

GROUP 23A

CVT

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SERVICE SPECIFICATIONS

M1231200300610

Item		Standard value
Transmission fluid temperature sensor resistance k Ω	At 20°C (68°F)	Approximately 6.5
	At 50°C (122°F)	Approximately 2.2
	At 80°C (176°F)	Approximately 0.9
Line pressure solenoid valve coil resistance Ω	Fluid temperature: 20°C (68°F)	Approximately 5.3
	Fluid temperature: 50°C (122°F)	Approximately 5.9
	Fluid temperature: 80°C (176°F)	Approximately 6.5
Primary pressure solenoid valve coil resistance Ω	Fluid temperature: 20°C (68°F)	Approximately 5.3
	Fluid temperature: 50°C (122°F)	Approximately 5.9
	Fluid temperature: 80°C (176°F)	Approximately 6.5
Low brake solenoid valve coil resistance Ω	Fluid temperature: 20°C (68°F)	Approximately 5.3
	Fluid temperature: 50°C (122°F)	Approximately 5.9
	Fluid temperature: 80°C (176°F)	Approximately 6.5
High clutch and reverse brake solenoid valve coil resistance Ω	Fluid temperature: 20°C (68°F)	Approximately 5.3
	Fluid temperature: 50°C (122°F)	Approximately 5.9
	Fluid temperature: 80°C (176°F)	Approximately 6.5
Lockup solenoid valve coil resistance Ω	Fluid temperature: 20°C (68°F)	Approximately 6.1
	Fluid temperature: 50°C (122°F)	Approximately 6.8
	Fluid temperature: 80°C (176°F)	Approximately 7.5
Engine stall speed r/min	D range	Approximately 2,300
	R range	Approximately 2,300
Shift lock solenoid resistance Ω		40 $\pm$ 2

LUBRICANTS

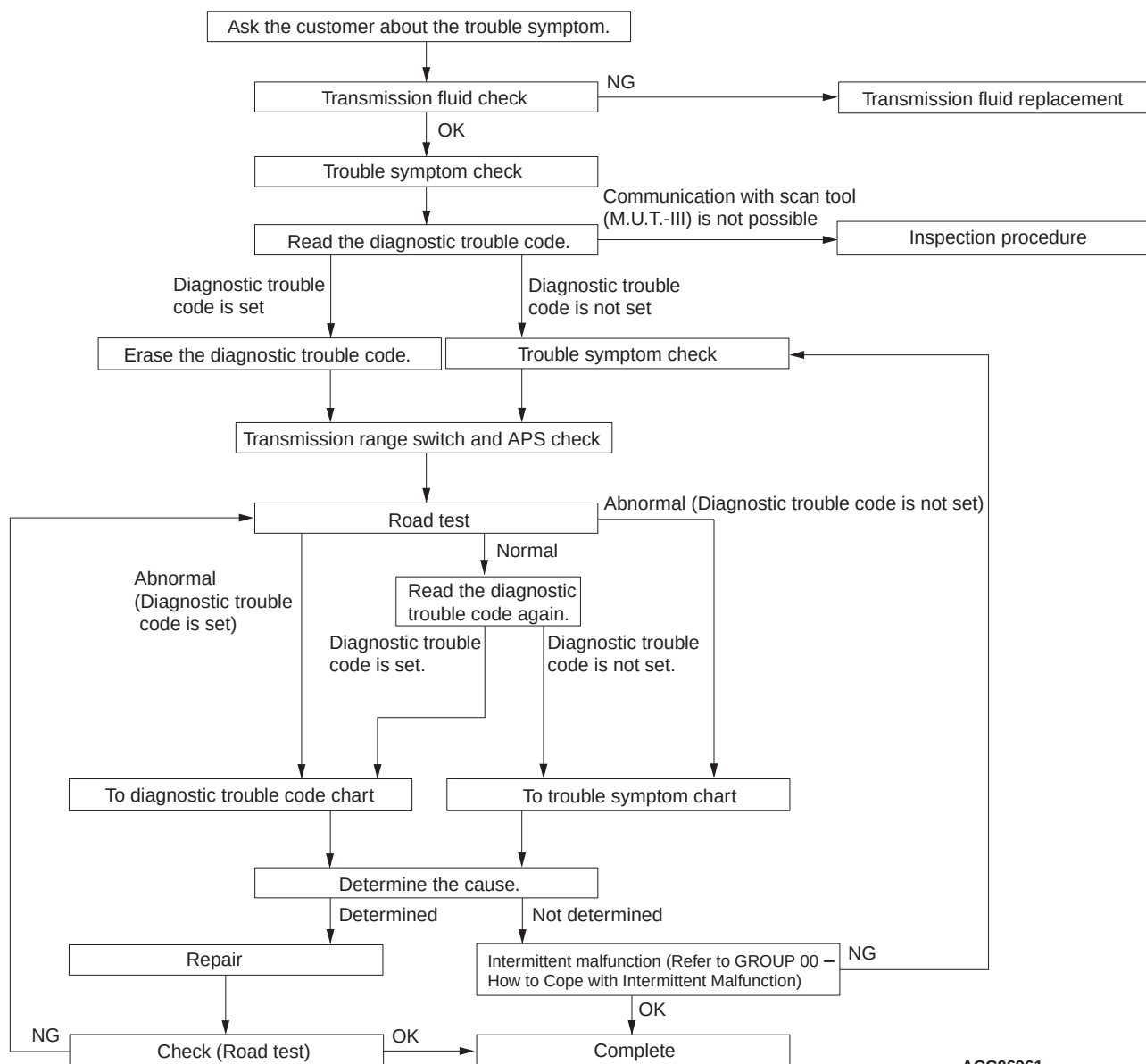
M1231200400866

Item	Brand name	Capacity dm ³ (qt)
Transmission fluid	MITSUBISHI MOTORS GENUINE CVTF-J4	7.0 (7.4)

DIAGNOSIS

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1231213500283



ACC06961

INITIALIZATION PROCEDURE FOR CVT LEARNED VALUE

M1231202400389

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827 M.U.T.-III USB Cable
 - MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)

AIM

After the Transaxle assembly is replaced, learned values must be initialized. The initialization procedure is as below.

INITIALIZATION PROCEDURE

1. Move the selector lever to the P range and turn the ignition switch to the LOCK (OFF) position. Then, connect scan tool (M.U.T.-III) to the data link connector.
2. Turn the ignition switch to the ON position, and then move the selector lever to the R range.
3. Depress the accelerator pedal while depressing the brake pedal. (Engine stops.) Use the scan tool (M.U.T.-III) special function to execute "reset (item No.3: C/V initial & learned value)" while holding them in applied position.
4. Set the selector lever to the P range.
5. Turn the ignition switch to the LOCK (OFF) position, and then wait for ten seconds.

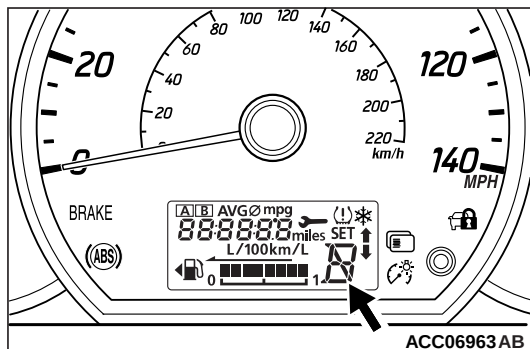
CAUTION

Do not start the engine.

6. Turn the ignition switch to the ON position, and then wait for ten seconds.
7. Check that "P" is displayed on the selector lever position indicator on the multi-information display.

NOTE: "P" will disappear while the data is being read. "P" will appear when the data reading is complete.

8. Turn the ignition switch to the LOCK (OFF) position and then to the ON position. Then use the scan tool (M.U.T.-III) to erase the transmission fluid degradation level.



CVT FLUID PRESSURE CONTROL LEARNING PROCEDURE

M1231225500514

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
- MB991824: Vehicles Communication Interface (V.C.I.)
- MB991827 M.U.T.-III USB Cable
- MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)

AIM

When the transmission control module (TCM) is replaced or when the learned value is initialized, the CVT-ECU does not have any learned value. This may degrade the shift quality. The ECU learns by repeating normal driving. In order to make the ECU learn faster, follow the procedure below.

LEARNING PROCEDURE

Steps	Item	Contents
1	Engine idling learning	Refer to GROUP 00 – Precautions Before Service – Engine Idling Learning Procedure P.00-41 .
2	Transmission fluid temperature measurement	Use the scan tool (M.U.T.-III) to measure the transmission fluid temperature (data list item No. 21).
3	Transmission fluid temperature adjustment	Start the engine and warm it up until the transmission fluid temperature reaches approximately 80°C. If the transmission fluid temperature does not rise to 80°C (176°F) in cold climates, raise the fluid temperature as much as possible.
4	Line pressure sensor learning	1. Start the engine when the selector lever is in the P range and the vehicle is stopped. 2. Turn the ignition switch to the LOCK (OFF) position to stop the engine. 3. Wait for 30 seconds in the state described in Step 2. 4. Repeat above steps 1 to 3 three times to complete learning.
5	Select control learning	1. Start the engine, and move the selector lever from the "N" range to the "D" range and from the "N" range to the "R" range (two or three times each). If there is no shift shock, the learning is complete. 2. If the shift shock is large, move the selector lever from the "N" range to the "D" range and from the "N" range to the "R" range (up to 10 times each) and the learning is complete.  CAUTION When moving the selector lever from the "N" range to the "D" range, and from the "N" range to the "R" range, hold for 5 seconds or more in each range.

Step s	Item	Contents
6	Shift control learning 1	1. Check that the idle neutral active status (data list item No. 40) can be monitored by using the scan tool (M.U.T.-III). 2. Start the engine and wait for at least one minute. 3. Turn off the air conditioning. 4. While the selector lever is at the "D" range, drive the vehicle at 10 km/h (6.2 mph) or more. Then, stop the vehicle with the selector lever at the "D" range. 5. Depress the brake pedal to activate the idle neutral control, and wait for 30 seconds or more. 6. Carry out Step 5 and Step 6 again to complete learning.
7	Shift control learning 2	1. Start the engine. 2. Turn off the air conditioning. 3. While the selector lever is at the "D" range, depress the accelerator pedal by approximately $1/8^{*1}$ to accelerate to approximately 60 km/h (37 mph). Depress the brake pedal to decelerate and stop the vehicle. Turn the ignition switch to the LOCK (OFF) position to stop the engine and wait for 5 seconds. 4. If there is no shift shock, the learning at Step 3 is complete. If the shift shock is large, repeat Step 2 and Step 3 (up to 5 times). 5. While the selector lever is at the "D" range, depress the accelerator pedal by approximately $3/8^{*2}$ to accelerate to approximately 60 km/h (37 mph). Drive at a constant speed for 5 seconds, and depress the brake pedal to decelerate and stop the vehicle. Turn the ignition switch to the LOCK (OFF) position to stop the engine and wait for 5 seconds. 6. If there is no shift shock, the learning at Step 5 is complete. If the shift shock is large, repeat Step 2 and Step 5 (up to 10 times) and the learning is complete.

NOTE: ^{*1}Reference: Data list item No.15 "Accelerator pedal depressing angle" on scan tool (M.U.T.-III) measures 10 to 15%.

NOTE: ^{*2}Reference: Data list item No.15 "Accelerator pedal depressing angle" on scan tool (M.U.T.-III) measures 25 to 50%.

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DIAGNOSTIC FUNCTION

WARNING INDICATOR

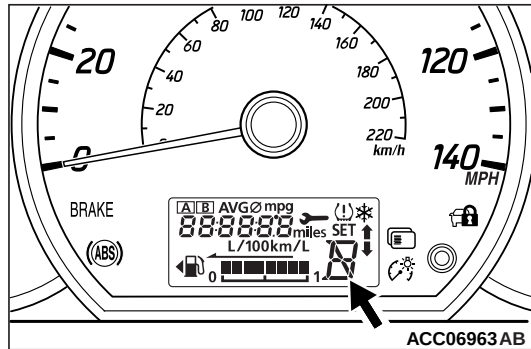
If a malfunction occurs in the CVT system, any of "R", "N", "D", "B" or "A" on the selector lever position indicator in the multi-information display will be flashed (one flash per two seconds).

NOTE:

- The selector lever position indicator "P" does not flash when a malfunction occurs in the CVT system.
- When the system is normal, the selector lever position indicator "A" is not displayed. Only when a malfunction occurs in the transmission range switch, the indicator will flash.

If the selector lever position indicator flashes rapidly (one flash per one second), the transmission fluid temperature is too high. [Flashes when the fluid temperature is approximately 137°C (279°F) or higher, and stops flashing (remains illuminated) automatically when the fluid temperature drops below approximately 132°C (270°F).]

NOTE: These transmission fluid temperatures, at which the indicator flashes or remains illuminated, are indication values on the scan tool (M.U.T.-III).



ON-BOARD DIAGNOSTICS

The transaxle control module (TCM) monitors its input/output signals (some signals all the time and others under specified conditions). When an irregular signal is initially monitored, the TCM decides that a malfunction has occurred and records the occurrence as a diagnostic trouble code. The diagnostic results can be read with scan tool. Diagnostic trouble codes are stored in EEPROM. The codes are

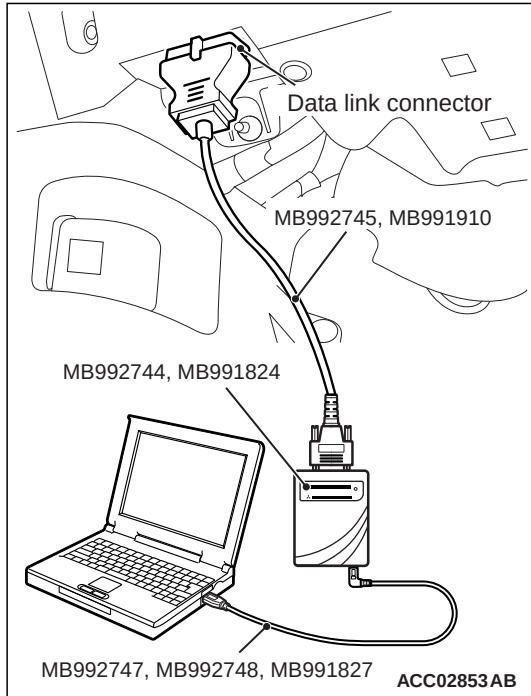
retained in memory even if the ignition switch is in the "LOCK" (OFF) position. DTCs are not erased even after the battery terminals and the TCM connector are disconnected. In addition, the diagnostic trouble code can also be erased by scan tool.

NOTE: If a sensor is disconnected when the ignition switch is in the "ON" position, a diagnostic trouble code is stored in memory. In this case, erase the DTC using scan tool.

HOW TO CONNECT THE SCAN TOOL (M.U.T.-III)

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827 M.U.T.-III USB Cable
 - MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)

**⚠ CAUTION**

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB992747/M992748 or special tool MB991827 to special tool MB992744 or special tool MB991824 and the personal computer.
4. Connect special tool MB992745 or special tool MB991910 to special tool MB992744 or special tool MB991824.
5. Connect special tool MB992745 or special tool MB991910 to the data link connector.

NOTE: When the special tool MB992745 is connected to the data link connector, the special tool MB992744 indicator light will be illuminated in a green color.

6. Turn the power switch of special tool MB991824 to the "ON" position. <When using the special tool MB991824>

NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.

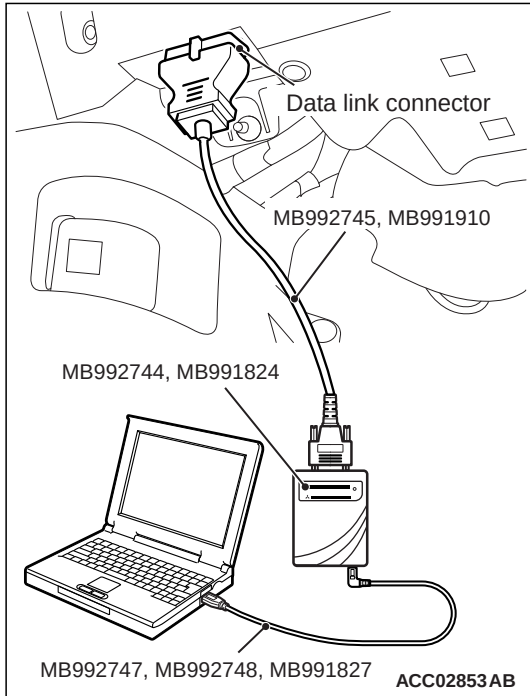
7. Start the M.U.T.-III system on the personal computer.

NOTE: Disconnecting scan tool (M.U.T.-III) is the reverse of the connecting sequence, making sure that the ignition switch is at the "LOCK" (OFF) position.

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827 M.U.T.-III USB Cable
 - MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)

**⚠ CAUTION**

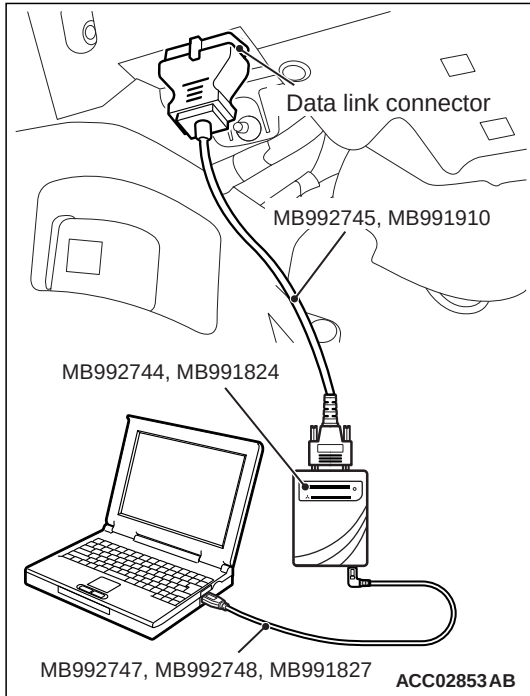
To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

NOTE: If the battery voltage is low, diagnostic trouble codes will not be set. Check the battery if scan tool (M.U.T.-III) does not display.

1. Connect scan tool (M.U.T.-III) to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "System select" from the start-up screen.
4. Select "From 06 MY."
5. Make sure vehicle information is correct.
6. Select "AT/CVT/A-MT/TC-SST."
7. Select "Diagnostic Trouble Code" to read the DTC.
8. If a DTC is set, it is shown.
9. Choose "Erase DTCs" to erase the DTC.

HOW TO READ DATA LIST**Required Special Tools:**

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827 M.U.T.-III USB Cable
 - MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)

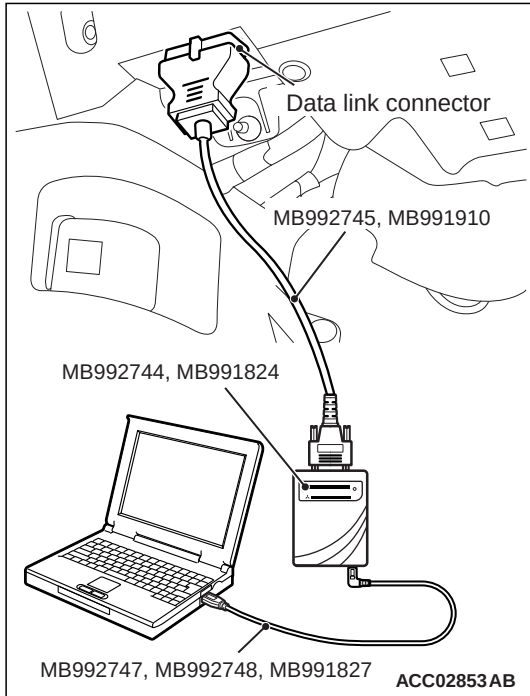
**⚠ CAUTION**

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool M.U.T.-III).

1. Connect scan tool (M.U.T.-III) to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "System select" from the start-up screen.
4. Select "From 06 MY."
5. Make sure vehicle information is correct.
6. Select "AT/CVT/A-MT/TC-SST."
7. Select "Data List."
8. Choose an appropriate item and select the "OK" button.

HOW TO DIAGNOSE THE CAN BUS LINES**Required Special Tools:**

- MB992744: Vehicle communication interface-Lite (V.C.I.-Lite)
- MB992745: V.C.I.-Lite main harness A
- MB992747: V.C.I.-Lite USB cable short
- MB992748: V.C.I.-Lite USB cable long
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
 - MB991824: Vehicles Communication Interface (V.C.I.)
 - MB991827 M.U.T.-III USB Cable
 - MB991910 M.U.T.-III Main Harness A (Vehicles with CAN communication system)

**CAUTION**

To prevent damage to scan tool (M.U.T.-III), always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool (M.U.T.-III).

1. Connect scan tool (M.U.T.-III) to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle whose CAN bus lines will be diagnosed.
 - If they match, go to step 8.
 - If not, go to step 5.
5. Select the "view vehicle information" button.
6. Enter the vehicle information and select the "OK" button.
7. When the vehicle information is displayed, confirm again that it matches the vehicle whose CAN bus lines will be diagnosed.
 - If they match, go to step 8.
 - If not, go to step 5.
8. Select the "OK" button.
9. When the optional equipment screen is displayed, choose the one which the vehicle is fitted with, and then select the "OK" button.

ROAD TEST

M1231207800616

Step	Conditions for test/operation	Test/Operation	Judgment standard	Check item	Diagnostic trouble code No.	Reference for checking procedure in case of error
1	Ignition switch: LOCK (OFF) position	Ignition switch (1) ON	Data list No. 6 (1) System voltage	ECU power supply	–	Malfunction of the system power supply (low voltage)
			Data list No. 7 (1) System voltage	Solenoid valve drive voltage	P1607	Malfunction of the solenoid power supply (low voltage)
2	Ignition switch: ON Engine: Stopped	Selector lever position (1) P (2) R (3) N (4) D (5) B	Data list No. 61 (1) P (2) R (3) N (4) D (5) L/B/S	Transmission range switch	P0705* ¹	Malfunction of transmission range switch
			Data list No. 51 (1) ON (2) OFF (3) OFF (4) OFF (5) OFF			
			Data list No. 52 (1) OFF (2) ON (3) OFF (4) OFF (5) OFF			
			Data list No. 53 (1) OFF (2) OFF (3) ON (4) OFF (5) OFF			
			Data list No. 54 (1) OFF (2) OFF (3) OFF (4) ON (5) OFF			
			Data list No. 57 (1) OFF (2) OFF (3) OFF (4) OFF (5) ON			
3	Engine warming up	Drive the vehicle at 10 km/h (6.2 mph) or more for at least 15 minutes so that the transmission fluid temperature reaches 60 to 70°C (140 to 158°F)	Data list No. 5 Voltage drops gradually	transmission fluid temperature sensor	P0712, P0713	Malfunction of the transmission fluid temperature sensor
			Data list No. 21 Oil temperature rises gradually			

Step	Conditions for test/operation	Test/Operation	Judgment standard	Check item	Diagnostic trouble code No.	Reference for checking procedure in case of error
4	Engine: Idling	Selector lever position: N	Data list No. 3 0.6 – 1.1 V	Secondary pressure sensor	P0842, P0843	Malfunction of the secondary pressure sensor
			Data list No. 43 0.8 – 1.0 A	Line pressure solenoid valve	P0962, P0963	Malfunction of the line pressure solenoid valve
			Data list No. 1 Engine running detected (more than 0 r/min)	Primary pulley speed sensor	P0715* ²	Malfunction of primary pulley speed sensor
			Data list No. 2 Engine running detected (more than 0 r/min)	Secondary pulley speed sensor	P0791* ²	Malfunction of secondary pulley speed sensor
5	Selector lever position: B	During driving [at approx. 20 km/h (12.4 mph)]	Data list No. 45 0.7 – 0.9 A	Primary pressure solenoid valve	P0970, P0971	Malfunction of the primary pressure solenoid valve
			Data list No. 49 0.2 – 0.6 A	Low brake pressure solenoid valve	P0973, P0974	Malfunction of the low brake solenoid valve
6	Selector lever position: D	During driving (at approx. 60 km/h (37.3 mph))	Data list No. 4 Nearly the same as the speedometer display	Output speed sensor	P0720	Malfunction of output speed sensor
			Data list No. 41 0.4 – 0.6 A	Lockup solenoid valve	P0741, P2763, P2764	Malfunction of the lockup solenoid valve
			Data list No. 47 0.6 – 0.9 A	High clutch and reverse brake pressure solenoid valve	P0976, P0977	Malfunction of the high clutch and reverse brake solenoid valve

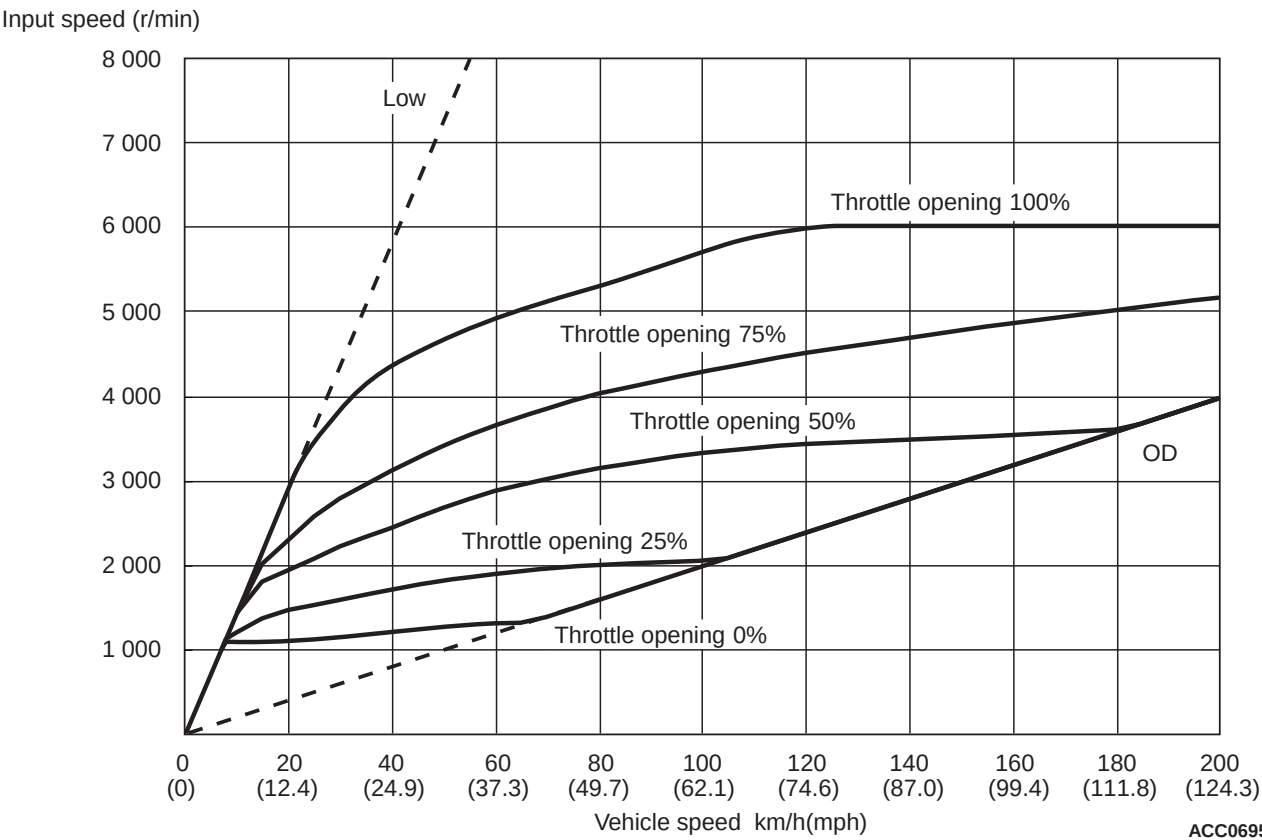
NOTE:

- *¹: When there is an open circuit, this diagnostic trouble code will be stored only after the vehicle starts.
- *²: This diagnostic trouble code will be stored only after the vehicle starts.

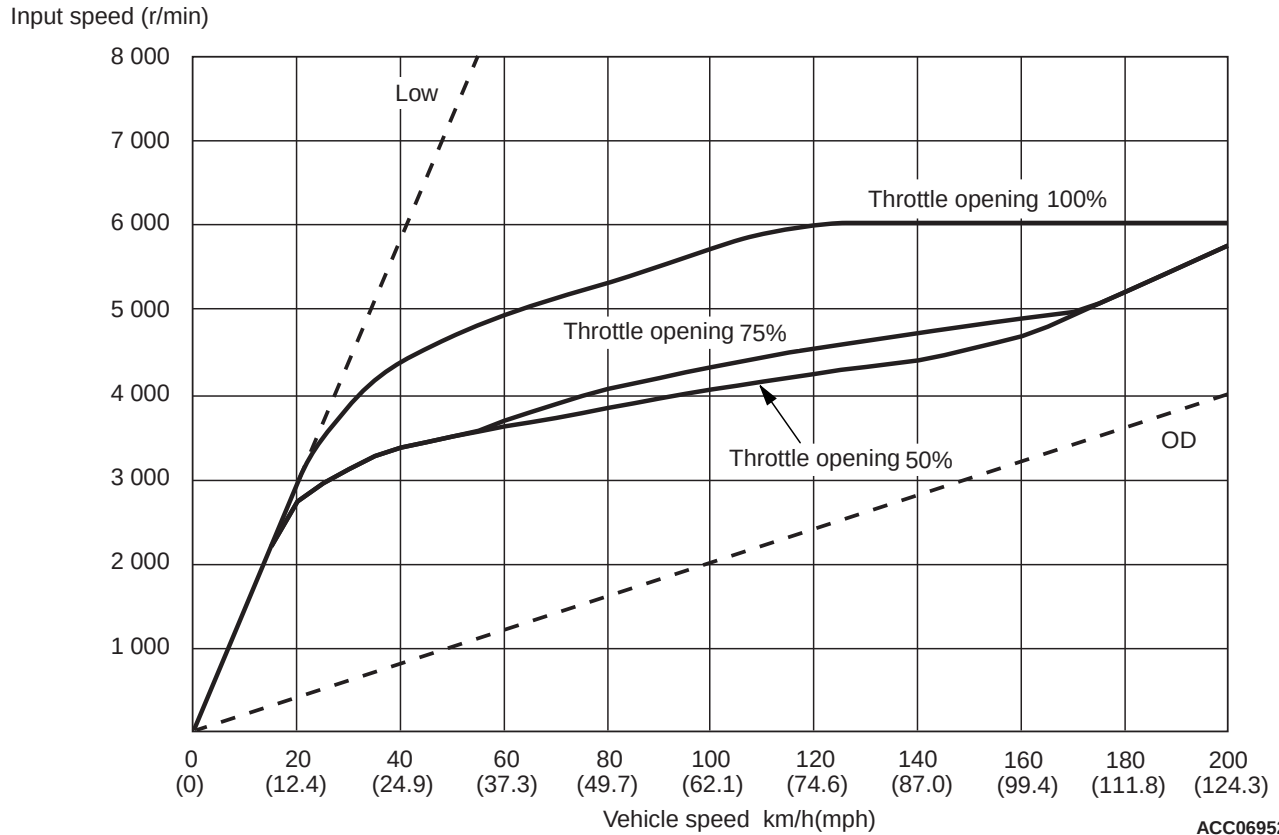
RATIO PATTERN

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<D RANGE>

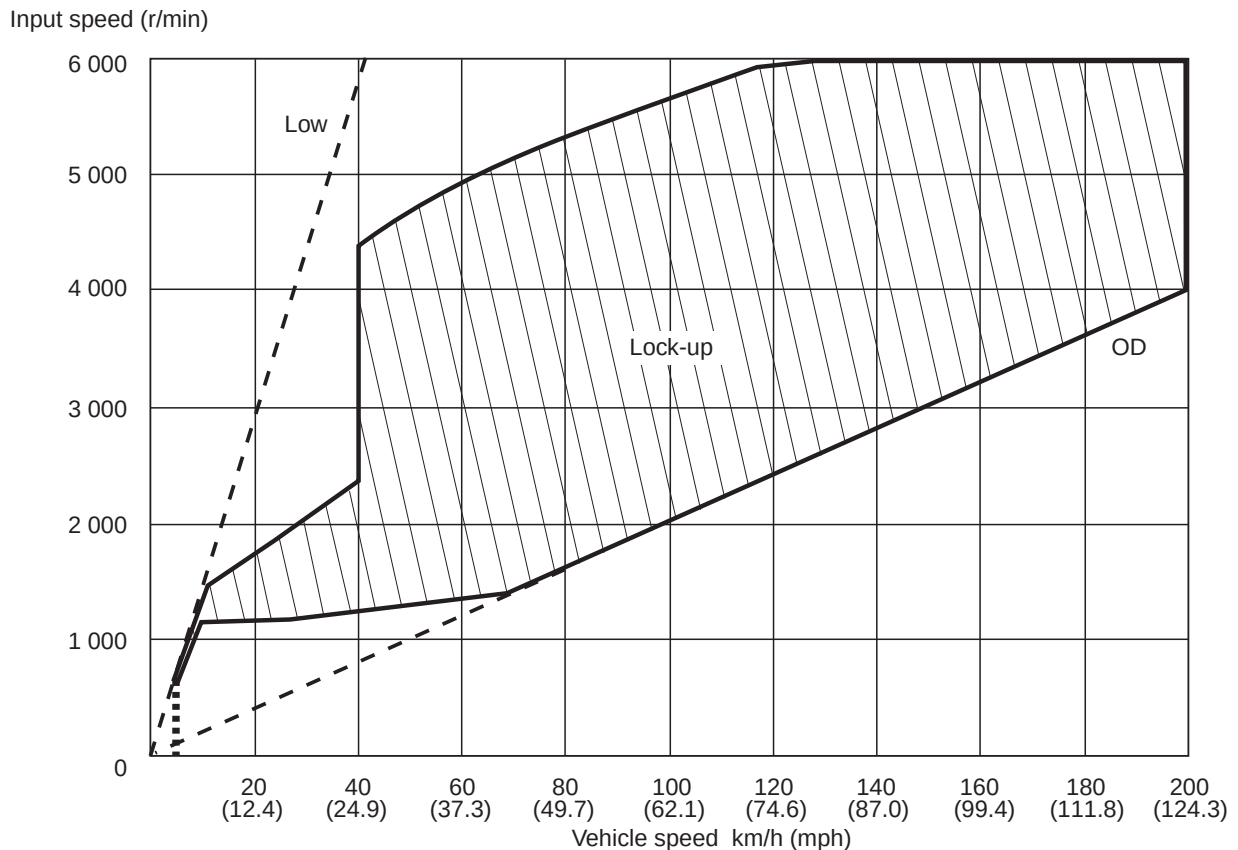


<B RANGE>



TORQUE CONVERTER CLUTCH OPERATION ZONE

M1231204100607



DIAGNOSTIC TROUBLE CODE CHART

M1231207900925

⚠ CAUTION

During diagnosis, a diagnostic trouble code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for diagnostic trouble code(s). If diagnostic trouble code(s) are set, erase them all.

Diagnostic trouble code No.	Diagnostic item	Reference page
P0703	Malfunction of stop light switch	P.23A-17
P0705	Malfunction of transmission range switch	P.23A-18
P0711	Malfunction of the transmission fluid temperature sensor (range)	P.23A-22
P0712	Malfunction of the transmission fluid temperature sensor (low voltage)	P.23A-25
P0713	Malfunction of the transmission fluid temperature sensor (high voltage)	P.23A-27
P0715	Malfunction of primary pulley speed sensor	P.23A-29
P0720	Malfunction of output speed sensor	P.23A-33
P0741	Abnormality in lockup function	P.23A-37
P0746	Abnormality in hydraulic control system function	P.23A-40
P0791	Malfunction of secondary pulley speed sensor	P.23A-42
P0796	Abnormality in primary pressure solenoid valve function	P.23A-46
P0841	Abnormality in secondary pressure sensor function	P.23A-50
P0842	Malfunction of the secondary pressure sensor (low voltage)	P.23A-51
P0843	Malfunction of the secondary pressure sensor (high voltage)	P.23A-53
P0876	Malfunction of high clutch pressure switch	P.23A-56
P0962	Malfunction of the line pressure solenoid valve (short to ground)	P.23A-60
P0963	Malfunction of the line pressure solenoid valve (open circuit/ short to power supply)	P.23A-62
P0970	Malfunction of the primary pressure solenoid valve (short to ground)	P.23A-64
P0971	Malfunction of the primary pressure solenoid valve (open circuit/ short to power supply)	P.23A-66
P0973	Malfunction of the low brake solenoid valve (short to ground)	P.23A-68
P0974	Malfunction of the low brake solenoid valve (open circuit/ short to power supply)	P.23A-70
P0976	Malfunction of the high clutch and reverse brake solenoid valve (short to ground)	P.23A-72
P0977	Malfunction of the high clutch and reverse brake solenoid valve (open circuit/ short to power supply)	P.23A-74
P1607	Malfunction of the system power supply (low voltage)	P.23A-76
P1637	Malfunction of memory backup	P.23A-78
P170E	ABS/ASC error information	P.23A-79
P1797	G sensor/Brake pressure sensor malfunction	P.23A-80

Diagnostic trouble code No.	Diagnostic item	Reference page
P2763	Malfunction of the lockup solenoid valve (open circuit/ short to power supply)	P.23A-80
P2764	Malfunction of the lockup solenoid valve (short to ground)	P.23A-82
P2857	Auxiliary gearbox gear 1 incorrect ratio run-up	P.23A-84
P2858	Auxiliary gearbox gear 2 incorrect ratio run-up	P.23A-87
P2859	Auxiliary gearbox gear 1 incorrect ratio	P.23A-90
P285A	Auxiliary gearbox gear 2 incorrect ratio	P.23A-95
U0001	Malfunction of CAN communication circuit	P.23A-98
U0100	CAN time-out error (Engine)	P.23A-100
U0121	CAN time-out error (ASC)	P.23A-102
U0141	CAN time-out error (ETACS)	P.23A-103
U0155	CAN time-out error (Combination meter)	P.23A-104

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC P0703: Malfunction of Stoplight Switch

DIAGNOSTIC FUNCTION

TCM detects malfunction using the stoplight switch signal sent from the ETACS-ECU.

DESCRIPTIONS OF MONITOR METHODS

- Drive the vehicle at 30 km/h (19 mph) or more for 10 seconds, and then turn the ignition switch to the "LOCK" (OFF) position. In this sequential operation, no variation has been found in the stoplight switch input signal in two consecutive times.

DTC SET CONDITIONS

Check Conditions

- Vehicle speed: 30 km/h (19 mph) or more.

Judgment Criteria

- The change of stoplight switch signal during driving cycle: no occurrence (10 seconds × 2 times).

PROBABLE CAUSES

- Malfunction of the CAN bus
- Malfunction of the stoplight switch
- Damaged wiring harness and connectors
- Malfunction of TCM
- Malfunction of ETACS-ECU

DIAGNOSIS

STEP 1. M.U.T.-III CAN bus diagnostics

Use scan tool to perform the CAN bus diagnosis.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C, Troubleshooting – Diagnostic Trouble Code Chart [P.54C-12](#)).

STEP 2. M.U.T.-III data list

Item 62: Brake switch

OK: The service data changes in response to the brake operation.**Q: Is the check result normal?****YES :** Go to Step 3.**NO :** Refer to GROUP 54A – ETACS, Input Signal Procedures – The stoplight switch signal is not received [P.54A-250](#).

STEP 3. Symptom recheck after erasing diagnostic trouble code**Q: Is the check result normal?****YES :** Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).**NO :** Replace TCM.

DTC P0705: Malfunction of Transmission Range Switch

DIAGNOSTIC FUNCTION

TCM monitors the signal from the transmission range switch, and determines if the abnormal input is present or not.

DESCRIPTIONS OF MONITOR METHODS

- TCM does not detect the transmission range switch input signal for 10 seconds when the vehicle speed is 3 km/h (2 mph) or more.
- TCM detects the multiple inputs from the transmission range switch for 2 seconds.

MONITOR EXECUTION

- Vehicle speed (no-transmission range switch signal input): 3km/h (2 mph) or more for 10 seconds continuously
- Vehicle speed (transmission range switch signal multiple input): No conditions

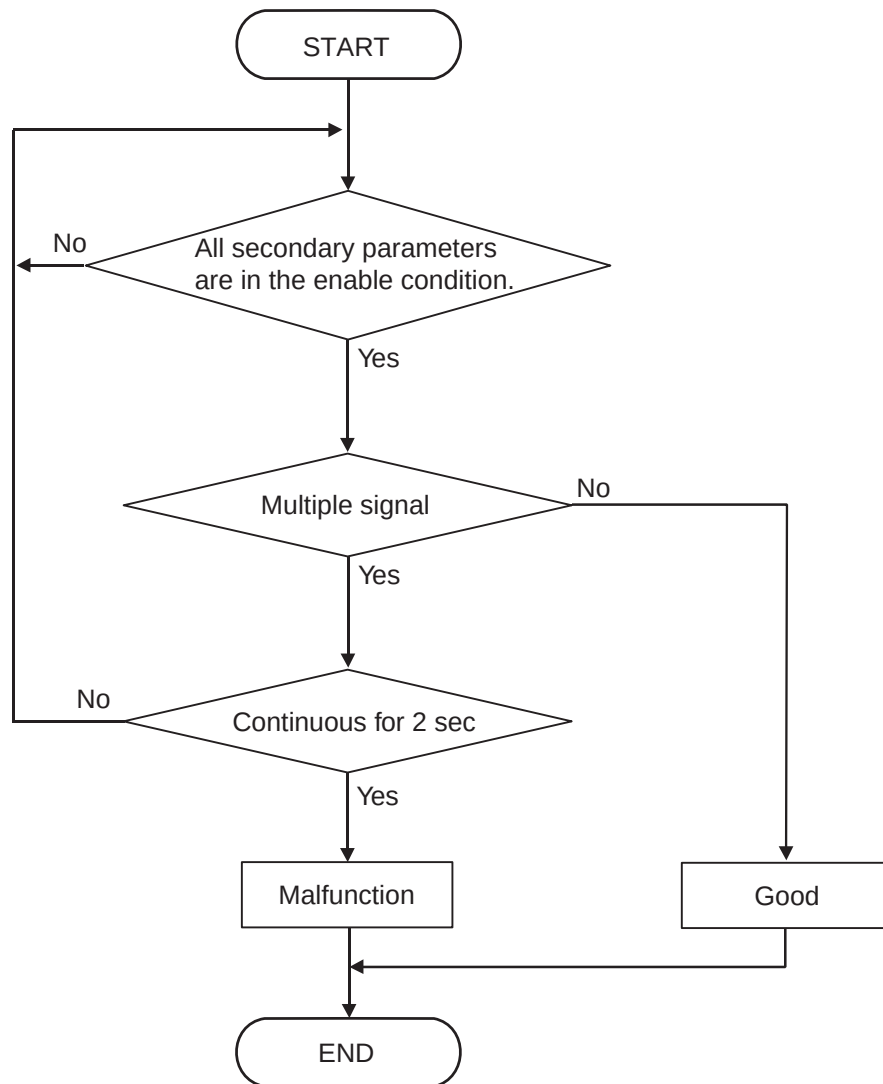
**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)****Other Monitor (There is no temporary DTC stored in memory for the item monitored below)**

- P0720: Malfunction of output speed sensor

Sensor (The sensor below is determined to be normal)

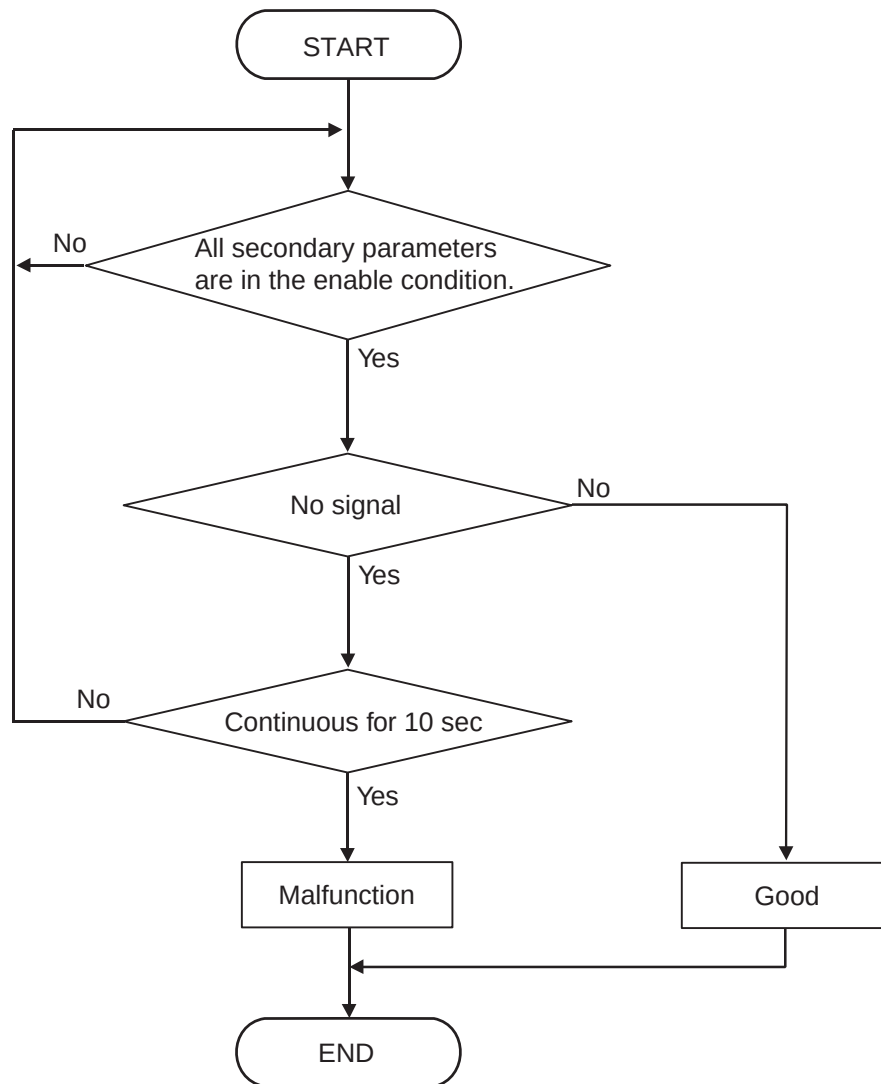
- Output speed sensor

LOGIC FLOW CHARTS (Monitor Sequence–Input Other Rationality)



ACC07000

LOGIC FLOW CHARTS (Monitor Sequence–Input Open Circuit)



ACC07001

DTC SET CONDITIONS**Check Conditions**

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- TCM does not detect the transmission range switch input signal for 10 seconds when the vehicle speed is 3 km/h (2 mph) or more.
- TCM detects the multiple inputs from the transmission range switch for 2 seconds.

OBD-II DRIVE CYCLE PATTERN

The vehicle is driven for at least 20 seconds at the speed of 10km/h (6.2 mph) or more.

PROBABLE CAUSES

- Malfunction of the transmission range switch
- Improper adjustment of transaxle control cable
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- Transmission range switch connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for open circuit in INHP, INHR, INHN, INHD and INHL line between the transmission range switch connector and the TCM connector

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Transmission range switch and control cable adjustment

Refer to [P.23A-123](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Adjust the transmission range switch and the control cable.

STEP 4. Transmission range switch continuity check

Refer to [P.23A-123](#).

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the transmission range switch.

STEP 5. Voltage measurement at TCM connector (INHP, INHR, INHN, INHD and INHL terminal)

- (1) Connect the transmission range switch connector.
- (2) Disconnect the TCM connector, and measure at the wiring harness side.
- (3) Turn the ignition switch to the "ON" position.
- (4) Measure the voltage at each terminal when the selector lever is moved to each range.
 - At P range: Between the TCM connector (INHP terminal) and body ground
 - At R range: Between the TCM connector (INHR terminal) and body ground
 - At N range: Between the TCM connector (INHN terminal) and body ground
 - At D range: Between the TCM connector (INHD terminal) and body ground
 - At B range: Between the TCM connector (INHL terminal) and body ground

OK: 10 V or more**Q: Is the check result normal?****YES** : Go to Step 6.**NO** : Repair the connector(s) or the wiring harness.**STEP 6. Symptom recheck after erasing diagnostic trouble code****Q: Is the diagnostic trouble code stored?****YES** : Replace the TCM.**NO** : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13.](#)).**DTC P0711: Malfunction of Transmission Fluid Temperature Sensor****DIAGNOSTIC FUNCTION**

TCM conducts fault detection by monitoring the terminal voltage of the transmission fluid temperature sensor.

DESCRIPTIONS OF MONITOR METHODS

The TCM checks whether the transmission fluid temperature rises to -20°C (-4°F) within the specified period after the engine is started.

- Transmission fluid temperature is less than -40°C (-40°F): 230 seconds
- Transmission fluid temperature is -34°C (-29°F): 230 seconds
- Transmission fluid temperature is -20°C (-4°F): 70 seconds

MONITOR EXECUTION

- Transmission fluid temperature: -20°C (-4°F) or less
- Transmission range: D
- Vehicle speed: 32 km (20 mph) or more
- Accelerator pedal opening angle: 12.5% or more
- Engine speed: 450 r/min or more

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)****Other Monitor (There is no temporary DTC stored in memory for the item monitored below)**

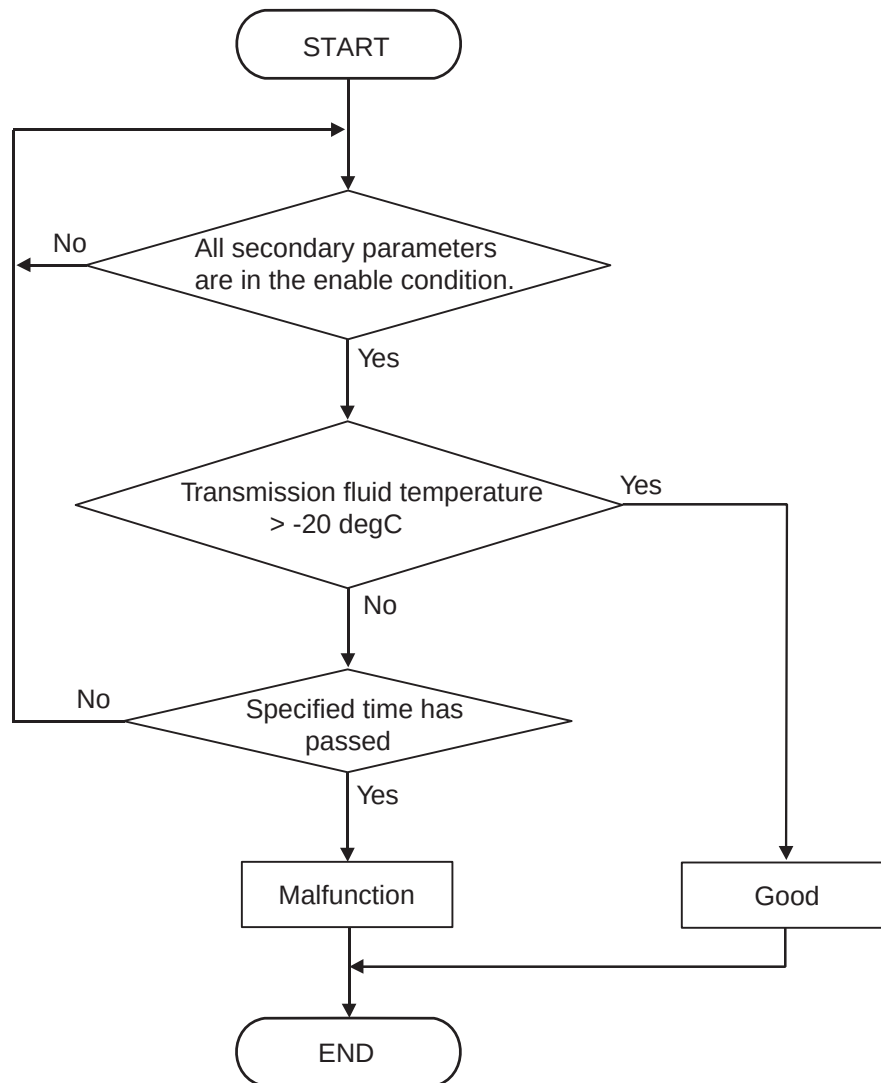
- P0705: Malfunction of transmission range switch
- P0712, P0713: Malfunction of transmission fluid temperature sensor

- P0720: Malfunction of output speed sensor
- P0741: Abnormality in lockup function
- U0001: Malfunction of CAN communication
- U0100: CAN time-out error (engine)

Sensor (The sensor below is determined to be normal)

- Transmission range switch
- Transmission fluid temperature sensor
- Output speed sensor
- Lockup solenoid valve

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07004

DTC SET CONDITIONS

Check Conditions

- Transmission fluid temperature: -20°C (-4°F) or less
- Transmission range switch position: D.
- Vehicle speed: 32 km/h (20 mph) or more.

- Accelerator pedal position sensor voltage: 1.37 V or more.
- Engine speed: 450 r/min or more.

Judgment Criteria

- The transmission fluid temperature does not rise to -20°C (-4°F) within the specified period (70 – 230 seconds) after the engine is started.

OBD-II DRIVE CYCLE PATTERN

The vehicle is driven for at least 250 seconds at 40 km/h (24.9 mph) or more while the selector lever is at D range and the accelerator opening angle is 20% or more.

PROBABLE CAUSES

- Malfunction of transmission fluid temperature sensor
- Malfunction of transmission fluid cooler piping and oil pump
- Malfunction of TCM

DIAGNOSIS

STEP 1. Transmission fluid cooler piping and oil pump check

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the failure sections.

STEP 2. Check the following connector

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the defective connector.

STEP 3. Check for harness damage in SPWR and SGND line between the CVT assembly connector and the TCM connector

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the wiring harness.

STEP 4. Transmission fluid temperature sensor check

Refer to [P.23A-127](#).

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the valve body assembly.

STEP 5. Symptom recheck after erasing diagnostic trouble code

Q: Is the check result normal?

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).)

NO : Replace TCM.

DTC P0712: Malfunction of the transmission fluid temperature sensor (low voltage)**DIAGNOSTIC FUNCTION**

TCM conducts fault detection by monitoring the terminal voltage of the transmission fluid temperature sensor.

DESCRIPTIONS OF MONITOR METHODS

- TCM detects the fluid temperature 180°C (356°F) or more for 5 seconds.

MONITOR EXECUTION

- Continuous

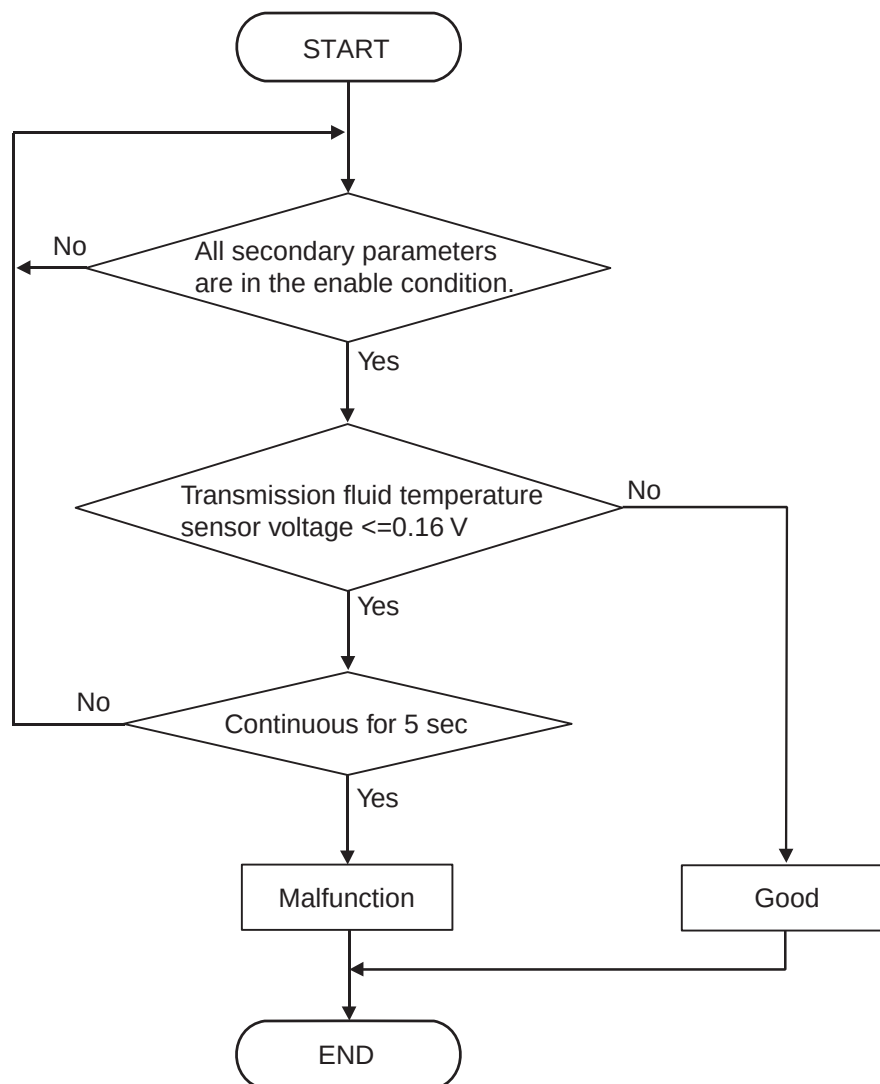
**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)

ACC07002

DTC SET CONDITIONS**Check Conditions**

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- Value of temperature of transmission fluid: 180°C (356°F) or more. (5 seconds)

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 10 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty transmission fluid temperature sensor)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS**STEP 1. Check the following connector**

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for short to ground in SPWR line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. transmission fluid temperature sensor check

Refer to [P.23A-127](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. transmission fluid temperature sensor continuity check

Disconnect the CVT assembly connector, and then check that there is no continuity between the sensor-side terminal No. 12 and the transaxle case.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the Transaxle assembly.

STEP 5. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P0713: Malfunction of the transmission fluid temperature sensor (high voltage)**DIAGNOSTIC FUNCTION**

TCM conducts fault detection by monitoring the terminal voltage of the transmission fluid temperature sensor.

DESCRIPTIONS OF MONITOR METHODS

- TCM detects the fluid temperature -40°C (-40°F) or less for five seconds.

MONITOR EXECUTION

- Vehicle speed: 10 km/h or more

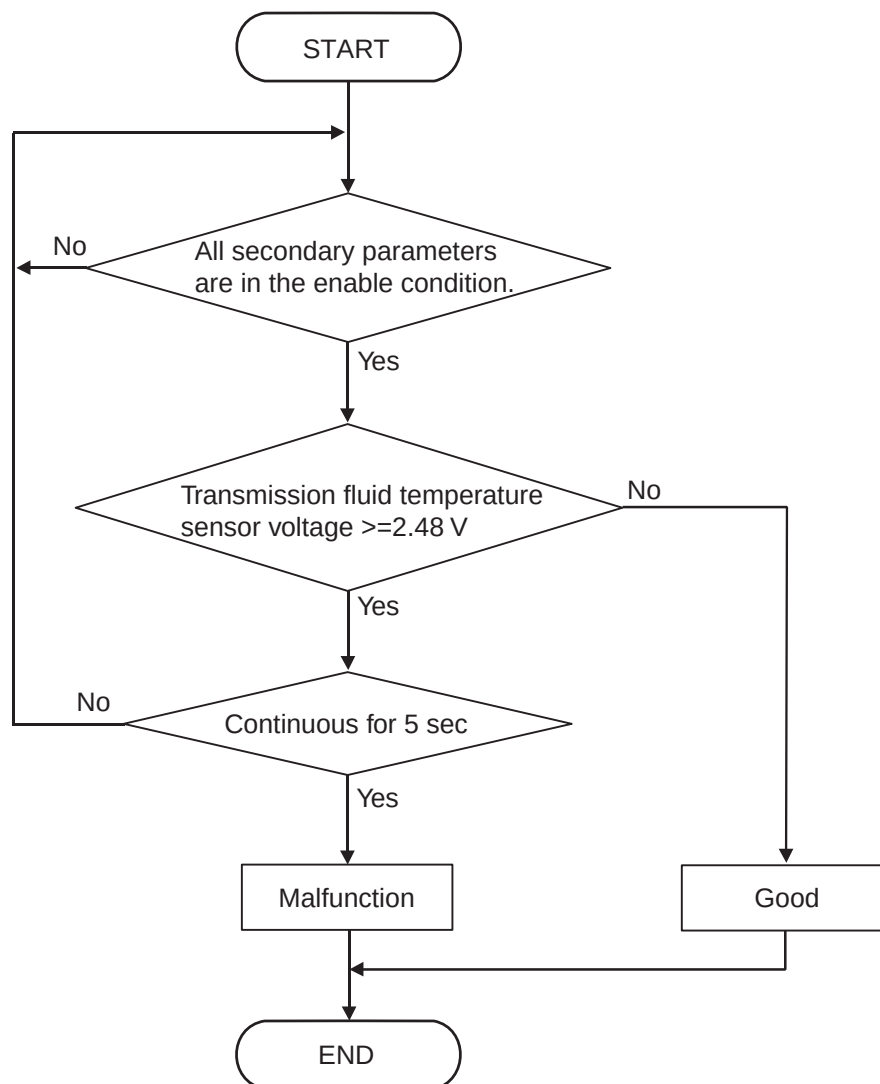
**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0720: Abnormality in output speed sensor

Sensor (The sensor below is determined to be normal)

- Output speed sensor

LOGIC FLOW CHARTS (Monitor Sequence)

ACC07003

DTC SET CONDITIONS**Check Conditions**

- After vehicle speed: 10 km/h (6.2 mph) or more.
- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- Value of temperature of transmission fluid: -40°C (-40°F) or less. (5 seconds)

OBD-II DRIVE CYCLE PATTERN

The vehicle is driven for at least 10 seconds at the speed of 20 km/h (12.4 mph) or more.

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty transmission fluid temperature sensor)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Check for open circuit in SPWR and SGND line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. transmission fluid temperature sensor check

Refer to [P.23A-127](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. transmission fluid temperature sensor continuity check

Disconnect the CVT assembly connector, and then check that there is no continuity between the sensor-side terminal No. 12 and the transaxle case.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the transaxle assembly.

STEP 5. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P0715: Malfunction of Primary Pulley Speed Sensor

DIAGNOSTIC FUNCTION

The TCM determines whether the system is defective by monitoring the primary pulley speed sensor.

DESCRIPTIONS OF MONITOR METHODS

- The status with the secondary pulley speed of 1,000 r/min or more and with the primary pulley speed of 150 r/min or less continues for 5 seconds.
- When the primary pulley speed has dropped abruptly from 1,000 r/min or more to 240 r/min or less, and then it keeps 240 r/min or less for 0.5 seconds continuously.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

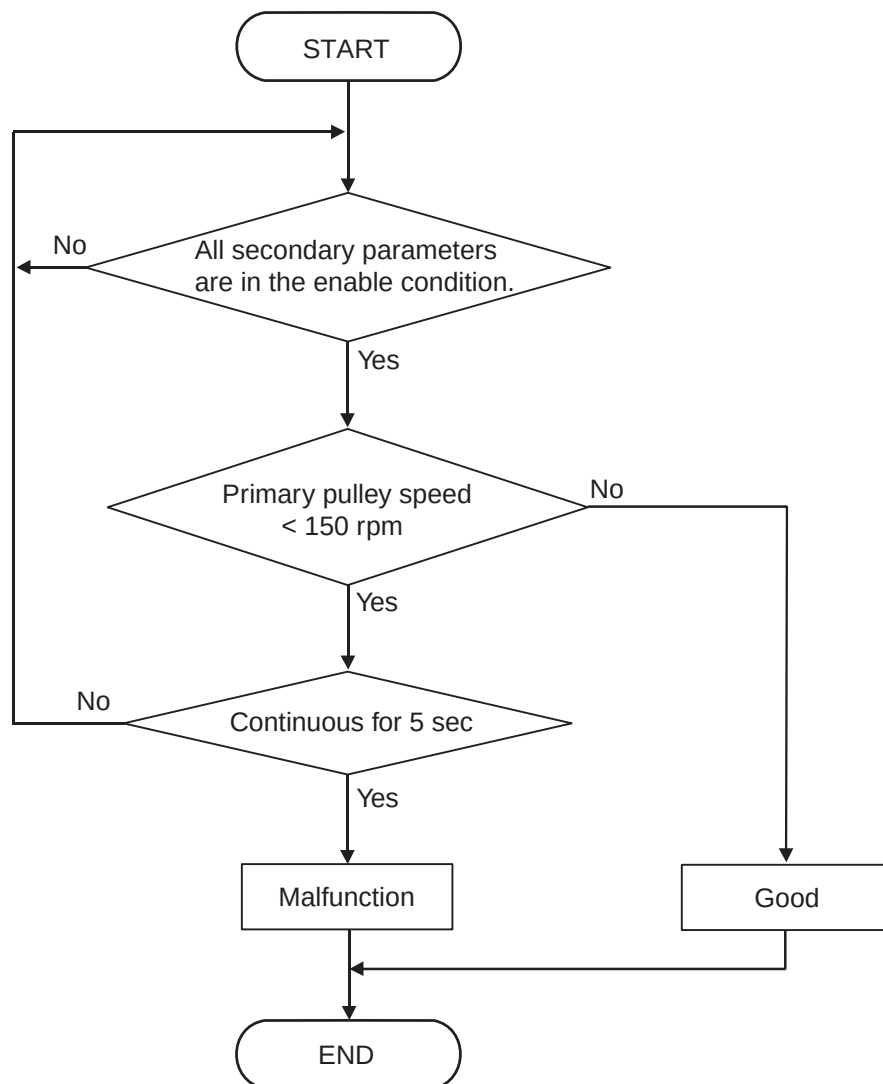
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0791: Malfunction of the secondary pulley speed sensor

Sensor (The sensor below is determined to be normal)

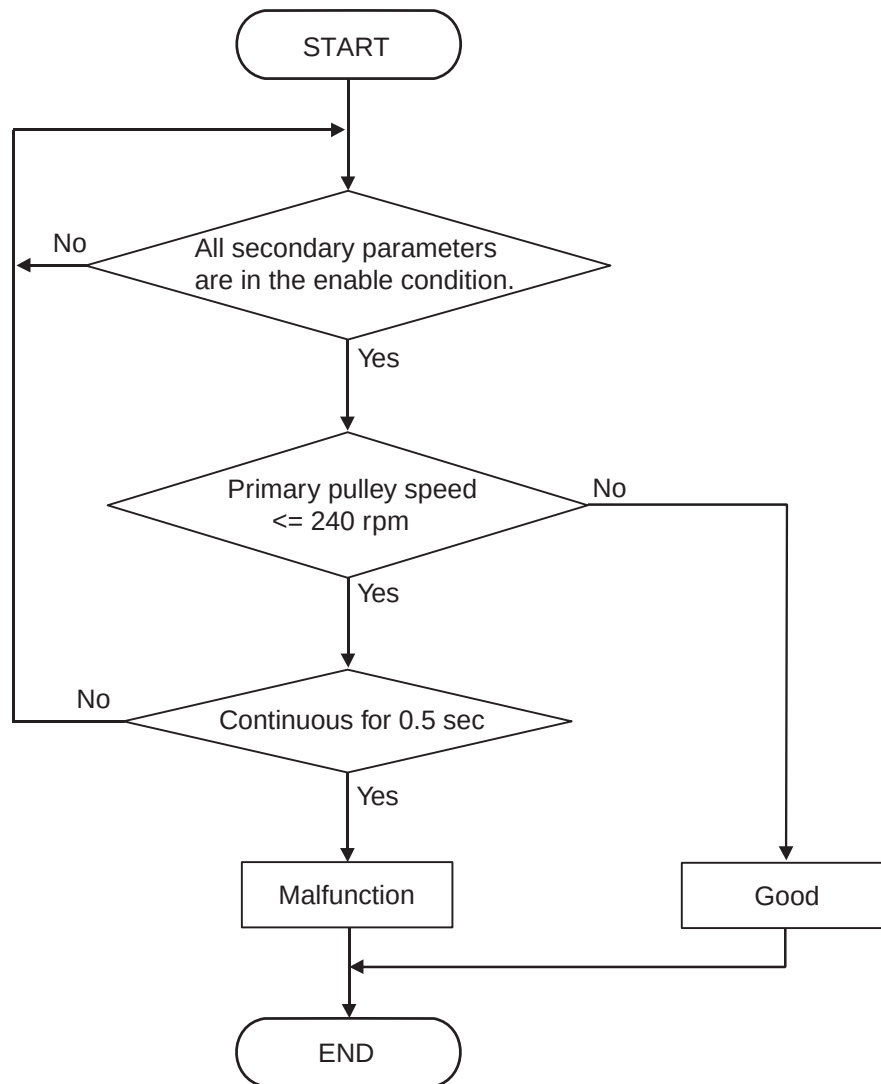
- Secondary pulley speed sensor

LOGIC FLOW CHARTS (Monitor Sequence–Open/Low revolution)



ACC07005

LOGIC FLOW CHARTS (Monitor Sequence–Input Open Circuit)



ACC07006

DTC SET CONDITIONS**Check Conditions**

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- The status with the secondary pulley speed of 1,000 r/min or more and with the primary pulley speed of less than 150 r/min continues for five seconds.

- The primary pulley speed has dropped abruptly from 1,000 r/min or more to 240 r/min or less. Then at least 0.5 seconds have passed with the reduced speed.

OBD-II DRIVE CYCLE PATTERN

The vehicle is driven for at least 10 seconds at the speed of 20 km/h (12.4 mph) or more.

PROBABLE CAUSES

- Malfunction of primary pulley speed sensor
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- Primary pulley speed sensor connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Check for open circuit in SGN2 line between the primary pulley speed sensor connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the connector(s) or the wiring harness.

STEP 3. Voltage measurement at primary pulley speed sensor connector (terminal No. 1)

- (1) Disconnect the primary pulley speed sensor connector, and measure at the wiring harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between the primary pulley speed sensor connector (terminal No. 1) and body ground.

OK: 10 V or more

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the connector(s) or the wiring harness (power supply line between the primary pulley speed sensor connector terminal No. 1 and the J/B connector).

STEP 4. Check the following connector

- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the defective connector.

STEP 5. Check for open circuit or short to ground in PRMS line between the primary pulley speed sensor connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 6.

NO : Repair the wiring harness.

STEP 6. Measure the output wave pattern of the primary pulley speed sensor at TCM connector (PRMS terminal).

- (1) Connect the primary pulley speed sensor connector and TCM connector.
- (2) Selector lever position: L range.
- (3) Drive at a constant speed of approx. 20 km/h.
- (4) Connect an oscilloscope, and measure the voltage between TCM connector PRMS terminal and body ground.

OK: A wave pattern such as the one shown on [P.23A-116](#) (Check Procedure Using an Oscilloscope) should be output, and the maximum value should be 11 V or more and the minimum value should be 1 V or less. There should be no noise in the output wave pattern.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Replace the primary pulley speed sensor.

STEP 7. Symptom recheck after erasing diagnostic trouble code

Q: Is the diagnostic trouble code stored?

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P0720: Malfunction of Output Speed Sensor**DIAGNOSTIC FUNCTION**

The TCM determines whether the system is defective by monitoring the output speed sensor.

DESCRIPTIONS OF MONITOR METHODS

- The status with the secondary pulley speed of 1,500 r/min or more and with the output shaft speed of 150 r/min or less continues for 10 seconds.
- When the output shaft speed has dropped abruptly from 730 r/min or more to 90 r/min or less, and then it keeps 90 r/min or less for 0.5 seconds continuously.

MONITOR EXECUTION

- Transmission range:D, R or B

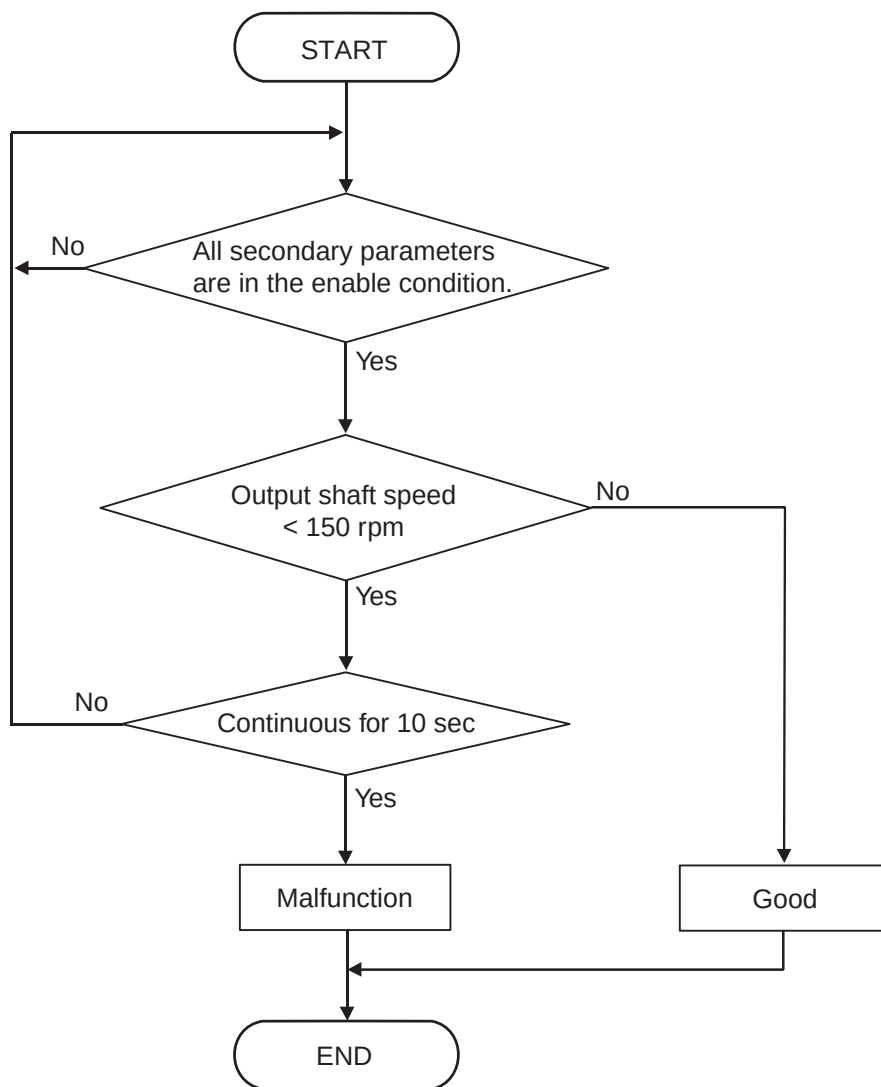
**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0705: Malfunction of transmission range switch
- P0791: Malfunction of secondary pulley speed sensor

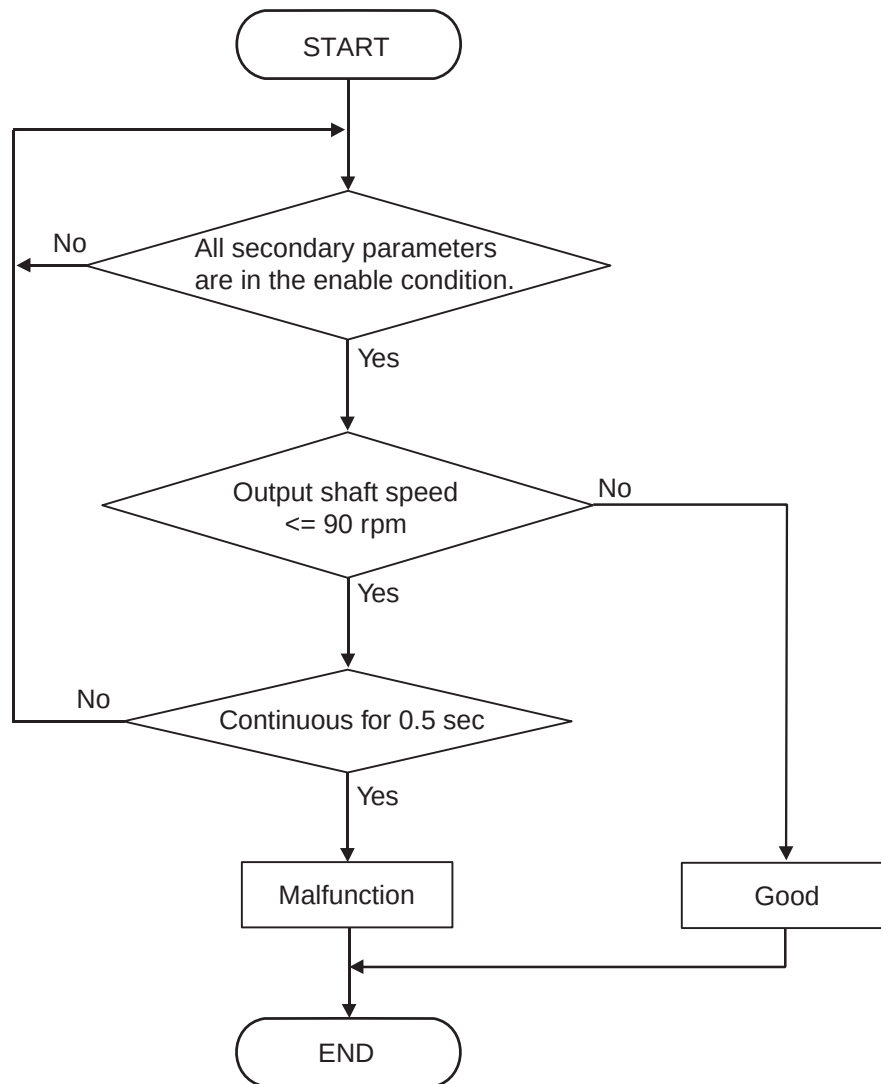
Sensor (The sensor below is determined to be normal)

- Transmission range switch
- Secondary pulley speed sensor

LOGIC FLOW CHARTS [Monitor Sequence–Input Rationality Low (Open/Low revolution)]

ACC07009

LOGIC FLOW CHARTS (Monitor Sequence–Input Open Circuit)



ACC07010

DTC SET CONDITIONS**Check Conditions**

- Transmission range switch position: D, R or B.
- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- The status with the secondary pulley speed of 1,500 r/min or more and with the output shaft speed of less than 150 r/min continues for 10 seconds.

- The output speed has dropped abruptly from 730 r/min or more to 90 r/min or less. Then at least 0.5 seconds have passed with the reduced speed.

OBD-II DRIVE CYCLE PATTERN

The vehicle is driven for at least 20 seconds with the engine speed at 3,500 r/min or more.

PROBABLE CAUSES

- Malfunction of output speed sensor
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- Output speed sensor connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Check for open circuit in SGN2 line between the output speed sensor connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the connector(s) or the wiring harness.

STEP 3. Voltage measurement at output speed sensor connector (terminal No. 1)

- (1) Disconnect the output speed sensor connector, and measure at the wiring harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between the output speed sensor connector (terminal No. 1) and body ground.

OK: 10 V or more

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the connector(s) or the wiring harness (power supply line between the output speed sensor connector terminal No. 1 and the J/B connector).

STEP 4. Check the following connector

- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the defective connector.

STEP 5. Check for open circuit or short to ground in OUTS line between the output speed sensor connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 6.

NO : Repair the wiring harness.

STEP 6. Measure the output wave pattern of the output speed sensor at TCM connector (OUTS terminal).

- (1) Connect the output speed sensor connector and TCM connector.
- (2) Selector lever position: D range.
- (3) Drive at a constant speed of approx. 20 km/h.
- (4) Connect an oscilloscope, and measure the voltage between TCM connector OUTS terminal and body ground.

OK: A wave pattern such as the one shown on [P.23A-116](#) (Check Procedure Using an Oscilloscope) should be output, and the maximum value should be 11 V or more and the minimum value should be 1 V or less. There should be no noise in the output wave pattern.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Replace the output speed sensor.

STEP 7. Symptom recheck after erasing diagnostic trouble code

Q: Is the diagnostic trouble code stored?

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P0741: Abnormality in Lockup Function

DIAGNOSTIC FUNCTION

Abnormality is detected by the TCM when the torque converter slip speed is high during lockup control.

DESCRIPTIONS OF MONITOR METHODS

- The status with the high torque converter slip speed continues for 30 seconds during lockup control [Primary pulley speed and engine speed are normal, and torque converter clutch (TCC) pressure is 0.2 MPa (29 psi) or more].

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

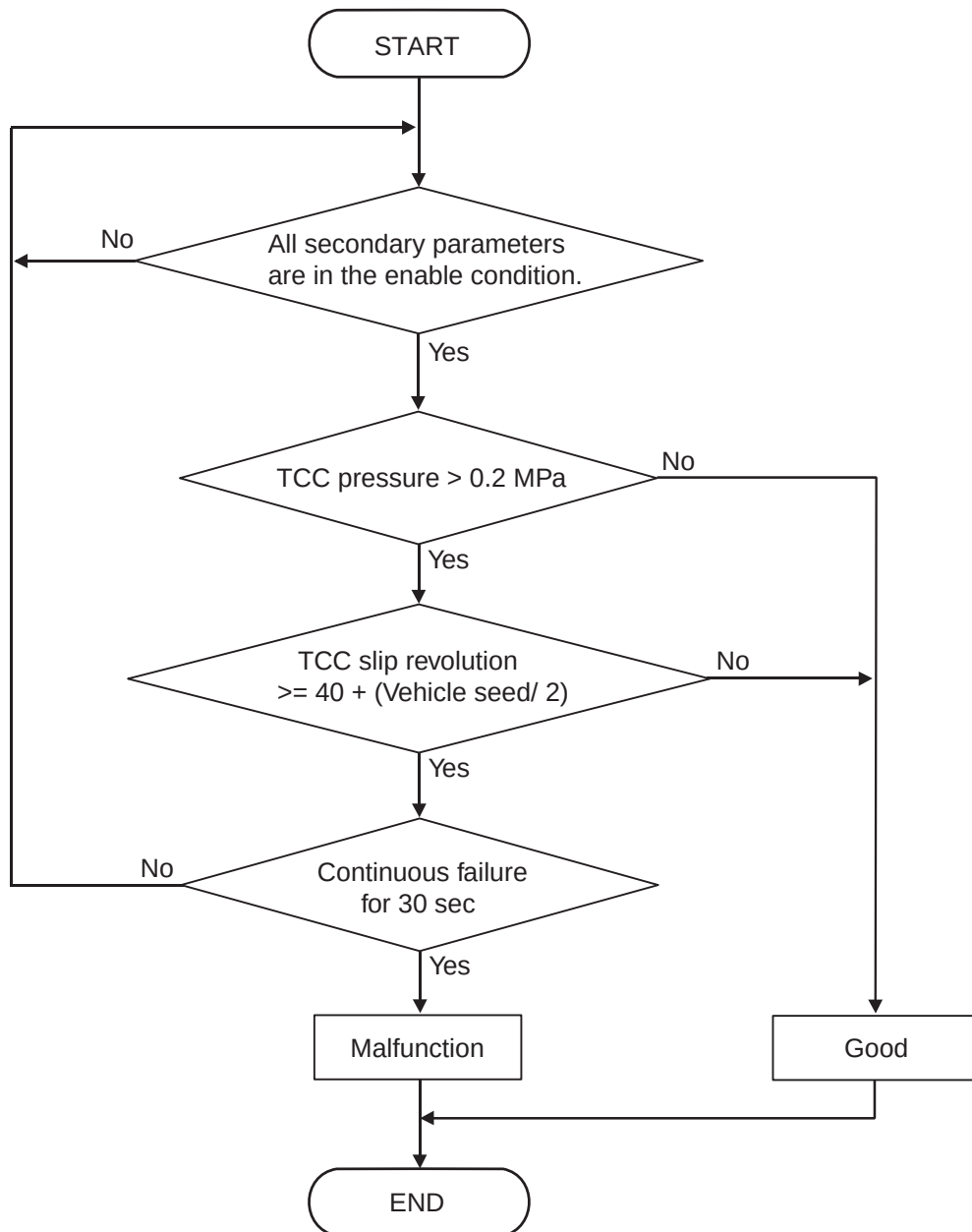
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0715: Malfunction of primary pulley speed sensor
- U0001: Malfunction of CAN communication
- U0100: CAN time-out error (engine)

Sensor (The sensor below is determined to be normal)

- Primary pulley speed sensor

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07030

DTC SET CONDITIONS**Check Conditions**

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- Torque converter clutch pressure: 0.2 MPa (29 psi) or more. (30 seconds)
- Torque converter slip revolution: 40+(vehicle speed/2) or more. (30 seconds)

OBD-II DRIVE CYCLE PATTERN

The vehicle is driven for at least 50 seconds at the speed of 40 km/h (24.9 mph) or more.

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty lockup solenoid valve or valve body assembly)

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Measure the output wave pattern of the lockup solenoid valve at TCM connector (LULS terminal).

- (1) Connect the CVT assembly connector.
- (2) Driving conditions.
- (3) During the lockup control.
- (4) Connect an oscilloscope, and measure the voltage between TCM connector LULS terminal and body ground.

OK: A wave pattern such as the one shown on [P.23A-116](#) (Check Procedure Using an Oscilloscope) should be output, and the maximum value should be 11 V or more and the minimum value should be 1 V or less. There should be no noise in the output wave pattern.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Refer to diagnostic trouble code No. P2763: Lockup Solenoid Valve (open circuit/ short to power supply) [P.23A-80](#), or diagnostic trouble code No. P2764: Lockup Solenoid Valve (short to ground) [P.23A-82](#).

STEP 3. Symptom recheck after erasing diagnostic trouble code

- (1) Erase the diagnostic trouble code.
- (2) Turn the ignition switch to the LOCK (OFF) position, and then wait for one minute. Then drive the vehicle until the engine has been warmed up.
- (3) Check if the diagnostic trouble code is stored.

Q: Is the diagnostic trouble code stored?

YES : Replace the transaxle assembly.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P0746: Abnormality in Hydraulic Control System Function

DIAGNOSTIC FUNCTION

If the pulley ratio, which is calculated according to the primary pulley speed and the secondary pulley speed, exceeds the standard value, the TCM determines that the line pressure is abnormal.

DESCRIPTIONS OF MONITOR METHODS

- The ratio between the primary pulley speed and the secondary pulley speed is 2.55 or more for 0.2 seconds, or 3.35 or more for 0.1 second.

MONITOR EXECUTION

- Transmission range:D, R or B
- Primary speed: 500 r/min or more
- Acceleration: -0.05G or more
- Engine speed: 450 r/min or more

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

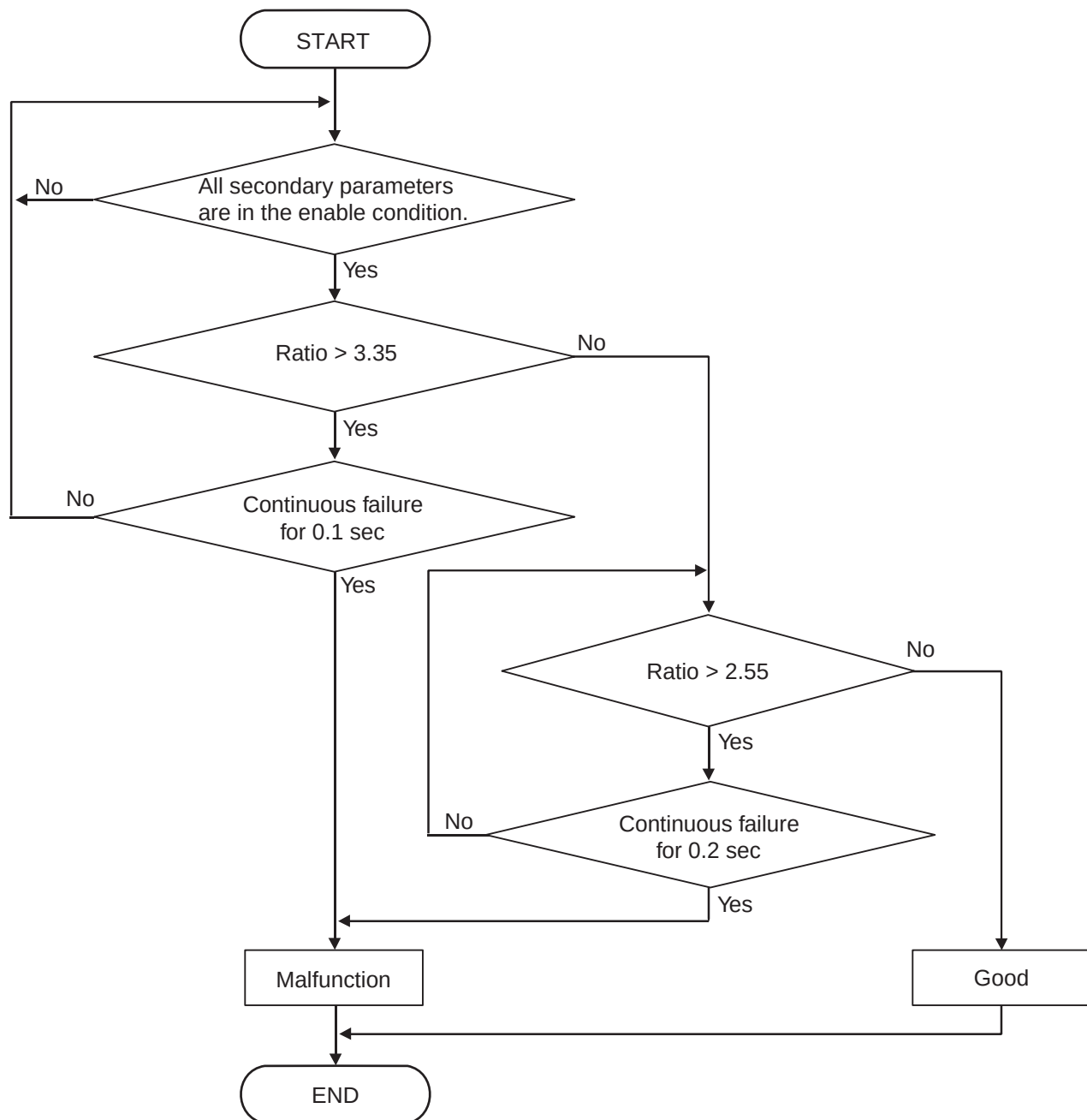
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0705: Malfunction of transmission range switch
- P0715: Malfunction of primary pulley speed sensor
- P0720: Abnormality in output speed sensor
- P0791: Malfunction of the secondary pulley speed sensor
- U0001: Malfunction of CAN communication
- U0100: CAN time-out error (engine)

Sensor (The sensor below is determined to be normal)

- Transmission range switch
- Primary pulley speed sensor
- Output speed sensor
- Secondary pulley speed sensor

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07017

DTC SET CONDITIONS

Check Conditions

- Transmission range switch position: D, R or B.
- Engine speed: 450 r/min or more.
- Primary pulley speed: 500 r/min or more.
- Acceleration: -0.05G or more

Judgment Criteria

- Pulley ratio (primary pulley speed/secondary pulley speed) more than 2.55 for 0.2 second.

- Pulley ratio (primary pulley speed/secondary pulley speed) more than 3.35 for 0.1 second.

OBD-II DRIVE CYCLE PATTERN

The vehicle is driven for at least 10 seconds with the accelerator opening angle at 20% or more.

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty line pressure solenoid valve or valve body assembly)

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Measure the output wave pattern of the line pressure solenoid valve at TCM connector (PLLS terminal).

- (1) Connect the CVT assembly connector.
- (2) Selector lever position: P range.
- (3) Engine: Idling
- (4) Connect an oscilloscope, and measure the voltage between TCM connector PLLS terminal and body ground.

OK: A wave pattern such as the one shown on [P.23A-116](#) (Check Procedure Using an Oscilloscope) should be output, and the maximum value should be 11 V or more and the minimum value should be 1 V or less. There should be no noise in the output wave pattern.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Refer to diagnostic trouble code No.P0962: Line Pressure Solenoid Valve (short to ground) [P.23A-60](#), or diagnostic trouble code No.P0963: Line Pressure Solenoid Valve (open circuit/ short to power supply) [P.23A-62](#).

STEP 3. Symptom recheck after erasing diagnostic trouble code

- (1) Erase the diagnostic trouble code.
- (2) Turn the ignition switch to the LOCK (OFF) position, and then wait for one minute. Then drive the vehicle until the engine has been warmed up.
- (3) Check if the diagnostic trouble code is stored.

Q: Is the diagnostic trouble code stored?

YES : Replace the transaxle assembly.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P0791: Malfunction of Secondary Pulley Speed Sensor

DIAGNOSTIC FUNCTION

The TCM determines whether the system is defective by monitoring the secondary pulley speed sensor.

DESCRIPTIONS OF MONITOR METHODS

- The status with the primary pulley speed of 1,000 r/min or more and with the secondary pulley speed of 150 r/min or less continues for 5 seconds.
- When the secondary pulley speed has dropped abruptly from 1,000 r/min or more to 240 r/min or less, and then it keeps 240 r/min or less for 0.5 seconds continuously.

MONITOR EXECUTION

- Continuous

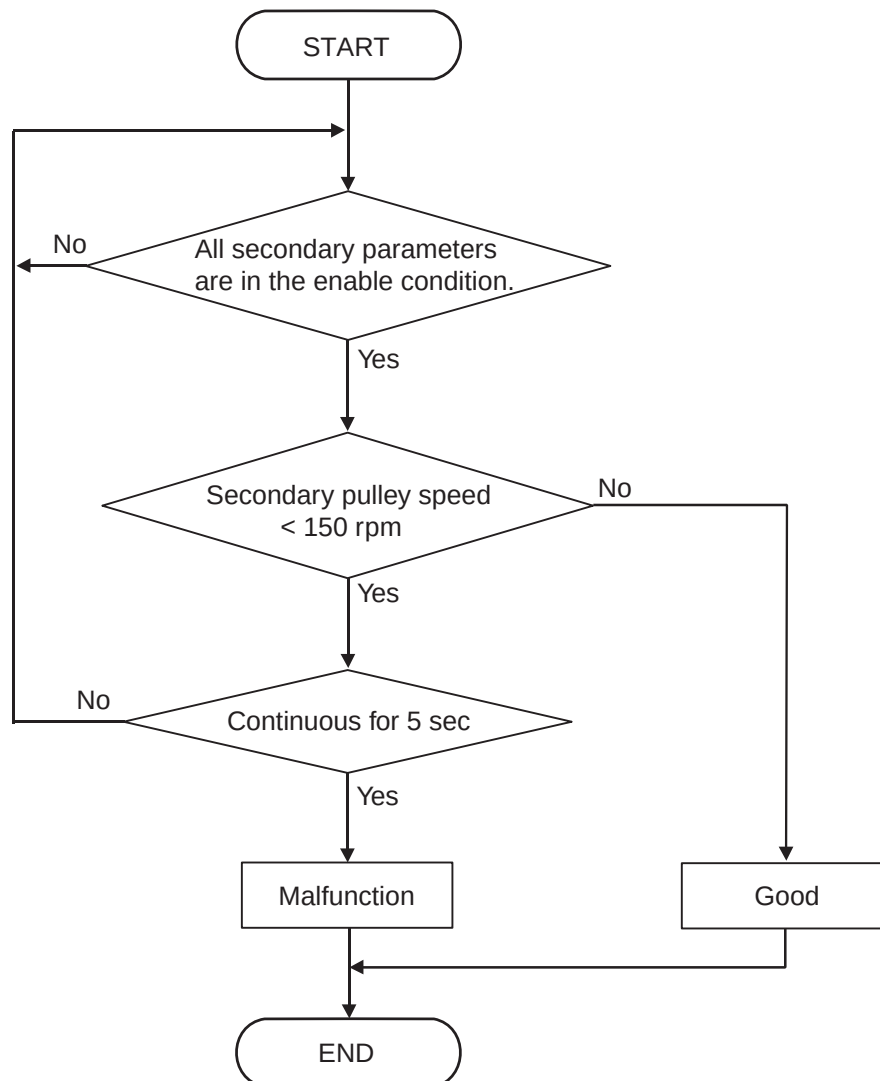
**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0715: Malfunction of the primary pulley speed sensor

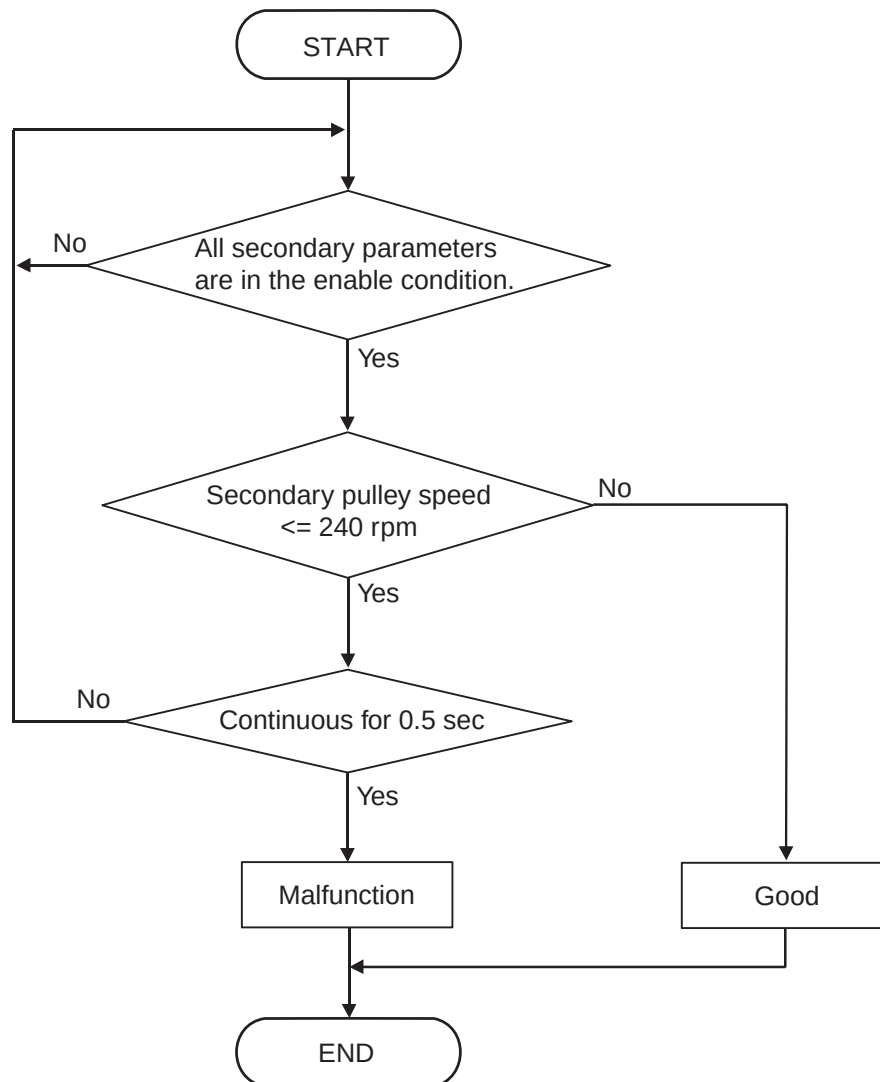
Sensor (The sensor below is determined to be normal)

- Primary pulley speed sensor

LOGIC FLOW CHARTS [Monitor Sequence–Input Rationality Low (Open/Low Revolution)]

ACC07007

LOGIC FLOW CHARTS (Monitor Sequence–Input Open Circuit)



ACC07008

DTC SET CONDITIONS**Check Conditions**

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- The status with the primary pulley speed of 1,000 r/min or more and with the secondary pulley speed of less than 150 r/min continues for five seconds.

- The primary pulley speed has dropped abruptly from 1,000 r/min or more to 240 r/min or less. Then at least 0.5 seconds have passed with the reduced speed.

OBD-II DRIVE CYCLE PATTERN

The vehicle is driven for at least 10 seconds with the engine speed at 1,500 r/min or more.

PROBABLE CAUSES

- Malfunction of secondary pulley speed sensor
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- Secondary pulley speed sensor connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Check for open circuit in SGN2 line between the secondary pulley speed sensor connector and the TCM connector

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the connector(s) or the wiring harness.

STEP 3. Voltage measurement at secondary pulley speed sensor connector (terminal No. 1)

- (1) Disconnect the secondary pulley speed sensor connector, and measure at the wiring harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Measure the voltage between the secondary pulley speed sensor connector (terminal No. 1) and body ground.

OK: 10 V or more

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the connector(s) or the wiring harness (power supply line between the secondary pulley speed sensor connector terminal No. 1 and the J/B connector).

STEP 4. Check the following connector

- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the defective connector.

STEP 5. Check for open circuit or short to ground in SECS line between the secondary pulley speed sensor connector and the TCM connector

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness.

STEP 6. Measure the output wave pattern of the secondary pulley speed sensor at TCM connector (SECS terminal).

- (1) Connect the secondary pulley speed sensor connector and TCM connector.
- (2) Selector lever position: D range.
- (3) Drive at a constant speed of approx. 20 km/h.
- (4) Connect an oscilloscope, and measure the voltage between TCM connector SECS terminal and body ground.

OK: A wave pattern such as the one shown on [P.23A-116](#) (Check Procedure Using an Oscilloscope) should be output, and the maximum value should be 11 V or more and the minimum value should be 1 V or less. There should be no noise in the output wave pattern.

Q: Is the check result normal?

YES : Go to Step 7.

NO : Replace the secondary pulley speed sensor.

STEP 7. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P0796: Abnormality in Primary Pressure Solenoid Valve Function**DIAGNOSTIC FUNCTION**

If the actual pulley ratio does not track with the target ratio, the TCM determines whether the system is defective

DESCRIPTIONS OF MONITOR METHODS

- If the actual pulley ratio remains 2.0 to 2.55 for five seconds when the target pulley ratio is 1.2 or less, or if the actual pulley ratio remains 0.2 to 0.75 for five seconds when the target pulley ratio is 1.55 or more, the TCM determines that a malfunction exists.

MONITOR EXECUTION

- Transmission range: D, R or B
- Engine speed: 450 r/min or more
- Primary pulley speed: 306 r/min or more
- Secondary pulley speed: 230 r/min or more

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)****Other Monitor (There is no temporary DTC stored in memory for the item monitored below)**

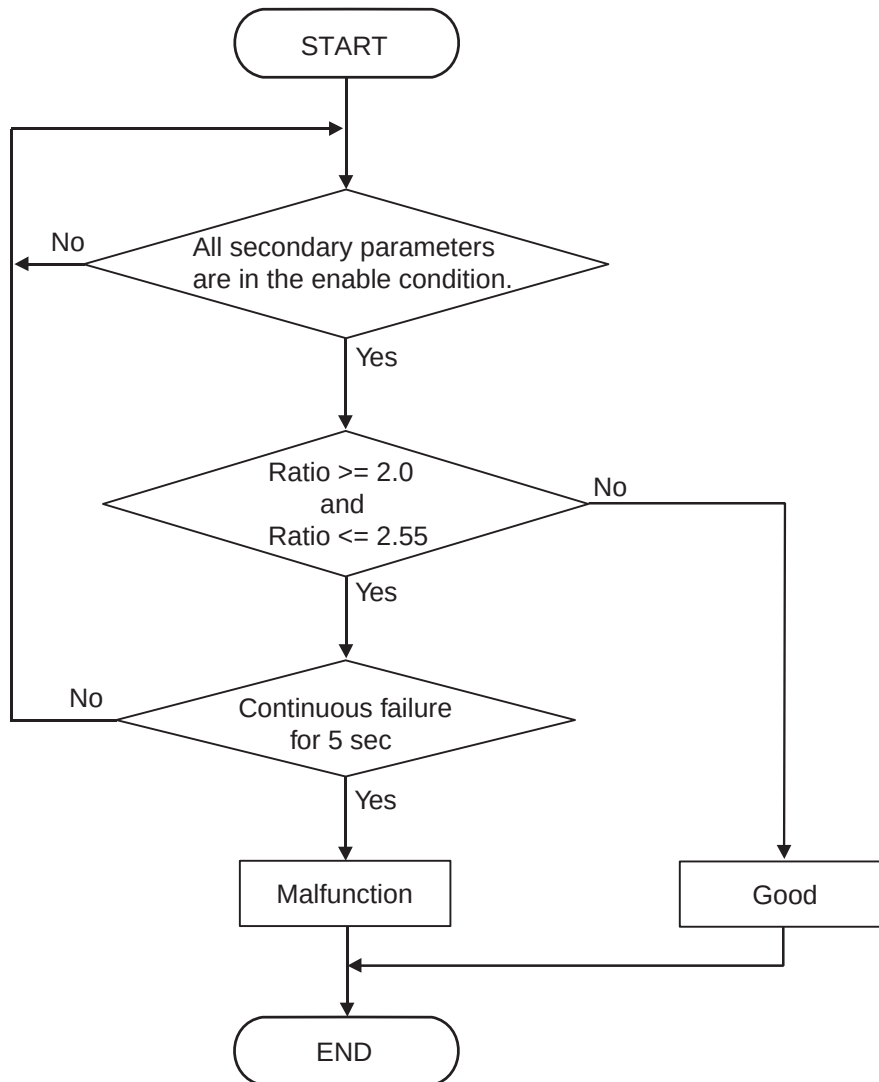
- P0705: Malfunction of transmission range switch
- P0715: Malfunction of primary pulley speed sensor
- P0746: Abnormality in hydraulic control system
- P0791: Malfunction of the secondary pulley speed sensor
- P0842, P0843: Malfunction of the secondary pressure sensor
- P0962, P0963: Malfunction of the line pressure solenoid valve
- P0970, P0971: Malfunction of the primary pressure solenoid valve
- U0001: Malfunction of CAN communication
- U0100: CAN time-out error (engine)

Sensor (The sensor below is determined to be normal)

- Transmission range switch
- Primary pulley speed sensor

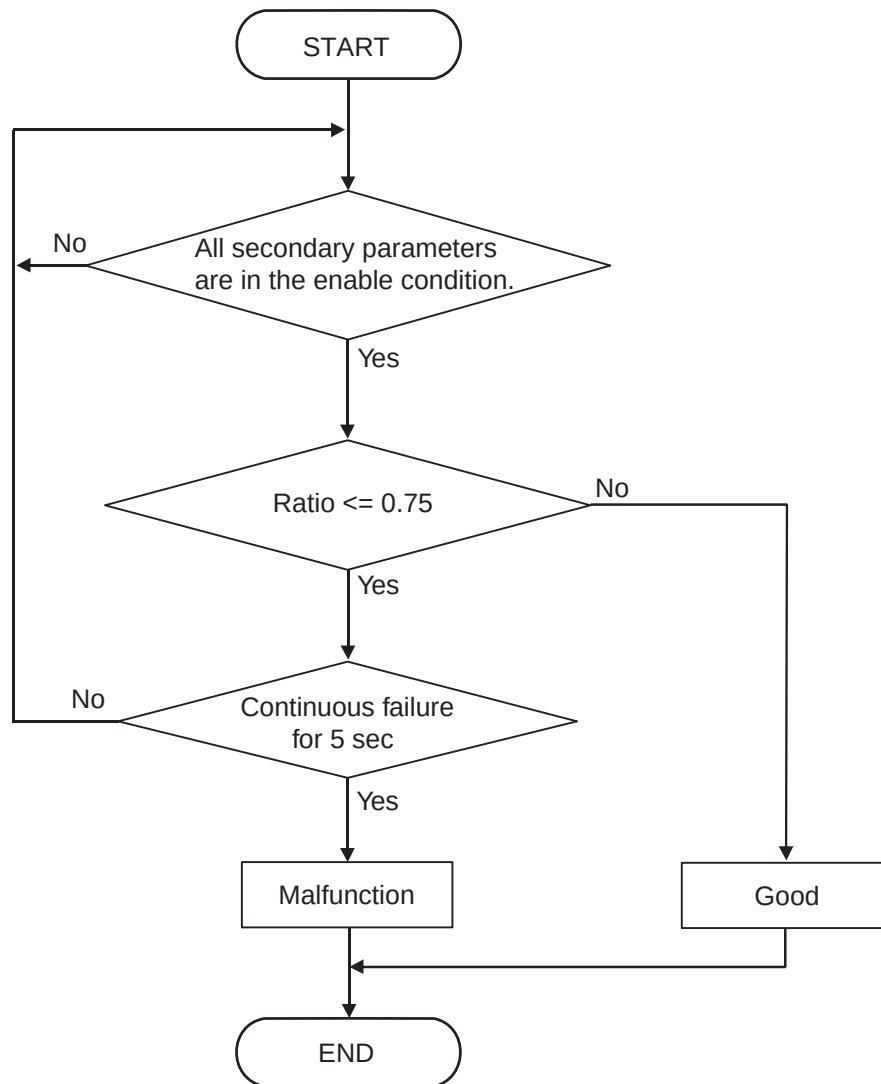
- Secondary pulley speed sensor
- Secondary pressure sensor
- Line pressure solenoid valve

- Primary pressure solenoid valve

LOGIC FLOW CHARTS (Monitor Sequence–Output Functional Low)

ACC07021

LOGIC FLOW CHARTS (Monitor Sequence–Output Functional High)



ACC07020

DTC SET CONDITIONS**Check Conditions**

- Transmission range switch position: D, R or B.
- Engine speed: 450 r/min or more.
- Primary pulley speed: 306 r/min or more.
- Secondary pulley speed: 230 r/min or more.

Judgment Criteria

- When the target pulley ratio (primary pulley speed/secondary pulley speed) is less than 1.2 while the vehicle is being driven, the actual pulley ratio remains from 2.0 to 2.55 for five seconds.

- When the target pulley ratio (primary pulley speed/secondary pulley speed) is more than 1.55 while the vehicle is being driven, the actual pulley ratio remains from 0.75 or less for five seconds.

OBD-II DRIVE CYCLE PATTERN

The vehicle is driven for at least 10 seconds with the accelerator opening angle at 20% or more.

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty primary pressure solenoid valve or valve body assembly)

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Measure the output wave pattern of the primary pressure solenoid valve at TCM connector (PRLS terminal).

- (1) Connect the CVT assembly connector.
- (2) Selector lever position: P range.
- (3) Engine: Idling
- (4) Connect an oscilloscope, and measure the voltage between TCM connector PRLS terminal and body ground.

OK: A wave pattern such as the one shown on [P.23A-116](#) (Check Procedure Using an Oscilloscope) should be output, and the maximum value should be 11 V or more and the minimum value should be 1 V or less. There should be no noise in the output wave pattern.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Refer to diagnostic trouble code No.P0970: Primary Pressure Solenoid Valve (short to ground) [P.23A-64](#), or diagnostic trouble code No.P0971: Primary Pressure Solenoid Valve (open circuit/ short to power supply) [P.23A-66](#).

STEP 3. Symptom recheck after erasing diagnostic trouble code

- (1) Erase the diagnostic trouble code.
- (2) Turn the ignition switch to the LOCK (OFF) position, and then wait for one minute. Then drive the vehicle until the engine has been warmed up.
- (3) Check if the diagnostic trouble code is stored.

Q: Is the diagnostic trouble code stored?

YES : Replace the transaxle assembly.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).

DTC P0841: Abnormality in Secondary Pressure Sensor Function

DIAGNOSTIC FUNCTION

TCM determines that the system is defective by monitoring the secondary pressure sensor.

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty secondary pressure sensor or valve body assembly)

JUDGMENT CRITERIA

- The difference between the actual and target secondary pressures remains more than 0.675 MPa for five seconds while the vehicle is driven at constant speed.

DIAGNOSIS

STEP 1. Hydraulic pressure test

Refer to [P.23A-130](#).

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the failure sections.

STEP 2. Check the following connector

- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the defective connector.

STEP 3. Voltage measurement at TCM connector (LPRS terminal)

- (1) Connect the TCM connector.
- (2) Drive the vehicle until the engine is warmed up.
- (3) Selector lever position: P range.
- (4) Engine: Idling
- (5) Measure the TCM connector side by backprobing.
- (6) Measure the voltage between the TCM connector (LPRS terminal) and TCM connector (SGND terminal).

OK: approx. 0.84 V

Q: Is the check result normal?

YES : Go to Step 4.

NO : Refer to diagnostic trouble code No.P0842: Secondary Pressure Sensor (low voltage) [P.23A-51](#), or diagnostic trouble code No.P0843: Secondary Pressure Sensor (high voltage) [P.23A-53](#).

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?****YES :** Replace the transaxle assembly.**NO :** Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13.](#)).

DTC P0842: Malfunction of the Secondary Pressure Sensor (low voltage)

DIAGNOSTIC FUNCTION

The TCM determines that the system is defective when the secondary pressure sensor output voltage is lower than a predetermined value.

DESCRIPTIONS OF MONITOR METHODS

- The status with the fluid temperature of –20°C (–4°F) or more and with the secondary pressure sensor voltage of 0.09 volt or less continues for 5 seconds.

MONITOR EXECUTION

- Transmission fluid temperature: –20°C (–4°F) or more

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

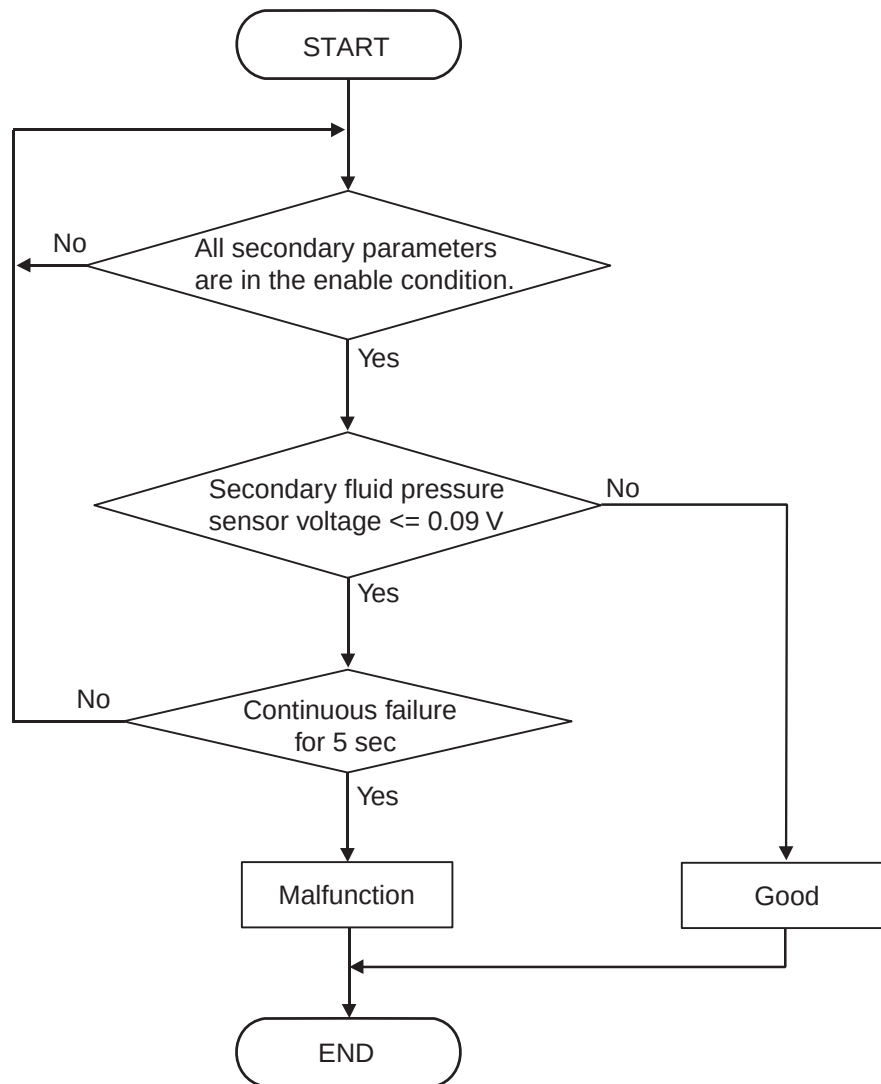
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07011

DTC SET CONDITIONS**Check Conditions**

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.
- Transmission fluid temperature: -20°C (-4°F) or more

Judgment Criteria

- The secondary pressure sensor detects a voltage of 0.09 V or less for five seconds.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 10 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty secondary pressure sensor or valve body assembly)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Check for open circuit or short to ground in SSPW, LPRS line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Voltage measurement at TCM connector (LPRS terminal)

- (1) Connect the CVT assembly connector and TCM connector.
- (2) Drive the vehicle until the engine is warmed up.
- (3) Measure the TCM connector side by backprobing.
- (4) Selector lever position: P range.
- (5) Engine: Idling
- (6) Measure the voltage between the TCM connector (LPRS terminal) and (SGND terminal).

OK: approx. 0.84 V

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).

DTC P0843: Malfunction of the Secondary Pressure Sensor (high voltage)

DIAGNOSTIC FUNCTION

The TCM determines that the system is defective when the secondary pressure sensor output voltage is higher than a predetermined value.

DESCRIPTIONS OF MONITOR METHODS

- The status with the fluid temperature of -20°C (-4°F) or more and with the secondary pressure sensor voltage of 4.70 volts or more continues for 5 seconds.

MONITOR EXECUTION

- Transmission fluid temperature: -20°C (-4°F) or more

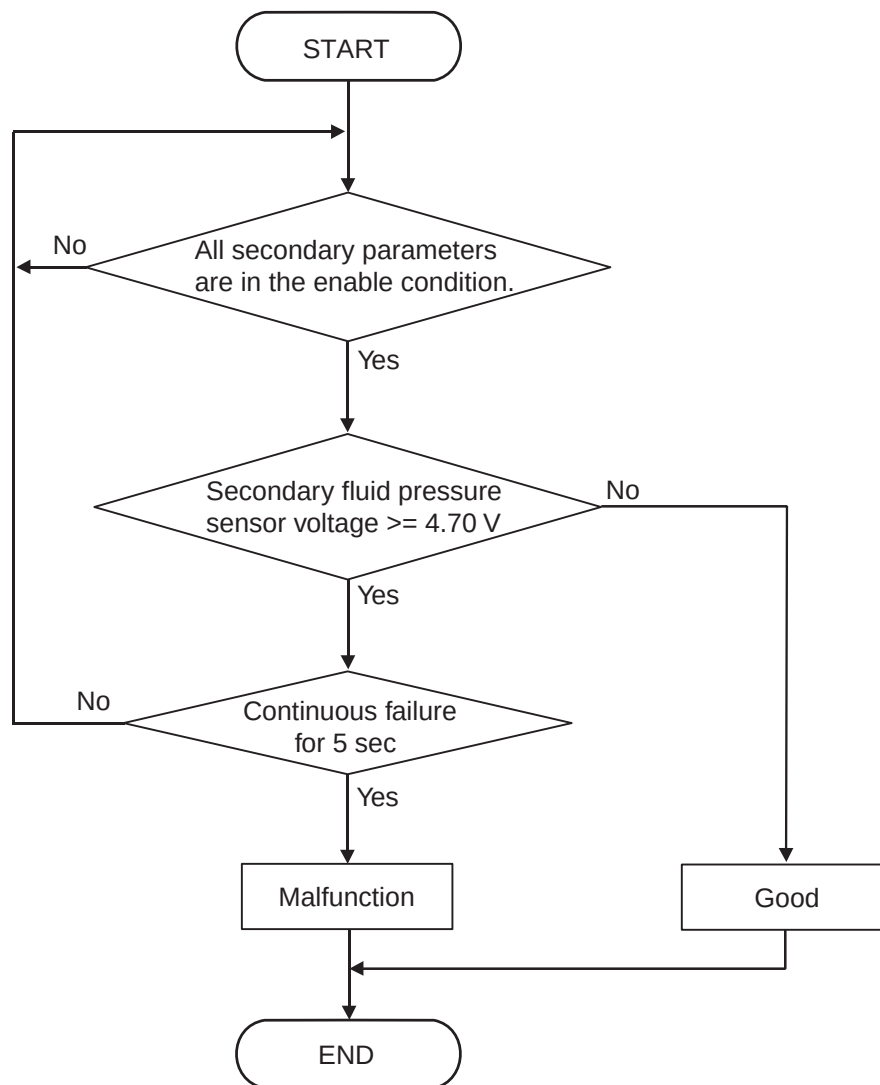
Sensor (The sensor below is determined to be normal)

- Not applicable

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)

ACC07012

DTC SET CONDITIONS**Check Conditions**

- Voltage of battery: 10 volts or more.

- Voltage of battery: 16.5 volts or less.
- Transmission fluid temperature: -20°C (-4°F) or more

Judgment Criteria

- The secondary pressure sensor output voltage is 4.70 volts or more.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 10 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty secondary pressure sensor or valve body assembly)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Check for open circuit in SGND line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Check for short to power supply in LPRS line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 4.

NO : Repair the wiring harness.

STEP 4. Voltage measurement at TCM connector (LPRS terminal)

- (1) Connect the CVT assembly connector and the TCM connector.
- (2) Drive the vehicle until the engine is warmed up.
- (3) Measure the TCM connector side by backprobing.
- (4) Selector lever position: P range.
- (5) Engine: Idling
- (6) Measure the voltage between the TCM connector (LPRS terminal) and (SGND terminal).

OK: approx. 0.84 V

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the transaxle assembly.

STEP 5. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?****YES :** Replace the TCM.**NO :** Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13.](#)).**DTC P0876: Malfunction of high clutch oil pressure switch****DIAGNOSTIC FUNCTION**

The TCM checks whether the high clutch oil pressure switch turns ON and OFF normally depending on the hydraulic pressure applied to the high clutch.

DESCRIPTIONS OF MONITOR METHODS

- The TCM determines that a malfunction exists if the high clutch oil pressure switch does not turn OFF when the command pressure to the high clutch is 0 MPa or less, or does not turn ON when the command pressure is 0.2 MPa or more for a certain period.

MONITOR EXECUTION (STUCK ON)

- The target pressure for the high clutch and reverse brake solenoid valve is 0 MPa or less.
- Target auxiliary gear position: 1st
- Engine speed: 450 r/min or more

MONITOR EXECUTION (STUCK OFF)

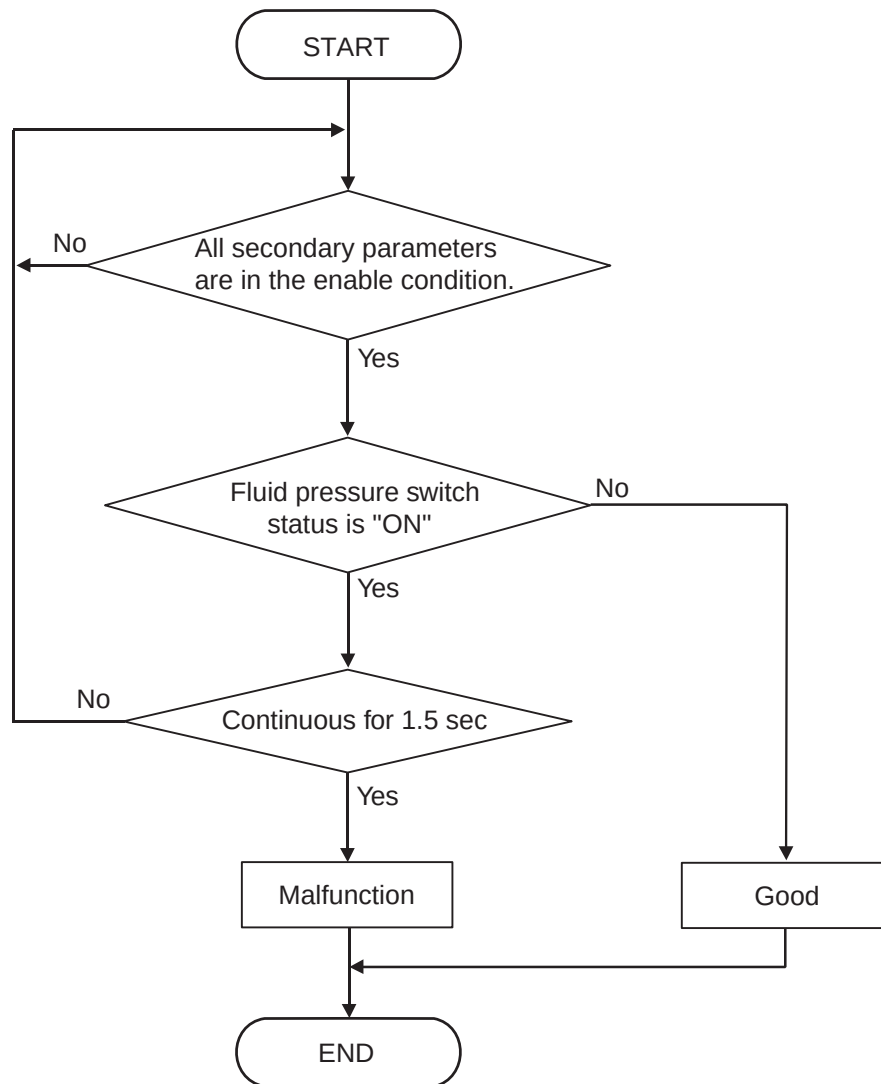
- The target pressure for the high clutch and reverse brake solenoid valve is 0.2 MPa or more.
- Target auxiliary gear position: 2nd
- Transmission range: D or B
- Accelerator pedal opening angle: 7.8% or more
- Engine speed: 450 r/min or more
- Output shaft speed: 300 r/min or more
- Secondary pulley speed: 300 r/min or more

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)****Other Monitor (There is no temporary DTC stored in memory for the item monitored below)**

- P0705: Malfunction of the transmission range switch
- P0711, P0712, P0713: Malfunction of transmission fluid temperature sensor
- P0715: Malfunction of primary pulley speed sensor
- P0720: Malfunction of the output speed sensor
- P0746: Abnormality in hydraulic control system
- P0791: Malfunction of the secondary pulley speed sensor
- P0962, P0963: Malfunction of the line pressure solenoid valve
- P0973, P0974: Malfunction of the low brake solenoid valve
- P0976, P0977: Malfunction of the high clutch and reverse brake solenoid valve
- P2857: 1st gear neutral malfunction
- P2858: 2nd gear neutral malfunction
- P2859: 1st gear ratio malfunction
- P285A: 2nd gear ratio malfunction
- U0001: Malfunction of CAN communication
- U0100: CAN time-out error (engine)

Sensor (The sensor below is determined to be normal)

- Transmission range switch
- Primary pulley speed sensor
- Output speed sensor
- Secondary pulley speed sensor
- Line pressure solenoid valve
- Low brake solenoid valve
- High clutch and reverse brake solenoid valve

LOGIC FLOW CHARTS (Monitor Sequence – Stuck ON)

ACC07013

DTC SET CONDITIONS (Stuck ON)**Check Conditions**

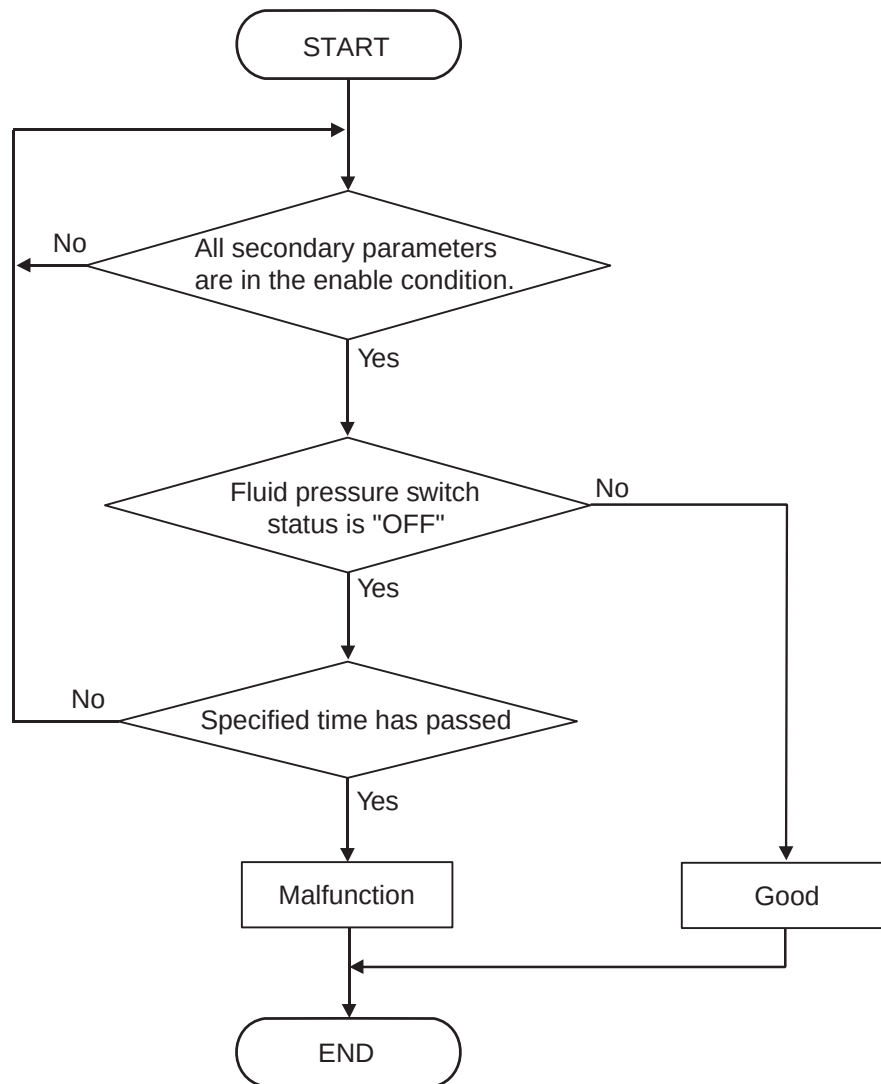
- The target pressure for the high clutch and reverse brake solenoid valve is 0 MPa or less.
- Target auxiliary gear position: 1st

- Engine speed: 450 r/min or more

Judgment Criteria

- The high clutch oil pressure switch is ON for 1.5 seconds.

LOGIC FLOW CHARTS (Monitor Sequence – Stuck OFF)



ACC07014

DTC SET CONDITIONS (Stuck OFF)**Check Conditions**

- The target pressure for the high clutch and reverse brake solenoid valve is 0.2 MPa or more.
- Target auxiliary gear position: 2nd
- Transmission range: D or B
- Accelerator pedal opening angle: 7.8% or more
- Engine speed: 450 r/min or more
- Secondary pulley speed: 300 r/min or more
- Output shaft speed: 300 r/min or more
- Secondary pulley speed: 300 r/min or more

Judgment Criteria

- The high clutch oil pressure switch remains off for a certain period. The period depends on transmission fluid temperature. For example, 2.5 seconds at 40°C (104°F) or more, and 10.2 seconds at –20°C (–4°F) or less.

OBD-II DRIVE CYCLE PATTERN

Wait for at least five seconds after the engine is started. Then accelerate to 70 km/h (43.5 mph) slowly with the accelerator opening angle at 10% or more.

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty high clutch oil pressure switch or valve body assembly)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Check for open circuit or short to ground in ROM3 line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Check for short to other harness in ROM3 line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 4.

NO : Repair the wiring harness.

STEP 4. Scan tool data list

Item 73: Oil pressure switch (Refer to Data List Reference Table [P.23A-109](#).)

Q: Is the check result normal?

YES : Go to Step 5.

NO : Replace the transaxle assembly.

STEP 5. Symptom recheck after erasing diagnostic trouble code**Q: Is the check result normal?**

YES : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).

NO : Replace TCM.

DTC P0962: Malfunction of the Line Pressure Solenoid Valve (short to ground)

DIAGNOSTIC FUNCTION

If a predetermined current does not flow into the line pressure solenoid valve (short to ground), the TCM will determine the system is defective.

DESCRIPTIONS OF MONITOR METHODS

Owing to short to ground, more current than predetermined flows into the line pressure solenoid valve drive circuit.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

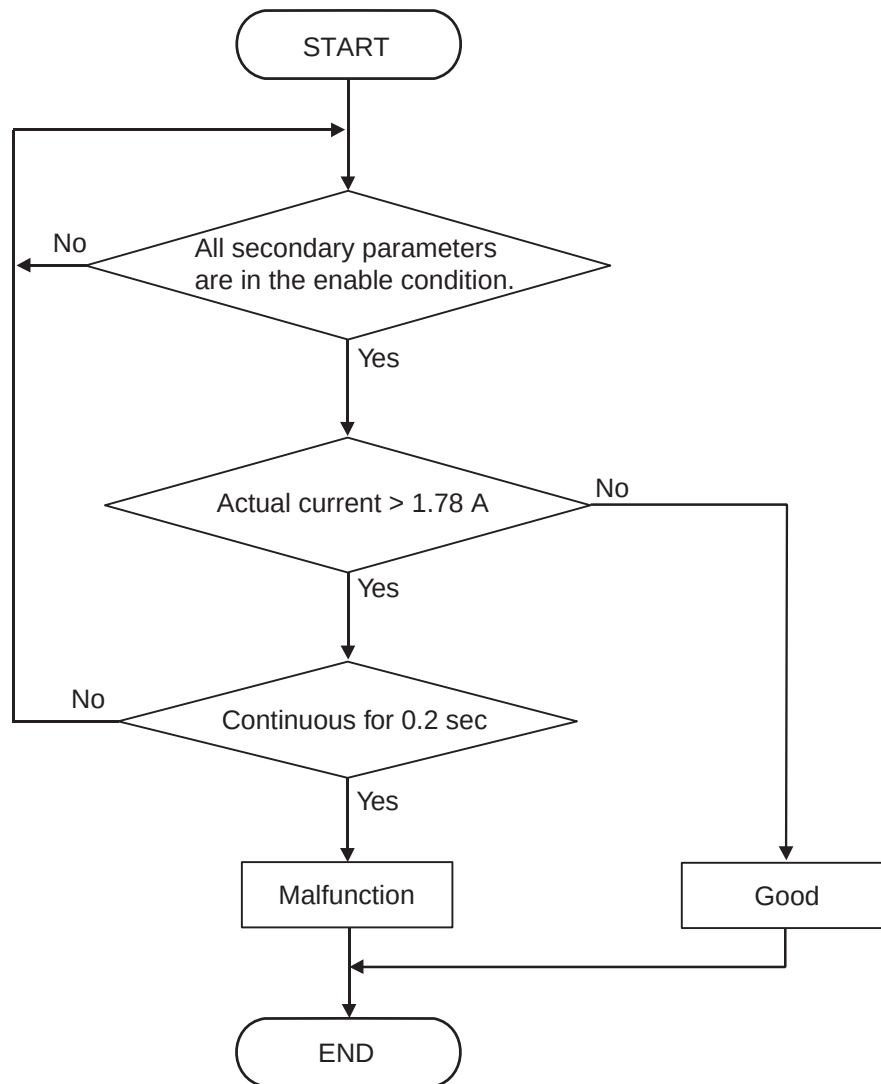
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07015

DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- A current of at least 1.78 A flows into the line pressure solenoid valve drive circuit for 0.2 seconds.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 5 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty line pressure solenoid valve)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for short to ground in PLLS line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Line pressure solenoid valve check

Refer to [P.23A-126](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).

DTC P0963: Malfunction of the Line Pressure Solenoid Valve (open circuit / short to power supply)

DIAGNOSTIC FUNCTION

The TCM monitors the line pressure solenoid valve circuit for open or short to power supply.

DESCRIPTIONS OF MONITOR METHODS

- Owing to open circuit or short to power supply, less current than predetermined flows into the line pressure solenoid valve drive circuit.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

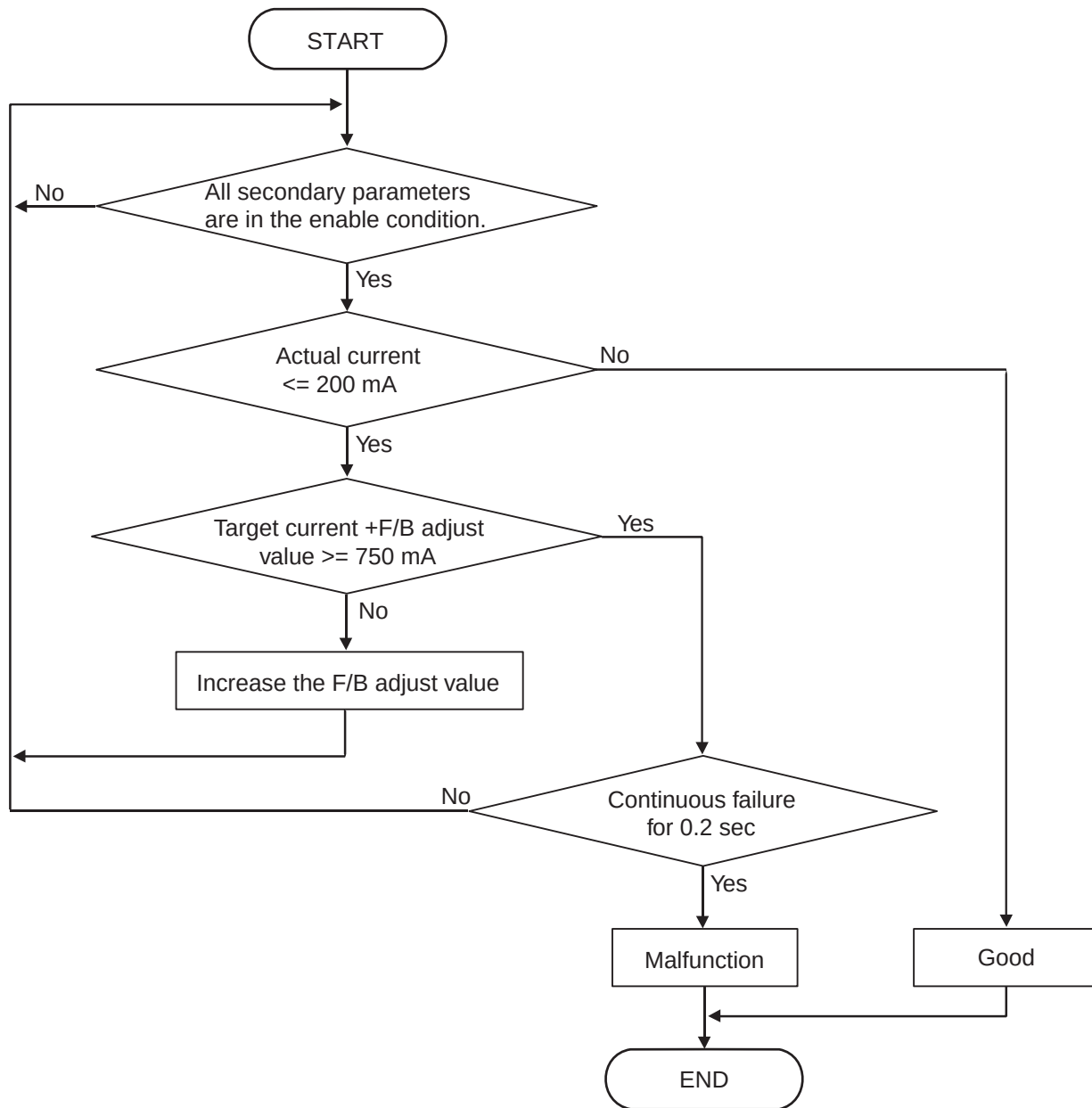
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07016

DTC SET CONDITIONS**Check Conditions**

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- All the conditions listed below remain for 0.2 seconds.

1. The line pressure solenoid valve command current is 750 mA or more.
2. The line pressure solenoid valve current, which the TCM monitors, is 200 mA or less.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 5 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty line pressure solenoid valve)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS**STEP 1. Check the following connector**

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for open circuit or short to power supply in PLLS line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Line pressure solenoid valve check

Refer to [P.23A-126](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).

DTC P0970: Malfunction of the Primary Pressure Solenoid Valve (short to ground)**DIAGNOSTIC FUNCTION**

If a predetermined current does not flow into the primary pressure solenoid valve (short to ground), the TCM will determine the system is defective.

DESCRIPTIONS OF MONITOR METHODS

Owing to short to ground, more current than predetermined flows into the primary pressure solenoid valve drive circuit.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

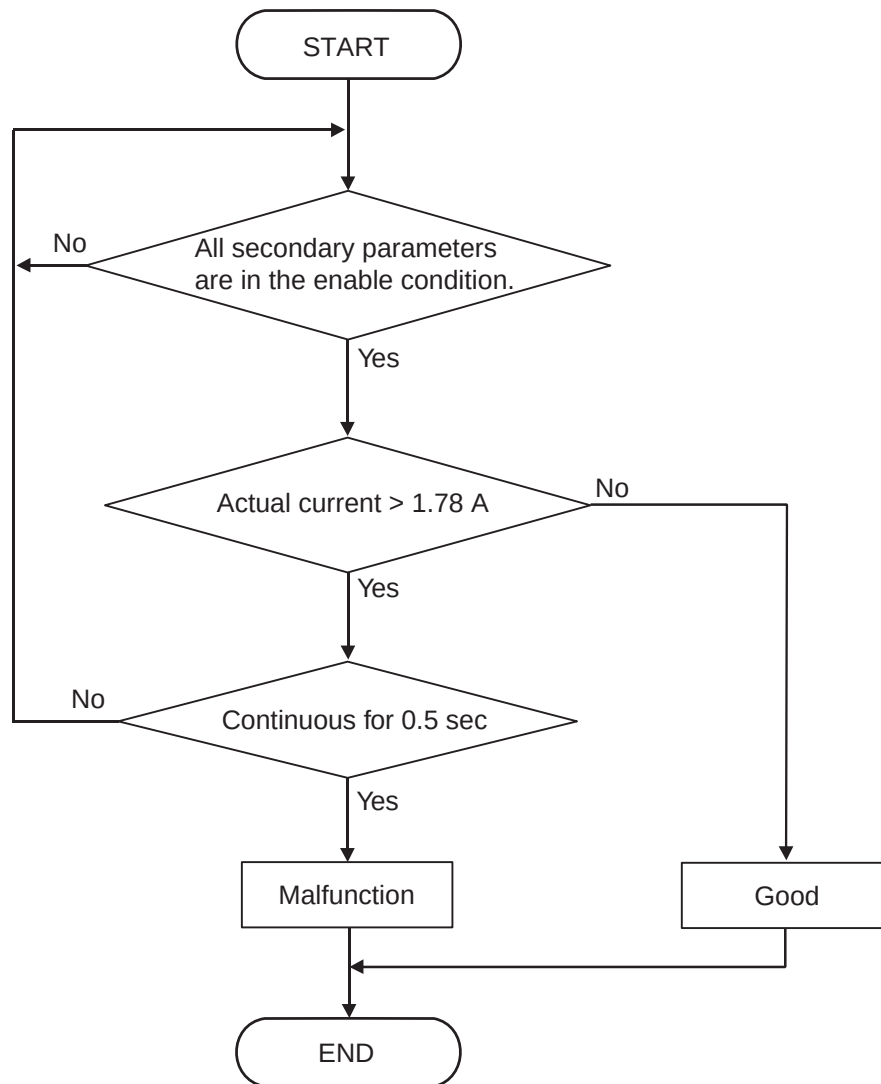
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07018

DTC SET CONDITIONS**Check Conditions**

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- A current of at least 1.78 A flows into the primary pressure solenoid valve drive circuit for 0.5 seconds.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 5 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty primary pressure solenoid valve)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for short to ground in PRLS line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Primary pressure solenoid valve check

Refer to [P.23A-126](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P0971: Malfunction of the Primary Pressure Solenoid Valve (open circuit / short to power supply)

DIAGNOSTIC FUNCTION

The TCM monitors the primary pressure solenoid valve circuit for open or short to power supply.

DESCRIPTIONS OF MONITOR METHODS

- Owing to open circuit or short to power supply, less current than predetermined flows into the primary pressure solenoid valve drive circuit.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

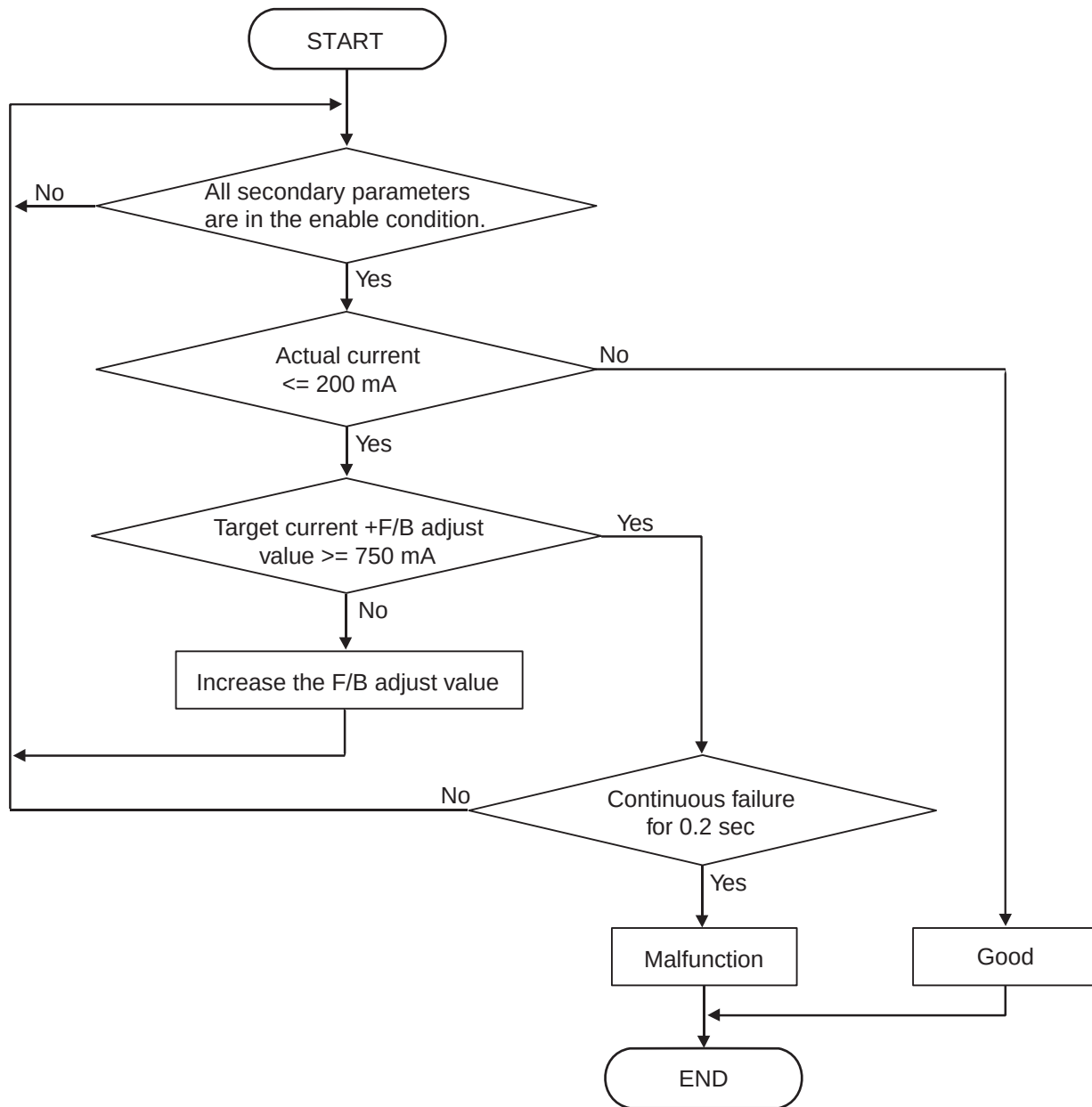
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07019

DTC SET CONDITIONS**Check Conditions**

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- All the conditions listed below remain for 0.2 seconds.

1. The primary pressure solenoid valve command current is 750 mA or more.
2. The primary pressure solenoid valve current, which the TCM monitors, is 200 mA or less.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 5 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty primary pressure solenoid valve)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS**STEP 1. Check the following connector**

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for open circuit or short to power supply in PRLS line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Primary pressure solenoid valve check

Refer to [P.23A-126](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).

DTC P0973: Malfunction of the Low Brake Solenoid Valve (short to ground)**DIAGNOSTIC FUNCTION**

If a predetermined current does not flow into the low brake solenoid valve (short to ground), the TCM will determine the system is defective.

DESCRIPTIONS OF MONITOR METHODS

Owing to short to ground, more current than predetermined flows into the low brake solenoid valve drive circuit.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

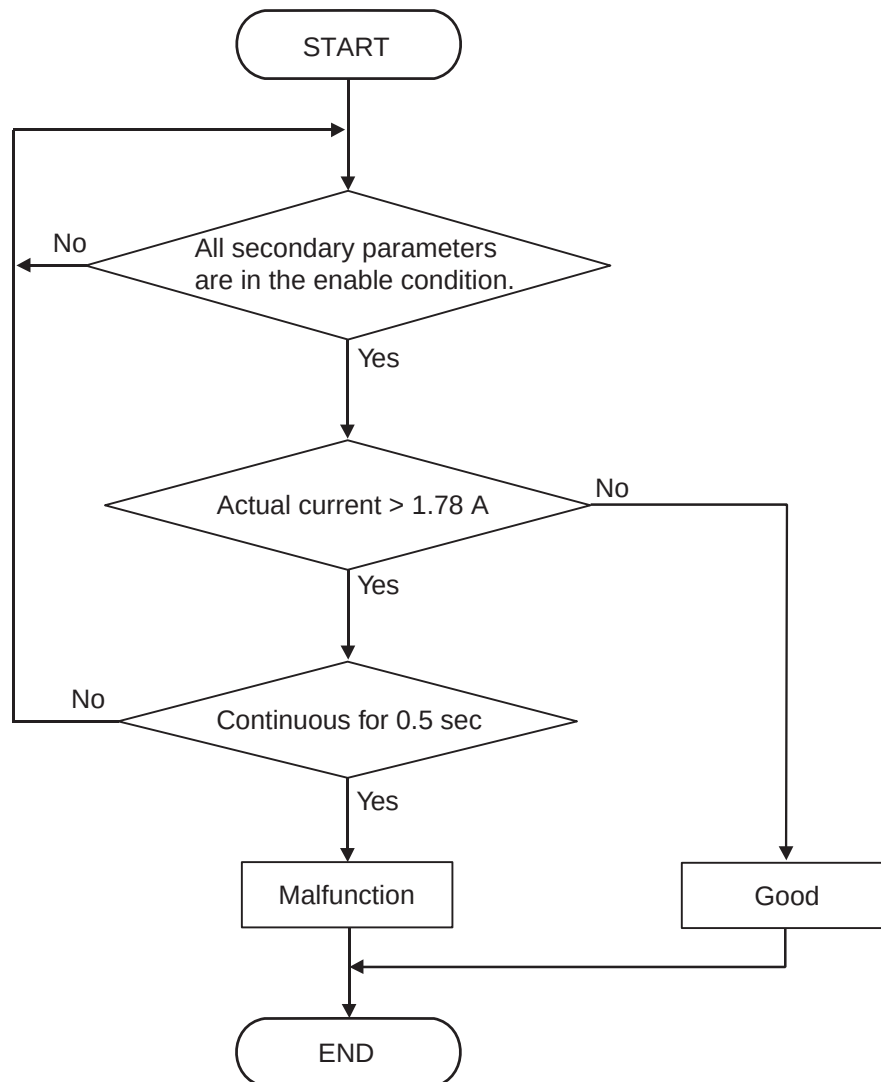
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07022

DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- A current of at least 1.78 A flows into the low brake solenoid valve drive circuit for 0.5 seconds.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 5 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty low brake solenoid valve)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for short to ground in LBLS line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Low brake solenoid valve check

Refer to [P.23A-126](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P0974: Malfunction of the Low Brake Solenoid Valve (open circuit / short to power supply)

DIAGNOSTIC FUNCTION

The TCM monitors the low brake solenoid valve circuit for open or short to power supply.

DESCRIPTIONS OF MONITOR METHODS

- Owing to open circuit or short to power supply, less current than predetermined flows into the low brake solenoid valve drive circuit.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

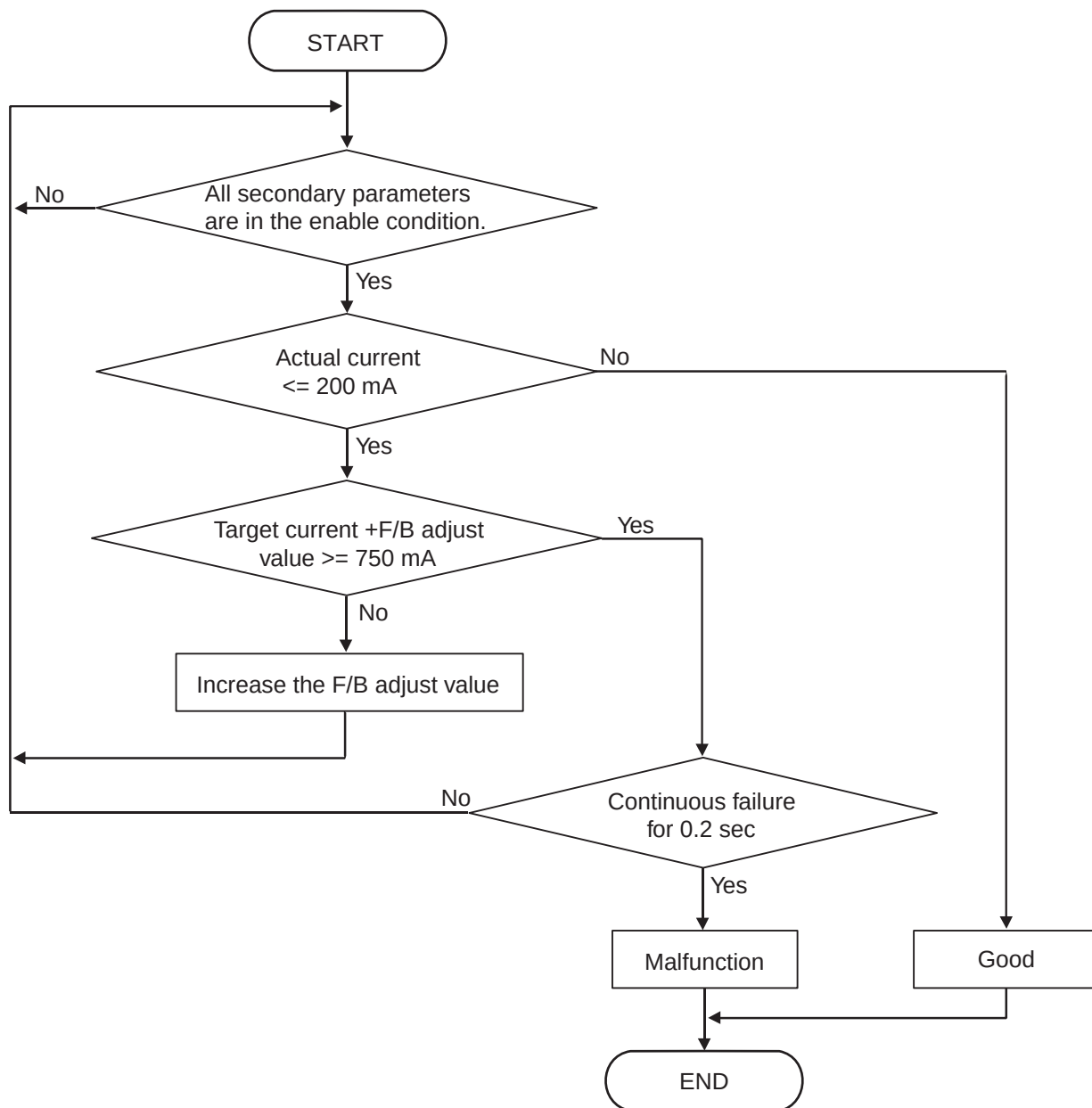
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07023

DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- All the conditions listed below remain for 0.2 seconds.

1. The low brake solenoid valve command current is 750 mA or more.
2. The low brake solenoid valve current, which the TCM monitors, is 200 mA or less.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 5 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty low brake solenoid valve)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS**STEP 1. Check the following connector**

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for open circuit or short to power supply in LBLs line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Low brake solenoid valve check

Refer to [P.23A-126](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P0976: Malfunction of the High Clutch and Reverse Brake Solenoid Valve (short to ground)**DIAGNOSTIC FUNCTION**

If a predetermined current does not flow into the high clutch and reverse brake solenoid valve (short to ground), the TCM will determine the system is defective.

DESCRIPTIONS OF MONITOR METHODS

Owing to short to ground, more current than predetermined flows into the high clutch and reverse brake solenoid valve drive circuit.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

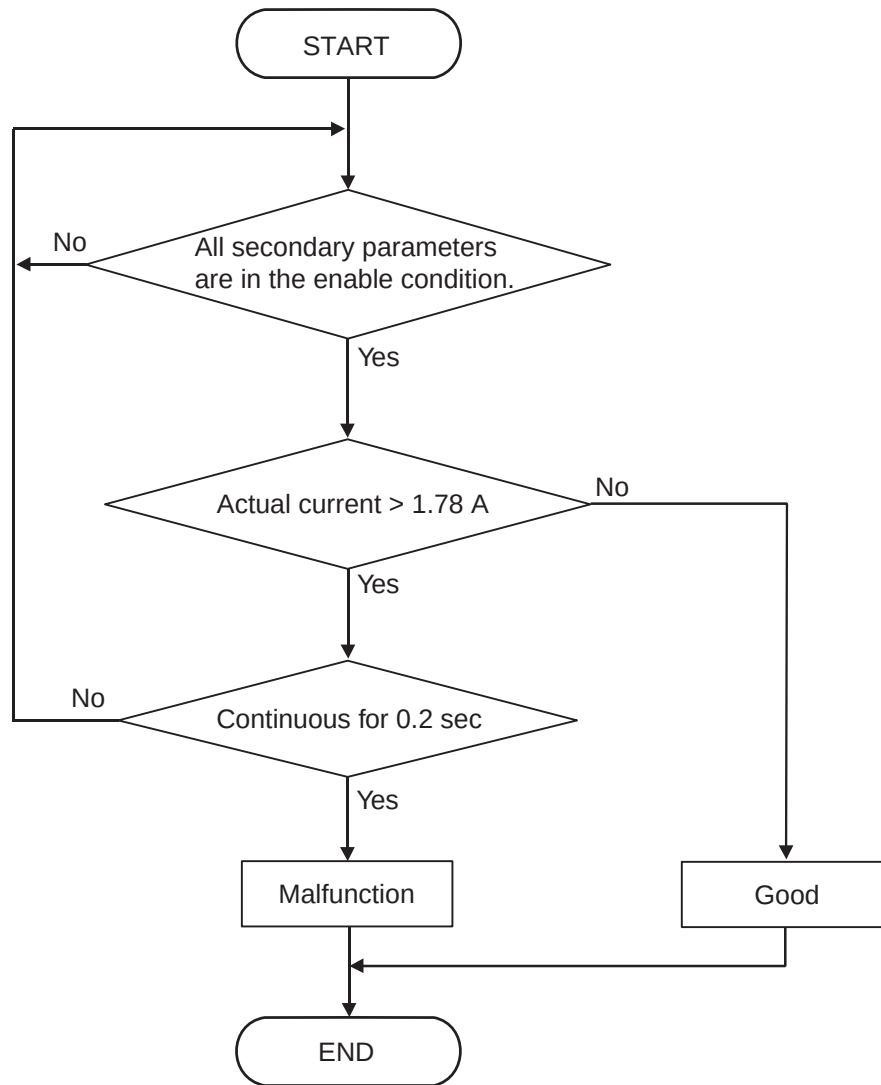
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07024

DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- A current of at least 1.78 A flows into the high clutch and reverse brake solenoid valve drive circuit for 0.2 seconds.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 5 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty high clutch and reverse brake solenoid valve)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for short to ground in HRLS line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. High clutch and reverse brake solenoid valve check

Refer to [P.23A-126](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).

DTC P0977: Malfunction of the High Clutch and Reverse Brake Solenoid Valve (open circuit / short to power supply)

DIAGNOSTIC FUNCTION

The TCM monitors the high clutch and reverse brake solenoid valve circuit for open or short to power supply.

DESCRIPTIONS OF MONITOR METHODS

- Owing to open circuit or short to power supply, less current than predetermined flows into the high clutch and reverse brake solenoid valve drive circuit.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

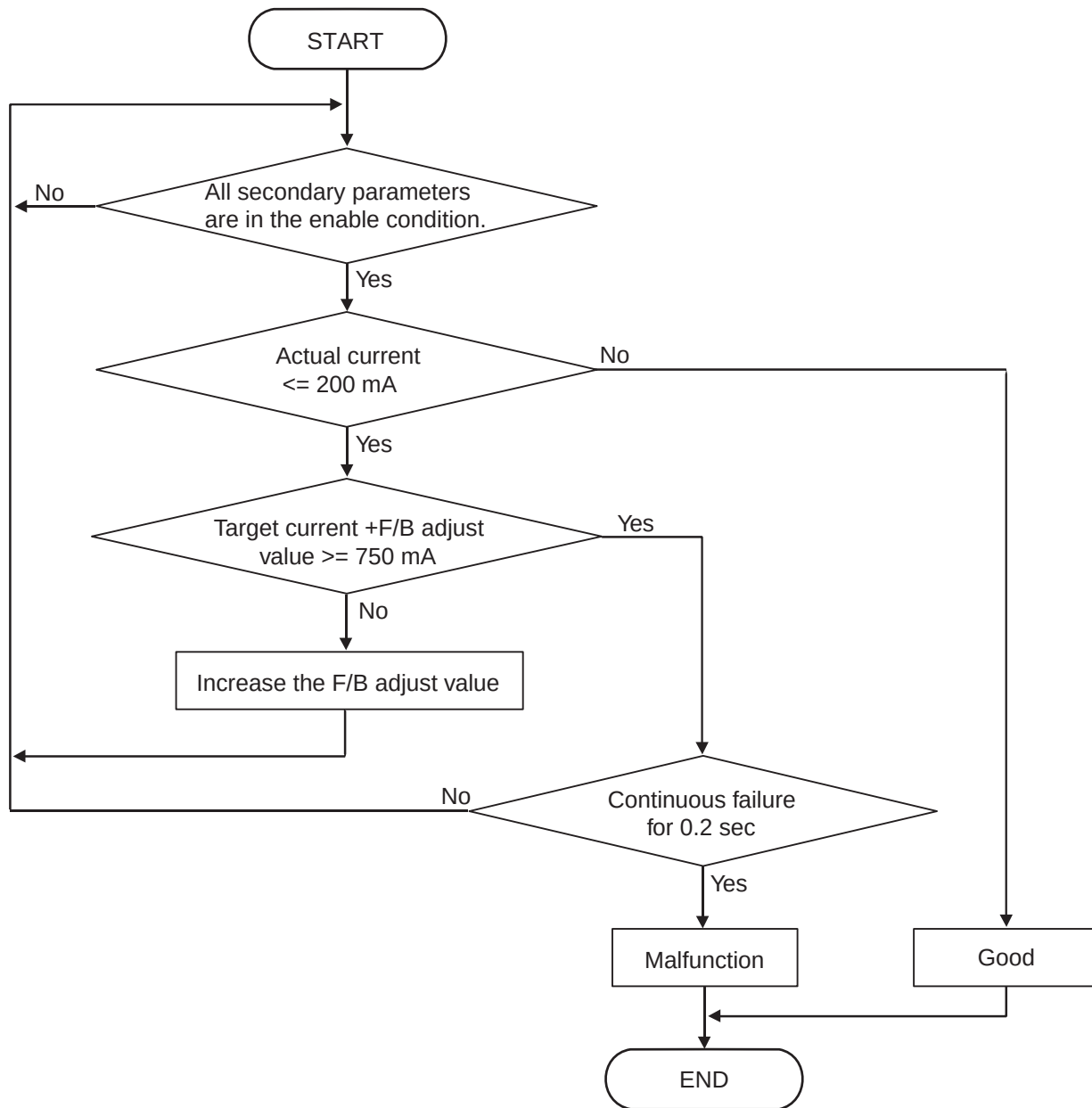
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07025

DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- All the conditions listed below remain for 0.2 seconds.

1. The high clutch and reverse brake solenoid valve command current is 750 mA or more.
2. The high clutch and reverse brake solenoid valve current, which the TCM monitors, is 200 mA or less.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 5 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty high clutch and reverse brake solenoid valve)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS**STEP 1. Check the following connector**

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for open circuit or short to power supply in HRLS line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. High clutch and reverse brake solenoid valve check

Refer to [P.23A-126](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P1607: Malfunction of the System Power Supply (low voltage)**DIAGNOSTIC FUNCTION**

The TCM determines that the system is defective if too low battery voltage is supplied to the TCM (open circuit in the power supply circuit).

DESCRIPTIONS OF MONITOR METHODS

The voltage, which is applied to the solenoid valve, is abnormal.

MONITOR EXECUTION

- Ignition switch (IG1) line voltage: 11 volts or more.

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

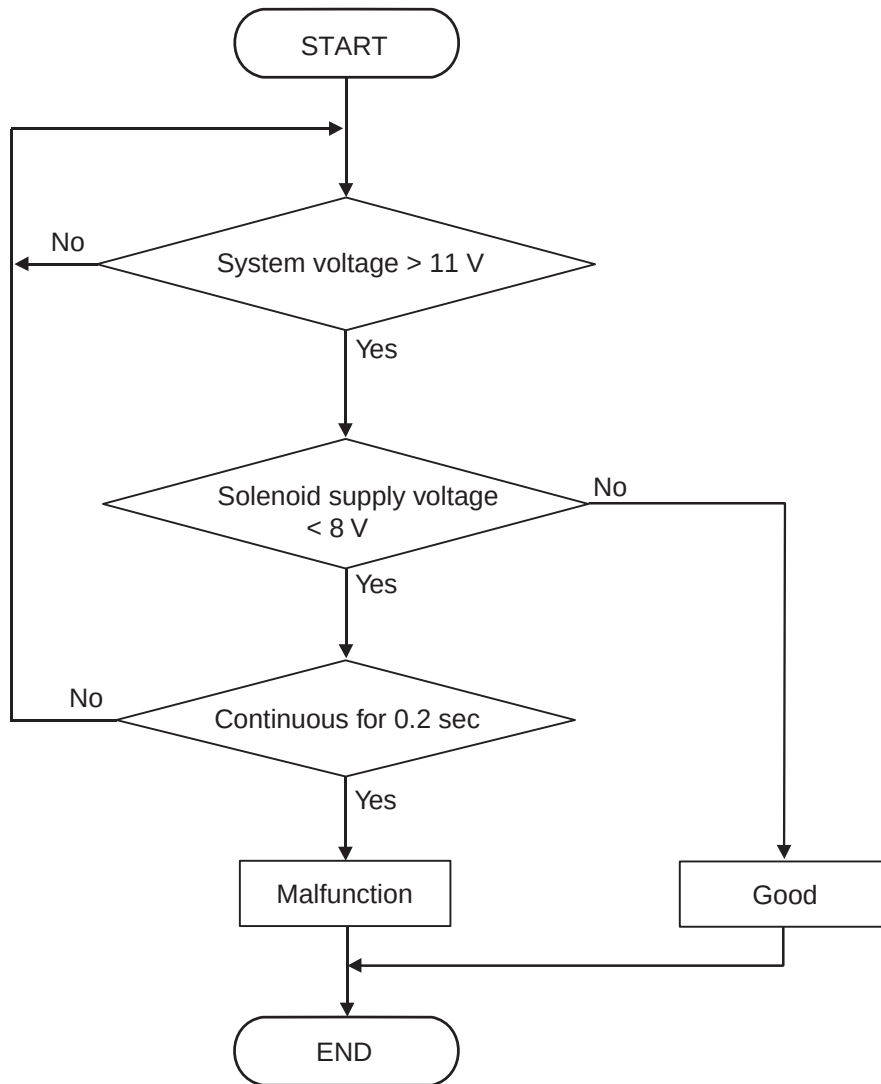
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07026

DTC SET CONDITIONS

Check Conditions

- System voltage (IG1 line voltage): 11 volts or more.

Judgment Criteria

- The solenoid power supply voltage (battery line voltage) remains less than 8.0 V for 0.2 seconds.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 10 seconds or more)

PROBABLE CAUSES

- Damaged wiring harness and connectors

DIAGNOSIS**STEP 1. M.U.T.-III diagnostic trouble code**

Check whether a diagnostic trouble code other than P1607 is stored.

Q: Is diagnostic trouble code stored?

YES : Carry out the appropriate troubleshooting.

NO : Repair the connector(s) or the wiring harness (BATT, BAT2 line between the TCM connector and the battery).

DTC P1637: Malfunction of Memory Backup**DIAGNOSTIC FUNCTION**

The TCM determines that the system is defective if the calculated value does not correspond with the stored value.

DESCRIPTIONS OF MONITOR METHODS

- When the ignition switch is turned to the "ON" position, TCM determines that the writing to the EEPROM area had failed last time the ignition switch was turned to the "LOCK" (OFF) position.

MONITOR EXECUTION

- Continuous

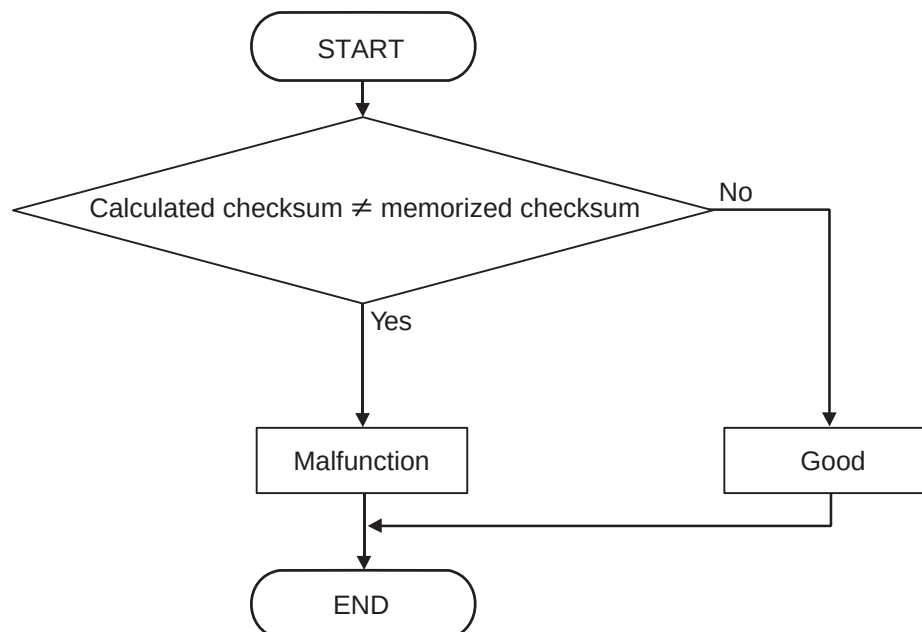
**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)

ACC07027

DTC SET CONDITIONS**Check Condition**

- Ignition switch is "ON" position

Judgment Criteria

- Calculated checksum is not same as memorized checksum.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 10 seconds or more)

PROBABLE CAUSES

- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS**STEP 1. M.U.T.-III diagnostic trouble code**

Check whether a diagnostic trouble code other than P1637 is stored.

Q: Is diagnostic trouble code stored?

YES : Carry out the appropriate troubleshooting.

NO : Go to Step 2.

STEP 2. Check for open circuit or short to ground in BATT, BAT2 line between the TCM connector and the battery**Q: Is the check result normal?**

YES : Replace the TCM.

NO : Repair the connector(s) or wiring harness.

DTC P170E: ASC-ECU Error Information**DIAGNOSTIC FUNCTION**

The TCM determines that a fault has occurred when it receives an error signal from the ASC-ECU.

DTC SET CONDITIONS**Check Condition**

- Ignition switch is "ON" position

- DTC U0121 CAN time-out error (ASC) is not detected.

Judgment Criteria

- This ECU receives an error signal from the ASC-ECU for two seconds.

PROBABLE CAUSES

- Malfunction of ASC system
- Malfunction of TCM

DIAGNOSIS**STEP 1. M.U.T.-III diagnostic trouble code**

Check if ASC-related diagnostic trouble code is stored.

Q: Is the ASC-related diagnostic trouble code stored?

YES : Carry out the appropriate troubleshooting.

NO : Go to Step 2.

STEP 2. Diagnostic trouble code recheck**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P1797: G Sensor/Brake Pressure Sensor Malfunction**DIAGNOSTIC FUNCTION**

TCM determines if the CAN signals it receives from the ASC-ECU are normal.

- The brake fluid pressure sensor error signal reception continues for 5 seconds.
- The front/rear G sensor error signal reception continues for 5 seconds.

JUDGMENT CRITERIA

If the following conditions are met after it is detected that the power supply voltage is 9 V or more, the engine speed is 450 r/min or more, and the vehicle speed was 5 km/h or more.

PROBABLE CAUSES

- Malfunction of ASC-ECU
- Malfunction of TCM

DIAGNOSIS**STEP 1. M.U.T.-III diagnostic trouble code**

Check if ASC-related diagnostic trouble code is stored.

Q: Is the ASC-related diagnostic trouble code stored?

YES : Carry out the appropriate troubleshooting.

NO : Go to Step 2.

STEP 2. Diagnostic trouble code recheck**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13.](#)).

DTC P2763: Malfunction of the Lockup Solenoid Valve (open circuit / short to power supply)**DIAGNOSTIC FUNCTION**

The TCM monitors the lock-up solenoid valve circuit for open or short to power supply.

DESCRIPTIONS OF MONITOR METHODS

- Owing to open circuit or short to power supply, less current than predetermined flows into the lockup solenoid valve drive circuit.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

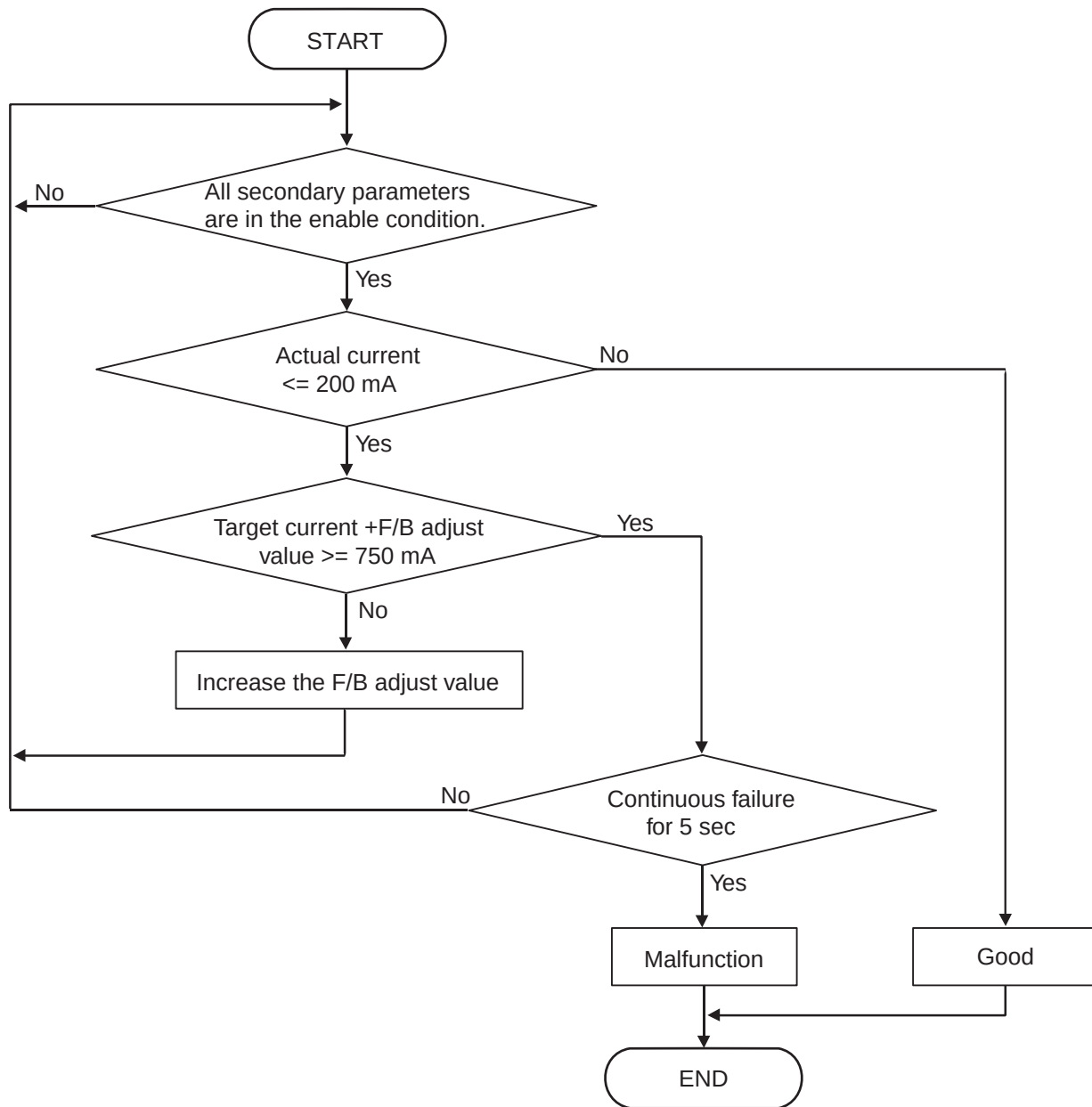
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07028

DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- All the conditions listed below remain for 5 seconds.

1. The lockup solenoid valve command current is 750 mA or more.
 2. The lockup solenoid valve current, which the TCM monitors, is 200 mA or less.
- All the conditions listed below remain for 5 seconds.
 1. The solenoid valve drive circuit is not shorted to ground.

2. The solenoid valve drive circuit system is defective.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 10 seconds or more)

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty lockup solenoid valve)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for open circuit or short to power supply in LULS line between the CVT assembly connector and the TCM connector

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Lockup solenoid valve check

Refer to [P.23A-126](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. Symptom recheck after erasing diagnostic trouble code

Q: Is the diagnostic trouble code stored?

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P2764: Malfunction of the Lockup Solenoid Valve (short to ground)

DIAGNOSTIC FUNCTION

If a predetermined current does not flow into the lock-up solenoid valve (short to ground), the TCM will determine the system is defective.

DESCRIPTIONS OF MONITOR METHODS

Owing to short to ground, more current than predetermined flows into the lockup solenoid valve drive circuit.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

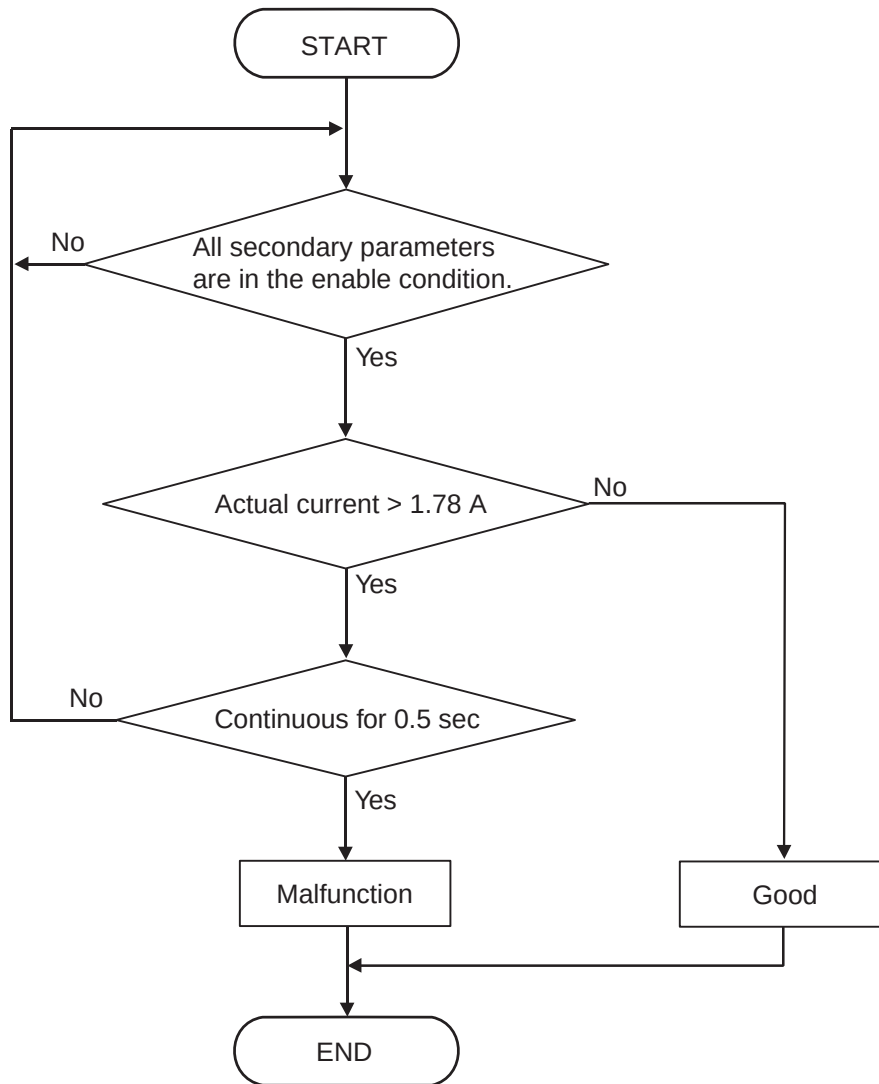
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07029

DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.

Judgment Criteria

- A current of at least 1.78 A flows into the lockup solenoid valve drive circuit for 0.5 seconds.

OBD-II DRIVE CYCLE PATTERN

The vehicle is driven for at least 5 seconds at the speed of 20 km/h (12.4 mph) or more.

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty lockup solenoid valve)
- Damaged wiring harness and connectors
- Malfunction of TCM

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector
- TCM connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector(s).

STEP 2. Check for short to ground in LULS line between the CVT assembly connector and the TCM connector**Q: Is the check result normal?**

YES : Go to Step 3.

NO : Repair the wiring harness.

STEP 3. Lockup solenoid valve check

Refer to [P.23A-126](#).

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the transaxle assembly.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).

DTC P2857: Auxiliary Gearbox Gear 1 Incorrect Ratio Run-up

DIAGNOSTIC FUNCTION

The TCM determines that the system is defective when the auxiliary gearbox remains at incorrect ratio although the TCM commands the 1st gear.

DESCRIPTIONS OF MONITOR METHODS

- The gear ratio is 2.232 or more for two seconds while the TCM is shifting the auxiliary gear to 1st gear.

MONITOR EXECUTION

- Accelerator pedal opening angle: 7.8% or more
- Engine speed: 450 r/min or more
- Output shaft speed: 300 r/min or more
- Secondary pulley speed: 300 r/min or more
- Transmission range: D or B
- Target auxiliary gear position: 1st

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)****Other Monitor (There is no temporary DTC stored in memory for the item monitored below)**

- P0705: Malfunction of the transmission range switch
- P0720: Malfunction of the output speed sensor
- P0791: Malfunction of the secondary pulley speed sensor
- P0973, P0974: Malfunction of the low brake solenoid valve
- P0976, P0977: Malfunction of the high clutch and reverse brake solenoid valve
- P2858: 2nd gear neutral malfunction
- P2859: 1st gear ratio malfunction
- P285A: 2nd gear ratio malfunction
- U0001: Malfunction of CAN communication

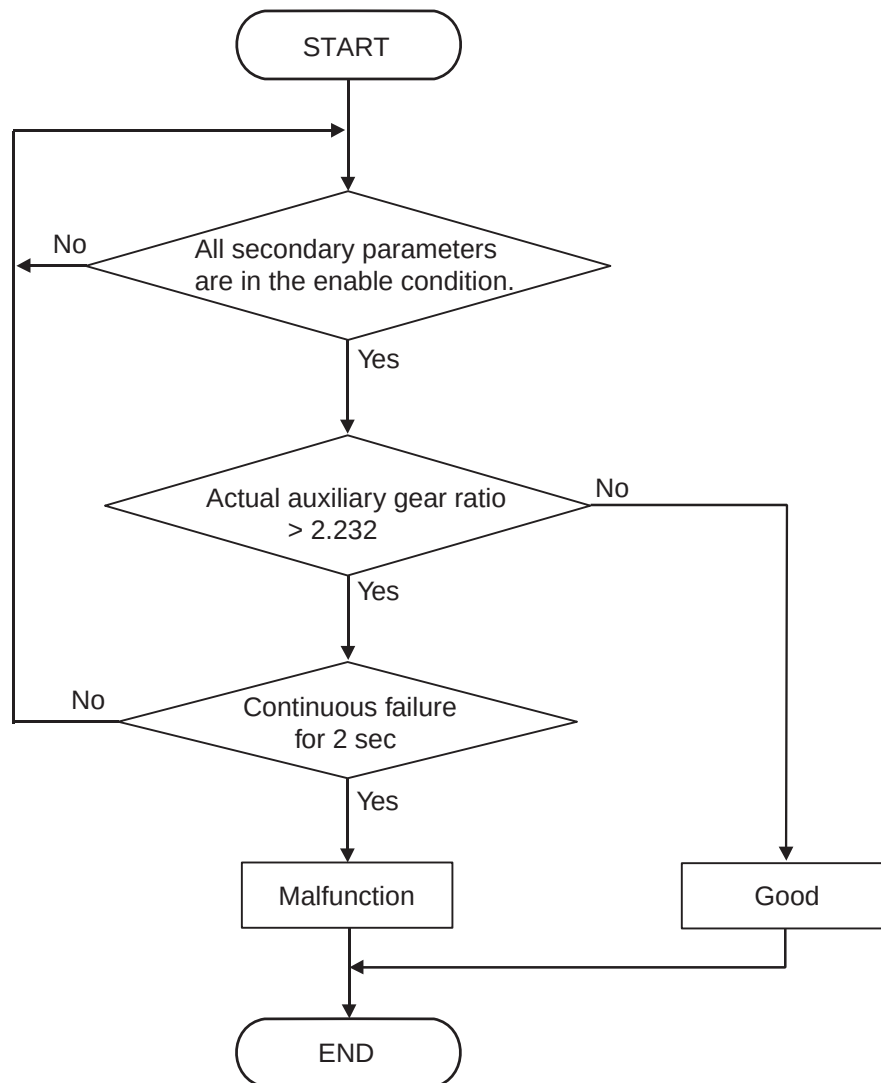
- U0100: CAN time-out error (engine)

Sensor (The sensor below is determined to be normal)

- Transmission range switch

- Secondary pulley speed sensor
- Output speed sensor
- Low brake solenoid valve
- High clutch and reverse brake solenoid valve

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07031

DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.
- Transmission range: D or B
- Accelerator pedal position sensor (main) output voltage: 1.23V or more (Opening angle: 7.8% or more)
- Engine speed: 450 r/min or more

- Output shaft speed: 300 r/min or more
- Secondary pulley speed: 300 r/min or more
- Target auxiliary gear position: 1st

Judgment Criteria

- While the vehicle is being driven, the actual gear ratio of the auxiliary gearbox remains more than 2.232 for two seconds although the TCM commands the 1st gear.

OBD-II DRIVE CYCLE PATTERN

Accelerate to 40 km/h (24.9 mph) slowly with the accelerator opening angle at 10% or more.

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty low brake solenoid valve or valve body assembly)

DIAGNOSIS**STEP 1. Check the following connector**

- CVT assembly connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Measure the output wave pattern of the low brake solenoid valve at TCM connector (LBLS terminal).

- (1) Connect the CVT assembly connector.
- (2) Selector lever position: D range.
- (3) Drive at a constant speed of approx. 20 km/h (auxiliary gearbox: at 1st gear)
- (4) Connect an oscilloscope, and measure the voltage between TCM connector LBLS terminal and body ground.

OK: A wave pattern such as the one shown on [P.23A-116](#) (Check Procedure Using an Oscilloscope) should be output, and the maximum value should be 11 V or more and the minimum value should be 1 V or less. There should be no noise in the output wave pattern.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Refer to diagnostic trouble code No.P0973: Low Brake Solenoid Valve (short to ground) [P.23A-68](#), or diagnostic trouble code No.P0974: Low Brake Solenoid Valve (open circuit/ short to power supply) [P.23A-70](#).

STEP 3. Symptom recheck after erasing diagnostic trouble code

- (1) Erase the diagnostic trouble code.
- (2) Turn the ignition switch to the LOCK (OFF) position, and then wait for one minute. Then drive the vehicle until the engine has been warmed up.
- (3) Check if the diagnostic trouble code is stored.

Q: Is the diagnostic trouble code stored?

YES : Replace the transaxle assembly.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC P2858: Auxiliary Gearbox Gear 2 Incorrect Ratio Run-up

DIAGNOSTIC FUNCTION

The TCM determines that the system is defective when the auxiliary gearbox remains at incorrect ratio although the TCM commands the 2nd gear.

DESCRIPTIONS OF MONITOR METHODS

- The gear ratio is 2.232 or more for at least two seconds while the TCM is shifting the auxiliary gear to 2nd gear.

MONITOR EXECUTION

- Accelerator pedal opening angle: 7.8% or more
- Engine speed: 450 r/min or more
- Output shaft speed: 300 r/min or more
- Secondary pulley speed: 300 r/min or more
- Transmission range: D or B
- Target auxiliary gear position: 2nd

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

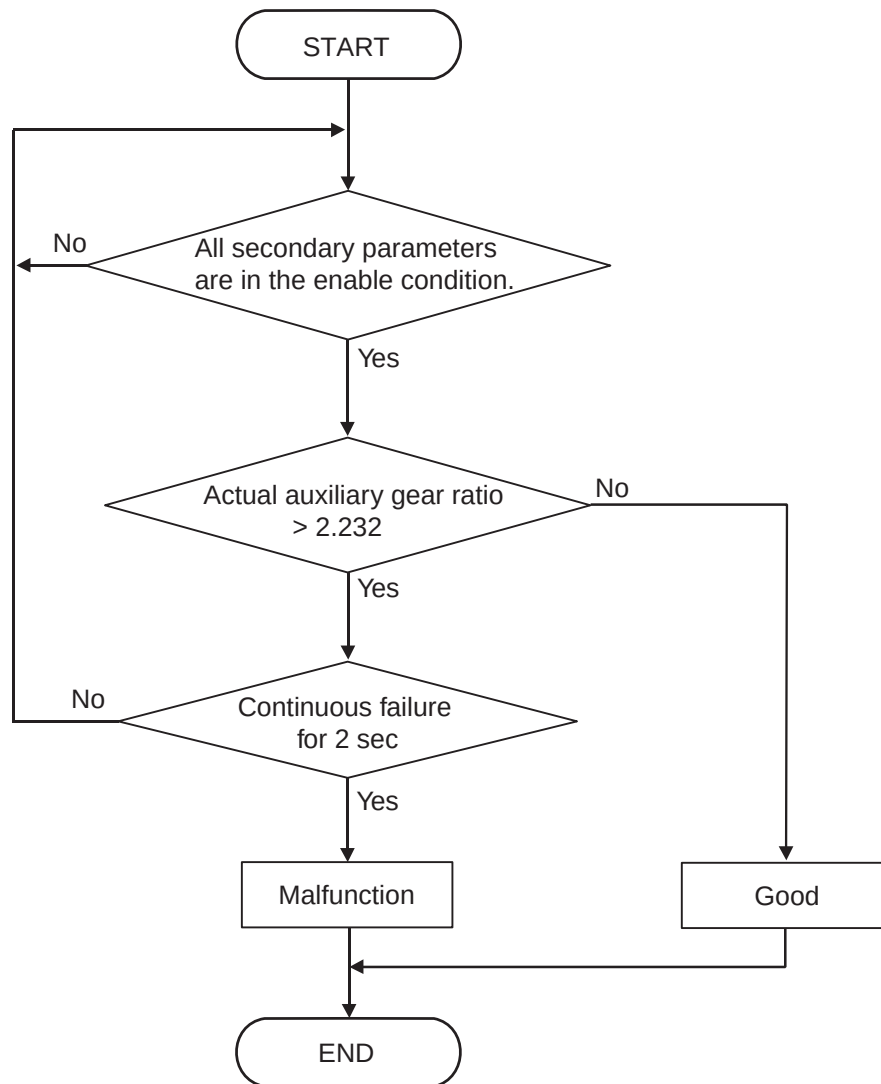
- P0705: Malfunction of the transmission range switch

- P0720: Malfunction of the output speed sensor
- P0791: Malfunction of the secondary pulley speed sensor
- P0973, P0974: Malfunction of the low brake solenoid valve
- P0976, P0977: Malfunction of the high clutch and reverse brake solenoid valve
- P2857: 1st gear neutral malfunction
- P2859: 1st gear ratio malfunction
- P285A: 2nd gear ratio malfunction
- U0001: Malfunction of CAN communication
- U0100: CAN time-out error (engine)

Sensor (The sensor below is determined to be normal)

- Transmission range switch
- Secondary pulley speed sensor
- Output speed sensor
- Low brake solenoid valve
- High clutch and reverse brake solenoid valve

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07035

DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.
- Transmission range: D or B
- Accelerator pedal position sensor (main) output voltage: 1.23V or more (Opening angle: 7.8% or more)
- Engine speed: 450 r/min or more
- Output shaft speed: 300 r/min or more
- Secondary pulley speed: 300 r/min or more
- Target auxiliary gear position: 2nd

Judgment Criteria

- While the vehicle is being driven, the actual gear ratio of the auxiliary gearbox remains more than 2.232 for two seconds although the TCM commands the 2nd gear.

OBD-II DRIVE CYCLE PATTERN

Drive at 40 km/h (24.9 mph) for at least five seconds with the accelerator opening angle at 10% or more.

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty high clutch and reverse brake solenoid valve or valve body assembly)

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Measure the output wave pattern of the high clutch and reverse brake solenoid valve at TCM connector (HRLS terminal).

- (1) Connect the CVT assembly connector.
- (2) Selector lever position: D range.
- (3) Drive at a constant speed of approx. 20 km/h (auxiliary gearbox: at 2nd gear)
- (4) Connect an oscilloscope, and measure the voltage between TCM connector HRLS terminal and body ground.

OK: A wave pattern such as the one shown on [P.23A-116](#) (Check Procedure Using an Oscilloscope) should be output, and the maximum value should be 11 V or more and the minimum value should be 1 V or less. There should be no noise in the output wave pattern.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Refer to diagnostic trouble code No.P0976: High Clutch and Reverse Brake Solenoid Valve (short to ground) [P.23A-72](#), or diagnostic trouble code No.P0977: High Clutch and Reverse Brake Solenoid Valve (open circuit/ short to power supply) [P.23A-74](#).

STEP 3. Symptom recheck after erasing diagnostic trouble code

- (1) Erase the diagnostic trouble code.
- (2) Turn the ignition switch to the LOCK (OFF) position, and then wait for one minute. Then drive the vehicle until the engine has been warmed up.
- (3) Check if the diagnostic trouble code is stored.

Q: Is the diagnostic trouble code stored?

YES : Replace the transaxle assembly.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).

DTC P2859: Auxiliary Gearbox Gear 1 Incorrect Ratio**DIAGNOSTIC FUNCTION**

The TCM determines that the system is defective when the auxiliary gearbox remains the gear ratio is abnormal although the TCM commands the 1st gear.

DESCRIPTIONS OF MONITOR METHODS

- The system determines that a fault has occurred when the gear ratio is within $\pm 10\%$ of the 2nd gear ratio (0.900 – 1.100) for at least 0.5 seconds while the TCM is shifting the auxiliary gear to 1st gear.
- The system determines that a fault has occurred when the gear ratio is 0.911 or less, or 2.732 or more for at least 0.2 seconds while the TCM is shifting the auxiliary gear to 1st gear.
- If the high clutch pressure switch remains on for at least 1.5 seconds while the TCM is shifting the auxiliary gear to 1st gear, the system determines that a fault has occurred.

MONITOR EXECUTION

- Accelerator pedal opening angle: 7.8% or more <Only when determining whether 2nd gear ratio is satisfied>
- Vehicle speed: 10 km/h (6 mph) or more <Only when determining whether 1st gear ratio is not satisfied>
- Vehicle speed: 10 km/h (6 mph) or less <Only when the system monitors the high clutch pressure switch>
- Engine speed: 450 r/min or more
- Output shaft speed: 300 r/min or more <Except when the system monitors the high clutch pressure switch>
- Secondary pulley speed: 300 r/min or more <Except when the system monitors the high clutch pressure switch>
- Transmission range: D or B

- Acceleration: -0.05 G or less <Only when determining whether 1st gear ratio is not satisfied>
- Target auxiliary gear position: 1st
- The target pressure for the high clutch and reverse brake solenoid valve is 0 MPa or less <Only when the system monitors the high clutch pressure switch>.

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

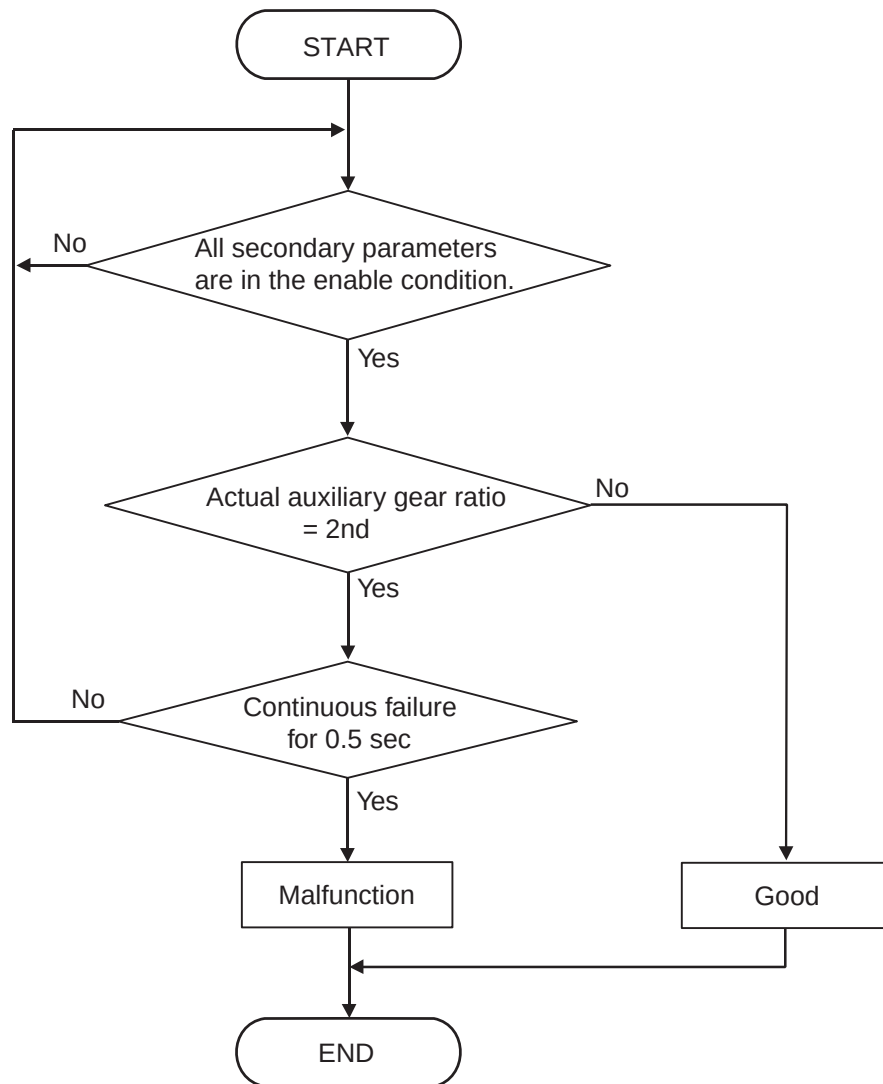
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0705: Malfunction of the transmission range switch
- P0715: Malfunction of primary pulley speed sensor
- P0720: Malfunction of the output speed sensor
- P0791: Malfunction of the secondary pulley speed sensor
- P0876: Malfunction of the high clutch pressure switch
- P0973, P0974: Malfunction of the low brake solenoid valve
- P0976, P0977: Malfunction of the high clutch and reverse brake solenoid valve
- P2857: 1st gear neutral malfunction
- P2858: 2nd gear neutral malfunction
- P285A: 2nd gear ratio malfunction
- U0001: Malfunction of CAN communication
- U0100: CAN time-out error (engine)

Sensor (The sensor below is determined to be normal)

- Transmission range switch
- Primary pulley speed sensor
- Output speed sensor
- Secondary pulley speed sensor
- Low brake solenoid valve
- High clutch and reverse brake solenoid valve

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07032

DTC SET CONDITIONS

Check Conditions

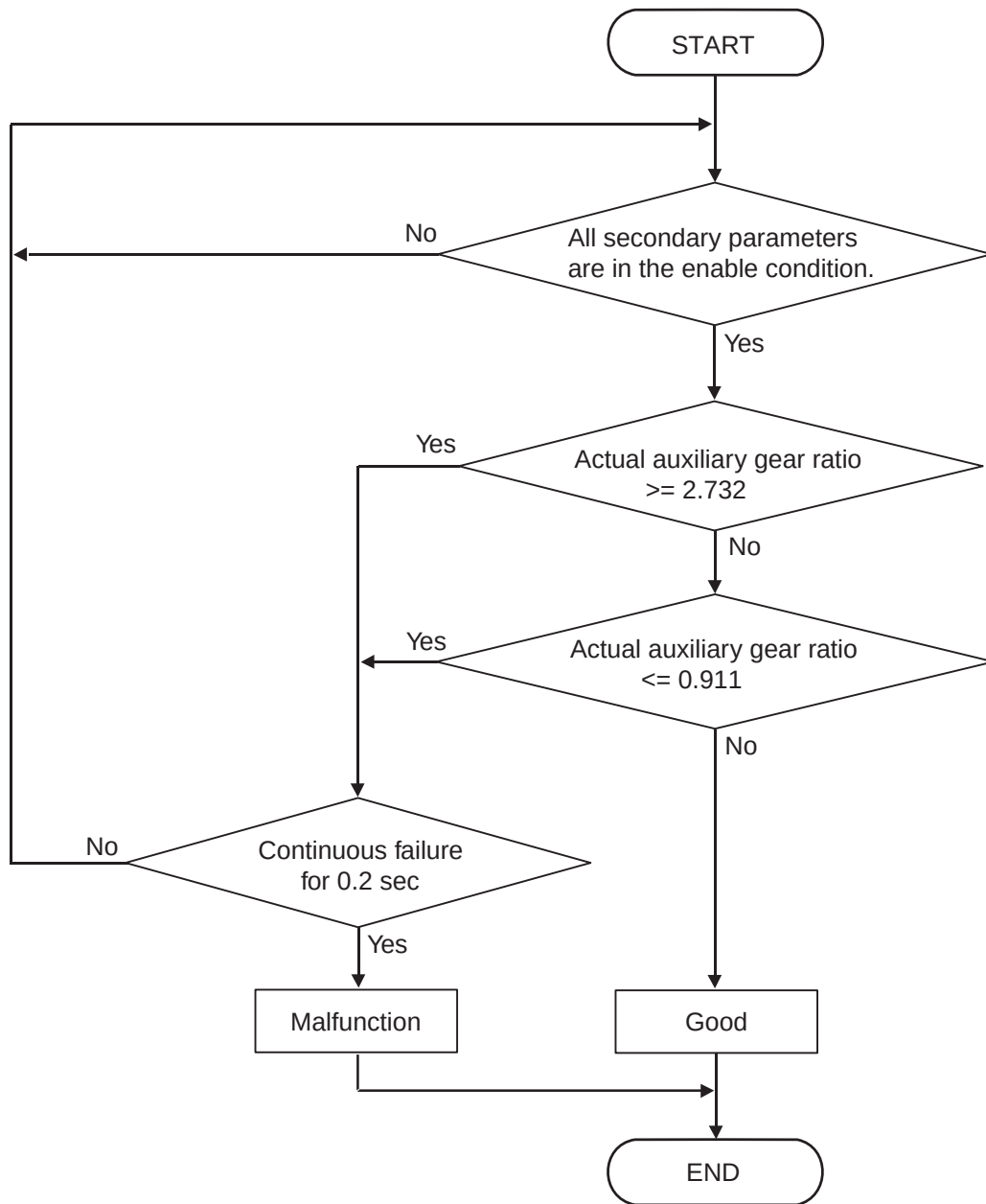
- Target auxiliary gear position: 1st
- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.
- Transmission range: D or B
- Accelerator pedal position sensor (main) output voltage: 1.23 volts or more

- Engine speed: 450 r/min or more
- Output shaft speed: 300 r/min or more
- Secondary pulley speed: 300 r/min or more

Judgment Criteria

- The actual gear ratio of the auxiliary gearbox deviates by $\pm 10\%$ or less from the 2nd gear ratio (0.900 – 1.100) for 0.5 seconds.

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07033

DTC SET CONDITIONS

Check Conditions

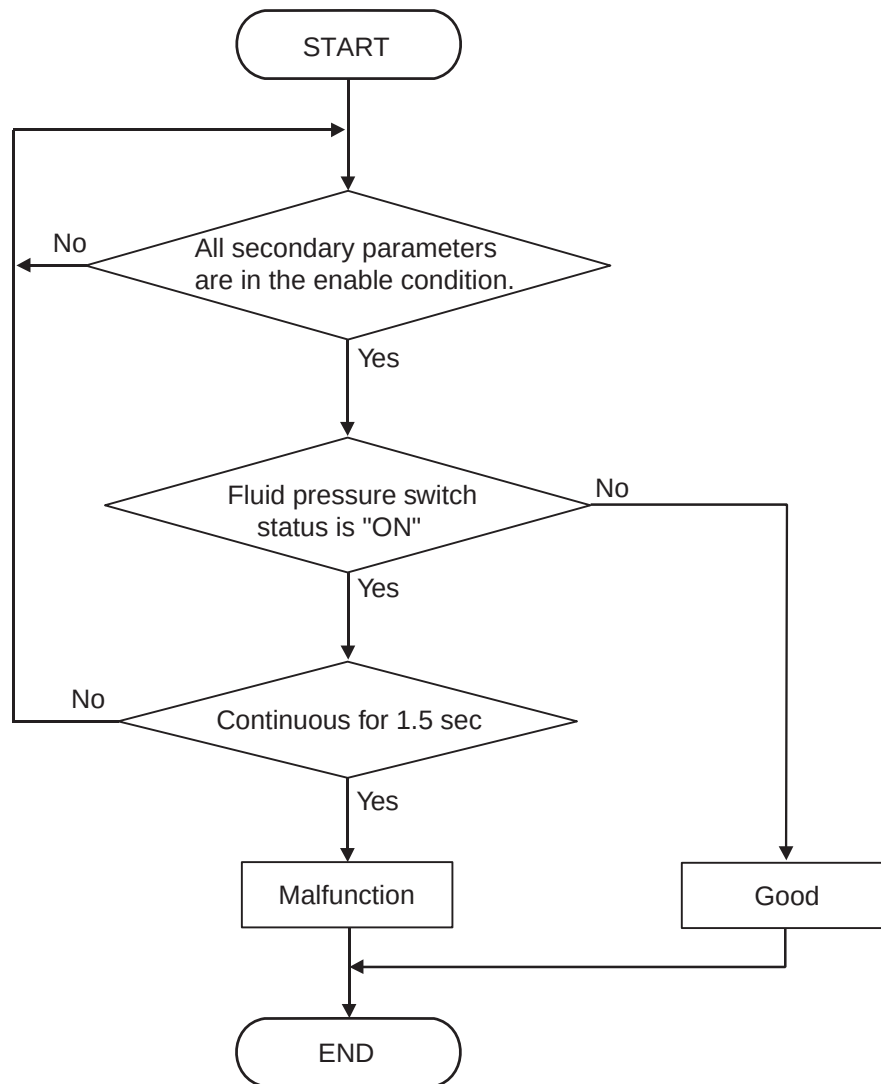
- Target auxiliary gear position: 1st
- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.
- Transmission range: D or B
- Vehicle speed: 10 km/h (6 mph) or more
- Engine speed: 450 r/min or more

- Output shaft speed: 300 r/min or more
- Secondary pulley speed: 300 r/min or more
- Acceleration: -0.05G or less

Judgment Criteria

- The actual gear ratio of the auxiliary gearbox deviates by $\pm 50\%$ or more from the 1st gear ratio (0.911 or less, 2.732 or more) for 0.2 seconds.

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07034

DTC SET CONDITIONS

Check Conditions

- Target auxiliary gear position: 1st
- The target pressure for the high clutch and reverse brake solenoid valve is 0 MPa or less.
- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.
- Transmission range: D or B
- Vehicle speed: 10 km/h (6 mph) or more
- Engine speed: 450 r/min or more

Judgment Criteria

- The high clutch oil pressure switch is ON for 1.5 seconds.

OBD-II DRIVE CYCLE PATTERN

Accelerate to 50 km/h (31.1 mph) slowly and then stop the vehicle for at least five seconds with the accelerator opening angle at 10% or more.

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty high clutch and reverse brake solenoid valve or valve body assembly)

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Measure the output wave pattern of the high clutch and reverse brake solenoid valve at TCM connector (HRLS terminal).

- (1) Connect the CVT assembly connector.
- (2) Selector lever position: D range.
- (3) Drive at a constant speed of approx. 20 km/h (auxiliary gearbox: at 1st gear)
- (4) Connect an oscilloscope, and measure the voltage between TCM connector HRLS terminal and body ground.

OK: A wave pattern such as the one shown on [P.23A-116](#) (Check Procedure Using an Oscilloscope) should be output, and the maximum value should be 11 V or more and the minimum value should be 1 V or less. There should be no noise in the output wave pattern.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Refer to diagnostic trouble code No.P0976: High Clutch and Reverse Brake Solenoid Valve (short to ground) [P.23A-72](#), or diagnostic trouble code No.P0977: High Clutch and Reverse Brake Solenoid Valve (open circuit/ short to power supply) [P.23A-74](#).

STEP 3. Symptom recheck after erasing diagnostic trouble code

- (1) Erase the diagnostic trouble code.
- (2) Turn the ignition switch to the LOCK (OFF) position, and then wait for one minute. Then drive the vehicle until the engine has been warmed up.
- (3) Check if the diagnostic trouble code is stored.

Q: Is the diagnostic trouble code stored?

YES : Replace the transaxle assembly.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).

DTC P285A: Auxiliary Gearbox Gear 2 Incorrect Ratio

DIAGNOSTIC FUNCTION

The TCM determines that the system is defective when the auxiliary gearbox remains the gear ratio is abnormal although the TCM commands the 2nd gear.

DESCRIPTIONS OF MONITOR METHODS

- The system determines that a fault has occurred when the gear ratio is within $\pm 10\%$ of the 1st gear ratio (1.639 – 2.003) for at least 0.5 seconds while the TCM is shifting the auxiliary gear to 2nd gear.
- The system determines that a fault has occurred when the gear ratio is 0.500 or less, or 1.500 or more for at least 0.2 seconds while the TCM is shifting the auxiliary gear to 2nd gear.

MONITOR EXECUTION

- Accelerator pedal opening angle: 7.8% or more <Only when determining whether 1st gear ratio is satisfied>
- Vehicle speed: 10 km/h (6 mph) or more <Only when determining whether 2nd gear ratio is not satisfied>
- Engine speed: 450 r/min or more
- Output shaft speed: 300 r/min or more
- Secondary pulley speed: 300 r/min or more
- Transmission range: D or B
- Acceleration: -0.05G or less <Only when determining whether 2nd gear ratio is not satisfied>

- Target auxiliary gear position: 2nd

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

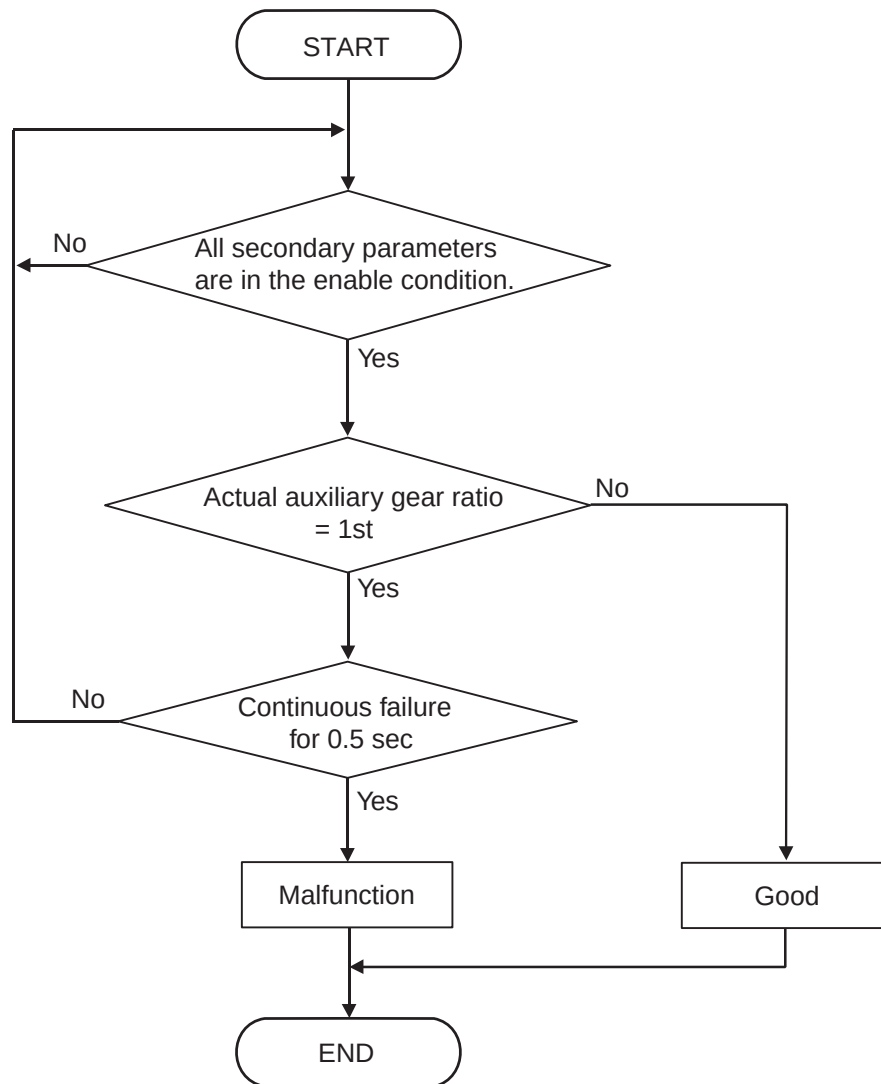
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0705: Malfunction of the transmission range switch
- P0720: Malfunction of the output speed sensor
- P0791: Malfunction of the secondary pulley speed sensor
- P0973, P0974: Malfunction of the low brake solenoid valve
- P0976, P0977: Malfunction of the high clutch and reverse brake solenoid valve
- P2857: 1st gear neutral malfunction
- P2858: 2nd gear neutral malfunction
- P2859: 1st gear ratio malfunction
- U0001: Malfunction of CAN communication
- U0100: CAN time-out error (engine)

Sensor (The sensor below is determined to be normal)

- Transmission range switch
- Output speed sensor
- Secondary pulley speed sensor
- Low brake solenoid valve
- High clutch and reverse brake solenoid valve

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07036

DTC SET CONDITIONS

Check Conditions

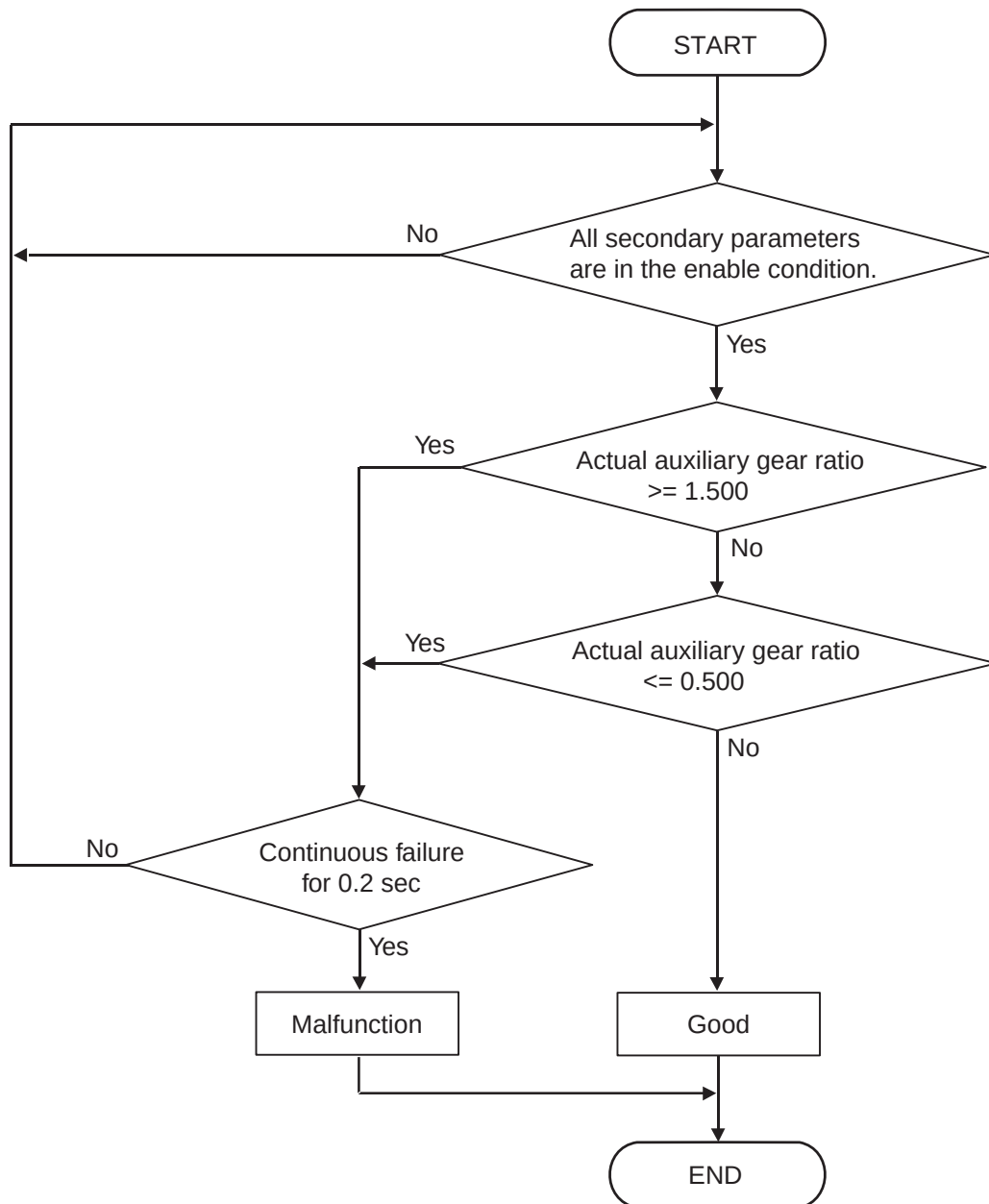
- Target auxiliary gear position: 2nd
- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.
- Transmission range: D or B
- Accelerator pedal position sensor (main) output voltage: 1.23 volts or more

- Engine speed: 450 r/min or more
- Secondary pulley speed: 300 r/min or more
- Output shaft speed: 300 r/min or more

Judgment Criteria

- The actual gear ratio of the auxiliary gearbox deviates by $\pm 10\%$ or less from the 1st gear ratio (1.639 – 2.003) for 0.5 seconds.

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07037

DTC SET CONDITIONS

Check Conditions

- Target auxiliary gear position: 2nd
- Voltage of battery: 10 volts or more.
- Voltage of battery: 16.5 volts or less.
- Transmission range: D or B
- Vehicle speed: 10 km/h (6 mph) or more
- Engine speed: 450 r/min or more
- Secondary pulley speed: 300 r/min or more
- Output shaft speed: 300 r/min or more
- Acceleration: -0.05G or less

Judgment Criteria

- The actual gear ratio of the auxiliary gearbox deviates by $\pm 50\%$ or more from the 2nd gear ratio (0.500 or less, 1.500 or more) for 0.2 seconds.

OBD-II DRIVE CYCLE PATTERN

Drive at 40 km/h (24.9 mph) for at least five seconds with the accelerator opening angle at 10% or more.

PROBABLE CAUSES

- Malfunction of the transaxle assembly (Faulty low brake solenoid valve or valve body assembly)

DIAGNOSIS

STEP 1. Check the following connector

- CVT assembly connector

Check the terminals for a contact status problem and internal short circuit.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the defective connector.

STEP 2. Measure the output wave pattern of the low brake solenoid valve at TCM connector (LBLS terminal).

- (1) Connect the CVT assembly connector.
- (2) Selector lever position: D range.
- (3) Drive at a constant speed of approx. 20 km/h (auxiliary gearbox: at 2nd gear)
- (4) Connect an oscilloscope, and measure the voltage between TCM connector LBLS terminal and body ground.

OK: A wave pattern such as the one shown on [P.23A-116](#) (Check Procedure Using an Oscilloscope) should be output, and the maximum value should be 11 V or more and the minimum value should be 1 V or less. There should be no noise in the output wave pattern.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Refer to diagnostic trouble code No.P0973: Low Brake Solenoid Valve (low input) [P.23A-68](#), or diagnostic trouble code No.P0974: Low Brake Solenoid Valve (high input) [P.23A-70](#).

STEP 3. Symptom recheck after erasing diagnostic trouble code

- (1) Erase the diagnostic trouble code.
- (2) Turn the ignition switch to the LOCK (OFF) position, and then wait for one minute. Then drive the vehicle until the engine has been warmed up.
- (3) Check if the diagnostic trouble code is stored.

Q: Is the diagnostic trouble code stored?

YES : Replace the transaxle assembly.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#).).

DTC U0001: Malfunction of CAN Communication Circuit

DIAGNOSTIC FUNCTION

The TCM determines that the system is defective if CAN communication information cannot be sent or received.

DESCRIPTIONS OF MONITOR METHODS

- TCM cannot receive the periodic communication data.

MONITOR EXECUTION

- Continuous

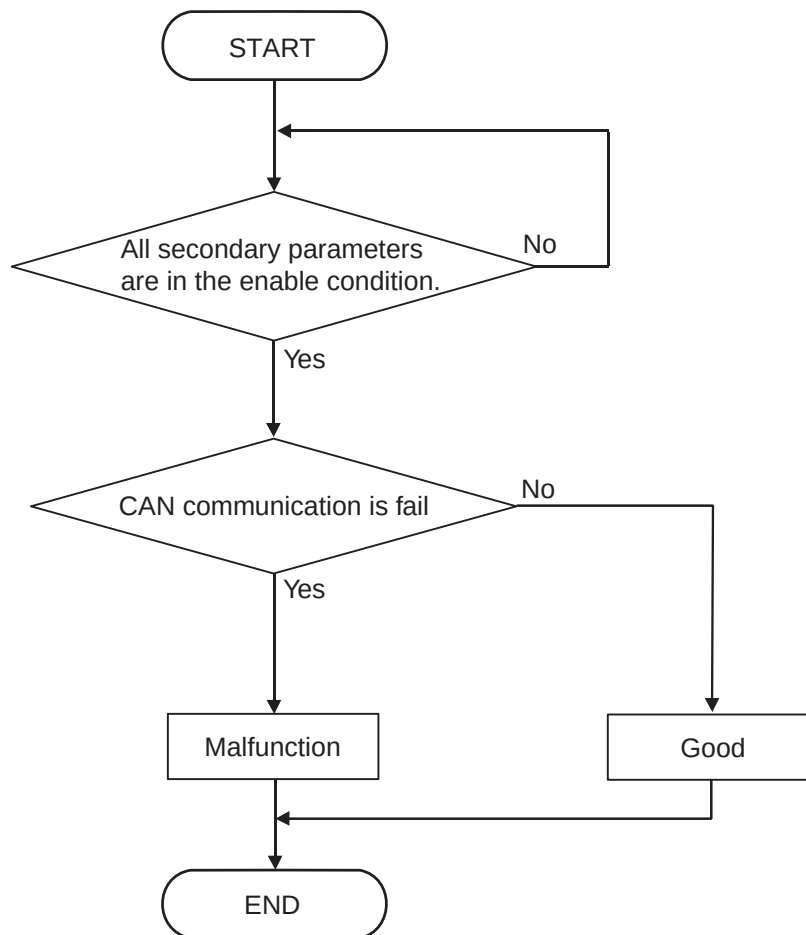
Sensor (The sensor below is determined to be normal)

- Not applicable

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)

ACC07038

DTC SET CONDITIONS**Check Conditions**

- Time after TCM start: more than 0.7 seconds.
- Voltage of battery: 10 volts or more
- Voltage of battery: 16.5 volts or less

Judgment Criteria

- CAN communication: fail (Bus-off error is detected)

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 10 seconds or more)

PROBABLE CAUSES

- Malfunction of the CAN bus line

DIAGNOSIS

STEP 1. M.U.T.-III CAN bus diagnostics

Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – Troubleshooting, Diagnostic Trouble Code Chart [P.54C-12](#)).

STEP 2. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace the TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC U0100: CAN Time-out Error (Engine)

DIAGNOSTIC FUNCTION

The TCM determines that the system is defective if the ECU can receive no CAN communication information from the engine control module.

DESCRIPTIONS OF MONITOR METHODS

- TCM cannot receive the periodic communication data from the ECM.

MONITOR EXECUTION

- Continuous

**MONITOR EXECUTION CONDITIONS
(OTHER MONITOR AND SENSOR)**

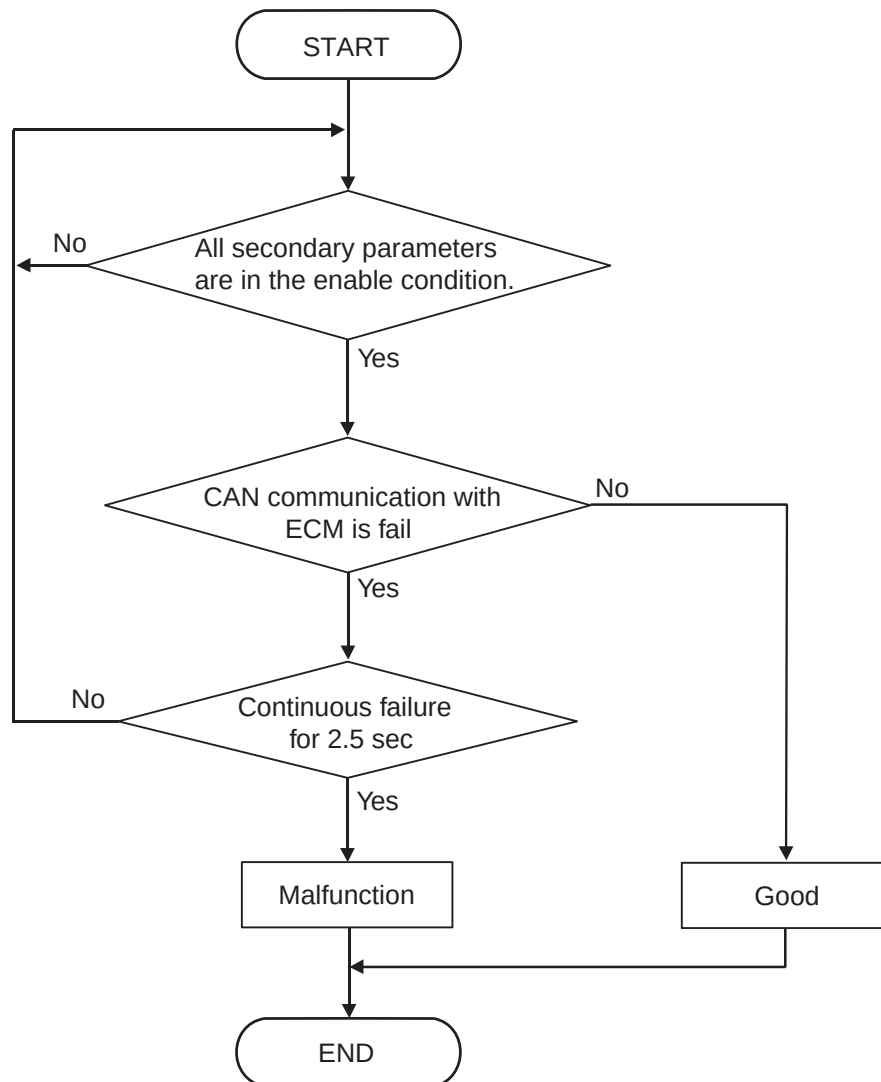
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ACC07039

DTC SET CONDITIONS**Check Conditions**

- Time after TCM start: more than 0.7 seconds.
- Voltage of battery: 10 volts or more
- Voltage of battery: 16.5 volts or less

Judgment Criteria

- No information is received from the engine control module for 2.5 seconds.

OBD-II DRIVE CYCLE PATTERN

Ignition switch: ON (start the engine and keep it for 10 seconds or more)

PROBABLE CAUSES

- Malfunction of the CAN bus line
- Malfunction of Engine control module
- Malfunction of TCM

DIAGNOSIS

STEP 1. M.U.T.-III CAN bus diagnostics

Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – Troubleshooting, Diagnostic Trouble Code Chart [P.54C-12](#)).

STEP 2. M.U.T.-III diagnostic trouble code

Check if the engine-related diagnostic trouble code is stored.

Q: Is the engine-related diagnostic trouble code stored?

YES : Carry out the appropriate troubleshooting.

NO : Go to Step 3.

STEP 3. M.U.T.-III diagnostic trouble code

Is diagnostic trouble code No. U0100 stored in the other ECU, which communicates with the engine control module via CAN?

Q: Is the diagnostic trouble code stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace engine control module.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 5. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC U0121: CAN Time-out Error (ASC)

DIAGNOSTIC FUNCTION

The TCM determines that the system is defective if the ECU can receive no CAN communication information from the ASC-ECU.

JUDGMENT CRITERIA

No information is received from the ASC-ECU for 2.5 seconds.

PROBABLE CAUSES

- Malfunction of the CAN bus line
- Malfunction of ASC-ECU
- Malfunction of TCM

DIAGNOSIS

STEP 1. M.U.T.-III CAN bus diagnostics

Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – Troubleshooting, Diagnostic Trouble Code Chart [P.54C-12](#)).

STEP 2. M.U.T.-III diagnostic trouble code

Check if the ASC-related diagnostic trouble code is stored.

Q: Is the ASC-related diagnostic trouble code stored?

YES : Carry out the appropriate troubleshooting.

NO : Go to Step 3.

STEP 3. M.U.T.-III diagnostic trouble code

Is diagnostic trouble code No. U0121 stored in the other ECU, which communicates with the ASC-ECU via CAN?

Q: Is the diagnostic trouble code stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace ASC-ECU.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 5. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC U0141: CAN Time-out Error (ETACS)

DIAGNOSTIC FUNCTION

The TCM determines that the system is defective if the ECU can receive no CAN communication information from the ETACS-ECU.

JUDGMENT CRITERIA

No information is received from the ETACS-ECU for 2.5 seconds.

PROBABLE CAUSES

- Malfunction of the CAN bus line
- Malfunction of ETACS-ECU
- Malfunction of TCM

DIAGNOSIS

STEP 1. M.U.T.-III CAN bus diagnostics

Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – Troubleshooting, Diagnostic Trouble Code Chart [P.54C-12](#)).

STEP 2. M.U.T.-III diagnostic trouble code

Check if the ETACS-related diagnostic trouble code is stored.

Q: Is the ETACS-related diagnostic trouble code stored?

YES : Carry out the appropriate troubleshooting.

NO : Go to Step 3.

STEP 3. M.U.T.-III diagnostic trouble code

Is diagnostic trouble code No. U0141 stored in the other ECU, which communicates with the ETACS-ECU via CAN?

Q: Is the diagnostic trouble code stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace ETACS-ECU.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 5. Symptom recheck after erasing diagnostic trouble code**Q: Is the diagnostic trouble code stored?**

YES : Replace TCM.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

DTC U0155: CAN Time-out Error (Combination Meter)

DIAGNOSTIC FUNCTION

The CVT-ECU determines that the system is defective if the ECU can receive no CAN communication information from the combination meter.

JUDGMENT CRITERIA

No information is received from the combination meter for 2.5 seconds.

PROBABLE CAUSES

- Malfunction of the CAN bus line
- Malfunction of combination meter
- Malfunction of CVT-ECU

DIAGNOSIS

STEP 1. M.U.T.-III CAN bus diagnostics

Use M.U.T.-III to perform the CAN bus diagnosis.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – Troubleshooting, Diagnostic Trouble Code Chart [P.54C-12](#)).

STEP 2. M.U.T.-III diagnostic trouble code

Check if the combination meter-related diagnostic trouble code is stored.

Q: Is the combination meter-related diagnostic trouble code stored?

YES : Carry out the appropriate troubleshooting.

NO : Go to Step 3.

STEP 3. M.U.T.-III diagnostic trouble code

Is diagnostic trouble code No. U0155 stored in the other ECU, which communicates with the combination meter via CAN?

Q: Is the diagnostic trouble code stored?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Symptom recheck after erasing diagnostic trouble code

Q: Is the diagnostic trouble code stored?

YES : Replace combination meter.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

STEP 5. Symptom recheck after erasing diagnostic trouble code

Q: Is the diagnostic trouble code stored?

YES : Replace CVT-ECU.

NO : Intermittent malfunction (Refer to GROUP 00 – How to Cope with Intermittent Malfunctions [P.00-13](#)).

TROUBLE SYMPTOM DIAGNOSIS CHART

Diagnose the system by referring to the trouble symptom chart and the possible cause chart. Then check, repair or replace if necessary.

TROUBLE SYMPTOM CHART

NOTE: Checks should be carried out in the sequence of (A) and (B) in "possible cause No." column. Check items listed in the (A) column, and then items listed in the (B) column.

Trouble symptom		Possible cause No.	
		(A)	(B)
Poor driveability	Driving off is impossible due to too high engine speed at the R, D or B range.	1, 2, 3, 4, 5, 6, 7, 8, 12, 14, 15, 17, 18, 20, 21 (at D or B range), 23 (at R range), 25, 26, 27, 28	10, 16
	Driving off is impossible as then engine stalls at the R, D or B range.	4, 5, 6, 7, 8, 10, 11, 12, 17, 24, 25, 26, 27, 28, 29	16
	Poor acceleration at the R, D or B range.	1, 5, 7, 8, 9, 11, 12, 14, 15, 16, 17, 19, 21 (at D or B range), 23 (at R range)	3, 6, 10, 13
	The engine speed rises suddenly while the vehicle is being driven at the R, D or B range.	2, 3, 11, 12, 14, 15, 17, 18, 20, 21 (at D or B range), 22 (at D or B range), 23 (at R range)	10
	Engine braking becomes effective suddenly while the vehicle is being driven at the R or D range.	1, 3, 11, 12, 14, 15, 17, 21 (at D or B range), 22 (at D or B range), 23 (at R range)	–
Shifting fault	Auxiliary gearbox slips when the transmission is shifted from 1st to 2nd gear range (engine revving).	3, 12, 14, 17, 18, 21, 22	1
	Engine braking does not become effective at the B range.	3, 4, 5, 6, 7, 8, 12, 13, 15, 17, 19, 21, 22	11, 18, 20
	The engine stalls immediately before the vehicle decelerates and then stops completely at the D or B range.	9, 13, 17, 19	–
	The torque converter is not locked-up due to slips while the vehicle is being driven at the D range.	5, 6, 7, 8, 9, 11, 12, 13, 16, 17, 19	10

Trouble symptom		Possible cause No.	
		(A)	(B)
Shift shock/vibration/abnormal noise	Harsh shock occurs during driving off at R, D or B range.	3, 12, 13, 17, 20, 21 (at D or B range), 23 (at R range)	10, 25, 26, 27, 28
	The shift shock is large when auxiliary gearbox shifting from 1st to 2nd.	3, 14, 15, 17, 21, 22	1, 5
	The torque converter lock-up shock is large while the vehicle is being driven at the D or B range.	5, 13, 17, 19	–
	The select shock is large when the selector lever position is shifted from "N" to "D", and "N" to "R".	1, 3, 6, 7, 8, 12, 13, 14, 15, 16, 17, 21 (at N → D), 23 (at N → R)	5
	Harsh shift shock during shifting from D to B range while the vehicle is being driven.	15, 17, 21, 22	–
	Vibration occurs while the vehicle is being driven at the R, D or B range.	1, 2, 3, 5, 9, 13, 14, 15, 17, 18, 19, 20, 21 (at D or B range), 22 (at D or B range), 23 (at R range), 24, 25, 26, 27, 28	10
	Abnormal noise occurs while the vehicle is being driven.	2, 17, 18, 20, 24, 25, 26, 27, 28	–
	Abnormal noise occurs while the engine is idling.	1, 2, 17, 18, 20, 24, 25, 26	–
Others	The starter can operate at the R, D or B range.	4, 6	–
	The engine stalls while the vehicle is stopped at the R, D or B range.	1, 5, 9, 13, 17, 19	–
	The starter cannot operate at the P or N range.	4, 6	21, 22
	The parking mechanism does not operate at the P range.	4, 6, 29	–
	The parking mechanism cannot be released when shifting from the P range to another range.	4, 6, 29	–
	The engine stalls while the vehicle is stationary at the P or N range.	1, 5, 9, 10, 13	21, 22

Possible cause chart

Possible cause No.	Probable cause	Remedy
1	Malfunction of the engine system	Check the engine system, and repair or replace if necessary.
2	Improper transmission fluid level	Check the transmission fluid, and repair or replace if necessary.
3	Not within the standard value of the line pressure	Check the hydraulic system, and repair or replace if necessary.
4	Malfunction of transaxle control cable	Check the transaxle control cable, and repair or replace if necessary.

Possible cause No.	Probable cause		Remedy
5	Electric system	The TCM is defective.	Check the TCM, and repair or replace if necessary.
6		Malfunction of the transmission range switch	Check the transmission range switch, and repair or replace if necessary.
7		Malfunction of the primary pulley speed sensor	Check the primary pulley speed sensor, and repair or replace if necessary.
8		Malfunction of the secondary pulley speed sensor	Check the secondary pulley speed sensor, and repair or replace if necessary.
9		Malfunction of the output speed sensor	Check the output speed sensor, and repair or replace if necessary.
10		Malfunction of the secondary pressure sensor	Replace the CVT assembly
11		Malfunction of the primary pressure solenoid valve	
12		Malfunction of the line pressure solenoid valve	
13		Malfunction of the lock-up solenoid valve	
14		Malfunction of the high clutch or the reverse brake solenoid valve	
15		Malfunction of the low brake solenoid valve	
16		Malfunction of the transmission fluid temperature sensor	
17	Hydraulic system	Malfunction of the valve body or the control valve	
18		Malfunction of the oil pump	
19	Drivetrain system	Malfunction of torque converter	
20		Malfunction of the pulley and the steel belt	
21		Malfunction of the low brake	
22		Malfunction of the high clutch	
23		Malfunction of the reverse brake	
24		Malfunction of the bearings	
25		Malfunction of the counter gear	
26		Malfunction of the planetary gear	
27		Malfunction of the reduction gear	
28		Malfunction of the final gear or the differential gear	
29		Malfunction of the parking mechanism	

DATA LIST REFERENCE TABLE

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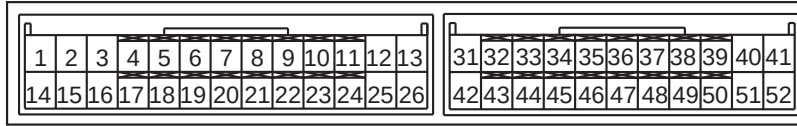
Item No.	Display on scan tool	Check conditions		Normal conditions
1	Primary speed sensor (input)	- Engine: Idling - Selector lever position: N - After warm-up		More than 0 r/min (0 mph)
2	Secondary speed sensor (input)	- Engine: Idling - Selector lever position: N - After warm-up		More than 0 r/min (0 mph)
3	Secondary pressure sensor signal	- Engine: Idling - Selector lever position: N - After warm-up		0.6 – 1.1 V
4	Vehicle speed sensor signal	Driving conditions		Nearly the same as the speedometer display
5	CVT oil temperature sensor signal	Ignition switch: ON	Transmission fluid temperature: Approx. 20°C (68°F)	2.01 – 2.05 V
			Transmission fluid temperature: Approx. 80°C (176°F)	0.90 – 0.94 V
6	Power supply voltage	Ignition switch: ON		System voltage
7	Solenoid drive voltage	Ignition switch: ON		System voltage
8	Output RPM sensor signal	- Vehicle speed: Driving at constant speed of 60 km/h (37.3 mph) - Selector lever position: D - After warm-up		2,000 – 2,500 r/min
11	Engine revolution	Driving conditions		Nearly the same as the tachometer display
12	Slip revolution	- Vehicle speed: Driving at constant speed of 60 km/h (37.3 mph) - Selector lever position: D		–15 to +15 r/min
13	Total change gear ratio	- Vehicle speed: Driving at constant speed of 60 km/h (37.3 mph) - Selector lever position: D		0.6 – 1.0
15	Accelerator position	Accelerator pedal: Fully closed		0%
		Accelerator pedal: Depressed		Opening angle value increases in response to the depression amount of the accelerator pedal.
		Accelerator pedal: Fully opened		100%
19	Torque ratio	- Engine: Idling - Selector lever position: P		Approx. 1.0
		Driving conditions		Value depends on driving condition.

Item No.	Display on scan tool	Check conditions	Normal conditions
20	Secondary pressure	- Engine: Idling - Selector lever position: N - After warm-up	0.45 – 0.55 MPa (66 – 79 psi)
21	CVT oil temperature	Driving after engine has warmed up	Gradually increases
26	Pulley change gear ratio	- Vehicle speed: 0 km/h (0 mph) - Engine: Idling - Selector lever position: N	1.96 – 2.35
32	Gear position (auxiliary gearbox)	- Vehicle speed: 0 km/h (0 mph) - Engine: Idling - Selector lever position: D	1st
		- Vehicle speed: Driving at constant speed of 60 km/h (37.3 mph) - Selector lever position: D	2nd
40	Idle neutral active status	Driving conditions	Inactive
		- After driving the vehicle at 10 km/h (6.2 mph) or more. - After warm-up - Flat road - Engine: Idling - Brake pedal: Depress - Selector lever position: D - The vehicle stationary	Activated
41	Lockup solenoid monitor current	- Vehicle speed: Driving at constant speed of 60 km/h (37.3 mph) - Selector lever position: D	0.4 – 0.6 A
		- Vehicle speed: 0 km/h (0 mph) - Engine: Idling - Selector lever position: N	Approx. 0 A
43	Line pressure solenoid monitor current	- Vehicle speed: 0 km/h (0 mph) - Engine: Idling - Selector lever position: N	0.8 – 1.0 A
45	Primary pressure solenoid monitor current	- Vehicle speed: Driving at constant speed of 20 km/h (12.4 mph) - Selector lever position: B	0.7 – 0.9 A
47	High clutch & reverse brake pressure solenoid monitor current	- Vehicle speed: Driving at constant speed of 60 km/h (37.3 mph) - Selector lever position: D	0.6 – 0.9 A
		- Vehicle speed: 0 km/h (0 mph) - Engine: Idling - Selector lever position: N	Approx. 1.0 A
49	Low brake pressure solenoid monitor current	- Vehicle speed: Driving at constant speed of 20 km/h (12.4 mph) - Selector lever position: B	0.2 – 0.6 A
		- Vehicle speed: Driving at constant speed of 60 km/h (37.3 mph) - Selector lever position: D	Approx. 0 A

Item No.	Display on scan tool	Check conditions		Normal conditions
51	Indicator P output	- Ignition switch: ON - Engine: Stopped	Selector lever position: P	ON
			Selector lever position: Other than the above	OFF
52	Indicator R output	- Ignition switch: ON - Engine: Stopped	Selector lever position: R	ON
			Selector lever position: Other than the above	OFF
53	Indicator N output	- Ignition switch: ON - Engine: Stopped	Selector lever position: N	ON
			Selector lever position: Other than the above	OFF
54	Indicator D output	- Ignition switch: ON - Engine: Stopped	Selector lever position: D	ON
			Selector lever position: Other than the above	OFF
57	Indicator B output	- Ignition switch: ON - Engine: Stopped	Selector lever position: B	ON
			Selector lever position: Other than the above	OFF
60	Idle switch signal	- Ignition switch: ON - Engine: Stopped	Accelerator pedal: Fully closed	ON
			Accelerator pedal: Depressed	OFF
61	Transmission range switch	- Ignition switch: ON - Engine: Stopped	Selector lever position: P	P
			Selector lever position: R	R
			Selector lever position: N	N
			Selector lever position: D	D
			Selector lever position: B	L/B/S
62	Brake switch	- Ignition switch: ON - Engine: Stopped	Brake pedal: Depressed	ON
			Brake pedal: Released	OFF
72	Shift position	- Ignition switch: ON - Engine: Stopped	Selector lever position: P	P, N
			Selector lever position: R	R
			Selector lever position: N	P, N
			Selector lever position: D	D
			Selector lever position: B	B/S
73	Oil pressure switch	- Vehicle speed: Driving at constant speed of 60 km/h (37.3 mph) - Selector lever position: D		ON
		- Vehicle speed: 0 km/h (0 mph) - Engine: Idling - Selector lever position: D		OFF
75	Vehicle longitudinal gradient	- Ignition switch: ON - Engine: Stopped - Flat road		Approx. 0%
84	Idle neutral control	Ignition switch: ON		Supported

TCM TERMINAL VOLTAGE REFERENCE CHART FOR TRANSAXLE OPERATION

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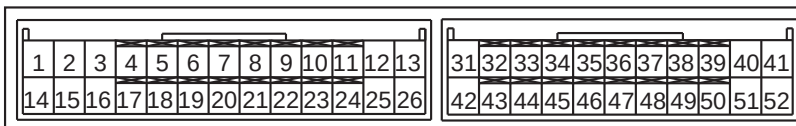
Terminal No.	Terminal code	Check item	Check conditions	Standard value
1	PLLS	Line pressure solenoid valve	- Engine: Idling - Selector lever position: P	Oscilloscope inspection procedure (Refer to P.23A-116.)
2	PRLS	Primary pressure solenoid valve	- Engine: Idling - Selector lever position: P	Oscilloscope inspection procedure (Refer to P.23A-116.)
3	LBLS	Low brake solenoid valve	- Selector lever position: D - Drive at a constant speed of approx. 20 km/h (12.4 mph) (auxiliary gearbox: at 1st gear)	Oscilloscope inspection procedure (Refer to P.23A-116.)
5	INHP	Transmission range switch P	- Ignition switch: ON - Selector lever position: P	System voltage
			- Ignition switch: ON - Selector lever position: Other than P	1 V or less
6	INHR	Transmission range switch R	- Ignition switch: ON - Selector lever position: R	System voltage
			- Ignition switch: ON - Selector lever position: Other than R	1 V or less
7	INH N	Transmission range switch N	- Ignition switch: ON - Selector lever position: N	System voltage
			- Ignition switch: ON - Selector lever position: Other than N	1 V or less
8	INHD	Transmission range switch D	- Ignition switch: ON - Selector lever position: D	System voltage
			- Ignition switch: ON - Selector lever position: Other than D	1 V or less
9	CANH	CAN bus line	—	—
10	CANL	CAN bus line	—	—
13	GND1	Earth	Always	1 V or less

Terminal No.	Terminal code	Check item	Check conditions	Standard value
17	ROM2	ROM assembly (CHIP SELECT)	–	–
18	ROM1	ROM assembly (CLOCK)	–	–
19	ROM3	ROM assembly (DATA I/O)	–	–
20	INHL	Transmission range switch B	- Ignition switch: ON - Selector lever position: B	System voltage
			- Ignition switch: ON - Selector lever position: Other than B	1 V or less
25	IGSW	Power supply	Ignition switch: ON	System voltage
			Ignition switch: OFF	1 V or less
26	GND2	Earth	Always	1 V or less
31	BATT	Power supply	Always	System voltage
32	OUTS	Output speed sensor	- Selector lever position: D - Drive at a constant speed of approx. 20 km/h (12.4 mph) - Use an oscilloscope to measure the voltage between the terminals No. 32 and No. 43.	Approx. 230 Hz Oscilloscope inspection procedure (Refer to P.23A-116.)
33	PRMS	Primary pulley speed sensor	- Selector lever position: B - Drive at a constant speed of approx. 20 km/h (12.4 mph) (auxiliary gearbox: at 1st gear) - Use an oscilloscope to measure the voltage between the terminals No. 33 and No. 43.	Approx. 1,100 Hz Oscilloscope inspection procedure (Refer to P.23A-116.)
			- Selector lever position: B - Drive at a constant speed of approx. 20 km/h (12.4 mph) (auxiliary gearbox: at 2nd gear) - Use an oscilloscope to measure the voltage between the terminals No. 33 and No. 43.	Approx. 900 Hz Oscilloscope inspection procedure (Refer to P.23A-116.)

Terminal No.	Terminal code	Check item	Check conditions		Standard value
34	SECS	Secondary pulley speed sensor	- Selector lever position: D - Drive at a constant speed of approx. 20 km/h (12.4 mph) (auxiliary gearbox: at 1st gear) - Use an oscilloscope to measure the voltage between the terminals No. 34 and No. 43.		Approx. 730 Hz Oscilloscope inspection procedure (Refer to P.23A-116.)
			- Selector lever position: D - Drive at a constant speed of approx. 20 km/h(12.4 mph) (auxiliary gearbox: at 2nd gear) - Use an oscilloscope to measure the voltage between the terminals No. 34 and No. 43.		Approx. 400 Hz Oscilloscope inspection procedure (Refer to P.23A-116.)
37	LPRS	Secondary pressure sensor	- Engine: Idling (after warming up) - Selector lever position: N		0.88 – 0.92 V
38	SPWR	Transmission fluid temperature sensor	Ignition switch: ON	Transmission fluid temperature: 20°C (68°F)	2.01 – 2.05 V
				Transmission fluid temperature: 50°C (122°F)	1.45 – 1.50 V
				Transmission fluid temperature: 80°C (176°F)	0.90 – 0.94 V
41	HRLS	High clutch and reverse brake solenoid valve	- Selector lever position: D - Drive at a constant speed of approx. 60 km/h (37.3 mph) (auxiliary gearbox: at 2nd gear)		Oscilloscope inspection procedure (Refer to P.23A-116.)
42	BAT2	Power supply	Always		System voltage
43	SGN2	Sensor earth	Always		1 V or less
49	SGND	Sensor earth	Always		1 V or less
51	SSPW	Power supply (sensor)	Ignition switch: ON		Approx. 5 V
			Ignition switch: OFF		1 V or less
52	LULS	Lockup solenoid valve	Driving conditions	Lockup engaged	Oscilloscope inspection procedure (Refer to P.23A-116.)

OSCILLOSCOPE INSPECTION PROCEDURES

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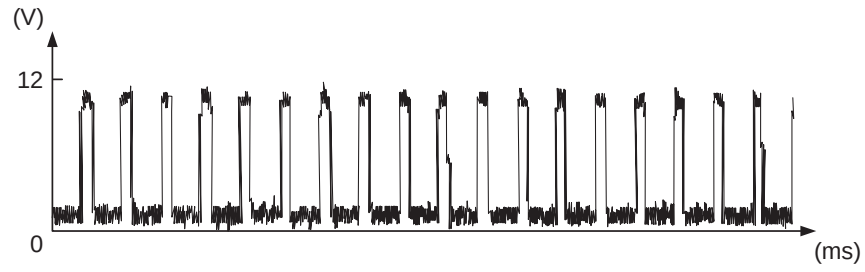


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Terminal No.	Terminal code	Check item	Check conditions	Wave patterns
1	PLLS	Line pressure solenoid valve	- Engine: Idling - Selector lever position: P	Waveform A
2	PRLS	Primary pressure solenoid valve		
3	LBLS	Low brake solenoid valve	- Selector lever position: D - Drive at a constant speed of approx. 20 km/h (12.4 mph) (auxiliary gearbox: at 1st gear)	
41	HRLS	High clutch and reverse brake solenoid valve	- Selector lever position: D - Drive at a constant speed of approx. 60 km/h (37.3 mph) (auxiliary gearbox: at 2nd gear)	
52	LULS	Lockup solenoid valve	- Driving conditions - Lockup engaged	
32	OUTS	Output speed sensor	- Selector lever position: D - Drive at a constant speed of approx. 20 km/h (12.4 mph)	Waveform B
33	PRMS	Primary pulley speed sensor	- Selector lever position: B - Drive at a constant speed of approx. 20 km/h (12.4 mph) (secondary shift mechanism: at 1st gear)	
			- Selector lever position: B - Drive at a constant speed of approx. 20 km/h (12.4 mph) (auxiliary gearbox: at 2nd gear)	
34	SECS	Secondary pulley speed sensor	- Selector lever position: D - Drive at a constant speed of approx. 20 km/h (12.4 mph) (auxiliary gearbox: at 1st gear)	
			- Selector lever position: D - Drive at a constant speed of approx. 20 km/h (12.4 mph) (auxiliary gearbox: at 2nd gear)	

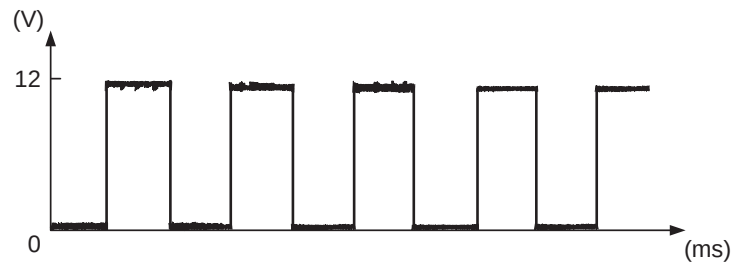
WAVEFORM SAMPLE

Waveform A



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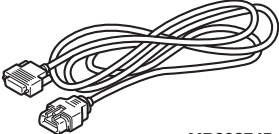
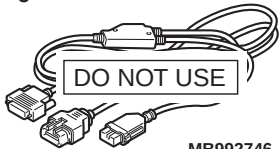
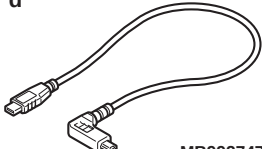
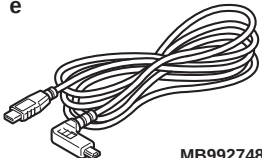
Waveform B

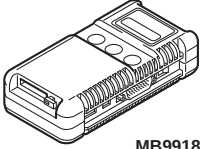
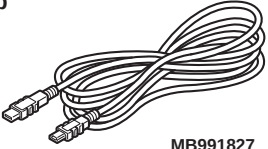
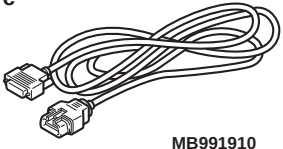
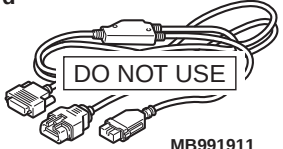
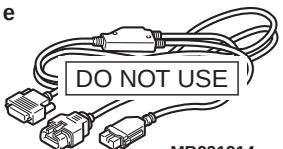
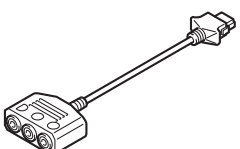
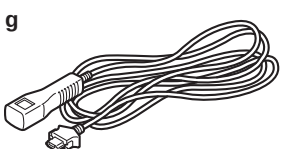
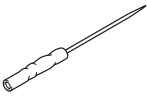


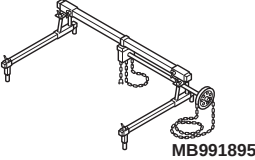
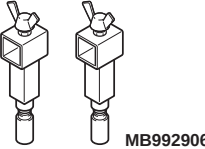
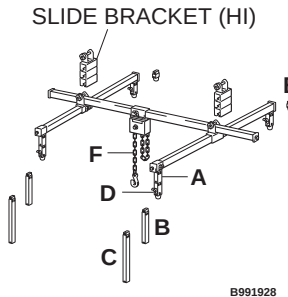
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SPECIAL TOOL

M1231200600707

Tool	Tool number and name	Supersession	Use
a  MB992744 b  MB992745 c  MB992746 d  MB992747 e  MB992748 ACB05421AB	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748 a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication) c. V.C.I.-Lite main harness B (for vehicles without CAN communication) d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long	-	CVT system check

Tool	Tool number and name	Supersession	Use
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991914 f  MB991825 g  MB991826 MB991958	MB991958 a: MB991824 b: MB991827 c: MB991910 d: MB991911 e: MB991914 f: MB991825 g: MB991826 M.U.T.-III sub assembly a: Vehicle Communication Interface (V.C.I.) b: M.U.T.-III USB Cable c: M.U.T.-III Main Harness A (Vehicles with CAN communication system) d: M.U.T.-III Main Harness B (Vehicles without CAN communication system) e: M.U.T.-III Main Harness C (for Chrysler models only) f: M.U.T.-III Measurement Adapter g: M.U.T.-III Trigger Harness	MB991824-KIT <i>NOTE: g: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i>	⚠ CAUTION For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B instead, the CAN communication does not function correctly. CVT system check
 MB992006	MB992006 Extra fine probe	—	Continuity check and voltage measurement at harness wire or connector

Tool	Tool number and name	Supersession	Use
	MB991895 Engine hanger	Tool not available	When the engine hanger is used: Supporting the engine assembly during removal and installation of the transaxle assembly
	MB992906 Engine hanger attachment	Tool not available	
 SLIDE BRACKET (HI) MB991928	MB991928 Engine hanger A: MB991929 A: Joint (50) ×2 B: MB991930 B: Joint (90) ×2 C: MB991931 C: Joint (140) ×2 D: MB991932 D: Foot (standard) ×4 E: MB991933 E: Foot (short) ×2 F: MB991934 F: Chain and hook assembly	Tool not available	

ON-VEHICLE SERVICE

ESSENTIAL SERVICE

TRANSMISSION FLUID CHECK

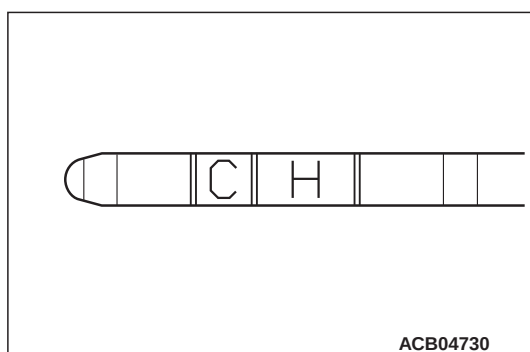
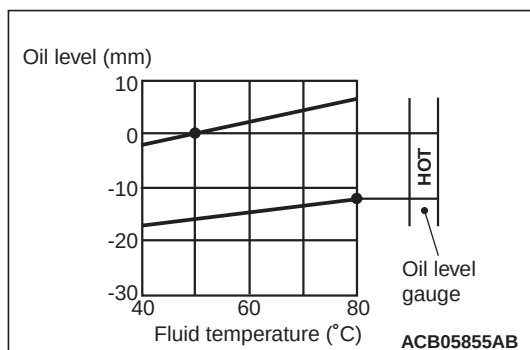
M1231211700719

CAUTION

Replace the transmission fluid whenever the transaxle is replaced with a new one or the vehicle is driven in harsh conditions.

1. Drive the vehicle until the transmission fluid is warmed up to the normal operating temperature 50 – 80°C (122 – 176°F).

NOTE: Use scan tool (M.U.T.-III.) to measure the transmission fluid temperature.



NOTE: When a certain amount of time is required to warm up the transmission fluid to the normal operating temperature 50 – 80 °C (122 – 176 °F), check the oil level referring to the characteristics chart.

2. Park the vehicle on a level surface.
3. Move the selector lever to every position to fill the torque converter and the hydraulic circuit with the transmission fluid, and then move the selector lever to P or N range.
4. Pull out the oil level gauge, and wipe off the transmission fluid and dirt. Then, insert the oil level gauge again and pull it to check the condition of the transmission fluid.

NOTE: If the transmission fluid smells burnt or is excessively deteriorated or dirty, the transmission fluid is contaminated with particles of the metal bushings and friction material. In these cases, the transaxle must be replaced.

5. Check that the transmission fluid level is within the "H" area on the oil level gauge. If the fluid level is low, add the transmission fluid to the "H" level.

Transmission fluid: MITSUBISHI MOTORS GENUINE CVTF-J4

NOTE: When the transmission fluid level is low, the oil pump sucks air together with the transmission fluid, and produces air bubbles in the hydraulic circuit. The air bubbles in the hydraulic circuit decreases the hydraulic pressure, causing the delayed gearshift or slippage of the belt, clutch, and brake. When the transmission fluid level is too high, the fluid is stirred by the gear and foams up, and the problems similar to those when the transmission fluid level is low will occur. In either case, air bubbles cause the overheat and oxidation of the transmission fluid, which prevents normal operation of the valve, clutch, and brake. Besides, when the transmission fluid is foamy, it flows out of the transaxle vent hole. This may be taken as the fluid leakage by mistake.

6. Insert the oil level gauge securely.

TRANSMISSION FLUID REPLACEMENT

M1231211800879

1. Remove the drain plug on the bottom of the transaxle case to drain the transmission fluid.

Draining amount: Approximately 2.5 dm³ (2.64 qt)

2. Install the drain plug with a new gasket to the transaxle case, and tighten it to the specified torque.

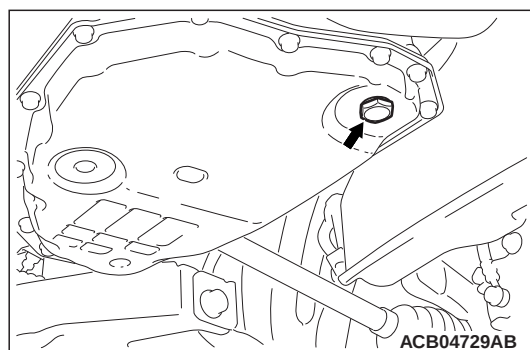
Tightening torque: 35 ± 4 N·m (26 ± 2 ft·lb)

⚠ CAUTION

If the transaxle case becomes full before filling 2.5 dm³ (2.64 qt) of transmission fluid, stop filling the transmission fluid.

3. Fill in the new transmission fluid through the oil filler tube.

Filling amount: Approximately 2.5 dm³ (2.64 qt)



**Transmission fluid: MITSUBISHI MOTORS GENUINE
CVTF-J4**

4. Start up the engine and let it idle for 1 to 2 minutes.
5. Move the selector lever to every position, and then move it to the P or N range.
6. Stop the engine and perform the above steps 1 to 5 again.
7. Stop the engine, and discharge a small amount of transmission fluid to check for fouling. If fouling is found, repeat steps 1 to 5 until clean transmission fluid comes out.
8. Drive the vehicle until the transmission fluid is warmed up to the normal operating temperature 50 – 80°C (122 – 176°F), and check the transmission fluid level. It must be within the "H" area on the oil level gauge.

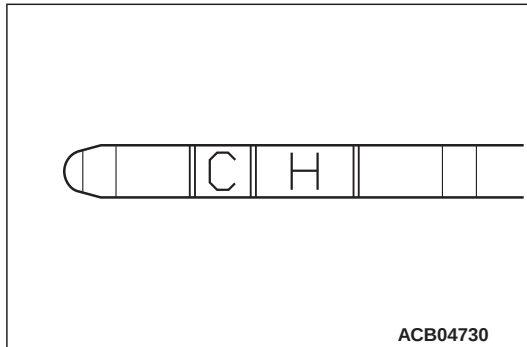
NOTE: The "C" level is for reference only. Use the "H" level as the criteria.

NOTE: Use scan tool (M.U.T.-III.) to measure the transmission fluid temperature.

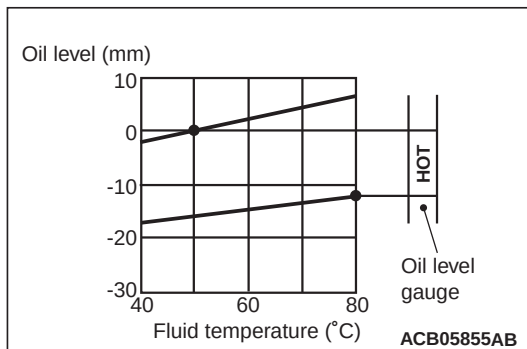
NOTE:

When a certain amount of time is required to warm up the transmission fluid to the normal operating temperature 50 – 80 °C (122 – 176 °F), check the oil level referring to the characteristics chart.

9. Adjust the transmission fluid level to the specified level. Refill the transmission fluid when the fluid level is low, and drain the transmission fluid through the drain plug when the fluid level is high.
10. Securely insert the oil level gauge into the oil filler tube.
11. TCM records the deterioration level of the transmission fluid. After replacing the transmission fluid with new one, use scan tool (M.U.T.-III) to reset the deterioration level recorded in TCM.



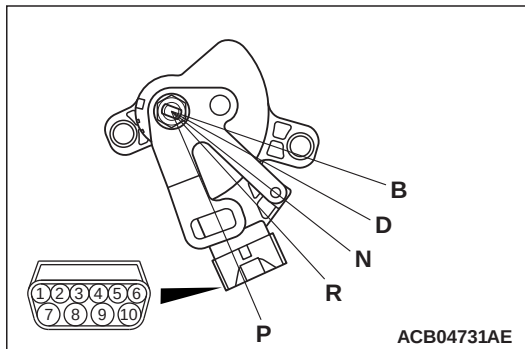
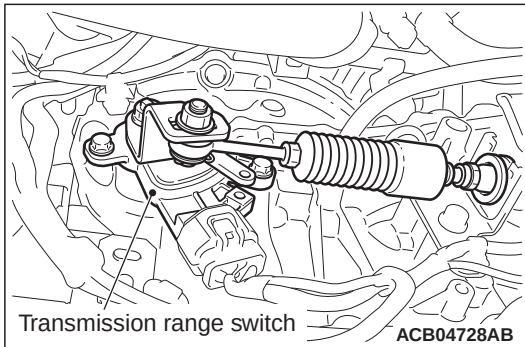
ACB04730



ACB05855AB

**TRANSMISSION RANGE SWITCH CONTINUITY
CHECK**

M1231201400557

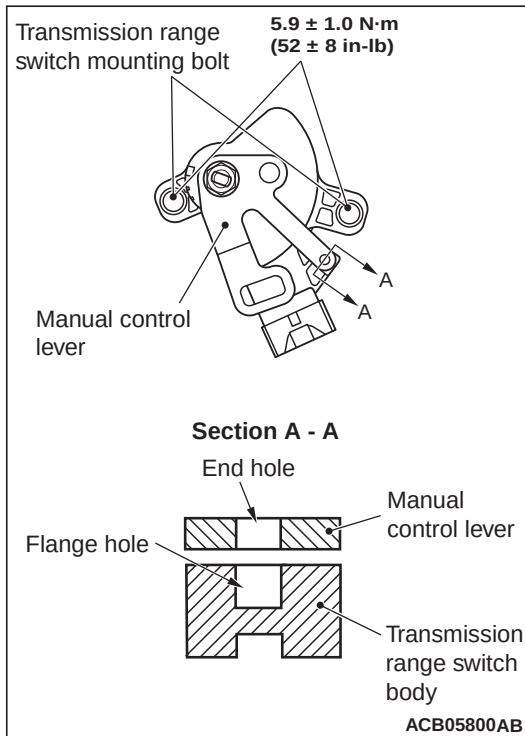


Item	Terminal number	Resistance value
P	3 – 2, 7 – 10	Continuity exists (2 Ω or less).
	Other than above	No continuity
R	3 – 9	Continuity exists (2 Ω or less).
	Other than above	No continuity
N	3 – 8, 7 – 10	Continuity exists (2 Ω or less).
	Other than above	No continuity
D	3 – 5	Continuity exists (2 Ω or less).
	Other than above	No continuity
B	3 – 1	Continuity exists (2 Ω or less).
	Other than above	No continuity

**TRANSMISSION RANGE SWITCH AND CONTROL
CABLE ADJUSTMENT**

M1231201500446

1. Move the selector lever to the N range.
2. Loosen the adjusting nut so that the manual control lever moves freely.
3. Move the manual control lever to Neutral position.



- Loosen the transmission range switch body mounting bolt, and turn the transmission range switch body so that the hole in the transmission range switch body flange aligns with the hole on the end of the manual control lever (section A - A on in the figure shown left).

NOTE: Insert a $\phi 5$ bar into the aligned holes in the transmission range switch body flange and on the tip of the manual control lever to position the transmission range switch body.

CAUTION

Be careful that the transmission range switch body does not move out of the position.

- Tighten the transmission range switch body mounting bolts to the specified torque.

Tightening torque: 5.9 ± 1.0 N·m (52 ± 8 in-lb)

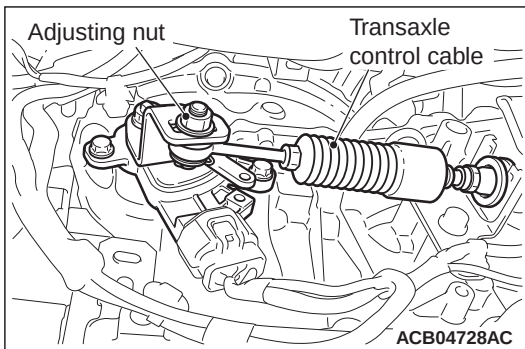
CAUTION

- Confirm that the width across flats of the cable end, matches a long hole of manual control lever.
- Before assembling between a manual control lever and an cable end of transaxle control cable, release taking a hold on an cable end once, and it's surely confirmed that it doesn't take tension on.

- Use the adjusting nut to tighten the transaxle control cable to the specified torque.

Tightening torque: 9.5 ± 3.5 N·m (84 ± 30 in-lb)

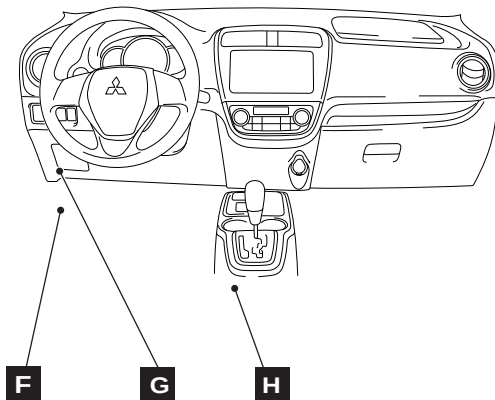
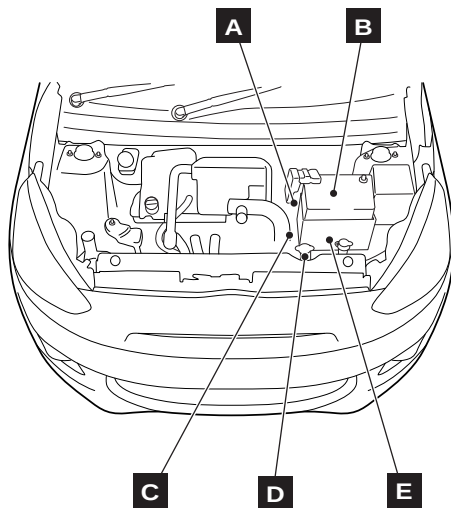
- Make sure that the selector lever is in the N range.
- Make sure that the transaxle-side ranges that are corresponding to the selector lever position operate and function without fail.



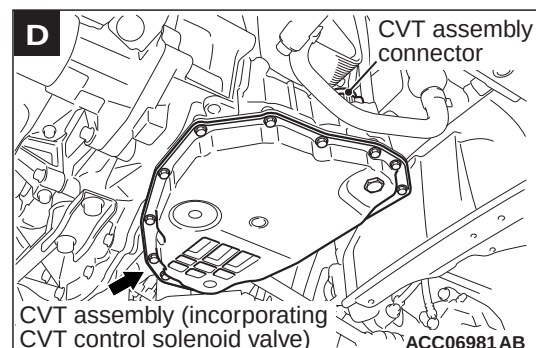
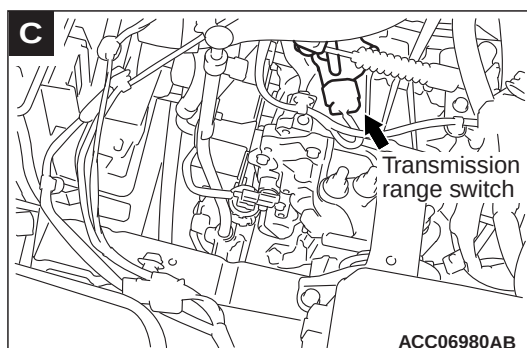
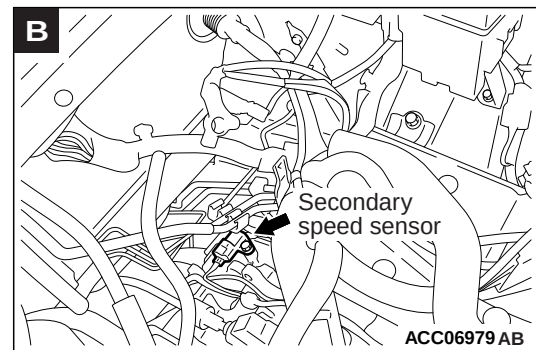
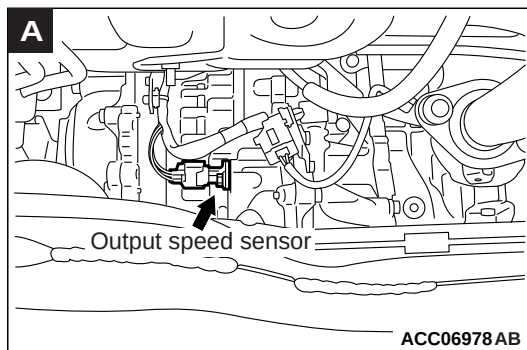
CVT CONTROL COMPONENT LAYOUT

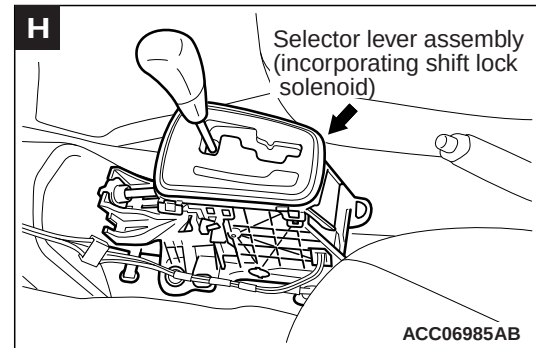
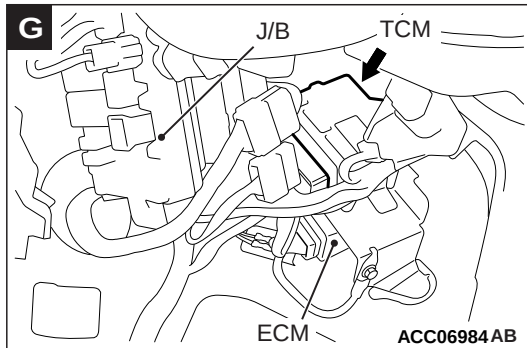
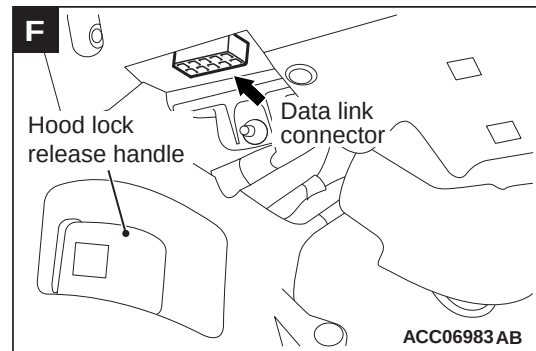
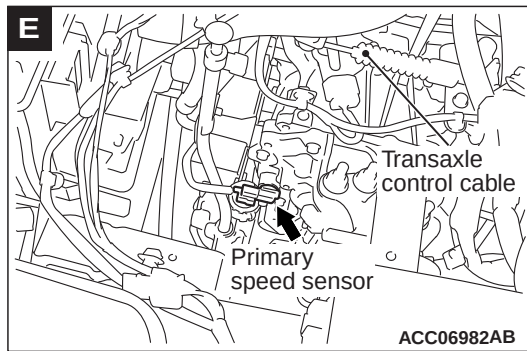
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Name	Symbol	Name	Symbol
CVT assembly connector (Solenoid valve assembly, transmission fluid temperature sensor, high clutch oil pressure switch)	D	Secondary pulley speed sensor	B
Data link connector	F	Shift lock solenoid	H
Output speed sensor	A	Transaxle control module (TCM)	G
Primary pulley speed sensor	E	Transmission range switch	C



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CVT CONTROL COMPONENT CHECK

TRANSMISSION RANGE SWITCH CHECK

M1231201400568

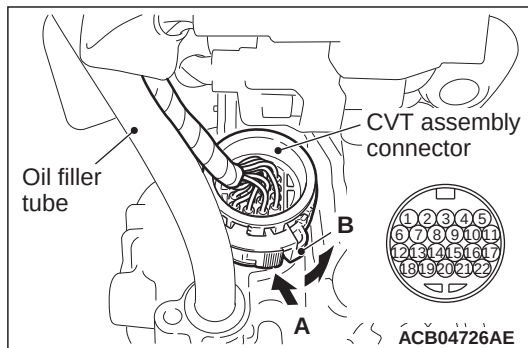
Refer to P.23A-123.

SOLENOID VALVE CHECK

M1231229500538

1. While pressing A in the figure, turn B counterclockwise to unlock the CVT assembly connector, and disconnect the connector.
2. Measure the resistance between the terminals of the applicable solenoid valves and ground.

Standard value:



Terminal No.	Applicable solenoid valve	Resistance value Ω
1	Line pressure solenoid valve	• Approximately 5.3 [Fluid temperature: 20°C (68°F)] • Approximately 5.9 [Fluid temperature: 50°C (122°F)] • Approximately 6.5 [Fluid temperature: 80°C (176°F)]
2	Primary pressure solenoid valve	
6	Low brake solenoid valve	
7	High clutch and reverse brake solenoid valve	
8	Lockup solenoid valve	• Approximately 6.1 [Fluid temperature: 20°C (68°F)] • Approximately 6.8 [Fluid temperature: 50°C (122°F)] • Approximately 7.5 [Fluid temperature: 80°C (176°F)]

⚠ CAUTION

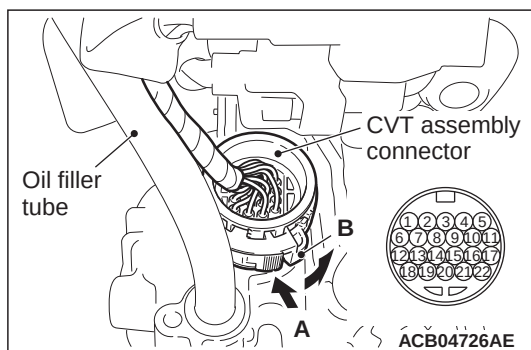
Each solenoid valve cannot be removed or replaced as a single unit.

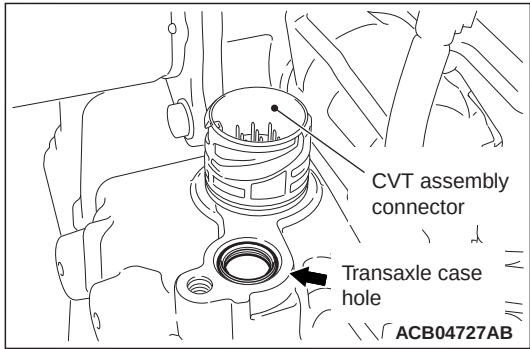
3. When the resistance is outside the standard value, replace the transaxle assembly.

TRANSMISSION FLUID TEMPERATURE SENSOR CHECK

M1231229600847

1. While pressing A in the figure, turn B counterclockwise to unlock the CVT assembly connector, and disconnect the connector.





⚠ CAUTION

Insert a thermometer which is made of metal or is put in a metal case [overall length: approximately 150 – 200 mm (6.0 – 7.8 in.)] into the transaxle case hole approximately 80 mm (3.1 in.).

2. Remove the oil filler pipe assembly (Refer to Transaxle Assembly), and insert a thermometer into the transaxle case hole.

NOTE: If a radiation thermometer (noncontact thermometer) is available, use it to measure the surface temperature of the oil pan.

3. Measure the resistance between the sensor-side connector terminal No. 12 of the CVT assembly connector and ground (terminal No.18).

Standard value:

Fluid temperature °C (°F)	Resistance kΩ
At 20 (68)	Approximately 6.5
At 40 (104)	Approximately 2.2
At 80 (176)	Approximately 0.9

⚠ CAUTION

The transmission fluid temperature sensor cannot be removed or replaced as a single unit.

4. When the resistance of the transmission fluid temperature sensor is outside the standard value, and the fluid temperature warning comes on/goes out at other than the specified temperatures, replace the transaxle assembly.

TORQUE CONVERTER STALL TEST

M1231205400399

This test measures the maximum engine speed at the time the torque converter stalls with the selector lever in the D or R position. With this test, the holding abilities of the clutch and brake that are incorporated in the transaxle can be checked.

⚠ WARNING

For safety, operators must not stand in front of and at the rear of the vehicle during this test.

1. Check the transmission fluid level, transmission fluid temperature, and engine coolant temperature.
 - Transmission fluid level: In the "HOT" range on the oil level gauge
 - Transmission fluid temperature: 60 to 70°C (140 to 158°F)
 - Engine coolant temperature: 80 to 100°C (176 to 212°F)

NOTE: Use scan tool (M.U.T.-III) to measure the transmission fluid temperature.

2. Operate the parking brake securely, and then chock the wheels.
3. Start the engine.

 CAUTION

- Do not maintain the WOT condition for 5 seconds or longer.
 - When continuing the stall test, make sure that the fluid temperature does not exceed 70°C (158°F). If the transmission fluid temperature exceeds 70°C (158°F), run the engine at around 1,000 r/min for 1 minute or longer to lower the transmission fluid temperature to 70°C (158°F) or less.
4. Move the selector lever to the D range and fully depress the accelerator pedal. Quickly read the maximum engine speed at this time.
- Standard value – Stall speed: Approximately 2,300 r/min**
5. Move the selector lever to the R range, and then repeat the previous step.
- Standard value – Stall speed: Approximately 2,300 r/min**

JUDGMENT OF TORQUE CONVERTER STALL TEST RESULTS

1. Stall speed is high when the selector lever is in both D and R ranges.
 - Line pressure is low.
 - Malfunction of the primary pulley
 - Malfunction of the secondary pulley
 - Malfunction of the steel belt
2. Stall speed is high only when the selector lever is in the D ranges.
 - Malfunction of the low brake
3. Stall speed is high only when the selector lever is in the R ranges.
 - Malfunction of the reverse brake
4. Stall speed is low when the selector lever is in both D and R ranges.
 - Malfunction of the engine system

HYDRAULIC PRESSURE TEST

M1231205500620

 CAUTION

- This test must be performed with the transmission fluid temperature within the range of 70 to 80°C (158 to 176°F).**
1. Check the engine oil level, and add if necessary.
 2. Warm up the engine, and then perform test drive for approx. ten minutes.
 3. Check the transmission fluid for leaks, level and contamination. Then top up or change if necessary.
 4. Operate the parking brake securely, and then chock the wheels.
 5. Connect the scan tool (M.U.T.-III), and then start the engine.

 WARNING

For safety, operators must not stand in front of and at the rear of the vehicle during this test.

 CAUTION

- During this test, leave the brake pedal depressed fully.**
6. Use the scan tool (M.U.T.-III) (data list item No. 20: Secondary pressure) to measure the secondary pressure (line pressure) by observing the conditions listed in the hydraulic pressure table.
 7. Stop the engine.
 8. If not within the standard value, take necessary steps according to the hydraulic pressure test diagnosis table.

Hydraulic pressure table (reference value)

Selector lever position	During engine idling	During engine stall
P, N	0.50 MPa	–
R, D (B)	0.50 – 1.18 MPa	4.04 – 4.54 MPa

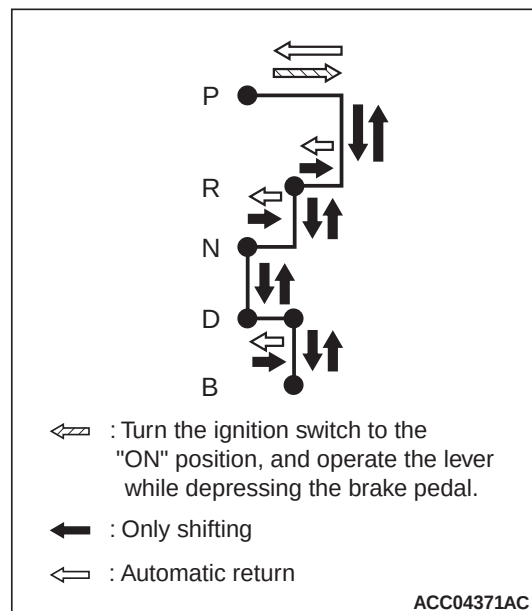
Hydraulic pressure test diagnosis table

Judgment result		Probable cause		Remedy
During engine idling	Low at all ranges [P, R, N, D (B)]	The hydraulic pressure delivery system or the oil pump may be defective.	• Worn oil pump	Replace the transaxle assembly
			• Damaged oil pump chain and sprocket	
			• Defective pressure regulator valve, or deteriorated spring	
			• Leaks in the hydraulic pressure circuit ranging from the oil strainer via the oil pump to the pressure regulator valve	
	Low at certain range(s) only.	Oil leaks may be present in the device or circuit relating to that range.	• The engine idling speed is low.	Check the engine system, and repair or replace if necessary.
	High	Sensor(s) or the pressure adjusting function may be defective.	• Malfunction of the accelerator pedal position sensor	Check the accelerator pedal position sensor, and repair or replace if necessary.
			• Malfunction of the oil pressure sensor	Replace the transaxle assembly
			• Malfunction of the line pressure solenoid valve (stuck OFF, open circuit or short circuit)	
			• Malfunction of the pressure regulator valve	

Judgment result		Probable cause		Remedy
During engine stall	Oil pressure does not rise from that during the engine idling.	Sensor(s) or the pressure adjusting function may be defective.	• Malfunction of TCM	Check the TCM, and repair or replace if necessary.
			• Malfunction of the line pressure solenoid valve (stuck ON or short circuit)	Replace the transaxle assembly
			• Malfunction of the pressure regulator valve	
	Oil pressure rises, but is not within the standard value.	The pressure supply system, sensor(s) or the pressure adjusting function may be defective.	• Worn oil pump	
			• Malfunction of the line pressure solenoid valve	
			• Malfunction of the pressure regulator valve	
	Low at certain range(s) only.	Oil leaks may be present in the device or circuit relating to that range.		

SELECTOR LEVER OPERATION CHECK

M1231202900522



1. Operate the parking brake.
2. Move the selector lever to every range and check that the lever moves smoothly with secure feel of engagement.
3. Make sure that the engine starts when the selector lever is in the "N" or "P" range, and does not start when the selector lever is in other range.
4. Start the engine. Release the parking brake lever.
5. Make sure that the vehicle moves forward when the selector lever is moved to "D" range, or to the "B" range. Also make sure that the vehicle moves backward when the selector lever is moved from the "N" to "R" range.
6. Stop the engine.
7. Turn "ON" the ignition switch, and move the selector lever from the "P" to "R" range. Check that the backup light comes on and the tone alarm sounds at this time.

NOTE: Since the vehicle is equipped with the CVT wrong-operation preventive device, the selector lever cannot be moved out of the "P" position without depressing the brake pedal after turning "ON" the ignition switch.

SHIFT LOCK MECHANISM CHECK
SYSTEM CHECK

M1232100300564

Inspection procedure	Check conditions		Items to be checked (Normal conditions)	Possible cause of abnormality
1	Brake pedal not depressed	Ignition switch position: Other than "ON"	The selector lever cannot be moved out of the "P" position	• Abnormality in the shift lock link (stuck, disengaged, broken, etc.) • Abnormality in the electrical circuit
2	Brake pedal depressed			• Abnormality in the electrical circuit
3	Brake pedal not depressed	Ignition switch position: "ON"	The selector lever can be moved from the "P" position to other positions smoothly.	• Abnormality in the shift lock link (stuck, disengaged, broken, etc.) • Abnormality in the electrical circuit
4	Brake pedal depressed			• Abnormality in the shift lock link (stuck, disengaged, broken, etc.) • Abnormality in the electrical circuit
5	Shift lock release button pressed			• Abnormality in the shift lock link (stuck, disengaged, broken, etc.)
6	Brake pedal depressed / not depressed		The selector lever can be moved from the "R" position to the "P" position smoothly.	• Abnormality in the shift lock link (stuck, disengaged, broken, etc.)

COMPONENT PARTS CHECK

SHIFT LOCK LINK

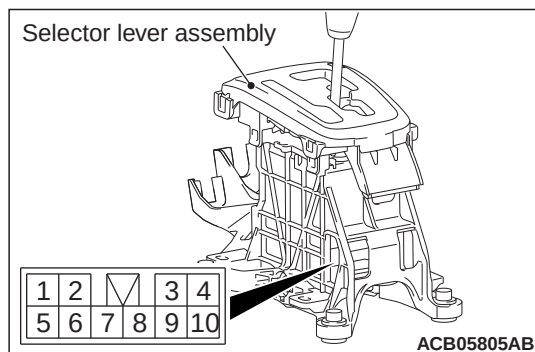
Check each part for damage and disengagement.

SHIFT LOCK SOLENOID

1. Measure the resistance between terminal No.3 and No.7 of the selector lever assembly connector.

Standard value: $40 \pm 2 \Omega$

2. When the resistance is outside the standard value, replace the selector lever assembly.



TRANSAXLE CONTROL

REMOVAL AND INSTALLATION

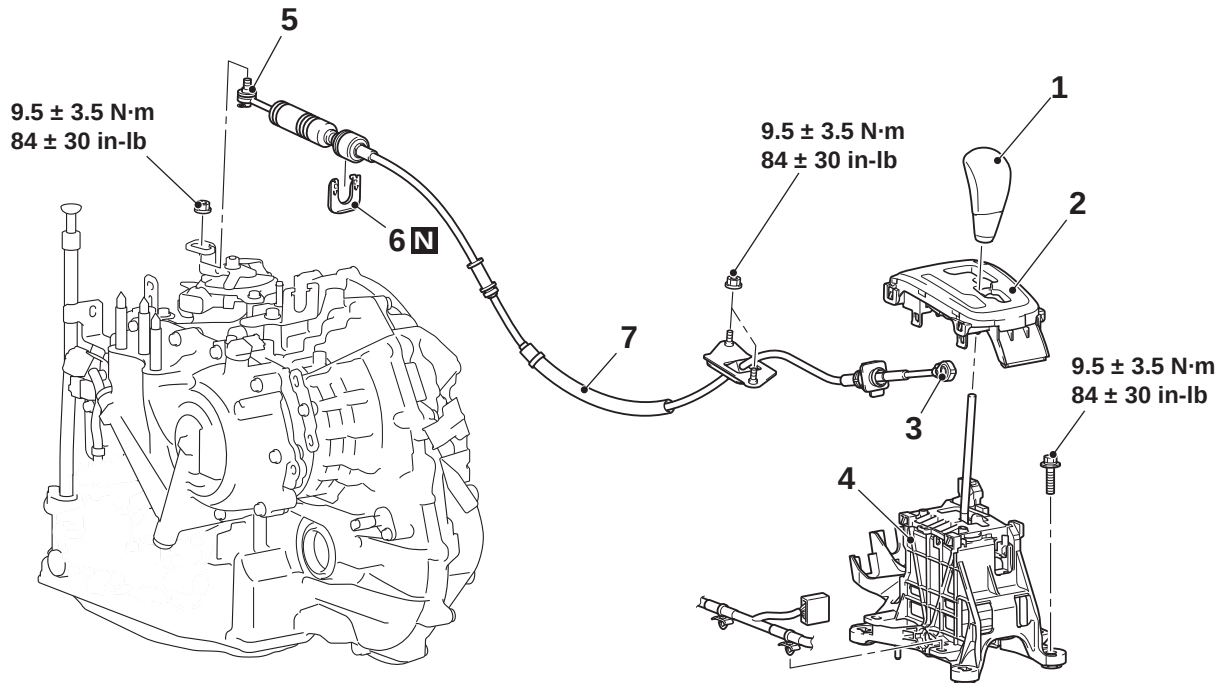
M1231203200816

⚠ WARNING

Be careful not to subject the SRS-ECU to any shocks during removal and installation of the transaxle control cable assembly.

Post-installation operation

- Shift lock mechanism check (Refer to [P.23A-133.](#))
- Selector lever operation check (Refer to [P.23A-132.](#))



ACB03531AB

Selector lever assembly removal steps

- Move the selector lever to the "N" position.
- 1. Selector lever knob
- SRS-ECU Removal and Installation (Refer to GROUP 52B, SRS-ECU [P.52B-229](#)).
- 2. Shift indicator panel
- 3. Transaxle control cable connection (selector lever side)
- 4. Selector lever assembly

Transaxle control cable assembly removal steps

- Move the selector lever to the "N" position.
- 1. Selector lever knob

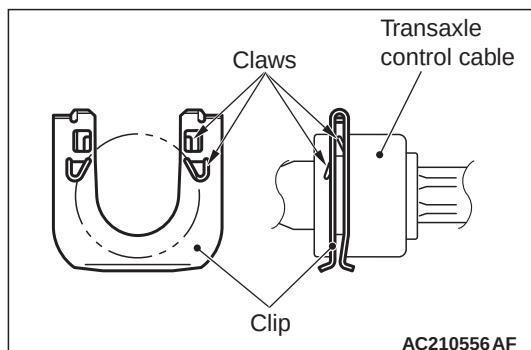
Transaxle control cable assembly removal steps (Continued)

- SRS-ECU Removal and Installation (Refer to GROUP 52B, SRS-ECU [P.52B-229](#)).
- 3. Transaxle control cable connection (selector lever side)
- Air cleaner assembly (Refer to GROUP 15, Air Cleaner [P.15-5](#)).
- Battery and battery tray ((Refer to GROUP 54A, Battery [P.54A-7](#)))
- >>A<< 5. Transaxle control cable connection (transaxle side)
- <<A>>>A<< 6. Clip
- 7. Transaxle control cable

REMOVAL SERVICE POINT

<<A>> CLIP REMOVAL

1. Push up the claws of the clip using a screwdriver, etc., and then remove the clip from the bracket together with the transaxle control cable.



INSTALLATION SERVICE POINTS

>>A<< CLIP/TRANSAXLE CONTROL CABLE (TRANSAXLE SIDE) INSTALLATION

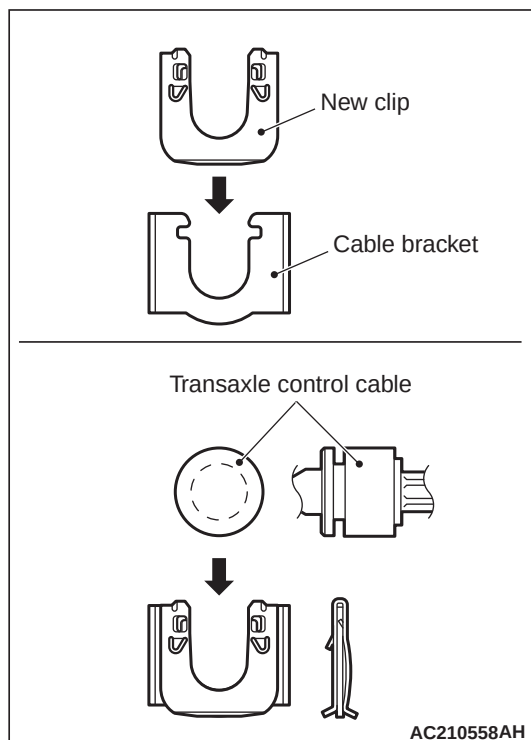
CAUTION

Securely insert the clip, and transaxle control cable until they click into place.

1. After installing the new clip to the cable bracket of the transaxle, install the transaxle control cable to the cable bracket.

NOTE: The clip is reversible.

2. Move the selector lever and manual control lever to the "N" position.

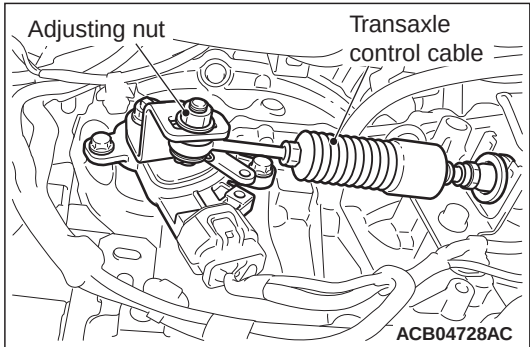


⚠ CAUTION

- Confirm that the width across flats of the cable end, matches a long hole of manual control lever.
- Before assembling between a manual control lever and an cable end of transaxle control cable, release taking a hold on an cable end once, and it's surely confirmed that it doesn't take tension on.

3. Use the adjusting nut to tighten the transaxle control cable to the specified torque.

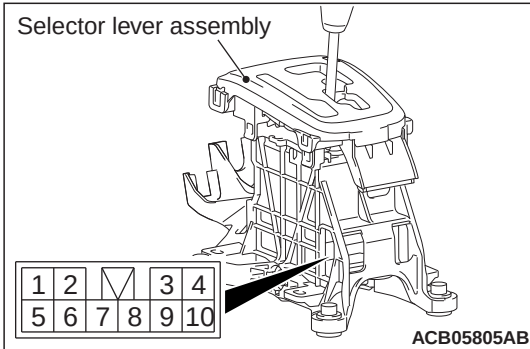
Tightening torque:
9.5 ± 3.5 N·m (84 ± 30 in-lb)



SELECTOR LEVER ASSEMBLY CONTINUITY CHECK

M1231220900078

SWITCH CHECK



Item	Selector lever position	Terminal number	Continuity
P position detect switch <Vehicles with KOS>	P	4 – 6	No continuity
	Other than above	4 – 6	Continuity
P position detect switch <Vehicles without KOS>	P	5 – 6	No continuity
	Other than above	5 – 6	Continuity

KEY LOCK RELAY CHECK
<VEHICLES WITHOUT KOS>

1. Shift the selector lever to P position.
2. Use a jumper wire to connect terminal No. 5 of the selector lever assembly connector to the battery (+) terminal, terminal No. 6 to the battery (-) terminal. Then apply battery voltage.
3. Check for continuity between the selector lever assembly connector terminals No. 4 and No. 5.

Jumper wire	Continuity between terminals No. 4 and No. 5
Connect	Yes (2 Ω or less)
Disconnect	No

TRANSAXLE ASSEMBLY

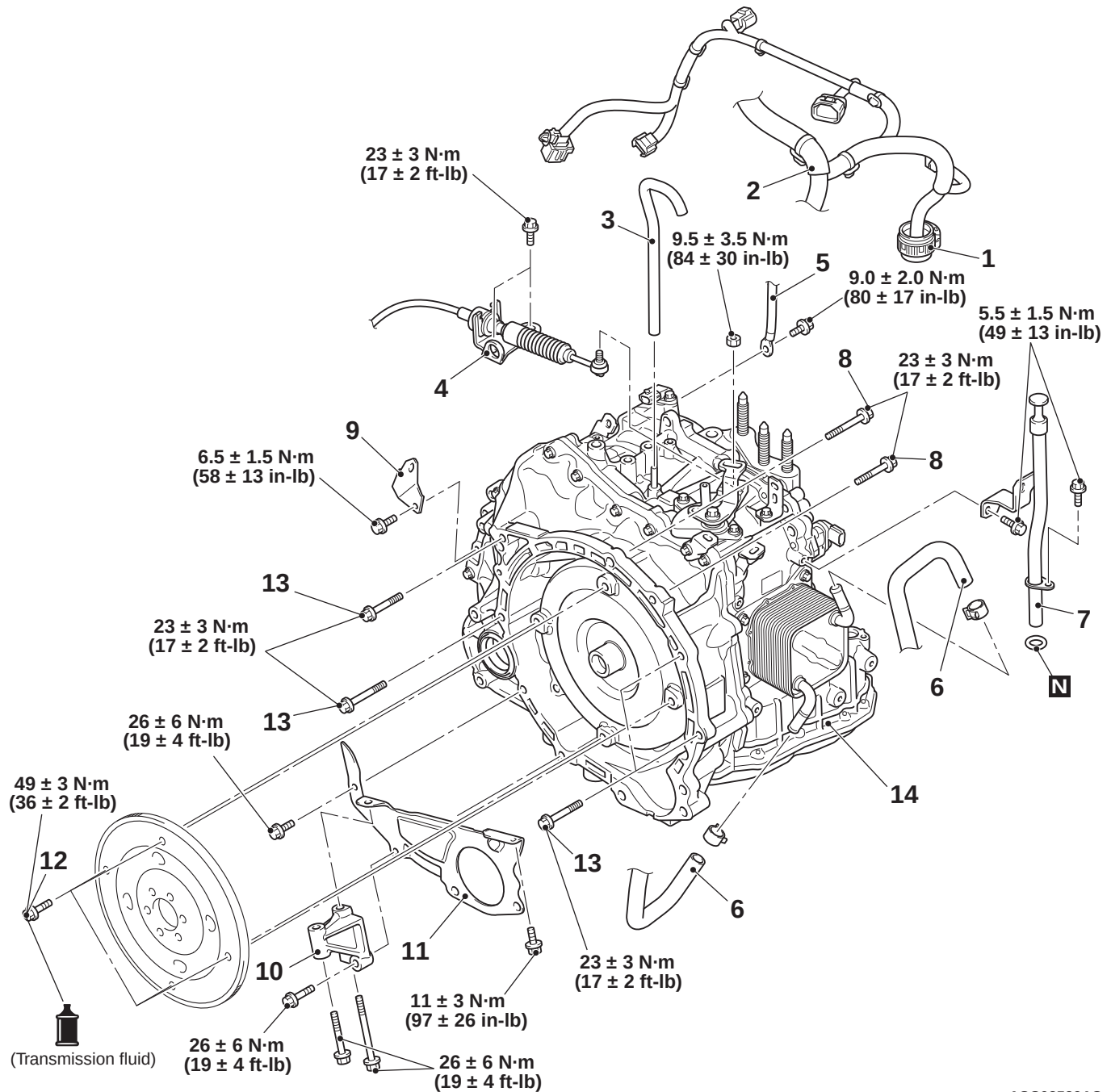
REMOVAL AND INSTALLATION

M1231203601088

 CAUTION

- When removing and installing the transaxle assembly, be careful not to drop the torque converter. In addition, do not remove the torque converter.
- When the transaxle assembly is replaced, initialize the CVT learned value. (Refer to [P.23A-4.](#))

Pre-removal operation • Under Cover Front Removal (Refer to GROUP 51 – Under Cover P.51-15). • Transmission Fluid Draining (Refer to P.23A-121). • Engine Coolant Draining (Refer to GROUP 14 – On-vehicle Service P.14-6). • Starter Motor Assembly Removal (Refer to GROUP 16 – Starter Motor Assembly P.16-21). • Catalytic Converter Removal (Refer to GROUP 15 – Exhaust Pipe and Main muffler P.15-10). • Drive Shaft Removal (Refer to GROUP 26 – Drive Shaft Assembly P.26-20). • Air Cleaner Assembly Removal (Refer to GROUP 15 – Air Cleaner P.15-5). • Battery and Battery Tray Removal (Refer to GROUP 54A – Battery P.54A-7).	Post-installation operation • Battery and Battery Tray Installation (Refer to GROUP 54A – Battery P.54A-7). • Air Cleaner Assembly Installation (Refer to GROUP 15 – Air Cleaner P.15-5). • Drive Shaft Installation (Refer to GROUP 26 – Drive Shaft Assembly P.26-20). • Catalytic Converter Installation (Refer to GROUP 15 – Exhaust Pipe and Main muffler P.15-10). • Starter Motor Assembly Installation (Refer to GROUP 16 – Starter Motor Assembly P.16-21). • Engine Coolant Refilling (Refer to GROUP 14 – On-vehicle Service P.14-6). • Transmission Fluid Refilling (Refer to P.23A-121). • Under Cover Front Installation (Refer to GROUP 51 – Under Cover P.51-15).
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ACC02529AC

<<A>>

Removal steps

1. CVT assembly harness connector connection
2. Connector and wiring harness connection
3. Breather hose
4. Cable bracket and transaxle control cable assembly
5. Battery ground
6. Transmission fluid cooler hose connection
7. Oil filler tube assembly
8. Transaxle assembly upper part coupling bolt
9. Connector bracket

<>

<<C>>

Removal steps (Continued)

10. Transaxle stay
11. Bell housing cover
12. Torque converter and drive plate coupling bolt
 - Engine roll rod assembly (Refer to GROUP 32 – Engine Roll Stopper Rod [P.32-4](#))
 - While supporting the engine and transaxle assembly with a garage jack.
 - Transaxle mounting insulator (Refer to GROUP 32 – Transaxle Mounting [P.32-3](#))
 - Engine assembly supporting

<<D>>

Removal steps (Continued)

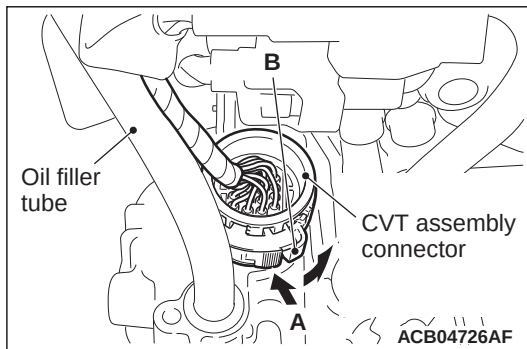
13. Transaxle assembly lower part coupling bolts
- >>A<< 14. Transaxle assembly

Required Special Tools:

- MB991895: Engine Hanger
- MB991928: Engine Hanger
- Joint x 2 (50) (MB991929)
- Foot x 4 (standard) (MB991932)
- MB992906: Engine hanger attachment

REMOVAL SERVICE POINTS**<<A>> CVT ASSEMBLY HARNESS CONNECTOR DISCONNECTION**

While pressing A in the figure, turn B counterclockwise to unlock the CVT assembly connector, and disconnect the connector.

**<> TRANSAXLE ASSEMBLY UPPER PART COUPLING BOLT REMOVAL**

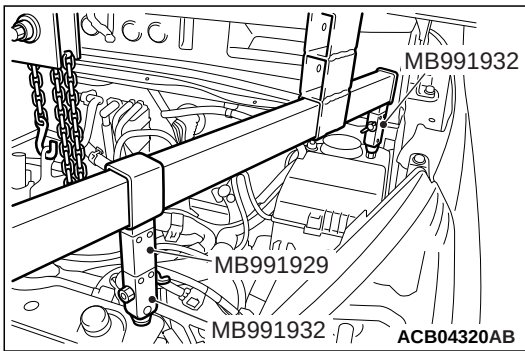
Only loosen the bolts from the engine and transaxle assembly (do not remove).

<<C>> TORQUE CONVERTER AND DRIVE PLATE COUPLING BOLT REMOVAL

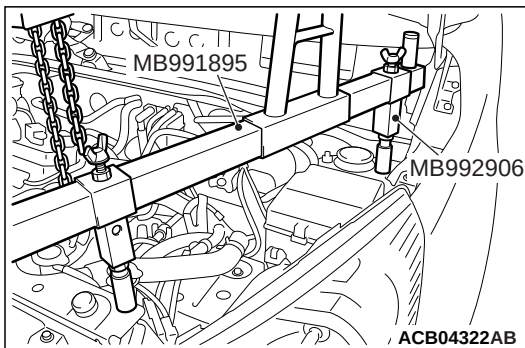
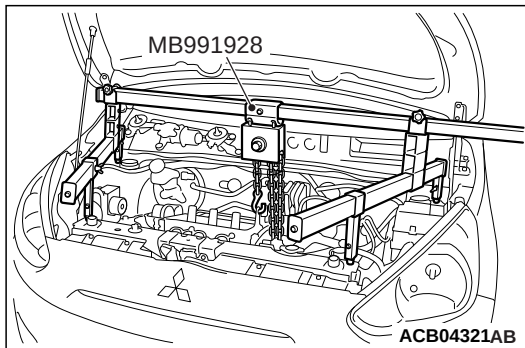
1. Remove the coupling bolts while turning the crankshaft.
2. Fully push the torque converter into the transaxle side so that it does not remain on the engine side.

<<D>> ENGINE ASSEMBLY SUPPORTING

1. <When engine hanger (Special tool: MB991928) is used>
 - (1) Assemble the engine hanger (Special tool: MB991928).
(Set the components below to the base hanger.)
 - Slide bracket (HI)
 - Foot x 4 (standard) (MB991932)
 - Joint x 2 (50) (MB991929)

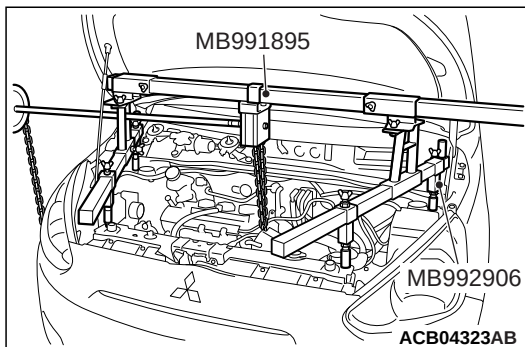


- (2) Set the foot of the engine hanger (Special tool: MB991928) as shown in the figure.
NOTE: Adjust the engine hanger balance.
- (3) Remove the garage jack and then remove the transaxle assembly upper part coupling bolts that have been loosened previously.



2. <When engine hanger (Special tool: MB991895) and engine hanger attachment (Special tool: MB992906) are used>

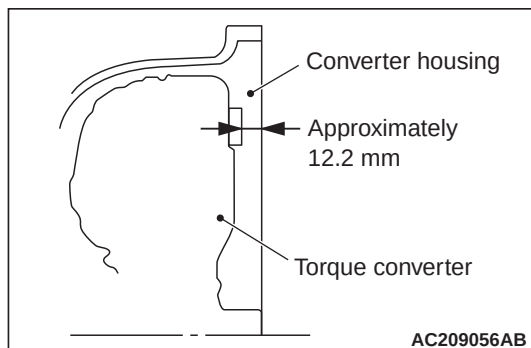
- (1) Set the foot of the engine hanger (Special tool: MB991895) and engine hanger attachment (Special tool: MB992906) as shown in the figure.
NOTE: Adjust the engine hanger balance.
- (2) Remove the garage jack and then remove the transaxle assembly upper part coupling bolts that have been loosened previously.



INSTALLATION SERVICE POINTS

>>A<< TRANSAXLE ASSEMBLY INSTALLATION

Fully push the torque converter into the transaxle side, and then assemble the transaxle assembly to the engine.



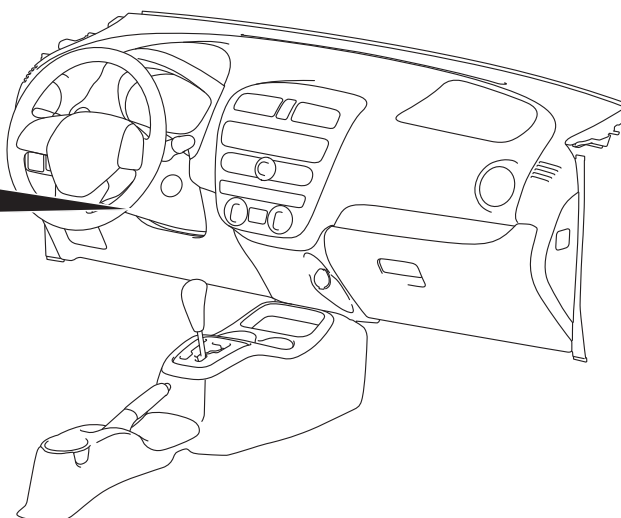
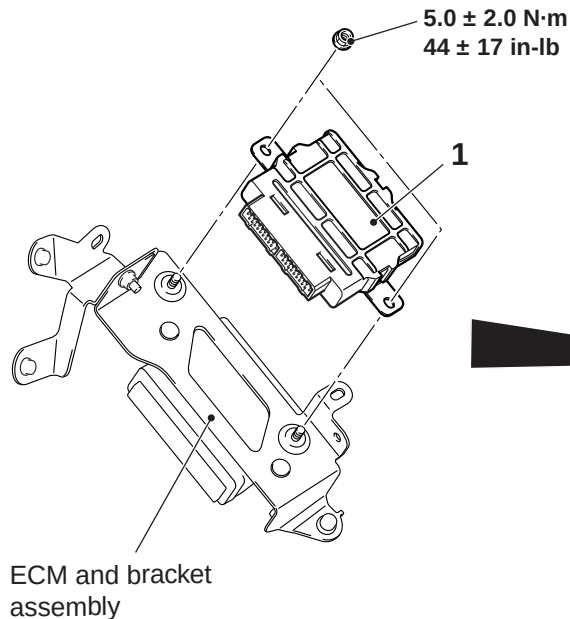
TRANSAXLE CONTROL MODULE (TCM)

REMOVAL AND INSTALLATION

M1231211400354

Pre-removal and post-installation operation

- Instrument Panel Lower Cover Removal and Installation (Refer to GROUP 52A – Instrument Lower Panel P.52A-6).



ACC02906AB

Removal steps

1. Transaxle control module (TCM)

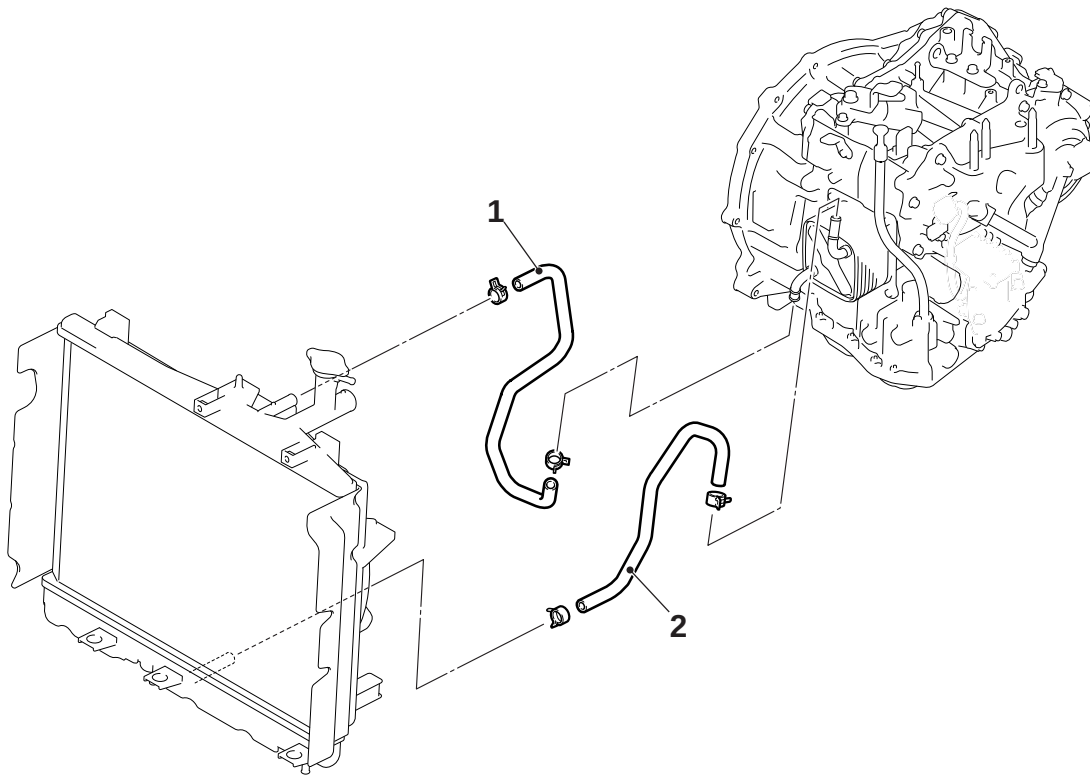
TRANSMISSION FLUID COOLER LINE

REMOVAL AND INSTALLATION

M1231210800326

Pre-removal and post-installation operation

- Under Cover Front Removal and Installation (Refer to GROUP 51 – Under Cover [P.51-15](#)).
- Engine Coolant Draining and Refilling (Refer to GROUP 14 – On-vehicle Service – Engine Coolant Replacement [P.14-6](#).)
- Battery and Battery Tray Removal and Installation (Refer to GROUP 54A – Battery [P.54A-7](#).)



ACB03539AB

Removal steps

- >>B<< 1. Water feed hose
>>A<< 2. Water return hose

INSTALLATION SERVICE POINTS**>>A<< WATER RETURN HOSE**

1. Align the marking on the water return hose with the projection on the nipple of the radiator.
2. Connect the water return hose to the transmission fluid cooler so that the hose marking faces toward the vehicle front. Install the clamp so that its tabs are parallel to the radiator.

>>B<< WATER FEED HOSE INSTALLATION

1. Align the marking on the water feed hose with the projection on the nipple of the radiator.
2. Engage the water feed hose into the clip A behind the cooling fan shroud.
3. Connect the water feed hose to the transmission fluid cooler so that the hose marking faces toward the vehicle front. Install the clamp so that its tabs are parallel to the radiator.

