







# **Specifications**

## **General Information**

# 🛦 WARNING 🛦

The diagram is provided as a diagnostic tool for trained, experienced technicians only. Improper trouble-shooting or repair can result in severe personal injury or death or property damage. See important instructions in Service Manual.

## **Electrical Specifications**

#### CANbus RESISTANCE

- CAN HI to LO wire: 50 to 70  $\Omega$
- Terminator Resistance: ~120  $\Omega$

## ALL CONTINUITY CHECKS

- OK (no open circuit) if less than 10  $\Omega$ 

## Drive / Gear / Misc. Sensor Specifications:

ALL SHORT TO GROUND

OK (no short circuit) if more than 100k Ω
SHORT CIRCUIT TO EXTERNAL VOLTAGE
OK if less than 1.5 VDC
TRANSDUCER SUPPLY VOLTAGE
At ECUs: 4.75 to 5.25 VDC

**NOTE:** To convert gauge pressure on all psia sensors, subtract the barometric pressure from the absolute pressure.

Transmissio To	on Pump Pressure orque = 15 N•m [13 <i>(Inboard</i> )	Sensor - 580 PSI 33 in-lb]	Low Gear Lube Level Switch (Sterndrive) State = Closed Circuit when tank level low
Pressure	Pressure	Voltage	
(kPa)	[psia]	(VDČ)	Neutral Safety Switch
`О́	0	<b>0.58</b>	(Sterndrive)
926	134	1.50	State = Closed circuit when in neutral
1927	279	2.50	
2930	428	3.50	Electronic Shift Control Position Sensor
3932	570	4.50	(Sterndrive)
			Values shown are tested values and do
Transm	ission Oil Temper	ature Sensor	not account for allowable ranges
То	orque = 15 N•m [13	33 in-lb]	Actuator Position Nominal
	(Inboard)		(+ Extend, - Retract) Voltage
Temperature	Temperature	Nominal Resistance	(%) (VDC)
(°C)	[°F]	(Ω)	100 (Fully Extended) 4.61
0	32	33.65k	0 (Neutral) 2.47
25	77	10k	-100 (Fully Retracted) 0.35
50	122	3.51k	
70	158	1.68k	Sea Water Flow Switch
90	194	866	(QSB.C.L.M Only)
120	248	361	State = Closed circuit when high temperature detected
150	302	170	

Water-in-Fuel Sensor (QSD Only) Torque = 1.2 N•m [10.6 in-lb] State = Closed circuit when water detected

# Water-in-Fuel Sensor

(QSB,C,L,M Only) Resistance:  $220k\Omega$  +/- 10% (each) - No water

## Helm Sensor Specifications:

	Control Leve	er Sensors				
Values approximate since sensors vary and are characterized during initialization						
Lever Position	Hi-Resolution Potentiometer	Decrement Potentiometer	Increment Potentiometer			
(Fwd +, Rev -)	Voltage	Voltage	Voltage			
(%)	(V)	(V)	(V)			
100 (Fwd WOT)	4.50	0.50	4.50			
50	2.50	1.50	3.50			
0 (Neutral)	0.50	2.50	2.50			
-50	2.50	3.50	1.50			
-100 (Rev WOT)	4.50	4.50	0.50			

# **Optional Sensor Specifications:**

Tank Level Sensor					
Tank Level	Voltage	Nominal Resistance			
(%)	(V)	(Ω)			
0 (Empty)	3.04	240			
25	2.55	189			
50	2.06	137			
75	1.56	85			
100 (Full)	1.07	33			

#### **Steer Angle Position Sensor**

Steer Angle %	Voltage
(%)	(V)
-100	0.5
-50	1.50
0	2.50
50	3.50
100	4.50

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#### Paddlewheel Sensor

Nominal Resistance: 10kΩ Variable Frequency

## Trim Angle Position Sensor Values shown are thru full range

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Position	Voltage
(°)	(V)
0	0.39
20	1.44
40	2.50
60	3.56
80	4.62

#### Speed Pitot Sensor Torque = 5 N•m [44 in-lb]

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Fault Guide	
FAULT MODES:	Non-Sticky: Clears immediately after fault is resolved.
	Sticky: Requires Key-Off and Key-On after fault is resolved to clear.
	Sticky - Persistent: Requires further action to clear; in this case a Drive Initialization.
ENGINE SPEED LIMITS:	Engine Speed Limited to Idle limits available throttle to 5%
	Engine Speed Limited Low limits available throttle to 25%
	Engine Speed Limited Medium limits available throttle to 50%
	Engine Speed Limited High limits available throttle to 80%.

PRELIMMARY 3-19-08

# **Command and Control Module (CCM) Faults**

Fault Text Readout	Mode	Fault Description	Guardian Strategy
BATT RangeHigh	Non-Sticky	System Unswitched Supply Voltage High Warning	None.
BATT RangeLow	Non-Sticky	System Unswitched Supply Voltage Low Warning	None.
Configuration Fault	Non-Sticky	DTS Control Head Initialization Not Complete	None.
ECUP RangeHigh	Non-Sticky	CCM Keyswitch Supply Voltage High Warning	None.
ECUP RangeLow	Non-Sticky	CCM Keyswitch Supply Voltage Low Warning	None.
Engine Crosscheck Data 0x160p255 SOH	Non-Sticky	Engine Crosscheck Message Timeout	None.
HELM PWMADC CROSSCHECK FAILED	Non-Sticky	CCM Health Crosscheck Failed	Engine Speed Limited to Idle.
Lever1	Sticky	Control Lever 1 Sensor Circuit Error	Engine Speed Limited High.
Lever1 Multi Sensor	Sticky	Control Lever 1 Multiple Sensor Circuit Failure	Engine Speed Limited to Idle.
Lever2	Sticky	Control Lever 2 Sensor Circuit Error	Engine Speed Limited High.
Lever2 Multi Sensor	Sticky	Control Lever 2 Multiple Sensor Circuit Failure	Engine Speed Limited to Idle.
LeverMasterFault	Non-Sticky	Master CCM Lever Set Incorrectly - CCM Calibration Incorrect	None.
PWMADC CROSSCHECK NOT RECEIVED	Non-Sticky	CCM Health Crosscheck Not Received	Engine Speed Limited to Idle.
Single Lever Fault	Non-Sticky	Single Lever Mode Lost - Unable to Maintain Single Lever Mode due to part of Control System Keyed-off or Lost	None.
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# System Integration Module (SIM) Faults

Fault Readout	Mode	Fault Description	Guardian Strategy
115 Main Crank EPS Error	Non-Sticky	Engine Magnetic Speed/Position Lost Both of Two	None.
		Signals - Data Erratic, Intermittent, or Incorrect	
121 Bkup Cam EPS Error	Non-Sticky	Engine Magnetic Crankshaft Speed/Position lost one of	None.
		two signals - Abnormal Rate of Change	
122 Sensor Boost High	Non-Sticky	Intake Manifold 1 Pressure Sensor Circuit - Voltage	None.
	N. 0011	Above Normal, or Shorted to High Source	
123 Sensor Boost Low	Non-Sticky	Intake Manifold 1 Pressure Sensor Circuit - Voltage	None.
124 Paget Dross High	Non Stielar	Below Normal, or Shorted to Low Source	None
124 BOOSI PIESS HIGH	NON-Slicky	Normal Operational Pange Mederately Sovere Level	None.
131 Sensor Throt High	Non-Sticky	Accelerator Pedal or Lever Position Sensor 1 Circuit -	None
	Non Olicky	Voltage Above Normal, or Shorted to High Source	None.
132 Sensor Throt Low	Non-Sticky	Accelerator Pedal or Lever Position Sensor 1 Circuit -	None.
	· · · · <b>,</b>	Voltage Below Normal, or Shorted to Low Source	
133 Sensor Rem Throt High	Non-Sticky	Remote Accelerator Pedal or Lever Position Sensor 1	None.
		Circuit - Voltage Above Normal, or Shorted to High	
		Source	
134 Sensor Rem Throt Low	Non-Sticky	Remote Accelerator Pedal or Lever Position Sensor 1	None.
		Circuit - Voltage Below Normal, or Shorted to Low	C
405.0	N OC I	Source	
135 Sensor Oil Press High	Non-Sticky	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage	None.
141 Sangar Oil Braga Law	Non Stielay	Above Normal, or Shorted to High Source	Nono
141 Sensor OII Fless Low	NON-SUCKY	Below Normal, or Shorted to Low Source	None.
143 Oil Press Low	Non-Sticky	Engine Oil Rifle Pressure - Data Valid but Below Normal	None
	Non Olicky	Operational Range - Moderately Severe Level	None.
144 Sensor Cool T High	Non-Sticky	Engine Coolant Temperature 1 Sensor Circuit - Voltage	None.
5	· · · · <b>,</b>	Above Normal, or Shorted to High Source	
145 Sensor Cool T Low	Non-Sticky	Engine Coolant Temperature 1 Sensor Circuit - Voltage	None.
		Below Normal, or Shorted to Low Source	
151 Cool T High	Non-Sticky	Engine Coolant Temperature - Data Valid but Above	None.
		Normal Operational Range - Most Severe Level	
153 Sensor IMT High	Non-Sticky	Intake Manifold 1 Temperature Sensor Circuit - Voltage	None.
	N. OC.	Above Normal, or Shorted to High Source	<u></u>
154 Sensor IMT Low	Non-Sticky	Intake Manifold 1 Temperature Sensor Circuit - Voltage	None.
155 IMT High	Non-Sticky	Intake Manifold 1 Temperature - Data Valid but Above	None
155 IMT Flight	NOIPOLICKY	Normal Operational Range - Most Severe Level	NONE.
195 Sensor Cool I vI High	Non-Sticky	Coolant Level Sensor 1 Circuit - Voltage Above Normal.	None.
		or Shorted to High Source	
196 Sensor Cool Lvl Low	Non-Sticky	Coolant Level Sensor 1 Circuit - Voltage Below Normal,	None.
	-	or Shorted to Low Source	
197 Cool Lvl Low	Non-Sticky	Coolant Level - Data Valid but Below Normal Operational	None.
		Range - Moderately Severe Level	
212 Sensor Oil T High	Non-Sticky	Engine Oil Temperature Sensor 1 Circuit - Voltage	None.
040.0	N OC I	Above Normal, or Shorted to High Source	<u></u>
213 Sensor OII I Low	Non-Sticky	Engine Oil Temperature Sensor 1 Circuit - Voltage Below	None.
214 Oil Tomporaturo High	Non Sticky	Engine Oil Temperature Data Valid but Above Normal	Nono
2185 Throt Sensor Supply High	Non-Sticky	Sensor Supply Voltage Number 4 Circuit - Voltage	None
2186 Throt Sensor Supply Low	Non-Sticky	Sensor Supply Voltage Number 4 Circuit - Voltage Below	None.
221 Snsr Amb Air Press High	Non-Sticky	Barometric Pressure Sensor Circuit - Voltage Above	None.
222 Snsr Amb Air Press Low	Non-Sticky	Barometric Pressure Sensor Circuit - Voltage Below	None.
		Normal, or Shorted to Low Source	
2249 Low Fuel Press2	Non-Sticky	Injector Metering Rail Number 1 Pressure - Data Valid	None.
		but Below Normal Operational Range - Most Severe	
		Level	
2265 Prime Pump High Error	Non-Sticky	Fuel Priming Pump Control Signal Circuit - Voltage	None.
2000 Drime Dump Law France	New Officiary	Above Normal or Shorted to High Source	Nana
2200 Prime Pump Low Error	NON-StICKY	Fuel Priming Pump Control Signal Circuit - Voltage	None.
2311 IMV Resistance Error	Non-Sticky	Eveling Actuator Number 1 Circuit Error Condition Evictor	None
2011 INTO INCOIDIGHIUC ETTUI	NULLOUGKY	r denny Actuator Muniper i Orcuit Enor Condition EXISts	

2322 Bkup Cam EPS Error     Non-Sticky     Engine Space/Position Sensor Number 2 - Data Erratic, Intermittent, or Incornect     None.       234 Engine Overspeed     Non-Sticky     Engine Space/Position - Data Valid but, Abore Normal Operational Range - Most Severe Level     None.       235 Cool LvI Very Low     Non-Sticky     Four Space - Most Severe Level     None.       236 Cool LvI Very Low     Non-Sticky     Fuel Pump Pressurzing Assembly 1 Circuit - Vottage Bolew Mormal, or Shorted to High Source     None.       271 IMV Shorted Low     Non-Sticky     Fuel Pump Pressurzing Assembly 1 Circuit - Vottage Bolew Mormal, or Shorted to High Source     None.       281 Cyl Press Imbalance Error     Non-Sticky     Fuel Pump Pressurzing Assembly 1 - Mochanical System Not Responding Property or Out of Adjustment     None.       232 Injector 1 Error     Non-Sticky     Injector Solenoid Driver Cylinder 1 Circuit - Current     None.       233 Injector 5 Error     Non-Sticky     Injector Solenoid Driver Cylinder 3 Circuit - Current     None.       234 Injector 3 Error     Non-Sticky     Injector Solenoid Driver Cylinder 3 Circuit - Current     None.       235 Injector 6 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       232 Injector 4 Error     Non-Sticky	2321 Main Crank EPS Error	Non-Sticky	Engine Speed/Position Sensor Number 1 - Data Erratic,	None.
234 Engine Overspeed     None.       235 Cool Lvil Very Low     None.       235 Cool Lvil Very Low     None.       235 Cool Lvil Very Low     None.       211 IMV Shorted Low     None.       211 IMV Shorted Low     None.       212 IMV Shorted Low     None.       212 IMV Shorted Low     None.       212 IMV Shorted High     None.       212 Injector 1     None.       213 Injector 1     None.       224 Injector 1     None.       221 Injector 1     None.       221 Injector 1     None.       221 Injector 1     None.       221 Injector 2     None.       232 Injector 4     None.       233 Injector 5     None.       234 Injector 4     None.       235 Injector 6     None.       236 Inj	2322 Bkup Cam EPS Error	Non-Sticky	Engine Speed/Position Sensor Number 2 - Data Erratic, Intermittent, or Incorrect	None.
235 Cocl LV Very Low     None.     Coolant Level - Data Valid but Below Normal Operational     None.       271 IMV Shorted Low     None.     Below Normal, or Shorted Low Source     None.       272 IMV Shorted High     None.     Status ()     None.       273 IMV Shorted High     None.     Above Normal, or Shorted to Low Source     None.       281 Cyl Press Imbalance Error     Non-Sticky     Fuel Pump Pressuring Assembly 1 Circuit - Voltage     None.       2973 Boost IR Error     Non-Sticky     Intake Manifold Pressure Sensor - Data Erratic, Intermittent, or Incortect     None.       322 Injector 1 Error     Non-Sticky     Intake Manifold Pressure Sensor - Data Erratic, Intermittent, or Incortect     None.       323 Injector 3 Error     Non-Sticky     Injector Solenoid Driver Cylinder 1 Circuit - Current     None.       324 Injector 3 Error     Non-Sticky     Injector Solenoid Driver Cylinder 1 Circuit - Current     None.       331 Injector 2 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Engine O IRIN Error Source 1 Driver Cylinder 4 Circuit - Current     None.       415 Oil Press Very Low     Non-Sticky     Engine O IRIN Error Sourc	234 Engine Overspeed	Non-Sticky	Engine Crankshaft Speed/Position - Data Valid but Above Normal Operational Range - Most Severe Level	None.
271 IMV Shorted Low     Non-Sticky     Fuel Pump Pressurizing Assembly 1 Circuit - Voltage     None.       272 IMV Shorted High     Non-Sticky     Fuel Pump Pressurizing Assembly 1 Circuit - Voltage     None.       281 Cyl Press Imbalance Error     Non-Sticky     Fuel Pump Pressurizing Assembly 1 - Mechanical     None.       2973 Boost IR Error     Non-Sticky     Fuel Pump Pressurizing Assembly 1 - Mechanical     None.       2973 Boost IR Error     Non-Sticky     Intermittent, or Incorred     None.       322 Injector 1 Error     Non-Sticky     Injector Solenoid Driver Cylinder 5 Circuit - Current     None.       323 Injector 5 Error     Non-Sticky     Injector Solenoid Driver Cylinder 5 Circuit - Current     None.       325 Injector 6 Error     Non-Sticky     Injector Solenoid Driver Cylinder 5 Circuit - Current     None.       331 Injector 2 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Engle Moranai, or Open Circu	235 Cool Lvl Very Low	Non-Sticky	Coolant Level - Data Valid but Below Normal Operational Range - Most Severe Level	None.
272 IMV Shorted High     Non-Sticky     Fuel Pump Pressurzing Assembly 1 Circuit - Voltage     None.       281 Cyl Press Imbalance Error     Non-Sticky     Fuel Pump Pressurzing Assembly 1 - Mechanical     None.       2973 Boost IR Error     Non-Sticky     Intermittent, or Incorrect     None.       2973 Boost IR Error     Non-Sticky     Intermittent, or Incorrect     None.       322 Injector 1 Error     Non-Sticky     Injector Soleroid Driver Cylinder 1 Circuit - Current     None.       323 Injector 5 Error     Non-Sticky     Injector Soleroid Driver Cylinder 5 Circuit - Current     None.       324 Injector 3 Error     Non-Sticky     Injector Soleroid Driver Cylinder 5 Circuit - Current     None.       325 Injector 6 Error     Non-Sticky     Injector Soleroid Driver Cylinder 5 Circuit - Current     None.       331 Injector 7 Error     Non-Sticky     Injector Soleroid Driver Cylinder 4 Circuit - Current     None.       332 Injector 8 Error     Non-Sticky     Injector Soleroid Driver Cylinder 4 Circuit - Current     None.       415 Oil Press Very Low     Non-Sticky     Relean Mormal, or Open Circuit     None.       422 Sensor Wir High     Non-Sticky     Water in Fuel Indicator - Data Valid but Above Normal     <	271 IMV Shorted Low	Non-Sticky	Fuel Pump Pressurizing Assembly 1 Circuit - Voltage Below Normal, or Shorted to Low Source	None.
281 Cyl Press Imbalance Error     Non-Sticky     Fuel Pump Pressurizing Assembly 1 - Mechanical     None.       2973 Boost IR Error     Non-Sticky     Intake Manifold Pressure Sensor - Data Erratic,     None.       111     Intake Manifold Pressure Sensor - Data Erratic,     None.     Intermittent, or Incorrect     None.       221 Injector 1 Error     Non-Sticky     Injector Solenoid Driver Cylinder 1 Circuit - Current     None.       232 Injector 5 Error     Non-Sticky     Injector Solenoid Driver Cylinder 5 Circuit - Current     None.       232 Injector 3 Error     Non-Sticky     Injector Solenoid Driver Cylinder 5 Circuit - Current     None.       235 Injector 6 Error     Non-Sticky     Injector Solenoid Driver Cylinder 2 Circuit - Current     None.       232 Injector 2 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       232 Injector 4 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       232 Injector 4 Error     Non-Sticky     Colenoid Driver Cylinder 4 Circuit - Current     None.       232 Injector 4 Error     Non-Sticky     Colenoid Driver Cylinder 4 Circuit - Current     None.       232 Injector 4 Error     Non-Sticky	272 IMV Shorted High	Non-Sticky	Fuel Pump Pressurizing Assembly 1 Circuit - Voltage Above Normal, or Shorted to High Source	None.
2973 Boost IR Error     Non-Sticky     Intake Manifold Pressure Sensor - Data Erratic, Intermittent, or Incorrect     None.       322 Injector 1 Error     Non-Sticky     Injector Solenoid Driver Cylinder 1 Circuit - Current     None.       323 Injector 5 Error     Non-Sticky     Injector Solenoid Driver Cylinder 5 Circuit - Current     None.       324 Injector 3 Error     Non-Sticky     Injector Solenoid Driver Cylinder 5 Circuit - Current     None.       325 Injector 6 Error     Non-Sticky     Injector Solenoid Driver Cylinder 3 Circuit - Current     None.       331 Injector 2 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     None.     Mon-Sticky     None.       415 Oil Press Very Low     Non-Sticky     Valet on Stever 1 Evel     None.     Operational Range - Most Severa Level     None.       422 Sensor Cint Level Error     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below     None.       423 Sensor WiF High     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Deve     None. <t< td=""><td>281 Cyl Press Imbalance Error</td><td>Non-Sticky</td><td>Fuel Pump Pressurizing Assembly 1 - Mechanical System Not Responding Properly or Out of Adjustment</td><td>None.</td></t<>	281 Cyl Press Imbalance Error	Non-Sticky	Fuel Pump Pressurizing Assembly 1 - Mechanical System Not Responding Properly or Out of Adjustment	None.
322 Injector 1 Error     Non-Sticky     Injector Solenoid Driver Cylinder 5 Circuit - Current     None.       323 Injector 5 Error     Non-Sticky     Injector Solenoid Driver Cylinder 5 Circuit - Current     None.       324 Injector 3 Error     Non-Sticky     Injector Solenoid Driver Cylinder 3 Circuit - Current     None.       325 Injector 6 Error     Non-Sticky     Injector Solenoid Driver Cylinder 6 Circuit - Current     None.       331 Injector 2 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Elgiw Normal, or Open Circuit     None.       332 Injector 4 Error     Non-Sticky     Engine Oil Rifle Pressure - Data Valid but Below Normal     None.       415 Oil Press Very Low     Non-Sticky     Engine Oil Rifle Pressure - Data Valid but Above Normal     None.       422 Sensor Cint Level Error     Non-Sticky     Water in Fuel Indicator - Data Valid but Above Normal.     Operational Range - Most Severe Level     None.       423 Sensor WIF Low     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Above     None.       423 Sensor WIF Low     Non-Sticky     Injector Metring Rail 1 Pressure - Data Valid but Above     None.       425 Sensor	2973 Boost IR Error	Non-Sticky	Intake Manifold Pressure Sensor - Data Erratic, Intermittent, or Incorrect	None.
323 Injector Selencid Driver Cylinder 5 Circuit - Current     None.       324 Injector 3 Error     Non-Sticky     Injector Solencid Driver Cylinder 3 Circuit - Current     None.       325 Injector 6 Error     Non-Sticky     Injector Solencid Driver Cylinder 6 Circuit - Current     None.       331 Injector 2 Error     Non-Sticky     Injector Solencid Driver Cylinder 4 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Enjector Solencid Driver Cylinder 4 Circuit - Current     None.       415 Oil Press Very Low     Non-Sticky     Enjere Oil Riffe Pressure - Data Valid but Below Normal     None.       418 Water In Fuel     Non-Sticky     Enjere Oil Riffe Pressure - Data Valid but Above Normal     None.       422 Sensor Cint Level Error     Non-Sticky     Colant Level - Data Erratic, Intermittent, or Incorrect     None.       423 Sensor WIF High     Non-Sticky     Colant Level - Data Erratic, Intermittent, or Incorrect     None.       429 Sensor WIF Low     Non-Sticky     Colant Level - Data Erratic, Intermittent, or Incorrect     None.       429 Sensor WIF Low     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above     None.       429 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure	322 Injector 1 Error	Non-Sticky	Injector Solenoid Driver Cylinder 1 Circuit - Current Below Normal, or Open Circuit	None.
324 Injector 3 Error     Non-Sticky     Injector Solenoid Driver Cylinder 3 Circuit - Current     None.       325 Injector 6 Error     Non-Sticky     Injector Solenoid Driver Cylinder 6 Circuit - Current     None.       331 Injector 2 Error     Non-Sticky     Injector Solenoid Driver Cylinder 2 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Engine Oli Rifle Pressure - Data Valid but Below Normal     None.       415 Oil Press Very Low     Non-Sticky     Engine Oli Rifle Pressure - Data Valid but Above Normal     None.       418 Water In Fuel     Non-Sticky     Water in Fuel Indicator - Data Valid but Above Normal     None.       422 Sensor Chit Level Error     Non-Sticky     Colant Level - Data Erratic. Intermittent, or Incorrect     None.       428 Sensor WIF Low     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below     None.       429 Sensor Fuel P Low     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above     None.       436 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above     None.       449 Fuel Pressure <td< td=""><td>323 Injector 5 Error</td><td>Non-Sticky</td><td>Injector Solenoid Driver Cylinder 5 Circuit - Current Below Normal, or Open Circuit</td><td>None.</td></td<>	323 Injector 5 Error	Non-Sticky	Injector Solenoid Driver Cylinder 5 Circuit - Current Below Normal, or Open Circuit	None.
325 Injector 6 Error     Non-Sticky     Injector Solenoid Driver Cylinder 6 Circuit - Current     None.       331 Injector 2 Error     Non-Sticky     Injector Solenoid Driver Cylinder 2 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       415 Oil Press Very Low     Non-Sticky     Enjector Solenoid Driver Cylinder 4 Circuit - Current     None.       415 Oil Press Very Low     Non-Sticky     Water in Fuel Indicator - Data Valid but Below Normal     None.       418 Water In Fuel     Non-Sticky     Water in Fuel Indicator - Data Valid but Above Normal     None.       422 Sensor Clnt Level Error     Non-Sticky     Colant Level - Data Erratic, Intermittent, or Incorrect     None.       429 Sensor WIF Low     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below     None.       436 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above     None.       449 Fuel Press Very High     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - None.     None.       452 Sensor Fuel P High	324 Injector 3 Error	Non-Sticky	Injector Solenoid Driver Cylinder 3 Circuit - Current Below Normal, or Open Circuit	None.
331 Injector 2 Error     Non-Sticky     Injector Solenoid Driver Cylinder 2 Circuit - Current     None.       332 Injector 4 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       415 Oil Press Very Low     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       415 Oil Press Very Low     Non-Sticky     Engine Oil Riffe Pressure - Data Valid but Below Normal Operational Range - Least Severe Level     None.       418 Water In Fuel     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below     None.       422 Sensor Cint Level Error     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below     None.       429 Sensor WIF Low     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below     None.       431 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - None.     None.       451 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - None.     None.       452 Sensor Fuel P Low     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - None.     None.       452 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Below Normal.     None.	325 Injector 6 Error	Non-Sticky	Injector Solenoid Driver Cylinder 6 Circuit - Current Below Normal, or Open Circuit	None.
332 Injector 4 Error     Non-Sticky     Injector Solenoid Driver Cylinder 4 Circuit - Current     None.       415 Oil Press Very Low     Non-Sticky     Engine Oil Rifle Pressure - Data Valid but Below Normal Operational Range - Most Severe Level     None.       418 Water In Fuel     Non-Sticky     Water in Fuel Indicator - Data Valid but Above Normal Operational Range - Least Severe Level     None.       422 Sensor Cint Level Error     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Above Normal, or Shorted to High Source     None.       429 Sensor WIF Low     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below Normal, or Shorted to Liew Source     None.       449 Fuel Press Very High     Non-Sticky     Injector Metering Rail 1 Pressure Data Valid but Above Normal, or Shorted to Liew Severe Level     None.       451 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Above Normal, or Shorted to Low Source     None.       452 Sensor Fuel P Low     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source     None.       453 High Fuel Pressure     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level     None.       554 Fuel Pressure     Non-Sticky     Inje	331 Injector 2 Error	Non-Sticky	Injector Solenoid Driver Cylinder 2 Circuit - Current Below Normal, or Open Circuit	None.
415 Oil Press Very Low   Non-Sticky   Engine Oil Rifle Pressure - Data Valid but Below Normal Operational Range - Most Severe Level   None.     418 Water In Fuel   Non-Sticky   Water In Fuel Indicator - Data Valid but Above Normal Operational Range - Least Severe Level   None.     422 Sensor Cint Level Error   Non-Sticky   Coolant Level - Data Erratic, Intermittent, or Incorrect   None.     428 Sensor WIF High   Non-Sticky   Water In Fuel Indicator Sensor Circuit - Voltage Below Normal, or Shorted to High Source   None.     429 Sensor WIF Low   Non-Sticky   Water In Fuel Indicator Sensor Circuit - Voltage Below Normal, or Shorted to Low Source   None.     449 Fuel Press Very High   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Above Normal, or Shorted to Low Source   None.     451 Sensor Fuel P High   Non-Sticky   Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Above Normal, or Shorted to Low Source   None.     472 Engine Sync Switch Error   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level   None.     553 High Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level   None.     554 Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Above No	332 Injector 4 Error	Non-Sticky	Injector Solenoid Driver Cylinder 4 Circuit - Current Below Normal, or Open Circuit	None.
418 Water In Fuel     Non-Sticky     Water in Fuel Indicator - Data Valid but Above Normal     None.       422 Sensor Cint Level Error     Non-Sticky     Coolant Level - Data Erratic, Intermittent, or Incorrect     None.       428 Sensor WIF High     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Above     None.       429 Sensor WIF Low     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below     None.       429 Sensor WIF Low     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below     None.       449 Fuel Press Very High     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above     None.       451 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit -     None.       452 Sensor Fuel P Low     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit -     None.       497 Engine Sync Switch Error     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit -     None.       553 High Fuel Pressure     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above None.     None.       554 Fuel Pressure     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above None.     None.       554 Fuel Pressure	415 Oil Press Very Low	Non-Sticky	Engine Oil Rifle Pressure - Data Valid but Below Normal Operational Range - Most Severe Level	None.
422 Sensor Clnt Level Error     Non-Sticky     Coolant Level Data Erratic, Intermittent, or Incorrect     None.       428 Sensor WIF High     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Above     None.       429 Sensor WIF Low     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below     None.       449 Fuel Press Very High     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above     None.       451 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - None.     None.       452 Sensor Fuel P Low     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - None.     None.       497 Engine Sync Switch Error     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - None.     None.       497 Engine Sync Switch Error     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - None.     None.       553 High Fuel Pressure     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above Nore.     None.       554 Fuel Pressure InRange Error     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Below None.     None.       559 Low Fuel Pressure     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Below None.     None.	418 Water In Fuel	Non-Sticky	Water in Fuel Indicator - Data Valid but Above Normal Operational Range - Least Severe Level	None.
428 Sensor WIF High     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Above Normal, or Shorted to High Source     None.       429 Sensor WIF Low     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below Normal, or Shorted to Low Source     None.       449 Fuel Press Very High     Non-Sticky     Injector Metering Rail 1 Pressure Data Valid but Above Normal Operational Range - Most Severe Level     None.       451 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source     None.       452 Sensor Fuel P Low     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source     None.       497 Engine Sync Switch Error     Non-Sticky     Multiple Unit Synchronization Switch - Data Erratic, Intermittent, or Incorrect     None.       553 High Fuel Pressure     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level     None.       554 Fuel Pressure InRange Error     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level     None.       689 Main Crank EPS Error     Non-Sticky     Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect     None.       CCM Not Authenticated P	422 Sensor CInt Level Error	Non-Sticky	Coolant Level - Data Erratic, Intermittent, or Incorrect	None.
429 Sensor WIF Low     Non-Sticky     Water in Fuel Indicator Sensor Circuit - Voltage Below Normal, or Shorted to Low Source     None.       449 Fuel Press Very High     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Most Severe Level     None.       451 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source     None.       452 Sensor Fuel P Low     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source     None.       497 Engine Sync Switch Error     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level     None.       553 High Fuel Pressure     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level     None.       554 Fuel Pressure InRange Error     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level     None.       689 Main Crank EPS Error     Non-Sticky     Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect     None.       778 Bkup Cam EPS Error     Non-Sticky     Engine Camshaft Speed/Position Sensor - Data Erratic, Intermittent, or Incorrect     None. <t< td=""><td>428 Sensor WIF High</td><td>Non-Sticky</td><td>Water in Fuel Indicator Sensor Circuit - Voltage Above Normal, or Shorted to High Source</td><td>None.</td></t<>	428 Sensor WIF High	Non-Sticky	Water in Fuel Indicator Sensor Circuit - Voltage Above Normal, or Shorted to High Source	None.
449 Fuel Press Very High     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Most Severe Level     None.       451 Sensor Fuel P High     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source     None.       452 Sensor Fuel P Low     Non-Sticky     Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source     None.       497 Engine Sync Switch Error     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level     None.       553 High Fuel Pressure     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level     None.       554 Fuel Pressure InRange Error     Non-Sticky     Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level     None.       689 Main Crank EPS Error     Non-Sticky     Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect     None.       778 Bkup Cam EPS Error     Non-Sticky     SIM to CCM CAN P Authentication Failure     CAN P Redume DTS Messages Disabled.       CCM Not Authenticated P     Non-Sticky     SIM to CCM CAN X Authentication Failure     CAN X Primary Messages Disabled.	429 Sensor WIF Low	Non-Sticky	Water in Fuel Indicator Sensor Circuit - Voltage Below Normal, or Shorted to Low Source	None.
451 Sensor Fuel P High   Non-Sticky   Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source   None.     452 Sensor Fuel P Low   Non-Sticky   Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source   None.     497 Engine Sync Switch Error   Non-Sticky   Multiple Unit Synchronization Switch - Data Erratic, Intermittent, or Incorrect   None.     553 High Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level   None.     554 Fuel Pressure InRange Error   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level   None.     559 Low Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level   None.     689 Main Crank EPS Error   Non-Sticky   Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect   None.     778 Bkup Cam EPS Error   Non-Sticky   SIM to CCM CAN P Authentication Failure   CAN P Redund DTS Messages Disabled.     CCM Not Authenticated P   Non-Sticky   SIM to CCM CAN X Authentication Failure   CAN X Primary Messages Disa     CCM Not Authenticated X   Non-Sticky   SIM to CCM CAN X Authentication Failure <td< td=""><td>449 Fuel Press Very High</td><td>Non-Sticky</td><td>Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Most Severe Level</td><td>None.</td></td<>	449 Fuel Press Very High	Non-Sticky	Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Most Severe Level	None.
452 Sensor Fuel P Low   Non-Sticky   Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source   None.     497 Engine Sync Switch Error   Non-Sticky   Multiple Unit Synchronization Switch - Data Erratic, Intermittent, or Incorrect   None.     553 High Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level   None.     554 Fuel Pressure InRange Error   Non-Sticky   Injector Metering Rail 1 Pressure - Data Erratic, Intermittent, or Incorrect   None.     559 Low Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level   None.     689 Main Crank EPS Error   Non-Sticky   Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect   None.     778 Bkup Cam EPS Error   Non-Sticky   Engine Camshaft Speed / Position Sensor - Data Erratic, Intermittent, or Incorrect   None.     CCM Not Authenticated P   Non-Sticky   SIM to CCM CAN P Authentication Failure   CAN P Reduce DTS Messages Disabled.     CCM PWM ADC   Non-Sticky   SIM to CCM Crosscheck Failure - CCM Data Invalid   Engine Speed	451 Sensor Fuel P High	Non-Sticky	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Above Normal, or Shorted to High Source	None.
497 Engine Sync Switch Error   Non-Sticky   Multiple Unit Synchronization Switch - Data Erratic, Intermittent, or Incorrect   None.     553 High Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level   None.     554 Fuel Pressure InRange Error   Non-Sticky   Injector Metering Rail 1 Pressure - Data Erratic, Intermittent, or Incorrect   None.     559 Low Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Below Intermittent, or Incorrect   None.     689 Main Crank EPS Error   Non-Sticky   Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect   None.     778 Bkup Cam EPS Error   Non-Sticky   Engine Camshaft Speed / Position Sensor - Data Erratic, Intermittent, or Incorrect   None.     CCM Not Authenticated P   Non-Sticky   SIM to CCM CAN P Authentication Failure   CAN P Redund DTS Messages Disabled.     CCM Not Authenticated X   Non-Sticky   SIM to CCM CAN X Authentication Failure   CAN X Primary Messages Disa     CCM PWM ADC   Non-Sticky   SIM to CCM Crosscheck Failure - CCM Data Invalid   Engine Speed	452 Sensor Fuel P Low	Non-Sticky	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Below Normal, or Shorted to Low Source	None.
553 High Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level   None.     554 Fuel Pressure InRange Error   Non-Sticky   Injector Metering Rail 1 Pressure - Data Erratic, Intermittent, or Incorrect   None.     559 Low Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Below Intermittent, or Incorrect   None.     689 Main Crank EPS Error   Non-Sticky   Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect   None.     778 Bkup Cam EPS Error   Non-Sticky   Engine Camshaft Speed / Position Sensor - Data Erratic, Intermittent, or Incorrect   None.     CCM Not Authenticated P   Non-Sticky   SIM to CCM CAN P Authentication Failure   CAN P Reduce DTS Messages Disabled.     CCM Not Authenticated X   Non-Sticky   SIM to CCM CAN X Authentication Failure   CAN X Primary Messages Disa     CCM PWM ADC   Non-Sticky   SIM to CCM Crosscheck Failure - CCM Data Invalid   Engine Speed	497 Engine Sync Switch Error	Non-Sticky	Multiple Unit Synchronization Switch - Data Erratic, Intermittent, or Incorrect	None.
554 Fuel Pressure InRange Error   Non-Sticky   Injector Metering Rail 1 Pressure - Data Erratic, Intermittent, or Incorrect   None.     559 Low Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level   None.     689 Main Crank EPS Error   Non-Sticky   Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect   None.     778 Bkup Cam EPS Error   Non-Sticky   Engine Camshaft Speed / Position Sensor - Data Erratic, Intermittent, or Incorrect   None.     CCM Not Authenticated P   Non-Sticky   SIM to CCM CAN P Authentication Failure   CAN P Redune DTS Messages Disabled.     CCM Not Authenticated X   Non-Sticky   SIM to CCM CAN X Authentication Failure   CAN X Primary Messages Disa     CCM PWM ADC   Non-Sticky   SIM to CCM Crosscheck Failure - CCM Data Invalid   Engine Speed	553 High Fuel Pressure	Non-Sticky	Injector Metering Rail 1 Pressure - Data Valid but Above Normal Operational Range - Moderately Severe Level	None.
559 Low Fuel Pressure   Non-Sticky   Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level   None.     689 Main Crank EPS Error   Non-Sticky   Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect   None.     778 Bkup Cam EPS Error   Non-Sticky   Engine Camshaft Speed / Position Sensor - Data Erratic, Intermittent, or Incorrect   None.     CCM Not Authenticated P   Non-Sticky   SIM to CCM CAN P Authentication Failure   CAN P Redund DTS Messages Disabled.     CCM Not Authenticated X   Non-Sticky   SIM to CCM CAN X Authentication Failure   CAN X Primary Messages Disa     CCM PWM ADC   Non-Sticky   SIM to CCM Crosscheck Failure - CCM Data Invalid   Engine Speed	554 Fuel Pressure InRange Error	Non-Sticky	Injector Metering Rail 1 Pressure - Data Erratic, Intermittent, or Incorrect	None.
689 Main Crank EPS Error   Non-Sticky   Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect   None.     778 Bkup Cam EPS Error   Non-Sticky   Engine Camshaft Speed / Position Sensor - Data Erratic, Intermittent, or Incorrect   None.     CCM Not Authenticated P   Non-Sticky   SIM to CCM CAN P Authentication Failure   CAN P Redund DTS Messages Disabled.     CCM Not Authenticated X   Non-Sticky   SIM to CCM CAN X Authentication Failure   CAN X Primary Messages Disa     CCM PWM ADC   Non-Sticky   SIM to CCM Crosscheck Failure - CCM Data Invalid   Engine Speed	559 Low Fuel Pressure	Non-Sticky	Injector Metering Rail 1 Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level	None.
778 Bkup Cam EPS Error   Non-Sticky   Engine Camshaft Speed / Position Sensor - Data Erratic, Intermittent, or Incorrect   None.     CCM Not Authenticated P   Non-Sticky   SIM to CCM CAN P Authentication Failure   CAN P Redund DTS Messages Disabled.     CCM Not Authenticated X   Non-Sticky   SIM to CCM CAN X Authentication Failure   CAN X Primary Messages Disabled.     CCM PWM ADC   Non-Sticky   SIM to CCM Crosscheck Failure - CCM Data Invalid   Engine Speed	689 Main Crank EPS Error	Non-Sticky	Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect	None.
CCM Not Authenticated P   Non-Sticky   SIM to CCM CAN P Authentication Failure   CAN P Reduce DTS Messages Disabled.     CCM Not Authenticated X   Non-Sticky   SIM to CCM CAN X Authentication Failure   CAN X Primary Messages Disabled.     CCM PWM ADC   Non-Sticky   SIM to CCM Crosscheck Failure - CCM Data Invalid   Engine Speed	778 Bkup Cam EPS Error	Non-Sticky	Engine Camshaft Speed / Position Sensor - Data Erratic, Intermittent, or Incorrect	None.
CCM Not Authenticated X   Non-Sticky   SIM to CCM CAN X Authentication Failure   CAN X Primary Messages Disa     CCM PWM ADC   Non-Sticky   SIM to CCM Crosscheck Failure - CCM Data Invalid   Engine Speed	CCM Not Authenticated P	Non-Sticky	SIM to CCM CAN P Authentication Failure	CAN P Redundant DTS Messages Disabled
CCM PWM ADC Non-Sticky SIM to CCM Crosscheck Failure - CCM Data Invalid Engine Speed	CCM Not Authenticated X	Non-Sticky	SIM to CCM CAN X Authentication Failure	CAN X Primary DTS Messages Disabled.
Limited to Idle.	CCM PWM ADC	Non-Sticky	SIM to CCM Crosscheck Failure - CCM Data Invalid	Engine Speed Limited to Idle.

DRVP High	Non-Sticky	Driver Power Supply Voltage High Warning	None.
DRVP InputHigh	Non-Sticky	Driver Power Supply Voltage Out of Range High	None.
DRVP InputLow	Non-Sticky	Driver Power Supply Voltage Out of Range Low	None.
DRVP Low	Non-Sticky	Driver Power Supply Voltage Low Warning	None.
ECM Battery Voltage High	Non-Sticky	ECM Battery Supply Voltage High Warning	None.
ECM Battery Voltage Low	Non-Sticky	ECM Battery Supply Voltage Low Warning	None.
ESC Loss Of Control	Non-Sticky	Inadequate Control of the Electronic Shift Control	Engine Speed
		Actuator Detected	Limited to Idle.
ESC Neutral Shift Sw Diff	Sticky	Electronic Shift Control Position Sensor to Neutral Safety	None.
	-	Switch Crosscheck Error	
ESC NoAdapt Forward	Non-Sticky	Electronic Shift Control Actuator Did Not Adapt to	None.
·		Required Window in Forward Gear	
ESC NoAdapt Reverse	Non-Sticky	Electronic Shift Control Actuator Did Not Adapt to	None.
·		Required Window in Reverse Gear	
ESC Output	Non-Sticky	Electronic Shift Control Actuator Circuits Open or Short	Electronic Shift
		Detected	Control Disabled.
ESC Position InputHigh	Sticky	Electronic Shift Control Position Sensor Circuit Voltage	None.
	,	Out of Range High	
ESC Position InputLow	Sticky	Electronic Shift Control Position Sensor Circuit Voltage	None.
	-	Out of Range Low	
ESC TimeOut	Non-Sticky	Electronic Shift Control Actuator Reponse Timeout	None.
ESTOP	Non-Sticky	E-Stop Commanded or Activated	Engine Shutdown.
	-		Crank Disabled.
Forward Shift Output	Non-Sticky	Forward Gear Shift Solenoid Circuit Open or Short	Forward Gear Shift
		Detected	Output Disabled.
Fuel Level 1 InputHigh	Non-Sticky	Tank Level 1 Sensor Circuit Voltage Out of Range High	None.
Fuel Level 1 InputLow	Non-Sticky	Tank Level 1 Sensor Circuit Voltage Out of Range Low	None.
Gear Temp High	Non-Sticky	Transmission Oil Temperature High Warning	None.
Gear Temp InputHigh	Non-Sticky	Transmission Oil Temperature Sensor Circuit Voltage	None.
		Out of Range High	
Gear Temp InputLow	Non-Sticky	Transmission Oil Temperature Sensor Circuit Voltage	None.
		Out of Range Low	
Low Drive Lube	Non-Sticky	Low Drive Lube Level Detected	None.
No DTS Commands	Non-Sticky	No Redundant CAN P DTS Commands from the CCM	None.
No Primary DTS Commands	Non-Sticky	No Primary CAN X DTS Commands from the CCM	None.
Reverse Shift Output	Non-Sticky	Reverse Gear Shift Solenoid Circuit Open or Short	Reverse Gear Shift
		Detected	Output Disabled.
Sea Water Flow Low	Non-Sticky	Low Sea Water Flow Detected	None.
SIM Battery Voltage High	Non-Sticky	SIM Keyswitch Supply Voltage High Warning	None.
SIM Battery Voltage Low	Non-Sticky	SIM Keyswitch Supply Voltage Low Warning	None.
SIM NO J1939 DATA	Non-Sticky	SIM Not Receiving J1939 Messages from the ECM	Cruise Disabled.
SmartStart Aborted	Non-Sticky	Start Cycle Has Been Aborted	None.
Starter Output	Non-Sticky	Starter Magnetic Switch Coil Circuit Open or Short	Starter Magnetic
		Detected	Switch Coil Output
			Disabled.
I rim Down Output	Non-Sticky	Frim Down Output Circuit Open or Short Detected	I rim Down Output
			Disabled.
I rim Position InputHigh	Non-Sticky	Trim Position Sensor Circuit Voltage Out of Range High	None.
Trim Desition Input	Non Stielar	Trim Desition Concer Circuit Voltage Out of Dange Low	Nono
	Non-Sticky	Trim Up Output Circuit Open or Short Detected	Trim Up Output
	NUTI-SUCKY	min op Output Gircuit Open of Short Detected	
Trolling Value Enable Output	Non Sticky	Troll Valva Enable Salanaid Cirquit Open or Short	Disableu.
Troining valve Eriable Output	NOII-Sticky	Detected	NULE.
Trolling Valve Output	Non-Sticky	Troll Valve Solenoid Circuit Open or Short Detected	Troll Valve Output
	Non Otoky	How varye coloridia circuit open of chort Detected	Disabled
XDRP High	Non-Sticky	SIM Transducer Power Output Voltage Out of Range	None.
	. ton Otiony	High Warning	
XDRP Low	Non-Stickv	SIM Transducer Power Output Voltage Out of Range	None.
		Low Warning	
		7	