08 GRP11 Two - Mode Hybrid Transmission Control Module (TCM)

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Power Moding Diagnostics								
System Voltage Low	P0562	Sets when the low voltage system voltage is below a threshold DTC Pass	Ignition Voltage	Ignition Voltage <= 10 Volts Ignition Voltage > 10 Volts	RunCrankActive Engine Speed	= 1 >= 0 RPM	(5 * 1) seconds in a (6 * 1) second window (6 -5) * 1 seconds	Special C
System Voltage Hi	P0563	Sets when the low voltage system voltage is above a threshold DTC Pass	Ignition Voltage	Ignition Voltage >= 18 Volts Ignition Voltage < 18 Volts	RunCrankActive	= 1	(5 * 1) seconds in a (6 * 1) second window (6 - 1) * 1 seconds	Special C

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Shift Solenoid Hydraulic Diags								
Shift Solenoid Hyraulic Diagnostics P0751, P0752, P0756, P0757 have the following common enable criteria	***				LinePressureEstimate Propulsion System Active	> 350 kpa **AND** **>=** 300 kpa FOR > 1 seconds **AND** > (Minimum Line Pressure - 30) kpa Where MinLinePressure is a lookup table Temp vs Line Pressure: Temp Kpa -40 1550 -30 1550 -20 1200 -10 800 0 600 10 400 1		
Shift Solenoid Valve A Stuck Off	P0751	This DTC will indicate when Shift Solenoid Valve A (X Valve) is stuck in the hydraulically low position This detection only occurs during an X valve transition	X valve is determined to be in a hydraulically Low state when it has been commanded hydraulically High.	X Commanded Hi for > XvalveTurnOn Time + 1 seconds Where XValveTurnOn Time: Temp Time -40 0.40 -30 0.25 -20 0.10 -10 0.04 0 0.03 140 0.02	X Command X Position	1 0	Fail Conditions met for 3 seconds	One Trip

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
		DTC Pass	X valve completes Low to High transition without failure		X Command X Position	1 1	1 loop execution at 0.0125 seconds	
Shift Solenoid Valve A Stuck On	P0752	This DTC will indicate when Shift Solenoid Valve A (X Valve) is stuck in the hydraulically hi position This DTC is linked to both a steady state and transitional test.	X valve is determined to be in a hydraulically high state when it has been commanded to a low state.	**Transition Case:** X commanded Low for > (XvalveTurnOffTm + 1) seconds Where XValveTurnOff Time: Temp Time -40 0.50 -30 0.40 -20 0.12 -10 0.08 0 0.03 140 0.0325	X Command X Position	0 1	Fail Conditions met for 3 seconds	Two Trips

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
		DTC Pass (**Transitional Pass**)	X valve completes High to Low transition without failure		X Command X position	0 0	1 loop execution at 0.0125 seconds	
				Steady State Case: Simultaneous failures occur on both PCS2 and PCS4 monitors	XY state PCS2 and PCS4 faults	EVT Lo **OR** EVT Hi Occur Simultaneously - within (VlvXStckHiSteadyStWindow + 0.1) seconds Where VlvXStckHiSteadyStWindow: Temp Time -50 0.50 -32 0.50 -24 0.50 -5 0.50 4 0.50 40 0.50	Fail Conditions met for 2 seconds	
		DTC Pass (**Steady State Pass**)	X valve returns to LOW state after steady state high failure		X Command X Position	0 0	1 loop execution at 0.0125 seconds	
				Stuck In Bore Case: X stuck in bore detection is indeterminant for an extended period of time	PCS4 hdydraulic stuck high failure detected upon key up XY state X commanded high this key cycle	TRUE EVT Lo FALSE	Fail conditions met for > KeHCCD_t_XStckInBoreDelay seconds	

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Shift Solenoid Valve B Stuck Off	P0756	This DTC will indicate when Shift Solenoid Valve B (Y Valve) is stuck in the hydraulically low position This detection only occurs during an Y valve transition	The Y valve is determined to be in a hydraulically Low state when it has been commanded hydraulically High.	Y Commanded Hi for > (Yvalve_TurnOnTm + 1 seconds Where Yvalve_TurnOnTm: Temp Time -40 0.90 -30 0.60 -20 0.28 -10 0.20 20 0.05 140 0.035	Y Command Y Position	1 0	Fail Conditions met for 4.5 seconds	Two Trips
		DTC Pass	Y valve completes Low to High transition without failure		Y command Y Position	1 1 (as indicated by YPSw showing 0 value)	Pass conditions met for 2 seconds	
Shift Solenoid Valve B Stuck On	P0757	This DTC will indicate when Shift Solenoid Valve B (Y Valve) is stuck in the hydraulically hi position This detection only occurs during an Y valve transition	The Y valve is determined to be in a hydraulically Hi state when it has been commanded hydraulically Lo	Y Commanded Lo for > (Yvalve_TurnOffTm + 1) seconds Where Yvalve_TurnOffTm: Temp Time -40 2.17 -30 1.35 -20 0.54 -10 0.20 20 0.064 140 0.05	Y Command Y Position	0 1	Fail Conditions met for 4.5 seconds	Two Trips
		DTC Pass	Y valve completes High to Low transition without failure		Y Command Y Position	0 0 (as indicated by YPSw showing 1 value)	Pass conditions met for 2 seconds	

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Pressure Control Solenoid Hydraulic Diagnostics								

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Pressure Control Solenoid hydraulic diagnostics P0776, P0777, P0796, P0797 P2714, P2715, share these common secondary parameter enable conditions	***				Engine speed	(> 550 RPM **FOR** > 100 * .0125 seconds) **OR** (<= 50 RPM **FOR** 110 * 0.0125 seconds)		
					Xvalve transition	X valve s not in a transition, and hasn't transitioned in the last (0.025 + .25) seconds		
					X Valve Stuck Hi Detection	No fault pending		
					LinePressureEstimate	> 350 kpa **AND** **>=** 300 kpa FOR > 1 seconds **AND** > (MinLinePressure - 30) kpa Where MinLinePressure is a lookup table TransTemp vs Line Pressure: Temp Kpa -40 1550 -30 1550 -20 1200 -10 800 0 600 10 400		
					Propulsion System Active	1		

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Pressure Control (PC) Solenoid B Stuck Off	P0776	This DTC will determine if Pressure Control Solenoid 2 (B) is stuck in the hydraulically low position. This DTC has two fail cases.	The pressure switch associated with pressure control solenoid B (PCS2) is indicating that the PCS is regulating exhuast when the PCS has been commanded full feed.	**Fail Case 1:** PCS2PS (PSw3) indicates low hydraulic pressure	PCS commanded pressure *** Common Hydraulic Enables	>= 1800 kpa for >= (PSReDelay + 0.1) seconds Where PSReDelay: Temp Time -50 4.50 -30 1.80 -24 1.2 -17 0.80 4 0.20 40 0.1	Failure exisits for (2400 * 0.0125) seconds	Two Trips
		DTC Pass	Pass when PCS2PS and PCS2Cmnd are in agreement (Full Feed)	PCS2PS (PSw3) indicates hi hydraulic pressure			(2500 - 2400) * 0.0125 seconds	
			The warning threshold for Fail Case 1 has been met 5 times in a single key cycle	**Fail Case 2:** Fail case 1 criteria met for atleast (40 * 0.0125) seconds, more than 5 times in a given key cycle	Same as **Fail Case 1.**		N/A	

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Pressure Control (PC) Solenoid B Stuck ON	P0777	This DTC will determine if Pressure Control Solenoid 2 (B) is stuck in the hydraulically hi position. This DTC has two fail cases.	Tthe pressure switch associated with pressure control solenoid B (PCS2) is indicating that the PCS is in the full feed position when the PCS has been commanded regulating exhaust.	**Fail Case 1:** PCS2PS (PSw3) indicates hi hydraulic pressure	PCS commanded pressure *** Common Hydraulic Enables	<= 5 kpa for >= (FFDelay + 0.1) seconds Where FFDelay: Temp Time -50 4.50 -30 1.40 -18 0.80 -4 0.30 13 0.19 40 0.08	Failure exisits for (2400 * 0.0125) seconds	Two Trips
		DTC Pass	Pass when PCS2PS and PCS2Cmnd are in agreement (Reg Exhaust)	PCS2PS (PSw3) indicates Low hydraulic pressure			(2500 - 2400) * 0.0125 seconds	
			The warning threshold for Fail Case 1 has been met 5 times in a single key cycle	**Fail Case 2:** Fail case 1 criteria met for atleast (16 * 0.0125) seconds, more than 5 times in a given key cycle	Same as **Fail Case 1.**		N/A	

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Pressure Control (PC) Solenoid C Stuck Off	P0796	This DTC will determine if Pressure Control Solenoid 3 (C) is stuck in the hydraulically low position. This DTC has two fail cases.	The pressure switch associated with pressure control solenoid C (PCS3) is indicating that the PCS is regulating exhuast when the PCS has been commanded full feed.	**Fail Case 1:** PCS3PS (PSw1) indicates low hydraulic pressure	PCS commanded pressure *** Common Hydraulic Enables	>= 1800 kpa for >= (PSReDelay + 0.1) seconds Where PSReDelay: Temp Time -50 4.50 -30 1.80 -24 1.2 -17 0.80 4 0.20 40 0.1	Failure exisits for (2400 * 0.0125) seconds	Two Trips
		DTC Pass	Pass when PCS3PS and PCS3Cmnd are in agreement (Full Feed)	PCS3PS (PSw1) indicates hi hydraulic pressure			(2500 - 2400) * 0.0125 seconds	
			The warning threshold for Fail Case 1 has been met 5 times in a single key cycle	**Fail Case 2:** Fail case 1 criteria met for atleast for atleast (40 * 0.0125) seconds, more than 5 times in a given key cycle	Same as **Fail Case 1.**		N/A	

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Pressure Control (PC) Solenoid C Stuck ON	P0797	This DTC will determine if Pressure Control Solenoid 3 (C) is stuck in the hydraulically hi position. This DTC has two fail cases.	The pressure switch associated with pressure control solenoid C (PCS3) is indicating that the PCS is in the full feed position when the PCS has been commanded regulating exhaust.	**Fail Case 1:** PCS3PS (PSw1) indicates hi hydraulic pressure	PCS commanded pressure <= *** Common Hydraulic Enables	5 kpa for >= (FFDelay + 0.1) seconds Where FFDelay: Trans Temp Time -50 4.50 -30 1.40 -18 0.80 -4 0.30 13 0.19 40 0.08	Failure exisits for (2400 * 0.0125) seconds	Two Trips
		DTC Pass	Pass when PCS3PS and PCS3Cmnd are in agreement (Reg Exhaust)	PCS3PS (PSw1) indicates Low hydraulic pressure			(2500 - 2400) * 0.0125 seconds	
			The warning threshold for Fail Case 1 has been met 5 times in a single key cycle	**Fail Case 2:** Fail case 1 criteria met for atleast (16 * 0.0125) seconds, more than 5 times in a given key cycle	Same as **Fail Case 1.**		N/A	
Pressure Control (PC) Solenoid D Stuck Off	P2714	This DTC will determine if Pressure Control Solenoid 4 (D) is stuck in the hydraulically low position. This DTC has two fail cases.	The pressure switch associated with pressure control solenoidC (PCS4) is indicating that the PCS is regulating exhuast when the PCS has been commanded full feed.	**Fail Case 1:** PCS4PS (PSw4) indicates low hydraulic pressure	PCS commanded pressure >= *** Common Hydraulic Enables	1800 kpa for >= (KtHCCD_t_PCS_PSReDelay + 0.1) seconds	Failure exisits for (2400 * 0.0125) seconds	Two Trips

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
		DTC Pass	Pass when PCS4PS and PCS4Cmnd are in agreement (Full Feed)	PCS4PS (PSw4) indicates hi hydraulic pressure			(2500 - 2400) * 0.0125 seconds	
			The warning threshold for Fail Case 1 has been met 5 times in a single key cycle	**Fail Case 2:** Fail case 1 criteria met for atleast (40 * 0.0125) seconds, more than 5 times in a given key cycle	Same as **Fail Case 1.**		N/A	
Pressure Control (PC) Solenoid D Stuck ON	P2715	This DTC will determine if Pressure Control Solenoid 4 (D) is stuck in the hydraulically hi position. This DTC has two fail cases.	The pressure switch associated with pressure control solenoid D (PCS4) is indicating that the PCS is in the full feed position when the PCS has been commanded regulating exhaust.	**Fail Case 1:** PCS4PS (PSw4) indicates hi hydraulic pressure	PCS commanded pressure <= *** Common Hydraulic Enables	5 kpa for >= (FFDelay + 0.1) seconds Where FFDelay: Trans Temp Time -50 4.50 -30 1.40 -18 0.80 -4 0.30 13 0.19 40 0.08	Failure exisits for (2400 * 0.0125) seconds	Two Trips
		DTC Pass	Pass when PCS4PS and PCS4Cmnd are in agreement (Reg Exhaust)	PCS4PS (PSw4) indicates Low hydraulic pressure			(2500 - 2400) * 0.0125 seconds	

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
			The warning threshold for Fail Case 1 has been met 5 times in a single key cycle	**Fail Case 2:** Fail case 1 criteria met for atleast (16 * 0.0125) seconds, more than 5 times in a given key cycle	Same as **Fail Case 1.**		N/A	
Clutch Slip Diagnostics								
Clutch slip diagnostics P079A, P079B, P079C, P079D share these common secondary parameter enable conditions	***				LinePressureEstimate	> 350 kpa **AND** **>=** 300 kpa FOR > 1 seconds **AND** > (MinLinePressure - 30) kpa Where MinLinePressure is a lookup table TransTemp vs Line Pressure: Temp Kpa -40 1550 -30 1550 -20 1200 -10 800 0 600 10 400		
Clutch 1 Slip	P079A	This DTC sets when excessive slip is observed on C1 while C1 has been commanded on	Clutch 1 Slip Speed	C1 Slip > 200 RPM	C1 Pressure Command C1 Torq Estimate C1 Fill detected	> = 1800 kpa > = 200 Nm 1	(240 * 0.0125) seconds	Two Trips
		DTC Pass	Clutch 1 Slip Speed	C1 Slip < 50 RPM	C1 Pressure Command C1 Torq Estimate C1 Fill detected	> = 1800 kpa > = 20 Nm 1	(80 * 0.0125) seconds	
Clutch 2 Slip	P079B	This DTC sets when excessive slip is observed on C2 while C2 has been commanded on	Clutch 2 Slip Speed	C2 Slip > 200 RPM	C2 Pressure Command	> = 1800 kpa	(250 * 0.0125) seconds	Two Trips

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
					C2 Torq Estimate	> = 200 Nm		
					C2 Fill detected	1		
		DTC Pass	Clutch 2 Slip Speed	C2 Slip < 50 RPM	C2 Pressure Command	> = 1800 kpa	(80 * 0.0125) seconds	
					C2 Torq Estimate	> = 20 Nm		
					C2 Fill detected	1		
Clutch 3 Slip	P079C	This DTC sets when excessive slip is observed on C3 while C3 has been commanded on	Clutch 3 Slip Speed	C3 Slip > 100 RPM	C3 Pressure Command	> = 1800 kpa	(240 * 0.0125) seconds	Two Trips
					C3 Torq Estimate	> = 20 Nm		
					C3 Fill detected	1		
		DTC Pass	Clutch 2 Slip Speed	C3 Slip < 20 RPM	C3 Pressure Command	> = 1800 kpa	(80 * 0.0125) seconds	
					C3 Torq Estimate	> = 20 Nm		
					C3 Fill detected	1		
Clutch 4 Slip	P079D	This DTC sets when excessive slip is observed on C4 while C4 has been commanded on	Clutch 4 Slip Speed	C4 Slip > 100 RPM	C4 Pressure Command	> = 1800 kpa	(150 * 0.0125) seconds	Two Trips
					C4 Torq Estimate	> = 20 Nm		
					C4 Fill detected	1		

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
		DTC Pass	Clutch 2 Slip Speed	C4 Slip < 20 RPM	C4 Pressure Command C4 Torq Estimate C4 Fill detected	> = 1800 kpa > = 20 Nm 1	(80 * 0.0125) seconds	
Pressure Control Solenoid Electrical Diags								
All Pressure Control Solenoid electrical diagnostics P0961, P0962, P0963, P0965, P0966, P0967, P0969, P0970, P0971, P2719, P2720, P2721, P2728, P2729, P2730, P0973	***				Ignition voltage Engine Speed Vehicle Speed RunCrankActive	> = 11 Volts && <= 18 Volts >= 0 RPM && <= 7500 RPM for >= 5 seconds <= 200 kph for >= 5 seconds 1		
Pressure Control (PC) Solenoid A System Performance	P0961	This DTC sets when an invalid voltage in PCS1 control circuit has been detected	PCS1 electrical status	HWIO circutry detects out of range error is present	DTC P0961 *** Common Electrical Enables	Not failed this key on	Failure detected for (320 * 0.0125) seconds out of a (400 * 0.0125) second window	Two Trips
		DTC Pass		HWIO circuitry detects an out of range error is not present			(400 - 320) * 0.0125 seconds	
Pressure Control (PC) Solenoid A Control Circuit Low Voltage	P0962	This DTC sets when the PCS1 control circuit has been detected to be shorted to ground	PCS1 electrical status	HWIO circuitry detects an electrical low pressure error is present	DTC P0962 *** Common Electrical Enables	Not failed this key on	Failure detected for (32 * 0.0125) seconds out of a (40 * 0.0125) second window	One Trip

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
		DTC Pass		HWIO circuitry detects an electrical low pressure error is not present			(40 - 32) * 0.0125 seconds	

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Pressure Control (PC) Solenoid A Control Circuit High Voltage	P0963	This DTC sets when PCS1 has been detected to be shorted to power or open circuited. DTC Pass	PCS1 electrical status	HWIO circuitry detects an electrical hi pressure error is present. HWIO circuitry detects an electrical hi pressure error is not present	DTC P0963 *** Common Electrical Enables	Not failed this key on	Failure detected for (32 * 0.0125) seconds out of a (40 * 0.0125) second window (40 - 32) * 0.0125 seconds	One Trip
Pressure Control (PC) Solenoid B System Performance	P0965	This DTC sets when an invalid voltage in PCS2 control circuit has been detected DTC Pass	PCS2 electrical status	HWIO circutry detects out of range error is present. HWIO circuitry detects an out of range error is not present	DTC P0965 *** Common Electrical Enables	Not failed this key on	Failure detected for (320 * 0.0125) seconds out of a (400 * 0.0125) second window (400 - 320) * 0.0125 seconds	Two Trips
Pressure Control (PC) Solenoid B Control Circuit Low Voltage	P0966	This DTC sets when the PCS2 control circuit has been detected to be shorted to ground	PCS2 electrical status	HWIO circuitry detects an electrical low pressure error is present.	DTC P0966	Not failed this key on	Faiilure detected for (32 * 0.0125) seconds out of a (40 * 0.0125) second window	One Trip

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
					*** Common Electrical Enables			
		DTC Pass		HWIO circuitry detects an electrical low pressure error is not present			(40 - 32) * 0.0125 seconds	
Pressure Control (PC) Solenoid B Control Circuit High Voltage	P0967	This DTC sets when PCS2 has been detected to be shorted to power or open circuited.	PCS2 electrical status	HWIO circuitry detects an electrical hi pressure error is present.	DTC P0967	Not failed this key on	Failure detected for (32 * 0.0125) seconds out of a (40 * 0.0125) second window	One Trip
					*** Common Electrical Enables			
		DTC Pass		HWIO circuitry detects an electrical hi pressure error is not present			(40 - 32) * 0.0125 seconds	
Pressure Control (PC) Solenoid C System Performance	P0969	This DTC sets when an invalid voltage in PCS3 control circuit has been detected	PCS3 electrical status	HWIO circutry detects out of range error is present.	DTC P0965	Not failed this key on	Failure detected for (320 * 0.0125) seconds out of a (400 * 0.0125) second window	Two Trips
					*** Common Electrical Enables			

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
		DTC Pass		HWIO circuitry detects an out of range error is not present			(400 - 320) * 0.0125 seconds	
Pressure Control (PC) Solenoid C Control Circuit Low Voltage	P0970	This DTC sets when the PCS3 control circuit has been detected to be shorted to ground	PCS3 electrical status	HWIO circuitry detects an electrical low pressure error is present.	DTC P0966 *** Common Electrical Enables	Not failed this key on	Failure detected for (32 * 0.0125) seconds out of a (40 * 0.0125) second window	One Trip
		DTC Pass		HWIO circuitry detects an electrical low pressure error is not present			(40 - 32) * 0.0125 seconds	

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Pressure Control (PC) Solenoid C Control Circuit High Voltage	P0971	This DTC sets when PCS3 has been detected to be shorted to power or open circuited. DTC Pass	PCS3 electrical status	HWIO circuitry detects an electrical hi pressure error is present. HWIO circuitry detects an electrical hi pressure error is not present	DTC P0967 *** Common Electrical Enables	Not failed this key on	Failure detected for (32 * 0.0125) seconds out of a (40 * 0.0125) second window (40 - 32) * 0.0125 seconds	One Trip
Pressure Control (PC) Solenoid D System Performance	P2719	This DTC sets when an invalid voltage in PCS4 control circuit has been detected DTC Pass	PCS4 electrical status	HWIO circutry detects out of range error is present. HWIO circuitry detects an out of range error is not present	DTC P2719 *** Common Electrical Enables	Not failed this key on	Failure detected for (320 * 0.0125) seconds out of a (400 * 0.0125) second window (400 - 320) * 0.0125 seconds	Two Trips

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Pressure Control (PC) Solenoid D Control Circuit Low Voltage	P2720	This DTC sets when the PCS4 control circuit has been detected to be open circuit or shorted to power	PCS4 electrical status	HWIO circuitry detects an electrical low pressure error is present.	DTC P2720	Not failed this key on	Failure detected for (32 * 0.0125) seconds out of a (40 * 0.0125) second window	One Trip
					*** Common Electrical Enables			
		DTC Pass		HWIO circuitry detects an electrical low pressure error is not present			(40 - 32) * 0.0125 seconds	
Pressure Control (PC) Solenoid D Control Circuit High Voltage	P2721	This DTC sets when PCS4 has been detected to be shorted to ground	PCS4 electrical status	HWIO circuitry detects an electrical hi pressure error is present.	DTC P2721	Not failed this key on	Failure detected for (32 * 0.0125) seconds out of a (40 * 0.0125) second window	One Trip
					*** Common Electrical Enables			
		DTC Pass		HWIO circuitry detects an electrical hi pressure error is not present			(40 - 32) * 0.0125 seconds	

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Pressure Control (PC) Solenoid E System Performance	P2728	This DTC sets when an invalid voltage in PCS5 control circuit has been detected	PCS5 electrical status	HWIO circutry detects out of range error is present.	DTC P2719	Not failed this key on	Failure detected for (320 * 0.0125) seconds out of a (400 * 0.0125) second window	Two Trips
					*** Common Electrical Enables			
		DTC Pass		HWIO circuitry detects an out of range error is not present			(400 - 320) * 0.0125 seconds	
Pressure Control (PC) Solenoid E Control Circuit Low Voltage	P2729	This DTC sets when the PCS5 control circuit has been detected to be open circuit or shorted to power	PCS5 electrical status	HWIO circuitry detects an electrical low pressure error is present.	DTC P2720	Not failed this key on	Failure detected for (32 * 0.0125) seconds out of a 40) * 0.0125) second window	One Trip
					*** Common Electrical Enables			
		DTC Pass		HWIO circuitry detects an electrical low pressure error is not present			(40 - 32) * 0.0125 seconds	

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Pressure Control (PC) Solenoid E Control Circuit High Voltage	P2730	This DTC sets when PCS5 has been detected to be shorted to ground	PCS5 electrical status	HWIO circuitry detects an electrical hi pressure error is present.	DTC P2721 *** Common Electrical Enables	Not failed this key on	Failure detected for (32 * 0.0125) seconds out of a (40 * 0.0125) second window	One Trip
		DTC Pass		HWIO circuitry detects an electrical hi pressure error is not present			(40 - 32) * 0.0125 seconds	
Shift Solenoid A Control Circuit Low	P0973	This DTC detects a short to power or open circuit in the X valve control circuit.	X Valve Electrical Status	HWIO circuitry detects an open circuit or short to power error is present.	DTC P0973 *** Common Electrical Enables	Not failed this key on	Failure detected for (16 * 0.025) seconds out of a (20 * 0.025) second window	One Trip
		DTC Pass		HWIO circuitry detects an open circuit or short to power error is not present.			(20 - 16) * 0.025 seconds	

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Shift Solenoid A Control Circuit High	P0974	This DTC detects a short to ground in the X valve control circuit. DTC Pass	X Valve Electrical Status	HWIO circuitry detects short to ground error is present. HWIO circuitry detects short to ground error is not present.	DTC P0974 *** Common Electrical Enables	Not failed this key on	Failure detected for (16 * 0.025) seconds out of a (20 * 0.025) second window (20 - 16) * 0.025 seconds	One Trip
Shift Solenoid B Control Circuit Low	P0976	This DTC detects a short to power or open circuit in the Y valve control circuit. DTC Pass	Y Valve Electrical Status	HWIO circuitry detects an electrical low pressure error is present. HWIO circuitry detects an open circuit or short to power error is not present.	DTC P0976 *** Common Electrical Enables	Not failed this key on	Failure detected for (16 * 0.025) seconds out of a (20 * 0.025) second window (20 - 16) * 0.025 seconds	One Trip

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Time Req'd	MIL Illum
Shift Solenoid B Control Circuit High	P0977	This DTC detects a short to ground in the Y valve control circuit. DTC Pass	Y Valve Electrical Status	HWIO circuitry detects an electrical hi pressure error is present. HWIO circuitry detects short to ground error is not present.	DTC P0977 *** Common Electrical Enables	Not failed this key on	Failure detected for (16 * 0.025) seconds out of a (20 * 0.025) second window (20 - 16) * 0.025 seconds	One Trip
Ignition Switch Run/Start Position Circuit Low	P2534	Detects a run crank relay open circuit DTC Pass	Runk Crank Line voltage Run Crank Line Voltage	Ignition Run Crank line voltage <= 2 Volts Ignition Run Crank line voltage > 2 Volts	CAN Communication ECM run crank active data	enabled available and active	(200 * 0.025) seconds in a (215 * 0.025) second window (215 - 200) * 0.025 seconds	One Trip