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SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MONITORING PARAMETERS AND CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	DEFAULT ACTIONS	PRIMARY MALF PASS CONDITION	SECONDARY PASS CONDITIONS	DTC TYPE
nhTransmission Fluid Overtemperature	P0218	This DTC detects a high transmission temperature for a long period of time	Transmission fluid temperature => 130.5 DegC For 600 Seconds	Common ignition voltage enable, -39 DegC <= transmission fluid temperature <= 149 DegC for time >= 5 seconds	Fail time => 600 seconds Continuous	Freeze Adapts	TFT <=129 DegC for => 5 seconds	same as fail	C
System Voltage Malfunction	P0562	0V to 24V This DTC detects a low voltage for a period of time.	Ignition voltage at transmission control module <= 11 volts	Ignition is On, Common engine speed enable, Engine Speed => 1200 RPM	10 Seconds	<b>none</b>	Ignition voltage at transmission control module > 11 volts for time >= 12 seconds	same as fail	C
System Voltage Malfunction	P0563	0V to 24V This DTC detects a high voltage for a period of time.	Ignition voltage at transmission control module >= 18 volts	Ignition is On	10 seconds Continuous	<b>none</b>	Ignition voltage at transmission control module < 18 volts for time >= 12 seconds	same as fail	C
TCM ROM Test	P0601	This DTC detects an error in the flash memory containing the program and calibration.	Checksum calculation algorithm of flash memory, fail counter >= 5 counts	Ignition is On	Continuous	Soft land to 2nd gear  Inhibit pressure control solenoid output and commad pressure to max  Inhibit TCC solenoid and command TCC off  Freeze adapts  Test Fail This Key On	Checksum calculation algorithm of flash memory	same as fail	A
TCM Not programmed	P0602	This DTC indicates the flash memory has not been programmed.	KbINFD_NoStartCal = TRUE	Ignition is On	Continuous	Soft land to 2nd gear  Inhibit pressure control solenoid output and commad pressure to max  Inhibit TCC solenoid and command TCC off  Freeze adapts  Test Fail This Key On	KbINFD_NoStartCal = FALSE	same as fail	A
Power up copy of NVM to RAM	P0603	This DTC detects an error in the RAM copy of NVM @ power up	Checksum calculation algorithm of NVM copy	Ignition is On	Continuous	Soft land to 2nd gear  Inhibit pressure control solenoid output and commad pressure to max  Inhibit TCC solenoid and command TCC off  Freeze adapts  Test Fail This Key On	Checksum calculation algorithm of NVM copy	same as fail	A

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Common vehicle speed enable: 5.0 KPH <= vehicle speed for time >= 5.0 seconds

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RAM Test	P0604	This DTC tests the read/write capability of each RAM location	Read and write each RAM location	Ignition is On	Continuous	Soft land to 2nd gear  Inhibit pressure control solenoid output and commad pressure to max  Inhibit TCC solenoid and command TCC off  Freeze adapts  Test Fail This Key On	Read and write each RAM location	same as fail	A
Transmission Range Switch Circuit	P0705	TCM detects invalid PRNDL (NSBU) range	PRNDL range = Illegal	8.0 < Ignition Voltage < 18.0 V 500 < Engine RPM < 6500 for 5.0 sec, not in fuel cutoff	60.0 sec  Type C	FA	PRNDL range = Legal  5.0 sec	Same As Fail	C

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Trans Fluid Temp. Sensor Circuit - High Input (Low Temperature)	P0713	0 ohms to 134217728 ohms The DTC detects a high resistance in the transmission fluid temperature sensor circuit.	Transmission fluid temperature sensor circuit resistance >= 116060.6 ohms	Common ignition voltage enable, Common engine speed enable, Transmission output speed >= 200 RPM for time >= 200 seconds, Transmission torque converter slip >= 120 RPM for time >= 200 seconds, No P0716, P0717, P0722, P0723 DTCs active	400 seconds	Same as P0711 DTC Action.  Fault Active	Transmission fluid temperature sensor circuit resistance <= 110778 ohms for time >= 2 seconds	same as fail	C
Input Speed Sensor Circuit-Range/PERF	P0716	0 RPM TO 8192 RPM The DTC detects an unrealistically large change in the Input Speed Circuit Input	Input Speed changes => 1300 RPM	Common ignition voltage enable, Common engine speed enable, No ISS P0717 DTC, Input speed raw >= 1000 RPM for time >= 2 seconds, Input speed delta < 300 RPM for time >= 2 seconds, Throttle position >= 10 % and throttle position valid from ECM, Vehicle speed >= 16 KPH, No OSS P0722, P0723 DTCs, No P0757, P0973, P0974 SSA Sol. DTCs, Engine torque >= 90 Nm and torque valid from ECM	Fail time >= 4.95 seconds  Continuous	Inhibit pressure control solenoid output and cmdmad pressure to max  Freeze Adapts  Calculate default input speed as a function of command gear ratio and output speed  Test Fail This Key On	Input speed > 450 RPM, Input speed delta <= 300 RPM, For pass time => 2 seconds	Common ignition voltage enable, No ISS P0717 DTC	B
Input Speed Sensor Circuit-No Signal	P0717	0 RPM TO 8192 RPM The DTC detects a Low Input Speed when the vehicle has large Vehicle and Engine Speeds	Input Speed < 100 RPM	Common ignition voltage enable, Common engine speed enable, Vehicle speed >= 16 KPH, Engine torque >= 90 Nm and torque valid from ECM, No OSS P0722 P0723 DTCs, No ISS P0717	Fail timer >= 5 seconds  Continuous	Inhibit pressure control solenoid output and cmdmad pressure to max  Freeze Adapts  Calculate default input speed as a function of command gear ratio and output speed  Test Fail This Key On	Input Speed > 450 RPM For pass time => 2 second	none	B
Brake Switch Circuit High Input (Stuck On)	P0719	0V to 12.0V This DTC detects a open brake switch during accelerations.	Accel counts > 8	<b>This Code Has not passed this ignition cycle.</b> No OSS DTC's Increment Accel counter when Brake Switch is High and Vehicle Speed < 8 KPH then 8 KPH <Vehicle Speed< 40 KPH for ≤ 6 sec then Vehicle Speed > 40 KPH for 7.0 sec. P0724 not passed.	8 test failures within 8 test samples AND Brake is On for = > 900 seconds  Continuous	None  NOTE: The State of the Brake Switch input is ignored in the software if Vehicle Speed is => 25 MPH AND TPS => 0.5 %	This Diagnostic will NOT Pass.	No OSS DTC's	C

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Output Speed Sensor - Low Input	P0722	0 RPM to 8192 RPM This DTC detects a low output speed when the vehicle has a large Input speed in a driving gear range with a high Engine Torque value.	Output Speed <= 50 RPM	Common ignition voltage enable, Common engine speed enable, PRNDL Range is not Park/Neutral, Power Take Off (PTO) is not active, -40 DegC <= transmission temperature <= 150 DegC, 50 Nm <= Engine Torque <= 882 Nm and toque valid from ECM, Throttle Position >= 10%, 1400 <= Input Speed <= 5000 RPM, TCC slip speed >= -5 RPM, No OSS P0722, P0723 DTCs, No ISS P0716, P0717 DTCs, No PSA P1810, P1815, P1816, P1818 DTCs	Fail timer >= 3.5 seconds  Continuous	Freeze Adapts  Inhibit pressure control solenoid output and cmdmd pressure to max  Calculate OSS from ISS and commanded gear ratio  Test Fail This Key On	Output Speed => 250 RPM for time => 2 second.	Common ignition voltage enable, Common engine speed enable, PRNDL Range is not Park/Neutral, Power Take Off (PTO) is not active, -40 DegC <= transmission temperature <= 150 DegC, 50 Nm <= Engine Torque <= 882 Nm and toque valid from ECM, Throttle Position >= 10%, 1400 <= Input Speed <= 5000 RPM, TCC slip >= -5 RPM, No OSS P0723 DTC	B
Output Speed Sensor - Intermittent	P0723	0 RPM to 8192 RPM This DTC detects an unrealistic large DROP in Output Shaft speed.	Output Speed DROP => 1000 RPM	Common ignition voltage enable, Common engine speed enable, PRNDL range change timer >= 6 seconds, 4WD range change timer >= 6 seconds, NO P0716, P0717, P0974 DTCs Input speed delta < 300 RPM for time >= 2 seconds, Output speed raw >= 900 RPM for time >= 2 seconds, Output speed change <= 250 RPM for time >= 2 seconds	Fail timer >= 3.4 seconds  Continuous	Freeze Adapts  Inhibit pressure control solenoid output and cmdmd pressure to max  Calculate OSS from ISS and commanded gear ratio  Test Fail This Key On	Output speed > 300 RPM, Output speed delta <= 250 RPM, For pass time => 2 seconds	Common ignition voltage enable, Common engine speed enable, PRNDL range change timer >= 6 seconds, 4WD range change timer >= 6 seconds, NO P0716, P0717, P0974 DTCs	B
Brake Switch Circuit Low Input (Stuck Off)	P0724	.0V to 12.0V This DTC detects an open circuit in the brake switch or brake switch wiring during decelerations.	Decel counts => 8	<b>This Code Has not passed this ignition cycle.</b> Common ignition voltage enable, Power Take Off (PTO) is not active, Brake switch signal indicates brake OFF, No OSS P0722, P0723 DTCs, No brake switch P0719 DTC, Increment Decel Counter when brake switch signal = brake OFF and Vehicle Speed >= 40 KPH for 7 seconds then, 40 KPH > Vehicle Speed > 8 KPH for time < 4.75 seconds then, Vehicle Speed < 8 KPH	8 test failures within 8 test samples  Continuous	None	Brake Switch indicates brake OFF for time => 2 seconds.	Common ignition voltage enable,	C

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Common vehicle speed enable: 5.0 KPH <= vehicle speed for time >= 5.0 seconds

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TCC System Stuck OFF	P0741	This DTC detects high torque converter slip when the TCC is commanded ON in 2nd and/or 3rd Gear.	TCC slip speed $\Rightarrow$ 125 RPM Fail counter $\geq$ 4 counts	Common ignition voltage enable, Comon engine speed enable, Throttle position $\Rightarrow$ 10 % and throttle valid from ECM, 50 Nm $\leq$ engine torque $\leq$ 1492 Nm and toque valid from ECM, Transmission fluid temperature $\geq$ 20 DegC, No TCC electrical P1866 or P1867 DTCs, Power Take Off (PTO) is not active, No ISS P0716, P0717 DTC's, No OSS P0722, P0723 DTC's, No TCC stuck on P0742 DTC, 1.41 $\leq$ gear ratio $\leq$ 1.56 (2 <sup>nd</sup> gear ) or 0.95 $\leq$ gear ratio $\leq$ 1.05 (3 <sup>rd</sup> gear), TCC on or locked, TCC capacity (PWM duty cycle) $\Rightarrow$ 60 % TCC on time $\Rightarrow$ 0.1 second	Fail timer $\geq$ 3.0 seconds Continuous	Inhibit TCC solenoid and command TCC off  Offset pressure control +145 kPa  Freeze Adapts  Inhibit 4 <sup>th</sup> gear if transmission hot,  Test Fail This Key On	-25 RPM $\leq$ TCC slip speed $\leq$ 25 RPM for pass time $\geq$ 2.8 seconds	same as fail	B
TCC System Stuck ON	P0742	This DTC detects low torque converter slip when the TCC is commanded off.	-15 RPM $\leq$ TCC slip speed $\leq$ 15 RPM Fail counter $\geq$ 4 counts	Common ignition voltage enable, Comon engine speed enable, Throttle position $\Rightarrow$ 10 % and throttle valid from ECM, 156 Nm $\leq$ engine torque $\leq$ 1492 Nm and toque valid from ECM, 10 $\leq$ Transmission fluid temperature $\leq$ 130 DegC, Power Take Off (PTO) is not active, No ISS P0716, P0717 DTC's, No OSS P0722, P0723 DTC's, No TCC electrical P1866 or P1867 DTCs, No TCC stuck off P0741 DTC, 800 RPM $\leq$ engine speed $\leq$ 4400 RPM, 11 KPH $\leq$ vehicle speed $\leq$ 121 KPH, 0.95 $\leq$ gear ratio $\leq$ 1.56 (2 <sup>nd</sup> , 3 <sup>rd</sup> gear), commanded gear $\neq$ 1st TCC commanded off	Fail timer $\geq$ 3 second  Continuous	Inhibit pressure control solenoid output and cmdmad pressure to max  Freeze Adapts        Test Fail This Key On	100 RPM $\leq$ TCC slip speed $\leq$ 2500 RPM for pass time $\geq$ 2.8 seconds	same as fail	B

\*\*\* Common engine speed enable: 500 RPM  $\leq$  engine speed  $\leq$  6500 RPM for time  $\geq$  5.0 seconds  
Common ignition voltage enable: 8.0 volts  $\leq$  ignition voltage  $\leq$  18.0 volts  
Common vehicle speed enable: 5.0 KPH  $\leq$  vehicle speed for time  $\geq$  5.0 seconds



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Shift Solenoid A Performance  Normal shift pattern 1234  Failure mode shift pattern 1144	P0752	This DTC detects incorrect gear ratio when 2 <sup>nd</sup> gear is commanded.	Fail case 3 fail counter >= 5 counts	Common ignition voltage enable, Comon engine speed enable, Throttle position valid from ECM, Engine torque valid from ECM, No ISS P0716, P0717 DTC's, No OSS P0722, P0723 DTC's, No P0973, P0974, P0976, P0977 DTCs, No P0742 or P0894 DTCs, 20 DegC ≥ transmission fluid temperature < 130 DegC, 150 RPM ≤ input speed ≤= 6500 RPM Transmission output speed >= 150 RPM  Power Take Off (PTO) is not active, Throttle position => 10%, 50 Nm <= engine torque <= 1492 Nm  <u>Fail case 3:</u> Command gear = 2 <sup>nd</sup> 2.88 <= measured gear ratio <= 3.33 (1 <sup>st</sup> gear)  <u>Fail case 4:</u> Command gear = 3rd .30 <= measured gear ratio <= .8 (4th gear)	<u>Fail case 3:</u> Fail Timer 2.0 Fail timer >= 2.25 seconds continuous  <u>Fail case 4:</u> Fail Count 2.0 Fail timer >= 3.0 seconds continuous	Inhibit pressure control solenoid output and commad pressure to max  Inhibit 3-2 downshift until vehicle speed <= 40 KPH  Freeze Adapts  Test Fail This Key On	<u>Pass case 2:</u> Pass timer >= 1.0 seconds  AND  <u>Pass case 3:</u> Pass timer >= 1.0 seconds	Common ignition voltage enable, Comon engine speed enable, Throttle position valid from ECM, Engine torque valid from ECM, No ISS P0716, P0717 DTC's, No OSS P0722, P0723 DTC's, No P0973, P0974, P0976, P0977 DTCs, No P0742 or P0894 DTCs, 20 DegC <= transmission fluid temperature <= 130 DegC, 150 RPM <= input speed <= 6500 RPM Transmission output speed >= 150 RPM  Throttle position => 7% 50 Nm <= engine torque <= 1492 Nm  <u>Pass case 2:</u> Command gear = 2 <sup>nd</sup> 1.46 <= measured gear ratio <= 2.18 (2 <sup>nd</sup> gear)  <u>Pass case 3:</u> Command gear = 3 <sup>rd</sup> 0.948 <= measured gear ratio <= 1.23 (3 <sup>rd</sup> gear)	B

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3-2 Downshift Solenoid Circuit High Voltage (Short to 12 Volts)	P0788	0V to 12V This DTC detects a continuous short to battery in the 3-2 DS circuit or the 3-2 DS solenoid.	Output State is invalid	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	Set Pressure to Max Freeze Adapts Softland to 3rdGear Inhibit 4 <sup>th</sup> Gear in Hot Mode  FATKO	43 out of 50 counts. Continuous	Same as fail	A
Transmission Component Slipping	P0894	This DTC detects Slip in the Torque Converter Clutch and/or the Forth gear Clutch Pack with the TCC in an apply or locked mode.	<b>Fail case 1:</b> Throttle position => 10%, 100 RPM <= TCC slip speed <= 550 RPM,  <b>Fail case 2.1:</b> Fail case 1 fail counter > 0 counts, Throttle position => 10%, 100 RPM <= TCC slip speed <= 550 RPM  <b>Fail case 2.2:</b> Throttle position => 10%, 100 RPM <= TCC slip speed <= 550 RPM  <b>Fail case 2.3:</b> Throttle position => 10%, 100 RPM <= TCC slip speed <= 550 RPM  <b>Set P0894 if fail case 1 complete = TRUE or if fail case 2 complete flag = TRUE</b>	Common engine speed enable, Power Take Off (PTO) is not active, Throttle position valid from ECM, Engine torque valid from ECM, Engine speed valid from ECM,  Given 3 <sup>rd</sup> or 4 <sup>th</sup> gear and speed ratio = engine RPM / trans output RPM, then 0.70 <= speed ratio <= 2.25  TCC commanded "on" or at "full lock" and TCC capacity (PWM DC) >= 75 % for time >= 5 seconds,  20 DegC <= transmission fluid temperature <= 130 DegC,  50 Nm <= engine torque <= 1492 Nm, 1200 RPM <= engine speed <= 3750 RPM, 48 KPH <= vehicle speed <= 177 KPH,  No ISS P0716, P0717 DTC's, No OSS P0722, P0723 DTC's, No P0973, P0974, P0976, P0977 DTCs, No P0751, P0752, P0756, P0757 DTCs, No P1866 or P1867 DTCs, No P0741 or P0742 DTCs, No P1810, P1815, P1816, or P1818 DTCs,  All of the above criteria must be met to run any part of P0894 fail case logic	<b>Fail case 1:</b> Fail case 1 fail time >= 10 seconds And TCC cycled from "off" to "on" Then increment fail case 1 fail counter  Set fail case 1 complete flag = TRUE if fail case 1 fail counter >= 3 counts  <b>Fail case 2.1:</b> Fail time >= 10 seconds, Freeze adapt and command maximum line pressure, Proceed to fail case 2.2  <b>Fail case 2.2:</b> Fail time >= 12.5 seconds, Freeze adapt and command TCC "off" for time >= 2 seconds, Proceed to fail case 2.3  <b>Fail case 2.3:</b> Fail time >= 15 seconds, Set fail case 2 complete flag = TRUE	Inhibit pressure control solenoid output and comcmd pressure to max,  Inhibit TCC solenoid and command TCC off,  Inhibit 4 <sup>th</sup> gear if transmission hot,  Freeze Adapts  Test Fail This Key On	-25 RPM <= TCC slip speed <= 25 RPM for time >= 10 seconds	Same as fail	B
Pressure Control Solenoid Performance	P0961	0V to 12V This DTC detects a continuous open or short to ground in the PCS circuit .	Duty Cycle is outside the hi and low limits (1.9 & 95%)	Common engine speed enable, Common ignition voltage enable,	>= 200 milliseconds  Continuous	Inhibit pressure control solenoid output and comcmd pressure to max, Freeze Adapts Test Fail This Key On	Duty Cycle is with in the hi and lo limits	Engine Running > 475 RPM > 7.0 sec System Volts between 8.0 & 18.0 Volts	C

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Shift Solenoid A Electrical (1-2 Shift Solenoid)	P0973	0V to 12V This DTC detects a continuous open or ground short in the SSA circuit or the SSA solenoid.	Hardware detects output state is invalid	Common ignition voltage enable, Comon engine speed enable,	43 out of 50 counts. Continuous	Inhibit pressure control solenoid output and commad pressure to max  Inhibit 3-2 downshift until vehicle speed <= 40 KPH  Freeze Adapts  Test Fail This Key On	43 out of 50 counts. Continuous	Same as fail	B
Shift Solenoid A Electrical (1-2 Shift Solenoid)	P0974	0V to 12V This DTC detects a continuous short to power in the SSA circuit or the SSA solenoid.	Hardware detects output state is invalid	Common ignition voltage enable, Comon engine speed enable,	43 out of 50 counts. Continuous	Inhibit pressure control solenoid output and commad pressure to max  Freeze Adapts  Test Fail This Key On	43 out of 50 counts. Continuous	Same as fail	B
Shift Solenoid B Electrical (2-3 Shift Solenoid)	P0976	0V to 12V This DTC detects a continuous open or ground short in the SSB circuit or the SSB solenoid.	Hardware detects output state is invalid	Common ignition voltage enable, Comon engine speed enable,	43 out of 50 counts. Continuous	Inhibit 1 <sup>st</sup> Gear  Inhibit pressure control solenoid output and commad pressure to max  Freeze Adapts  Test Fail This Key On	43 out of 50 counts. Continuous	Same as fail	A
Shift Solenoid B Electrical (2-3 Shift Solenoid)	P0977	0V to 12V This DTC detects a continuous short to power in the SSB circuit or the SSB solenoid.	Hardware detects output state is invalid	Common ignition voltage enable, Comon engine speed enable,	43 out of 50 counts. Continuous	Inhibit Max Gear  Inhibit pressure control solenoid output and commad pressure to max  Freeze Adapts  Test Fail This Key On	43 out of 50 counts. Continuous	Same as fail	A
PSA Circuit Malfunction – PSA indcates an illegal range value	P1810	0V to 12V This DTC detects an invalid state of the PSA sensor or the PSA circuit by deciphering the PSA inputs.	PSA range = illegal value	Common ignition voltage enable,Common engine speed enable, Power Take Off (PTO) is not active, No PSA P1810 DTC	60 seconds Continuous	Inhibit pressure control solenoid output and commad pressure to max  Freeze Adapts  Force TCC Apply in 4 <sup>th</sup> Gear  Test Fail This Key On	PSA range <> illegal value for time => 5 seconds	Same as fail	B
PSA Start in Wrong Range	P1815	0V to 12V This DTC detects an invalid state of the PSA sensor or the PSA circuit by deciphering the PSA inputs.	PSA indicates D2 (ONLY) before and after Engine Start-up ( 625 RPM)	System Voltage is between 8.0 & 18.0  No VSS DTC's  Engine Speed Transition: Below 50 RPM for => 1.0 sec. then, between 50 and 610 RPM > 0.075 sec. then => 625 RPM. (RPM must remain above the 625 RPM cal)  Output Speed <= 250 RPM	7.0seconds  Continuous	Freeze Adapts Max Line Pressure.	PSA indicates Park/Neutral after 625 RPM for => 0.00625 seconds. (Must occur before a failure is reported or the fila timer reaches it's limit)	Same as Fail	B

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PSA Circuit Malfunction – PSA indicates P/N with drive gear ratio	P1816	0V to 12V This DTC detects an invalid state of the PSA sensor or the PSA circuit by deciphering the PSA inputs.	PSA range = P/N And 3.33 >= gear ratio >= 2.33 or 1.52 >= gear ratio >= 1.23 or 1.02 >= gear ratio >= 0.95 or 0.9 >= gear ratio >= 0.64  NOTE: Ratio is measured NI/NO	Common ignition voltage enable, Common engine speed enable, Power Take Off (PTO) is not active, Throttle position valid from ECM, Engine torque valid from ECM, No ISS P0716, P0717 DTC's, No OSS P0722, P0723 DTC's, No P0973, P0974, P0976, P0977 DTCs, No P0751, P0752, P0756, P0757 DTCs, No P1810, P1815, P1816, or P1818 DTCs, Transmission output speed >= 350 RPM, Throttle position => 10%, 50 Nm <= engine torque <= 1492 Nm	12.75 seconds  Continuous	Inhibit pressure control solenoid output and commad pressure to max  Freeze Adapts  Force TCC Apply in 4 <sup>th</sup> Gear  Test Fail This Key On	PSA range = D4 for time => 1.7 second	Same as fail	B
PSA Circuit Malfunction – PSA indicates drive range with measured reverse gear ratio	P1818	0V to 12V This DTC detects an invalid state of the PSA sensor or the PSA circuit by deciphering the PSA inputs.	PSA range = D4, D3, D2, D1, or P/N and 2.11 >= gear ratio >= 2.05  NOTE: Ratio is measured NI/NO	Common ignition voltage enable, Common engine speed enable, Engine torque valid from ECM, No OSS P0722, P0723 DTC's, No P1810, P1815, P1816, or P1818 DTCs, Transmission output speed >= 100 RPM, 108 Nm <= engine torque <= 881 Nm Throttle position => 8 %	5 seconds  Continuous	Inhibit pressure control solenoid output and commad pressure to max  Freeze Adapts  Default range to D4  Force TCC Apply in 4 <sup>th</sup> Gear  Test Fail This Key On	PSA indicates D4, D3, D2, or D1 And 2.52 >= gear ratio >= 2.42 or 1.52 >= gear ratio >= 1.44 or 1.02 >= gear ratio >= 0.98 or 0.78 >= gear ratio >= 0.727 for time => 1.7 second	Same as fail	B
Ign. Switch Run Crank Circuit	P2534	Detcts a continuous open in the Ignition 1 switch circuit	The Fail counter is incremented every 25ms if an open is detected.	Engine Running	Fail Counts = 200 out of 215 counts	Freeze Adapts Max line pressure Immediate Land to 2 <sup>nd</sup> gear Test fail this key on	Fail Counts < 200 out of 215 counts	Same as fail	A
TCC PWM Solenoid Electrical	P2764	0V to 12V This DTC detects a continuous open or ground short in TCC PWM circuit or the TCC PWM solenoid.	Hardware detects output state is invalid	Common ignition voltage enable, Comon engine speed enable,	43 out of 50 counts. Continuous	Inhibit TCC solenoid and command TCC off  Inhibit pressure control solenoid output and commad pressure to max  Inhibit 4 <sup>th</sup> gear if transmission hot  Freeze Adapts  Test Fail This Key On	43 out of 50 counts. Continuous	Same as fail	B

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SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALF DETECTION PARAMETERS	SECONDARY MONITORING PARAMETERS AND CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	DEFAULT ACTIONS	PRIMARY MALF PASS CONDITION	SECONDARY PASS CONDITIONS	DTC TYPE
TCC PWM Solenoid Electrical	P2763	0V to 12V This DTC detects a continuous short to power in the TCC PWM circuit or the TCC PWM solenoid.	Hardware detects output state is invalid	Common ignition voltage enable, Common engine speed enable,	43 out of 50 counts. Continuous	Inhibit TCC solenoid and command TCC off  Inhibit pressure control solenoid output and command pressure to max  Inhibit 4 <sup>th</sup> gear if transmission hot  Freeze Adapts  Test Fail This Key On	43 out of 50 counts. Continuous	Same as fail	B
TCC Enable Solenoid Circuit Low Voltage Short to Ground or Open	P2769	0V to 12V This DTC detects a continuous open or short to ground in the TCC Enable Solenoid circuit or the TCC Enable Solenoid.	Output State is invalid	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	Freeze Adapts Inhibit TCC Inhibit 4 <sup>th</sup> if in Hot Mode  FATKO	43 out of 50 counts. Continuous	Same as fail	B
TCC Enable Solenoid Circuit High Voltage Short to 12 Volts (Sol with very low res)	P2770	0V to 12V This DTC detects a continuous short to battery in the TCC Enable Solenoid circuit or the TCC Enable Solenoid.	Output State is invalid	Engine RPM between 475 & 6200 for 5 sec. System Voltage is between 8 & 18 Vehicle Speed less than 200 KPH	43 out of 50 counts. Continuous	Freeze Adapts Inhibit TCC Inhibit 4 <sup>th</sup> if in Hot Mode  FATKO	43 out of 50 counts. Continuous	Same as fail	B
Four Wheel Drive Low - Switch Input Malfunction  Fail Case 2: Switch Stuck On.	P2771	This DTC detects the continuous short to ground in the Four Wheel Drive Low Switch Circuit	4WD Lo Switch indicates ON and Measured Transfer Case Ratio =>0.95 and <= 1.05 in any one gear.  Measured Transfer case ratio = NI / NO / commanded gear ratio	Same as Fail Case 1	=> 5.0 seconds in any one gear.  (Usually 4th gear)  2 Fail Counts	Same as Fail Case 1	Same As Fail Case 1	Same As Fail Case 1	B
Power down copy of NVM to RAM	P062F	This DTC detects an error in the RAM copy of NVM @ power down	Checksum calculation algorithm of NVM copy	Ignition is On	Continuous	Soft land to 2 <sup>nd</sup> gear  Inhibit pressure control solenoid output and command pressure to max  Inhibit TCC solenoid and command TCC off  Freeze adapts  Test Fail This Key On	Checksum calculation algorithm of NVM copy	same as fail	A
CAN Bus Error ECU	U0073	This DTC detects a communication problem between the TCM and ECU	No valid ECU CAN message for 2.0 seconds	Common ignition voltage enable	Continuous	Inhibit pressure control solenoid output and command pressure to max  Force TCC OFF with 4th gear commanded  Freeze adapts  Default throttle to 35 %  Test Fail This Key On	Valid ECU CAN message for 2.0 seconds	same as fail	B

\*\*\* Common engine speed enable: 500 RPM <= engine speed <= 6500 RPM for time >= 5.0 seconds  
Common ignition voltage enable: 8.0 volts <= ignition voltage <= 18.0 volts  
Common vehicle speed enable: 5.0 KPH <= vehicle speed for time >= 5.0 seconds

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CAN Bus Error ECU	U0100	This DTC detects a communication problem between the TCM and ECU	No valid ECU CAN message for 2.0 seconds	Common ignition voltage enable	Continuous	Inhibit pressure control solenoid output and commad pressure to max  Force TCC OFF with 4th gear commanded  Freeze adapts  Default throttle to 35 %  Test Fail This Key On	Valid ECU CAN message for 2.0 seconds	same as fail	B
CAN Bus Error Loss Comm with Body	U0140	This DTC detects a communication problem between the TCM and ECU	No valid ECU CAN message for 2.0 seconds	Common ignition voltage enable	Continuous	Inhibit pressure control solenoid output and commad pressure to max  Force TCC OFF with 4th gear commanded  Freeze adapts  Default throttle to 35 %  Test Fail This Key On	Valid ECU CAN message for 2.0 seconds	same as fail	C
CAN Bus Error Loss Comm with TCS/ABS	U0121	This DTC detects a communication problem between the TCM and ECU	No valid ECU CAN message for 2.0 seconds	Common ignition voltage enable	Continuous	Inhibit pressure control solenoid output and commad pressure to max  Force TCC OFF with 4th gear commanded  Freeze adapts  Default throttle to 35 %  Test Fail This Key On	Valid ECU CAN message for 2.0 seconds	same as fail	C

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 Common ignition voltage enable: 8.0 volts <= ignition voltage <= 18.0 volts  
 Common vehicle speed enable: 5.0 KPH <= vehicle speed for time >= 5.0 seconds

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### NOTE:

- ABOVE 25 MPH and 0.5% TPS the Brake Switch Input is NOT used. (Driver will notice: in 4th with TCC On - Tap Brake pedal and TCC Will NOT TURN OFF.. THIS IS **NORMAL** FOR 1998-2003 PCM- DIESELS. This action allows the brake switch and circuit to become a NON-OBD-II component.)
- All Diagnostics are disabled with Power Take Off (PTO) active.
- P0724 Will not pass
- TPS DTC's are NOT monitored. If a TPS/APP does set, it does not inhibit any transmission diagnostics from running.
- No ECT DTC's (Engine Coolant) P0117, P0118 No MAP DTC's = P0106, P0107, P0108

### CLASS 2 Override Abort Calibrations

Function	Calibration
Max Engine Speed for overall overrides	3200 RPM
Max KPH for Solenoid override	100 KPH
Max 2-1 downshift request	40 KPH
Max 3-2 downshift request	60 KPH
Max Engine Speed for Force Motor Override	2500 RPM (Actual is 1/2 this value on the vehicle)
Min Force Motor AMP override	0.0 AMPS
Max Force Motor AMP override	1.1 AMPS
TCC Commanded Off Time Override	300 sec.

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 Common vehicle speed enable: 5.0 KPH <= vehicle speed for time >= 5.0 seconds

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**System Voltage Malfunction**

Logic	MODIFICATION / ACTION	DRIVER MAY HAVE COMMENT/COMPLAINT	Requirement
<p>SYSTEM VOLTAGE OUT OF RANGE.</p> <p>8.0 volts &lt; ignition voltage &lt; 18.0 volts for time &gt;= 10.0 seconds</p> <p>ignition voltage &lt;= 8.0 volts or ignition voltage &gt;= 18.0 volts for time &gt;= 10.0 seconds</p> <p><b>Unrelated to the P0562 and/or P0563 System Voltage DTC's</b></p>	<p>Normal transmission control</p> <p>Inhibit pressure control solenoid, Inhibit TCC solenoid, soft land to 2nd, freeze adapts</p>	<p>Transmission will not shift. (Customer may comment of one gear only) (The controller should have a P0562 or P0563 stored in history)</p>	<p>Protection of Transmission Solenoids</p>

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 Common ignition voltage enable: 8.0 volts <= ignition voltage <= 18.0 volts  
 Common vehicle speed enable: 5.0 KPH <= vehicle speed for time >= 5.0 seconds