2007 MY AUTO 4T80-E TRANSMISSION DIAGNOSTIC PARAMETERS

Component/ System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters / Enable Conditions	Time Required	MIL Illumin.
System Voltage	P0562	Low Supply		IG voltage < 8.68 V	Ignition ON Not in Emergency mode T/M input rev. > 800 T/M input rev. = Q_NORMAL	20 sec Continuous	2nd
	P0563	High Supply		G voltage > 18 V	Ignition ON Not in Emergency mode T/M input rev. > 800 T/M input rev. = Q_NORMAL	20 sec Continuous	2nd
Internal Control Module Memory	P0601	Check Sum Error		To detect that the value of checksum calculations executed after IG ON. If there are a differences from the correct checksum value stored in FLASH ROM, the second calculation is made. Differences twice detection is criteria.	Ignition OFF-ON (only at T/M computer initialization function)	2 times Continuous	2nd
Lost communication with ECM (Engine)	U0100	Frame missing from ECM	Detect no Status CAN frame from ECM		Engine rpm > 400 rpm once within the driving cycle Ignition ON + 3 sec DS_Active_CAN = TRUE Normal communication	4 sec Continuous	2nd
CAN Bus Off Counter Overrun	U0001	CAN controller continuity check	CAN controller Bus Off is detected	RESET_COUNTER by receiving “BUS OFF” state from CAN controller has reached 8 times continuously	Limp home mode = Off 3 sec after Ignition ON or reset of CAN controller. DS_Active_CAN = TRUE		2nd
Invalid data from ECM	P1895	Engine Torque signal is indicated invalid	Invalid Torque data from ECM	TCM receives Engine Torque Actual Validity is “Invalid”	Not detection of Lost communication with ECM Not in Emergency mode Ignition ON > 3 sec DS_Active_CAN = TRUE Normal communication	4 sec Continuous	2nd
	P1896	Driver Req Torque signal is indicated invalid	Invalid Torque data from ECM	TCM receives Engine Torque Driver Requested Validity is “Invalid” or Engine Torque Maximum Validity is “Invalid”	3 sec after IG ON DS_Active_CAN = TRUE Not in Emergency mode Normal communication Not detection of Lost communication with ECM	4 sec Continuous	2nd
Solenoid S1	P0985	Circuit continuity check	Short-cut ground	To detect the “OFF” signal (0V) of the S1 monitor, when S1 driver outputs the “ON”signal (12V)	DS_Active = TRUE 10 ms after solenoid output changed Not in Emergency mode	500 msec	2nd
	P0986		Not connected or short-cut Ubatt	To detect the “ON” signal (12V) of the S1 monitor, when S1 driver outputs the “OFF” signal (0V)		Continuous	
Solenoid S2	P0973	Circuit continuity check	Short-cut ground	To detect the “OFF” signal (0V) of the S1 monitor, when S1 driver outputs the “ON”signal (12V)	DS_Active = TRUE 10 ms after solenoid output changed Not in Emergency mode	500 msec	2nd
	P0974		Not connected or short-cut Ubatt	To detect the “ON” signal (12V) of the S1 monitor, when S1 driver outputs the “OFF” signal (0V)		Continuous	
Torque Converter Clutch	P0741	Comparison of engine speed and transmission input speed	(Eng. Rpm - Trans. Input rpm) > 100 Converter is slipping with active lock-up.		DS_Active = TRUE Fdetect_inh = FALSE cf. Gear ratio Shift position = RANGE_D(defined) 8 sec after N-D shifting control end EGtorque >= 0 Nm EGrpm < 4000 rpm	12 sec Continuous	2nd

					3sec after SLU target current (_ir) >= 1000 mA abs(1- outRpmABS / in_to_outrpm*) < 10 % Not in back up output/input revolution sensor 0.5 sec after shifting control end oilTemp >= 20 oC No electrical failure on SLU Lock-up activated		
	P0742		(Eng. Rpm - Trans. Input rpm) < 30 Converter clutch is locked when it should be slipping	Step 1: EgRpm < 100 rpm for 1.0 sec -> stall avoidance Step 2: Abs(EgRpm - inRpm) < 30 rpm for 2.0 sec continuously	EGrpm > 400 rpm Egrpm Valid Data =1 (Valid) Step1: Not in CAN BUS Off Failure Not in ECU Communication Failure 10.2 V < IG Voltage < 15.5 V outRpm = 0 rpm oiltemp >= 20 oC Shift position = RANGE_D (defined) No electrical failure on SLU Not garage shifting (N-D) 1.0 sec after N-D shifting control end 8.0 sec after changing to Shift position = RANGE_Ddefined) Not shifting 0.5 sec after shifting control end EGtrq_noACC >= 60 Nm 1000 rpm< EgRpm < 3000 rpm abs(1- outRpmABS / in_to_outrpm*) < 10 % Step 2 EGtorque >= 0 Nm EGrpm < 4000 rpm abs(1- outRpmABS / in_to_outrpm*) < 10 % Not in back up output/input revolution sensor 0.5 sec after shifting control end oilTemp >= 20 oC No electrical failure on SLU Current Gear >= GEAR_2ND	Step1: 1sec Step2: 4sec	2nd
Pressure solenoid SLU	P2764	Circuit continuity check	Short-cut ground or open	Low current, <23 mA, AD < 15	DS_Active = TRUE Not in Emergency mode No Detection of GND SHORT failure for 1 sec and over	500 ms Continuous	2nd
	P2762		Terminal short	Error current > 80 mA	Not in Emergency mode Engine speed > 400 rpm Oil temp > 20 deg C System voltage change < 0,2V System voltage 11 -16 V Output current target > 835mA and not changed during detection. Not failure detection(T/M oil temperature) DS_Active Not shifting	2,75 sec Continuous	2nd
	P2763		Short-cut Ubatt (+B)	Measured Current > 1,333 mA, AD > 1000	DS_Active = TRUE Not in Emergency mode No Detection of GND SHORT failure for 1 sec and over	500 ms Continuous	2nd
	P2759		Feed Back Current Stuck(Electrical)	To detect “sum_ie” *1 more than 20000	IG voltage > 10.5 V input AD value < 1000(1333mA) not in Emergency mode DS_Active = TRUE No detection of SLU +B/GND short	1 sec	2nd

					open failure		
Pressure solenoid SLT	P0962	Circuit continuity check	Short-cut ground or open	To detect very low current (A/D input value < 15 (23 mA))	DS_Active = TRUE Not in Emergency mode No Detection of GND SHORT failure for 1 sec and over	500 ms Continuous	2nd
	P0961		Terminal short	Error current > 80 mA	Not in Emergency mode Not shifting Oil temp > 20 deg C System voltage change < 0,2V System voltage 11 -16 V Not shifting SLT target current is not changed Not failure detection(T/M oil temperature) DS_Active SLT current >= 853 mA	2.75 sec Continuous	2nd
	P0963		Short-cut Ubatt(+B)	Measured Current > 1,333 mA, AD > 1000	DS_Active = TRUE Not in Emergency mode No Detection of GND SHORT failure for 1 sec and over	500 ms Continuous	2nd
	P0748		Feed Back Current Stuck(Electrical)	To detect “sum_ie” *1 more than 20000	input AD value < 1000(1333mA) not in Emergency mode DS_Active = TRUE IG voltage > 10.5 V No detection of SLB +B/GND short open failure	1 sec	2nd
Timing solenoid SLC1	P0966	Circuit continuity check	Short-cut ground or open	Low current, <23 mA, AD < 15	DS_Active = TRUE Not in Emergency mode No Detection of GND SHORT failure for 1 sec and over	500 msec Continuous	2nd
	P0965		Terminal short	Error current > 80 mA	Not in Emergency mode Not shifting Oil temp > 20 deg C System voltage change < 0,2V System voltage 11 -16 V Not shifting SLC1 target current is not changed Not failure detection(T/M oil temperature) DS_Active SLC1 current >= 853 mA	2.75 sec Continuous	2nd
	P0967		Short-cut Ubatt(+B)	Measured Current > 1,333 mA, AD > 1000	DS_Active = TRUE Not in Emergency mode No Detection of GND SHORT failure for 1 sec and over	500 msec Continuous	2nd
	P0778		Feed Back Current Stuck(Electrical)	To detect “sum_ie” *1 more than 20000	input AD value < 1000(1333mA) not in Emergency mode DS_Active = TRUE IG voltage > 10.5 V No detection of SLB +B/GND short open failure	1 sec	2nd
Timing solenoid SLC2	P0970	Circuit continuity check	Short-cut ground or open	Low current, <23 mA, AD < 15	DS_Active = TRUE Not in Emergency mode No Detection of GND SHORT failure for 1 sec and over	500 msec Continuous	2nd
	P0969		Terminal short	Error current > 80 mA	Not in Emergency mode Not shifting Oil temp > 20 deg C System voltage change < 0,2V	2.75 sec Continuous	2nd

					System voltage 11 -16 V Not shifting SLC1 target current is not changed Not failure detection(T/M oil temperature) DS_Active SLC1 current >= 853 mA		
	P0971		Short-cut Ubatt(+B)	Measured Current > 1333 mA, AD > 1000	DS_Active = TRUE Not in Emergency mode No Detection of GND SHORT failure for 1 sec and over	500 msec Continuous	2nd
	P0798		Feed Back Current Stuck(Electrical)	To detect “sum_ie” *1 more than 20000	input AD value < 1000(1333mA) not in Emergency mode DS_Active = TRUE IG voltage > 10.5 V No detection of SLC2 +B/GND short open failure	1 sec	2nd
Timing solenoid SLC3	P2720	Circuit continuity check	Short-cut ground or open	To detect very low current (A/D input value < 15 (23 mA))	DS_Active = TRUE Not in Emergency mode No Detection of +B SHORT failure for 1 sec and over	500 msec Continuous	2nd
	P2719		Terminal short	TCM detects the error current more than 80 mA	Not in Emergency mode Not shifting Oil temp > 20 deg C System voltage change < 0,2V System voltage 11 -16 V Not shifting SLC3 target current is not changed Not failure detection(T/M oil temperature) DS_Active SLC3 current >= 853 mA	2.75 sec Continuous	2nd
	P2721		Short-cut Ubatt(+B)	To detect input AD value is more than 1000 (1333 mA)	DS_Active = TRUE Not in Emergency mode No Detection of GND SHORT failure for 1 sec and over	500 msec Continuous	2nd
	P2716		Feed Back Current Stuck(Electrical)	To detect “sum_ie” *1 more than 20000	Limp home mode = Off input AD value < 1000(1333mA) not in Emergency mode DS_Active = TRUE IG voltage > 10.5 V No detection of SLC3 +B/GND short	1 sec	2nd
Timing solenoid SLB1	P2729	Circuit continuity check	Short-cut ground or open	To detect very low current (A/D input value < 15 (23 mA))	DS_Active = TRUE Not in Emergency mode No Detection of +B SHORT failure for 1 sec and over	500 msec Continuous	2nd
	P2728		Terminal short	TCM detects the error current more than 80 mA	Not in Emergency mode Not shifting Oil temp > 20 deg C System voltage change < 0,2V System voltage 11 -16 V Not shifting SLB1 target current is not changed Not failure detection(T/M oil temperature) DS_Active SLB1 current >= 853 mA	2.75 sec Continuous	2nd
	P2730		Short-cut Ubatt(+B)	To detect input AD value is more than 1000 (1333 mA)	DS_Active = TRUE Not in Emergency mode No Detection of GND SHORT failure for 1 sec and over	500 msec Continuous	2nd

	P2725		Feed Back Current Stuck(Electrical)	To detect “sum_ie” *1 more than 20000	Limp home mode = Off input AD value < 1000(1333mA) not in Emergency mode DS_Active = TRUE IG voltage > 10.5 V No detection of SLB +B/GND short open failure	1 sec	2nd
Gear error, hydraulic fault	P0729	Rationality	Calculation of actual gear ratio for 6th gear is not correct.	Calculated ratio for 6th gear differs more than 20% from expected or abs	Throttle >= 10% Current gear = 6 out Rpm >= 500	12 sec Continuous	2nd
	P0731	Rationality	Calculation of actual gear ratio for 1st gear is not correct.	abs(1 - GRCurrent* / 2nd GearRatio) < 4% abs(1 - GRCurrent* / 3rd GearRatio) < 4% continuously abs(1 - GRCurrent* / 4th GearRatio) < 4%	current Gear = (GEAR_1ST or GEAR_1STEB) 1350 rpm >= outRpm >= 250 rpm (Gasoline E/G) (840 rpm >= outRpm >= 250 rpm (Diesel E/G)) EGtrq_noACC >= 100 Nm (GEAR_1ST) (EGtrq_noACC >= 80 Nm (GEAR_1STEB)) ConditionA: DS_Active = TRUE Fdetect_Inh* = FALSE Shift position = RANGE_D(defined) 8.0 sec later after changing to Shift position = RANGE_D(defined) Not garage shifting control(N-D or N-R) 1.0 sec later after garage shift control end Not neutral control 1.0 sec later after neutral control off end Not shifting 0.5 sec later after shifting control end Oil temperature >= 20 oC brake off (brake pedal release)	12 sec Continuous	2nd
	P0732	Rationality	Calculation of actual gear ratio for 2nd gear is not correct.	Calculated ratio for 2nd gear differs more than 20% from expected	Throttle > 10% out Rpm >= 500 Current gear = 2	12 sec Continuous	2nd
	P0733	Rationality	Calculation of actual gear ratio for 3rd gear is not correct.	Calculated ratio for 3rd gear differs more than 20% from expected	Throttle > 10% Current gear = 3 out Rpm >= 500	12 sec Continuous	2nd
	P0734	Rationality	Calculation of actual gear ratio for 4th gear is not correct.	Calculated ratio for 4th gear differs more than 20% from expected	Throttle > 10% Current gear = 4 out Rpm >= 500	12 sec Continuous	2nd
	P0735	Rationality	Calculation of actual gear ratio for 5th gear is not correct.	Calculated ratio for 5th gear differs more than 20% from expected	Throttle > 10% Current gear = 5 out Rpm >= 500	12 sec Continuous	2nd
	P0736	Rationality	Calculation of actual gear ratio for Reverse gear is not correct	Calculated ratio for Reverse gear differs more than 20% from expected	Not Reverse┌ control outRpm >= 500 rpm throttle >= 10 % Condition A (But Shift position = RANGE_R (defined))	12 sec Continuous	2nd
Gear 1 Incorrect Ratio, Engine Brake	P1731	Rationality	Calculation of actual gear ratio for 1st gear is not correct.	1 - GRCurrnet / GRExpected > 20 %	current Gear = GEAR_1stEB outRpm >= 500 rpm EGtrq_noACC < 0 Nm	12 sec Continuous	2nd
Engine speed signal	P0725	Signal from ECM stated as		TCM receives Engine Speed Validity is “Invalid”	3 sec after IG ON DS_Active_CAN = TRUE Not in Emergency mode Normal communication Not detection of Lost communication - with ECM	4 sec Continuous	2nd
Transmission Range Sensor Circuit	P0707	Voltage low		POS1 voltage < 0.127 (AD value=26) V POS2 voltage < 0.127 (AD value=26) V	6.0 V < Battery Voltage < 15.5 V Not in service mode	200ms	2nd
	P0708	Voltage high		To detect “input POS1 voltage + input POS2 voltage”≤ < 5V - 0.29(AD value=60) V or	Not in service mode 6.0 V < Battery Voltage < 15.5 V	200 ms Continuous	2nd

				To detect “input POS1 voltage + input POS2 voltage”≥ > 5V + 0.29(AD value=60) V			
Output speed sensor circuit	P0722		No pulse	To detect no pulse of OutRpm sensor while detecting InRpm sensor signal 16 pulses	DS_Active = TRUE Not in Emergency mode RANGE_D (defined signal) {if (More than vehicle speed 66 km/h or (More than 20 oC in temperature of oil and Oil temperature sensor = Q_NORMAL)) More than 2.5 sec changed from P, R or N range to others else More than 10 sec changed from P, R or N range to others} Selector position switch = Q_NORMAL Not in Neutral control Not shifting Not in ND control Input revolution sensor =Q_NORMAL Bus off, ABS no communication, Vehicle Speed_ABS, EngineTorque = Q_NORMAL S1,S2,SLC1,SLC2,SLC3,SLB1,SLT = Q_NORMAL OutRpmABS*1> 300 rpm		2nd
	P0721		Range/Performance wrong pulse	| 1-outRpmABS/outRpmSP | > 15 %	No ND control Gear >= 2ND | 1-outRpmABS/outRpmNC | < 5% 8 sec after shifting control (To prevent miss-detection in case C1 clutch is not engaged) 8 sec after changing to Position switch = RANGE_D(defined) Range other than P and N and R Not shifting (// To prevent miss- detection at off up shift) EgRpm > 400rpm Speed ABS >= 30 km/h Spinning=FALSE DS_Active = TRUE Not in Emergency mode No failure detection(C1 drum sun-gear, Selector position, S1 and S2 solenoid, LUP control, Linear solenoid, Accel Pedal, Egrpm, EgTorq, SpeedABS, T/M OilTemp Sensor, BusOff,ABS no Comunication)	10 sec	2nd

Transmission input speed sensor	P0717		No pulse	To detect no pulse of inRpm sensor while detecting outRpm sensor signal 24 pulses	DS_Active = TRUE
					Not in Emergency mode
					OutRpm * CurrentGearRatio > 600 rpm
					RANGE_D (defined signal)
					Selector position switch = Q_NORMAL
					Not shifting
					Not in ND control
					CurrentGear >= 2nd gear
					{if (More than vehicle speed 66 km/h or
					(More than oil temperature 20 oC)
					and Oil temperature sensor = Q_NORMAL))
					More than 2.5 sec changed from P,R or N range to others or
					else
					More than 10 sec changed from P,R or N range to others or
					}
					OutRpm = Q_NORMAL
					S1,S2,SLC1,SLC2,SLC3,SLB1,SLT = Q_NORMAL
					Bus off = Q_NORMAL
							2nd

	P0716		Wrong Pulse	| 1-outRpmABS/outRpmNC | > 15 %	| 1-outRpmABS/outRpmSP | < 5 % | 1-outRpmABS/outRpmEG | < 5 % 8 sec after shifting control (// To prevent miss-detection in case C1 clutch is not engaged) 8 sec after changing to Position switch = RANGE_D	10 sec	

					Gear >= 2ND Not shifting (// To prevent miss- detection at off up shift) No ND control Range other than P and N and R EgRpm > 400rpm Spinning=FALSE DS_Active = TRUE LockUpActive=TRUE Not in Emergency mode Speed ABS > 30 km/h No failure detection(Bus off, ,ABS no communication, SpeedABS, Wheel Speed, RearWheelSpeed OutRpm, Selector position, S1 and S2 solenoid, LUP control, Linear solenoid, accelerator, Egrpm, EgTorq, OilTemp Sensor)		
Transmission oil temperature sensor	P0711	Rationality	Oil temp change less than	Oil Temp at initialization = the highest oil temp during 10 min ± 4 (AD value	Oil temp at initialization < 50 OC Selector position switch = NORMAL EGcoolant temp at initialization < 70 OC AD value of oil temp < 1000 AD value of oil temp > 10 Range = D,R(defined)	10 min	2nd
	P0712	Circuit continuity check	Short-cut ground	AD value of Oil Temp < 10*1 (More than 200 OC).	DS_Active = TRUE	300sec	2nd
	P0713	Circuit continuity check	Short-cut Ubat or open circuit	AD value of Oil Temp > 1000*1 (-43 OC)	DS_Active = TRUE DriveTime* > 15 min (To confirm at vehicle evaluation) EGCoolantTemp > 50 ┌OC┌ EGCoolantTemp = Q_NORMAL Bus off, ECU no communication = Q_NORMAL	12 sec	2nd
Invalid signal from ECM	P1820	Accelerator pedal position signal is invalid	Data from ECM indicated as invalid	TCM receives Accelerator Position Validity is “Invalid”	3 sec after IG ON DS_Active_CAN = TRUE Not in Emergency mode Not detection of Lost communication with ECM Normal communication	4 sec	2nd
Engine Torque Reduction Failed	P1780	Accelerator pedal position signal is invalid		TCM receives 'Engine Torque Reduction Failed’ or ‘Engine Torque Transmission Request Failed’ as unreliable and Requested Reduction during shift is more than 30 [Nm]	3 sec after IG ON DS_Active_CAN = TRUE Not in Emergency mode Normal communication Not detection of Lost communication with ECM	240 ms	
Shift Malfunction / Unusual shifting	P0780	Shift time check	Shift time is too long, too short or “tie up” occurs	No shifting After 5 times of above count_fail_tie or After 10 times of above count_fail_unusual.	Oil temp >= 65 oC DS_Active = Fdetect_Inh = FALSE cf. Gear ratio Shift position = RANGE_D (defined) OutRpm > 300 rpm Not garage shifting(N-D) 8.0 sec after Shift position = RANGE_D(defined) 1.0 sec after N-D shifting end Not neutral control 1.0 sec after neutral control end 0.5 sec after previous shifting control end No Wheel spin condition *1		2nd