07 GRP07_All Transmissions.doc

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MALF PARAMETERS & CONDITIONS	TIME LENGTH AND FREQUENCY	DTC TYPE
Pedal Position Signal	P0120	**CAN: Protocol for TCM to receive engine control inputs from Engine Control Module. CAN confirms messages are being received via BUS failure timer. CAN bits are checked for Pass/ Fail.**	Throttle Position Invalid Flag = 1	8.0 < Ignition Voltage < 18.0 V CAN BUS ECU Failure ≠ 0 sec **NOTE**: Fail time = 0, DTC has failed	1.0 sec Continuous	Type A
System Voltage: LOW	P0562	0 – 24 V LOW voltage with operating vehicle	Ignition Voltage ≤ 8.0 V	Engine Speed > 1200 RPM Powertrain components powered	10.0 sec Continuous	Type A
System Voltage: HIGH	P0563	0 – 24 V HIGH voltage with operating vehicle	Ignition Voltage ≥ 18.0 V	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Powertrain components powered	10 fail counts out of 12 total counts Continuous	Type A
Transmission Control Module Read Only Memory	P0601	EPROM/Flash memory corruption (Incorrect program/calibrations checksum)	RAM fail count > 5	None	Immediate Continuous	Type A
Transmission Control Module Not Programmed	P0602	Non-programmed ITCM (calibrations)	KbCOND_NoStartCal = TRUE	None	Immediate Continuous	Type A
Transmission Control Module Long-Term Memory Reset	P0603	Wrong copy of Non-volatile Memory to RAM	Non-volatile memory (static or dynamic) checksum failure	None	Immediate Continuous	Type A
Transmission Control Module Random Access Memory	P0604	RAM failure	RAM read/write failure (single word)	None	Immediate Continuous	Type A
TCM Long-Term Memory Performance	P062F	NVM write error at key-down	TCM Non-Volatile Memory Incorrect flag = 1	8.0 < Ignition Voltage < 18.0 V Ignition ON	Immediate Continuous	Type A

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Transmission Fluid Temperature Sensor Performance	P0711	0.24 - 5.0 V Fail Cases 1 & 2 Trans Temp remains constant when measurable change is expected Fail Case 3 Unrealistic change in trans temperature	Fail Case 1 -39° C. < Startup Trans Temp < 20° C. ΔTrans Temp < 2° C. TCC Slip > 120 RPM for > 300 sec cumulative Fail Case 2 129° C. < Startup Trans Temp < 149° C. ΔTrans Temp < 2° C. Fail Case 3 ΔTrans Temp > 20° C. in 200 msec	No ECT (see below) P0722, P0723, P0716, P0717 DTCs Vehicle Speed > 8.0 kph for 300 sec cumulative -39° C. < Trans Temp < 149° C. ECT > 70° C. ΔECT > 55° C. since start-up	Fail Cases 1, 2 80 sec Fail Case 3 Fail Counter > 14 within 7.0 sec	Special Type C
Transmission Fluid Temperature Sensor Circuit: LOW Voltage	P0712	0.24 - 5.0 V Continuous Short-to-Ground in Trans Temperature Sensor or TTS circuit	Raw TTS > 150° C	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff	10.0 sec Continuous	Special Type C
Transmission Fluid Temperature Sensor Circuit: HIGH Voltage	P0713	0.24 - 5.0 V Continuous Open in Trans Temperature Sensor or TTS circuit	Raw TTS < -39° C	No P0722, P0723, P0716, P0717 DTC 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff TCC Slip > 120 RPM > 200 sec VSS > 60 RPM for 200 sec	80.0 sec Continuous	Special Type C
Input Speed Sensor Circuit Performance	P0716	Unrealistically large change in Input Speed in very short time	Input Speed change > 1000 RPM	No P0722, P0723, P0717, P0752, P0973, P0974, TPS DTCs No Engine Torque default 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Positive ΔISS < 500 RPM for 2.0 sec ISS > 1050 for 2.0 sec 50 < Engine Torque < 1492 N-m TPS > 8.0% Vehicle Speed > 16.0 kph	3.3 sec Continuous	Type B
Input Speed Sensor Circuit LOW Voltage	P0717	Low Input Speed with large vehicle speed	Input Speed < 100 RPM	No P0722, P0723 DTCs No Engine Torque default 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff 50 < Engine Torque < 1492 N-m Vehicle Speed > 16.0 kph	4.5 sec Continuous	Type B
Output Speed Sensor Circuti: Low Voltage	P0722	Low vehicle speed with large engine speed in Drive range	**Drive** 50 ≤ Engine Torque ≤ 1492 N-m Output Speed ≤ 61 RPM **Park/Neutral** 1492≤ Engine Torque ≤ 1492 N-m	No MAP, TPS (see below), P0723, P0716, P0717 DTCs No Engine Torque default Gear Selector ≠ Park/Neutral TPS > 8.0% TCC Slip > -20 RPM Trans Temp > -40° C. 1500 < Input Speed < 5000 RPM 50 < Engine Torque < 1492 N-m	4.5 sec Continuous	Type B

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Output Speed Sensor Circuit: Intermittent	P0723	Loss of vehicle speed with moving vehicle	ΔVSS > 365 RPM in Drive ranges VSS > 304 RPM (34 kph) for > 2.0 sec	No P0716, P0717, P0974 DTCs No Engine Torque default 500 < Engine Speed < 6500 RPM for 5.0 sec, not in fuel cutoff Time since Range change > 6.0 sec Positive ΔVSS, loop-to-loop, < 152 RPM for > 2.0 sec 50 < Engine Torque < 1492 N-m Positive ΔISS, loop-to-loop, < 500 RPM for > 2.0 sec	3.3 sec for Drive ranges Continuous	Type B
Engine Speed: No Signal	P0727	Detects no response from CAN Bus signal for engine speed	CAN Bus Engine Speed Incorrect flag = 1	8.0 < Ignition Voltage < 18.0 V 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff CAN BUS ECU Failure ≠ 0 sec	1.0 sec Continuous	Type B
Torque Converter Clutch System Stuck OFF	P0741	High TCC Slip speed with TCC commanded ON	TCC Slip speed > 200 RPM	No TPS (see below), P0722, P0723, P0716, P0717, P0742, P2761, P1887 DTCs No Engine Torque Default 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Time since Range change > 6.0 sec 8.0 < TPS < 90% 20° C. < Trans Temp < 130° C. Commanded Gear > 1 Clutch Capacity > 65% for 5.0 sec 0.61 < Trans Ratio < 1.71 50 < Engine Torque < 1492 N-m	8.0 sec Count = 2 Continuous	Type B
Torque Converter Clutch System Stuck ON	P0742	Lack of Torque Converter release oil pressure (Switch is closed) with TCC commanded OFF	TCC Release Switch is closed	No TPS (see below), P2761, P1887 DTCs No Engine Torque Default 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff TCC commanded OFF Time since Range change > 6.0 sec 16.0 < Vehicle Speed < 511 kph 8.0 < TPS < 90% 0.633 < Trans Ratio < 3.16 20° C. < Trans Temp < 130° C. 50 < Engine Torque < 1492 N-m	8.0 sec Count = 2 Continuous	Type B
1-2 Shift Solenoid Valve Performance: Stuck OFF	P0751	2-2-3-3 shift pattern	<u>Fail Case 1</u> Command Gear = 1 1.54 < Ratio < 1.71 And <u>Fail Case 2</u> Command Gear = 4 0.95 < Ratio < 1.05	No Engine Torque Default No TPS (see below), P0722, P0723, P0716, P0717, P0973, P0974, P0976, P0977 DTCs No Engine Torque Default 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff TPS > 8.0% Vehicle Speed > 8.0 kph 20° C. < Trans Temp < 130° C. 50 < Engine Torque < 1492 N-m	<u>Fail Case 1</u> 3.0 sec <u>Fail Case 2</u> 5.0 sec Count = 2 Continuous	Type B

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1-2 Shift Solenoid Valve Performance: Stuck ON	P0752	1-1-4-4 shift pattern	Fail Case 3 Command Gear = 2 2.81 < Ratio < 3.10 And Fail Case 4 Command Gear = 3 0.64 < Ratio < 0.71	See P0751	Fail Case 3 3.0 sec Fail Case 4 4.0 sec Count = 2 Continuous	Type B
2-3 Shift Solenoid Valve Performance: Stuck ON	P0756	4-3-3-4 shift pattern	Fail Case 5 Command Gear = 1 0.64 < Ratio < 1.86 And Fail Case 6 Command Gear = 2 0.95 < Ratio < 1.05	See P0751	Fail Case 5 3.0 sec Fail Case 6 4.0 sec Count = 2 Continuous	Type A
2-3 Shift Solenoid Valve Performance: Stuck OFF	P0757	1-2-2-1 shift pattern	Fail Case 7 40 < Engine Torque < 1492 N-m Command Gear = 3 1.54 < Ratio < 1.71 And Fail Case 8 0 < Engine Torque < 1492 N-m Command Gear = 4 1.54 < Ratio < 3.10	No Engine Torque Default No TPS (see below), P0722, P0723, P0716, P0717, P0973, P0974, P0976, P0977 DTCs No Engine Torque Default 500 < Engine RPM < 6000 for 5.0 sec, not in fuel cutoff 8.0 < TPS < 100% 20° C. < Trans Temp < 130° C. Vehicle Speed > 8.0 kph	Fail Case 7 3.0 sec Fail Case 8 3.0 sec Count = 2 Continuous	Type A
1-2 Shift Solenoid Control Circuit: LOW Voltage (Shift Solenoid A)	P0973	Continuous Open, Short-to-Ground in SSA circuit (ODM) or SSA solenoid	Short to Ground bit = 1 **OR** Shift Solenoid 1-2 Commanded ON & Open bit = 1	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff High Side Driver 1 ON	Fail cnt = 44/50 (Total time ≈ 4.4 sec) Continuous	Type B

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1-2 Shift Solenoid Control Circuit: HIGH Voltage (Shift Solenoid A)	P0974	Short-to-Power in SSA circuit (ODM) or SSA solenoid	SS 1-2 feedback circuit state ≠ TCM commanded state	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Shift Solenoid 1-2 commanded ON High Side Driver 1 ON	Fail cnt = 44/50 (Total time ≈ 4.4 sec) Continuous	Type B
2-3 Shift Solenoid Control Circuit: LOW Voltage (Shift Solenoid B)	P0976	Continuous Open, Short-to-Ground in SSB circuit (ODM) or solenoid	Short to GND bit = 1 **OR** Shift Solenoid 2-3 Commanded ON & Open bit = 1	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff High Side Driver 2 ON	Fail count = 44 out of 50 total (Total time ≈ 4.4 sec) Continuous	Type A
2-3 Shift Solenoid Control Circuit: HIGH Voltage (Shift Solenoid B)	P0977	Short-to-Power in SSB circuit (ODM) or solenoid	SS 2-3 feedback circuit state ≠ TCM commanded state	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Shift Solenoid 2-3 commanded ON High Side Driver 2 ON	Fail count = 44 out of 50 total (Total time ≈ 4.4 sec) Continuous	Type A
Throttle Blade Position Signal	P1795	CAN: Protocol for TCM to receive engine control inputs from Engine Control Module. CAN confirms messages are being received via BUS failure timer. CAN bits are checked for Pass/ Fail.	Throttle Position Incorrect flag in CAN Bus = 1	8.0 < Ignition Voltage < 18.0 V CAN BUS ECU Failure ≠ 0 sec **NOTE**: Fail time = 0, DTC has failed	1.0 sec Continuous	Type A
Transmission Pressure Switch Assembly - Illegal Range	P1810	Invalid PSA state or PSA circuit	Range = ILLEGAL (Pressure switch B & C low voltage)	500 < Engine Speed < 6500 RPM for 5.0 sec, not at fuel cutoff	60 sec Continuous	Type B
Transmission Pressure Switch Assembly: Park/Neutral with Drive Ratio	P1816	Invalid PSA state or PSA circuit malfunction	PSA indicates P/N when Ratio indicates Drive	No TPS (see below), P0722, P0723, P0716, P0717, P0751, P0752, P0756, P0757, P1810, P0973, P0974, P0976, P0977 DTCs 8.0 < Ignition Voltage < 18.0 V 500 < Engine RPM < 5500 for 5.0 sec, not in fuel cutoff Output Speed ≥ 76 RPM TPS ≥ 8.0 % 50 < Engine Torque < 1492 N-m	6.3 sec Continuous	Type B
Transmission Pressure Switch Assembly: Drive without Drive Ratio	P1818	Invalid PSA state or PSA circuit malfunction	PSA = D4 or P/N when Ratio indicates Reverse	No TPS (see below), P0722, P0723, P0716, P0717, P0751, P0752, P0756, P0757, P1810, P1816, P0973, P0974, P0976, P0977 DTCs 8.0 < Ignition Voltage < 18.0 V 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff Output Speed ≥ 50 RPM TPS ≥ 3.0 % 20 < Engine Torque < 1492 N-m Trans Temp > 0° C when PSA = drive	2.8 sec Continuous	Type B
Shift Solenoid Control Circuit: Low Voltage	P1833	Continuous Open, Short-to-Ground in High Side Driver 2 circuit	High Side Driver 2 feedback circuit state ≠ TCM commanded state	500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff High Side Driver 2 commanded ON	Fail cnt = 44/50 (Total time ≈ 4.4 sec) Continuous	Type A

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Torque Converter Clutch Release Switch Circuit	P1887	OPEN Release Switch (TCC not applied) when TCM & TCC slip speed indicate TCC is locked	Release Switch is OPEN	No P0716, P0717, P0741, P0742, P2761 DTCs 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff TCC commanded ON 20° C. < Trans Temp < 130° C. -10 < TCC Slip < 60 RPM 50 < Engine Torque < 1492 N-m 103 < TCC Pressure < 827 kPa	6.0 sec Count = 2 Continuous	Type B
Engine Torque Signal	P2637	CAN: Protocol for TCM to receive engine control inputs from Engine Control Module. CAN confirms messages are being received via BUS failure timer. CAN bits are checked for Pass/ Fail.	CAN Bus Engine Torque Incorrect flag = 1	8.0 < Ignition Voltage < 18.0 V CAN BUS ECU Failure ≠ 0 sec **NOTE**: Fail time = 0, code has failed	1.0 sec Continuous	Type A
Torque Converter Clutch Pulse Width Modulated Solenoid Control Circuit	P2761	Continuous Open or Short-to-Ground in TCC PWM circuit or TCC PWM solenoid	Every 100 msec, fail counter incremented if open or short detected	No P0741, P0742 DTCs 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff TCC Duty Cycle < 10% or > 80%	Fail count = 44 out of 50 total (Total time ≈ 4.4 sec) Continuous	Type B
CAN Bus Error ECM	U0100	Communication between TCM & Engine Control Unit (ECU)	CAN Bus ECU Error flag = 1	8.0 < Ignition Voltage < 18.0 V Ignition ON	1.0 sec Continuous	Type B
CAN Bus Reset Counter Overrun	U2104	CAN: A protocol for TCM to receive engine control inputs from Engine Control Module. CAN confirms messages are being received via BUS failure timer. CAN bits are checked for Pass/ Fail.	Bus reset Fail count ≥ 64	8.0 < Ignition Voltage < 18.0 V Ignition ON	Continuous	Type B