2. Diagnostic Trouble Code (DTC) Detecting Criteria

A: DTC P0500 VEHICLE SPEED SENSOR “A”

1. OUTLINE OF DIAGNOSIS

- Judge the malfunction of VDC wheel speed sensor.
- Judge as NG when the wheel speed sensor normal status signal from VDC is cleared.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10.9 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Signal of malfunction from Vehicle Dynamics Control Module NOTE: The VDC controller detects malfunction if one of the speed sensors does not output a signal and the other vehicle speed sensor output signal is above 7.46 MPH.	ON

Time Needed for Diagnosis: 2.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

B: DTC P0601 INTERNAL CONTROL MODULE MEMORY CHECKSUM ERROR

1. OUTLINE OF DIAGNOSIS

- Judge the malfunction in ROM area of the TCM.
- Judge as NG when the consistency in the ROM area is lost.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Checksum (ROM)	Error

Time Needed for Diagnosis: Immediately
Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

C: DTC P0604 INTERNAL CONTROL MODULE RANDOM ACCESS MEMORY (RAM) ERROR

1. OUTLINE OF DIAGNOSIS

- Judge the malfunction in RAM area of the TCM.
- Judge as NG if an attempt to write to RAM area failed.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Writing-check (RAM) NOTE: This check is carried out about the RAM only used for CAN communication.	Error

Time Needed for Diagnosis: Immediately
Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

D: DTC P062F INTERNAL CONTROL MODULE EEPROM ERROR

1. OUTLINE OF DIAGNOSIS

Diagnosis 1
- Judge the malfunction in EEPROM area of the TCM.
- Judge as NG if an attempt to write to EEPROM area failed.

Diagnosis 2
- Judge the malfunction in EEPROM area of the TCM.
- Judge as malfunction when the consistency in the EEPROM area is lost.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Diagnosis 1	
12 V battery system voltage	≥ 9 V
Diagnosis 2	
12 V battery system voltage	≥ 9 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Diagnosis 1	
Writing-check (EEPROM)	Error
Diagnosis 2	
Checksum (EEPROM)	Error

Time Needed for Diagnosis: Immediately
Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

E: DTC P0705 TRANSMISSION RANGE SENSOR CIRCUIT (PRNDL INPUT)

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of the Range Switch.
- Judge as NG when multiple Range Switch inputs are detected.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Engine speed	≥ 1500 rpm

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Two or more transmission range switches ON NOTE: “Transmission range switch ON” is defined as transmission range switch input voltage < 2.9 V.	True

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

F: DTC P0708 AT RANGE SWITCH NOT INPUTTED

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of the Range Switch.
- Judge as NG when no Range Switch inputs are detected.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Vehicle speed (calculated from actual output shaft speed)	≥ 6 MPH

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
All transmission range switches OFF NOTE: "Transmission range switch OFF" is defined as transmission range switch input voltage ≥ 4.1 V.	True

Time Needed for Diagnosis: 3 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

G: DTC P0711 ATF TEMP. SENSOR CIRCUIT RANGE/PERFORMANCE

1. OUTLINE OF DIAGNOSIS

Diagnosis 1
- Judge the malfunction of oil temperature sensor characteristics (stuck to low temperature side).
- Judge as NG if the amount of oil temperature change since ignition ON is equal to or below the predetermined value.

Diagnosis 2
- Judge the malfunction of oil temperature sensor characteristics (stuck to high temperature side).
- Judge as NG when the difference of engine coolant temperature and CVT oil temperature exceeds the predetermined value both when starting engine and when driving.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Diagnosis 1	
12 V battery system voltage	≥ 10 V
Engine speed (The timer is held when the following conditions are not satisfied.)	> 600 rpm
Transmission range	Drive
Vehicle speed (calculated from actual output shaft speed)	≥ 21.9 MPH
Diagnosis 2	
12 V battery system voltage	≥ 10 V
ECT at the end of the previous drive cycle – ECT at engine start	≥ 40 degC

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Diagnosis 1	
Absolute change of measured Transmission fluid temperature sensor input voltage	≤ 0.049 V
Transmission fluid temperature	< 20 degC
Diagnosis 2	
Transmission fluid temperature – ECT at engine start	> 46 degC

Time Needed for Diagnosis:
- **Diagnosis 1:** 600 s
- **Diagnosis 2:** 300 s

Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

H: DTC P0712 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT LOW INPUT

1. OUTLINE OF DIAGNOSIS

- Detect the GND-output short circuit of ATF temperature sensor.
- Judge as NG if the ATF temperature sensor detected voltage is lower than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Measured Transmission fluid temperature sensor input voltage (Transmission fluid temperature)	< 0.132 V (> 150 degC)

Time Needed for Diagnosis: 1 second
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

I: DTC P0713 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT HIGH INPUT

1. OUTLINE OF DIAGNOSIS

- Detect power supply-output short circuit or open circuit of the ATF temperature sensor 5 V system.
- Judge as NG if the ATF temperature sensor detected voltage is higher than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Vehicle speed (calculated from output shaft speed)	≥ 6.3 MPH
Above condition satisfied for	≥ 50 s

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Measured Transmission fluid temperature sensor input voltage (Transmission fluid temperature)	> 4.502 V (< – 53 degC)

Time Needed for Diagnosis: 1 second
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

J: DTC P0719 BRAKE SWITCH CIRCUIT LOW

1. OUTLINE OF DIAGNOSIS

- Detect no input from the brake signal.
- Judge as NG if a predetermined number of deceleration occurs while the cruise control is set to OFF and the brake is OFF.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Cruise control	OFF
Malfunctions listed on the right column are not detected:	P0720, P1706

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Number of times that vehicle speed changes from 30 km/h to 1 km/h while the brake SW is OFF	> 10 count

Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

K: DTC P0720 OUTPUT SPEED SENSOR CIRCUIT

1. OUTLINE OF DIAGNOSIS

- Detect the no input signal from the front wheel speed sensor.
- Judge as NG if there is no output from the front wheel speed sensor while the forward/reverse clutch is engaged and the wheel speed from VDC is equal to or higher than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Vehicle speed (from vehicle dynamics control module)	≥ 3 MPH
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Measured front front output shaft speed	0 rpm

Time Needed for Diagnosis: 0.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

L: DTC P0721 OUTPUT SHAFT SPEED SENSOR CIRCUIT RANGE/PERFORMANCE

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of front wheel speed sensor characteristics.
- Judge as NG when the deviation between vehicle speed from VDC and front wheel speed sensor becomes equal to or larger than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Vehicle speed (from vehicle dynamics control module)	≥ 12 MPH

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Vehicle speed (calculated from front output shaft speed) – Vehicle speed (from vehicle dynamics control module)	> 10 MPH

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

M: DTC P0724 BRAKE SWITCH CIRCUIT HIGH

1. OUTLINE OF DIAGNOSIS

- Detect the brake signal stuck to ON.
- Judge as NG if a predetermined number of acceleration occurs while the cruise control is set to OFF and the brake is ON.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Cruise control	OFF
Malfunctions listed on the right column are not detected:	P0720, P1706

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Number of times that vehicle speed changes from 1 km/h to 30 km/h while the brake SW is ON	> 10 count

Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

N: DTC P0730 GEARSHIFT CONTROL PERFORMANCE ABNORMAL

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of transmission gear ration control function.
- Judge as NG when the difference between the transmission Gear Ratio Target, which is an internal data, and Actual Gear Ratio is larger than the specified value. (Compare the “Gear Ratio Target × Secondary pulley speed ≈ Target primary speed equivalent value” and primary pulley sensor value.)

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Engine speed	≥ 500 rpm
Transmission range	Drive

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Target primary pulley shaft speed – Measured primary pulley shaft speed	≥ 600 rpm
(Duty of shift up pressure control solenoid valve	≥ 90%
or	
Duty of shift down pressure control solenoid valve)	≥ 90%

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

O: DTC P0746 PRESSURE CONTROL SOLENOID "A" PERFORMANCE/STUCK OFF

1. OUTLINE OF DIAGNOSIS

• Detect the malfunction of transmission line pressure solenoid and hydraulic circuit (stuck to low pressure side).
• Judge as NG when the actual line pressure drops to or below the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Diagnosis 1	
12 V battery system voltage	≥ 10 V
Engine speed	≥ 1000 rpm
Measured line pressure control solenoid valve current	≤ 0.78 A
Torque converter clutch circuit control solenoid output command	ON
Diagnosis 2	
12 V battery system voltage	≥ 10 V
Engine speed	≥ 1000 rpm
Measured line pressure control solenoid valve current	≤ 0.78 A
Torque converter clutch circuit control solenoid output command	OFF

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Diagnosis 1	
Measured line pressure	< Map 1 kPa
Diagnosis 2	
Measured line pressure	< Map 2 kPa

Map 1

		Engine speed (rpm)						
		0	500	1000	1500	2000	2500	3000
Transmission fluid temperature (degC)	– 40	0	0	490	577	681	783	884
	– 20	0	0	490	577	681	783	884
	0	0	0	415	468	533	612	701
	20	0	0	399	454	515	569	642
	40	0	0	381	432	489	552	605
	60	0	0	225	280	338	407	465
	80	0	0	218	279	338	404	472
	100	0	0	195	276	320	381	448
	120	0	0	167	246	298	365	431
	140	0	0	170	252	308	365	436

		Engine speed (rpm)						
		3500	4000	4500	5000	5500	6000	6500
Transmission fluid temperature (degC)	– 40	1010	1114	1191	1273	1359	1419	1419
	– 20	1010	1114	1191	1273	1359	1419	1419
	0	802	933	1073	1183	1282	1374	1424
	20	726	832	965	1128	1257	1370	1459
	40	683	775	890	1039	1200	1318	1411
	60	525	618	728	873	1050	1196	1288
	80	517	599	707	849	1015	1163	1255
	100	509	576	669	796	931	1072	1195
	120	491	543	664	772	874	1000	1110
	140	482	547	635	723	845	947	1074

Map 2

		Engine speed (rpm)						
		0	500	1000	1500	2000	2500	3000
Transmission fluid temperature (degC)	– 40	0	0	493	578	690	783	887
	– 20	0	0	493	578	690	783	887
	0	0	0	376	440	517	597	699
	20	0	0	386	452	524	599	687
	40	0	0	359	422	492	566	648
	60	0	0	336	394	459	529	612
	80	0	0	327	386	451	517	601
	100	0	0	312	377	438	503	580
	120	0	0	303	367	430	493	566
	140	0	0	296	367	429	490	563

		Engine speed (rpm)						
		3500	4000	4500	5000	5500	6000	6500
Transmission fluid temperature (degC)	– 40	1020	1117	1196	1286	1378	1439	1477
	– 20	1020	1117	1196	1286	1378	1439	1477
	0	806	954	1099	1201	1301	1412	1498
	20	796	933	1095	1214	1317	1426	1532
	40	744	849	1032	1167	1285	1397	1483
	60	711	805	953	1115	1244	1345	1428
	80	676	779	906	1064	1213	1310	1391
	100	656	750	870	1014	1167	1261	1343
	120	644	728	835	970	1117	1233	1292
	140	638	717	812	928	1063	1182	1257

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

P: DTC P0747 PRESSURE CONTROL SOLENOID "A" STUCK ON

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of transmission line pressure solenoid and hydraulic circuit (stuck to high pressure side).
- Judge as NG when the actual line pressure rises to or above the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Diagnosis 1	
12 V battery system voltage	≥ 10 V
Engine speed	≥ 1000 rpm
Measured line pressure control solenoid valve current	≥ 0.5 A
Torque converter clutch circuit control solenoid output command	ON
Diagnosis 2	
12 V battery system voltage	≥ 10 V
Engine speed	≥ 1000 rpm
Measured line pressure control solenoid valve current	≥ 0.5 A
Torque converter clutch circuit control solenoid output command	OFF

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Diagnosis 1	
Measured line pressure	> Map 1 kPa
Diagnosis 2	
Measured line pressure	> Map 2 kPa

Map 1

		Engine speed (rpm)						
		0	500	1000	1500	2000	2500	3000
Transmission fluid temperature (degC)	– 40	25600	25600	5752	5752	5712	5616	5531
	– 20	25600	25600	5752	5752	5712	5616	5531
	0	25600	25600	5510	5565	5605	5649	5701
	20	25600	25600	5414	5476	5537	5579	5617
	40	25600	25600	5359	5359	5445	5514	5567
	60	25600	25600	5312	5312	5401	5490	5545
	80	25600	25600	5312	5312	5401	5490	5545
	100	25600	25600	5343	5343	5343	5427	5499
	120	25600	25600	5140	5140	5140	5281	5348
	140	25600	25600	5277	5277	5277	5277	5372

		Engine speed (rpm)						
		3500	4000	4500	5000	5500	6000	6500
Transmission fluid temperature (degC)	– 40	5549	5556	5581	5612	5671	5706	5719
	– 20	5549	5556	5581	5612	5671	5706	5719
	0	5750	5801	5851	5911	5976	6026	6078
	20	5664	5710	5769	5822	5862	5927	5983
	40	5610	5659	5718	5777	5825	5873	5929
	60	5578	5621	5668	5718	5763	5813	5863
	80	5578	5621	5668	5718	5763	5813	5863
	100	5577	5609	5650	5694	5739	5796	5810
	120	5415	5450	5482	5523	5549	5585	5604
	140	5480	5530	5560	5596	5628	5608	5661

Map 2

		Engine speed (rpm)						
		0	500	1000	1500	2000	2500	3000
Transmission fluid temperature (degC)	– 40	25600	25600	6213	5778	5748	5640	5608
	– 20	25600	25600	6213	5778	5748	5640	5608
	0	25600	25600	5512	5563	5603	5644	5677
	20	25600	25600	5379	5438	5510	5562	5600
	40	25600	25600	5277	5277	5381	5470	5533
	60	25600	25600	5316	5316	5336	5431	5503
	80	25600	25600	5403	5403	5403	5444	5519
	100	25600	25600	5381	5381	5381	5381	5446
	120	25600	25600	5255	5255	5255	5255	5336
	140	25600	25600	5128	5128	5128	5128	5174

		Engine speed (rpm)						
		3500	4000	4500	5000	5500	6000	6500
Transmission fluid temperature (degC)	– 40	5590	5582	5599	5635	5689	5740	5824
	– 20	5590	5582	5599	5635	5689	5740	5824
	0	5714	5758	5805	5881	5941	5998	6046
	20	5644	5691	5739	5795	5850	5899	5958
	40	5579	5629	5678	5737	5788	5844	5900
	60	5552	5595	5648	5697	5747	5800	5854
	80	5568	5617	5667	5709	5761	5833	5854
	100	5524	5587	5615	5666	5725	5784	5798
	120	5421	5473	5525	5570	5626	5636	5659
	140	5269	5326	5361	5401	5434	5440	5470

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

Q: DTC P0751 SHIFT SOLENOID "A" PERFORMANCE/STUCK OFF

1. OUTLINE OF DIAGNOSIS

• Detect the malfunction of shift-up fluid pressure control solenoid and hydraulic circuit characteristics (stuck to low pressure side).
• Judge as NG if the amount of gear rate change per second is equal to or larger than the predetermined value, even though the up-shift command is issued.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Commanded duty of shift down pressure control solenoid	0%
Engine speed	≥ 1000 rpm
Actual pulley ratio *	> 1.5 and < 2.348

* Actual pulley ratio: Measured primary pulley shaft speed / Measured secondary pulley shaft speed

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Actual pulley ratio * change for 1 second	> – 0.08
Commanded duty of shift up pressure control solenoid	≥ 90%

* Actual pulley ratio: Measured primary pulley shaft speed / Measured secondary pulley shaft speed

Time Needed for Diagnosis: 1 second

Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

R: DTC P0752 SHIFT SOLENOID "A" STUCK ON

1. OUTLINE OF DIAGNOSIS

• Detect the malfunction of shift-up fluid pressure control solenoid and hydraulic circuit characteristics (stuck to high pressure side).
• Judge as NG if the amount of gear rate change per second is within the predetermined value, even though the down-shift command is issued.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Commanded duty of shift up pressure control solenoid	0%
Engine speed	≥ 1000 rpm
Actual pulley ratio *	< 0.5

* Actual pulley ratio: Measured primary pulley shaft speed / Measured secondary pulley shaft speed

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Actual pulley ratio * change for 1 second	> – 0.08 and < 0.08
Commanded duty of shift down pressure control solenoid	> 80%

* Actual pulley ratio: Measured primary pulley shaft speed / Measured secondary pulley shaft speed

Time Needed for Diagnosis: 1 second

Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

S: DTC P0756 SHIFT SOLENOID "B" PERFORMANCE/STUCK OFF

1. OUTLINE OF DIAGNOSIS

• Detect the malfunction of shift-down fluid pressure control solenoid and hydraulic circuit characteristics (stuck to low pressure side).
• Judge as NG if the amount of gear rate change per second is within the predetermined value, even though the down-shift command is issued.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Engine speed	≥ 1000 rpm
Commanded duty of shift up pressure control solenoid	0%
Actual pulley ratio	≥ 0.363 and ≤ 2.348

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Actual pulley ratio * change for 1 second	> – 0.08 and < 0.08
Commanded duty of shift down pressure control solenoid	> 80%

* Actual pulley ratio: Measured primary pulley shaft speed / Measured secondary pulley shaft speed

Time Needed for Diagnosis: 1 second

Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

T: DTC P0757 SHIFT SOLENOID "B" STUCK ON

1. OUTLINE OF DIAGNOSIS

• Detect the malfunction of shift-down fluid pressure control solenoid and hydraulic circuit characteristics (stuck to high pressure side).
• Judge as NG if the amount of gear rate change per second is equal to or larger than the predetermined value, even though the up-shift command is issued.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Engine speed	≥ 1000 rpm
Commanded duty of shift down pressure control solenoid	0%
Actual pulley ratio	≥ 0.363 and ≤ 2.348

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Actual pulley ratio * change for 1 second	> 0.04
Commanded duty of shift up pressure control solenoid	> 50%

* Actual pulley ratio: Measured primary pulley shaft speed / Measured secondary pulley shaft speed

Time Needed for Diagnosis: 10 seconds

Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

U: DTC P0776 PRESSURE CONTROL SOLENOID "B" PERFORMANCE/STUCK OFF

1. OUTLINE OF DIAGNOSIS

• Detect the malfunction of transmission forward/reverse clutch pressure solenoid and hydraulic circuit characteristics (stuck to low pressure side).
• Judge as NG if the value calculated by “output speed – secondary pulley speed” becomes equal to or larger than the predetermined value, even though the forward/reverse clutch is engaged.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Diagnosis 1	
12 V battery system voltage	≥ 10 V
Transmission range	Drive
Measured secondary pulley shaft speed	≥ 100 rpm
Actual output shaft speed	≥ 100 rpm
Vehicle speed (from vehicle dynamics control module)	≥ 6 MPH
Commanded forward & reverse clutch pressure control solenoid current	< 0.9 A
Engine speed	≥ 500 rpm
Diagnosis 2	
12 V battery system voltage	≥ 10 V
Transmission range	Drive
Measured secondary pulley shaft speed	> 600 rpm
Actual output shaft speed	< 100 rpm
Vehicle speed (from vehicle dynamics control module)	< 6 MPH
Commanded forward & reverse clutch pressure control solenoid current	< 0.9 A
Accelerator pedal position (from ECM)	> 6%
Engine speed	≥ 500 rpm

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Actual output shaft speed * – Measured secondary pulley shaft speed	Table 1 rpm

* Actual output shaft speed: Measured rear output shaft speed × 0.543 ** + Measured front output shaft speed × (1 – 0.543)
** 0.543:0.543 Center differential gear ratio

Table 1

Vehicle speed (MPH)	0	13	25	38	50	63	75
Actual output shaft speed – Measured primary pulley shaft speed (rpm)	150	100	100	100	100	100	100

Vehicle speed (MPH)	88	100	113	125	138	150	159
Actual output shaft speed – Measured primary pulley shaft speed (rpm)	100	100	100	100	100	100	100

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

V: DTC P0801 REVERSE INHIBIT CONTROL CIRCUIT

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of shift lock solenoid or circuit.
- Judge as NG if abnormal signal from the integrated unit is received, when bus off is not detected and there is no trouble in CAN between the integrated unit.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Malfunctions listed on the right column are not detected:	U0073 U0140, U0422

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Shift lock solenoid system circuit abnormal (received from BIU)	ON

Time Needed for Diagnosis: 1 second
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

W: DTC P0841 SECONDARY OIL PRESSURE SENSOR PERFORMANCE

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of transmission fluid pressure control function.
- Judge as NG when a divergence obtained by comparing the target secondary pressure (an internal data) with the secondary pressure sensor detected value becomes equal to or larger than the specified value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Engine speed	≥ Table 1 rpm

Table 1

Target line pressure (kPa)	0	500	1000	1500	2000	3000	4000	5000	6000
Engine speed (rpm)	400	600	965	1180	1370	1670	1930	2150	2340

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Target line pressure – Measured line pressure	≥ 500 kPa

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

X: DTC P0842 SECONDARY OIL PRESSURE SENSOR CIRCUIT (LOW)

1. OUTLINE OF DIAGNOSIS

- Detect the GND-output short circuit of the secondary pressure sensor.
- Judge as NG if the secondary pressure sensor detected voltage is lower than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Measured line pressure sensor input voltage (Line pressure)	< 0.195 V (< – 574 kPa)

Time Needed for Diagnosis: 0.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

Y: DTC P0843 SECONDARY OIL PRESSURE SENSOR CIRCUIT (HIGH)

1. OUTLINE OF DIAGNOSIS

- Detect power supply-output short circuit or open circuit of the secondary pressure sensor 5 V system.
- Judge as NG if the secondary pressure sensor detected voltage is higher than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Measured line pressure sensor input voltage (Line pressure)	> 4.883 V (> 8200 kPa)

Time Needed for Diagnosis: 1.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

Z: DTC P0890 AT SELF-SHUT RELAY DIAGNOSIS (LOW)

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of transmission fluid pressure solenoid drive power supply relay circuit.
- Judge as NG if the transmission fluid pressure solenoid drive power supply voltage is lower than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
TCM Power Relay output command	ON
Ignition state	Run or Crank

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Measured TCM input voltage which is supplied from 12 V battery system through the TCM Power Relay	< 2 V

Time Needed for Diagnosis: 0.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AA:DTC P0951 MANUAL SWITCH

1. OUTLINE OF DIAGNOSIS

- Detect the GND-output short (ground-fault) in manual SW circuit.
- Judge as NG if the manual SW is ON in P, R or N range.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Malfunctions listed on the right column are not detected:	P0705, P0708

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Manual SW status in other than D range	ON

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AB:DTC P0961 PRESSURE CONTROL SOLENOID "A" CONTROL CIRCUIT RANGE/PERFORMANCE

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of transmission line pressure solenoid drive circuit.
- Judge as NG when the deviation between target current and actual current of the transmission line pressure solenoid becomes equal to or larger than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
| Target line pressure control solenoid valve current – Measured line pressure control solenoid valve current |	> 0.2 A

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AC:DTC P0962 SECONDARY SOLENOID CIRCUIT (LOW)

1. OUTLINE OF DIAGNOSIS

Diagnosis 1
- Detect the GND-output short in secondary solenoid drive circuit.
- Judge as NG if the secondary solenoid drive current is higher than the predetermined value.

Diagnosis 2
- Detect the GND-output short in secondary solenoid drive circuit.
- Judge as NG when the number of overcurrent detection in the secondary solenoid drive circuit exceeds 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Diagnosis 1	
12 V battery system voltage	≥ 9 V
Commanded line pressure control solenoid valve current	≥ 0.1 A
Diagnosis 2	
12 V battery system voltage	≥ 9 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Diagnosis 1	
Measured line pressure control solenoid valve current	≥ 1.1 A
Diagnosis 2	
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured line pressure control solenoid valve current	≥ 1.2 A

Time Needed for Diagnosis: 0.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AD:DTC P0963 SECONDARY SOLENOID CIRCUIT (HIGH)

1. OUTLINE OF DIAGNOSIS

- Detect open circuit or power supply-output short circuit of the secondary solenoid drive circuit.
- Judge as NG if the secondary solenoid drive current is lower than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Commanded line pressure control solenoid valve current	≥ 0.2 A

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Measured line pressure control solenoid valve current	< 0.1 A

Time Needed for Diagnosis: 0.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AE:DTC P0965 FORWARD & REVERSE SOLENOID FUNCTION

1. OUTLINE OF DIAGNOSIS

Diagnosis 1
• Detect the malfunction of transmission forward/reverse clutch pressure solenoid drive circuit characteristics.
• Judge as NG when the deviation between set current and actual current of the transmission forward/reverse clutch pressure solenoid drive circuit becomes equal to or larger than the predetermined value.
Diagnosis 2
• Detect the malfunction of transmission forward/reverse clutch pressure solenoid drive circuit characteristics.
• Judge as NG when the transmission forward/reverse clutch pressure solenoid drive current is within the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Diagnosis 1	
12 V battery system voltage	≥ 10 V
Diagnosis 2	
12 V battery system voltage	≥ 10 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Diagnosis 1	
| Target forward & reverse clutch pressure control solenoid current – Measured forward & reverse clutch pressure control control solenoid current |	> 0.2 A
Diagnosis 2	
Measured forward & reverse clutch pressure control solenoid current	> 1.08 A and ≤ 1.9 A

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AF:DTC P0966 FORWARD & REVERSE SOLENOID CIRCUIT (LOW)

1. OUTLINE OF DIAGNOSIS

- Detect the GND-output short in transmission forward/reverse clutch pressure solenoid circuit.
- Judge as NG when the number of overcurrent detection in the transmission forward/reverse clutch pressure solenoid drive circuit exceeds 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured forward & reverse clutch pressure control solenoid current	≥ 1.9 A

Time Needed for Diagnosis: 0.02 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AG:DTC P0967 FORWARD & REVERSE LINEAR SOLENOID CIRCUIT (HIGH)

1. OUTLINE OF DIAGNOSIS

• Detect open circuit or power supply-output short circuit in the transmission forward/reverse clutch pressure solenoid circuit.
• Judge as NG if the transmission forward/reverse clutch pressure solenoid drive current is lower than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Target forward & reverse clutch pressure control solenoid current	≥ 0.3 A

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured forward & reverse clutch pressure control solenoid current	< 0.15 A

Time Needed for Diagnosis: 1 second
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AH:DTC P0970 TRANSFER SOLENOID CIRCUIT (LOW)

1. OUTLINE OF DIAGNOSIS

- Detect the GND-output short in transfer solenoid circuit.
- Judge as NG when the number of GND-output short detection counted by a detecting circuit in the transfer solenoid drive circuit exceeds 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Target duty cycle	0%

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Malfunction signal from solenoid driver IC	≥ 10 count

Time Needed for Diagnosis: Immediately
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AI: DTC P0971 TRANSFER SOLENOID CIRCUIT (HIGH)

1. OUTLINE OF DIAGNOSIS

- Detect open circuit or power supply-output short circuit in the transfer solenoid circuit.
- Judge as NG when the number of open circuit or power supply-output short circuit detection counted by a detecting circuit in the transfer solenoid drive circuit exceeds 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Target duty cycle	100%

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Malfunction signal from solenoid driver IC	≥ 10 count

Time Needed for Diagnosis: Immediately
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AJ:DTC P0973 PRIMARY SOLENOID SYSTEM A CIRCUIT (LOW)

1. OUTLINE OF DIAGNOSIS

- Detect the GND-output short of the primary UP solenoid drive circuit.
- Judge as NG when the number of GND short detection of primary UP solenoid drive circuit is more than 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Commanded duty of shift up pressure control solenoid	100%

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured shift up pressure control solenoid voltage	≤ 0.8 V

Time Needed for Diagnosis: 0.2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AK:DTC P0974 PRIMARY SOLENOID SYSTEM A CIRCUIT (HIGH)

1. OUTLINE OF DIAGNOSIS

- Detect the open circuit and power supply-output short of the primary UP solenoid drive circuit.
- Judge as NG when the number of open or power supply short detection of primary UP solenoid drive circuit is more than 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Commanded duty of shift up pressure control solenoid	0%

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured shift up pressure control solenoid voltage	≥ 2.5 V

Time Needed for Diagnosis: 0.2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AL:DTC P0976 PRIMARY SOLENOID SYSTEM B CIRCUIT (LOW)

1. OUTLINE OF DIAGNOSIS

- Detect the GND-output short of the primary DOWN solenoid drive circuit.
- Judge as NG when the number of GND short detection of primary DOWN solenoid drive circuit is more than 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Commanded duty of shift down pressure control solenoid	100%

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured shift down pressure control solenoid voltage	≤ 0.8 V

Time Needed for Diagnosis: 0.2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AM:DTC P0977 PRIMARY SOLENOID SYSTEM B CIRCUIT (HIGH)

1. OUTLINE OF DIAGNOSIS

- Detect the open circuit and power supply-output short of the primary DOWN solenoid drive circuit.
- Judge as NG when the number of open or power supply short detection of primary DOWN solenoid drive circuit is more than 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Commanded duty of shift down pressure control solenoid	0%

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured shift down pressure control solenoid voltage	≥ 2.5 V

Time Needed for Diagnosis: 0.2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AN:DTC P160A RANDOM ACCESS MEMORY (RAM) ERROR

1. OUTLINE OF DIAGNOSIS

- Judge the malfunction in RAM area of the TCM.
- Judge as NG if an attempt to write to RAM area failed.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Writing-check (RAM) NOTE: This check is carried out about the RAM used except for CAN communication.	Error

Time Needed for Diagnosis: Immediately
Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

AO:DTC P1706 AT VEHICLE SPEED SENSOR CIRCUIT MALFUNCTION (REAR WHEEL)

1. OUTLINE OF DIAGNOSIS

- Detect the no input signal from the rear wheel speed sensor.
- Judge as NG if there is no output from the rear wheel speed sensor while the forward/reverse clutch is engaged and the wheel speed from VDC is equal to or higher than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Vehicle speed (from vehicle dynamics control module)	≥ 3 MPH
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Measured rear front output shaft speed	0 rpm

Time Needed for Diagnosis: 0.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AP:DTC P170B OUTPUT SPEED SENSOR CIRCUIT RANGE/PERFORMANCE REAR

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of rear wheel speed sensor characteristics.
- Judge as NG when the deviation between vehicle speed from VDC and rear wheel speed sensor becomes equal to or larger than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Vehicle speed (from vehicle dynamics control module)	≥ 12 MPH
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
| Vehicle speed (calculated from rear output shaft speed) – Vehicle speed (from vehicle dynamics control module) |	> 10 MPH

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AQ:DTC P2530 IGNITION SWITCH RUN POSITION CIRCUIT

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of ignition SW circuit.
- Ignition SW signal is lost 5 times or more even though the engine is ON.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10.9 V
Engine speed	≥ 500 rpm

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Count of temporarily discontinuous input of ignition switch	≥ 5 count

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AR:DTC P2746 PRIMARY PULLEY REVOLUTION SPEED SENSOR CIRCUIT

1. OUTLINE OF DIAGNOSIS

- Detect the malfunction of primary speed sensor signal characteristics.
- Judge as NG if the value calculated by “engine speed – primary pulley speed” becomes equal to or larger than the predetermined value.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	≥ 50 rpm

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Engine speed – Measured primary pulley shaft speed × 1.129 *	> Table 1 rpm

* 1.129:Primary reduction gear ratio

Table 1

Measured primary pulley shaft speed × 1.129 (rpm)	0	500	1000	1500	2000	2500	3000	3500
Engine speed – Measured primary pulley shaft speed × 1.129 (rpm)	3700	3227	2755	2282	1856	1519	1213	956

Measured primary pulley shaft speed × 1.129 (rpm)	4000	4500	5000	5500	6000	6500	7000
Engine speed – Measured primary pulley shaft speed × 1.129 (rpm)	786	713	651	601	569	544	520

Time Needed for Diagnosis: 10 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AS:DTC P2747 INTERMEDIATE SHAFT SPEED SENSOR "B" CIRCUIT NO SIGNAL

1. OUTLINE OF DIAGNOSIS

- Detect the no input signal from the primary speed sensor.
- Judge as NG if there is no input signal from the primary pulley speed sensor, while the secondary pulley speed sensor interlocked with it by chain has the input signal.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Engine speed	≥ 400 rpm
Measured secondary pulley shaft speed	≥ 500 rpm

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Measured primary pulley shaft speed	0 rpm

Time Needed for Diagnosis: 0.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AT:DTC P2750 SEC. PULLEY REVOLUTION SPEED SENSOR CIRCUIT

1. OUTLINE OF DIAGNOSIS

Diagnosis 1
- Detect the malfunction of secondary speed sensor signal characteristics.
- Judge as NG when the secondary pulley speed against the primary pulley speed goes outside the possible range considering the hardware capabilities.

Diagnosis 2
- Detect the malfunction of secondary speed sensor signal characteristics.
- Judge as NG when the secondary pulley speed exceeds 13500 rpm.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
Diagnosis 1	
12 V battery system voltage	≥ 9 V
Transmission range	Drive or Reverse
Measured primary pulley shaft speed /Measured front output shaft speed	≥ 0.36 and ≤ 2.34
Diagnosis 2	
12 V battery system voltage	≥ 9 V
Transmission range	Drive or Reverse
Measured primary pulley shaft speed /Measured front output shaft speed	≥ 0.36 and ≤ 2.34

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Diagnosis 1	
Measured primary pulley shaft speed / Measured secondary pulley shaft speed	< 0.33 or > 2.58
Diagnosis 2	
Measured secondary pulley shaft speed	> 13500 rpm

Time Needed for Diagnosis: 5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AU:DTC P2751 INTERMEDIATE SHAFT SPEED SENSOR "C" CIRCUIT NO SIGNAL

1. OUTLINE OF DIAGNOSIS

- Detect the no input signal from the secondary speed sensor.
- Judge as NG if there is no input signal from the secondary pulley speed sensor, while the primary pulley speed sensor interlocked with it by chain has the input signal.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Transmission range	Drive or Reverse
Measured primary pulley shaft speed	≥ 1000 rpm

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Measured secondary pulley shaft speed	0 rpm

Time Needed for Diagnosis: 0.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AV:DTC P2757 TORQUE CONVERTER CLUTCH PRESSURE CONTROL SOLENOID CONTROL CIRCUIT PERFORMANCE/STUCK OFF

1. OUTLINE OF DIAGNOSIS

• Detect the malfunction of lock-up fluid pressure control solenoid, and hydraulic circuit, or drive circuit characteristics (stuck to low pressure side).
• Judge as NG if the deviation between engine speed and primary pulley speed becomes equal to or larger than the predetermined value, even though the lock-up command is issued.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Engine speed	≥ 1000 rpm
Transmission range	Drive
Commanded duty of torque converter clutch pressure control solenoid	≥ 95%

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Engine speed – Measured primary pulley shaft speed × 1.129 *	> Table 1 rpm

* 1.129:Primary reduction gear ratio

Table 1

Measured primary pulley shaft speed × 1.129 (rpm)	0	500	1000	1500	2000	2500	3000	3500
Engine speed – Measured primary pulley shaft speed × 1.129 (rpm)	200	200	200	200	200	200	200	200

Measured primary pulley shaft speed × 1.129 (rpm)	4000	4500	5000	5500	6000	6500	7000
Engine speed – Measured primary pulley shaft speed × 1.129 (rpm)	200	200	200	200	200	200	200

Time Needed for Diagnosis: 10 seconds
Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

AW:DTC P2758 TORQUE CONVERTER CLUTCH PRESSURE CONTROL SOLENOID CONTROL CIRCUIT STUCK ON

1. OUTLINE OF DIAGNOSIS

• Detect the malfunction of lock-up fluid pressure control solenoid, and hydraulic circuit, or drive circuit characteristics (stuck to high pressure side).
• Judge as NG if the gear ratio is 1.5 or larger and the amount of gear rate change per second is –0.08 or larger, even though the lock-up command is issued.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Engine speed	≥ 1000 rpm
Transmission range	Drive
Engine torque	> Table 1 N·m
Commanded duty of torque converter clutch pressure control solenoid	≤ 0%

Table 1

Engine coolant temperature (degC)	– 40	– 20	0	20	40	60	80	100
Engine torque (N·m)	80	80	80	80	80	50	50	50

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Engine speed – Measured primary pulley shaft speed × 1.129 *	< Table 2 rpm

* 1.129:Primary reduction gear ratio

Table 2

Measured primary pulley shaft speed × 1.129 (rpm)	0	500	1000	1500	2000	2500	3000	3500
Engine speed – Measured primary pulley shaft speed × 1.129 (rpm)	0	0	50	50	50	50	50	50

Measured primary pulley shaft speed × 1.129 (rpm)	4000	4500	5000	5500	6000	6500	7000
Engine speed – Measured primary pulley shaft speed × 1.129 (rpm)	50	50	50	50	50	50	50

Time Needed for Diagnosis: 10 seconds
Malfunction Indicator Light Illumination: Illuminates when malfunction occurs in 2 continuous driving cycles.

AX:DTC P2763 LOCK-UP DUTY SOLENOID CIRCUIT (HIGH)

1. OUTLINE OF DIAGNOSIS

- Detect the open circuit and power supply-output short of the lock-up duty solenoid drive circuit.
- Judge as NG when the number of open or power supply short detection of lock-up duty solenoid drive circuit is more than 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Commanded duty of torque converter clutch pressure control solenoid	0%

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured torque converter clutch pressure control solenoid voltage	≥ 2.5 V

Time Needed for Diagnosis: 0.2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AY:DTC P2764 LOCK-UP DUTY SOLENOID CIRCUIT (LOW)

1. OUTLINE OF DIAGNOSIS

- Detect the GND-output short of the lock-up duty solenoid drive circuit.
- Judge as NG when the number of GND short detection of lock-up duty solenoid drive circuit is more than 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Commanded duty of torque converter clutch pressure control solenoid	100%

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured torque converter clutch pressure control solenoid voltage	≤ 0.8 V

Time Needed for Diagnosis: 0.2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

AZ:DTC P2769 LOCK-UP ON/OFF SOLENOID CIRCUIT (LOW)

1. OUTLINE OF DIAGNOSIS

- Detect the GND-output short of the lock-up ON/OFF solenoid drive circuit.
- Judge as NG when the number of GND short detection of lock-up ON/OFF solenoid drive circuit exceeds 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Torque converter clutch circuit control solenoid output command	ON

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured torque converter clutch circuit control solenoid voltage	≤ 0.8 V

Time Needed for Diagnosis: 0.2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BA:DTC P2770 LOCK-UP ON/OFF SOLENOID CIRCUIT (HIGH)

1. OUTLINE OF DIAGNOSIS

- Detect open circuit or power supply-output short circuit in the lock-up ON/OFF solenoid drive circuit.
- Judge as NG when the number of open circuit or power supply-output short circuit detection of lock-up ON/OFF solenoid drive circuit exceeds 10 times.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 9 V
Torque converter clutch circuit control solenoid output command	OFF

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
Signal of malfunction from solenoid driver IC	ON
As defined by:	
Measured torque converter clutch circuit control solenoid voltage	≥ 2.5 V

Time Needed for Diagnosis: 0.2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BB:DTC U0073 CONTROL MODULE COMMUNICATION BUS OFF

1. OUTLINE OF DIAGNOSIS

- Detect malfunction of CAN communication.
- Judge as NG when CAN communication failure has occurred.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN bus condition	Bus off

Time Needed for Diagnosis: 2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BC:DTC U0100 LOST COMMUNICATION WITH ECM/PCM "A"

1. OUTLINE OF DIAGNOSIS

- Detect malfunction of CAN communication.
- Judge as NG when CAN communication with ECM is not possible.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN data from ECM	Lost

Time Needed for Diagnosis: 0.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BD:DTC U0122 LOST COMMUNICATION WITH VEHICLE DYNAMICS CONTROL MODULE

1. OUTLINE OF DIAGNOSIS

- Detect malfunction of CAN communication.
- Judge as NG when CAN communication with VDC CM is not possible.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN data from Vehicle Dynamics Control Module	Lost

Time Needed for Diagnosis: 0.5 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BE:DTC U0140 LOST COMMUNICATION WITH BODY CONTROL MODULE

1. OUTLINE OF DIAGNOSIS

- Detect malfunction of CAN communication.
- Judge as NG when CAN communication failure occurs with the body integrated unit.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN data from BIU	Lost

Time Needed for Diagnosis: 2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BF:DTC U0155 LOST COMMUNICATION WITH INSTRUMENT PANEL CLUSTER (IPC) CONTROL MODULE

1. OUTLINE OF DIAGNOSIS

- Detect malfunction of CAN communication.
- Judge as NG when CAN communication failure occurs with the combination meter.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN data from meter	Lost

Time Needed for Diagnosis: 2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BG:DTC U0164 LOST COMMUNICATION WITH HVAC CONTROL MODULE

1. OUTLINE OF DIAGNOSIS

- Detect malfunction of CAN communication.
- Judge as NG when CAN communication failure occurs with the A/C control panel.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN data from A/C control panel	Lost

Time Needed for Diagnosis: 2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BH:DTC U0401 INVALID DATA RECEIVED FROM ECM/PCM “A”

1. OUTLINE OF DIAGNOSIS

- Detect malfunction of CAN communication.
- Judge as NG when data received from ECM is not normal.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN data from ECM	Did not change

Time Needed for Diagnosis: 2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BI: DTC U0416 INVALID DATA RECEIVED FROM VEHICLE DYNAMICS CONTROL MODULE

1. OUTLINE OF DIAGNOSIS

- Detect malfunction of CAN communication.
- Judge as NG when data received from VDC CM is not normal.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN data from Vehicle Dynamics Control Module	Did not change

Time Needed for Diagnosis: 2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BJ:DTC U0422 INVALID DATA RECEIVED FROM BODY CONTROL MODULE

1. OUTLINE OF DIAGNOSIS

- Detect malfunction of CAN communication.
- Judge as NG when data received from the body integrated unit is not normal.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN data from BIU	Freeze

Time Needed for Diagnosis: 2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BK:DTC U0423 INVALID DATA RECEIVED FROM INSTRUMENT PANEL CLUSTER CONTROL MODULE

1. OUTLINE OF DIAGNOSIS

- Detect malfunction of CAN communication.
- Judge as NG when data received from the combination meter is not normal.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN data from meter	Freeze

Time Needed for Diagnosis: 2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

BL:DTC U0424 INVALID DATA RECEIVED FROM HVAC CONTROL MODULE

1. OUTLINE OF DIAGNOSIS

- Detect malfunction of CAN communication.
- Judge as NG when data received from the A/C control panel is not normal.

2. ENABLE CONDITIONS

Secondary Parameters	Enable Conditions
12 V battery system voltage	≥ 10 V
Measured primary pulley shaft speed	> 0 rpm
or	
Transmission range	Drive or Reverse

3. DIAGNOSTIC METHOD

If the duration of time while the following conditions are met is longer than the time indicated, judge as NG.

Judgment Value

Malfunction Criteria	Threshold Value
CAN data from A/C control panel	Freeze

Time Needed for Diagnosis: 2 seconds
Malfunction Indicator Light Illumination: Illuminates as soon as a malfunction occurs.

MANUAL TRANSMISSION AND DIFFERENTIAL

6MT(TY75)