ECM	627	12	C	F	Injector Power Supply - Bad Intelligent Device or Component

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	627	12	C	E	Injector Power Supply - Bad intelligent device or component
ECM	627	12	C	L	Injector Power Supply - Bad intelligent device or component
ECM	627	2	C	E	Power Supply Lost With Ignition On - Data Erratic, Intermittent, or Incorrect
ECM	627	2	C	L	Power Supply Lost With Ignition On - Data Erratic, Intermittent, or Incorrect
ECM	627	2	C	F	Power Supply : Power Lost With Ignition On - Data Erratic, Intermittent, or Incorrect
ECM	628	9	C	F	Proprietary Datalink Error (OEM/Vehicle Datalink) Abnormal Update Rate. The ECM cannot communicate with the immobilizer anti-theft system.
ECM	629	31	C	F	At Least One Unacknowledged Most Severe Fault - Condition Exists
ECM	629	12	C	E	Engine Control Module Critical Internal Failure - Bad intelligent device or component
ECM	629	12	C	L	Engine Control Module Critical Internal Failure - Bad intelligent device or component
ECM	629	12	C	F	Engine Control Module Warning Internal Hardware Failure - Bad intelligent device or component
ECM	629	31	C	E	At Least One Unacknowledged Moderately Severe Fault - Condition Exists
ECM	629	31	C	L	At Least One Unacknowledged Moderately Severe Fault - Condition Exists
ECM	629	2	C	F	Fuel Pump Control Module, Electronic Calibration Code Error
ECM	629	9	C	F	The ECM expected information from a multiplexed device but did not receive it soon enough, or did not receive it at all.
TCU	63	*	*	L	DRIVING MODE SIGNAL
TCU	63	*	*	F	DRIVING MODE SIGNAL
ECM	630	12	Y	E	EEPROM memory deletion error
ECM	630	12	Y	L	EEPROM memory deletion error
ECM	630	13	C	F	Engine Control Module – out of calibration
ECM	630	12	C	E	Engine Control Module Calibration Memory - Bad intelligent device or component
ECM	630	12	C	L	Engine Control Module Calibration Memory - Bad intelligent device or component
ECM	630	13	C	E	Electronic Calibration Code Incompatibility - Out of Calibration
ECM	630	13	C	L	Electronic Calibration Code Incompatibility - Out of Calibration
ECM	630	31	C	E	ECM Program Memory (RAM) Corruption - Condition Exists
ECM	630	31	C	L	ECM Program Memory (RAM) Corruption - Condition Exists
ECM	630	12	C	F	Engine Control Module - Warning Software error
ECM	630	2	C	F	Calibration Memory : Engine Control Module data lost - Data Erratic, Intermittent, or Incorrect
ECM	630	2	P	E	Calibration Memory: Erratic, Intermittent, or Incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	630	2	P	L	Calibration Memory: Erratic, Intermittent, or Incorrect
ECM	630	31	C	F	Calibration Memory : ECM Program Memory (RAM) Corruption Condition Exists
ECM	6301	3	C	F	Water in Fuel Indicator 2 Sensor Circuit - Voltage above normal, or shorted to high source
ECM	6301	4	C	F	Water in Fuel Indicator 2 Sensor Circuit - Voltage below normal, or shorted to low source
ECM	6301	3	C	E	Water in Fuel Indicator 2 Sensor Circuit - Voltage above normal, or shorted to high source
ECM	6301	3	C	L	Water in Fuel Indicator 2 Sensor Circuit - Voltage above normal, or shorted to high source
ECM	6301	4	C	E	Water in Fuel Indicator 2 Sensor Circuit - Voltage below normal, or shorted to low source
ECM	6301	4	C	L	Water in Fuel Indicator 2 Sensor Circuit - Voltage below normal, or shorted to low source
ECM	6309	5	P	E	Aftertreatment 1 Diesel Exhaust Fluid Control Module Power Supply 2 : Current Below Normal
ECM	6309	5	P	L	Aftertreatment 1 Diesel Exhaust Fluid Control Module Power Supply 2 : Current Below Normal
ECM	6309	6	P	E	Aftertreatment 1 Diesel Exhaust Fluid Control Module Power Supply 2 : Current Above Normal
ECM	6309	6	P	L	Aftertreatment 1 Diesel Exhaust Fluid Control Module Power Supply 2 : Current Above Normal
ECM	631	2	P	E	Calibration Module : Erratic, Intermittent, or Incorrect
ECM	631	2	P	L	Calibration Module : Erratic, Intermittent, or Incorrect
ECM	632	4	C	F	Less than Positive (+) 6 VDC detected at fuel shutoff circuit or an excessive current draw from the electronic control module (ECM) or faulty ECM output circuit.
ECM	632	7	C	F	Fuel Shutoff Valve - stuck open
ECM	632	4	C	E	Less than Positive (+) 6 VDC detected at fuel shutoff circuit or an excessive current draw from the electronic control module (ECM) or faulty ECM output circuit.
ECM	632	4	C	L	Less than Positive (+) 6 VDC detected at fuel shutoff circuit or an excessive current draw from the electronic control module (ECM) or faulty ECM output circuit.
ECM	632	7	C	E	Fuel Shutoff Valve - stuck open
ECM	632	7	C	L	Fuel Shutoff Valve - stuck open
ECM	632	11	C	F	Fuel Shutoff Valve Supply Voltage error
ECM	632	3	C	E	Fuel Shutoff Valve Circuit - shorted high
ECM	632	3	C	F	Fuel Shutoff Valve Circuit - shorted high
ECM	632	3	C	L	Fuel Shutoff Valve Circuit - shorted high
ECM	6326	18	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater -

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	6326	18	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	6326	3	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Above Normal, or Shorted to High Source
ECM	6326	3	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Above Normal, or Shorted to High Source
ECM	6326	4	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Below Normal, or Shorted to Low Source
ECM	6326	4	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Heater - Voltage Below Normal, or Shorted to Low Source
ECM	633	3	Y	E	SCV (MPROP) H side VB short circuit
ECM	633	3	Y	L	SCV (MPROP) H side VB short circuit
ECM	633	5	Y	E	SCV (MPROP) disconnection
ECM	633	5	Y	L	SCV (MPROP) disconnection
ECM	633	6	Y	E	SCV (MPROP) H side GND short circuit
ECM	633	6	Y	L	SCV (MPROP) H side GND short circuit
ECM	633	11	C	F	Open circuit detected at the transient suppressor in the injection control valve circuit in the engine harness.
ECM	633	2	C	F	Fuel Rail Actuator Circuit - data incorrect
ECM	633	3	C	F	Fuel Injection Control Valve Circuit - shorted high
ECM	633	31	C	E	Electronic Fuel Injection Control Valve Circuit - Condition Exists
ECM	633	31	C	F	Fuel Control Valve #1 : Fueling Actuator #1 Circuit Error - Condition Exists
ECM	633	31	C	L	Electronic Fuel Injection Control Valve Circuit - Condition Exists
ECM	633	4	C	F	Fuel Injection Control Valve Circuit - shorted low
ECM	633	5	C	F	Fueling Actuator #1 Circuit - open circuit
ECM	633	6	C	F	Fueling Actuator #1 Circuit - grounded circuit
ECM	633	7	C	F	Engine ECM has detected a failure in the injection control valve.
ECM	635	7	C	F	Engine Timing Actuator is not responding to ECM commands
ECM	635	2	C	F	Timing Rail Actuator Circuit - data incorrect
ECM	635	3	C	F	Engine Timing Actuator Circuit - shorted high
ECM	635	4	C	F	Engine Timing Actuator Circuit - shorted low
ECM	635	5	C	F	Timing Actuator #1 Circuit - open circuit
ECM	635	6	C	F	Timing Actuator #1 Circuit - grounded circuit
ECM	636	3	S	E	Camshaft position sensor, short circuit to +24V

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	636	3	S	L	Camshaft position sensor, short circuit to +24V
ECM	636	4	S	E	Camshaft position sensor, short circuit to ground
ECM	636	4	S	L	Camshaft position sensor, short circuit to ground
ECM	636	5	S	E	Camshaft position sensor, open circuit
ECM	636	5	S	L	Camshaft position sensor, open circuit
ECM	636	1	S	E	Camshaft position sensor, faulty
ECM	636	1	S	F	Camshaft position sensor, faulty
ECM	636	1	S	L	Camshaft position sensor, faulty
ECM	636	2	S	E	Camshaft position sensor, intermittent fault
ECM	636	2	S	F	Camshaft position sensor, intermittent fault
ECM	636	2	S	L	Camshaft position sensor, intermittent fault
ECM	636	3	S	F	Camshaft position sensor, short circuit to +24V
ECM	636	4	S	F	Camshaft position sensor, short circuit to ground
ECM	636	5	S	F	Camshaft position sensor, open circuit
ECM	636	7	S	E	Engine speed detected by flywheel sensor, but no signal from camshaft sensor
ECM	636	7	S	F	Engine speed detected by flywheel sensor, but no signal from camshaft sensor
ECM	636	7	S	L	Engine speed detected by flywheel sensor, but no signal from camshaft sensor
ECM	636	8	S	E	Camshaft Pulse Pattern, Gap or Sync Error or other fault
ECM	636	8	S	F	Camshaft Pulse Pattern, Gap or Sync Error or other fault
ECM	636	8	S	L	Camshaft Pulse Pattern, Gap or Sync Error or other fault
ECM	637	11	P	E	Engine Timing Sensor: Other Failure Mode
ECM	637	11	P	L	Engine Timing Sensor: Other Failure Mode
ECM	638	6	C	F	Rack Actuator Position #1 Circuit - grounded circuit
ECM	638	7	C	F	Rack Actuator - mechanically stuck open
ECM	6385	3	C	E	Engine Starter Motor Relay Control Circuit - Voltage Above Normal or Shorted to High Source
ECM	6385	3	C	L	Engine Starter Motor Relay Control Circuit - Voltage Above Normal or Shorted to High Source
ECM	6385	4	C	E	Engine Starter Motor Relay Control Circuit - Voltage Below Normal or Shorted to Low Source
ECM	6385	4	C	L	Engine Starter Motor Relay Control Circuit - Voltage Below Normal or Shorted to Low Source
ECM	639	14	P	E	J1939 Network #1 : Special Instruction
ECM	639	14	P	L	J1939 Network #1 : Special Instruction
ECM	639	13	C	E	SAE J1939 Multiplexing Configuration Error - Out of Calibration

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	639	13	C	L	SAE J1939 Multiplexing Configuration Error - Out of Calibration
ECM	639	2	C	E	J1939 Network #1 - Data erratic, intermittent or incorrect
ECM	639	2	C	F	Engine Control Module Network Communication Error
ECM	639	2	C	L	J1939 Network #1 - Data erratic, intermittent or incorrect
ECM	639	13	C	F	SAE J1939 Datalink : SAE J1939 Multiplexing Configuration Error - Out of Calibration
ECM	639	9	C	E	SAE J1939 Datalink - Abnormal update rate
ECM	639	9	C	F	J1939 Datalink - Abnormal Update Rate. Communication between the electronic control module (ECM) and another device on the SAE J1939 data link has been lost.
ECM	639	9	C	L	SAE J1939 Datalink - Abnormal update rate
ECM	639	9	P	E	J1939 Network #1 : Abnormal Update Rate
ECM	639	9	P	L	J1939 Network #1 : Abnormal Update Rate
TCU	64	*	*	L	STARTING GEAR SIGNAL
TCU	64	*	*	F	STARTING GEAR SIGNAL
ECM	640	14	C	F	OEM Commanded Dual Output Shutdown
ECM	640	14	C	E	Auxiliary Commanded Dual Output Shutdown - Special Instructions
ECM	640	14	C	L	Auxiliary Commanded Dual Output Shutdown - Special Instructions
ECM	641	10	S	E	VGT motion error, span too large
ECM	641	10	S	L	VGT motion error, span too large
ECM	641	11	S	E	VGT actuator faulty
ECM	641	11	S	L	VGT actuator faulty
ECM	641	12	S	E	VGT internal fault
ECM	641	12	S	L	VGT internal fault
ECM	641	11	C	E	VGT Actuator Driver Circuit - Root Cause Not Known
ECM	641	11	C	L	VGT Actuator Driver Circuit - Root Cause Not Known
ECM	641	31	C	F	VGT Actuator Driver Circuit - Condition Exists
ECM	641	9	C	F	VGT Actuator Driver Circuit - Abnormal update rate
ECM	641	31	C	E	VGT Actuator Driver Circuit - Condition Exists
ECM	641	31	C	L	VGT Actuator Driver Circuit - Condition Exists
ECM	641	11	C	F	VGT Actuator Driver Circuit - Root Cause Not Known
ECM	641	12	C	F	VGT Actuator Controller - Bad intelligent device or component
ECM	641	13	C	F	VGT Actuator Controller - Out of Calibration
ECM	641	15	C	F	Variable geometry turbocharger actuator over temperature (calculated) - data above normal range - least severe level.
ECM	641	12	C	E	VGT Actuator Controller - Bad intelligent device or component

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	641	12	C	L	VGT Actuator Controller - Bad intelligent device or component
ECM	641	3	C	F	VGT actuator driver circuit - voltage above normal or shorted to high source.
ECM	641	4	C	F	VGT actuator driver circuit - voltage below normal, or shorted to low source.
ECM	641	13	C	E	VGT Actuator Controller - Out of Calibration
ECM	641	13	C	L	VGT Actuator Controller - Out of Calibration
ECM	641	5	C	F	Variable Geometry Turbocharger actuator circuit - current below normal, or open circuit.
ECM	641	13	S	E	VGT actuator installation procedure was not completed
ECM	641	13	S	L	VGT actuator installation procedure was not completed
ECM	641	15	C	E	VGT Actuator Driver Over Temperature (Calculated) - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	641	7	C	F	VGT Actuator Driver Circuit (Motor) - Mechanical system not responding or out of adjustment
ECM	641	15	C	L	VGT Actuator Driver Over Temperature (Calculated) - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	641	15	S	E	VGT error
ECM	641	15	S	L	VGT error
ECM	641	16	S	E	VGT temperature too high
ECM	641	16	S	L	VGT temperature too high
ECM	641	19	S	E	VGT timeout on CAN
ECM	641	19	S	L	VGT timeout on CAN
ECM	641	2	S	E	VGT internal temperature sensor stuck
ECM	641	2	S	L	VGT internal temperature sensor stuck
ECM	641	20	S	E	Variable geometry turbocharger control fault
ECM	641	20	S	L	Variable geometry turbocharger control fault
ECM	641	4	S	E	VGT voltage supply open load
ECM	641	4	S	L	VGT voltage supply open load
ECM	641	5	S	E	VGT internal temperature sensor open circuit
ECM	641	5	S	L	VGT internal temperature sensor open circuit
ECM	641	7	C	E	VGT Actuator Driver Circuit (Motor) - Mechanical system not responding or out of adjustment
ECM	641	7	C	L	VGT Actuator Driver Circuit (Motor) - Mechanical system not responding or out of adjustment
ECM	641	7	S	E	VGT motion limited or restricted
ECM	641	7	S	L	VGT motion limited or restricted
ECM	641	8	S	E	VGT reference or position not found
ECM	641	8	S	L	VGT reference or position not found
ECM	641	9	C	E	VGT Actuator Driver Circuit - Abnormal update rate
ECM	641	9	C	L	VGT Actuator Driver Circuit - Abnormal update rate

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	641	9	S	E	VGT temperature sensor value not plausible
ECM	641	9	S	L	VGT temperature sensor value not plausible
ECM	641	10	S	F	VGT motion error, span too large
ECM	641	11	S	F	VGT actuator faulty
ECM	641	12	S	F	VGT internal fault
ECM	641	13	S	F	VGT actuator installation procedure was not completed
ECM	641	15	S	F	VGT error
ECM	641	16	S	F	VGT temperature too high
ECM	641	19	S	F	VGT timeout on CAN
ECM	641	2	S	F	VGT internal temperature sensor stuck
ECM	641	4	S	F	VGT voltage supply open load
ECM	641	5	S	F	VGT internal temperature sensor open circuit
ECM	641	6	C	E	VGT Actuator Driver Circuit - Current Above Normal or Grounded Circuit
ECM	641	6	C	L	VGT Actuator Driver Circuit - Current Above Normal or Grounded Circuit
ECM	641	6	S	E	Variable geometry turbocharger control fault
ECM	641	6	S	L	Variable geometry turbocharger control fault
ECM	641	7	S	F	VGT motion limited or restricted
ECM	641	8	S	F	VGT reference or position not found
ECM	641	9	S	F	VGT temperature sensor value not plausible
ECM	644	2	C	E	External Speed Command Input (Multiple Unit Synchronization) - Data erratic, intermittent or incorrect
ECM	644	2	C	F	External Speed Input (Multiple Unit Sychronization) - data incorrect
ECM	644	2	C	L	External Speed Command Input (Multiple Unit Synchronization) - Data erratic, intermittent or incorrect
ECM	645	19	S	E	CAN message TCO1 from tachograph timeout
ECM	645	19	S	F	CAN message TCO1 from tachograph timeout
ECM	645	19	S	L	CAN message TCO1 from tachograph timeout
ECM	647	3	C	F	Fan Control Circuit - Voltage Above Normal or Shorted to High Source. Open circuit or high voltage detected at the fan control circuit.
ECM	647	11	C	F	Fan Clutch Circuit Error
ECM	647	3	C	E	Fan Control Circuit - Voltage above normal, or shorted to high source
ECM	647	3	C	L	Fan Control Circuit - Voltage above normal, or shorted to high source
ECM	647	4	C	E	Fan Control Circuit - Voltage below normal, or shorted to low source
ECM	647	4	C	L	Fan Control Circuit - Voltage below normal, or shorted to low source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	647	4	C	F	Fan Clutch Output Device Driver : Fan Control Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	649	3	C	F	Engine Exhaust Back Pressure Regulator Control Circuit - Voltage Above Normal, or Shorted to High Source
ECM	649	4	C	F	Engine Exhaust Back Pressure Regulator Control Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	649	5	C	F	Engine Exhaust Back Pressure Regulator Control Circuit - Current Below Normal or Open Circuit
ECM	649	3	C	E	Engine Exhaust Back Pressure Regulator Control Circuit - Voltage Above Normal, or Shorted to High Source
ECM	649	3	C	L	Engine Exhaust Back Pressure Regulator Control Circuit - Voltage Above Normal, or Shorted to High Source
ECM	649	4	C	E	Engine Exhaust Back Pressure Regulator Control Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	649	4	C	L	Engine Exhaust Back Pressure Regulator Control Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	649	5	C	E	Engine Exhaust Back Pressure Regulator Control Circuit - Current Below Normal or Open Circuit
ECM	649	5	C	L	Engine Exhaust Back Pressure Regulator Control Circuit - Current Below Normal or Open Circuit
ECM	649	5	P	E	Engine Exhaust Back Pressure Regulator Control Command : Current Below Normal
ECM	649	5	P	L	Engine Exhaust Back Pressure Regulator Control Command : Current Below Normal
ECM	649	6	P	E	Engine Exhaust Back Pressure Regulator Control Command : Current Above Normal
ECM	649	6	P	L	Engine Exhaust Back Pressure Regulator Control Command : Current Above Normal
ECM	649	7	P	E	Engine Exhaust Back Pressure Regulator Control Command : Not Responding Properly
ECM	649	7	P	L	Engine Exhaust Back Pressure Regulator Control Command : Not Responding Properly
TCU	65	*	*	L	ENGINGE TORQUE SIGNAL
TCU	65	*	*	F	ENGINGE TORQUE SIGNAL
ECM	651	21	S	F	Cylinder balancing, not plausible
ECM	651	10	S	E	Fault with sensors/actuators for the particulate filter
ECM	651	10	S	L	Fault with sensors/actuators for the particulate filter
ECM	651	13	S	E	Injector trim code version error, injector cyl. 1
ECM	651	13	S	L	Injector trim code version error, injector cyl. 1
ECM	651	15	S	E	Cylinder 1 torque error
ECM	651	15	S	L	Cylinder 1 torque error
ECM	651	16	S	E	Cylinder 1 injector fault, high torque

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	651	16	S	L	Cylinder 1 injector fault, high torque
ECM	651	18	S	E	Cylinder 1 injector fault, low torque
ECM	651	18	S	L	Cylinder 1 injector fault, low torque
ECM	651	2	P	E	Engine Injector Cylinder #01 : Erratic, Intermittent, or Incorrect
ECM	651	2	P	L	Engine Injector Cylinder #01 : Erratic, Intermittent, or Incorrect
ECM	651	2	S	E	Injector trim code, checksum error injector cyl. 1
ECM	651	2	S	L	Injector trim code, checksum error injector cyl. 1
ECM	651	20	P	E	Engine Injector Cylinder #01 : Data Drifted High
ECM	651	20	P	L	Engine Injector Cylinder #01 : Data Drifted High
ECM	651	20	S	E	Cylinder 1 balancing min or max
ECM	651	20	S	L	Cylinder 1 balancing min or max
ECM	651	21	P	E	Engine Injector Cylinder #01 : Data Drifted Low
ECM	651	21	P	L	Engine Injector Cylinder #01 : Data Drifted Low
ECM	651	21	S	E	Cylinder balancing, not plausible
ECM	651	21	S	L	Cylinder balancing, not plausible
ECM	651	3	Y	E	Short circuit
ECM	651	3	Y	L	Short circuit
ECM	651	4	S	E	Injector 1 cable short circuit to ground
ECM	651	4	S	L	Injector 1 cable short circuit to ground
ECM	651	5	C	E	Injector Solenoid Driver Cylinder 1 Circuit - Current below normal or open circuit
ECM	651	5	C	L	Injector Solenoid Driver Cylinder 1 Circuit - Current below normal or open circuit
ECM	651	5	P	E	Engine Injector Cylinder #01 : Current Below Normal
ECM	651	5	P	L	Engine Injector Cylinder #01 : Current Below Normal
ECM	651	5	S	E	Injector cyl. 1 cable/injector open load
ECM	651	5	S	L	Injector cyl. 1 cable/injector open load
ECM	651	5	Y	E	Disconnection (injector-specific-tion)
ECM	651	5	Y	L	Disconnection (injector-specific-tion)
ECM	651	6	P	E	Engine Injector Cylinder #01 : Current Above Normal
ECM	651	6	P	L	Engine Injector Cylinder #01 : Current Above Normal
ECM	651	6	S	E	Injector cyl. 1 cable/injector short circuit
ECM	651	6	S	L	Injector cyl. 1 cable/injector short circuit
ECM	651	6	Y	E	Coil short circuit
ECM	651	6	Y	L	Coil short circuit
ECM	651	7	C	E	Injector Solenoid Driver Cylinder 1 - Mechanical system not responding or out of adjustment
ECM	651	7	C	L	Injector Solenoid Driver Cylinder 1 - Mechanical system not responding or out of adjustment

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	651	7	S	E	Injection error, physical cylinder 1
ECM	651	7	S	L	Injection error, physical cylinder 1
ECM	651	8	S	E	Injector cyl. 1, over or under fueling
ECM	651	8	S	L	Injector cyl. 1, over or under fueling
ECM	651	5	C	F	Injector Solenoid Driver Cylinder 1 Circuit - Current Below Normal, or Open Circuit. High resistance or no current detected at Number 1 injector DRIVER or RETURN pin.
ECM	651	7	C	F	Injector Solenoid Driver Cylinder 1 - Mechanical System Not Responding Properly or Out of Adjustment. Unintended fueling detected in cylinder number 1.
ECM	651	1	S	E	Two or more injectors with the same trim code, injector cyl. 1
ECM	651	1	S	F	Two or more injectors with the same trim code, injector cyl. 1
ECM	651	1	S	L	Two or more injectors with the same trim code, injector cyl. 1
ECM	651	10	S	F	Fault with sensors/actuators for the particulate filter
ECM	651	13	S	F	Injector trim code version error, injector cyl. 1
ECM	651	15	S	F	Cylinder 1 torque error
ECM	651	16	S	F	Cylinder 1 injector fault, high torque
ECM	651	18	S	F	Cylinder 1 injector fault, low torque
ECM	651	2	S	F	Injector trim code, checksum error injector cyl. 1
ECM	651	20	S	F	Cylinder 1 balancing min or max
ECM	651	4	S	F	Injector 1 cable short circuit to ground
ECM	651	5	S	F	Injector cyl. 1 cable/injector open load
ECM	651	6	C	F	Injector Solenoid Valve Cylinder #1 Circuit – grounded circuit
ECM	651	6	S	F	Injector cyl. 1 cable/injector short circuit
ECM	651	7	S	F	Injection error, physical cylinder 1
ECM	651	8	S	F	Injector cyl. 1, over or under fueling
ECM	652	1	S	E	Two or more injectors with the same trim code, injector cyl. 2
ECM	652	1	S	L	Two or more injectors with the same trim code, injector cyl. 2
ECM	652	10	S	E	Fault with sensors/actuators for the particulate filter
ECM	652	10	S	L	Fault with sensors/actuators for the particulate filter
ECM	652	13	S	E	Injector trim code version error, injector cyl. 2
ECM	652	13	S	L	Injector trim code version error, injector cyl. 2
ECM	652	15	S	E	Cylinder 2 torque error
ECM	652	15	S	L	Cylinder 2 torque error
ECM	652	16	S	E	Cylinder 2 injector fault, high torque
ECM	652	16	S	L	Cylinder 2 injector fault, high torque

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	652	18	S	E	Cylinder 2 injector fault, low torque
ECM	652	18	S	L	Cylinder 2 injector fault, low torque
ECM	652	2	P	E	Engine Injector Cylinder #02 : Erratic, Intermittent, or Incorrect
ECM	652	2	P	L	Engine Injector Cylinder #02 : Erratic, Intermittent, or Incorrect
ECM	652	2	S	E	Injector trim code, checksum error injector cyl. 2
ECM	652	2	S	L	Injector trim code, checksum error injector cyl. 2
ECM	652	20	P	E	Engine Injector Cylinder #02 : Data Drifted High
ECM	652	20	P	L	Engine Injector Cylinder #02 : Data Drifted High
ECM	652	20	S	E	Cylinder 2 balancing min or max
ECM	652	20	S	L	Cylinder 2 balancing min or max
ECM	652	21	P	E	Engine Injector Cylinder #02 : Data Drifted Low
ECM	652	21	P	L	Engine Injector Cylinder #02 : Data Drifted Low
ECM	652	3	Y	E	Short circuit
ECM	652	3	Y	L	Short circuit
ECM	652	4	S	E	Injector 2 cable short circuit to ground
ECM	652	4	S	L	Injector 2 cable short circuit to ground
ECM	652	5	C	E	Injector Solenoid Driver Cylinder 2 Circuit - Current below normal or open circuit
ECM	652	5	C	L	Injector Solenoid Driver Cylinder 2 Circuit - Current below normal or open circuit
ECM	652	5	P	E	Engine Injector Cylinder #02 : Current Below Normal
ECM	652	5	P	L	Engine Injector Cylinder #02 : Current Below Normal
ECM	652	5	S	E	Injector cyl. 2 cable/injector open load
ECM	652	5	S	L	Injector cyl. 2 cable/injector open load
ECM	652	5	Y	E	Disconnection (injector-specific-tion)
ECM	652	5	Y	L	Disconnection (injector-specific-tion)
ECM	652	6	P	E	Engine Injector Cylinder #02 : Current Above Normal
ECM	652	6	P	L	Engine Injector Cylinder #02 : Current Above Normal
ECM	652	6	S	E	Injector cyl. 2 cable/injector short circuit
ECM	652	6	S	L	Injector cyl. 2 cable/injector short circuit
ECM	652	6	Y	E	Coil short circuit
ECM	652	6	Y	L	Coil short circuit
ECM	652	7	C	E	Injector Solenoid Driver Cylinder 2 - Mechanical system not responding or out of adjustment
ECM	652	7	C	L	Injector Solenoid Driver Cylinder 2 - Mechanical system not responding or out of adjustment
ECM	652	7	S	E	Injection error, physical cylinder 2
ECM	652	7	S	L	Injection error, physical cylinder 2

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	652	8	S	E	Injector cyl. 2, over or under fueling
ECM	652	8	S	L	Injector cyl. 2, over or under fueling
ECM	652	5	C	F	Injector Solenoid Driver Cylinder 2 Circuit - Current below normal or open circuit
ECM	652	7	C	F	Injector Solenoid Driver Cylinder 2 - Mechanical System Not Responding Properly or Out of Adjustment. Unintended fueling detected in cylinder number 2.
ECM	652	1	S	F	Two or more injectors with the same trim code, injector cyl. 2
ECM	652	10	S	F	Fault with sensors/actuators for the particulate filter
ECM	652	13	S	F	Injector trim code version error, injector cyl. 2
ECM	652	15	S	F	Cylinder 2 torque error
ECM	652	16	S	F	Cylinder 2 injector fault, high torque
ECM	652	18	S	F	Cylinder 2 injector fault, low torque
ECM	652	2	S	F	Injector trim code, checksum error injector cyl. 2
ECM	652	20	S	F	Cylinder 2 balancing min or max
ECM	652	4	S	F	Injector 2 cable short circuit to ground
ECM	652	5	S	F	Injector cyl. 2 cable/injector open load
ECM	652	6	C	F	Injector Solenoid Valve Cylinder #2 Circuit – grounded circuit
ECM	652	6	S	F	Injector cyl. 2 cable/injector short circuit
ECM	652	7	S	F	Injection error, physical cylinder 2
ECM	652	8	S	F	Injector cyl. 2, over or under fueling
ECM	653	20	S	F	Cylinder 3 balancing min or max
ECM	653	1	S	E	Two or more injectors with the same trim code, injector cyl. 3
ECM	653	1	S	L	Two or more injectors with the same trim code, injector cyl. 3
ECM	653	10	S	E	Fault with sensors/actuators for the particulate filter
ECM	653	10	S	L	Fault with sensors/actuators for the particulate filter
ECM	653	13	S	E	Injector trim code version error, injector cyl. 3
ECM	653	13	S	L	Injector trim code version error, injector cyl. 3
ECM	653	15	S	E	Cylinder 3 torque error
ECM	653	15	S	L	Cylinder 3 torque error
ECM	653	16	S	E	Cylinder 3 injector fault, high torque
ECM	653	16	S	L	Cylinder 3 injector fault, high torque
ECM	653	18	S	E	Cylinder 3 injector fault, low torque
ECM	653	18	S	L	Cylinder 3 injector fault, low torque
ECM	653	2	P	E	Engine Injector Cylinder #03 : Erratic, Intermittent, or Incorrect
ECM	653	2	P	L	Engine Injector Cylinder #03 : Erratic, Intermittent, or Incorrect
ECM	653	2	S	E	Injector trim code, checksum error injector cyl. 3

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	653	2	S	L	Injector trim code, checksum error injector cyl. 3
ECM	653	20	P	E	Engine Injector Cylinder #03 : Data Drifted High
ECM	653	20	P	L	Engine Injector Cylinder #03 : Data Drifted High
ECM	653	20	S	E	Cylinder 3 balancing min or max
ECM	653	20	S	L	Cylinder 3 balancing min or max
ECM	653	21	P	E	Engine Injector Cylinder #03 : Data Drifted Low
ECM	653	21	P	L	Engine Injector Cylinder #03 : Data Drifted Low
ECM	653	3	Y	E	Short circuit
ECM	653	3	Y	L	Short circuit
ECM	653	4	S	E	njector 3 cable short circuit to ground
ECM	653	4	S	L	njector 3 cable short circuit to ground
ECM	653	5	C	E	Injector Solenoid Driver Cylinder 3 Circuit - Current below normal or open circuit
ECM	653	5	C	L	Injector Solenoid Driver Cylinder 3 Circuit - Current below normal or open circuit
ECM	653	5	P	E	Engine Injector Cylinder #03 : Current Below Normal
ECM	653	5	P	L	Engine Injector Cylinder #03 : Current Below Normal
ECM	653	5	S	E	Injector cyl. 3 cable/injector open load
ECM	653	5	S	L	Injector cyl. 3 cable/injector open load
ECM	653	5	Y	E	Disconnection (injector-specific-tion)
ECM	653	5	Y	L	Disconnection (injector-specific-tion)
ECM	653	6	P	E	Engine Injector Cylinder #03 : Current Above Normal
ECM	653	6	P	L	Engine Injector Cylinder #03 : Current Above Normal
ECM	653	6	S	E	Injector cyl. 3 cable/injector short circuit
ECM	653	6	S	L	Injector cyl. 3 cable/injector short circuit
ECM	653	6	Y	E	Coil short circuit
ECM	653	6	Y	L	Coil short circuit
ECM	653	7	C	E	Injector Solenoid Driver Cylinder 3 - Mechanical system not responding or out of adjustment
ECM	653	7	C	L	Injector Solenoid Driver Cylinder 3 - Mechanical system not responding or out of adjustment
ECM	653	7	S	E	Injection error, physical cylinder 3
ECM	653	7	S	L	Injection error, physical cylinder 3
ECM	653	8	S	E	Injector cyl. 3, over or under fueling
ECM	653	8	S	L	Injector cyl. 3, over or under fueling
ECM	653	1	S	F	Two or more injectors with the same trim code, injector cyl. 3
ECM	653	10	S	F	Fault with sensors/actuators for the particulate filter
ECM	653	13	S	F	Injector trim code version error, injector cyl. 3
ECM	653	15	S	F	Cylinder 3 torque error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	653	16	S	F	Cylinder 3 injector fault, high torque
ECM	653	18	S	F	Cylinder 3 injector fault, low torque
ECM	653	2	S	F	Injector trim code, checksum error injector cyl. 3
ECM	653	4	S	F	njector 3 cable short circuit to ground
ECM	653	5	C	F	Injector Cylinder #03 : Injector Solenoid Cylinder #3 Circuit - Current Below Normal, or Open Circuit
ECM	653	5	S	F	Injector cyl. 3 cable/injector open load
ECM	653	6	C	F	Injector Solenoid Valve Cylinder #3 Circuit – grounded circuit
ECM	653	6	S	F	Injector cyl. 3 cable/injector short circuit
ECM	653	7	S	F	Injection error, physical cylinder 3
ECM	653	8	S	F	Injector cyl. 3, over or under fueling
ECM	653	7	C	F	Injector Cylinder # 03 : Injector Cylinder #3 - Mechanical System Not Responding Properly or Out of Adjustment
ECM	654	1	S	E	Two or more injectors with the same trim code, injector cyl. 4
ECM	654	1	S	L	Two or more injectors with the same trim code, injector cyl. 4
ECM	654	10	S	E	Fault with sensors/actuators for the particulate filter
ECM	654	10	S	L	Fault with sensors/actuators for the particulate filter
ECM	654	13	S	E	Injector trim code version error, injector cyl. 4
ECM	654	13	S	L	Injector trim code version error, injector cyl. 4
ECM	654	15	S	E	Cylinder 4 torque error
ECM	654	15	S	L	Cylinder 4 torque error
ECM	654	16	S	E	Cylinder 4 injector fault, high torque
ECM	654	16	S	L	Cylinder 4 injector fault, high torque
ECM	654	18	S	E	Cylinder 4 injector fault, low torque
ECM	654	18	S	L	Cylinder 4 injector fault, low torque
ECM	654	2	P	E	Engine Injector Cylinder #04 : Erratic, Intermittent, or Incorrect
ECM	654	2	P	L	Engine Injector Cylinder #04 : Erratic, Intermittent, or Incorrect
ECM	654	2	S	E	Injector trim code, checksum error injector cyl. 4
ECM	654	2	S	L	Injector trim code, checksum error injector cyl. 4
ECM	654	20	P	E	Engine Injector Cylinder #04 : Data Drifted High
ECM	654	20	P	L	Engine Injector Cylinder #04 : Data Drifted High
ECM	654	20	S	E	Cylinder 4 balancing min or max
ECM	654	20	S	L	Cylinder 4 balancing min or max
ECM	654	21	P	E	Engine Injector Cylinder #04 : Data Drifted Low
ECM	654	21	P	L	Engine Injector Cylinder #04 : Data Drifted Low
ECM	654	3	Y	E	Short circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	654	3	Y	L	Short circuit
ECM	654	4	S	E	Injector 4 cable short circuit to ground
ECM	654	4	S	L	Injector 4 cable short circuit to ground
ECM	654	5	C	E	Injector Solenoid Driver Cylinder 4 Circuit - Current below normal or open circuit
ECM	654	5	C	L	Injector Solenoid Driver Cylinder 4 Circuit - Current below normal or open circuit
ECM	654	5	P	E	Engine Injector Cylinder #04 : Current Below Normal
ECM	654	5	P	L	Engine Injector Cylinder #04 : Current Below Normal
ECM	654	5	S	E	Injector cyl. 4 cable/injector open load
ECM	654	5	S	L	Injector cyl. 4 cable/injector open load
ECM	654	5	Y	E	Disconnection (injector-specific-tion)
ECM	654	5	Y	L	Disconnection (injector-specific-tion)
ECM	654	6	P	E	Engine Injector Cylinder #04 : Current Above Normal
ECM	654	6	P	L	Engine Injector Cylinder #04 : Current Above Normal
ECM	654	6	S	E	Injector cyl. 4 cable/injector short circuit
ECM	654	6	S	L	Injector cyl. 4 cable/injector short circuit
ECM	654	6	Y	E	Coil short circuit
ECM	654	6	Y	L	Coil short circuit
ECM	654	7	C	E	Injector Solenoid Driver Cylinder 4 - Mechanical system not responding or out of adjustment
ECM	654	7	C	L	Injector Solenoid Driver Cylinder 4 - Mechanical system not responding or out of adjustment
ECM	654	7	S	E	Injection error, physical cylinder 4
ECM	654	7	S	L	Injection error, physical cylinder 4
ECM	654	8	S	E	Injector cyl. 4, over or under fueling
ECM	654	8	S	L	Injector cyl. 4, over or under fueling
ECM	654	5	C	F	Injector Solenoid Driver Cylinder 4 Circuit - Current below normal or open circuit
ECM	654	1	S	F	Two or more injectors with the same trim code, injector cyl. 4
ECM	654	10	S	F	Fault with sensors/actuators for the particulate filter
ECM	654	13	S	F	Injector trim code version error, injector cyl. 4
ECM	654	15	S	F	Cylinder 4 torque error
ECM	654	16	S	F	Cylinder 4 injector fault, high torque
ECM	654	18	S	F	Cylinder 4 injector fault, low torque
ECM	654	2	S	F	Injector trim code, checksum error injector cyl. 4
ECM	654	20	S	F	Cylinder 4 balancing min or max
ECM	654	4	S	F	Injector 4 cable short circuit to ground

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	654	5	S	F	Injector cyl. 4 cable/injector open load
ECM	654	6	C	F	Injector Solenoid Valve Cylinder #4 Circuit - grounded circuit
ECM	654	6	S	F	Injector cyl. 4 cable/injector short circuit
ECM	654	7	S	F	Injection error, physical cylinder 4
ECM	654	8	S	F	Injector cyl. 4, over or under fueling
ECM	654	7	C	F	Injector Solenoid Driver Cylinder 4 - Mechanical System Not Responding Properly or Out of Adjustment. Unintended fueling detected in cylinder number 4.
ECM	655	1	S	E	Two or more injectors with the same trim code, injector cyl. 5
ECM	655	1	S	L	Two or more injectors with the same trim code, injector cyl. 5
ECM	655	10	S	E	Fault with sensors/actuators for the particulate filter
ECM	655	10	S	L	Fault with sensors/actuators for the particulate filter
ECM	655	13	S	E	Injector trim code version error, injector cyl. 5
ECM	655	13	S	L	Injector trim code version error, injector cyl. 5
ECM	655	15	S	E	Cylinder 5 torque error
ECM	655	15	S	L	Cylinder 5 torque error
ECM	655	16	S	E	Cylinder 5 injector fault, high torque
ECM	655	16	S	L	Cylinder 5 injector fault, high torque
ECM	655	18	S	E	Cylinder 5 injector fault, low torque
ECM	655	18	S	L	Cylinder 5 injector fault, low torque
ECM	655	2	S	E	Injector trim code, checksum error injector cyl. 5
ECM	655	2	S	L	Injector trim code, checksum error injector cyl. 5
ECM	655	20	S	E	Cylinder 5 balancing min or max
ECM	655	20	S	L	Cylinder 5 balancing min or max
ECM	655	4	S	E	Injector 5 cable short circuit to ground
ECM	655	4	S	L	Injector 5 cable short circuit to ground
ECM	655	5	C	E	Injector Solenoid Driver Cylinder 5 Circuit - Current below normal or open circuit
ECM	655	5	C	L	Injector Solenoid Driver Cylinder 5 Circuit - Current below normal or open circuit
ECM	655	5	S	E	Injector cyl. 5 cable/injector open load
ECM	655	5	S	L	Injector cyl. 5 cable/injector open load
ECM	655	6	S	E	Injector cyl. 5 cable/injector short circuit
ECM	655	6	S	L	Injector cyl. 5 cable/injector short circuit
ECM	655	7	C	E	Injector Solenoid Driver Cylinder 5 - Mechanical system not responding or out of adjustment
ECM	655	7	C	L	Injector Solenoid Driver Cylinder 5 - Mechanical system not responding or out of adjustment

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	655	7	S	E	Injection error, physical cylinder 5
ECM	655	7	S	L	Injection error, physical cylinder 5
ECM	655	8	S	E	Injector cyl. 5, over or under fueling
ECM	655	8	S	L	Injector cyl. 5, over or under fueling
ECM	655	1	S	F	Two or more injectors with the same trim code, injector cyl. 5
ECM	655	10	S	F	Fault with sensors/actuators for the particulate filter
ECM	655	13	S	F	Injector trim code version error, injector cyl. 5
ECM	655	15	S	F	Cylinder 5 torque error
ECM	655	16	S	F	Cylinder 5 injector fault, high torque
ECM	655	18	S	F	Cylinder 5 injector fault, low torque
ECM	655	2	S	F	Injector trim code, checksum error injector cyl. 5
ECM	655	20	S	F	Cylinder 5 balancing min or max
ECM	655	4	S	F	Injector 5 cable short circuit to ground
ECM	655	5	S	F	Injector cyl. 5 cable/injector open load
ECM	655	6	C	F	Injector Solenoid Valve Cylinder #5 Circuit – grounded circuit
ECM	655	6	S	F	Injector cyl. 5 cable/injector short circuit
ECM	655	7	S	F	Injection error, physical cylinder 5
ECM	655	8	S	F	Injector cyl. 5, over or under fueling
ECM	655	5	C	F	Injector Cylinder #05 : Injector Solenoid Cylinder #5 Circuit - Current Below Normal, or Open Circuit
ECM	655	7	C	F	Injector Solenoid Driver Cylinder 5 - Mechanical System Not Responding Properly or Out of Adjustment. Unintended fueling detected in cylinder Number 5.
ECM	656	1	S	E	Two or more injectors with the same trim code, injector cyl. 6
ECM	656	1	S	L	Two or more injectors with the same trim code, injector cyl. 6
ECM	656	13	S	E	Injector trim code version error, injector cyl. 6
ECM	656	13	S	L	Injector trim code version error, injector cyl. 6
ECM	656	15	S	E	Cylinder 6 torque error
ECM	656	15	S	L	Cylinder 6 torque error
ECM	656	16	S	E	Cylinder 6 injector fault, high torque
ECM	656	16	S	L	Cylinder 6 injector fault, high torque
ECM	656	18	S	E	Cylinder 6 injector fault, low torque
ECM	656	18	S	L	Cylinder 6 injector fault, low torque
ECM	656	2	S	E	Injector trim code, checksum error injector cyl. 6
ECM	656	2	S	L	Injector trim code, checksum error injector cyl. 6
ECM	656	20	S	E	Cylinder 6 balancing min or max
ECM	656	20	S	L	Cylinder 6 balancing min or max

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	656	5	C	E	Injector Solenoid Driver Cylinder 6 Circuit - Current below normal or open circuit
ECM	656	5	C	L	Injector Solenoid Driver Cylinder 6 Circuit - Current below normal or open circuit
ECM	656	5	S	E	Injector cyl. 6 cable/injector open load
ECM	656	5	S	L	Injector cyl. 6 cable/injector open load
ECM	656	6	S	E	Injector cyl. 6 cable/injector short circuit
ECM	656	6	S	L	Injector cyl. 6 cable/injector short circuit
ECM	656	7	C	E	Injector Solenoid Driver Cylinder 6 - Mechanical system not responding or out of adjustment
ECM	656	7	C	L	Injector Solenoid Driver Cylinder 6 - Mechanical system not responding or out of adjustment
ECM	656	7	S	E	Injection error, physical cylinder 6
ECM	656	7	S	L	Injection error, physical cylinder 6
ECM	656	8	S	E	Injector cyl. 6, over or under fueling
ECM	656	8	S	L	Injector cyl. 6, over or under fueling
ECM	656	5	C	F	Injector Solenoid Driver Cylinder 6 Circuit - Current Below Normal, or Open Circuit. Current detected at injector number 1 when voltage is turned off.
ECM	656	1	S	F	Two or more injectors with the same trim code, injector cyl. 6
ECM	656	13	S	F	Injector trim code version error, injector cyl. 6
ECM	656	15	S	F	Cylinder 6 torque error
ECM	656	16	S	F	Cylinder 6 injector fault, high torque
ECM	656	18	S	F	Cylinder 6 injector fault, low torque
ECM	656	2	S	F	Injector trim code, checksum error injector cyl. 6
ECM	656	20	S	F	Cylinder 6 balancing min or max
ECM	656	5	S	F	Injector cyl. 6 cable/injector open load
ECM	656	6	C	F	Injector Solenoid Valve Cylinder #6 Circuit - grounded circuit
ECM	656	6	S	F	Injector cyl. 6 cable/injector short circuit
ECM	656	7	S	F	Injection error, physical cylinder 6
ECM	656	8	S	F	Injector cyl. 6, over or under fueling
ECM	656	7	C	F	Injector Cylinder # 06 : Injector Cylinder #6 - Mechanical System Not Responding Properly or Out of Adjustment
ECM	657	1	S	E	Two or more injectors with the same trim code, injector cyl. 7
ECM	657	1	S	L	Two or more injectors with the same trim code, injector cyl. 7
ECM	657	13	S	E	Injector trim code version error, injector cyl. 7
ECM	657	13	S	L	Injector trim code version error, injector cyl. 7
ECM	657	15	S	E	Cylinder 7 torque error
ECM	657	15	S	L	Cylinder 7 torque error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	657	16	S	E	Cylinder 7 injector fault, high torque
ECM	657	16	S	L	Cylinder 7 injector fault, high torque
ECM	657	18	S	E	Cylinder 7 injector fault, low torque
ECM	657	18	S	L	Cylinder 7 injector fault, low torque
ECM	657	2	S	E	Injector trim code, checksum error injector cyl. 7
ECM	657	2	S	L	Injector trim code, checksum error injector cyl. 7
ECM	657	20	S	E	Cylinder 7 balancing min or max
ECM	657	20	S	L	Cylinder 7 balancing min or max
ECM	657	5	C	E	Injector Solenoid Driver Cylinder 7 Circuit - Current below normal or open circuit
ECM	657	5	C	L	Injector Solenoid Driver Cylinder 7 Circuit - Current below normal or open circuit
ECM	657	5	S	E	Injector cyl. 7 cable/injector open load
ECM	657	5	S	L	Injector cyl. 7 cable/injector open load
ECM	657	6	S	E	Injector cyl. 7 cable/injector short circuit
ECM	657	6	S	L	Injector cyl. 7 cable/injector short circuit
ECM	657	7	S	E	Injection error, physical cylinder 7
ECM	657	7	S	L	Injection error, physical cylinder 7
ECM	657	8	S	E	Injector cyl. 7, over or under fueling
ECM	657	8	S	L	Injector cyl. 7, over or under fueling
ECM	657	5	C	F	Injector Solenoid Driver Cylinder 7 Circuit - Current below normal or open circuit
ECM	657	1	S	F	Two or more injectors with the same trim code, injector cyl. 7
ECM	657	13	S	F	Injector trim code version error, injector cyl. 7
ECM	657	15	S	F	Cylinder 7 torque error
ECM	657	16	S	F	Cylinder 7 injector fault, high torque
ECM	657	18	S	F	Cylinder 7 injector fault, low torque
ECM	657	2	S	F	Injector trim code, checksum error injector cyl. 7
ECM	657	20	S	F	Cylinder 7 balancing min or max
ECM	657	5	S	F	Injector cyl. 7 cable/injector open load
ECM	657	6	S	F	Injector cyl. 7 cable/injector short circuit
ECM	657	7	S	F	Injection error, physical cylinder 7
ECM	657	8	S	F	Injector cyl. 7, over or under fueling
ECM	658	1	S	E	Two or more injectors with the same trim code, injector cyl. 8
ECM	658	1	S	L	Two or more injectors with the same trim code, injector cyl. 8
ECM	658	13	S	E	Injector trim code version error, injector cyl. 8
ECM	658	13	S	L	Injector trim code version error, injector cyl. 8

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	658	15	S	E	Cylinder 8 torque error
ECM	658	15	S	L	Cylinder 8 torque error
ECM	658	16	S	E	Cylinder 8 injector fault, high torque
ECM	658	16	S	L	Cylinder 8 injector fault, high torque
ECM	658	18	S	E	Cylinder 8 injector fault, low torque
ECM	658	18	S	L	Cylinder 8 injector fault, low torque
ECM	658	2	S	E	Injector trim code, checksum error injector cyl. 8
ECM	658	2	S	L	Injector trim code, checksum error injector cyl. 8
ECM	658	20	S	E	Cylinder 8 balancing min or max
ECM	658	20	S	L	Cylinder 8 balancing min or max
ECM	658	5	C	E	Injector Solenoid Driver Cylinder 8 Circuit - Current below normal or open circuit
ECM	658	5	C	L	Injector Solenoid Driver Cylinder 8 Circuit - Current below normal or open circuit
ECM	658	5	S	E	Injector cyl. 8 cable/injector open load
ECM	658	5	S	L	Injector cyl. 8 cable/injector open load
ECM	658	6	S	E	Injector cyl. 8 cable/injector short circuit
ECM	658	6	S	L	Injector cyl. 8 cable/injector short circuit
ECM	658	7	S	E	Injection error, physical cylinder 8
ECM	658	7	S	L	Injection error, physical cylinder 8
ECM	658	8	S	E	Injector cyl. 8, over or under fueling
ECM	658	8	S	L	Injector cyl. 8, over or under fueling
ECM	658	5	C	F	Injector Solenoid Driver Cylinder 8 Circuit - Current below normal or open circuit
ECM	658	1	S	F	Two or more injectors with the same trim code, injector cyl. 8
ECM	658	13	S	F	Injector trim code version error, injector cyl. 8
ECM	658	15	S	F	Cylinder 8 torque error
ECM	658	16	S	F	Cylinder 8 injector fault, high torque
ECM	658	18	S	F	Cylinder 8 injector fault, low torque
ECM	658	2	S	F	Injector trim code, checksum error injector cyl. 8
ECM	658	20	S	F	Cylinder 8 balancing min or max
ECM	658	5	S	F	Injector cyl. 8 cable/injector open load
ECM	658	6	S	F	Injector cyl. 8 cable/injector short circuit
ECM	658	7	S	F	Injection error, physical cylinder 8
ECM	658	8	S	F	Injector cyl. 8, over or under fueling
ECM	659	5	C	E	Injector Solenoid Driver Cylinder 9 Circuit - Current below normal or open circuit
ECM	659	5	C	L	Injector Solenoid Driver Cylinder 9 Circuit - Current below normal or open circuit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	659	5	C	F	Injector Solenoid Driver Cylinder 9 Circuit - Current below normal or open circuit
ECM	660	5	C	E	Injector Solenoid Driver Cylinder 10 Circuit - Current below normal or open circuit
ECM	660	5	C	L	Injector Solenoid Driver Cylinder 10 Circuit - Current below normal or open circuit
ECM	660	5	C	F	Injector Solenoid Driver Cylinder 10 Circuit - Current below normal or open circuit
ECM	661	5	C	E	Injector Solenoid Driver Cylinder 11 Circuit - Current below normal or open circuit
ECM	661	5	C	L	Injector Solenoid Driver Cylinder 11 Circuit - Current below normal or open circuit
ECM	661	5	C	F	Injector Solenoid Driver Cylinder 11 Circuit - Current below normal or open circuit
ECM	662	5	C	E	Injector Solenoid Driver Cylinder 12 Circuit - Current below normal or open circuit
ECM	662	5	C	L	Injector Solenoid Driver Cylinder 12 Circuit - Current below normal or open circuit
ECM	662	5	C	F	Injector Solenoid Driver Cylinder 12 Circuit - Current below normal or open circuit
ECM	663	5	C	E	Injector Solenoid Driver Cylinder 13 Circuit - Current below normal or open circuit
ECM	663	5	C	L	Injector Solenoid Driver Cylinder 13 Circuit - Current below normal or open circuit
ECM	663	5	C	F	Injector Solenoid Driver Cylinder 13 Circuit - Current below normal or open circuit
ECM	664	5	C	E	Injector Solenoid Driver Cylinder 14 Circuit - Current below normal or open circuit
ECM	664	5	C	L	Injector Solenoid Driver Cylinder 14 Circuit - Current below normal or open circuit
ECM	664	5	C	F	Injector Solenoid Driver Cylinder 14 Circuit - Current below normal or open circuit
ECM	665	5	C	E	Injector Solenoid Driver Cylinder 15 Circuit - Current below normal or open circuit
ECM	665	5	C	L	Injector Solenoid Driver Cylinder 15 Circuit - Current below normal or open circuit
ECM	665	5	C	F	Injector Solenoid Driver Cylinder 15 Circuit - Current below normal or open circuit
ECM	6653	16	C	F	Cold Start Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Moderate Severe Level
ECM	6653	16	C	E	Cold Start Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Moderate Severe Level
ECM	6653	16	C	L	Cold Start Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Moderate Severe Level
ECM	6655	3	C	F	Maintain ECU Power Lamp - Voltage Above Normal, or Shorted to High Source
ECM	6655	4	C	F	Maintain ECU Power Lamp - Voltage Below Normal, or Shorted to Low Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	6655	3	C	E	Maintain ECU Power Lamp - Voltage Above Normal, or Shorted to High Source
ECM	6655	3	C	L	Maintain ECU Power Lamp - Voltage Above Normal, or Shorted to High Source
ECM	6655	4	C	E	Maintain ECU Power Lamp - Voltage Below Normal, or Shorted to Low Source
ECM	6655	4	C	L	Maintain ECU Power Lamp - Voltage Below Normal, or Shorted to Low Source
ECM	666	5	C	E	Injector Solenoid Driver Cylinder 16 Circuit - Current below normal or open circuit
ECM	666	5	C	L	Injector Solenoid Driver Cylinder 16 Circuit - Current below normal or open circuit
ECM	666	5	C	F	Injector Solenoid Driver Cylinder 16 Circuit - Current below normal or open circuit
ECM	6713	13	C	E	Variable Geometry Turbocharger Actuator Software - Out of Calibration
ECM	6713	13	C	L	Variable Geometry Turbocharger Actuator Software - Out of Calibration
ECM	6713	31	C	E	Variable Geometry Turbocharger Actuator Software - Condition Exists
ECM	6713	31	C	L	Variable Geometry Turbocharger Actuator Software - Condition Exists
ECM	6713	13	C	F	Variable Geometry Turbocharger Actuator Software - Out of Calibration
ECM	6713	31	C	F	Variable Geometry Turbocharger Actuator Software - Condition Exists
ECM	6713	9	C	F	VGT Actuator Driver Circuit - Abnormal update rate
ECM	6713	9	C	E	VGT Actuator Driver Circuit - Abnormal update rate
ECM	6713	9	C	L	VGT Actuator Driver Circuit - Abnormal update rate
ECM	676	5	P	E	Engine Glow Plug Relay: Current Below Normal
ECM	676	5	P	L	Engine Glow Plug Relay: Current Below Normal
ECM	676	6	P	E	Engine Glow Plug Relay: Current Above Normal
ECM	676	6	P	L	Engine Glow Plug Relay: Current Above Normal
ECM	676	19	P	E	Engine Glow Plug Relay: Data Error
ECM	676	19	P	L	Engine Glow Plug Relay: Data Error
ECM	677	3	C	E	Starter Relay Driver Circuit - Voltage above normal, or shorted to high source
ECM	677	3	C	L	Starter Relay Driver Circuit - Voltage above normal, or shorted to high source
ECM	677	3	P	E	Engine Starter Motor Relay : Voltage Above Normal
ECM	677	3	P	L	Engine Starter Motor Relay : Voltage Above Normal
ECM	677	3	S	E	Starter actuator, short circuit to +24V
ECM	677	3	S	L	Starter actuator, short circuit to +24V

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	677	4	C	E	Starter Relay Driver Circuit - Voltage below normal, or shorted to low source
ECM	677	4	C	L	Starter Relay Driver Circuit - Voltage below normal, or shorted to low source
ECM	677	4	S	E	Starter actuator, short circuit to ground
ECM	677	4	S	L	Starter actuator, short circuit to ground
ECM	677	5	P	E	Engine Starter Motor Relay: Current Below Normal
ECM	677	5	P	L	Engine Starter Motor Relay: Current Below Normal
ECM	677	5	S	E	Starter actuator, open load
ECM	677	5	S	L	Starter actuator, open load
ECM	677	6	P	E	Engine Starter Motor Relay : Current Above Normal
ECM	677	6	P	L	Engine Starter Motor Relay : Current Above Normal
ECM	677	0	S	E	Unintentional starter activation while moving or idling
ECM	677	0	S	F	Unintentional starter activation while moving or idling
ECM	677	0	S	L	Unintentional starter activation while moving or idling
ECM	677	19	S	E	Starter motor demand defect via CAN
ECM	677	19	S	F	Starter motor demand defect via CAN
ECM	677	19	S	L	Starter motor demand defect via CAN
ECM	677	2	S	E	Starter actuator, faulty
ECM	677	2	S	F	Starter actuator, faulty
ECM	677	2	S	L	Starter actuator, faulty
ECM	677	3	S	F	Starter actuator, short circuit to +24V
ECM	677	4	S	F	Starter actuator, short circuit to ground
ECM	677	5	S	F	Starter actuator, open load
ECM	677	7	S	E	Starter actuator, blind start
ECM	677	7	S	F	Starter actuator, blind start
ECM	677	7	S	L	Starter actuator, blind start
ECM	677	8	S	F	Activates the starter
ECM	677	3	C	F	Starter Solenoid Lockout Relay Driver Circuit : Starter Relay Circuit - Voltage Above Normal, or Shorted to High Source
ECM	677	4	C	F	Starter Solenoid Lockout Relay Driver Circuit : Starter Relay Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	678	3	P	E	ECU 8V DC Supply : Voltage Above Normal
ECM	678	3	P	L	ECU 8V DC Supply : Voltage Above Normal
ECM	678	4	P	E	ECU 8V DC Supply : Voltage Below Normal
ECM	678	4	P	L	ECU 8V DC Supply : Voltage Below Normal
ECM	6799	3	C	E	Fan Blade Pitch Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source
ECM	6799	3	C	L	Fan Blade Pitch Position Sensor Circuit - Voltage Above Normal, or Shorted to High Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	6799	4	C	E	Fan Blade Pitch Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	6799	4	C	L	Fan Blade Pitch Position Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	6799	7	C	E	Fan Blade Pitch - Mechanical system not responding or out of adjustment
ECM	6799	7	C	L	Fan Blade Pitch - Mechanical system not responding or out of adjustment
ECM	6799	2	C	E	Fan Blade Pitch ? Data Erratic, Intermittent, or Incorrect
ECM	6799	2	C	L	Fan Blade Pitch ? Data Erratic, Intermittent, or Incorrect
ECM	6802	31	C	E	Aftertreatment 1 Diesel Exhaust Fluid Dosing System Frozen - Condition Exists
ECM	6802	31	C	L	Aftertreatment 1 Diesel Exhaust Fluid Dosing System Frozen - Condition Exists
ECM	6881	13	C	F	SCR Operator Inducement Override Switch - Out of Calibration
ECM	6881	9	C	F	SCR Operator Inducement Override Switch - Abnormal Update Rate
ECM	6881	13	C	E	SCR Operator Inducement Override Switch - Out of Calibration
ECM	6881	13	C	L	SCR Operator Inducement Override Switch - Out of Calibration
ECM	6881	9	C	E	SCR Operator Inducement Override Switch - Abnormal Update Rate
ECM	6881	9	C	L	SCR Operator Inducement Override Switch - Abnormal Update Rate
ECM	6882	11	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Root Cause Not Known
ECM	6882	12	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Bad Intelligent Device or Component
ECM	6882	16	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	6882	3	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Above Normal or Shorted to High Source
ECM	6882	4	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Below Normal or Shorted to Low Source
ECM	6882	9	C	F	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Abnormal Update Rate
ECM	6882	16	C	E	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	6882	16	C	L	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	6882	3	C	E	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
					Module - Voltage Above Normal or Shorted to High Source
ECM	6882	3	C	L	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Above Normal or Shorted to High Source
ECM	6882	4	C	E	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Below Normal or Shorted to Low Source
ECM	6882	4	C	L	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Voltage Below Normal or Shorted to Low Source
ECM	6882	11	C	E	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Root Cause Not Known
ECM	6882	11	C	L	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Root Cause Not Known
ECM	6882	12	C	E	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Bad Intelligent Device or Component
ECM	6882	12	C	L	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Bad Intelligent Device or Component
ECM	6882	9	C	E	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Abnormal Update Rate
ECM	6882	9	C	L	Aftertreatment Diesel Oxidation Catalyst Temperature Sensor Module - Abnormal Update Rate
TCU	69	*	*	L	REFERENCE ENGINE TORQUE SIGNAL
TCU	69	*	*	F	REFERENCE ENGINE TORQUE SIGNAL
ECM	6918	31	C	E	SCR System Cleaning Inhibited Due to Inhibit Switch - Condition Exists
ECM	6918	31	C	L	SCR System Cleaning Inhibited Due to Inhibit Switch - Condition Exists
ECM	6918	31	C	F	SCR System Cleaning Inhibited Due to Inhibit Switch - Condition Exists
ECM	6928	31	C	F	SCR System Cleaning Inhibited Due to System Timeout - Condition Exists
ECM	6928	31	C	E	SCR System Cleaning Inhibited Due to System Timeout - Condition Exists
ECM	6928	31	C	L	SCR System Cleaning Inhibited Due to System Timeout - Condition Exists
ECM	697	3	C	E	Auxiliary PWM Driver 1 Circuit - Voltage above normal, or shorted to high source
ECM	697	3	C	L	Auxiliary PWM Driver 1 Circuit - Voltage above normal, or shorted to high source
ECM	697	4	C	E	Auxiliary PWM Driver 1 Circuit - Voltage below normal, or shorted to low source
ECM	697	4	C	L	Auxiliary PWM Driver 1 Circuit - Voltage below normal, or shorted to low source
ECM	697	3	C	F	Auxiliary PWM Driver #1 : Auxiliary PWM Driver #1 - Voltage Above Normal, or Shorted to High Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	697	4	C	F	Auxiliary PWM Driver #1 : Auxiliary PWM Driver #1 - Voltage Below Normal, or Shorted to Low Source
TCU	6A	*	*	L	ACTUAL ENGINE TORQUE SIGNAL
TCU	6A	*	*	F	ACTUAL ENGINE TORQUE SIGNAL
TCU	6B	*	*	L	NOM FRICTION TORQUE SIGNAL
TCU	6B	*	*	F	NOM FRICTION TORQUE SIGNAL
TCU	6E	*	*	L	EEC2 TIMEOUT
TCU	6E	*	*	F	EEC2 TIMEOUT

8 SPN 7~

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	7	*	*	E	Short circuit in max flow solenoid system
ECM	70	2	C	E	Parking Brake Switch - Data Erratic, Intermittent, or Incorrect
ECM	70	2	C	L	Parking Brake Switch - Data Erratic, Intermittent, or Incorrect
ECM	701	14	C	F	Auxiliary Input/Output 1 - Special Instructions
ECM	701	14	C	E	Auxiliary Input/Output 1 - Special Instructions
ECM	701	14	C	L	Auxiliary Input/Output 1 - Special Instructions
MCU	701	4	*	E	Hour-Meter-Voltage Below Normal, Or Shorted To Low Source
MCU	701	4	*	L	Hour-Meter-Voltage Below Normal, Or Shorted To Low Source
MCU	701	4	*	F	Hourmeter Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	702	5	C	F	Auxiliary Input/Output 2 Circuit - Current below normal or open circuit
ECM	702	6	C	F	Auxiliary Input/Output 2 Circuit - Current above normal or grounded circuit
ECM	702	3	C	E	Auxiliary Input/Output 2 Circuit - Voltage above normal, or shorted to high source
ECM	702	3	C	L	Auxiliary Input/Output 2 Circuit - Voltage above normal, or shorted to high source
ECM	702	5	C	E	Auxiliary Input/Output 2 Circuit - Current below normal or open circuit
ECM	702	5	C	L	Auxiliary Input/Output 2 Circuit - Current below normal or open circuit
ECM	702	6	C	E	Auxiliary Input/Output 2 Circuit - Current above normal or grounded circuit
ECM	702	6	C	L	Auxiliary Input/Output 2 Circuit - Current above normal or grounded circuit
ECM	702	3	C	F	A problem was detected with the dual output-driver A circuit.
ECM	7026	11	C	E	Engine Fuel Valve 1 - Root Cause Not Known
ECM	7026	11	C	L	Engine Fuel Valve 1 - Root Cause Not Known
ECM	7026	13	C	E	Engine Fuel Valve 1 - Out of Calibration
ECM	7026	13	C	L	Engine Fuel Valve 1 - Out of Calibration
ECM	703	11	C	E	Warning Auxiliary Equipment Sensor Input # 3 (OEM Switch) - Root Cause Not Known
ECM	703	11	C	L	Warning Auxiliary Equipment Sensor Input # 3 (OEM Switch) - Root Cause Not Known
ECM	703	14	C	E	Auxiliary Equipment Sensor Input 3 Engine Protection Critical - Special Instructions
ECM	703	14	C	L	Auxiliary Equipment Sensor Input 3 Engine Protection Critical - Special Instructions
ECM	703	3	C	E	Auxiliary Input/Output 3 Circuit - Voltage above normal, or shorted to high source
ECM	703	3	C	L	Auxiliary Input/Output 3 Circuit - Voltage above normal, or shorted to high source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	703	11	C	F	Auxiliary Equipment Sensor Input Number 3 (OEM Switch) - Root Cause Not Known.
ECM	703	3	C	F	Auxiliary Input/Output #3 Circuit - shorted high
ECM	703	14	C	F	Auxiliary Equipment Sensor : Auxiliary Equipment Sensor Input 3 Engine Protection Critical - Special Instructions
MCU	705	0	*	E	(MCU Input)Battery Voltage-Data Valid But Above Normal Operational Range
MCU	705	0	*	L	(MCU Input)Battery Voltage-Data Valid But Above Normal Operational Range
MCU	705	1	*	E	(MCU Input)Battery Voltage-Data Valid But Below Normal Operational Range
MCU	705	1	*	L	(MCU Input)Battery Voltage-Data Valid But Below Normal Operational Range
MCU	705	0	*	F	Battery Voltage High
MCU	705	1	*	F	Battery Voltage Low
Warning	706	*	*	E	(Warning) Battery Voltage low
Warning	706	*	*	L	(Warning) Battery Voltage Low
Warning	706	*	*	F	(Warning) Battery Voltage Low
MCU	707	1	*	F	Alternator Node I Voltage Low (or Open Circuit)
MCU	707	1	*	E	Alternator Voltage-Data Valid But Below Normal Operational Range
MCU	707	1	*	L	Alternator Voltage-Data Valid But Below Normal Operational Range
TCU	709	*	*	L	Warning Symbol Lamp
TCU	71	*	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH K1
TCU	71	*	*	F	S.C. TO BATTERY VOLTAGE AT CLUTCH K1
MCU	711	2	*	E	One Touch Deceleration Switch – Data Erratic, Intermittent Or Incorrect
MCU	712	2	*	E	Power Boost Switch – Data Erratic, Intermittent Or Incorrect
MCU	714	3	*	E	Acceleration Dial Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	714	3	*	L	Acceleration Dial Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	714	4	*	E	Acceleration Dial Voltage-Voltage Below Normal, Or Shorted To Low Source
MCU	714	4	*	L	Acceleration Dial Voltage-Voltage Below Normal, Or Shorted To Low Source
MCU	715	3	*	E	Rotate Signal Input Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	715	3	*	L	Rotate Signal Input Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	715	4	*	E	Rotate Signal Input Voltage-Voltage Below Normal, Or Shorted To Low Source
MCU	715	4	*	L	Rotate Signal Input Voltage-Voltage Below Normal, Or Shorted To Low Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	716	3	*	E	Tilt Signal Input Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	716	3	*	L	Tilt Signal Input Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	716	4	*	E	Tilt Signal Input Voltage-Voltage Below Normal, Or Shorted To Low Source
MCU	716	4	*	L	Tilt Signal Input Voltage-Voltage Below Normal, Or Shorted To Low Source
ECM	717	11	C	F	Either low voltage detected on auto-shift high gear actuator circuit when (+) 12 VDC are commanded or voltage detected when no voltage is commanded.
ECM	718	11	C	F	Either low voltage detected on auto-shift low gear actuator circuit when + 12 VDC are commanded or voltage detected when no voltage is commanded.
ECM	719	11	C	F	Either low voltage detected on auto-shift neutral gear actuator circuit when + 12 VDC are commanded or voltage detected when no voltage is commanded.
TCU	72	*	*	F	S.C. TO GROUND AT CLUTCH K1
TCU	72	*	*	L	S.C. TO GROUND AT CLUTCH K1
MCU	722	6	*	E	Travel Alarm Buzzer-Current Above Normal Or Grounded Circuit
MCU	722	6	*	L	Travel Alarm Buzzer-Current Above Normal Or Grounded Circuit
MCU	722	3	*	E	Travel Alarm Buzzer-Voltage Above Normal, Or Shorted To High Source
MCU	722	3	*	L	Travel Alarm Buzzer-Voltage Above Normal, Or Shorted To High Source
MCU	722	4	*	E	Travel Alarm Buzzer-Voltage Below Normal, Or Shorted To Low Source
MCU	722	4	*	L	Travel Alarm Buzzer-Voltage Below Normal, Or Shorted To Low Source
ECM	723	2	C	F	Engine Speed Sensor (Camshaft) Error - Data Erratic, Intermittent, or Incorrect. The ECM has detected an error in the camshaft position sensor signal.
ECM	723	7	C	F	Engine Speed / Position Camshaft and Crankshaft Misalignment - Mechanical system not responding or out of adjustment
ECM	723	10	S	E	Engine position sensor 2, position diff
ECM	723	10	S	L	Engine position sensor 2, position diff
ECM	723	14	S	E	Engine position sensor 2 error torque limit
ECM	723	14	S	L	Engine position sensor 2 error torque limit
ECM	723	2	C	E	Engine Camshaft Speed / Position Sensor - Data erratic, intermittent or incorrect
ECM	723	2	C	L	Engine Camshaft Speed / Position Sensor - Data erratic, intermittent or incorrect
ECM	723	2	S	E	Engine position sensor 2, faulty
ECM	723	2	S	L	Engine position sensor 2, faulty
ECM	723	7	C	E	Engine Speed / Position Camshaft and Crankshaft Misalignment - Mechanical system not responding or out of adjustment
ECM	723	7	C	L	Engine Speed / Position Camshaft and Crankshaft Misalignment - Mechanical system not responding or out of adjustment
ECM	723	7	S	E	Engine position sensor 2, faulty
ECM	723	7	S	L	Engine position sensor 2, faulty
ECM	723	8	P	E	Engine Speed Sensor #2 : Abnormal Frequency, Pulse Width, or Period
ECM	723	8	P	L	Engine Speed Sensor #2 : Abnormal Frequency, Pulse Width, or Period
ECM	723	8	S	E	Engine position sensor 2, Gap Puls or Sync error
ECM	723	8	S	L	Engine position sensor 2, Gap Puls or Sync error
MCU	723	3	*	E	Buzzer-Voltage Above Normal, Or Shorted To High Source
MCU	723	3	*	L	Buzzer-Voltage Above Normal, Or Shorted To High Source
MCU	723	4	*	E	Buzzer-Voltage Below Normal, Or Shorted To Low Source
MCU	723	4	*	L	Buzzer-Voltage Below Normal, Or Shorted To Low Source
ECM	723	10	S	F	Engine position sensor 2, position diff
ECM	723	14	S	F	Engine position sensor 2 error torque limit
ECM	723	2	S	F	Engine position sensor 2, faulty
ECM	723	4	S	E	Engine position sensor 2, too weak signal
ECM	723	4	S	F	Engine position sensor 2, too weak signal
ECM	723	4	S	L	Engine position sensor 2, too weak signal
ECM	723	7	S	F	Engine position sensor 2, faulty
ECM	723	8	S	F	Engine position sensor 2, Gap Puls or Sync error
ECM	723	9	S	E	Engine position sensor 2, Time out
ECM	723	9	S	F	Engine position sensor 2, Time out
ECM	723	9	S	L	Engine position sensor 2, Time out
MCU	723	3	*	F	Buzzer Circuit - Voltage Above Normal, or Shorted to High Source
MCU	723	4	*	F	Buzzer Circuit - Voltage Below Normal, or Shorted to Low Source (or Open Circuit)
MCU	727	4	*	E	Wiper Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	727	4	*	L	Wiper Relay-Voltage Below Normal, Or Shorted To Low Source
MCU	727	6	*	E	Wiper Relay-Current Above Normal Or Grounded Circuit
MCU	727	6	*	L	Wiper Relay-Current Above Normal Or Grounded Circuit
MCU	727	4	*	F	Wiper Relay Circuit - Voltage Below Normal, or Shorted to Low Source (or Open Circuit)
MCU	727	6	*	F	Wiper Relay Circuit . Current Above Normal
MCU	728	3	*	E	Boom Link Angle Sensor Signal Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	728	3	*	L	Boom Link Angle Sensor Signal Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	728	4	*	E	Boom Link Angle Sensor Signal Voltage-Voltage Below Normal, Or Shorted To Low Source
MCU	728	4	*	L	Boom Link Angle Sensor Signal Voltage-Voltage Below Normal, Or Shorted To Low Source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	728	3	*	F	Boom Position Sensor Signal Circuit . Voltage Above Normal, or Shorted to High Source (or Open Circuit)
MCU	728	4	*	F	Boom Position Sensor Signal Circuit . Voltage Below Normal, or Shorted to Low Source
MCU	729	3	*	E	Bell Crank Angle Sensor Signal Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	729	3	*	L	Bell Crank Angle Sensor Signal Voltage-Voltage Above Normal, Or Shorted To High Source
MCU	729	4	*	E	Bell Crank Angle Sensor Signal Voltage-Voltage Below Normal, Or Shorted To Low Source
MCU	729	4	*	L	Bell Crank Angle Sensor Signal Voltage-Voltage Below Normal, Or Shorted To Low Source
ECM	729	3	C	E	Engine Intake Air Heater 1 Circuit - Voltage above normal, or shorted to high source
ECM	729	3	C	L	Engine Intake Air Heater 1 Circuit - Voltage above normal, or shorted to high source
ECM	729	4	C	E	Engine Intake Air Heater 1 Circuit - Voltage below normal, or shorted to low source
ECM	729	4	C	L	Engine Intake Air Heater 1 Circuit - Voltage below normal, or shorted to low source
MCU	729	3	*	F	Bucket Position Sensor Signal Circuit . Voltage Above Normal, or Shorted to High Source (or Open Circuit)
MCU	729	4	*	F	Bucket Position Sensor Signal Circuit . Voltage Below Normal, or Shorted to Low Source
ECM	729	3	C	F	Inlet Air Heater Driver #1 : Intake Air Heater #1 Circuit - Voltage Above Normal, or Shorted to High Source
ECM	729	4	C	F	Inlet Air Heater Driver #1 : Intake Air Heater #1 Circuit - Voltage Below Normal, or Shorted to Low Source
TCU	73	*	*	L	O.C. AT CLUTCH K1
TCU	73	*	*	F	O.C. AT CLUTCH K1
ECM	73	11	C	F	Error detected in lift pump circuit at pins 11 and 22 of the engine harness.
MCU	730	12	*	E	MCU Internal Memory Status-Bad Intelligent Device Or Component
MCU	730	12	*	L	MCU Internal Memory Status-Bad Intelligent Device Or Component
MCU	730	19	*	E	APTC Heater PWM Output Duty-Received Network Data In Error
MCU	730	19	*	L	APTC Heater PWM Output Duty-Received Network Data In Error
ECM	730	3	C	E	Intake Air Heater 2 Circuit - Voltage Above Normal, or Shorted to High Source
ECM	730	3	C	L	Intake Air Heater 2 Circuit - Voltage Above Normal, or Shorted to High Source
ECM	730	4	C	E	Intake Air Heater 2 Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	730	4	C	L	Intake Air Heater 2 Circuit - Voltage Below Normal, or Shorted to Low Source
MCU	730	19	*	F	APTC Heater PWM Output Duty Operation Error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	730	3	C	F	Intake Air Heater # 2 : Intake Air Heater 2 Circuit - Voltage Above Normal, or Shorted to High Source
ECM	730	4	C	F	Intake Air Heater # 2 : Intake Air Heater 2 Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	7321	3	C	E	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage Above Normal, or Shorted to High Source
ECM	7321	3	C	L	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage Above Normal, or Shorted to High Source
ECM	7323	4	C	E	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage below normal, or shorted to low source
ECM	7323	4	C	L	Aftertreatment 1 Outlet Soot Sensor Heater - Voltage below normal, or shorted to low source
ECM	733	3	C	F	Rack Position Sensor #1 Circuit - shorted high
ECM	734	5	C	F	
ECM	7343	31	P	E	SCR Operator Inducement Override Renewal Required
ECM	7343	31	P	L	SCR Operator Inducement Override Renewal Required
EHCU	739	2	*	L	Armrest Switch Signal Error
TCU	74	*	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH K2
TCU	74	*	*	F	S.C. TO BATTERY VOLTAGE AT CLUTCH K2
ECM	7440	31	P	E	Aftertreatment Active Regeneration Inhibited Due to Low Exhaust Pressure
ECM	7440	31	P	L	Aftertreatment Active Regeneration Inhibited Due to Low Exhaust Pressure
ECM	7441	3	P	E	Aftertreatment Ambient Air Temperature : Voltage Above Normal
ECM	7441	3	P	L	Aftertreatment Ambient Air Temperature : Voltage Above Normal
ECM	7441	4	P	E	Aftertreatment Ambient Air Temperature : Voltage Below Normal
ECM	7441	4	P	L	Aftertreatment Ambient Air Temperature : Voltage Below Normal
ECM	748	9	C	F	Transmission Output Retarder - Abnormal update rate
ECM	748	9	C	E	Transmission Output Retarder - Abnormal update rate
ECM	748	9	C	L	Transmission Output Retarder - Abnormal update rate
TCU	75	*	*	F	S.C. TO GROUND AT CLUTCH K2
TCU	75	*	*	L	S.C. TO GROUND AT CLUTCH K2
ECM	7576	12	C	E	Glow Plug Module - Bad intelligent device or component
ECM	7576	12	C	L	Glow Plug Module - Bad intelligent device or component
TCU	76	*	*	L	O.C. AT CLUTCH K2
TCU	76	*	*	F	O.C. AT CLUTCH K2
TCU	77	*	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH K3
TCU	77	*	*	F	S.C. TO BATTERY VOLTAGE AT CLUTCH K3
ECM	7745	13	C	E	Engine Start Request - Out of Calibration
ECM	7745	13	C	L	Engine Start Request - Out of Calibration
ECM	7745	9	C	E	Engine Start Request - Abnormal Update Rate

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	7745	9	C	L	Engine Start Request - Abnormal Update Rate
ECM	7746	13	C	E	Engine Start Consent - Out of Calibration
ECM	7746	13	C	L	Engine Start Consent - Out of Calibration
TCU	777	*	*	E	aaaaa test
TCU	78	*	*	F	S.C. TO GROUND AT CLUTCH K3
TCU	78	*	*	L	S.C. TO GROUND AT CLUTCH K3
ECM	7848	14	C	E	Aftertreatment 1 SCR System Conditions Not Met for Active Cleaning - Special Instructions
ECM	7848	14	C	L	Aftertreatment 1 SCR System Conditions Not Met for Active Cleaning - Special Instructions
TCU	79	*	*	L	O.C. AT CLUTCH K3
TCU	79	*	*	F	O.C. AT CLUTCH K3
TCU	7A	*	*	L	S.C. TO BATTERY VOLTAGE AT CONVERTER CLUTCH no reaction
TCU	7A	*	*	F	S.C. TO BATTERY VOLTAGE AT CONVERTER CLUTCH no reaction
TCU	7B	*	*	L	S.C. TO GROUND AT CONVERTER CLUTCH
TCU	7B	*	*	F	S.C. TO GROUND AT CONVERTER CLUTCH
TCU	7C	*	*	L	O.C. AT CONVERTER CLUTCH
TCU	7C	*	*	F	O.C. AT CONVERTER CLUTCH
TCU	7D	*	*	L	S.C. TO GROUND AT ENGINE DERATING DEVICE
TCU	7D	*	*	F	S.C. TO GROUND AT ENGINE DERATING DEVICE
TCU	7E	*	*	L	S.C. TO BATTERY VOLTAGE AT ENGINE DERATING DEVICE
TCU	7E	*	*	F	S.C. TO BATTERY VOLTAGE AT ENGINE DERATING DEVICE
TCU	7F	*	*	L	O.C. AT ENGINE DERATING DEVICE
TCU	7F	*	*	F	O.C. AT ENGINE DERATING DEVICE

9 SPN 8~

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	81	*	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH K4
ECM	81	16	C	F	Engine Diesel Particulate Filter Intake Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	81	16	C	E	Engine Diesel Particulate Filter Intake Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	81	16	C	L	Engine Diesel Particulate Filter Intake Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
TCU	81	*	*	F	S.C. TO BATTERY VOLTAGE AT CLUTCH K4
TCU	82	*	*	F	S.C. TO GROUND AT CLUTCH K4
TCU	82	*	*	L	S.C. TO GROUND AT CLUTCH K4
TCU	83	*	*	L	O.C. AT CLUTCH K4
TCU	83	*	*	F	O.C. AT CLUTCH K4
MCU	830	12	*	F	MCU Internal Memory Error
TCU	84	*	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH KV
ECM	84	10	C	F	Wheel-based Vehicle Speed : Vehicle Speed Sensor Circuit tampering has been detected - Abnormal Rate of Change
ECM	84	18	C	F	Wheel-Based Vehicle Speed Data Valid but Below Normal Operational Range Moderately Severe Level. The ECM lost the vehicle speed signal.
ECM	84	19	C	F	Wheel-Based Vehicle Speed - Received Network Data In Error
ECM	84	2	C	F	Vehicle Speed Sensor Circuit - Data Erratic, Intermittent, or Incorrect
ECM	84	9	C	F	Wheel-Based Vehicle Speed - Abnormal update rate
TCU	84	*	*	F	S.C. TO BATTERY VOLTAGE AT CLUTCH KV
ECM	84	10	C	E	Wheel-Based Vehicle Speed Sensor Circuit tampering has been detected - Abnormal rate of change
ECM	84	10	C	L	Wheel-Based Vehicle Speed Sensor Circuit tampering has been detected - Abnormal rate of change
ECM	84	19	C	E	Wheel-Based Vehicle Speed - Received Network Data In Error
ECM	84	19	C	L	Wheel-Based Vehicle Speed - Received Network Data In Error
ECM	84	2	C	E	Wheel-Based Vehicle Speed - Data erratic, intermittent or incorrect
ECM	84	2	C	L	Wheel-Based Vehicle Speed - Data erratic, intermittent or incorrect
ECM	84	9	C	E	Wheel-Based Vehicle Speed - Abnormal update rate
ECM	84	9	C	L	Wheel-Based Vehicle Speed - Abnormal update rate
MCU	840	2	*	F	Cluster Communication Error
MCU	840	2	*	E	Cluster Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	840	2	*	L	Cluster Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	841	2	*	E	ECM Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	841	2	*	L	ECM Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	841	2	*	F	ECM Communication Error

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	842	2	*	E	TCU Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	842	2	*	L	TCU Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	842	2	*	F	TCU Communication Error
MCU	843	2	*	E	A/C Controller Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	843	2	*	L	A/C Controller Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	843	2	*	F	APTC Communication Error
MCU	844	2	*	F	Monitor Communication Error
MCU	844	2	*	E	Monitor Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	844	2	*	L	Monitor Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	845	2	*	E	I/O Controller 1 Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	845	2	*	L	I/O Controller 1 Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	848	2	*	E	Haptic Controller or Jog Dial Module Communication Status Data Erratic, Intermittent Or Incorrect, HCESPN; 848, FMI; 2
MCU	848	2	*	L	Haptic Controller or Jog Dial Module Communication Status Data Erratic, Intermittent Or Incorrect, HCESPN; 848, FMI; 2
TCU	85	*	*	L	S.C. TO GROUND AT CLUTCH KV
TCU	85	*	*	F	S.C. TO GROUND AT CLUTCH KV
MCU	850	2	*	E	RMCU Status-Data Erratic, Intermittent Or Incorrect
MCU	850	2	*	L	RMCU Status-Data Erratic, Intermittent Or Incorrect
MCU	850	2	*	F	RMCU-MCU Communication Error
TCU	86	*	*	L	O.C. AT CLUTCH KV
TCU	86	*	*	F	O.C. AT CLUTCH KV
MCU	861	2	*	E	EHCU Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	861	2	*	L	EHCU Communication Status-Data Erratic, Intermittent Or Incorrect
ECM	862	3	C	F	Crankcase Breather Filter Heater Circuit - Voltage above normal, or shorted to high source
ECM	862	4	C	F	Crankcase Breather Filter Heater Circuit - Voltage below normal, or shorted to low source
ECM	862	3	C	E	Crankcase Breather Filter Heater Circuit - Voltage above normal, or shorted to high source
ECM	862	3	C	L	Crankcase Breather Filter Heater Circuit - Voltage above normal, or shorted to high source
ECM	862	4	C	E	Crankcase Breather Filter Heater Circuit - Voltage below normal, or shorted to low source
ECM	862	4	C	L	Crankcase Breather Filter Heater Circuit - Voltage below normal, or shorted to low source
MCU	866	2	*	E	AAVM Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	866	2	*	L	AAVM Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	867	2	*	E	RDU Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	867	2	*	L	RDU Communication Status-Data Erratic, Intermittent Or Incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	868	2	*	E	Switch Controller Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	868	2	*	L	Switch Controller Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	869	2	*	E	KCU Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	869	2	*	L	KCU Communication Status-Data Erratic, Intermittent Or Incorrect
TCU	87	*	*	L	S.C. TO BATTERY VOLTAGE AT CLUTCH KR
TCU	87	*	*	F	S.C. TO BATTERY VOLTAGE AT CLUTCH KR
ECM	876	11	C	F	Air conditioner clutch driver signal indicates a short to ground when commanded on.
MCU	879	2	*	E	AVCU Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	879	2	*	L	AVCU Communication Status-Data Erratic, Intermittent Or Incorrect
TCU	88	*	*	L	S.C. TO GROUND AT CLUTCH KR
TCU	88	*	*	F	S.C. TO GROUND AT CLUTCH KR
TCU	89	*	*	L	O.C. AT CLUTCH KR
TCU	89	*	*	F	O.C. AT CLUTCH KR
MCU	897	2	*	E	PCU Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	897	2	*	L	PCU Communication Status-Data Erratic, Intermittent Or Incorrect
TCU	8A	*	*	L	S.C. TO GROUND AT DLM TRANSVERSAL OUTPUT
TCU	8A	*	*	F	S.C. TO GROUND AT DLM TRANSVERSAL OUTPUT
TCU	8B	*	*	L	S.C. TO BATTERY VOLTAGE AT DLM TRANSVERSAL
TCU	8B	*	*	F	S.C. TO BATTERY VOLTAGE AT DLM TRANSVERSAL
TCU	8C	*	*	L	O.C. AT DLM TRANSVERSAL OUTPUT
TCU	8C	*	*	F	O.C. AT DLM TRANSVERSAL OUTPUT
TCU	8D	*	*	L	S.C. TO GROUND AT DLM INDICATOR LAMP OUTPUT
TCU	8D	*	*	F	S.C. TO GROUND AT DLM INDICATOR LAMP OUTPUT
TCU	8E	*	*	L	S.C. TO BATTERY VOLTAGE AT DLM INDICATOR LAMP OUTPUT
TCU	8E	*	*	F	S.C. TO BATTERY VOLTAGE AT DLM INDICATOR LAMP OUTPUT
TCU	8F	*	*	L	O.C. DLM INDICATOR LAMP OUTPUT
TCU	8F	*	*	F	O.C. DLM INDICATOR LAMP OUTPUT

10 SPN 9~

TYPE	SPN	FMI	Engine	Machine type	Description
MCU	900	2	*	E	MGS(Bucket) Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	900	2	*	L	MGS(Bucket) Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	901	2	*	E	MGS(Arm) Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	901	2	*	L	MGS(Arm) Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	902	2	*	E	MGS(Boom) Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	902	2	*	L	MGS(Boom) Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	903	2	*	E	MGS(Body) Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	903	2	*	L	MGS(Body) Communication Status-Data Erratic, Intermittent Or Incorrect
ECM	91	0	C	E	Accelerator Pedal or Lever Position Sensor 1 - Data valid but above normal operational range - Most Severe Level
ECM	91	0	C	L	Accelerator Pedal or Lever Position Sensor 1 - Data valid but above normal operational range - Most Severe Level
ECM	91	1	C	F	Accelerator Pedal or Lever Position 1 Sensor Circuit Frequency - Data valid but below normal operating Range
ECM	91	10	S	F	Accelerator pedal not plausible, faulty
ECM	91	13	C	F	Accelerator Pedal Idle Validation Circuit - out of calibration
ECM	91	19	C	F	SAE J1939 Multiplexing Accelerator Pedal Sensor System Error
ECM	91	3	C	F	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	91	8	C	F	Accelerator Pedal Position Sensor Circuit - high frequency
ECM	91	9	C	F	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Abnormal update rate
ECM	91	1	C	E	Accelerator Pedal or Lever Position 1 Sensor Circuit Frequency - Data valid but below normal operating Range
ECM	91	1	C	L	Accelerator Pedal or Lever Position 1 Sensor Circuit Frequency - Data valid but below normal operating Range
ECM	91	10	S	E	Accelerator pedal not plausible, faulty
ECM	91	10	S	L	Accelerator pedal not plausible, faulty
ECM	91	19	C	E	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Received Network Data In Error
ECM	91	19	C	L	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Received Network Data In Error
ECM	91	19	S	E	Accelerator pedal value out of range via CAN
ECM	91	19	S	L	Accelerator pedal value out of range via CAN
ECM	91	2	C	E	Accelerator Pedal or Lever Position Sensor 1 - Data erratic, intermittent or incorrect
ECM	91	2	C	L	Accelerator Pedal or Lever Position Sensor 1 - Data erratic, intermittent or incorrect
ECM	91	2	P	E	Accelerator Pedal Position 1 : Erratic, Intermittent or Inaccurate
ECM	91	2	P	L	Accelerator Pedal Position 1 : Erratic, Intermittent or Inaccurate
ECM	91	2	S	E	Auxiliary accelerator pedal is used due to other fault

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	91	2	S	L	Auxiliary accelerator pedal is used due to other fault
ECM	91	3	C	E	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	91	3	C	L	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	91	3	P	E	Accelerator Pedal Position 1 : Voltage Above Normal
ECM	91	3	P	L	Accelerator Pedal Position 1 : Voltage Above Normal
ECM	91	3	Y	E	Accelerator sensor 1 error (Voltage high)
ECM	91	3	Y	L	Accelerator sensor 1 error (Voltage high)
ECM	91	4	C	L	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source
ECM	91	4	P	E	Accelerator Pedal Position 1 : Voltage Below Normal
ECM	91	4	P	L	Accelerator Pedal Position 1 : Voltage Below Normal
ECM	91	4	Y	E	Accelerator sensor 1 error (Voltage low)
ECM	91	4	Y	L	Accelerator sensor 1 error (Voltage low)
ECM	91	8	P	E	Accelerator Pedal Position 1 : Abnormal Frequency, Pulse width or Period
ECM	91	8	P	L	Accelerator Pedal Position 1 : Abnormal Frequency, Pulse width or Period
ECM	91	9	C	E	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Abnormal update rate
ECM	91	9	C	L	SAE J1939 Multiplexed Accelerator Pedal or Lever Sensor System - Abnormal update rate
ECM	91	9	S	E	Accelerator pedal faulty or error via can
ECM	91	9	S	L	Accelerator pedal faulty or error via can
ECM	91	2	C	F	Accelerator Pedal Idle Validation Circuit - data incorrect
ECM	91	4	C	F	FC 131: High voltage detected at accelerator position signal pin 30 of the OEM harness. FC 132: Low voltage detected at accelerator position signal pin 30 of the OEM harness.
TCU	91	*	*	L	S.C. TO GROUND AT RELAY REVERSE WARNING ALARM
ECM	91	19	S	F	Accelerator pedal value out of range via CAN
ECM	91	2	S	F	Auxiliary accelerator pedal is used due to other fault
ECM	91	9	S	F	Accelerator pedal faulty or error via can
TCU	91	*	*	F	S.C. TO GROUND AT RELAY REVERSE WARNING ALARM
MCU	910	2	*	E	MGS Laser Communication Status-Data Erratic, Intermittent Or Incorrect
MCU	910	2	*	L	MGS Laser Communication Status-Data Erratic, Intermittent Or Incorrect
TCU	92	*	*	L	S.C. TO BATTERY VOLTAGE AT RELAY REVERSE WARNING ALARM
TCU	92	*	*	F	S.C. TO BATTERY VOLTAGE AT RELAY REVERSE WARNING ALARM
ECM	923	11	C	F	Output Device Driver (VGT or Transmission shift PWM signal)
TCU	93	*	*	L	O.C. AT RELAY REVERSE WARNING ALARM
ECM	93	2	C	E	Auxiliary Alternate Torque Validation Switch - Data erratic, intermittent or incorrect

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	93	2	C	F	OEM Alternate torque validation switch - data incorrect
ECM	93	2	C	L	Auxiliary Alternate Torque Validation Switch - Data erratic, intermittent or incorrect
TCU	93	*	*	F	O.C. AT RELAY REVERSE WARNING ALARM
ECM	931	3	C	F	Fuel Supply Pump Actuator Circuit - shorted high
ECM	931	7	C	F	Fuel Supply Pump Actuator – mechanically stuck
ECM	94	0	S	E	Accumulator pressure is too high
ECM	94	0	S	L	Accumulator pressure is too high
ECM	94	0	C	F	Fuel pressure signal indicates that fuel pressure has exceeded the maximum limit for the given engine rating.
ECM	94	18	C	F	Fuel Pump Delivery Pressure Low - Data Valid but Below Normal Operational Range - Moderately Severe Level. The ECM has detected that fuel pressure is lower than commanded pressure.
ECM	94	0	C	E	Engine Fuel Delivery Pressure - Data Valid but Above Normal Operational Range - Most Severe Level
ECM	94	0	C	L	Engine Fuel Delivery Pressure - Data Valid but Above Normal Operational Range - Most Severe Level
ECM	94	15	C	E	Fuel Pump Delivery Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	94	15	C	L	Fuel Pump Delivery Pressure - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	94	16	C	E	Fuel Pump Delivery Pressure - Data Valid but Above Normal Operational Range – Moderately Severe Level
ECM	94	16	C	L	Fuel Pump Delivery Pressure - Data Valid but Above Normal Operational Range – Moderately Severe Level
ECM	94	17	C	E	Fuel Pump Delivery Pressure - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	94	17	C	L	Fuel Pump Delivery Pressure - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	94	18	C	E	Fuel Pump Delivery Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	94	18	C	L	Fuel Pump Delivery Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level
ECM	94	2	C	E	Fuel Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
ECM	94	2	C	L	Fuel Pressure Sensor Circuit - Data Erratic, Intermittent, or Incorrect
TCU	94	*	*	L	S.C. TO GROUND AT RELAY STARTER INTERLOCK
ECM	94	0	S	F	Gage pressure of fuel in system as delivered from supply pump to the injection pump.
ECM	94	10	C	F	Fuel pressure sensor stuck in range while engine is operating or fuel pressure sensor reading erratic in range.
ECM	94	16	C	F	Fuel Pressure High - Warning
ECM	94	2	C	F	Indicates that the sensor is significantly offset or biased with respect to actual pressure at ambient conditions.
ECM	94	3	C	E	Fuel Delivery Pressure Sensor Circuit - Voltage above normal, or shorted to high source

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	94	3	C	L	Fuel Delivery Pressure Sensor Circuit - Voltage above normal, or shorted to high source
ECM	94	4	C	E	Fuel Delivery Pressure Sensor Circuit - Voltage below normal, or shorted to low source
ECM	94	4	C	L	Fuel Delivery Pressure Sensor Circuit - Voltage below normal, or shorted to low source
TCU	94	*	*	F	S.C. TO GROUND AT RELAY STARTER INTERLOCK
ECM	94	1	C	F	Fuel Delivery Pressure : Fuel Pump Delivery Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
ECM	94	15	C	F	Fuel Delivery Pressure : Fuel Pump Delivery Pressure - Data Valid but Above Normal Operational Range - Least Severe Level
ECM	94	17	C	F	Fuel Delivery Pressure : Fuel Pump Delivery Pressure - Data Valid but Below Normal Operational Range - Least Severe Level
ECM	94	3	C	F	Fuel Delivery Pressure : Fuel Delivery Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source
ECM	94	4	C	F	Fuel Delivery Pressure : Fuel Delivery Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source
ECM	95	16	C	E	Fuel Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	95	16	C	L	Fuel Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level
TCU	95	*	*	L	S.C. TO BATTERY VOLTAGE AT RELAY STARTER INTERLOCK
TCU	95	*	*	F	S.C. TO BATTERY VOLTAGE AT RELAY STARTER INTERLOCK
ECM	95	16	C	F	Engine Fuel Filter Differential Pressure : Fuel Filter Differential Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level
TCU	96	*	*	L	O.C. AT RELAY STARTER INTERLOCK
TCU	96	*	*	F	O.C. AT RELAY STARTER INTERLOCK
ECM	97	15	C	F	Water in Fuel Indicator : Water in Fuel Indicator High - Data Valid but Above Normal Operational Range - Least Severe Level (Water has been detected in the fuel filter) 97-15
ECM	97	16	C	F	Water in Fuel Indicator : Water in Fuel Indicator - Data Valid but Above Normal Operational Range - Moderately Severe Level
ECM	97	3	C	F	Water-in-Fuel Indicator : Water-In-Fuel Sensor Signal Voltage High (Check the water-in-fuel sensor and circuit) 97-3
ECM	97	0	C	E	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Most Severe Level
ECM	97	0	C	L	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Most Severe Level
ECM	97	15	C	E	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	97	15	C	L	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Least Severe Level
ECM	97	15	P	E	Water in Fuel Indicator: High - least severe (1)

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	97	15	P	L	Water in Fuel Indicator: High - least severe (1)
ECM	97	16	C	E	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	97	16	C	L	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Moderately Severe Level
ECM	97	16	P	E	Water In fuel Indicator : High - moderate severity (2)
ECM	97	16	P	L	Water In fuel Indicator : High - moderate severity (2)
ECM	97	3	C	E	Water in Fuel Indicator Sensor Circuit - Voltage above normal, or shorted to high source
ECM	97	3	C	L	Water in Fuel Indicator Sensor Circuit - Voltage above normal, or shorted to high source
ECM	97	3	P	E	Water In Fuel Indicator : Voltage Above Normal
ECM	97	3	P	L	Water In Fuel Indicator : Voltage Above Normal
ECM	97	4	C	E	Water in Fuel Indicator Sensor Circuit - Voltage below normal, or shorted to low source
ECM	97	4	C	L	Water in Fuel Indicator Sensor Circuit - Voltage below normal, or shorted to low source
TCU	97	*	*	L	S.C. TO GROUND AT PARK BRAKE SOLENOID
ECM	97	0	C	F	Water-in-fuel signal indicates the water in the fuel filter needs to be drained.
ECM	97	4	C	F	Low voltage detected at WIF signal pin 40 of the original equipment manufacturer (OEM) harness.
TCU	97	*	*	F	S.C. TO GROUND AT PARK BRAKE SOLENOID
ECM	970	31	P	E	Engine Auxiliary Shutdown Switch
ECM	970	31	P	L	Engine Auxiliary Shutdown Switch
ECM	974	19	C	F	SAE J1939 Multiplexing Remote Throttle Data Error
ECM	974	3	C	F	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Above Normal, or shorted to High Source. High voltage detected at remote accelerator pedal position circuit.
ECM	974	4	C	F	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	974	19	C	E	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Position Sensor System - Received Network Data In Error
ECM	974	19	C	L	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Position Sensor System - Received Network Data In Error
ECM	974	3	C	E	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	974	3	C	L	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage above normal, or shorted to high source
ECM	974	4	C	E	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	974	4	C	L	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage below normal, or shorted to low source
ECM	974	0	S	E	Signal level from redundant gas pedal above high limit

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	974	0	S	F	Signal level from redundant gas pedal above high limit
ECM	974	0	S	L	Signal level from redundant gas pedal above high limit
ECM	974	1	S	E	Signal level from redundant gas pedal below low limit
ECM	974	1	S	F	Signal level from redundant gas pedal below low limit
ECM	974	1	S	L	Signal level from redundant gas pedal below low limit
ECM	976	2	C	E	Auxiliary Intermediate (PTO) Speed Switch Validation - Data erratic, intermittent or incorrect
ECM	976	2	C	L	Auxiliary Intermediate (PTO) Speed Switch Validation - Data erratic, intermittent or incorrect
ECM	976	2	P	E	PTO Governor State : Erratic, Intermittent, or Incorrect
ECM	976	2	P	L	PTO Governor State : Erratic, Intermittent, or Incorrect
ECM	98	18	P	E	Engine Oil Level : Low - moderate severity (2)
ECM	98	18	P	L	Engine Oil Level : Low - moderate severity (2)
ECM	98	1	C	F	Engine Oil Level Low – Maintenance
ECM	98	0	C	E	Engine Oil Level - Data valid but above normal operational range - Most Severe Level
ECM	98	0	C	L	Engine Oil Level - Data valid but above normal operational range - Most Severe Level
ECM	98	1	C	E	Engine Oil Level - Data valid but below normal operational range - Most Severe Level
ECM	98	1	C	L	Engine Oil Level - Data valid but below normal operational range - Most Severe Level
ECM	98	1	P	E	Engine Oil Level : Low - most severe (3)
ECM	98	1	P	L	Engine Oil Level : Low - most severe (3)
ECM	98	10	S	E	Oil level sensor stuck
ECM	98	10	S	L	Oil level sensor stuck
ECM	98	17	C	E	Engine Oil Level - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	98	17	C	L	Engine Oil Level - Data Valid But Below Normal Operating Range - Least Severe Level
ECM	98	3	S	E	Oil level sensor, short circuit to +24V
ECM	98	3	S	L	Oil level sensor, short circuit to +24V
ECM	98	4	S	E	Oil level sensor, short circuit to ground
ECM	98	4	S	L	Oil level sensor, short circuit to ground
TCU	98	*	*	L	S.C. TO BATTERY VOLTAGE AT PARK BRAKE SOLENOID
ECM	98	0	C	F	Engine Oil Level Data Valid But Above Normal Operational Range Most Severe Level. High oil level has been detected by the oil level sensor.
ECM	98	10	S	F	Oil level sensor stuck
ECM	98	17	C	F	Engine Oil Level Data Valid But Below Normal Operational Range Least Severe Level. Low oil level has been detected by the oil level sensor.
ECM	98	2	C	F	Engine Oil Level #1 Sensor Circuit - data incorrect
ECM	98	2	S	E	Oil level sensor, faulty
ECM	98	2	S	F	Ratio of current volume of engine sump oil to maximum required volume.

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
ECM	98	2	S	L	Oil level sensor, faulty
ECM	98	3	C	F	Engine Oil Level Sensor Circuit - Voltage Above Normal or Shorted to High Source. The engine oil level sensor has detected an internal failure.
ECM	98	3	S	F	Ratio of current volume of engine sump oil to maximum required volume.
ECM	98	4	C	F	Engine Oil Level Sensor Circuit - Voltage Below Normal or Shorted to Low Source. The engine oil level sensor has detected an internal failure.
ECM	98	4	S	F	Ratio of current volume of engine sump oil to maximum required volume.
TCU	98	*	*	F	S.C. TO BATTERY VOLTAGE AT PARK BRAKE SOLENOID
ECM	986	3	S	E	Fan actuator, short circuit to +24V
ECM	986	3	S	L	Fan actuator, short circuit to +24V
ECM	986	4	S	E	Fan actuator, short circuit high to ground
ECM	986	4	S	L	Fan actuator, short circuit high to ground
ECM	986	5	S	E	Fan actuator, open load
ECM	986	5	S	L	Fan actuator, open load
ECM	986	2	S	E	Fan actuator, faulty
ECM	986	2	S	F	Fan actuator, faulty
ECM	986	2	S	L	Fan actuator, faulty
ECM	986	3	S	F	Fan actuator, short circuit to +24V
ECM	986	4	S	F	Fan actuator, short circuit high to ground
ECM	986	5	S	F	Fan actuator, open load
ECM	986	7	S	E	Fan coupling unit, bad performance
ECM	986	7	S	F	Fan coupling unit, bad performance
ECM	986	7	S	L	Fan coupling unit, bad performance
ECM	99	1	C	F	High Lubricating Oil Filter Restriction
TCU	99	*	*	L	O.C. AT PARK BRAKE SOLENOID
TCU	99	*	*	F	O.C. AT PARK BRAKE SOLENOID
ECM	999	555	C	F	Hyundai Industries Heavy
TCU	9A	*	*	L	S.C. TO GROUND AT CONVERTER LOCK UP CLUTCH SOLENOID
TCU	9A	*	*	F	S.C. TO GROUND AT CONVERTER LOCK UP CLUTCH SOLENOID
TCU	9B	*	*	L	O.C. AT CONVERTER LOCK UP CLUTCH SOLENOID
TCU	9B	*	*	F	O.C. AT CONVERTER LOCK UP CLUTCH SOLENOID
TCU	9C	*	*	L	S.C. TO BATTERY VOLTAGE AT CONVERTER LOCK UP CLUTCH SOLENOID
TCU	9C	*	*	F	S.C. TO BATTERY VOLTAGE AT CONVERTER LOCK UP CLUTCH SOLENOID
TCU	9D	*	*	L	S.C. TO GROUND AT RETARDER SOLENOID
TCU	9D	*	*	F	S.C. TO GROUND AT RETARDER SOLENOID
TCU	9E	*	*	L	O.C. AT RETARDER SOLENOID
TCU	9E	*	*	F	O.C. AT RETARDER SOLENOID
TCU	9F	*	*	L	S.C. TO BATTERY VOLTAGE AT RETARDER SOLENOID
TCU	9F	*	*	F	S.C. TO BATTERY VOLTAGE AT RETARDER SOLENOID

11 SPN A~

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	A1	*	*	L	S.C. TO GROUND AT DIFFLOCK OR AXLE CONNECTION SOLENOID
TCU	A1	*	*	F	S.C. TO GROUND AT DIFFLOCK OR AXLE CONNECTION SOLENOID
TCU	A2	*	*	L	S.C. TO BATTERY VOLTAGE AT DIFFLOCK OR AXLE CONNECTION SOLENOID
TCU	A2	*	*	F	S.C. TO BATTERY VOLTAGE AT DIFFLOCK OR AXLE CONNECTION SOLENOID
TCU	A3	*	*	L	O.C. AT DIFFLOCK OR AXLE CONNECTION SOLENOID
TCU	A3	*	*	F	O.C. AT DIFFLOCK OR AXLE CONNECTION SOLENOID
TCU	A4	*	*	L	S.C. TO GROUND AT WARNING SIGNAL OUTPUT
TCU	A4	*	*	F	S.C. TO GROUND AT WARNING SIGNAL OUTPUT
TCU	A5	*	*	L	O.C. AT WARNING SIGNAL OUTPUT
TCU	A5	*	*	F	O.C. AT WARNING SIGNAL OUTPUT
TCU	A6	*	*	L	S.C. TO BATTERY VOLTAGE AT WARNING SIGNAL OUTPUT
TCU	A6	*	*	F	S.C. TO BATTERY VOLTAGE AT WARNING SIGNAL OUTPUT
TCU	A7	*	*	L	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 4
TCU	A7	*	*	F	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 4
TCU	A8	*	*	L	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 4
TCU	A8	*	*	F	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 4
TCU	A9	*	*	L	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 4
TCU	A9	*	*	F	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 4
TCU	AA	*	*	L	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 5
TCU	AA	*	*	F	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 5
TCU	AB	*	*	L	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 5
TCU	AB	*	*	F	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 5
TCU	AC	*	*	L	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 5
TCU	AC	*	*	F	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 5
TCU	AD	*	*	L	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 6
TCU	AD	*	*	F	S.C. TO GROUND AT CUSTOMER SPECIFIC FUNCTION NO. 6
TCU	AE	*	*	L	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 6
TCU	AE	*	*	F	S.C. TO BATTERY VOLTAGE AT CUSTOMER SPECIFIC FUNCTION NO. 6
TCU	AF	*	*	L	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 6

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	AF	*	*	F	O.C. AT CUSTOMER SPECIFIC FUNCTION NO. 6
TCU	B1	*	*	L	SLIPPAGE AT CLUTCH K1
TCU	B1	*	*	F	SLIPPAGE AT CLUTCH K1
TCU	B2	*	*	L	SLIPPAGE AT CLUTCH K2
TCU	B2	*	*	F	SLIPPAGE AT CLUTCH K2
TCU	B3	*	*	L	SLIPPAGE AT CLUTCH K3
TCU	B3	*	*	F	SLIPPAGE AT CLUTCH K3
TCU	B4	*	*	L	SLIPPAGE AT CLUTCH K4
TCU	B4	*	*	F	SLIPPAGE AT CLUTCH K4
TCU	B5	*	*	L	SLIPPAGE AT CLUTCH KV
TCU	B5	*	*	F	SLIPPAGE AT CLUTCH KV
TCU	B6	*	*	L	SLIPPAGE AT CLUTCH KR
TCU	B6	*	*	F	SLIPPAGE AT CLUTCH KR
TCU	B7	*	*	L	OVERTEMP SUMP
TCU	B7	*	*	F	OVERTEMP SUMP
TCU	B8	*	*	L	OVERTEMP RETARDER
TCU	B8	*	*	F	OVERTEMP RETARDER
TCU	B9	*	*	L	OVERSPEED ENGINE
TCU	B9	*	*	F	OVERSPEED ENGINE
TCU	BA	*	*	F	Differential Pressure TM Oil Filter (Clogging)
TCU	BA	*	*	L	Differential Pressure TM Oil Filter (Clogging)
TCU	BB	*	*	L	SLIPPAGE AT CONVERTER LOCK-UP CLUTCH
TCU	BB	*	*	F	SLIPPAGE AT CONVERTER LOCK-UP CLUTCH
TCU	BC	*	*	L	OVERSPEED OUTPUT
TCU	BC	*	*	F	OVERSPEED OUTPUT
TCU	BD	*	*	L	S.C. TO GROUND AT ENGINE BRKAE SOLENOID
TCU	BD	*	*	F	S.C. TO GROUND AT ENGINE BRKAE SOLENOID
TCU	BE	*	*	L	S.C. TO BATTERY VOLTAGE AT ENGINE BRAKE
TCU	BE	*	*	F	S.C. TO BATTERY VOLTAGE AT ENGINE BRAKE
TCU	BF	*	*	L	O.C. AT ENGINE BRAKE
TCU	BF	*	*	F	O.C. AT ENGINE BRAKE
TCU	C0	*	*	L	ENGINE TORQUE OR ENGINE POWER OVERLOAD
TCU	C0	*	*	F	ENGINE TORQUE OR ENGINE POWER OVERLOAD
TCU	C1	*	*	L	TRANSMISSION OUTPUT TORQUE OVERLOAD
TCU	C1	*	*	F	TRANSMISSION OUTPUT TORQUE OVERLOAD
TCU	C2	*	*	L	TRANSMISSION INPUT TORQUE OVERLOAD
TCU	C2	*	*	F	TRANSMISSION INPUT TORQUE OVERLOAD
TCU	C3	*	*	L	OVERTEMP CONVERTER OUTPUT
TCU	C3	*	*	F	OVERTEMP CONVERTER OUTPUT
TCU	C4	*	*	L	S.C. TO GROUND AT JOYSTICK STATUS INDICATOR
TCU	C4	*	*	F	S.C. TO GROUND AT JOYSTICK STATUS INDICATOR
TCU	C5	*	*	L	S.C. TO BATTERY VOLTAGE AT JOYSTICK STATUS INDICATOR

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	C5	*	*	F	S.C. TO BATTERY VOLTAGE AT JOYSTICK STATUS INDICATOR
TCU	C6	*	*	L	O.C. AT JOYSTICK STATUS INDICATOR
TCU	C6	*	*	F	O.C. AT JOYSTICK STATUS INDICATOR
TCU	C7	*	*	L	S.C. TO GROUND AT OVERTEMP NEUTRAL
TCU	C7	*	*	F	S.C. TO GROUND AT OVERTEMP NEUTRAL
TCU	C8	*	*	L	S.C. TO BATTERY VOLTAGE AT OVERTEMP NEUTRAL INDICATOR
TCU	C8	*	*	F	S.C. TO BATTERY VOLTAGE AT OVERTEMP NEUTRAL INDICATOR
TCU	C9	*	*	L	O.C. AT OVERTEMP NEUTRAL INDICATOR
TCU	C9	*	*	F	O.C. AT OVERTEMP NEUTRAL INDICATOR
TCU	CA	*	*	L	ENGINE_RETARDER CONFIG_TIMEOUT
TCU	CA	*	*	F	ENGINE_RETARDER CONFIG_TIMEOUT
TCU	CB	*	*	L	ERC1 TIMEOUT
TCU	CB	*	*	F	ERC1 TIMEOUT
TCU	D1	*	*	L	S.C. TO BATTERY VOLTAGE AT POWER SUPPLY FOR SENSORS
TCU	D1	*	*	F	S.C. TO BATTERY VOLTAGE AT POWER SUPPLY FOR SENSORS
TCU	D2	*	*	L	S.C. TO GROUND AT POWER SUPPLY FOR SENSORS
TCU	D2	*	*	F	S.C. TO GROUND AT POWER SUPPLY FOR SENSORS
TCU	D3	*	*	L	LOW VOLTAGE AT BATTERY
TCU	D3	*	*	F	LOW VOLTAGE AT BATTERY
TCU	D4	*	*	L	HIGH VOLTAGE AT BATTERY
TCU	D4	*	*	F	HIGH VOLTAGE AT BATTERY
TCU	D5	*	*	L	ERROR AT VALVE POWER SUPPLY VPS1
TCU	D5	*	*	F	ERROR AT VALVE POWER SUPPLY VPS1
TCU	D6	*	*	L	ERROR VALVE POWER SUPPLY VPS2
TCU	D6	*	*	F	ERROR VALVE POWER SUPPLY VPS2
TCU	D7	*	*	L	S.C. TO GROUND AT DLM LONGITUDINAL OUTPUT
TCU	D7	*	*	F	S.C. TO GROUND AT DLM LONGITUDINAL OUTPUT
TCU	D8	*	*	L	S.C. TO BATTERY VOLTAGE AT DLM LONGITUDINAL OUTPUT
TCU	D8	*	*	F	S.C. TO BATTERY VOLTAGE AT DLM LONGITUDINAL OUTPUT
TCU	D9	*	*	L	O.C. AT DLM LONGITUDINAL OUTPUT
TCU	D9	*	*	F	O.C. AT DLM LONGITUDINAL OUTPUT
TCU	E1	*	*	L	OPEN CIRCUIT AT DIRECTION SELECT SIGNALS
TCU	E1	*	*	F	OPEN CIRCUIT AT DIRECTION SELECT SIGNALS
TCU	E2	*	*	L	OPEN CIRCUIT AT DIRECTION SELECT SIGNALS OF SHIFTER 2
TCU	E2	*	*	F	OPEN CIRCUIT AT DIRECTION SELECT SIGNALS OF SHIFTER 2
TCU	E3	*	*	L	S.C. TO BATTERY VOLTAGE AT DISPLAY OUTPUT

continued.....

.....continued

TYPE	SPN	FMI	Engine	Machine type	Description
TCU	E3	*	*	F	S.C. TO BATTERY VOLTAGE AT DISPLAY OUTPUT
TCU	E4	*	*	L	S.C. TO GROUND AT DISPLAY OUTPUT
TCU	E4	*	*	F	S.C. TO GROUND AT DISPLAY OUTPUT
TCU	E5	*	*	L	DISPID1_TIMEOUT
TCU	E5	*	*	F	DISPID1_TIMEOUT
TCU	E6	*	*	L	ILLEGAL ID REQUEST VIA CAN
TCU	E6	*	*	F	ILLEGAL ID REQUEST VIA CAN
MCU	EE	81	*	F	System Error Alarm (GPS Antenna Fail)
MCU	EE	82	*	F	Wireless Com Antenna Failure
MCU	EE	8A	*	F	System Error Alarm (Time out 1)
MCU	EE	8B	*	F	System Error Alarm (Time out 2)
TCU	F1	*	*	L	GENERAL EEPROM FAULT
TCU	F1	*	*	F	GENERAL EEPROM FAULT
TCU	F2	*	*	L	CONFIGURATION LOST
TCU	F2	*	*	F	CONFIGURATION LOST
TCU	F3	*	*	L	APPLICATION ERROR
TCU	F3	*	*	F	APPLICATION ERROR
TCU	F4	*	*	L	LIMP HOME REQUEST
TCU	F4	*	*	F	LIMP HOME REQUEST
TCU	F5	*	*	L	CLUTCH FAILURE
TCU	F5	*	*	F	CLUTCH FAILURE
TCU	F6	*	*	L	CLUTCH ADJUSTMENT DATA LOST OR INCHPEDAL CALIBRATION DATA LOST
TCU	F6	*	*	F	CLUTCH ADJUSTMENT DATA LOST OR INCHPEDAL CALIBRATION DATA LOST

Index