GROUP 22C

TWIN CLUTCH-SPORTRONIC SHIFT TRANSMISSION (TC-SST)

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GENERAL INFORMATION

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TWIN CLUTCH-SPORTRONIC SHIFT TRANSMISSION (TC-SST)

Due to the addition of RALLIART, TC-SST (twin clutch–sportronic shift transmission) has been adopted. The TC-SST assembly is a twin clutch type automatic M/T that offers the easy driving similar to A/T, excellent sport driving, and enhanced fun to drive. The TC-SST assembly offers the following features.

Good fuel efficiency

- Because the basic structure is the same as M/T, it is simple and has a high driving force transmission efficiency.
- Instead of the torque converter, the clutch is used to transfer the driving force from engine, reducing the loss of driving force.
- Through the precise joint control with the engine, the gears can be shifted at the optimum timing. (With NORMAL mode)

Shift feeling

- Corresponding to the optimization of shift change timing by the automatic shifting, the shift shock is reduced, and the shifting is made smooth without torque loss.

Easy drive

- By adopting TC-SST-ECU, solenoid valve, sensor, valve body, and others, the easy driving similar to A/T has been achieved.

Sport drive

- Drive mode switching function is equipped which enables the selection of NORMAL, SPORT.

Fun to Drive

- The manual mode and the paddle shift are adopted that allow the driver to shift gears at any timing.

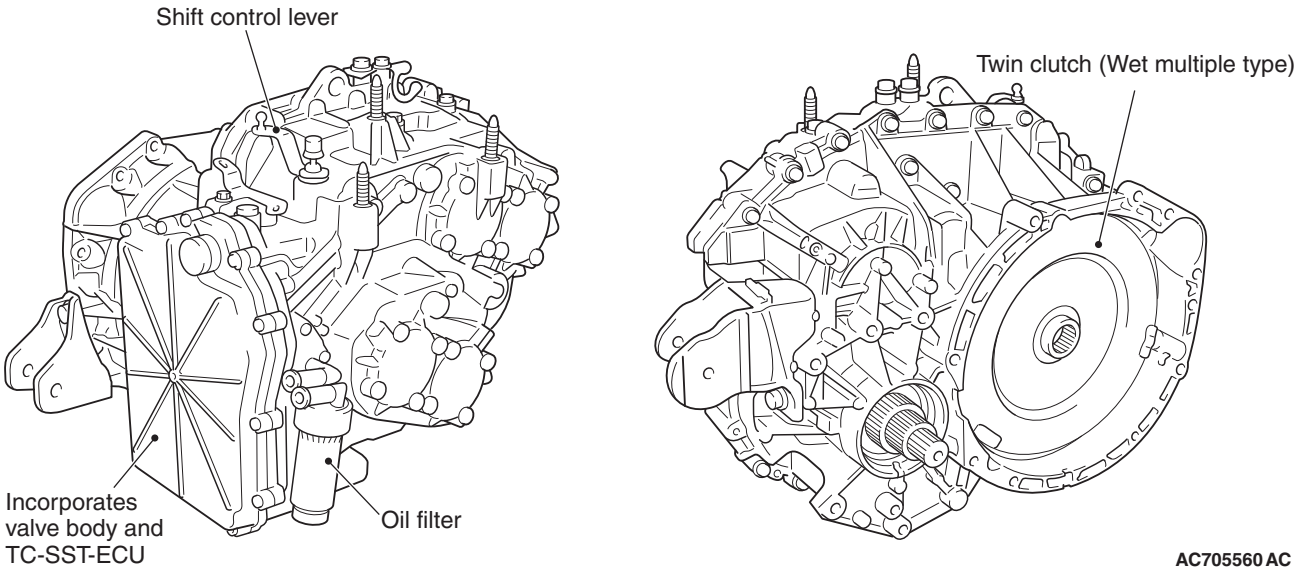
Starting acceleration

- The clutch and gear shift operation are automatically controlled, reducing the power transfer loss and achieving the ideal starting acceleration.

SPECIFICATIONS

Item		Specification
Transmission model		W6DGA
Transmission type		6-speed forward, 1-speed reverse constant mesh
Clutch		Wet multiplate clutch x 2
Gear ratio	1st	3.655
	2nd	2.368
	3rd	1.754
	4th	1.322
	5th	0.983
	6th	0.731
	Reverse	4.011
Final gear ratio		4.062
Helical gear LSD (front differential)		Present
Transfer	Reduction ratio	0.302
	Differential gear unit	Hydraulic pressure multiplate clutch (ACD)

OVERVIEW

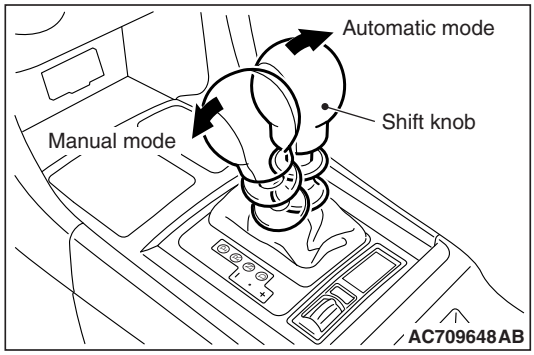


DESCRIPTION OF FUNCTION

The TC-SST assembly offers the following features, achieving high-performance as well as the easy driving and sport driving.

SHIFTING MODE

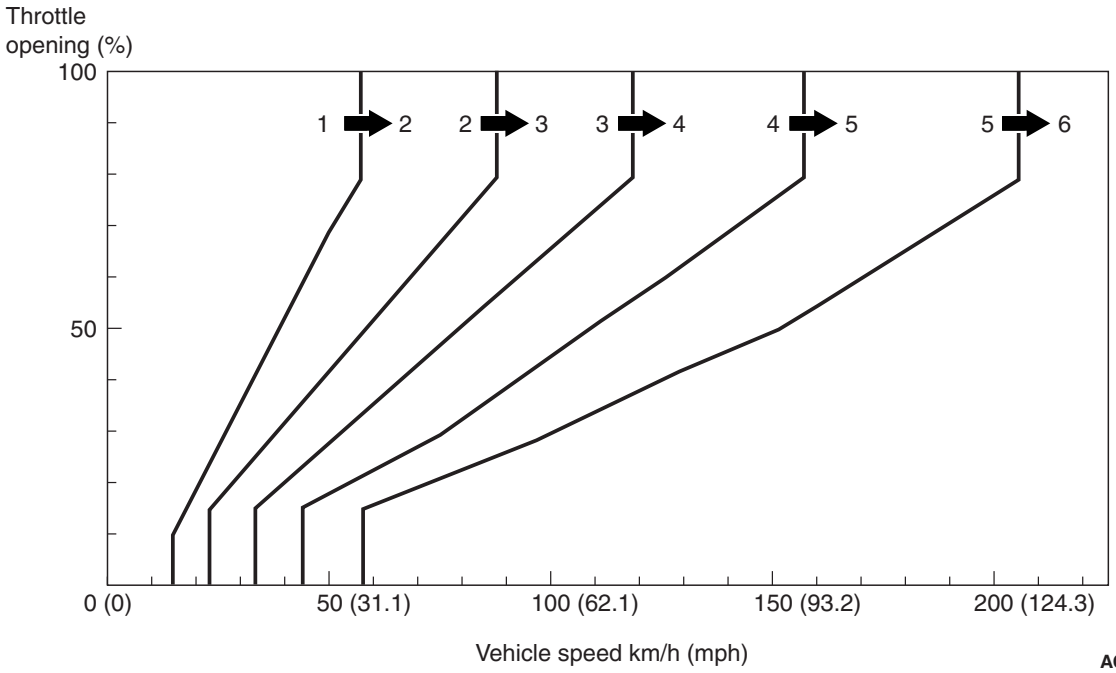
By the operation of shift lever, the automatic mode and manual mode can be selected.



Mode	Control content
Automatic mode (Shift lever position: D)	• Shifting is performed automatically according to the shift map. By the operation of paddle shift, the mode can be changed to the manual mode. (When the "+" side lever of paddle shift is pulled for 2 seconds, the mode returns to the automatic mode. When the vehicle is stopped, the mode automatically returns to the automatic mode.) • In combination with the drive mode, it provides support for the economy driving to circuit driving.
Manual mode (Shift lever position: +/– side)	• By the operation of shift lever or paddle shift, the driver can change gears at any timing. • No automatic shifting is performed during driving, but the selection of 1st gear and clutch engagement at starting are performed automatically. Also, the gear is downshifted automatically during deceleration before a stop, and the clutch is released during stop to achieve the neutral status. *NOTE:* • *Depending on the driving and operation conditions, the shifting may be restricted, including the prohibition of upshifting to ensure the driving performance and prohibition of downshifting to prevent the engine over revolution.* • *When the fluid temperature is high, the shifting may be delayed from the operation in order to protect the TC-SST assembly.*

SHIFT MAP

<NORMAL - UPSHIFT>



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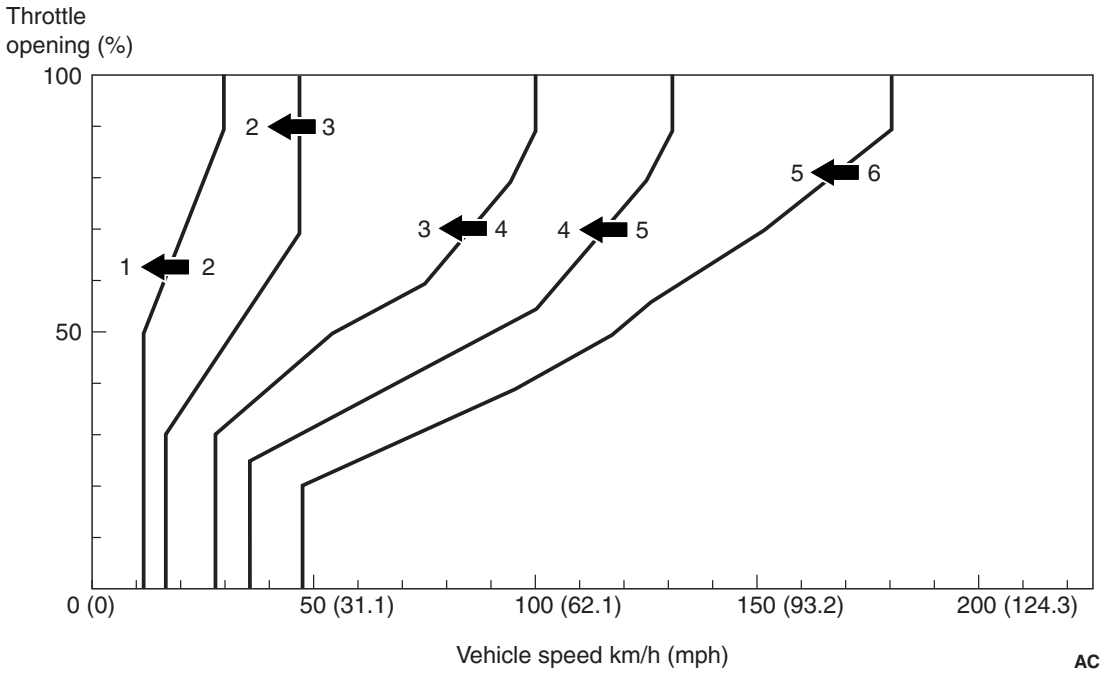
<NORMAL - DOWNSHIFT>



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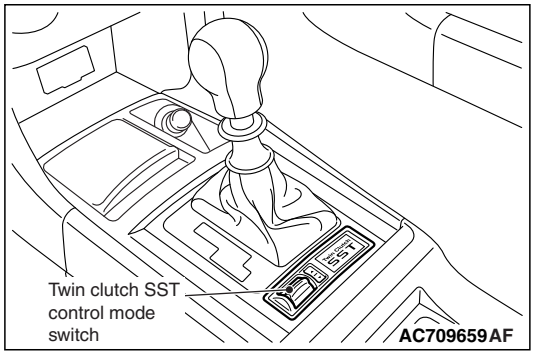
DRIVE MODE



By the switching of twin clutch SST control mode switch, two types of control modes, which are NORMAL, SPORT, can be selected.

Mode	Control content
NORMAL	• This mode is best suited for the normal driving on normal roads, expressways, and snowy roads. • A consideration is given to comfort and fuel efficiency, and the control is performed to shift gears smoothly at low engine speed.
SPORT	• This mode is best suited for sport driving. • Compared to NORMAL, the control is performed to shift gears swiftly at high engine speed. This mode enables driving that is characteristic of RALLIART, offered by the shifting timing focused on acceleration, the deceleration by downshifting at braking, and others.

CREEP FUNCTION

With TC-SST, by intentionally making the clutch to slip (half clutch), the creep driving can be performed which is similar to A/T. Because this function allows the forward and backward driving in low speed, the driving becomes easier on congested road and when parking the vehicle.

KICK-DOWN FUNCTION

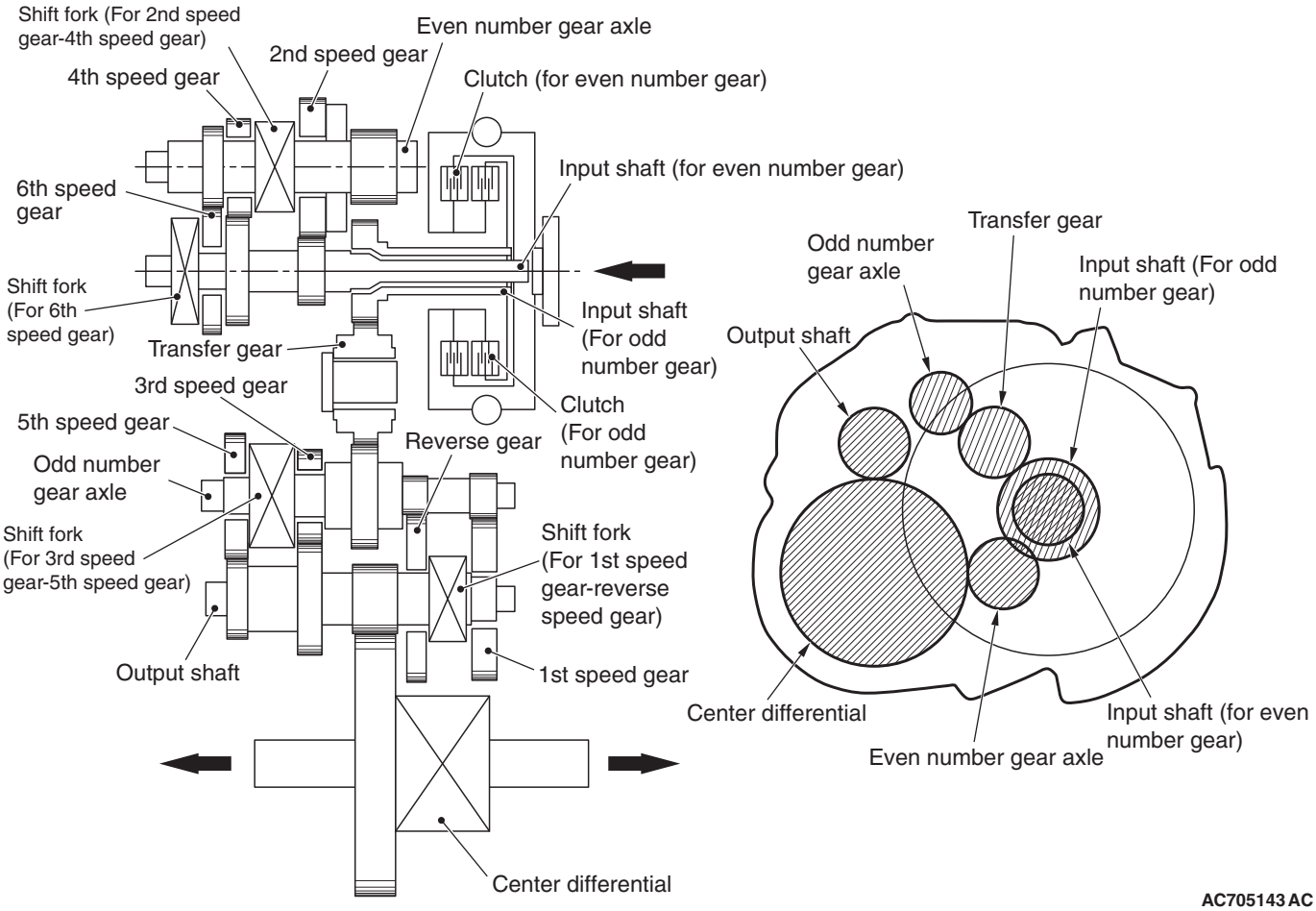
For the overtakes on expressway and the acceleration on upslope, when the accelerator pedal is depressed suddenly, the gear is intentionally downshifted for one gear.
Depending on the driving conditions, the downshifting may be performed with 2 or 3 gears skipped, or the downshifting may be rejected.

DESCRIPTION OF CONSTRUCTION AND OPERATION

The TC-SST assembly consists mainly of the clutch, shifting section, valve body, and TC-SST-ECU. The valve body is controlled by TC-SST-ECU, and the clutch and shifting operations are performed by the hydraulic pressure from the valve body.

Name		Structure and action
Shift mechanism	Clutch	Two wet multiplate clutches are divided for the odd number gears and even number gears, and each clutch is engaged and released alternately.
	Shifting section (Reverse, 1st, 3rd, 5th)	The odd number gear axle consists of the reverse, 1st, 3rd, and 5th gears, synchronizer, and two shift forks, and it is connected to the clutch (for odd number gears).
	Shifting section (2nd, 4th, 6th)	The even number gear axle consists of the 2nd, 4th, and 6th gears, synchronizer, and two shift forks, and it is connected to the clutch (for even number gears).
Hydraulic mechanism	Valve body	The hydraulic circuit for feeding oil to each part of TC-SST assembly is mounted, and the solenoid valve for changing the circulating path and controlling the hydraulic pressure is equipped.
Control mechanism	TC-SST-ECU	Incorporated into the TC-SST assembly. Controls the solenoid valve based on various signals.

SHIFT MECHANISM



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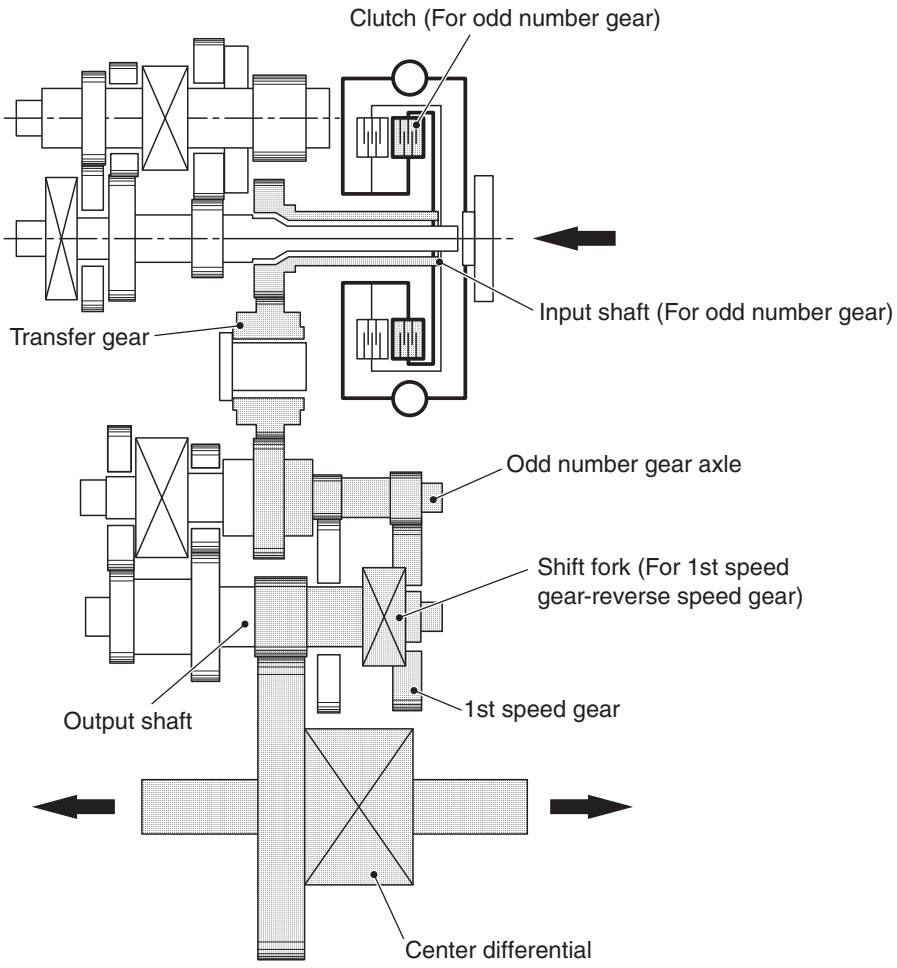
The shifting mechanism of TC-SST assembly is divided into two systems as the odd number gear axle (reverse, 1st, 3rd, 5th) and even number gear axle (2nd, 4th, 6th). Each mechanism is joined with an independent clutch, establishing a structure with which two 3-speed M/T mechanisms are combined.

WHEN IN P AND N RANGE

In the P range and N range, the 2nd gear and the 1st gear are engaged beforehand with the two clutches kept released.

AT STARTING (P → D RANGE, N → D RANGE)



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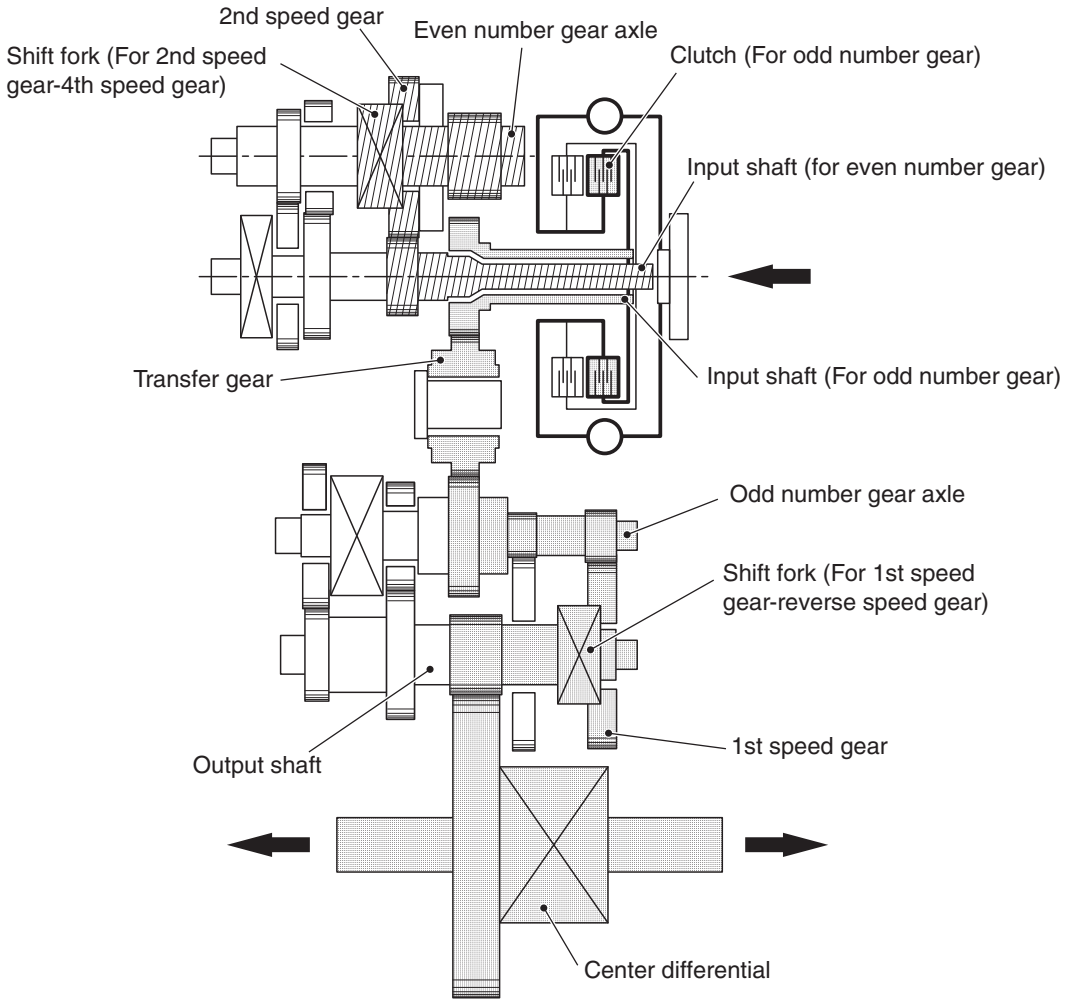
Corresponding to the operations from P to D and from N to D, the clutch for the odd number gears is engaged to perform the 1st gear starting.

WHEN DRIVING IN 1ST GEAR



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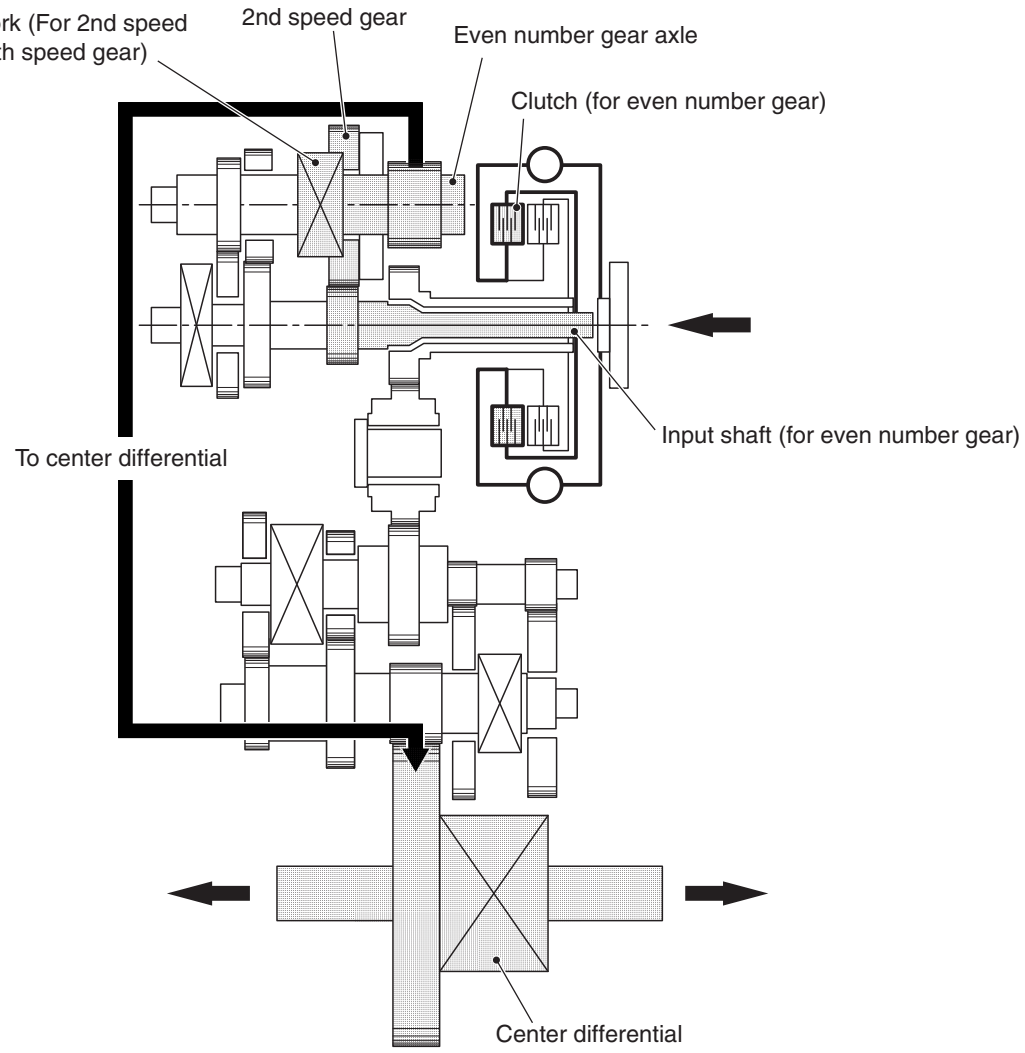
During driving with the 1st gear, the even number gear clutch is kept released, and the 2nd gear is engaged in advance. (During driving with even number gears, the odd number gears are engaged in advance.)

WHEN DRIVING IN 2ND GEAR



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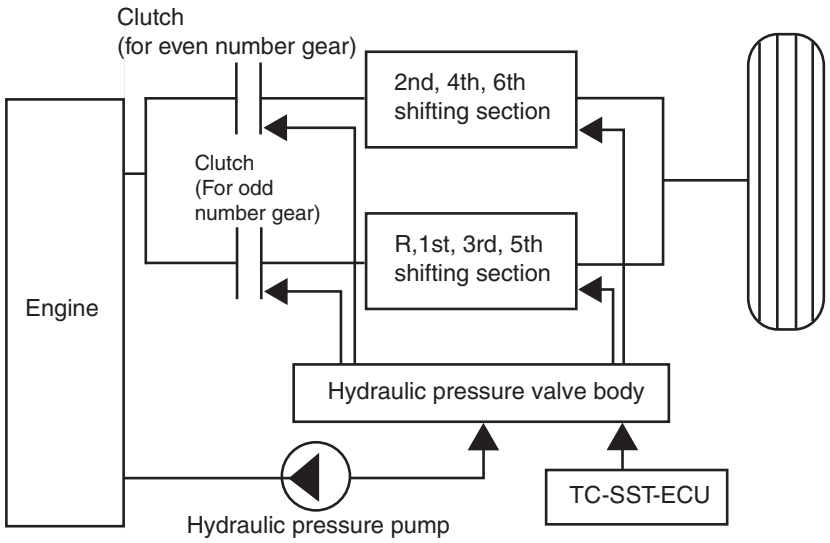
The clutch (for odd number gears) is released at the shifting timing in accordance with the shift map, and the clutch (for even number gears) is engaged to perform driving with the 2nd gear.
Because the shifting is performed only by the alternation of two clutches, the shifting time is short, and the clutch does not become completely released during driving.

HYDRAULIC MECHANISM



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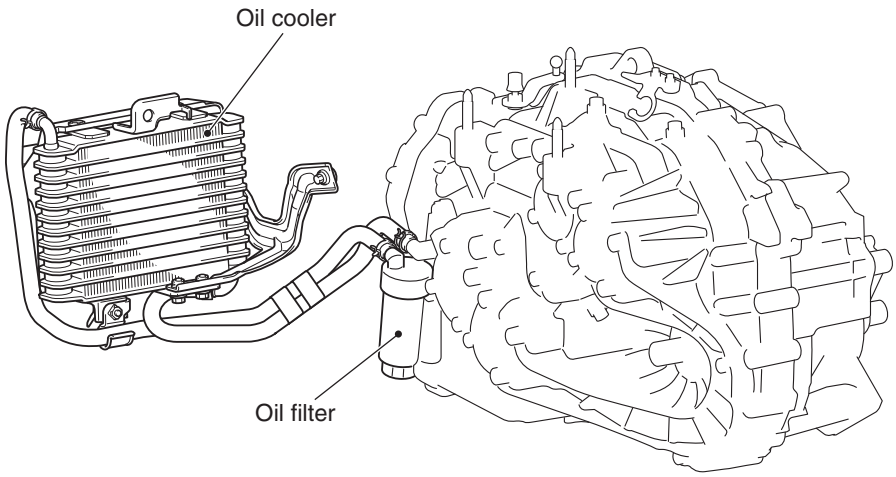
By the operation of solenoid valve, the valve body feeds the hydraulic pressure needed for the operation of clutch and each shifting section. The solenoid valve is controlled by TC-SST-ECU, and the hydraulic pump generates the hydraulic pressure by using the engine power.



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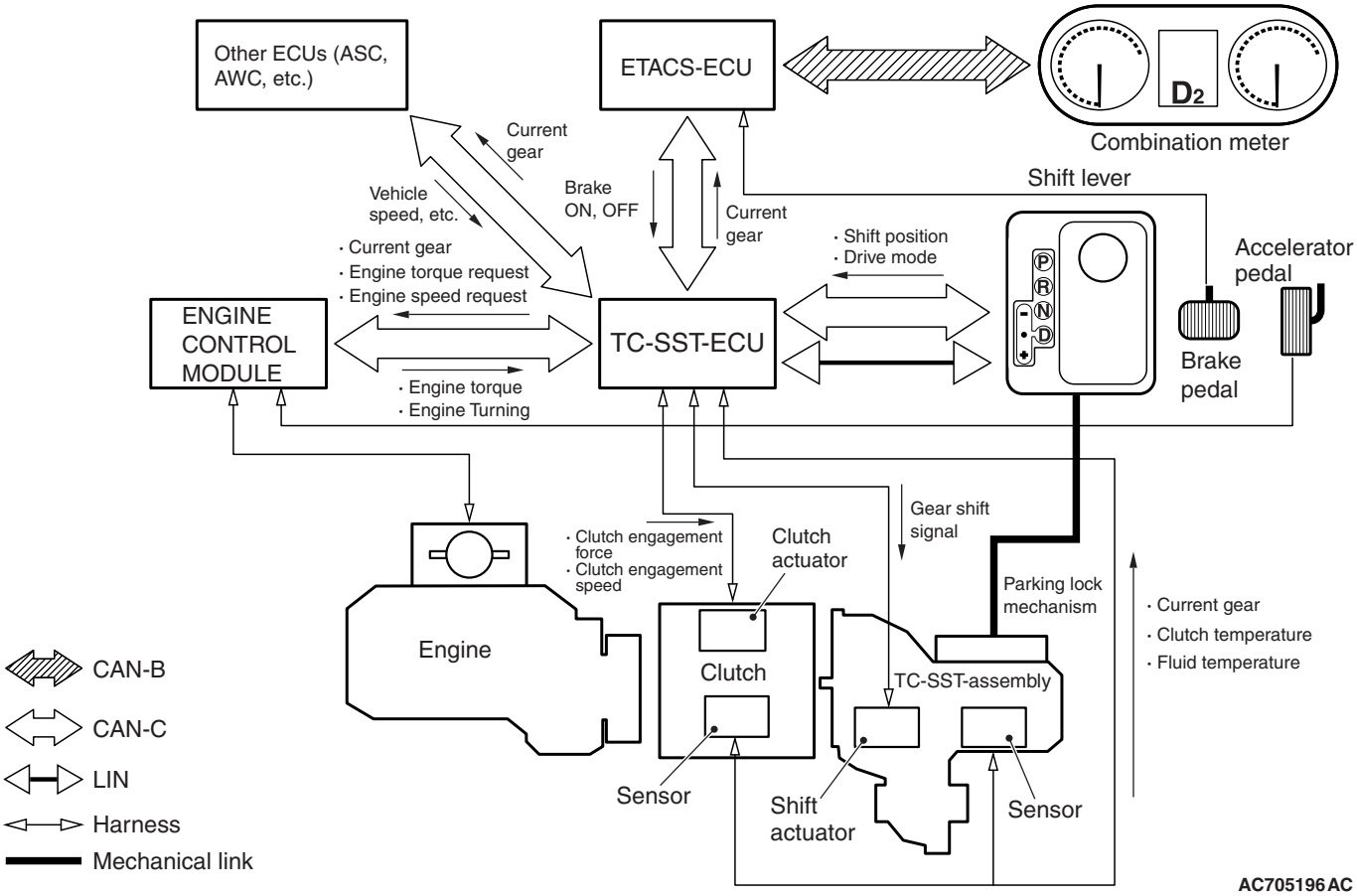
Also, to prevent the oil performance drop, the oil cooler and oil filter are equipped.

CONTROL MECHANISM



TC-SST-ECU communicates with various systems (engine control module, shift lever, twin clutch SST control mode switch, and others) to recognize the driver operation, driving condition, malfunction of systems, and others, and performs the corresponding control of TC-SST assembly.

Name	Function content
TC-SST-ECU	• Incorporated into the TC-SST assembly. Controls the solenoid valve of valve body based on the driver operations and signals from sensors and ECUs, and performs the engagement and releasing of clutch as well as the gear shifting. • By sending and receiving the information on engine torque, engine speed, shifted gear, and others with the engine control module, performs the integrated control of engine and TC-SST assembly.
Engine control module	By sending and receiving the information on engine torque, engine speed, shifted gear, and others with TC-SST-ECU, performs the integrated control of engine and TC-SST assembly.

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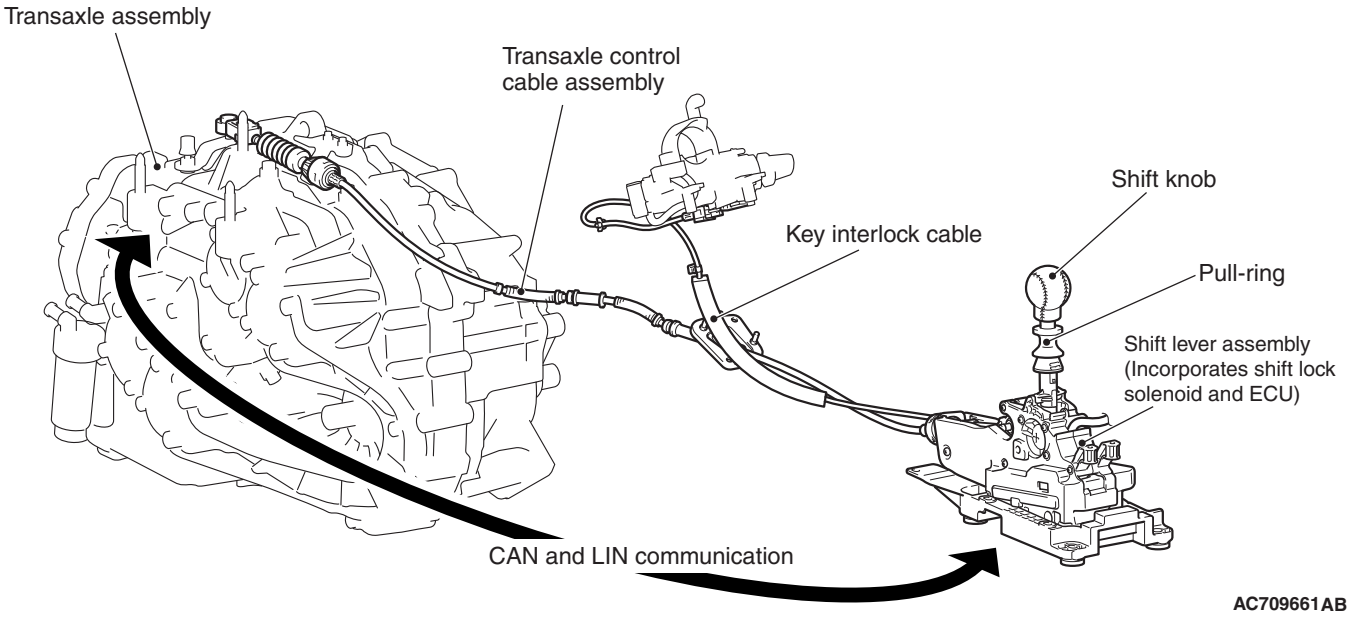
Name	Function content
ETACS-ECU	• Transmits the information to TC-SST-ECU of the brake operation and others needed for the vehicle starting and shifting timing. • Receives the information from TC-SST-ECU of the current gear, TC-SST assembly malfunction, and others, and sends the information to the combination meter to display the information.
Other ECUs (ASC-ECU, AWC-ECU, and others)	By the communication with ECUs which are relevant to the driving performance, controls the TC-SST assembly to support the normal driving to the circuit driving.
Shift lever	By sending the information to TC-SST-ECU of the driver operations, and shifting mode and drive mode switching/selection, controls the TC-SST assembly corresponding to the operation conditions.

TRANSAXLE CONTROL

In order to differentiate the TC-SST assembly shift lever from A/T and CVT, a new exclusive shift lever has been developed whose appearance is made similar to that for M/T. It offers the following features.

- Sporty, straight type shift lever operation has been adopted, and the operating power at each shift position have been properly tuned, ensuring the firm and smooth operation feel.
- The manual mode (6-speed) has been installed to allow manual shifting according to the driver's operation.
- ECU that is incorporated in the shift lever transmits the lever position information and others to TC-SST-ECU via CAN (main circuit) and LIN (auxiliary circuit).
- For the parking lock mechanism, the transaxle control cable is adopted.
- The electrical control-type shift lock (shift lever cannot be shifted to the position other than P position unless the brake pedal is depressed) mechanism with the solenoid has been adopted to facilitate the tuning work in assembly. The cable type having an established past record is adopted for the key interlock mechanism.
- Spherical shift knob is used to achieve the same quality as that for M/T.
- As a mis-operation preventative mechanism between P and R range, the pull ring has been adopted.
- The main components have been made of resin to reduce weight and number of components.



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ERRONEOUS OPERATION PREVENTION MECHANISMS

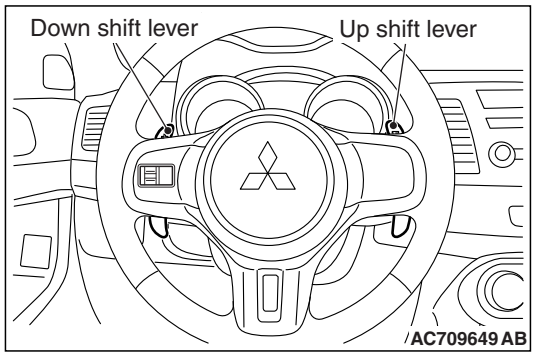
SHIFT LOCK MECHANISM

- This is basically the same as with the electric shift lock mechanism which is used for OUTLANDER.

KEY INTERLOCK MECHANISM

- This is basically the same as with the cable-type key interlock mechanism which is used for A/T vehicles.

PADDLE SHIFT



The mechanism is basically the same as that of OUTLANDER.

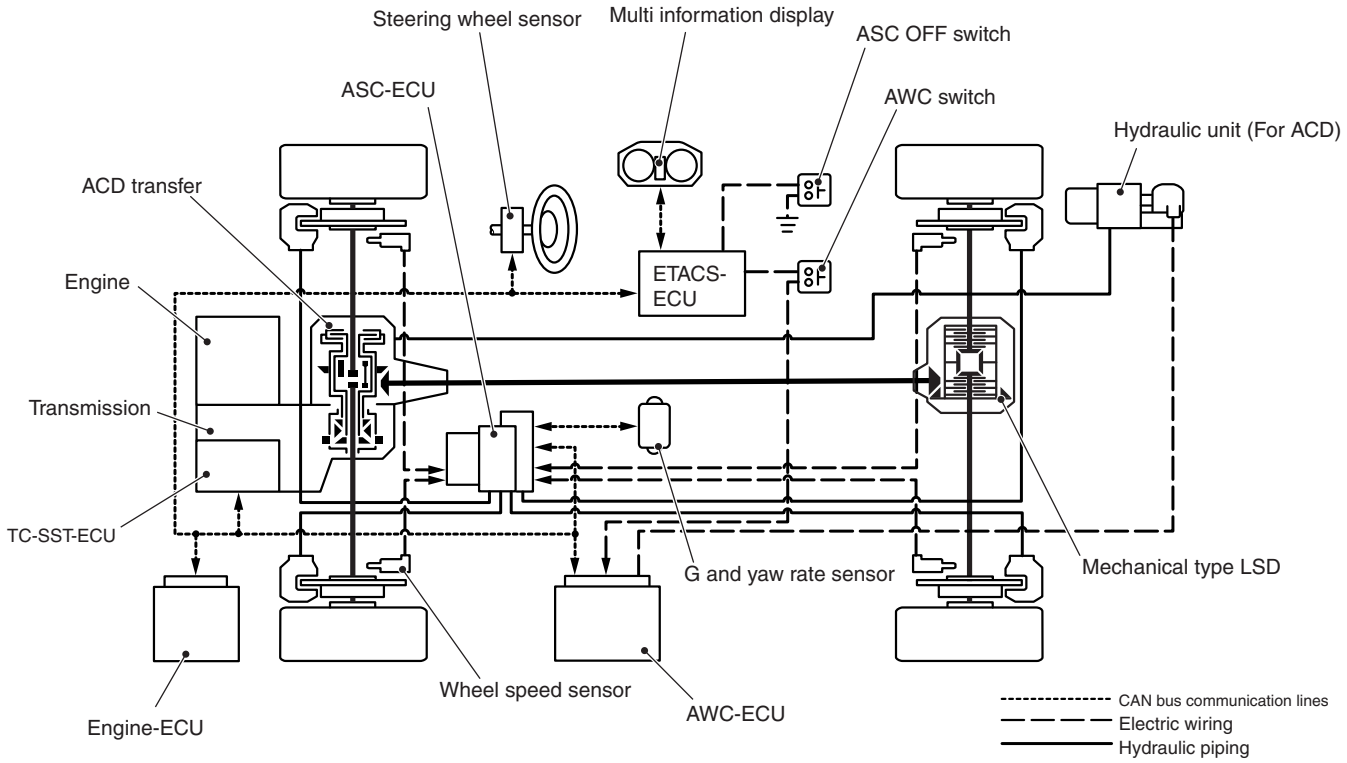
NOTE: With the automatic shifting (shift lever position: D), when the mode is changed to the manual mode by the paddle shift operation, the mode is cancelled by the conditions below.

- *Upshift lever is pulled for 2 seconds or more.*
- *Vehicle is stopped.*

ACTIVE CENTER DIFFERENTIAL (ACD)

The ACD is the system to improve acceleration performance and straightforward driving ability by controlling the limitation force and driving force distribution of the center differential.

DESCRIPTION OF STRUCTURE AND OPERATION



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AWC-ECU performs a calculation based on the information from ECU, sensors, and switches. Then, based on the calculation value, it appropriately operates the hydraulic unit (for ACD) to control in response to the driver's operations and vehicle behaviors.

ACD transfer	Adjusts the center differential operation by controlling the multiplate clutch transfer torque inside the ACD transfer based on the hydraulic pressure from the hydraulic unit.
Hydraulic unit (For ACD)	Controls the hydraulic pressure supplied to the multiplate clutch in the ACD transfer according to the signal from the AWC-ECU.
AWC-ECU	Based on the information obtained via CAN communication and others, it appropriately controls ACD.
Sensors	Information of sensors (throttle position sensor, G sensor, steering sensor, wheel speed sensor, yaw rate sensor), engine torque, and engine speed are sent to the AWC-ECU.

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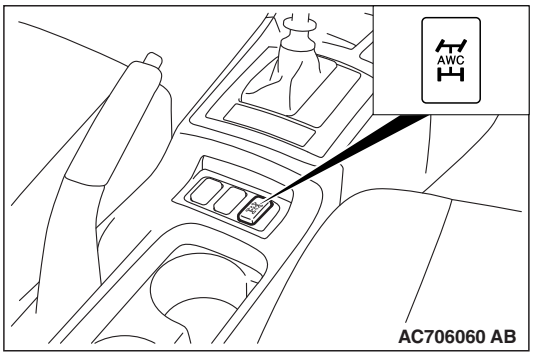
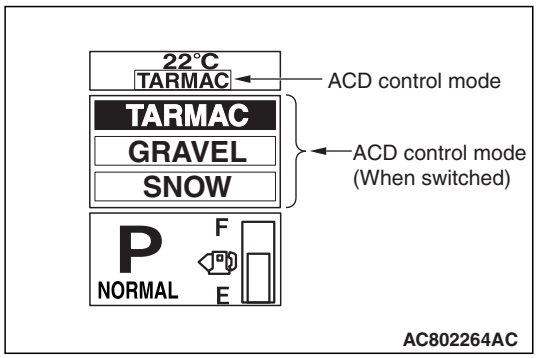
AWC SWITCH



By pressing the AWC switch, the driving mode can be switched among TARMAC, GRAVEL, and SNOW.
With each pressing of the AWC switch, the ACD control mode shifts in the order as follows: TARMAC → GRAVEL → SNOW → TARMAC

MULTI INFORMATION DISPLAY



The current driving mode is displayed at all times to the upper center of multi information display. When the mode is switched, the mode switching status is displayed automatically to the information screen at the middle, and then the screen returns to the previous screen after the completion of setting.

CONTROL OVERVIEW

ACD CONTROL MODE

- The ACD control is the same as with previous model, and the control mode can be switched among TARMAC, GRAVEL, and SNOW in response to road conditions.

ACD control mode	Road condition achieving an effect
TARMAC	Normally used. Use this mode on a paved road.
GRAVEL	Used when driving on slightly slippery road surfaces such as wet road and gravel.
SNOW	Used when driving on slippery road surfaces such as snowy road.

SENSOR INFORMATION

- With the information of sensors (throttle position sensor, G sensor, steering sensor, wheel speed sensor, yaw rate sensor), engine torque, and engine speed, the accurate control has been achieved, and the vehicle response to the driving status has been improved.

ADDITION OF TC-SST CONTROL

- For vehicles with TC-SST, AWC-ECU communicates with TC-SST-ECU via CAN line to suppress unnecessary gear shifts during cornering which hamper the sport driving.

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SERVICE SPECIFICATIONS

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Item	Standard value
ACD proportioning valve resistance Ω	3.7 ± 0.3
Hydraulic pressure of hydraulic unit (during forced activation) MPa (psi)	0.9 – 1.1 (130 - 159 psi)

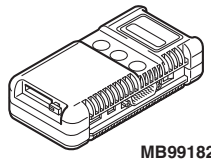
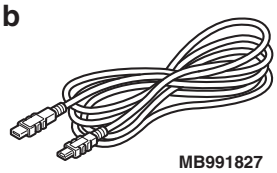
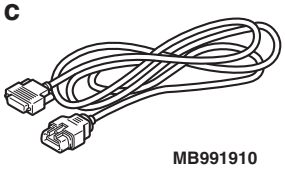
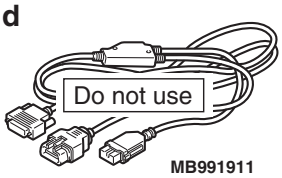
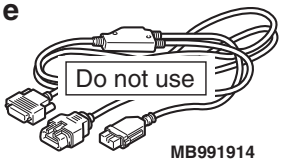
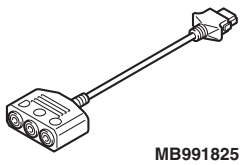
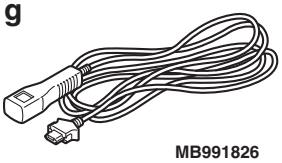
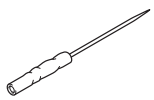
LUBRICANTS

M1225000200234

Item		Brand	Capacity
Transmission fluid dm ^{3} (qt)		DiaQueen SSTF-I	7.6 (8.0) [Including 0.5 (0.53) in oil cooler]
Transfer oil dm ^{3} (qt)		DiaQueen LSD gear oil	0.8 (0.85)
ACD control fluid dm ^{3} (qt)		DIAMOND ATF SP III	0.9 (0.95)
Front propeller shaft	Sleeve yoke section	DiaQueen LSD gear oil	Adequate amount
Transaxle assembly	Spline sections of front driveshaft assembly (LH) and output shaft	Molykote BR2-Plus	
	Spline sections of transfer assembly and transaxle assembly		
	O-ring		
	Spline sections of input shaft and flywheel		

SPECIAL TOOLS

M1225000300156

Tool	Tool number and name	Supersession	Application
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 *NOTE: G: MB991826 M.U.T.-III trigger harness is not necessary when pushing V.C.I. ENTER key.*	**⚠ 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.** Checking diagnostic trouble codes
 MB992006	MB992006 Extra fine probe	–	Making voltage and resistance measurement during troubleshooting

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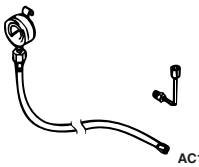
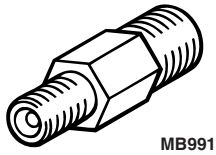
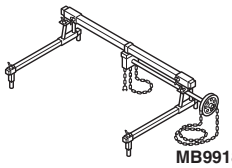
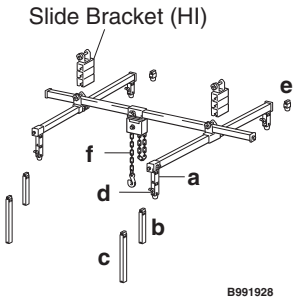
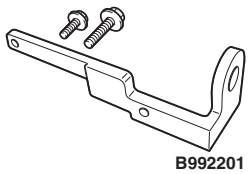
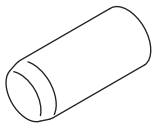
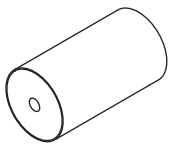
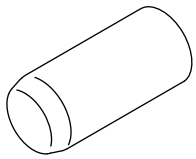
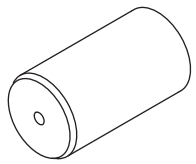
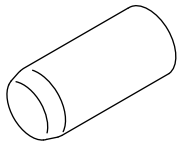
Tool	Tool number and name	Supersession	Application
 AC103525	MD998330 (Includes MD998331) Oil pressure gauge (3.0 MPa, 427 psi)	MD998330-01	Measurement of hydraulic pressure
 MB991705	MB991705	Adapter	
 MB991895	MB991895 Engine hanger	Tool not available	When the engine hanger is used: Supporting the engine assembly during removal and installation of the transaxle assembly
 B991928	MB991928 Engine hanger a: MB991929 Joint (50) ×2 b: MB991930 Joint (90) ×2 c: MB991931 Joint (140) ×2 d: MB991932 Foot (standard) ×4 e: MB991933 Foot (short) ×2 f: MB991934 Chain and hook assembly	Tool not available	
 B992201	MB992201 Engine hanger plate	–	
	MB992311 Oil seal guide	–	Installation of transaxle case (LH) oil seal
	MB992310 Oil seal installer	–	Installation of transaxle case (LH) oil seal

TSB Revision

Tool	Tool number and name	Supersession	Application
	MB992313 Oil seal guide	–	Installation of transaxle case (RH) oil seal
	MB992312 Oil seal installer	–	Installation of transaxle case (RH) oil seal
	MB992314 V ring guide	–	Installation of V ring

DIAGNOSIS <TC-SST>

INTRODUCTION

The TC-SST system can exhibit any of the following symptoms: noise or vibration is generated or fluid leaks.

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The causes of these symptoms could come from: incorrect mounting, the fluid level may be low, or a component of the TC-SST may be faulty.

TROUBLESHOOTING STRATEGY

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will find most TC-SST malfunctions.

1. Gather as much information as possible about the complaint from the customer.
2. Verify that the condition described by the customer exists.
3. Check the vehicle for any TC-SST Diagnostic Trouble Codes (DTCs).
4. If you cannot verify the condition and there are no DTCs, the malfunction is intermittent. For information on how to cope with intermittent malfunctions, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-14.

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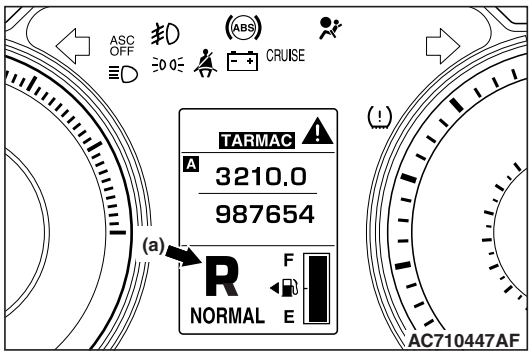
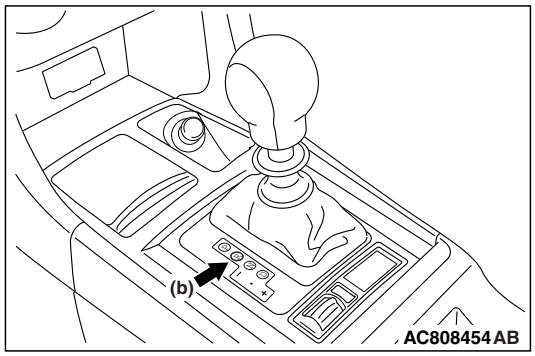
5. If you can verify the condition but there are no DTCs, or the system cannot communicate with scan tool, refer to the Symptom Chart P.22C-38.
6. If there is a DTC, record the number of the code, then erase the code from memory using scan tool.
7. Reconfirm the symptom.
8. If a DTC is set again, go to the Inspection Chart for Diagnostic Trouble Codes.
9. If a DTC is not set again, the malfunction is intermittent. For information on how to cope with intermittent malfunctions, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-14.
10. Verify malfunction is eliminated. After repairs are completed, the complaint conditions to confirm the malfunction has been eliminated.

PRECAUTIONS FOR DIAGNOSIS

With the TC-SST assembly, the IG shutoff delay system is adopted to improve the engine starting performance.

When the ignition switch is turned OFF, the IG shut-off delay system release the gear engagement in preparation for the next engine starting. This is a system to delay the engine stop for approximately 1 second, and the delay is not a malfunction.





If the gear is not in the reverse position, the R range indicator of the multi information display (a) and the R range indicator of the floor console panel (b) flash. This is a warning to the driver, and is not a malfunction.
In this case, return the shift lever to the N range, and move it to the R range again. If the flashing of each R range indicator changes to normal illumination, it indicates that the gear is in reverse position.

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TC-SST TEACH-IN

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⚠ CAUTION

- **Check the Diag. Version before Teach-in. If the Diag. Version is 0000, reprogram the ECU. (The software with Diag. Version 0000 does not have Teach-in function.)**
- **When the mechatronic assembly is replaced, reprogram the ECU and carry out the following Teach-In.**
- **When the clutch assembly is replaced, the following Teach-In must be carried out.**

TEACH-IN ITEM

1. Teach-In operation type

There are two types of Teach-In operation and the type to be implemented varies depending on the replacement part.

Type	Teach-In	Mechatronic assembly replacement	Clutch assembly replacement
A	Teach-In for Shift fork	Implemented	Not implemented
B	Teach-In for Clutch	Implemented	Implemented

NOTE: When replacing the mechatronic assembly, execute in A → B order.

2. Scan tool item execution

To complete each Teach-In operation, multiple items must be executed using scan tool MB991958, and those items shall be executed in a designated order.

2-1. SCAN TOOL ITEM LIST

Item No.	Scan tool Item Name
1	Plausibility check
2	Shift fork Teach-In
3	Line pressure Test
4	Stroke Teach-In
5	Boost Teach-In
6	Interlock Teach-In
7	Clutch Ventilation
8	Reset clutch gain

NOTE:

- *Item No. 3 and No. 6 are displayed on the scan tool, however, those are not used.*
- *Item No.8 is not displayed when the Diag. Version of TC-SST-ECU is pre-0002. (Diag. Version can be checked by the Teach-In screen of scan tool.)*

2-2. ITEM EXECUTION ORDER

Type	Teach-In	Item execution order
A	Teach-In for Shift fork	No.7 → No.1 → No.2
B	Teach-In for Clutch	No.7 → No.4 → No.5 → No.8

NOTE: Item No.8 is not displayed when the Diag. Version of TC-SST-ECU is pre-0002. (Diag. Version can be checked by the Teach-In screen of scan tool.)

3. Confirmation of Teach-In operation status

Using the data list simultaneously displayed with Teach-In, the execution status and results can be confirmed.

No.	Data List Item Name	Scan tool display
100	Teach-In executing	No/Pending/Yes
101	Normal End	No/Yes
102	Abnormal End	No/Yes
103	Timeout error	No/Yes
104	Abort conditions error	No/Yes
110	Execute last Teach-In item	The previously conducted scan tool item name is displayed
111	Internal Error Data	The monitoring unit No. is displayed in case of an error

TEACH-IN PROCEDURE

NOTE:

- *According to the transmission fluid state (fluid -filled state), Teach-In executed time is not equal.*
- *Item No.8 is not displayed when the Diag. Version of TC-SST-ECU is pre-0002. (Diag. Version can be checked by the Teach-In screen of scan tool.)*

<MECHATRONIC ASSEMBLY REPLACEMENT>

Steps	Contents
1	With the scan tool connected and the vehicle set to the condition below, execute the Teach-In. • Engine: Idling • Shift lever position: P range • Brake pedal: Depressed • Parking brake: Pulled • Transmission fluid temperature: 40°C to 80°C (104°F to 176°F)
2	Select "Special Function" of TC-SST.
3	Select "Teach-In" of Special Function.
4	According to "2-2 Item execution order", select the Item No.7: Clutch Ventilation to execute. *NOTE: Before execution, "No" is displayed in the Data list No. 100: Teach-In executing.*
5	After execution, check that "Yes" is displayed in the Data list No. 100: Teach-In executing. *NOTE: In a case other than the execution conditions, "Pending" is displayed in the Data list No. 100: Teach-In executing.*
6	After the Teach-In (Item No. 7: Clutch Ventilation) completion, check that "No" is displayed in the Data list No. 100: Teach-In executing and execution results are displayed in the Data list No. 101 to No. 104. • No.101: Normal End: On normal end, "Yes" is displayed. • No.102: Abnormal End: On abnormal end, "Yes" is displayed. • No.103: Timeout error: On timeout error, "Yes" is displayed. • No.104: Abort conditions error: In a case other than the execution conditions, "Yes" is displayed.
7	Change the item to No. 1: Plausibility check, and execute steps from 4 to 6 in the same manner.
8	Change the item to No. 2: Shift fork Teach-In, and execute steps from 4 to 6 in the same manner.
9	Turn the ignition switch to the LOCK (OFF) position.
10	Change the item to No. 7: Clutch Ventilation, and execute steps from 4 to 6 in the same manner.
11	Change the item to No. 4: Stroke Teach-In, and execute steps from 4 to 6 in the same manner.
12	**⚠ CAUTION** **Be careful with the following item when performing Item No.5: Boost Teach-In.** • **The engine speed could be high (4,000 r/min) when the Boost Teach-In is in progress. (Depending on the transaxle state, the engine speed may not be high.)** Change the item to No. 5: Boost Teach-In, and execute steps from 4 to 6 in the same manner.
13	Change the item to No. 8: Reset clutch gain, and execute steps from 4 to 6 in the same manner.
14	Turn the ignition switch to the LOCK (OFF) position.

<CLUTCH ASSEMBLY REPLACEMENT>

Contents
Execute the mechatronic assembly replacement procedures form 1 to 3, and from 10 to 14.

DIAGNOSIS FUNCTION

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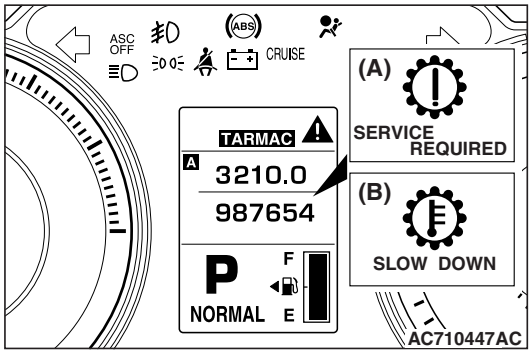


WARNING INDICATOR

When a malfunction occurs in the TC-SST system, the figure (A) remains displayed on the information screen of multi information display.
If the figure (A) remains displayed on the information screen of multi information display, check whether or not a diagnostic trouble code is set.

NOTE: When the figure (B) is displayed on the information screen of multi information display, the transmission fluid temperature is high.

FAIL-SAFE FUNCTION

If an abnormality occurs to the signal of sensors, switches, solenoids, or others, TC-SST-ECU performs a control for the driver safety and system protection. The control contents are as follows.

FAIL-SAFE REFERENCE TABLE

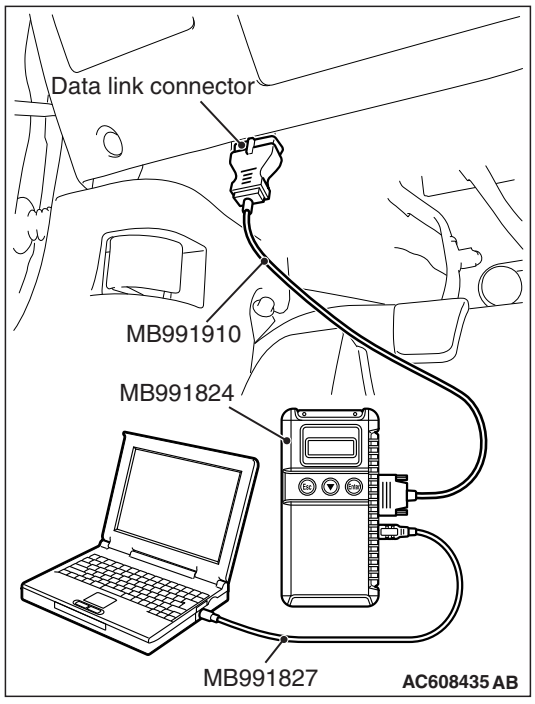
Diagnostic trouble code No.			Control content
P0702 P1803 P1804 P1805	P1806 P1807 P1857 P1858	P185D P1866 P1868 P1872	Clutch open prohibits the vehicle from driving, and displays an occurrence of trouble to the multi information display to warn the driver.
P0776 P0777 P0964 P0965 P0966	P0968 P0970 P0971 P1852 P2733	P2736 P2738 P2739	Continues driving with the current gear fixed, and an occurrence of trouble is displayed to the multi information display to warn the driver.
P0715 P0716 P0753 P0758 P0841 P0842 P0843 P0846 P0847 P0848 P0973 P0974 P0976 P181B P181C P181E P181F P1820 P1821 P1822	P1823 P1824 P1825 P1826 P1827 P1828 P1829 P182A P182B P182C P182D P182E P1831 P1832 P1833 P1834 P1835 P1836 P183D P1844	P184B P1855 P1885 P1886 P1887 P1888 P2718 P2719 P2720 P2721 P2728 P2729 P2730 P2766 P2809 P2812 P2814 P2815	Drives with the odd number gear axle (1st, 3rd, 5th gear) or with the even gear axle (2nd, 4th, 6th gear), and an occurrence of trouble is displayed to the multi information display to warn the driver.

Diagnostic trouble code No.			Control content
P1862 P1863 P186A P186B	P1876 P1877 P1878 P1879	P187A P187B P187C	Drives with the gears other than the gears related to the part in trouble, and an occurrence of trouble is displayed to the multi information display to warn the driver.
P1871	U0001	U0100	The creep driving cannot be performed, and displays an occurrence of trouble to the multi information display to warn the driver.
P0746 P0963	P1870	P1871	Shift shock or shift response deterioration occurs, and displays an occurrence of trouble to the multi information display to warn the driver.
P0630 P0701 P0712 P0713 P0960 P0961 P0962 P0967	P1637 P1676 P180C P1864 P1867 P186C P186D P186E	P186F P1873 P1874 P1875 P1880 P1881 P1890	Normal driving can be performed, and displays an occurrence of trouble to the multi information display to warn the driver.

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

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle 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 MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the scan tool system on the personal computer.

NOTE: Disconnecting scan tool MB991958 is the reverse of the connecting sequence, making sure that the ignition switch is at the "LOCK" (OFF) position.

PERMANENT DTC

Refer to GROUP 13B – Multiport Fuel Injection (MFI) Diagnosis, Diagnostic Function P.13B-10.

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PROCEDURES FOR ERASING PERMANENT DTC

Repair the relevant DTC, and then erase the permanent DTC according to the following procedure.

NOTE: The permanent DTC corresponding to the DTC that takes multiple drive cycles to detect a malfunction, can be erased by performing the erasing procedure once.

⚠ CAUTION

If the malfunction indicator lamp turns on while erasing the permanent DTC, repeat from Step 1.

1. Check that the DTC is not stored. If the DTC is stored, perform the DTC troubleshooting, then repair the DTC.
2. Turn the ignition switch to the "LOCK" (OFF) position.
3. Start the engine.
4. Drive the vehicle with all the following conditions satisfied.
   - Total driving time (engine running) is 10 minutes or more continuously.
   - The driving time includes continuous idling for 30 seconds or more.

     NOTE: The accelerator pedal is not depressed.
   - While driving, drive with the vehicle speed 40 km/h (25 mph) or more for 5 minutes or more.

     NOTE: Drive the vehicle so that the total accumulated driving time with the vehicle speed 40 km/h (25 mph) or more will be 5 minutes or more. Do not include the time when the vehicle is driven at 40 km/h (25 mph) or less.
5. Turn the ignition switch to the "LOCK" (OFF) position.

FREEZE FRAME DATA CHECK

Various data of when the diagnostic trouble code is determined is obtained, and the status of that time is stored. By analyzing each data using the scan tool, troubleshooting can be performed efficiently.

Display items of the freeze frame data are as follows.

FREEZE FRAME DATA REFERENCE TABLE

Item No.	Item	Unit/Display
1	Odometer	mile
2	Drive cycle	Count
4	Current trouble accumulative time	min
5	System power supply	V
7	Clutch pressure (Odd number gears)	mbar
8	Clutch pressure (Even number gears)	mbar
9	Clutch status (Odd number gears)	• Inactive • Closed (During the torque control) • Hydraulic pressure charging • Pre-stroke • During hydraulic pressure relief • Clutch not engaged • Open • Clutch in engagement • Clutch in disengagement
10	Clutch status (Even number gears)	• Inactive • Closed (During the torque control) • Hydraulic pressure charging • Pre-stroke • During hydraulic pressure relief • Clutch not engaged • Open • Clutch in engagement • Clutch in disengagement
11	Shift fork position sensor 1	mm
12	Shift fork position sensor 2	mm
13	Shift fork position sensor 3	mm
14	Shift fork position sensor 4	mm
15	Input shaft (odd) speed	r/min
16	Input shaft (even) speed	r/min

Item No.	Item	Unit/Display
22	Current gear	• N • 1st • 2nd • 3rd • 4th • 5th • 6th • R • N (Odd number) • N (Even number) • Undefined gear
23	Target gear	• N • 1st • 2nd • 3rd • 4th • 5th • 6th • R • N (Odd number) • N (Even number) • Undefined gear
24	SST control mode	• NORMAL • SPORT
25	Gear change mode	• AUTO • Manual
26	Torque limit request (Fuel cut)	• ON • OFF
27	Torque limit request (Throttle closing)	• ON • OFF
28	Torque limit request (Retard)	• ON • OFF
30	Monitoring unit number (1)	Monitoring unit No. indication(Refer to P.22C-33)
31	Monitoring unit number (2)	
32	Monitoring unit number (3)	
33	Monitoring unit number (4)	
34	Monitoring unit number (5)	
35	Monitoring unit number (6)	
36	Monitoring unit number (7)	
37	Monitoring unit number (8)	
39	Vehicle speed	mph
40	Highside driver 1 state	• ON • OFF

Item No.	Item	Unit/Display
41	Highside driver 2 state	• ON • OFF
42	Highside driver 3 state	• ON • OFF
43	Dumper speed sensor	r/min

DIAGNOSTIC TROUBLE CODE CHART

M1225000600395

⚠ CAUTION

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

NOTE:

- *The monitoring unit No. indicates the malfunction code applicable to each DTC No., and it can be confirmed by the freeze frame data (item No. 30 to No. 37).*
- *For the DTC No. with *, the malfunction indicator lamp lights up when the applicable DTC No. is set.*
- *The definition of drive cycle indicates from (Ignition switch: "ON" after starting the engine), (Ignition switch: "LOCK" (OFF)) to (Ignition switch: "ON" again).*

DTC No.	Monitoring unit No.	Diagnostic item	Judgment drive cycle	Reference page
P0630	204	VIN not recorded	1	P.22C-39
P0701	081	EEPROM system (Malfunction)	2	P.22C-40
P0702	087, 088	Internal control module, monitoring processor system (Malfunction)	1	P.22C-40
P0712*	136	TC-SST-ECU temperature sensor system (Output low range out)	2	P.22C-41
P0713*	101	TC-SST-ECU temperature sensor system (Output high range out)	2	P.22C-43
P0715*	090	Input shaft 1 (odd number gear axle) speed sensor system (Output high range out)	2	P.22C-45
P0716*	114, 138	Input shaft 1 (odd number gear axle) speed sensor system (Poor performance)	2	P.22C-47
P0717*	070	Input shaft 1 (odd number gear axle) speed sensor system (Output low range out)	2	P.22C-52
P0725	258	Engine speed signal abnormality	2	P.22C-54
P0746*	107, 108	Line pressure solenoid system (Drive current range out)	1	P.22C-55
P0753*	039	Shift select solenoid 1 system (Open circuit)	1	P.22C-58
P0758*	042	Shift select solenoid 2 system (Open circuit)	1	P.22C-60
P0776*	110, 111	Clutch cooling flow solenoid system (Drive current range out)	1	P.22C-62
P0777*	112	Clutch cooling flow solenoid system (Stuck)	1	P.22C-64
P0841*	117	Clutch 1 pressure sensor system (Poor performance)	2	P.22C-67
P0842*	004	Clutch 1 pressure sensor system (Output low range out)	2	P.22C-70
P0843*	005	Clutch 1 pressure sensor system (Output high range out)	2	P.22C-72
P0846*	121	Clutch 2 pressure sensor system (Poor performance)	2	P.22C-74
P0847*	006	Clutch 2 pressure sensor system (Output low range out)	2	P.22C-77
P0848*	007	Clutch 2 pressure sensor system (Output high range out)	2	P.22C-79
P0960*	030	Line pressure solenoid system (Open circuit)	1	P.22C-81

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DTC No.	Monitoring unit No.	Diagnostic item	Judgment drive cycle	Reference page
P0961*	077	Line pressure solenoid system (Overcurrent)	1	P.22C-83
P0962*	029	Line pressure solenoid system (Short to ground)	1	P.22C-85
P0963*	028	Line pressure solenoid system (Short to power supply)	1	P.22C-87
P0964*	033	Clutch cooling flow solenoid system (Open circuit)	1	P.22C-89
P0965*	078	Clutch cooling flow solenoid system (Overcurrent)	1	P.22C-91
P0966*	032	Clutch cooling flow solenoid system (Short to ground)	1	P.22C-93
P0967*	031	Clutch cooling flow solenoid system (Short to power supply)	1	P.22C-95
P0968*	036	Shift/cooling switching solenoid system (Open circuit)	1	P.22C-97
P0970*	035	Shift/cooling switching solenoid system (Short to ground)	1	P.22C-99
P0971*	034	Shift/cooling switching solenoid system (Short to power supply)	1	P.22C-101
P0973*	038	Shift select solenoid 1 system (Short to ground)	1	P.22C-103
P0974*	037	Shift select solenoid 1 system (Short to power supply)	1	P.22C-105
P0976*	041	Shift select solenoid 2 system (Short to ground)	1	P.22C-107
P0977	040	Shift select solenoid 2 system (Short to power supply)	1	P.22C-109
P1637*	082	EEPROM system (DTC storing malfunction)	1	P.22C-110
P1676*	109	Coding incomplete	1	P.22C-112
P1802	089, 230	Shift lever system (LIN communication malfunction)	2	P.22C-114
P1803	233	Shift lever system (CAN or LIN time-out error)	1	P.22C-117
P1804*	024	Shift fork position sensor 1 and 2 system (Power supply voltage low range out)	1	P.22C-118
P1805*	025	Shift fork position sensor 1 and 2 system (Power supply voltage high range out)	1	P.22C-120
P1806*	026	Shift fork position sensor 3 and 4 system (Power supply voltage low range out)	1	P.22C-122
P1807*	027	Shift fork position sensor 3 and 4 system (Power supply voltage high range out)	1	P.22C-124
P1808*	105	TC-SST-ECU temperature, fluid temperature sensor system (Correlation error)	1	P.22C-126
P180C	113	Clutch pressure cut spool sticking	2	P.22C-128
P181B*	124	Clutch 1 (Pressure low range out)	2	P.22C-129
P181C*	125	Clutch 1 (Pressure high range out)	2	P.22C-131
P181E*	129	Clutch 2 (Pressure low range out)	2	P.22C-141
P181F*	130	Clutch 2 (Pressure high range out)	2	P.22C-144
P1820*	008	Shift fork position sensor 1 system (Voltage low range out)	1	P.22C-154

TSB Revision

DTC No.	Monitoring unit No.	Diagnostic item	Judgment drive cycle	Reference page
P1821*	009	Shift fork position sensor 1 system (Voltage high range out)	1	P.22C-157
P1822*	144	Shift fork position sensor 1 system (Output range out)	1	P.22C-160
P1823*	158	Shift fork position sensor 1 system (Neutral)	1	P.22C-163
P1824*	156	Shift fork position sensor 1 system (Poor performance)	2	P.22C-166
P1825*	010	Shift fork position sensor 2 system (Voltage low range out)	1	P.22C-170
P1826*	011	Shift fork position sensor 2 system (Voltage high range out)	1	P.22C-172
P1827*	146	Shift fork position sensor 2 system (Output range out)	1	P.22C-175
P1828*	218	Shift fork position sensor 2 system (Neutral)	1	P.22C-178
P1829*	152	Shift fork position sensor 2 system (Poor performance)	2	P.22C-181
P182A*	012	Shift fork position sensor 3 system (Voltage low range out)	1	P.22C-185
P182B*	013	Shift fork position sensor 3 system (Voltage high range out)	1	P.22C-188
P182C*	148	Shift fork position sensor 3 system (Output range out)	1	P.22C-191
P182D*	219	Shift fork position sensor 3 system (Neutral)	1	P.22C-194
P182E*	153	Shift fork position sensor 3 system (Poor performance)	2	P.22C-197
P1831*	014	Shift fork position sensor 4 system (Voltage low range out)	1	P.22C-200
P1832*	015	Shift fork position sensor 4 system (Voltage high range out)	1	P.22C-202
P1833*	150	Shift fork position sensor 4 system (Output range out)	1	P.22C-205
P1834*	159	Shift fork position sensor 4 system (Neutral)	1	P.22C-208
P1835*	157	Shift fork position sensor 4 system (Poor performance)	2	P.22C-211
P1836*	160, 172, 182, 183	Shift fork 1 malfunction	1	P.22C-215
P183D*	161, 174, 184, 185	Shift fork 2 malfunction	1	P.22C-222
P1844*	162, 178, 186, 187	Shift fork 3 malfunction	1	P.22C-230
P184B*	163, 180, 188, 189	Shift fork 4 malfunction	1	P.22C-237
P1852*	190, 191	Shift fork 1 or 2 opposite direction movement	1	P.22C-245
P1855*	192, 193	Shift fork 3 or 4 opposite direction movement	1	P.22C-247
P1857*	194	Odd number gear axle interlock	1	P.22C-250
P1858*	195	Even number gear axle interlock	1	P.22C-253
P185D	223	Clutch open not possible	1	P.22C-255

DTC No.	Monitoring unit No.	Diagnostic item	Judgment drive cycle	Reference page
P1862*	059	High side 1 system (Overcurrent)	1	P.22C-256
P1863*	060	High side 1 system (Open circuit)	1	P.22C-258
P1864*	061	High side 1 system (Short to power supply)	1	P.22C-260
P1866*	062	High side 2 system (Overcurrent)	1	P.22C-262
P1867*	063	High side 2 system (Open circuit)	1	P.22C-264
P1868*	064	High side 2 system (Short to power supply)	1	P.22C-266
P186A*	065	High side 3 system (Overcurrent)	1	P.22C-268
P186B*	066	High side 3 system (Open circuit)	1	P.22C-270
P186C*	067	High side 3 system (Short to power supply)	1	P.22C-272
P186D*	173	High side 1 system (Voltage low range out)	1	P.22C-274
P186E*	177	High side 2 system (Voltage low range out)	1	P.22C-276
P186F*	179	High side 3 system (Voltage low range out)	1	P.22C-278
P1870*	205	Engine torque signal abnormality	2	P.22C-281
P1871*	203	APS system (Signal abnormality)	1	P.22C-284
P1872	220	Between shift lever and TC-SST system (Q-A function abnormality)	1	P.22C-287
P1873	212, 216	Clutch 1 system (Pressure abnormality)	2	P.22C-288
P1874	213, 217	Clutch 2 system (Pressure abnormality)	2	P.22C-289
P1875*	139, 207	Damper speed sensor system (Poor performance)	2	P.22C-290
P1876	196	Gear block 1st	3	P.22C-293
P1877*	197	Gear block 2nd	2	P.22C-295
P1878*	198	Gear block 3rd	2	P.22C-297
P1879*	199	Gear block 4th	2	P.22C-299
P187A*	200	Gear block 5th	2	P.22C-301
P187B*	201	Gear block 6th	2	P.22C-303
P187C	202	Gear block reverse	3	P.22C-305
P1880	137	EOL Mode Active	1	P.22C-306
P1881	268	Twin clutch SST control mode switch system (Malfunction)	2	P.22C-307
P1885	168, 170	Shift fork 1 jump out	3	P.22C-308
P1886	164, 166	Shift fork 2 jump out	3	P.22C-309
P1887	165	Shift fork 3 jump out	3	P.22C-310
P1888	169, 171	Shift fork 4 jump out	3	P.22C-311
P1890	132	Teach-In not completed	2	P.22C-312
P2718*	045	Clutch/shift pressure solenoid 1 system (Open circuit)	1	P.22C-314

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DTC No.	Monitoring unit No.	Diagnostic item	Judgment drive cycle	Reference page
P2719*	079	Clutch/shift pressure solenoid 1 system (Overcurrent)	1	P.22C-316
P2720*	044	Clutch/shift pressure solenoid 1 system (Short to ground)	1	P.22C-318
P2721*	043	Clutch/shift pressure solenoid 1 system (Short to power supply)	1	P.22C-320
P2727*	048	Clutch/shift pressure solenoid 2 system (Open circuit)	1	P.22C-322
P2728*	080	Clutch/shift pressure solenoid 2 system (Overcurrent)	1	P.22C-324
P2729*	047	Clutch/shift pressure solenoid 2 system (Short to ground)	1	P.22C-326
P2730*	046	Clutch/shift pressure solenoid 2 system (Short to power supply)	1	P.22C-328
P2733*	134	Clutch/shift switching solenoid 1, spool stuck	1	P.22C-330
P2736*	051	Clutch/shift switching solenoid 1 system (Open circuit)	1	P.22C-333
P2738*	050	Clutch/shift switching solenoid 1 system (Short to ground)	1	P.22C-334
P2739*	049	Clutch/shift switching solenoid 1 system (Short to power supply)	1	P.22C-336
P2742*	135	Fluid temperature sensor system (Output low range out)	2	P.22C-338
P2743*	103	Fluid temperature sensor system (Output high range out)	2	P.22C-340
P2766*	115, 240	Input shaft 2 (even number gear axle) speed sensor system (Poor performance)	2	P.22C-342
P2809*	141	Clutch/shift switching solenoid 2, spool stuck	1	P.22C-347
P2812*	054	Clutch/shift switching solenoid 2 system (Open circuit)	1	P.22C-349
P2814*	053	Clutch/shift switching solenoid 2 system (Short to ground)	1	P.22C-351
P2815*	052	Clutch/shift switching solenoid 2 system (Short to power supply)	1	P.22C-353
U0001*	083	Bus off	1	P.22C-355
U0100*	116	Engine time-out error	1	P.22C-357
U0103	123	Shift lever time-out error	1	P.22C-359
U0121	122	ASC time-out error	1	P.22C-360
U0136	209	AWC time-out error	1	P.22C-361
U0141	120	ETACS time-out error	1	P.22C-362

SYMPTOM CHART

M1225005200284

⚠ CAUTION

During diagnosis, a DTC 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.

Symptom	Inspection procedure No.	Reference page
The scan tool cannot communicate with TC-SST-ECU.	1	P.22C-363
The driving mode cannot be changed.	2	P.22C-364
Speed change with the paddle shift is impossible.	3	P.22C-366
TC-SST-ECU power supply circuit malfunction	4	P.22C-369
The shift lever does not operate.	5	P.22C-373
Gears cannot be changed with the manual mode.	6	P.22C-376
The vehicle moves with the P-range.	7	P.22C-377
Slipping occurs with the D-range/R-range/manual mode, and engine racing occurs during gear shifting/driving.	8	P.22C-378
The vehicle does not creep with the D-range/R-range/manual mode.	9	P.22C-379
The shock is large when the vehicle is stopped and the brake pedal is released with the D-range/R-range/manual mode.	10	P.22C-380
Poor acceleration	11	P.22C-380
The gear shifting does not occur. (The transmission does not upshift or downshift.)	12	P.22C-381
The shift shock is large.	13	P.22C-382
Delay occurs when the lever is shifted N → D or N → R.	14	P.22C-383
The engine stops when the lever is shifted N → D or N → R.	15	P.22C-384
The vehicle moves with the N-range on the level ground.	16	P.22C-385
Judder/vibration/noise	17	P.22C-385

TSB Revision

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC P0630: VIN not Recorded

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the chassis number is normal.

(TC-SST-ECU receives chassis number information from the engine control module via CAN, and write to TC-SST-ECU.)

DESCRIPTIONS OF MONITOR METHODS

The chassis number is determined to be written abnormally.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of engine control module
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code

Check the engine diagnostic trouble code. (Refer to GROUP 13B – Troubleshooting P.13B-51.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.

NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. P0630 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0701: EEPROM System (Malfunction)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the EEPROM and RAM in the TC-SST-ECU is normal.

DESCRIPTIONS OF MONITOR METHODS
The EEPROM writing data is determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P0701 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0702: Internal control module, monitoring processor system (Malfunction)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the internal module and monitoring processor are normal.

DESCRIPTIONS OF MONITOR METHODS
The internal module and monitoring processor are determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check the TC-SST-ECU power supply circuit

Refer to P.22C-369.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-369.) After repairing the power supply circuit, go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. P0702 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0712: TC-SST-ECU temperature sensor system (Output low range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the output of the ECU temperature sensor is normal.

DESCRIPTIONS OF MONITOR METHODS

The output of the ECU temperature is determined to be too low.

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)

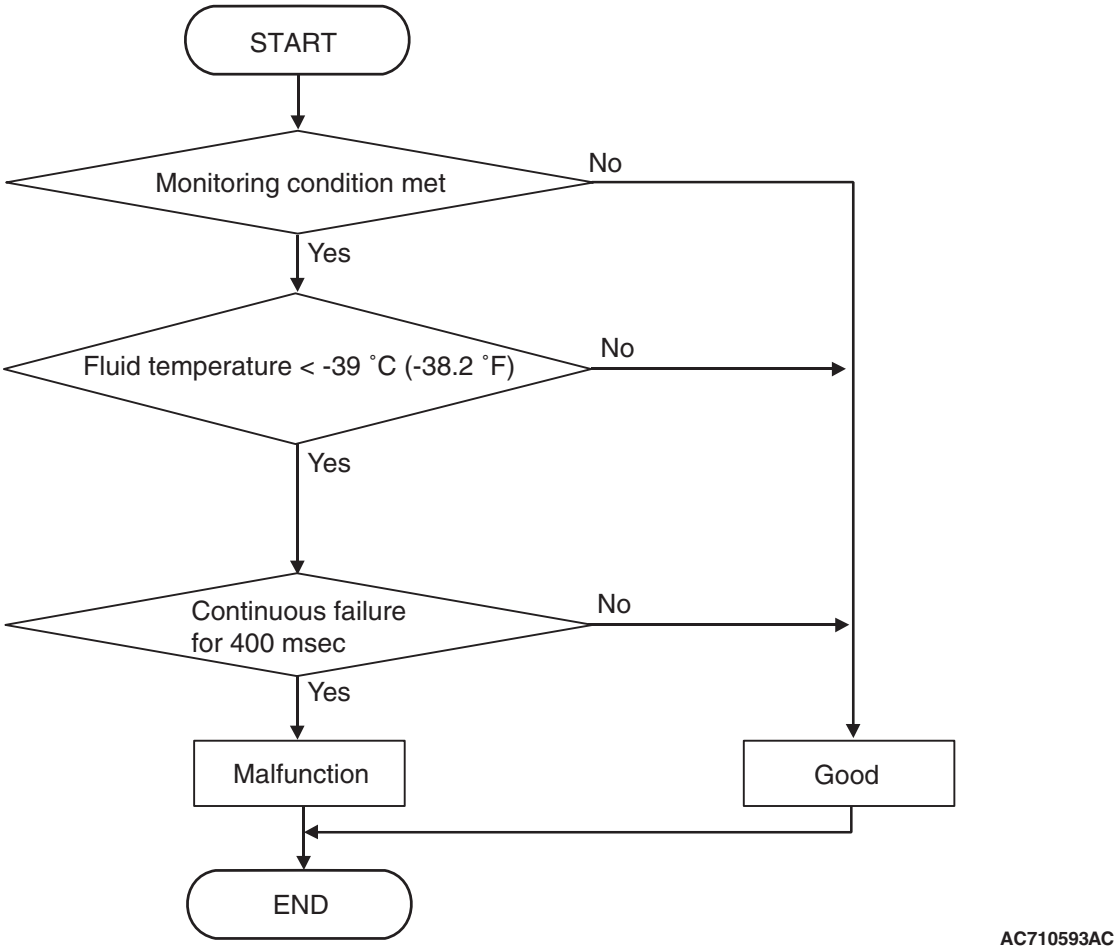
- P0713: TC-SST-ECU temperature sensor system (Output high range out)
- P1808: TC-SST-ECU temperature, fluid temperature sensor system (Correlation error)

Sensor (The sensor below is determined to be normal)

- Not applicable

TSB Revision

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Fluid temperature: –39°C (–38.2°F) or less. (400 millisecond)

OBD-II DRIVE CYCLE PATTERN

The TC-SST-ECU temperature remains –39°C (–38.2°F) or more for 400 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
30 seconds after turning ON the ignition switch, check that the diagnostic trouble code is reset.

Q: Is DTC No. P0712 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0713: TC-SST-ECU temperature sensor system (Output high range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the output of the ECU temperature sensor is normal.

DESCRIPTIONS OF MONITOR METHODS
The output of the ECU temperature is determined to be too high.

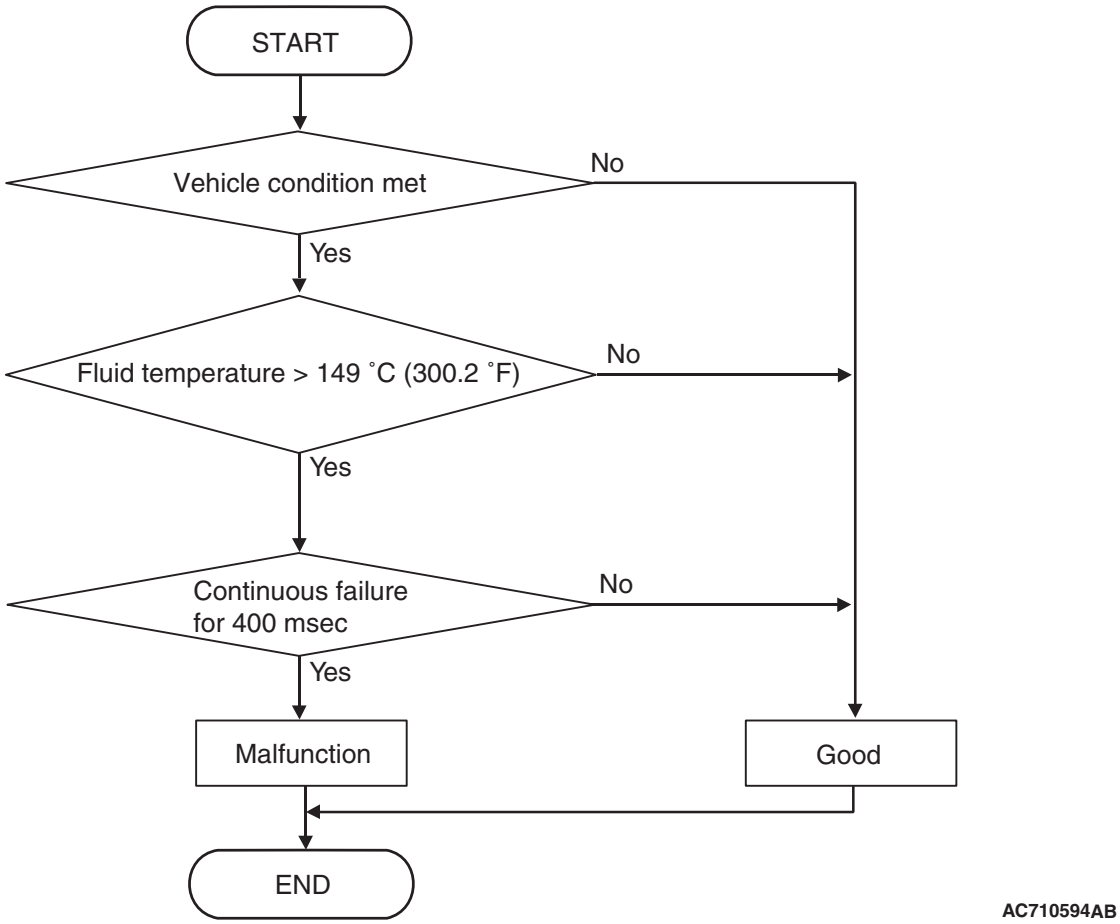
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0712: TC-SST-ECU temperature sensor system (Output low range out)
- P1808: TC-SST-ECU temperature, fluid temperature sensor system (Correlation error)

Sensor (The sensor below is determined to be normal)
- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Fluid temperature: 149°C (300.2°F) or more. (400 millisecond)

OBD-II DRIVE CYCLE PATTERN

The TC-SST-ECU temperature remains 149°C (300.2°F) or less for 400 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
30 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P0713 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0715: Input shaft 1 (odd number gear axle) speed sensor system (Output high range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the input shaft 1 (odd number gear axle) speed sensor is normal.

DESCRIPTIONS OF MONITOR METHODS

The output of the input shaft 1 (odd number gear axle) is determined to be too high.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

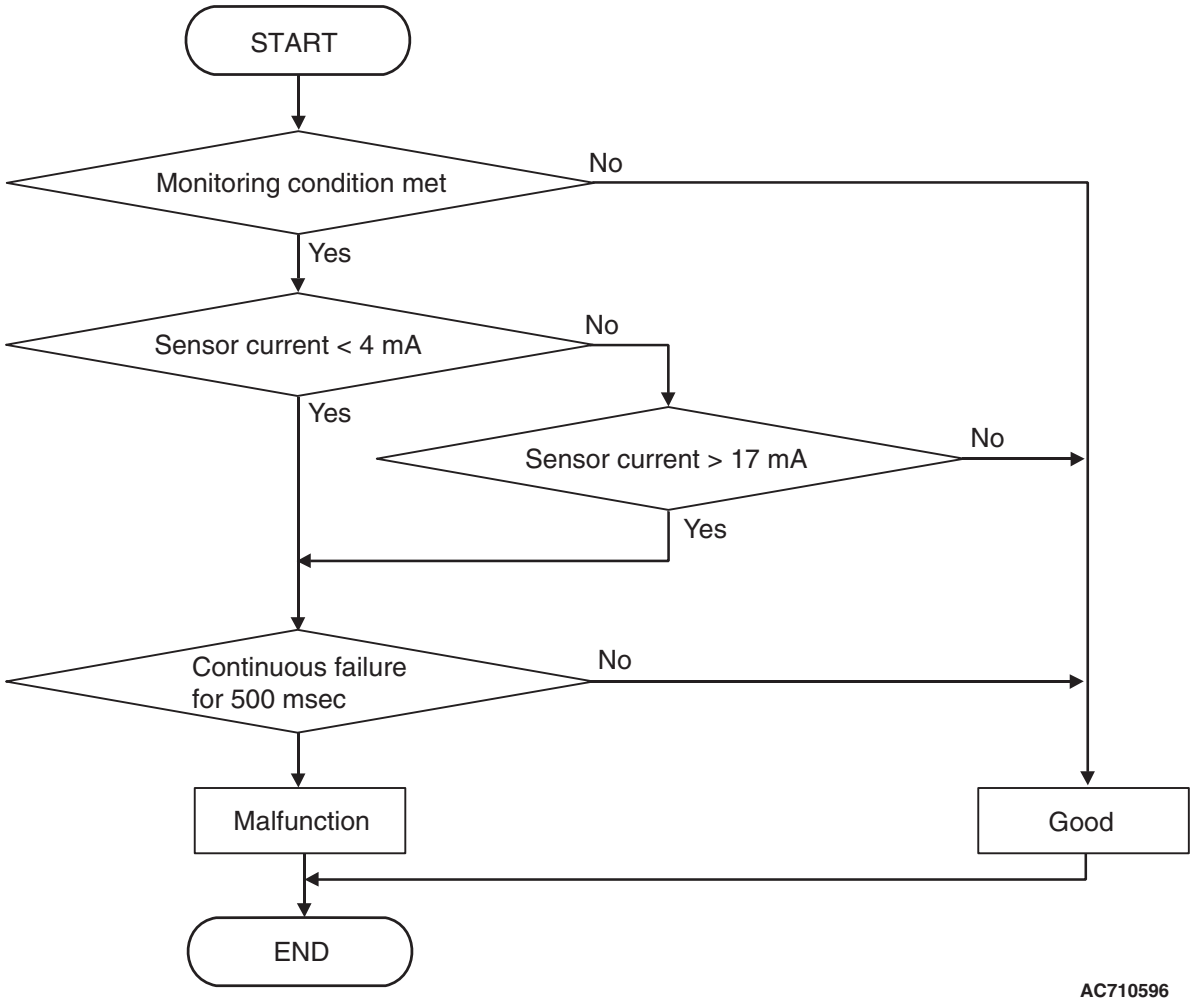
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0716: Input shaft 1 (odd number gear axle) speed sensor system (Poor performance)
- P0717: Input shaft 1 (odd number gear axle) speed sensor system (Output low range out)
- P2766: Input shaft 2 (even number gear axle) speed sensor system (Poor performance)

Sensor (The sensor below is determined to be normal)

- Input shaft 2 (even number gear axle) speed sensor

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Time after engine start: 1.5 seconds or more.

JUDGMENT CRITERIA

- Sensor current: 17 mA or more. (500 millisecond)

OBD-II DRIVE CYCLE PATTERN

The sensor current remains 17 mA or less for 500 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of input shaft 1 speed sensor

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P0715 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0716: Input shaft 1 (odd number gear axle) speed sensor system (Poor performance)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the input shaft 1 (odd number gear axle) speed sensor is normal.

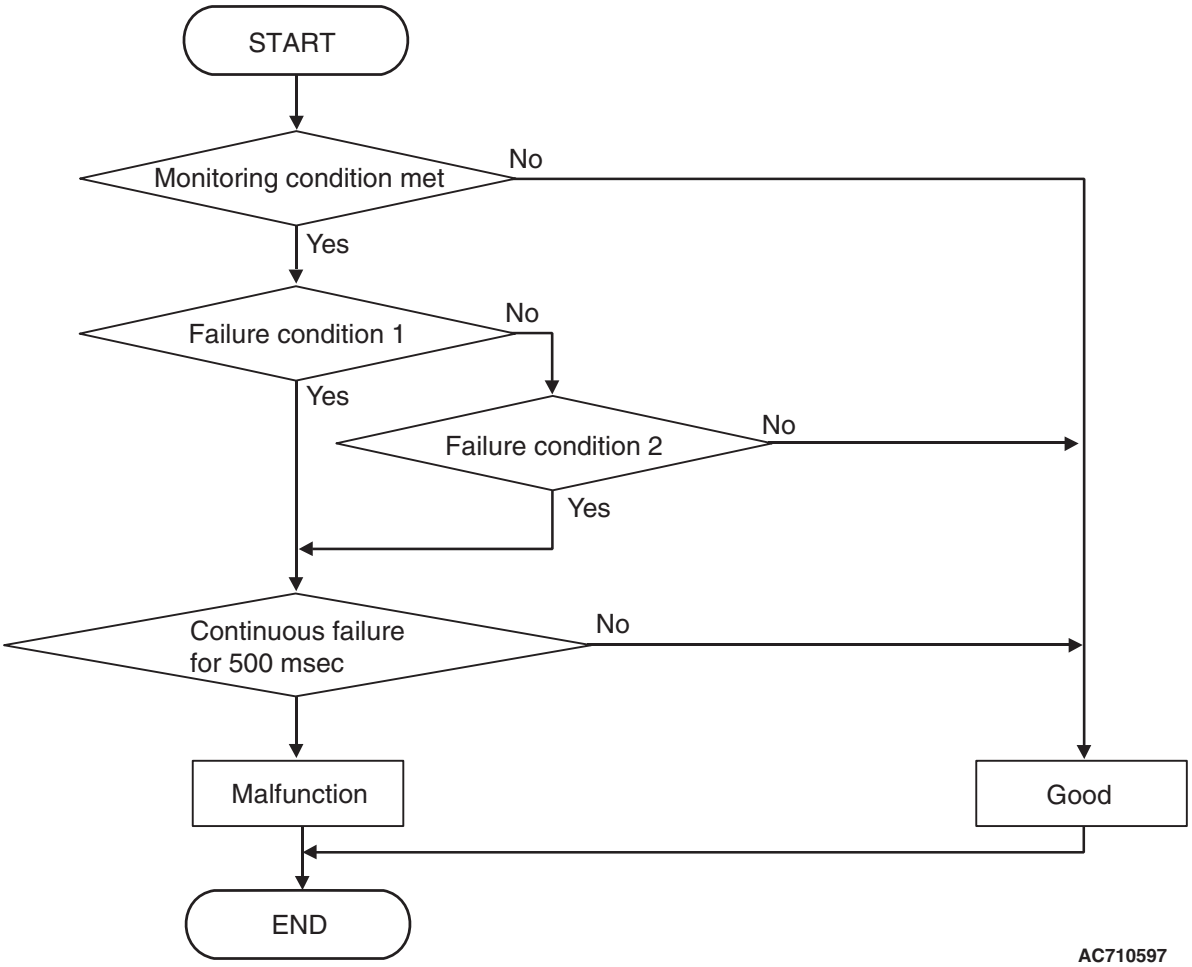
DESCRIPTIONS OF MONITOR METHODS
The rotation speed of the input shaft 1 (odd number gear axle) is determined to be abnormal.

MONITOR EXECUTION
- Continuous

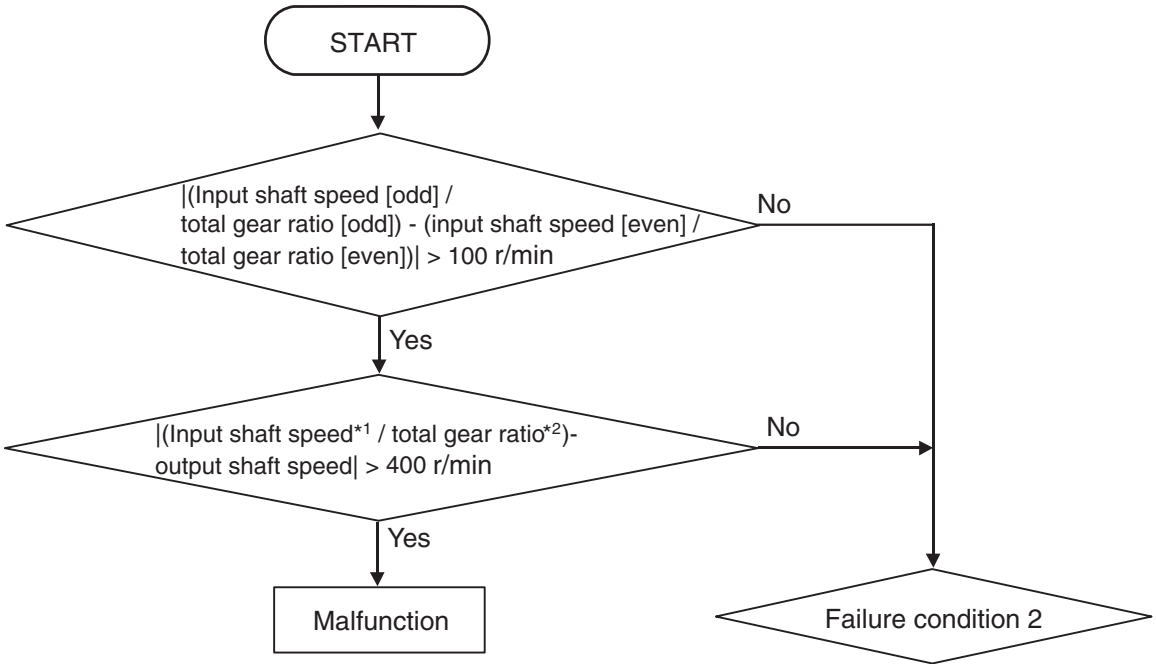
MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0715: Input shaft 1 (odd number gear axle) speed sensor system (Output high range out)
- P0717: Input shaft 1 (odd number gear axle) speed sensor system (Output low range out)
- P2766: Input shaft 2 (even number gear axle) speed sensor system (Poor performance)

Sensor (The sensor below is determined to be normal)
- Input shaft 2 (even number gear axle) speed sensor

LOGIC FLOW CHARTS (Monitor Sequence) <Rationality>



LOGIC FLOW CHARTS (Monitor Sequence) <Rationality (Failure condition 1)>



*1 : In case of input speed sensor A monitor, this is speed of input shaft (odd).
In case of input speed sensor B monitor, this is speed of input shaft (even).

*2 : In case of input speed sensor A monitor, this is total gear ratio of input shaft (odd).
In case of input speed sensor B monitor, this is total gear ratio of input shaft (even).

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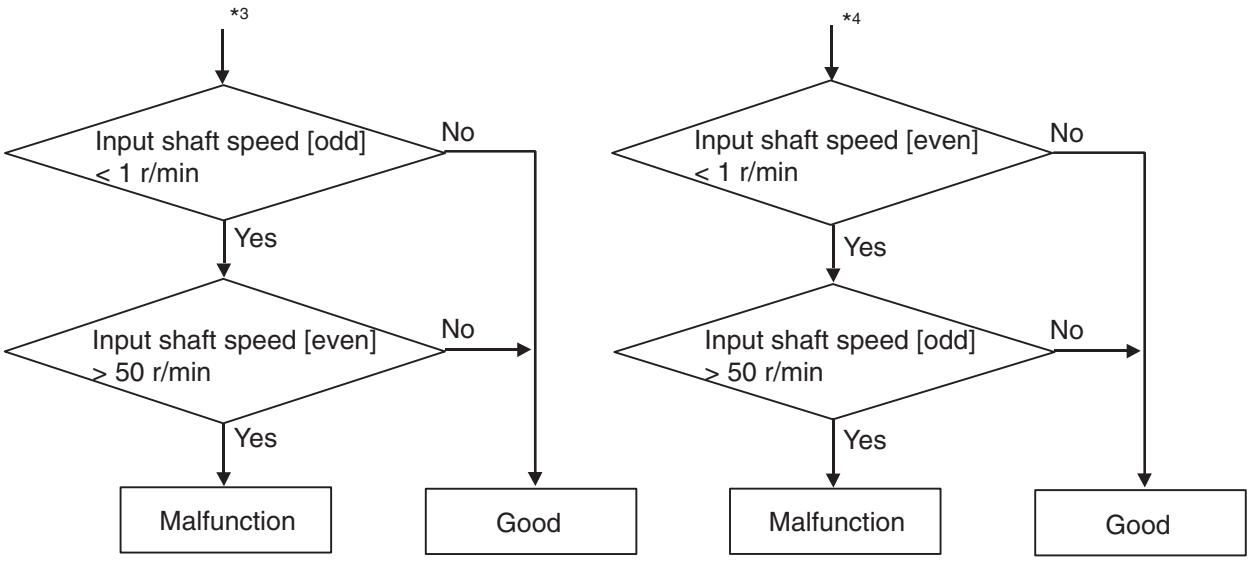
LOGIC FLOW CHARTS (Monitor Sequence) <Rationality (Failure condition 2)>



*3 :In case of input speed sensor A monitor

*4 :In case of input speed sensor B monitor

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DTC SET CONDITIONS

Check Conditions <Rationality>

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Input shaft [odd] gear: engaged.
- Input shaft [even] gear: engaged.

JUDGMENT CRITERIA <Rationality>

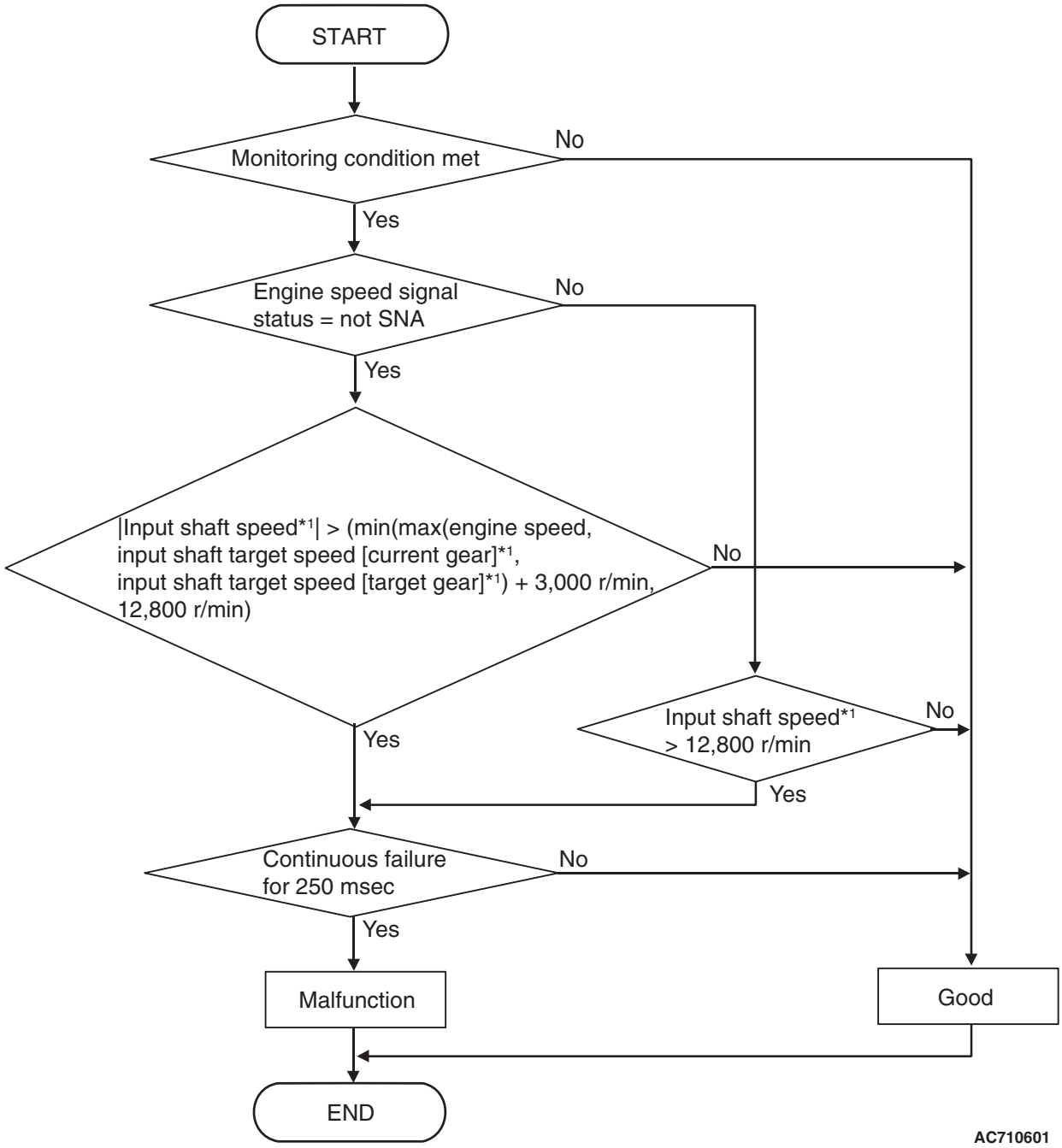
- Failure condition 1 or failure condition 2 (Refer to Logic Flow Charts (Monitor Sequence) <Rationality>). (500 millisecond)

TSB Revision

OBD-II DRIVE CYCLE PATTERN <RATIONALITY>

Each value of failure condition 1 or failure condition 2 (Logic Flow Charts (Monitor Sequence) <Rationality>) returns to the normal value and remains in the state for 500 milliseconds.

LOGIC FLOW CHARTS (Monitor Sequence) <Rationality - plausibility failure>



*1 :In case of input shaft 1 (odd) speed sensor monitor, this is speed of input shaft (odd).
In case of input shaft 2 (even) speed sensor monitor, this is speed of input shaft (even).

TSB Revision

Check Conditions <Rationality plausibility failure>

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA <Rationality plausibility failure>

- Input shaft 1 (odd) speed: Refer to Logic Flow Charts (Monitor Sequence) <Rationality plausibility failure>. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <RATIONALITY PLAUSIBILITY FAILURE>

The value of the Logic Flow Charts (Monitor Sequence) <Rationality plausibility failure> returns to the normal value and remains in the state for 250 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of input shaft 1 speed sensor

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Monitoring unit No. check

(1) Check the freeze frame data (item No. 30 to No. 37).
(2) Check which monitoring unit (No. 114 or No. 138) is set.

Q: Which monitoring unit is set, No. 114 or No. 138?

No. 114 : Go to Step 4

No. 138 : Go to Step 3

STEP 3. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Drive the vehicle at 50 km/h (31 mph) or more.
(3) Check that the DTC is reset.

Q: Is DTC No.P0716 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Check whether the DTC is reset.
(1) Erase the DTC.

⚠ CAUTION
When driving with each gear range, check that the gear engagement is correct and the engine rotation speed does not increase abnormally after gear shifting.
(2) Drive with shifting to each gear range.
(3) Check that the DTC is reset.

Q: Is DTC No.P0716 set?

YES : Go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 5. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the mechatronic assembly. (Refer to P.22C-533.)
"No" : Replace the transaxle assembly. (Refer to P.22C-525.)

DTC P0717: Input shaft 1 (odd number gear axle) speed sensor system (Output current low range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the input shaft 1 (odd number gear axle) speed sensor is normal.

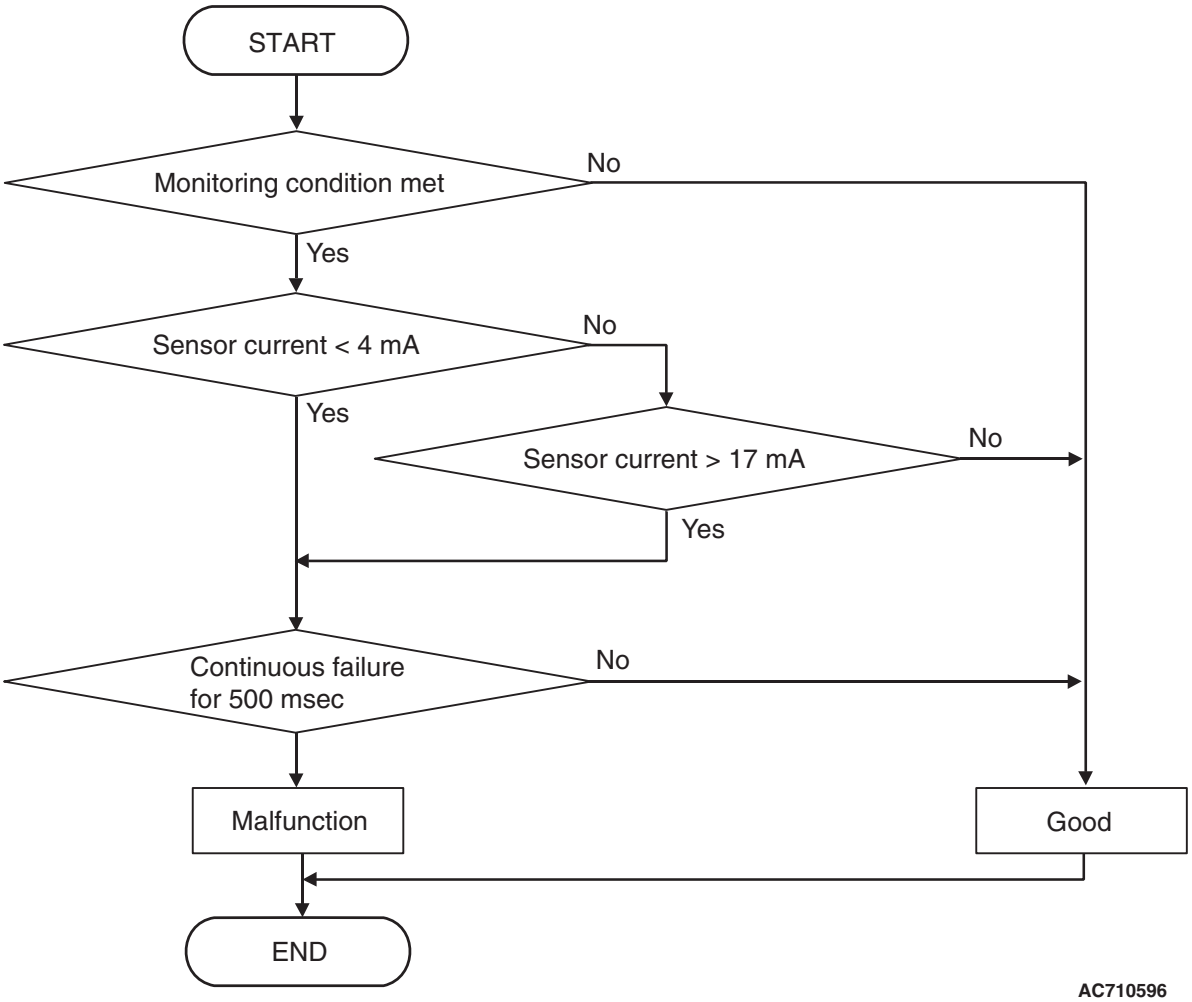
DESCRIPTIONS OF MONITOR METHODS
The output of the input shaft 1 (odd number gear axle) speed sensor is determined to be too low.

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: Input shaft 1 (odd number gear axle) speed sensor system (Output high range out)
- P0716: Input shaft 1 (odd number gear axle) speed sensor system (Poor performance)
- P2766: Input shaft 2 (even number gear axle) speed sensor system (Poor performance)

Sensor (The sensor below is determined to be normal)
- Input shaft 2 (even number gear axle) speed sensor

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Time after engine start: 1.5 seconds or more.

JUDGMENT CRITERIA

- Sensor current: 4 mA or less. (500 millisecond)

OBD-II DRIVE CYCLE PATTERN

The sensor current remains 4 mA or more for 500 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of input shaft 1 speed sensor

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P0717 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

13BDTC P0725: Engine speed signal abnormality

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU receives the periodic communication data from the engine control module via the CAN bus lines, and checks the data for abnormality.

DESCRIPTIONS OF MONITOR METHODS
The engine speed signal from the engine control module is determined to be abnormal.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of crankshaft position sensor
- Malfunction of engine control module
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code
Check the engine diagnostic trouble code. (Refer to GROUP 13B – Troubleshooting P.13B-51.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.
After 10 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P0725 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0746: Line Pressure Solenoid System (Drive current range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the line pressure solenoid is normal.

DESCRIPTIONS OF MONITOR METHODS
The difference between the actual current of the line pressure solenoid and target current is large.

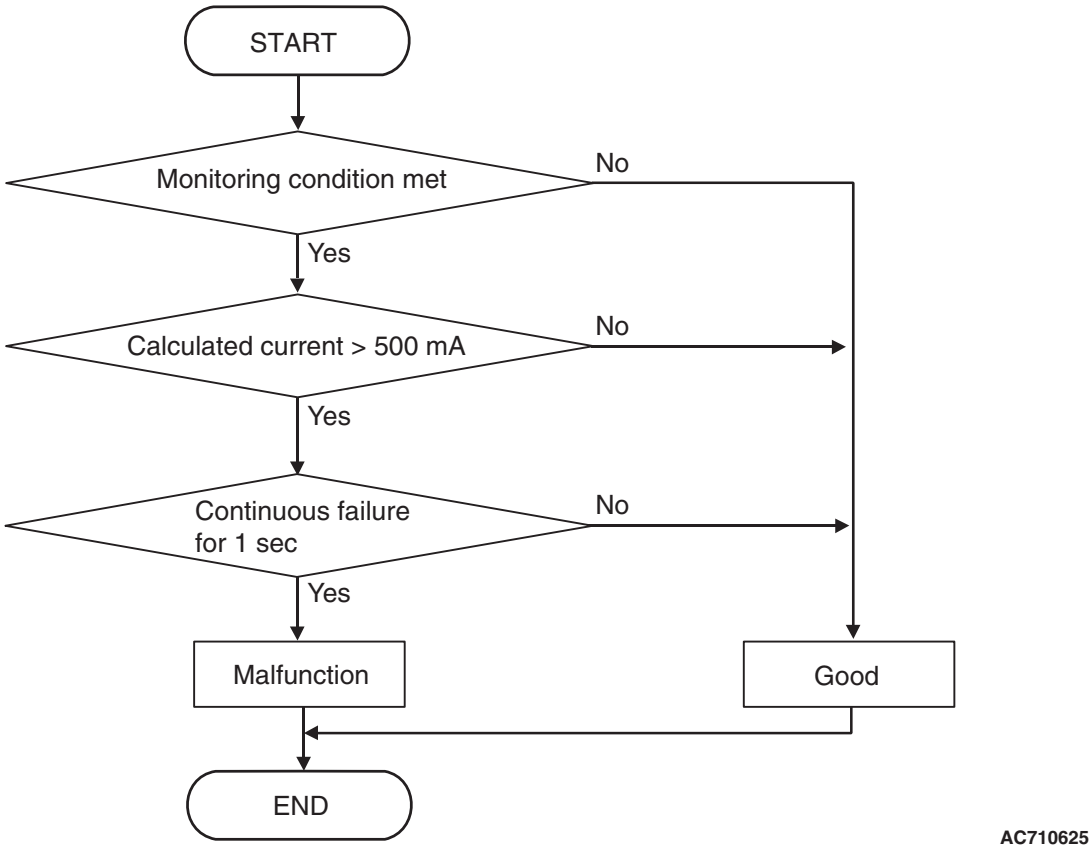
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0960: Line pressure solenoid system (Open circuit)
- P0961: Line pressure solenoid system (Overvoltage)
- P0962: Line pressure solenoid system (Short to ground)
- P0963: Line pressure solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)
- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence) <Rationality - high>



DTC SET CONDITIONS

Check Conditions <Rationality-high>

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

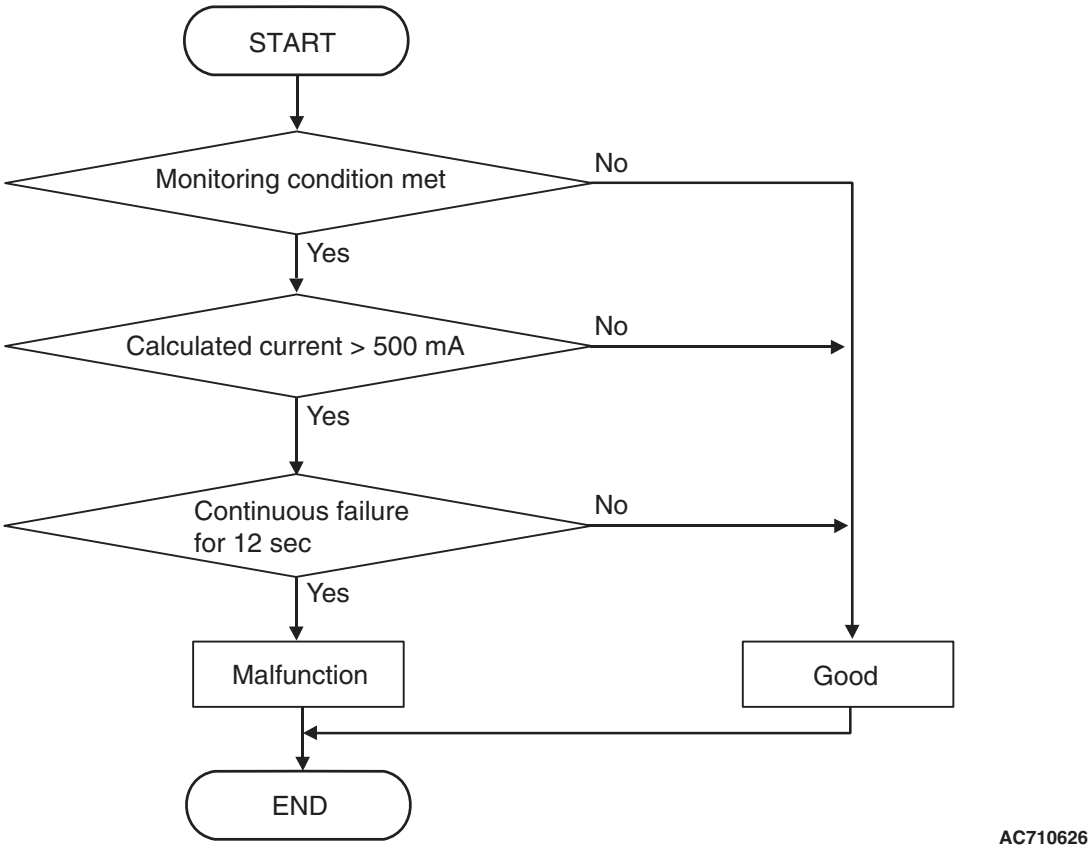
JUDGMENT CRITERIA <Rationality-high>

- Calculated current (actual current – target current): 500 mA or more. (1 second)

OBD-II DRIVE CYCLE PATTERN <RATIONALITY-HIGH>

The value of the calculated current (actual current – target current) remains 500 mA or less for 1 second.

LOGIC FLOW CHARTS (Monitor Sequence) <Rationality - low>



DTC SET CONDITIONS

Check Conditions <Rationality-low>

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA <Rationality-low>

- Calculated current (target current – actual current): 500 mA or more. (12 seconds)

OBD-II DRIVE CYCLE PATTERN <RATIONALITY-LOW>

The value of the calculated current (target current – actual current) remains 500 mA or less for 12 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of line pressure solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
Leave the engine idle for 15 seconds, and perform a test run of the vehicle. Then check that the DTC is reset.

Q: Is DTC No. P0746 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0753: Shift Select Solenoid 1 System (Open circuit)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift select solenoid 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift select solenoid 1 circuit is determined to be open.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

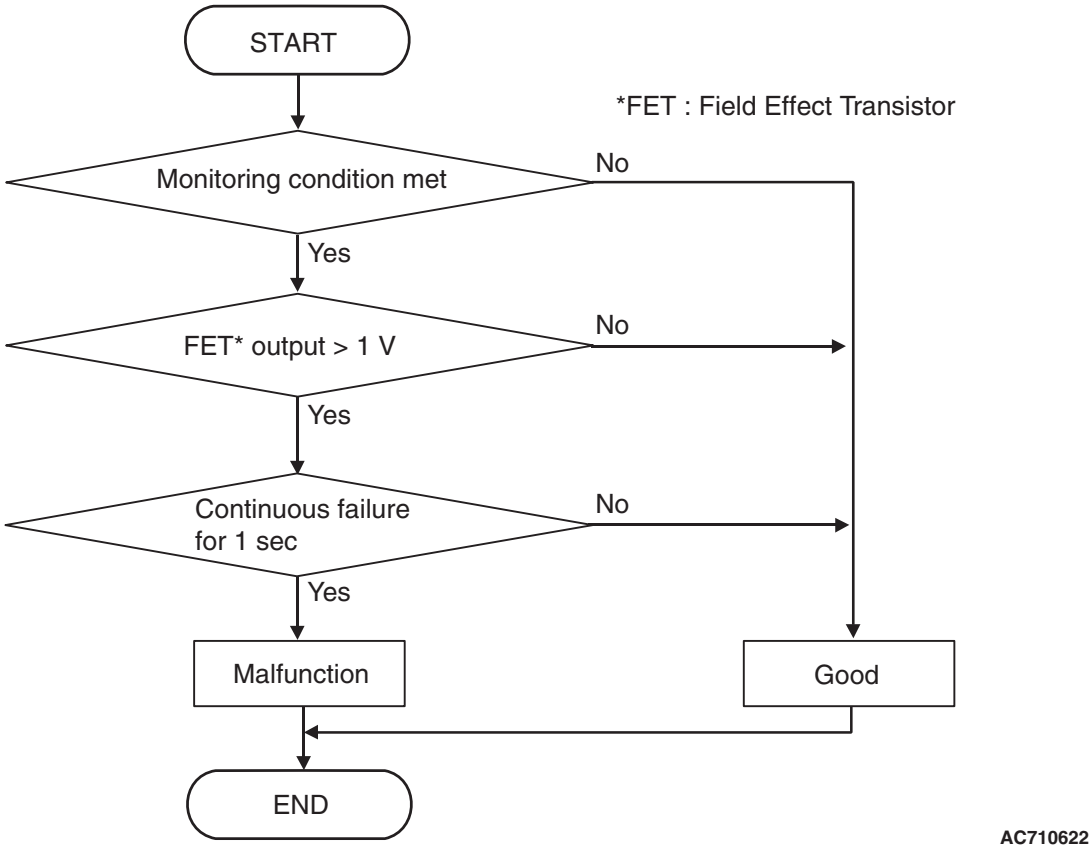
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 1 V or more. (1 second)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 1 V or less for 1 second.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift select solenoid 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P0753 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0758: Shift Select Solenoid 2 System (Open circuit)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift select solenoid 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift select solenoid 2 circuit is determined to be open.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

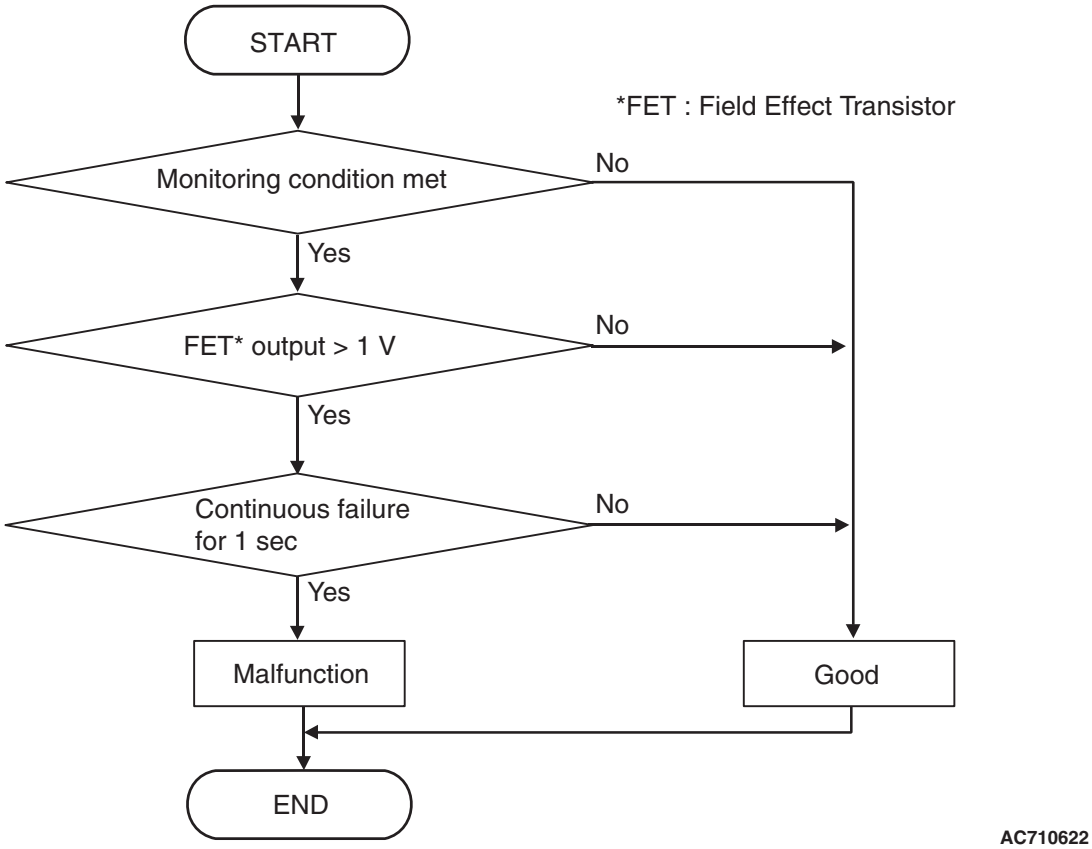
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 1 V or more. (1 second)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 1 V or less for 1 second.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift select solenoid 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P0758 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0776: Clutch Cooling Flow Solenoid System (Drive current range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch cooling flow solenoid is normal.

DESCRIPTIONS OF MONITOR METHODS

The difference between the actual current of the clutch cooling flow solenoid and target current is large.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

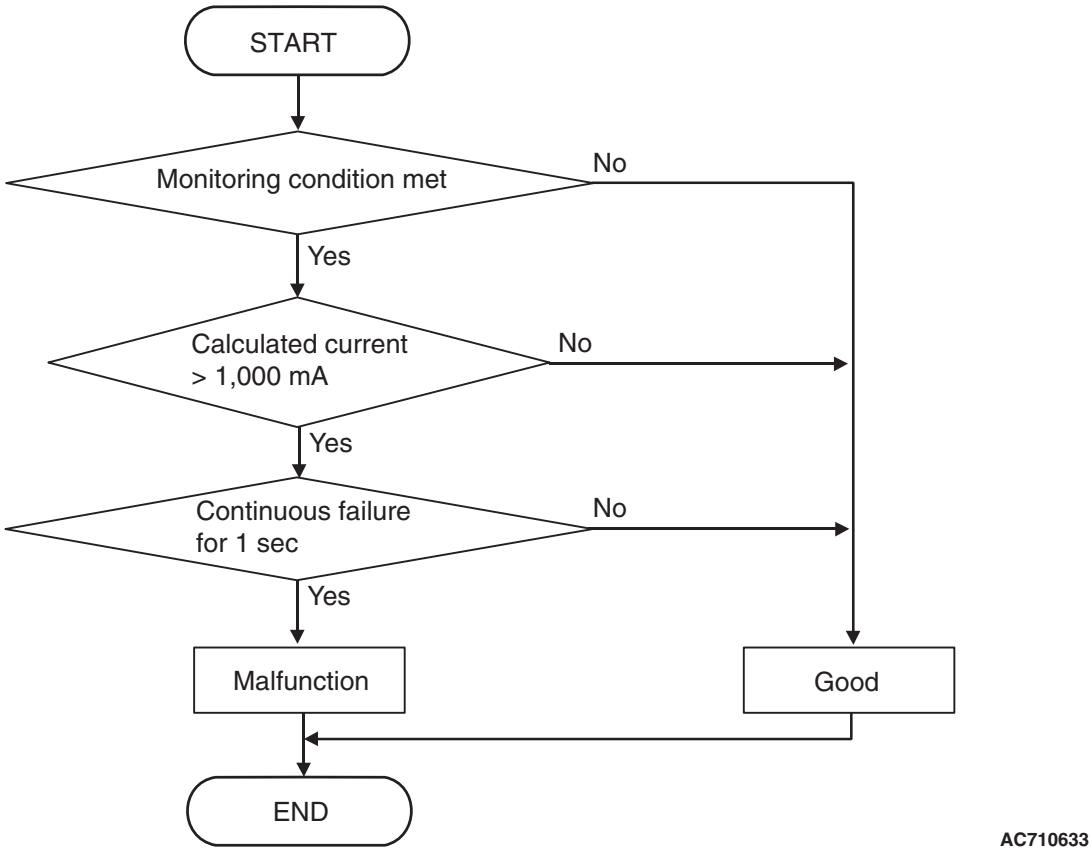
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0777: Clutch cooling flow solenoid system (Stuck)
- P0964: Clutch cooling flow solenoid system (Open circuit)
- P0965: Clutch cooling flow solenoid system (Overvoltage)
- P0966: Clutch cooling flow solenoid system (Short to ground)
- P0967: Clutch cooling flow solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.

JUDGMENT CRITERIA <Rationality-high>

- Calculated current (actual current – target current): 1,000 mA or more. (1 second)

JUDGMENT CRITERIA <Rationality-low>

- Calculated current (target current – actual current): 1,000 mA or more. (1 second)

OBD-II DRIVE CYCLE PATTERN <RATIONALITY-HIGH>

The value of the calculated current (actual current – target current) remains 1,000 mA or less for 1 second.

OBD-II DRIVE CYCLE PATTERN <RATIONALITY-LOW>

The value of the calculated current (target current – actual current) remains 1,000 mA or less for 1 second.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch cooling flow solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
Leave the engine idle for 15 seconds, and perform a test run of the vehicle. Then check that the DTC is reset.

Q: Is DTC No. P0776 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0777: Clutch Cooling Flow Solenoid System (Stuck)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the clutch cooling flow solenoid is normal.

DESCRIPTIONS OF MONITOR METHODS
The clutch cooling flow solenoid is determined to be seized.

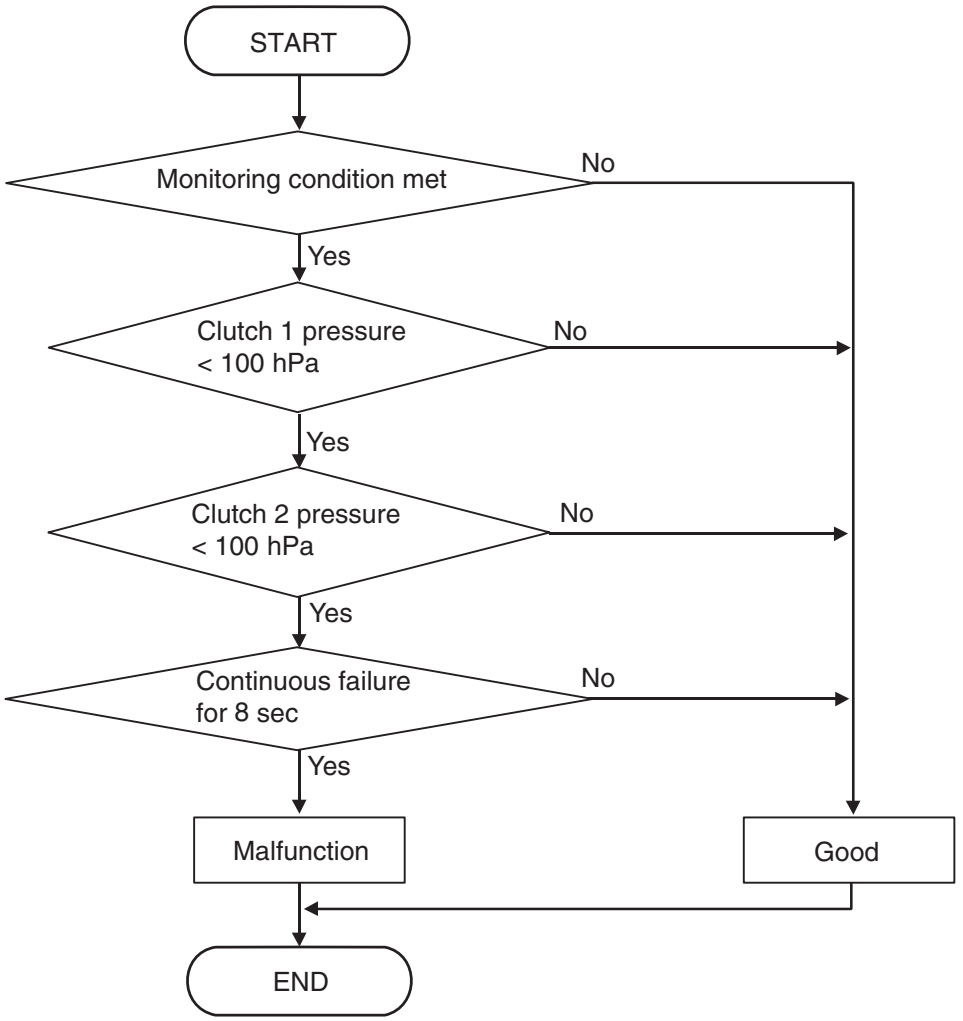
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0776: Clutch cooling flow solenoid system (Drive current range out)
- P0964: Clutch cooling flow solenoid system (Open circuit)
- P0965: Clutch cooling flow solenoid system (Overvoltage)
- P0966: Clutch cooling flow solenoid system (Short to ground)
- P0967: Clutch cooling flow solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)
- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Clutch 1 target pressure: 380 hPa or more.
- Clutch 2 target pressure: 380 hPa or more.

JUDGMENT CRITERIA

- Clutch 1 pressure: 100 hPa or less, and clutch 2 pressure: 100 hPa or less. (8 seconds)

OBD-II DRIVE CYCLE PATTERN

The Clutch 1 pressure and clutch 2 pressure remain 100 hPa or more for 8 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch cooling flow solenoid
- Insufficient fluid level
- Improper installation of mechatronic assembly

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Carry out the Item No. 3 (Teach-In) : Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(3) With the engine idle status, check that the DTC is reset.

Q: Is the DTC No. P0777 restored? or Is the line pressure test of Teach-In not completed normally ("No" is displayed in the Data list No.101: Normal End)?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Check the fluid.

Q: Is the fluid level proper?

YES : Go to Step 4
NO : Add the fluid.

STEP 4. Check the installation status of the mechatronic assembly.

Q: Is the mechatronic assembly installed correctly?

YES : Go to Step 5
NO : Install the mechatronic assembly correctly. (Refer to P.22C-533.)

STEP 5. Check whether the DTC is reset.
(1) Erase the DTC.
(2) With the engine idle status, check that the DTC is reset.

Q: Is DTC No.P0777 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then, go to Step 6.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 6. Check whether the DTC is reset.
(1) Erase the DTC.
(2) With the engine idle status, check that the DTC is reset.

Q: Is DTC No.P0777 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

TSB Revision

DTC P0841: Clutch 1 Pressure Sensor System (Poor performance)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch 1 pressure sensor is normal.

DESCRIPTIONS OF MONITOR METHODS

The difference between the allowable torque of clutch 1 and the engine torque is large.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

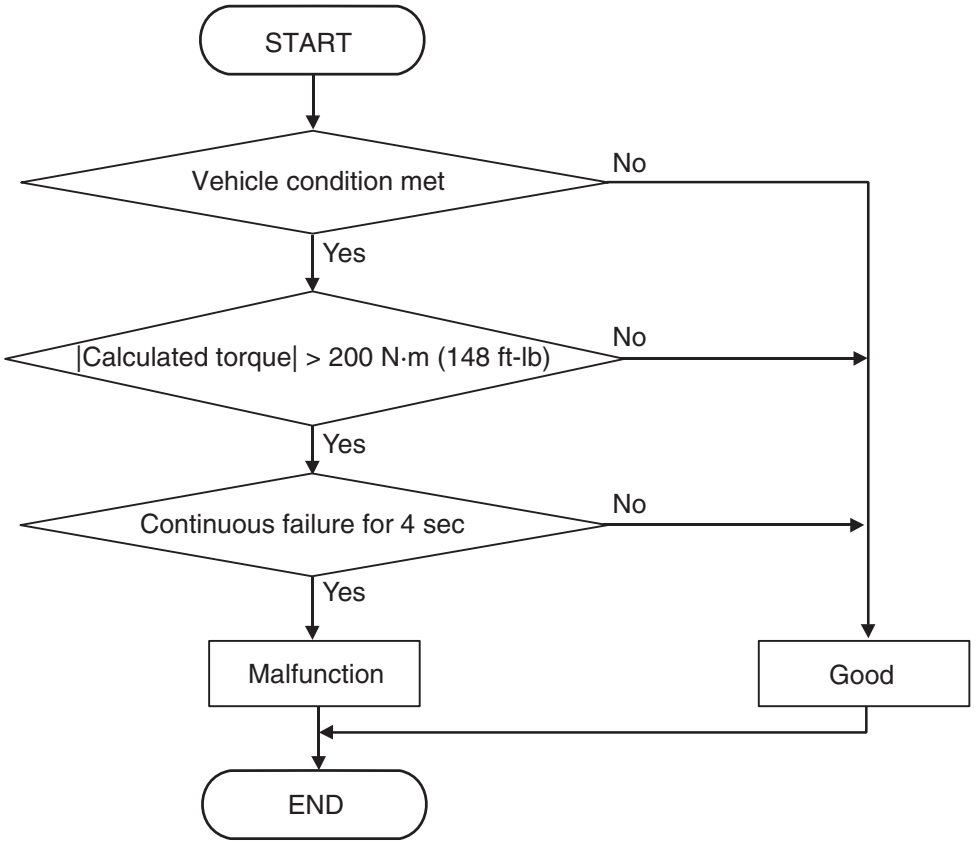
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)
- P185D: Clutch open not possible

Sensor (The sensor below is determined to be normal)

- Shift select solenoid 1
- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



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DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Engine speed: 6,800 r/min or less.
- Clutch 1 (odd) slip state: Slip or engaged.
- Clutch 1 (odd) slip speed: 20 r/min or more.
- Clutch 2 (even) state: Disengaged.

JUDGMENT CRITERIA

- Calculated torque (Clutch 1 (odd) permit torque – engine torque): 200 N·m (148 ft-lb) or more. (4 seconds)

OBD-II DRIVE CYCLE PATTERN

The value of the calculated torque (clutch 1 (odd) permit torque – engine torque) remains 200 N·m (148 ft-lb) or less for 4 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch 1 pressure sensor
- Malfunction of clutch assembly
- Malfunction of engine system
- Insufficient fluid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code
Check the engine diagnostic trouble code. (Refer to GROUP 13B – Troubleshooting P.13B-51.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Fluid check
Drain the fluid and check that no bubbles, foreign material and contamination are found.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the fluid.

STEP 4. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Gradually accelerate the vehicle.
(3) Accelerate the vehicle with the accelerator pedal fully opened.
(4) Check that the DTC is reset.

Q: Is DTC No.P0841 set?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0842: Clutch 1 Pressure Sensor System (Output low range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch 1 pressure sensor is normal.

DESCRIPTIONS OF MONITOR METHODS

The output of the clutch 1 pressure sensor is too low.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

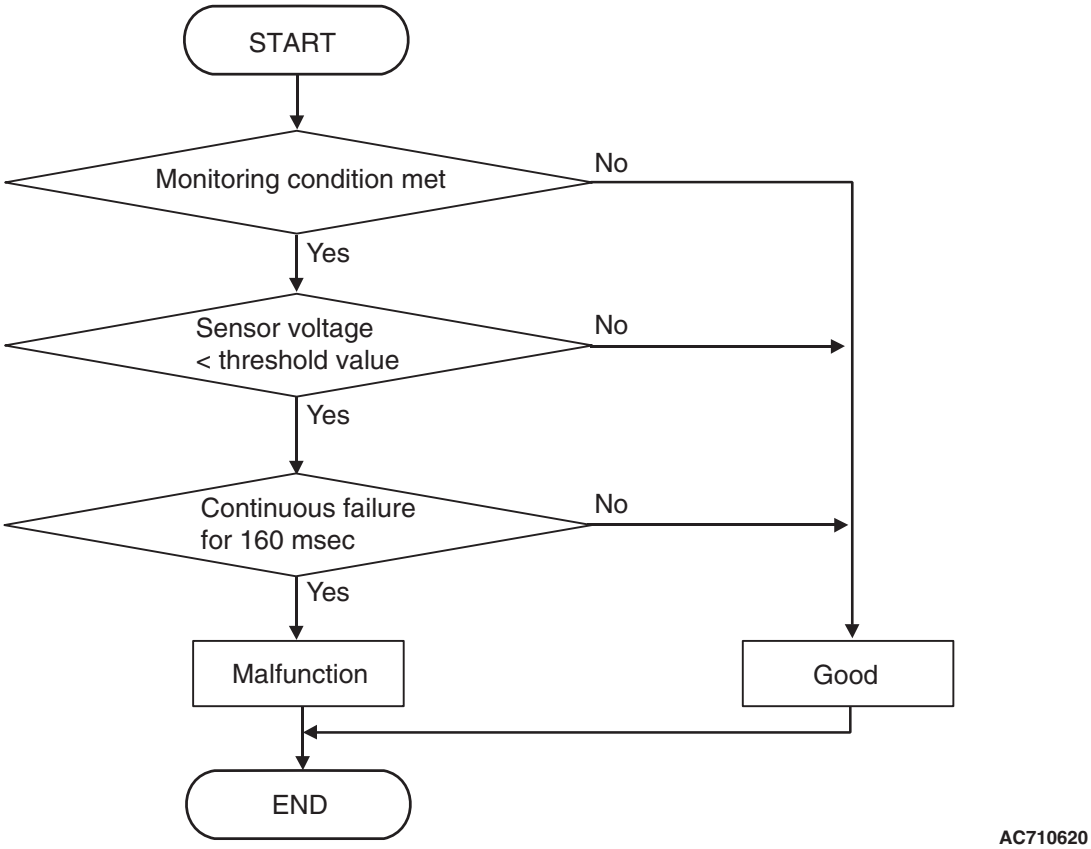
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)
- P185D: Clutch open not possible

Sensor (The sensor below is determined to be normal)

- Shift select solenoid 1
- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Sensor voltage: 1.16 V or less. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The voltage of the clutch 1 pressure sensor remains 1.16 V or more for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch 1 pressure sensor

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
15 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P0842 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0843: Clutch 1 Pressure Sensor System (Output high range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch 1 pressure sensor is normal.

DESCRIPTIONS OF MONITOR METHODS

The output of the clutch 1 pressure sensor is too high.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

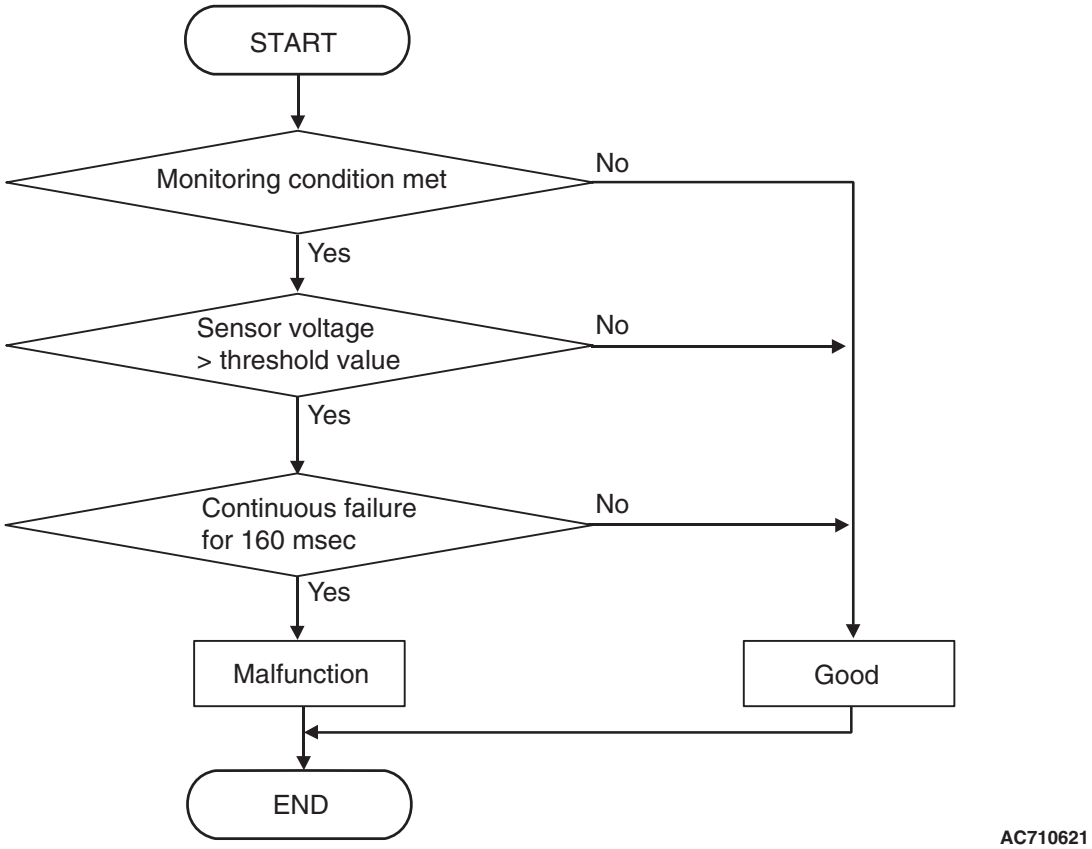
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)
- P185D: Clutch open not possible

Sensor (The sensor below is determined to be normal)

- Shift select solenoid 1
- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Sensor voltage: 2.48 V or more. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The voltage of the clutch 1 pressure sensor remains 2.48 V or less for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch 1 pressure sensor

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
15 seconds after turning ON the ignition switch, check that the diagnostic trouble code is reset.

Q: Is DTC No. P0843 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0846: Clutch 2 Pressure Sensor System (Poor performance)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch 2 pressure sensor is normal.

DESCRIPTIONS OF MONITOR METHODS

The difference between the allowable torque of clutch 2 and the engine torque is large.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

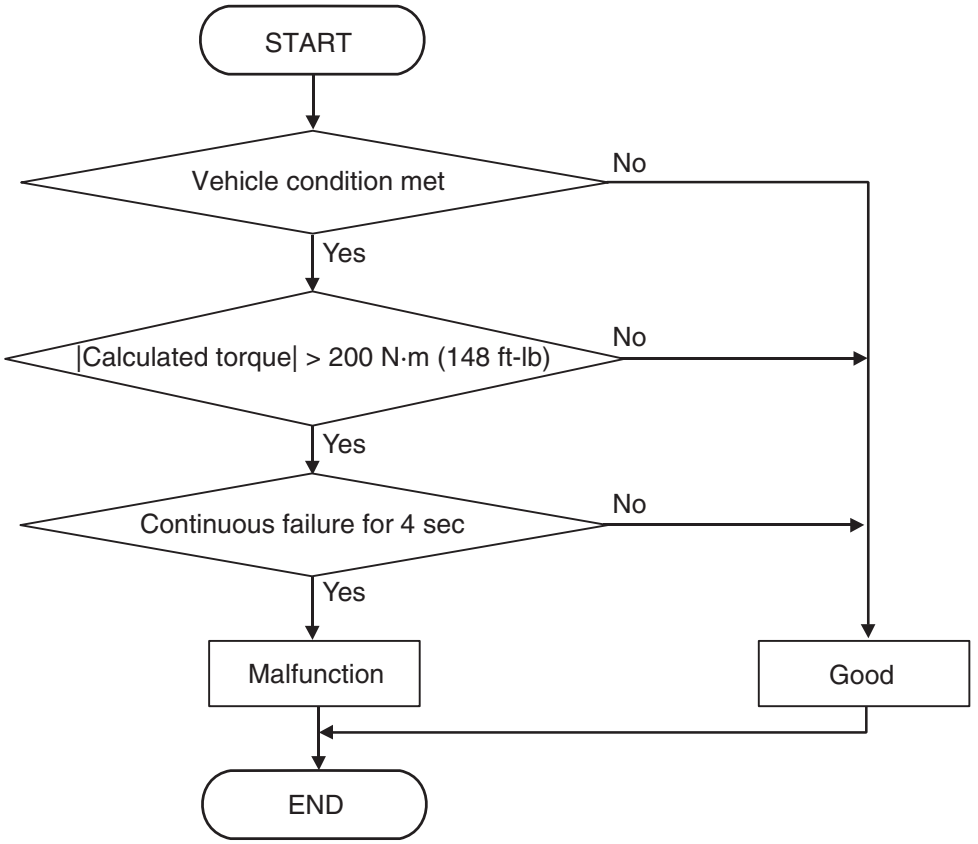
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)
- P185D: Clutch open not possible

Sensor (The sensor below is determined to be normal)

- Shift select solenoid 1
- Clutch/shift switching solenoid 2

LOGIC FLOW CHARTS (Monitor Sequence)



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DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Engine speed: 6,800 r/min or less.
- Clutch 2 (even) slip state: Slip or engaged.
- Clutch 2 (even) slip speed: 20 r/min or more.
- Clutch 1 (odd) state: Disengaged.

JUDGMENT CRITERIA

- Calculated torque (Clutch 2 (even) permit torque – engine torque): 200 N·m (148 ft-lb) or more. (4 seconds)

OBD-II DRIVE CYCLE PATTERN

The value of the calculated torque (clutch 2 (even) permit torque – engine torque) remains 200 N·m (148 ft-lb) or less for 4 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch 2 pressure sensor
- Malfunction of clutch assembly
- Malfunction of engine system
- Insufficient fluid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code
Check the engine diagnostic trouble code. (Refer to GROUP 13B – Troubleshooting P.13B-51.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Fluid check
Drain the fluid and check that no bubbles, foreign material and contamination are found.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the fluid.

STEP 4. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Gradually accelerate the vehicle.
(3) Accelerate the vehicle with the accelerator pedal fully opened.
(4) Check that the DTC is reset.

Q: Is DTC No.P0846 set?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0847: Clutch 2 Pressure Sensor System (Output low range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch 2 pressure sensor is normal.

DESCRIPTIONS OF MONITOR METHODS

The output of the clutch 2 pressure sensor is too low.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

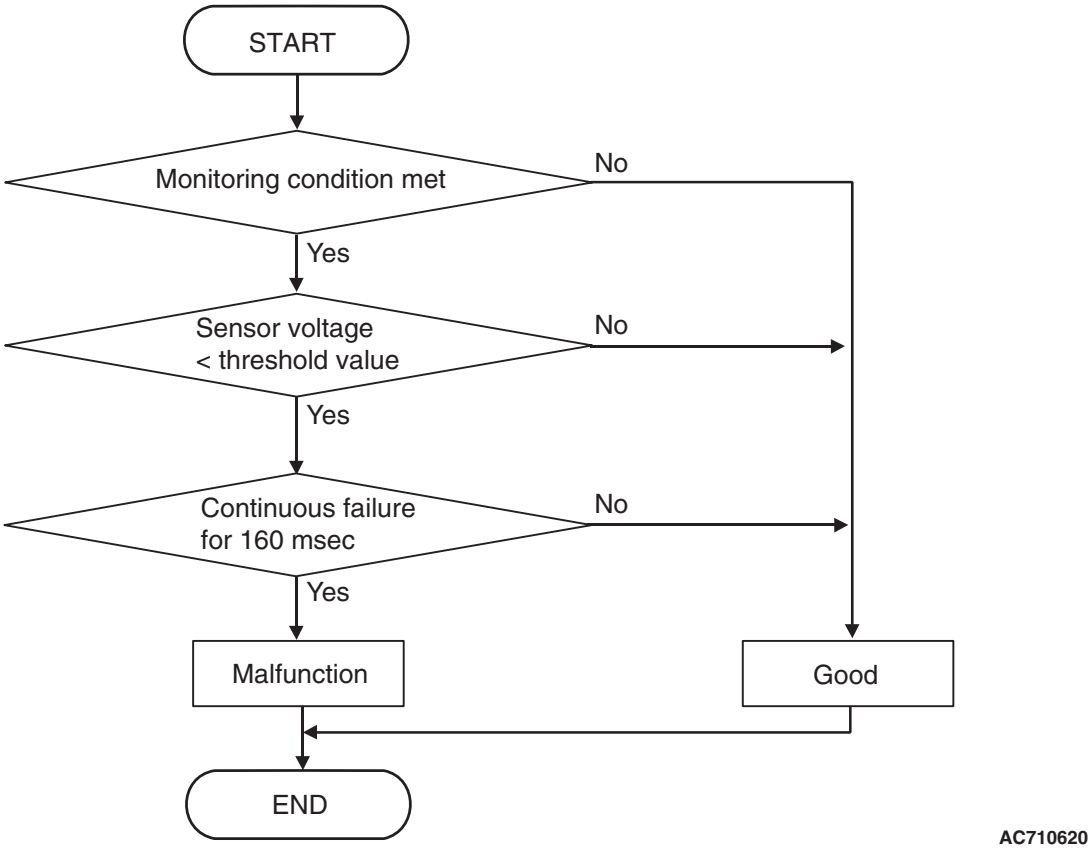
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)
- P185D: Clutch open not possible

Sensor (The sensor below is determined to be normal)

- Shift select solenoid 1
- Clutch/shift switching solenoid 2

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Sensor voltage: 0.69 V or less. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The voltage of the clutch 2 pressure sensor remains 0.69 V or more for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch 2 pressure sensor

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
15 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P0847 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0848: Clutch 2 Pressure Sensor System (Output high range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch 2 pressure sensor is normal.

DESCRIPTIONS OF MONITOR METHODS

The output of the clutch 2 pressure sensor is too high.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

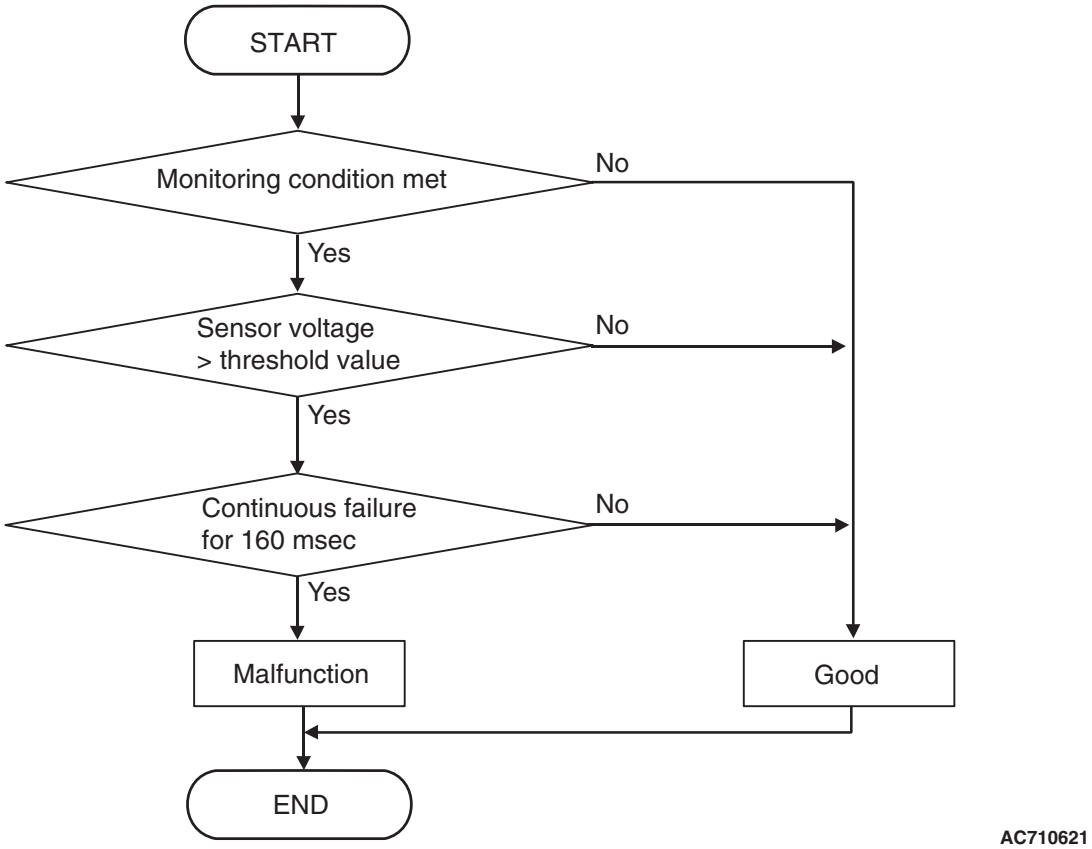
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)
- P185D: Clutch open not possible

Sensor (The sensor below is determined to be normal)

- Shift select solenoid 1
- Clutch/shift switching solenoid 2

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Sensor voltage: 2.66 V or more. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The voltage of the clutch 2 pressure sensor remains 2.66 V or less for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch 2 pressure sensor

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
15 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P0848 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0960: Line Pressure Solenoid System (Open circuit)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the line pressure solenoid circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The line pressure solenoid circuit is determined to be open.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

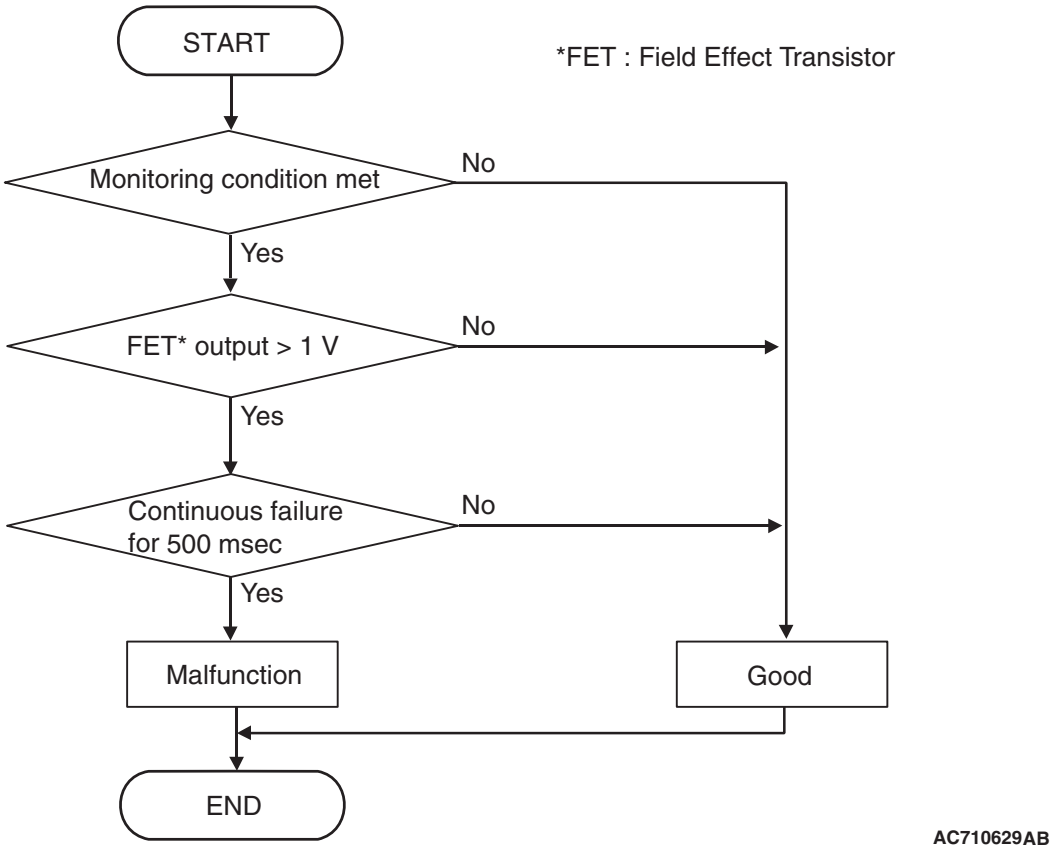
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0746: Line pressure solenoid system (Drive current range out)
- P0961: Line pressure solenoid system (Overvoltage)
- P0962: Line pressure solenoid system (Short to ground)
- P0963: Line pressure solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 1 V or more. (500 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 1 V or less for 500 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of line pressure solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
15 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P0960 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0961: Line Pressure Solenoid System (Overcurrent)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the line pressure solenoid circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The supply current to the line pressure solenoid is determined to be overcurrent.

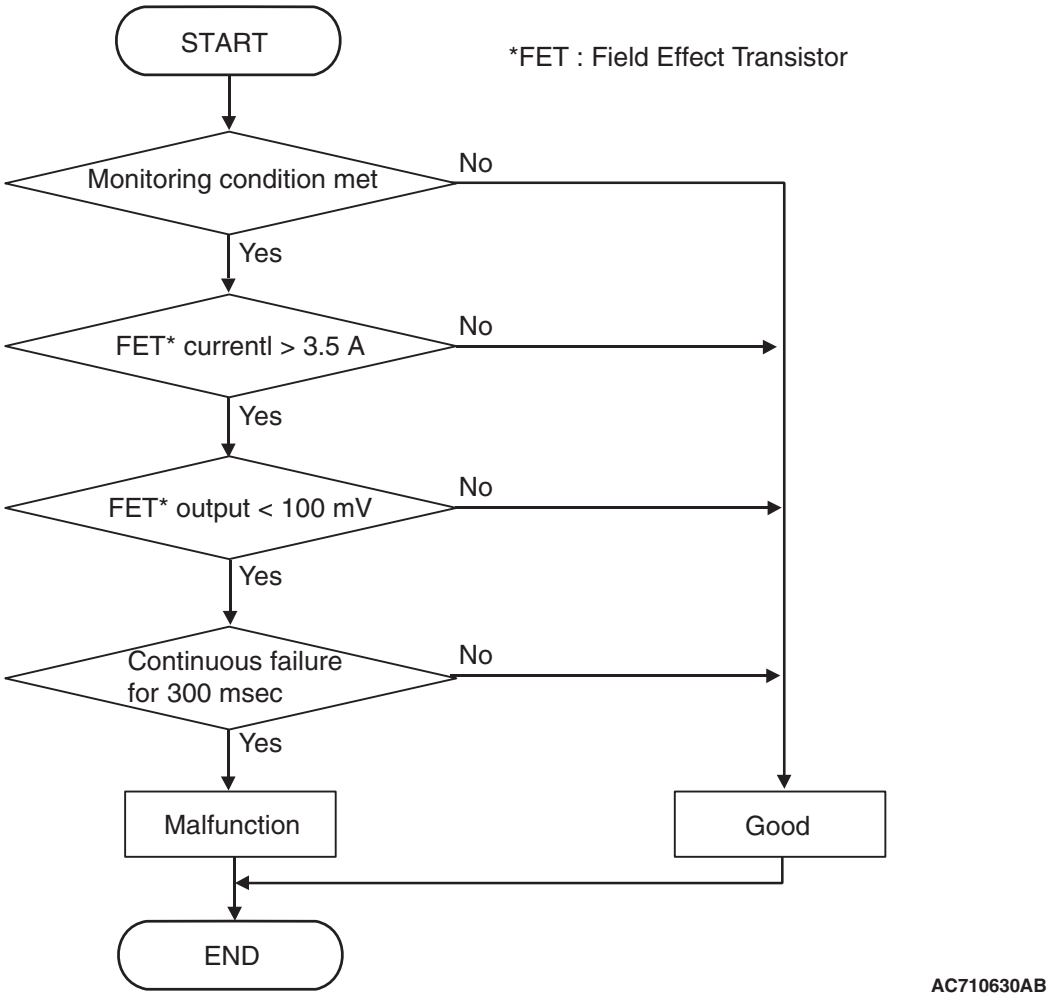
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0746: Line pressure solenoid system (Drive current range out)
- P0960: Line pressure solenoid system (Open circuit)
- P0962: Line pressure solenoid system (Short to ground)
- P0963: Line pressure solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)
- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) current: 3.5 A or more, and FET (Field Effect Transistor) output: 100 mV or less (300 millisecond).

OBD-II DRIVE CYCLE PATTERN

The current of the FET channel shunt is 3.5 A or less, and the FET channel output is 100 mV or more for 300 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of line pressure solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No. P0961 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0962: Line Pressure Solenoid System (Short to ground)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the line pressure solenoid circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The line pressure solenoid circuit is determined to be short to ground.

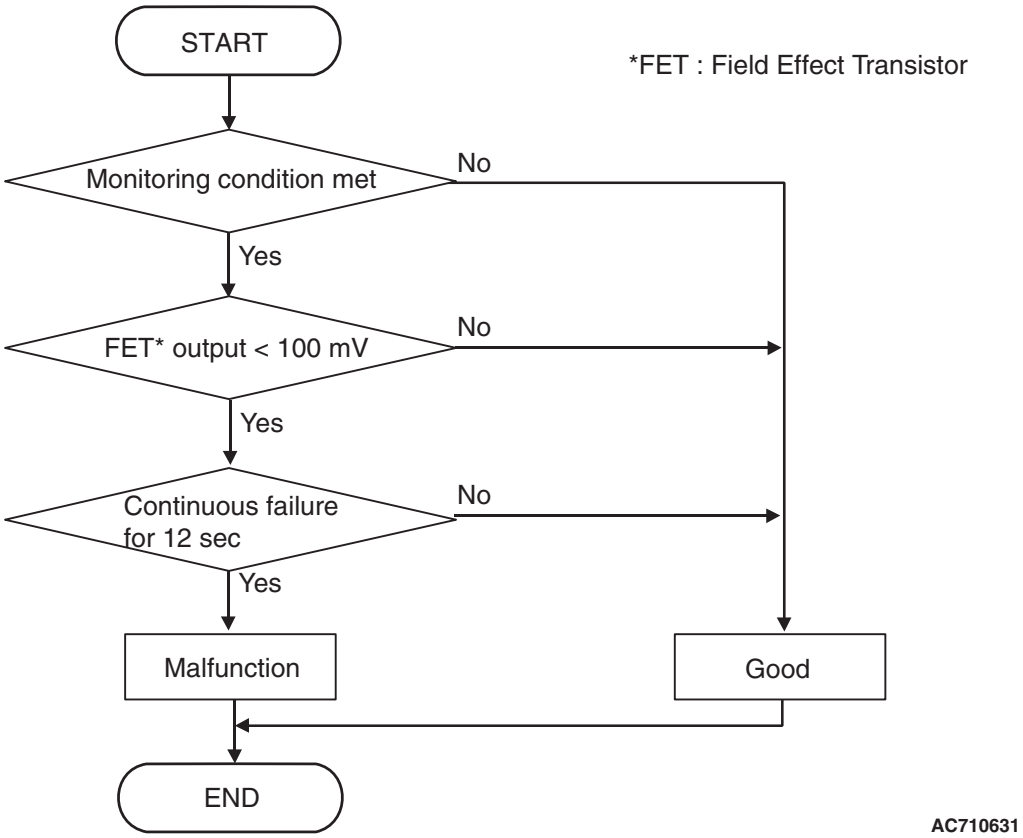
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0746: Line pressure solenoid system (Drive current range out)
- P0960: Line pressure solenoid system (Open circuit)
- P0961: Line pressure solenoid system (Overvoltage)
- P0963: Line pressure solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)
- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 100 mV or less. (12 seconds)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 12 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of line pressure solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P0962 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0963: Line Pressure Solenoid System (Short to power supply)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the line pressure solenoid circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The line pressure solenoid circuit is determined to be short to power supply.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

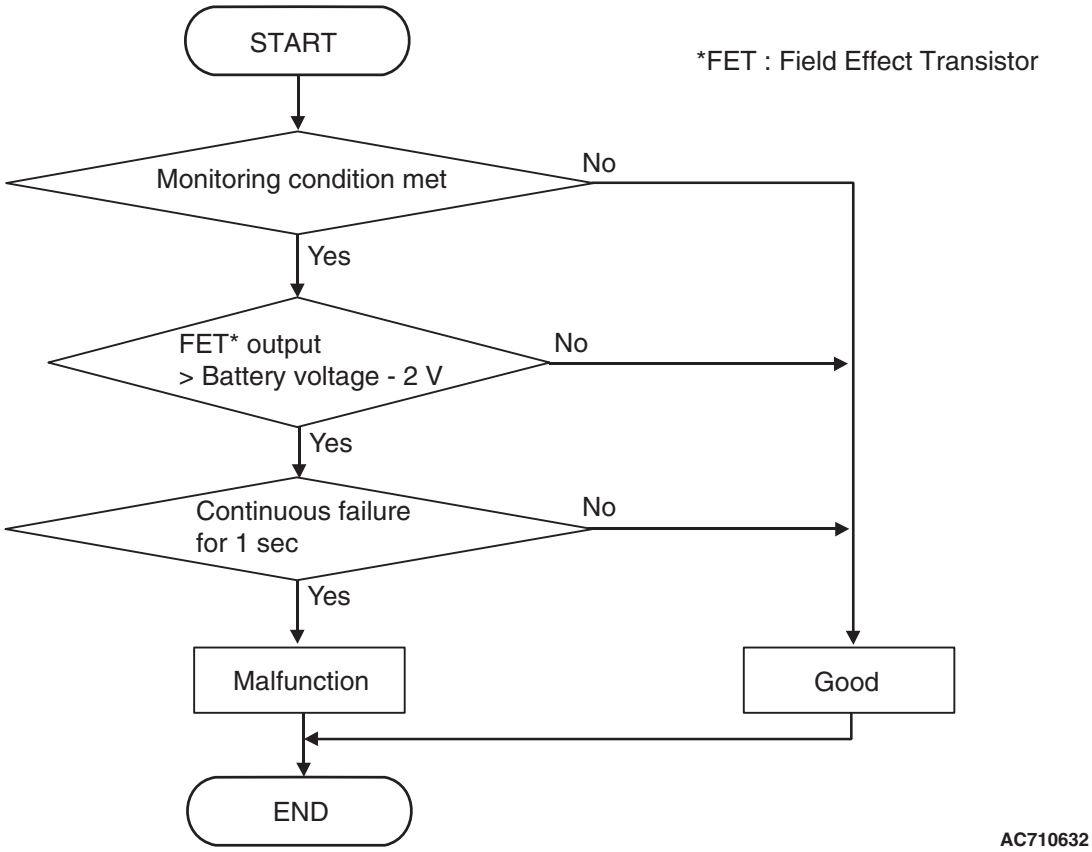
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0746: Line pressure solenoid system (Drive current range out)
- P0960: Line pressure solenoid system (Open circuit)
- P0961: Line pressure solenoid system (Overvoltage)
- P0962: Line pressure solenoid system (Short to ground)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Line pressure solenoid: OFF.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: (Battery voltage – 2 V) or more. (1 second)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains (Battery voltage – 2 V) or less for 1 second.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of line pressure solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No. P0963 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0964: Clutch Cooling Flow Solenoid System (Open circuit)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch cooling flow solenoid circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch cooling flow solenoid circuit is determined to be open.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

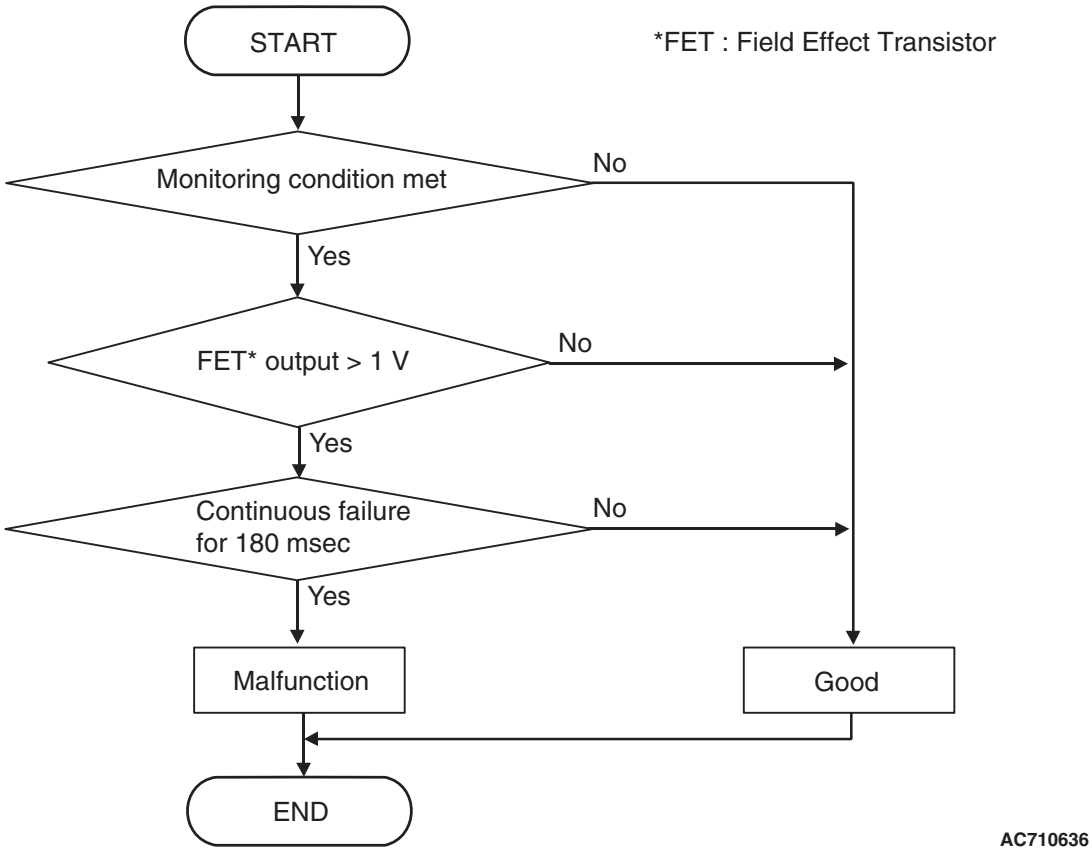
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0776: Clutch cooling flow solenoid system (Drive current range out)
- P0777: Clutch cooling flow solenoid system (Stuck)
- P0965: Clutch cooling flow solenoid system (Overvoltage)
- P0966: Clutch cooling flow solenoid system (Short to ground)
- P0967: Clutch cooling flow solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 1 V or more. (180 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 1 V or less for 180 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch cooling flow solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P0964 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0965: Clutch Cooling Flow Solenoid System (Overcurrent)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch cooling flow solenoid circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The supply current to the clutch cooling flow solenoid is determined to be overcurrent.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

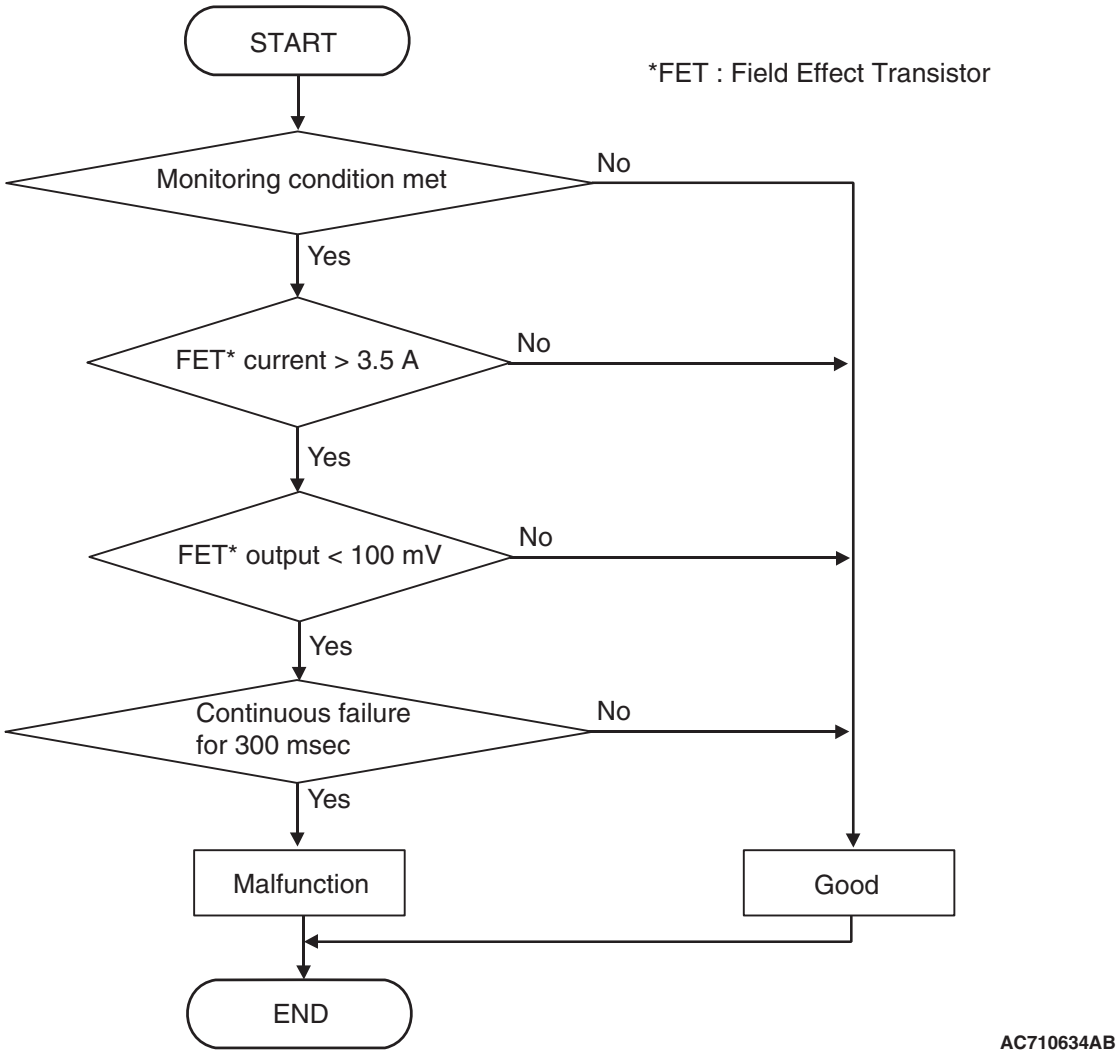
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0776: Clutch cooling flow solenoid system (Drive current range out)
- P0777: Clutch cooling flow solenoid system (Stuck)
- P0964: Clutch cooling flow solenoid system (Open circuit)
- P0966: Clutch cooling flow solenoid system (Short to ground)
- P0967: Clutch cooling flow solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) current: 3.5 A or more, and FET (Field Effect Transistor) output: 100 mV or less (300 millisecond).

OBD-II DRIVE CYCLE PATTERN

The status with the current of the FET channel shunt 3.5 A or less and with the FET channel output 100 mV or more continues for 300 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch cooling flow solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
5 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P0965 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0966: Clutch Cooling Flow Solenoid System (Short to ground)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch cooling flow solenoid circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch cooling flow solenoid circuit is determined to be short to ground.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

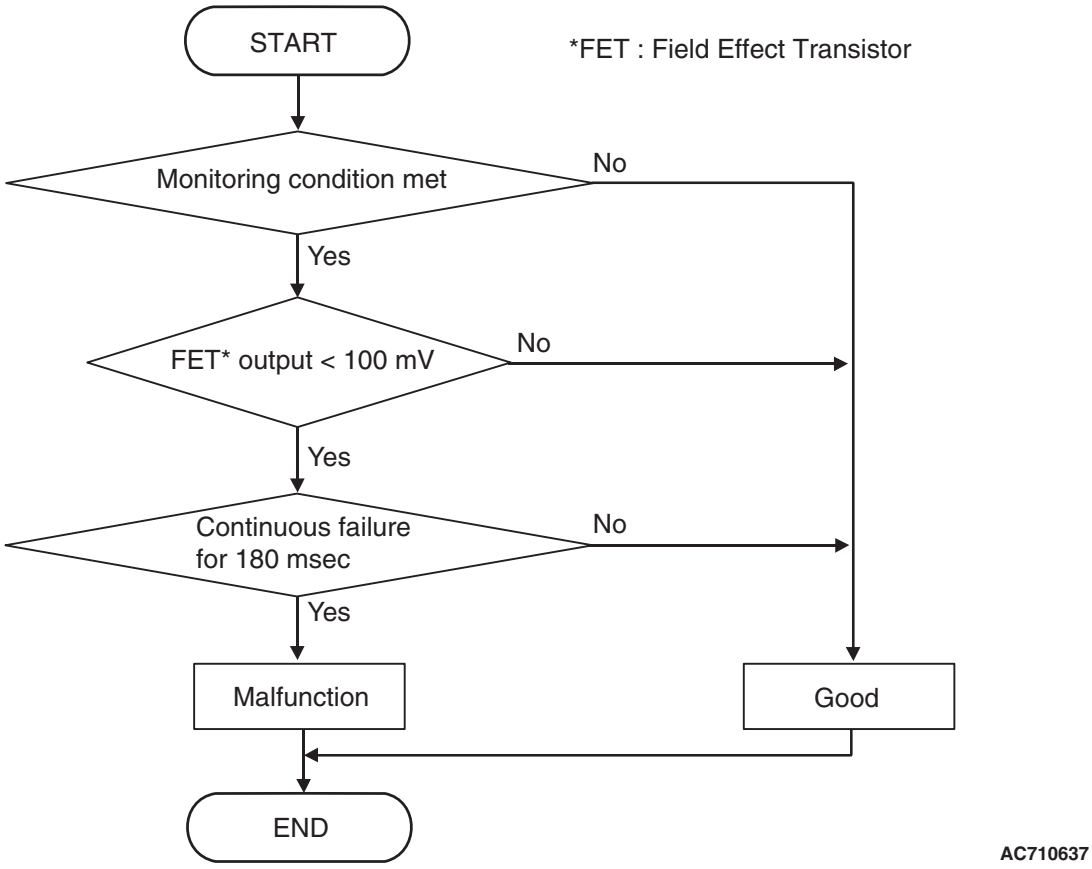
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0776: Clutch cooling flow solenoid system (Drive current range out)
- P0777: Clutch cooling flow solenoid system (Stuck)
- P0964: Clutch cooling flow solenoid system (Open circuit)
- P0965: Clutch cooling flow solenoid system (Overvoltage)
- P0967: Clutch cooling flow solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 100 mV or less. (180 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 180 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch cooling flow solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P0966 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0967: Clutch Cooling Flow Solenoid System (Short to power supply)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch cooling flow solenoid circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch cooling flow solenoid circuit is determined to be short to power supply.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

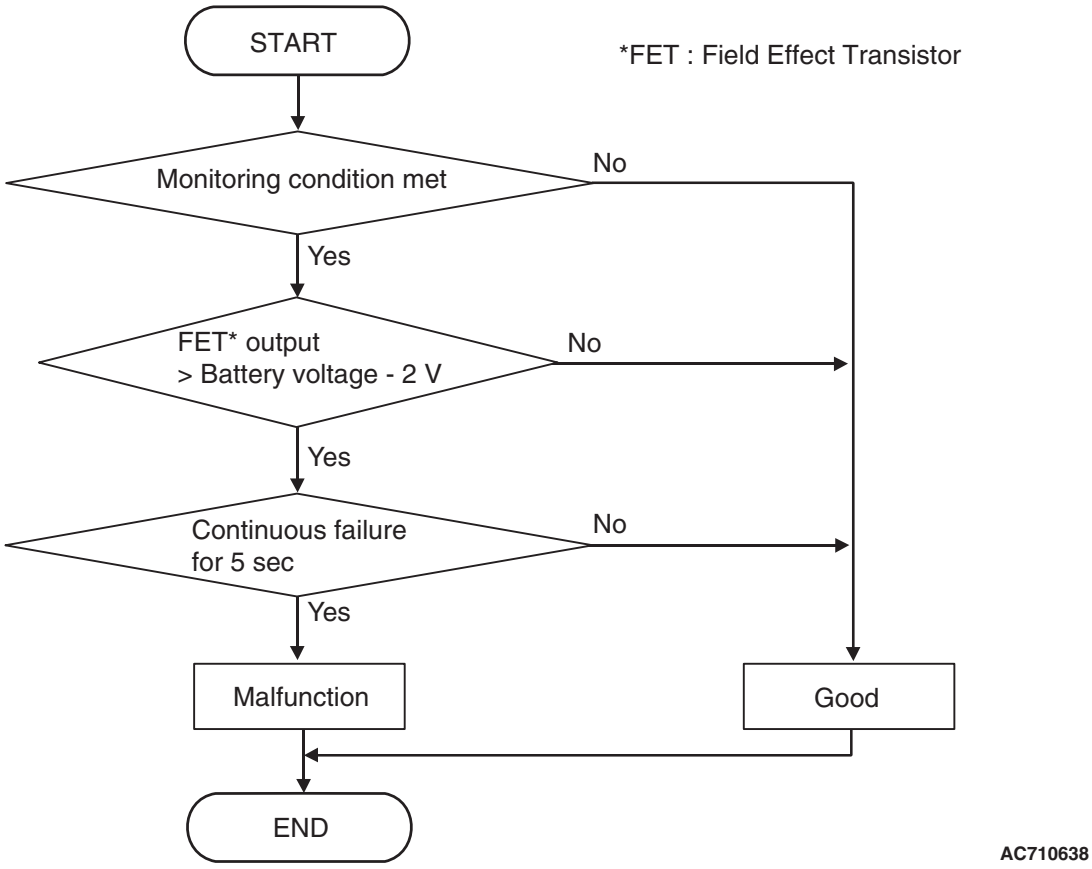
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0776: Clutch cooling flow solenoid system (Drive current range out)
- P0777: Clutch cooling flow solenoid system (Stuck)
- P0964: Clutch cooling flow solenoid system (Open circuit)
- P0965: Clutch cooling flow solenoid system (Overvoltage)
- P0966: Clutch cooling flow solenoid system (Short to ground)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Clutch cooling flow solenoid: OFF.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: (Battery voltage – 2 V) or more. (5 seconds)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains (Battery voltage – 2 V) or less for 5 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch cooling flow solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No. P0967 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0968: Shift/Cooling Switching Solenoid System (Open circuit)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift/cooling switching solenoid circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift/cooling switching solenoid circuit is determined to be open.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

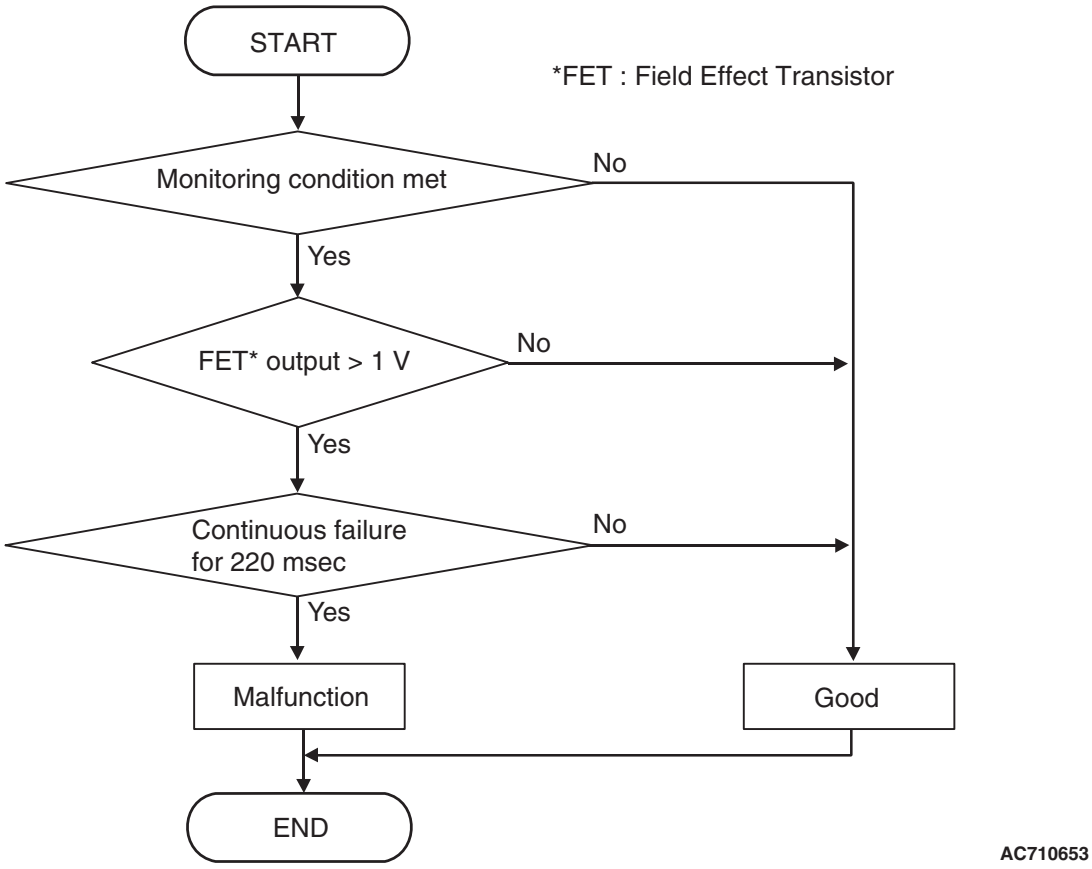
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 1 V or more. (220 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 1 V or less for 220 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift/cooling switching solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
15 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P0968 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0970: Shift/Cooling Switching Solenoid System (Short to ground)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift/cooling switching solenoid circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift/cooling switching solenoid circuit is determined to be short to ground.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

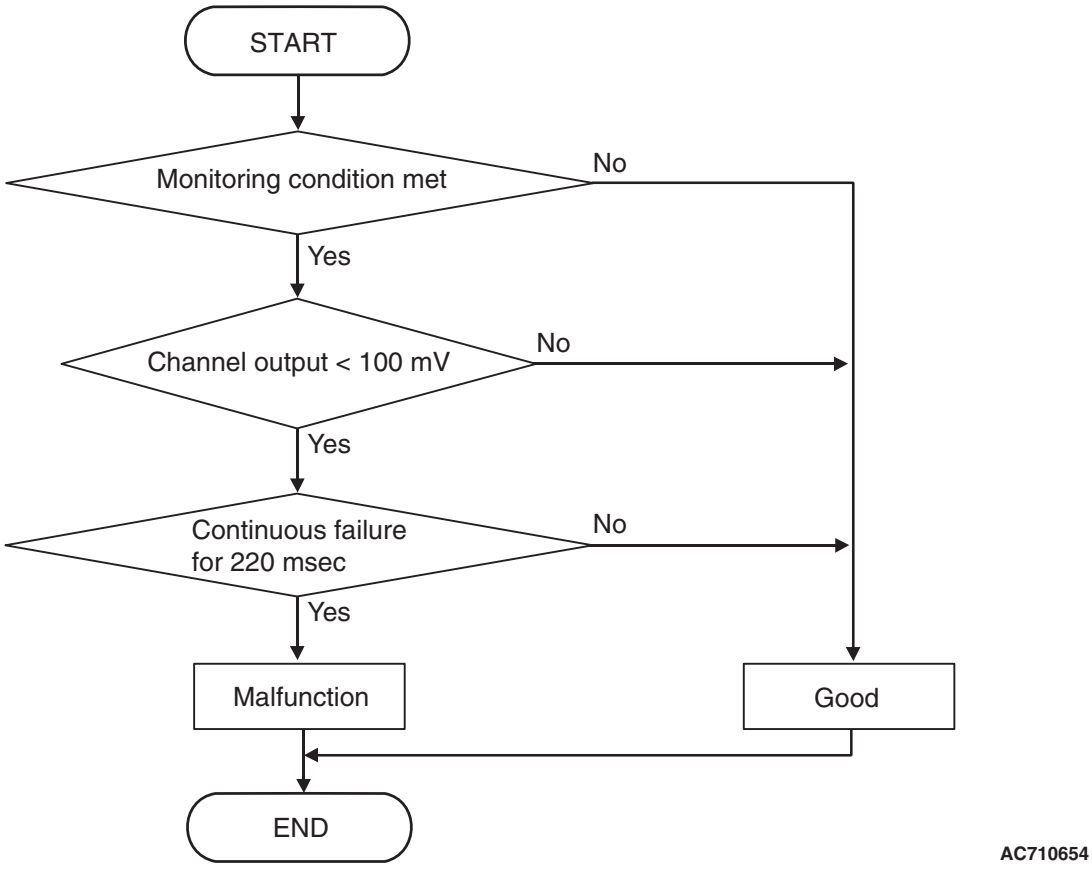
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 100 mV or less. (220 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 220 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift/cooling switching solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P0970 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0971: Shift/Cooling Switching Solenoid System (Short to power supply)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift/cooling switching solenoid circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift/cooling switching solenoid circuit is determined to be short to power supply.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

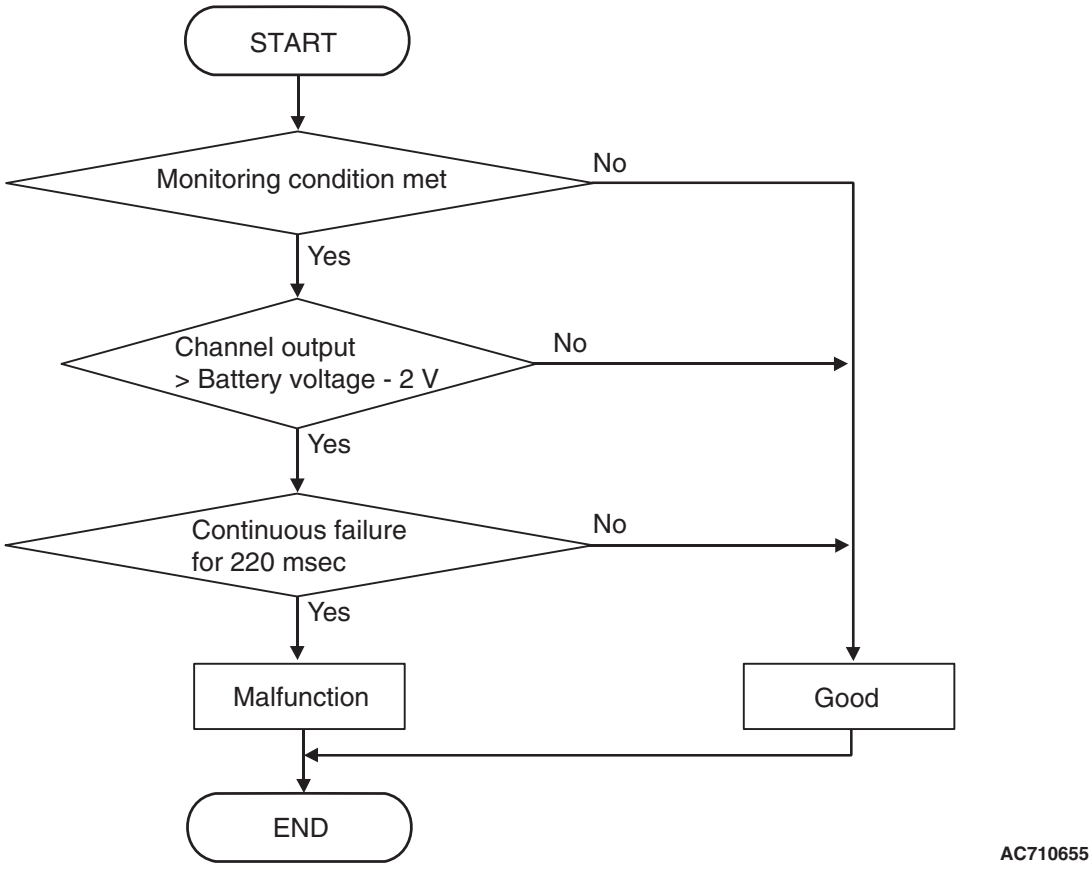
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Shift/cooling switching solenoid: OFF.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: (Battery voltage – 2 V) or more. (220 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains (Battery voltage – 2 V) or less for 220 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift/cooling switching solenoid

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P0971 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0973: Shift Select Solenoid 1 System (Short to ground)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift select solenoid 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift select solenoid 1 circuit is determined to be short to ground.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

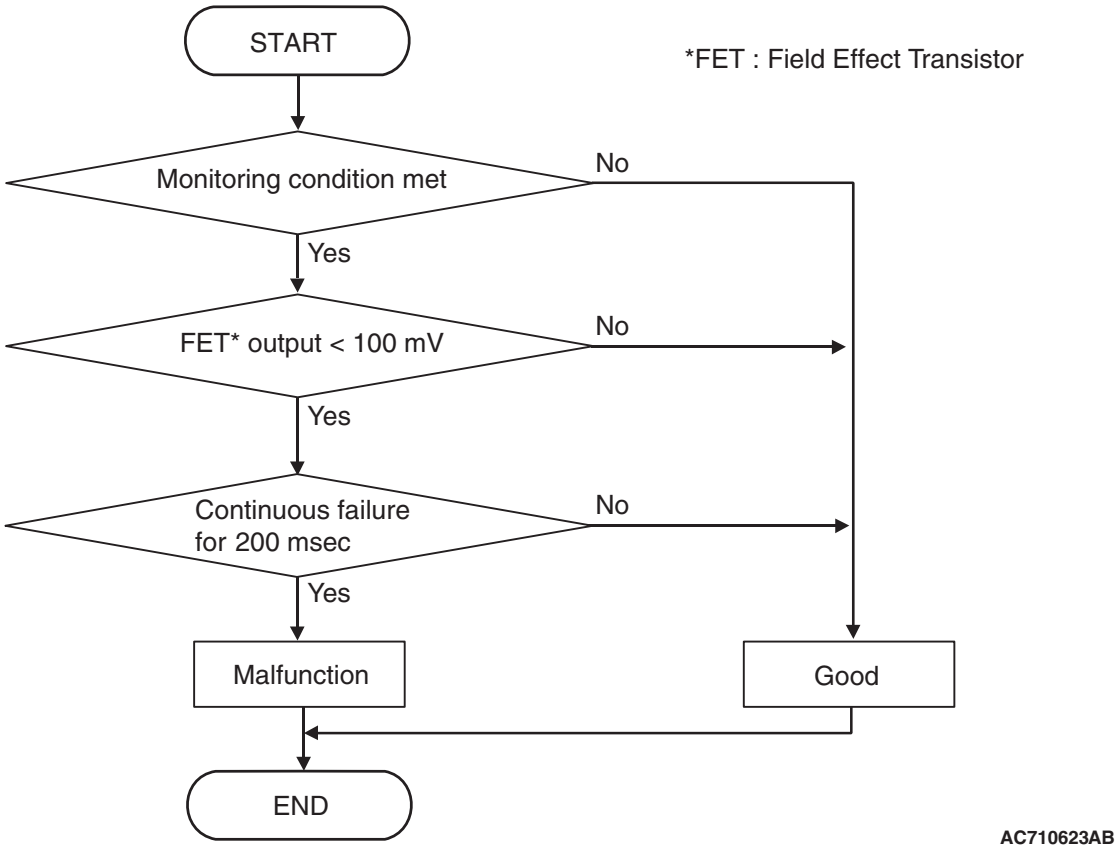
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 100 mV or less. (200 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 200 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift select solenoid 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P0973 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0974: Shift Select Solenoid 1 System (Short to power supply)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift select solenoid 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift select solenoid 1 circuit is determined to be short to power supply.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

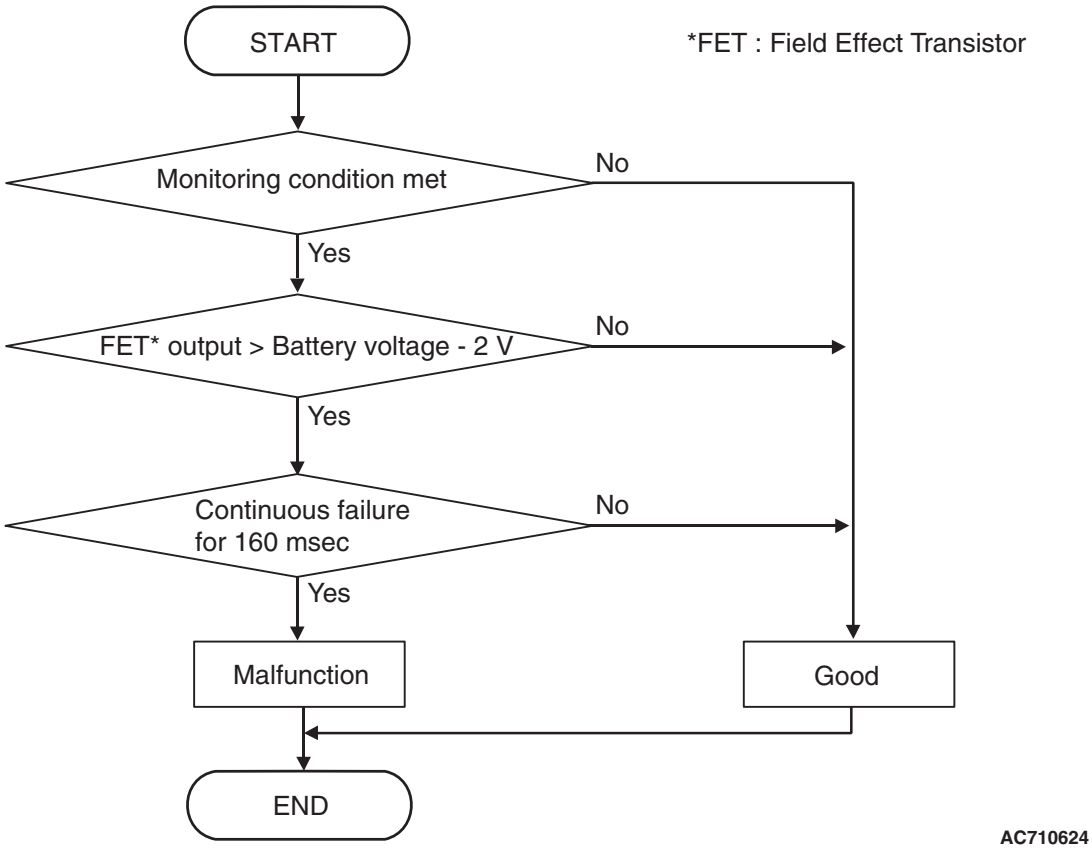
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Shift select solenoid 1: OFF.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: (Battery voltage – 2 V) or more. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains (Battery voltage – 2 V) or less for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift select solenoid 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No. P0974 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0976: Shift Select Solenoid 2 System (Short to ground)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift select solenoid 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift select solenoid 2 circuit is determined to be short to ground.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

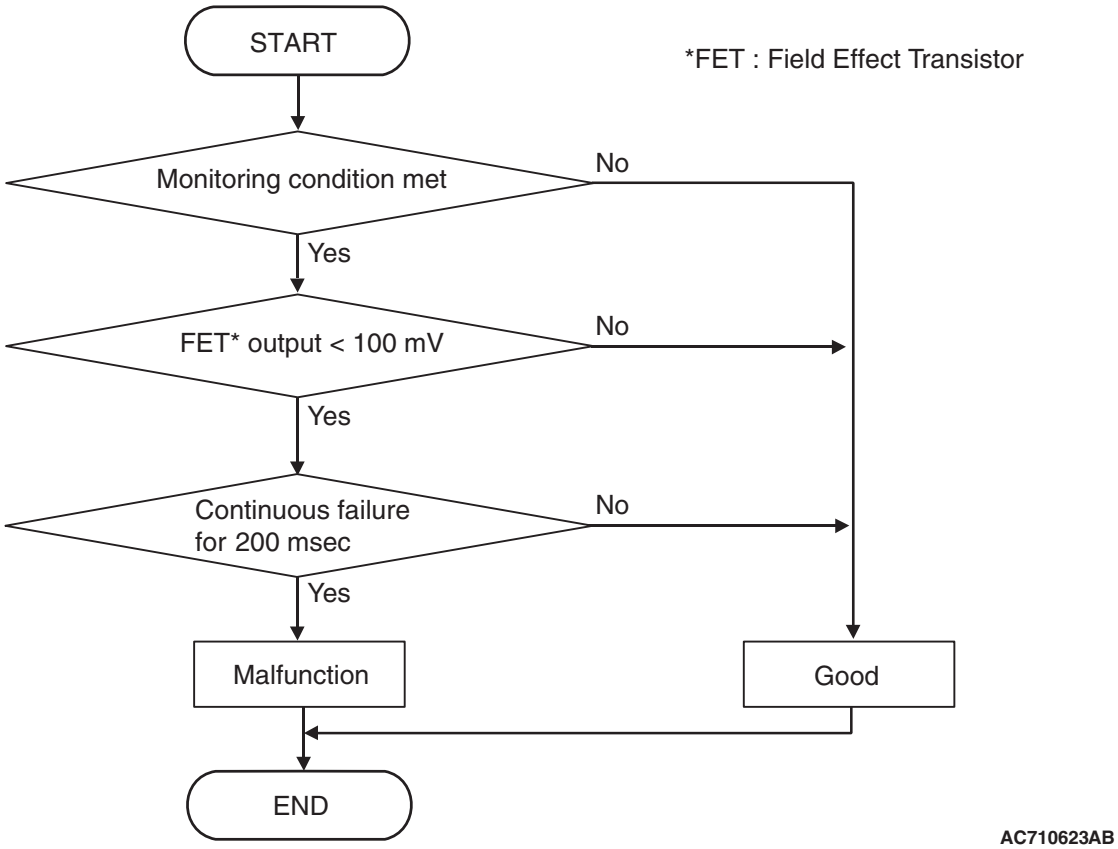
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 100 mV or less. (200 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 200 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift select solenoid 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P0976 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P0977: Shift Select Solenoid 2 System (Short to power supply)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift select solenoid 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift select solenoid 2 circuit is determined to be short to power supply.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift select solenoid 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

15 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P0977 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1637: EEPROM System (DTC storing malfunction)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that EEPROM in TC-SST-ECU is normal.

DESCRIPTIONS OF MONITOR METHODS

The EEPROM writing data is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

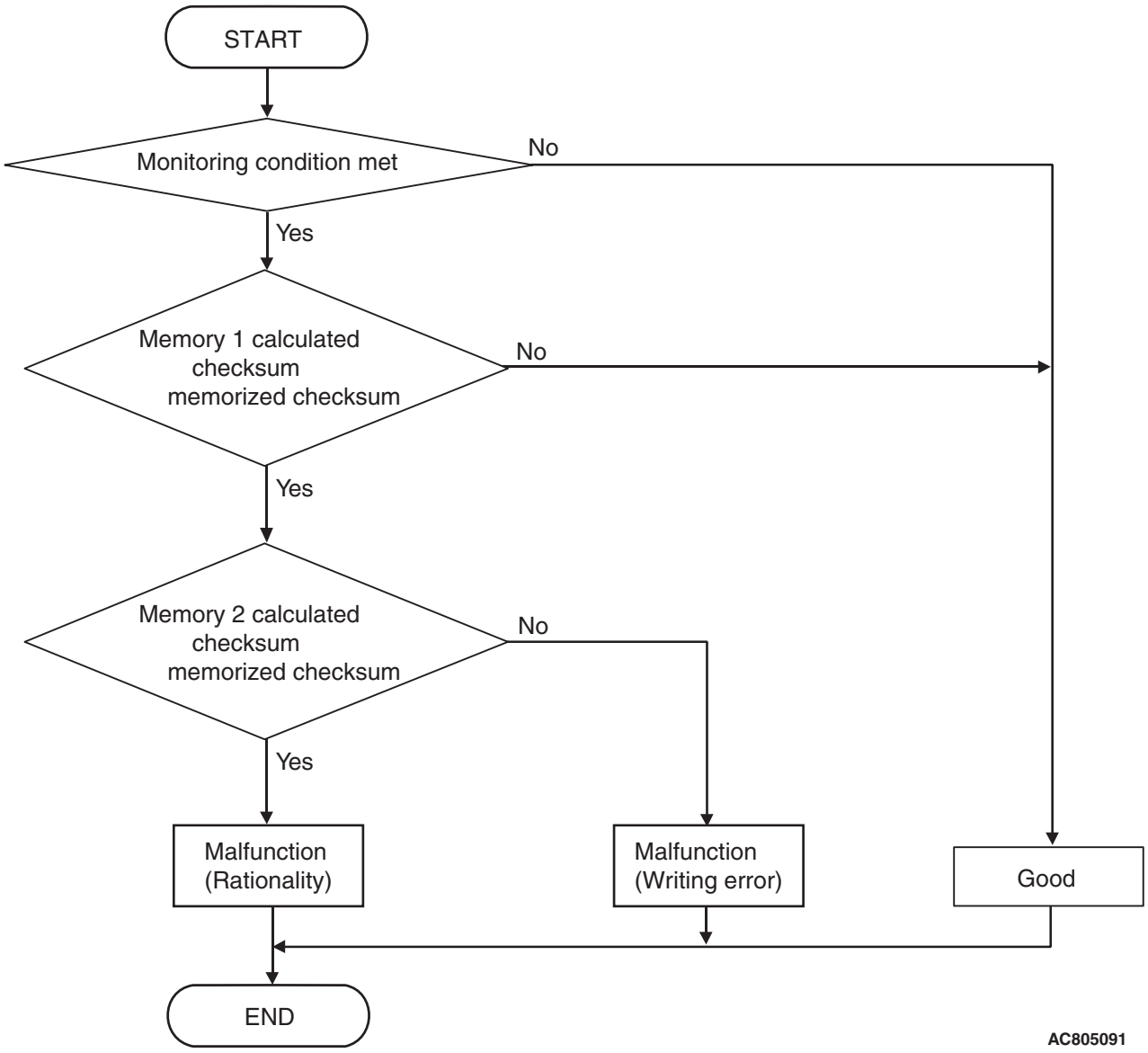
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Calculated checksum: Not equal the memorized checksum.

OBD-II DRIVE CYCLE PATTERN

The calculated checksum corresponds with the memorized checksum.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No. P1637 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1676: Coding incomplete

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the coding is normal. (TC-SST-ECU is a local coding.)

DESCRIPTIONS OF MONITOR METHODS
The coding is determined to be abnormal. (This abnormality occurs when the vehicle information has been incorrectly written to TC-SST-ECU at a factory before shipment.)

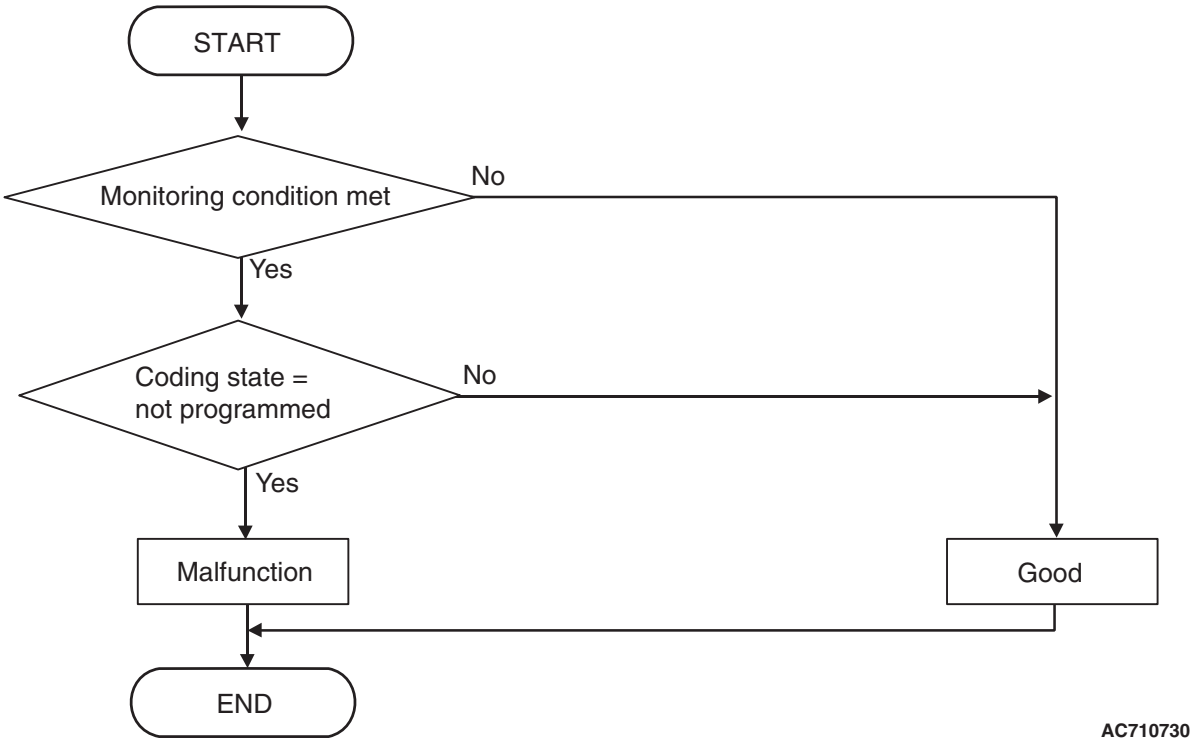
MONITOR EXECUTION
- Continuous

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)



DTC SET CONDITIONS

Check Conditions

- Ignition switch: ON

JUDGMENT CRITERIA

- Coding state: Not programmed. (Immediately)

OBD-II DRIVE CYCLE PATTERN

The coding is completed.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

After 5 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

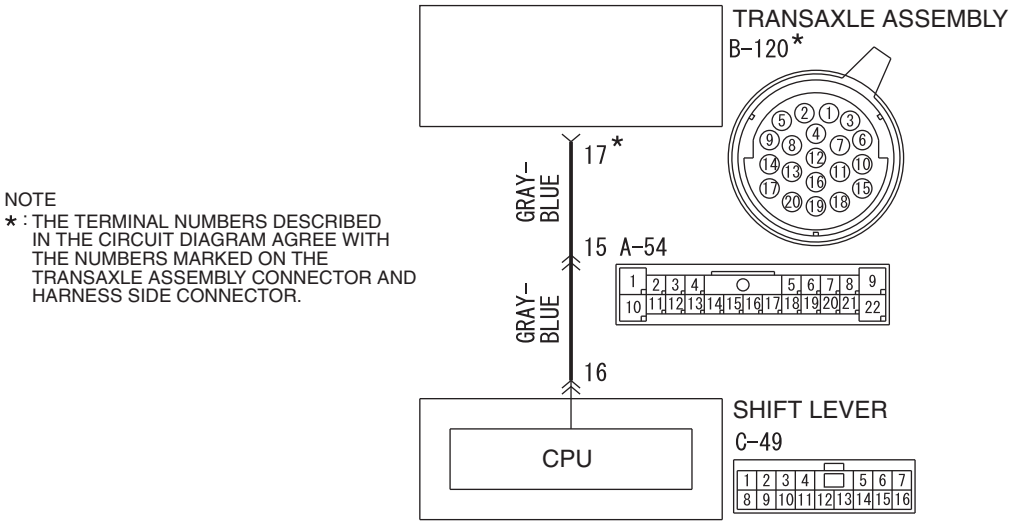
Q: Is DTC No. P1676 set?

YES : Perform coding (Refer to the "Scan tool operation manual" and perform coding.) or Replace the mechatronic assembly (Refer to P.22C-533).

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

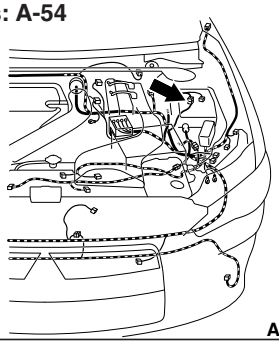
DTC P1802: Shift Lever System (LIN communication malfunction)

LIN communication system circuit



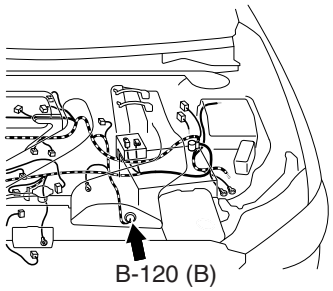
AC803068AB

Connectors: A-54



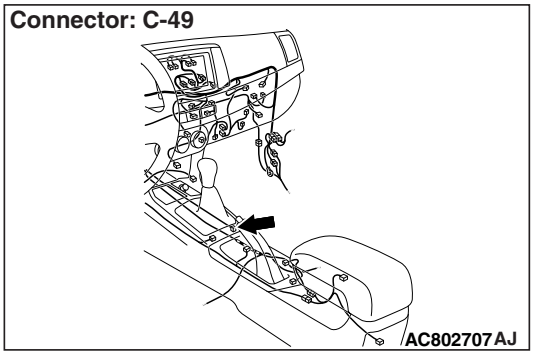
AC802703AH

Connector: B-120



AC800715AL

TSB Revision



⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the CAN back-up communication (LIN) is normal.

DESCRIPTIONS OF MONITOR METHODS

The CAN back-up communication is determined to be abnormal.

PROBABLE CAUSES

- Malfunction of the shift lever-ECU
- Malfunction of the LIN bus
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code

Check the shift lever diagnostic trouble code. (Refer to P.22C-397.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.

NO : Go to Step 3.

STEP 3. Inspection of the TC-SST-ECU connector, intermediate connector, and shift lever-ECU connector: B-120, A-54, C-49
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the defective connector.

STEP 4. Check the wiring harness between B-120 TC-SST-ECU connector terminal No. 17 and C-49 shift lever-ECU connector terminal No. 16.
Check the communication line for open and short circuit.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the wiring harness.

STEP 5. Check whether the DTC is reset.
10 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P1802 set?

YES : Go to Step 6.
NO : This diagnosis is complete.

STEP 6. Replace the shift lever assembly, and check if the diagnostic trouble code is reset.
(1) Replace the shift lever assembly. (Refer to P.22C-517.)
(2) Check the DTC.
(3) After 10 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No. P1802 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1803: Shift Lever System (CAN, LIN Time-out Error)

SHIFT LEVER SYSTEM CIRCUIT

Refer to P.22C-114.

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the communication with the shift lever-ECU (CAN and LIN) is normal.

DESCRIPTIONS OF MONITOR METHODS

The CAN and LIN communication with the shift lever-ECU is determined to be abnormal.

PROBABLE CAUSES

- Malfunction of the shift lever-ECU
- Malfunction of the LIN bus
- The CAN bus line is defective.
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code

Check the shift lever diagnostic trouble code. (Refer to P.22C-397.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.

NO : Go to Step 3.

STEP 3. Inspection of the TC-SST-ECU connector, intermediate connector, and shift lever-ECU connector: B-107, A-13, C-27

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the defective connector.

STEP 4. Check the wiring harness between B-107 TC-SST-ECU connector terminal No. 17 and C-27 shift lever-ECU connector terminal No. 16.
Check the communication line for open and short circuit.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the wiring harness.

STEP 5. Check whether the DTC is reset.
30 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P1803 set?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1804: Shift Fork Position Sensor 1 and 2 System (Power supply voltage low range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the supply voltage to the shift fork position sensor 1 and 2 is normal.

DESCRIPTIONS OF MONITOR METHODS
The supply voltage to the shift fork position sensor 1 and 2 is too low.

MONITOR EXECUTION
- Continuous

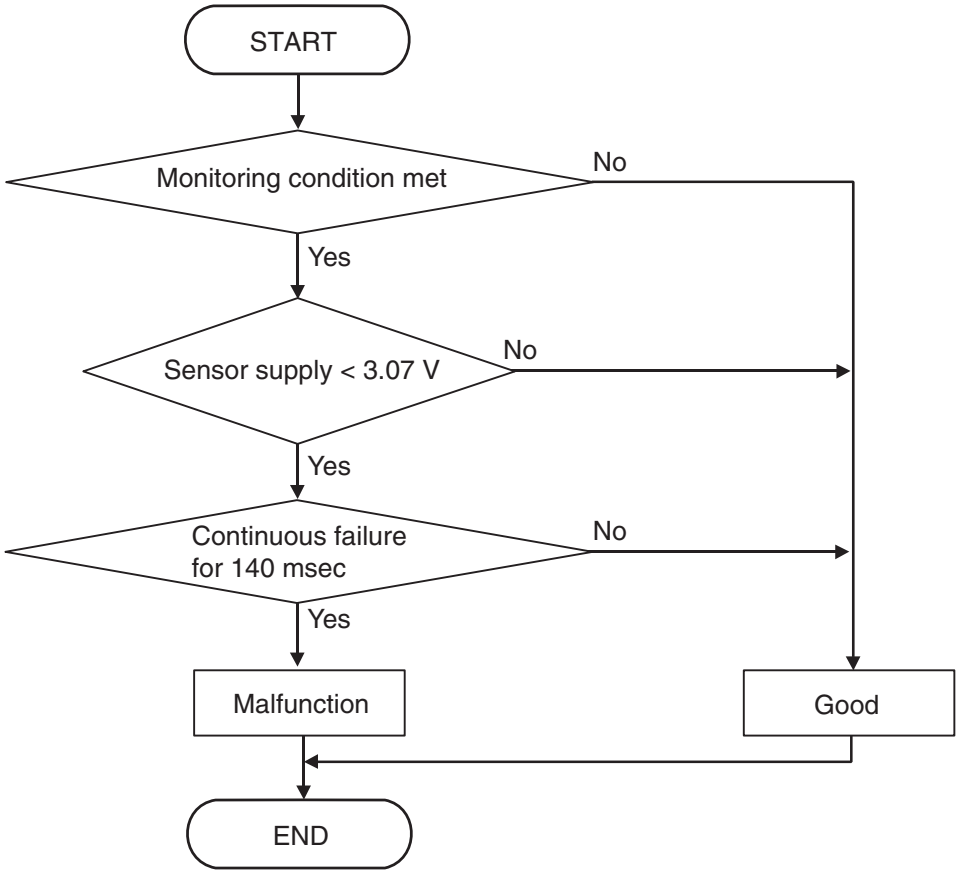
MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P1820: Shift fork position sensor 1 system (Voltage low range out)
- P1821: Shift fork position sensor 1 system (Voltage high range out)
- P1822: Shift fork position sensor 1 system (Output range out)
- P1824: Shift fork position sensor 1 system (Poor performance)
- P1825: Shift fork position sensor 2 system (Voltage low range out)
- P1826: Shift fork position sensor 2 system (Voltage high range out)
- P1827: Shift fork position sensor 2 system (Output range out)
- P1829: Shift fork position sensor 2 system (Poor performance)
- P1836: Shift fork 1 malfunction
- P183D: Shift fork 2 malfunction
- P1844: Shift fork 3 malfunction
- P184B: Shift fork 4 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)
- Shift fork position sensor 1
- Shift fork position sensor 2

TSB Revision

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Supply voltage: 3.07 V or less. (140 millisecond)

OBD-II DRIVE CYCLE PATTERN

The supply voltage remains 3.07 V or more for 140 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 1 and 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check the TC-SST-ECU power supply circuit
Refer to P.22C-369.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-369.) After repairing the power supply circuit, go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. P1804 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1805: Shift Fork Position Sensor 1 and 2 System (Power supply voltage high range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the supply voltage to the shift fork position sensor 1 and 2 is normal.

DESCRIPTIONS OF MONITOR METHODS

The supply voltage to the shift fork position sensor 1 and 2 is too high.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

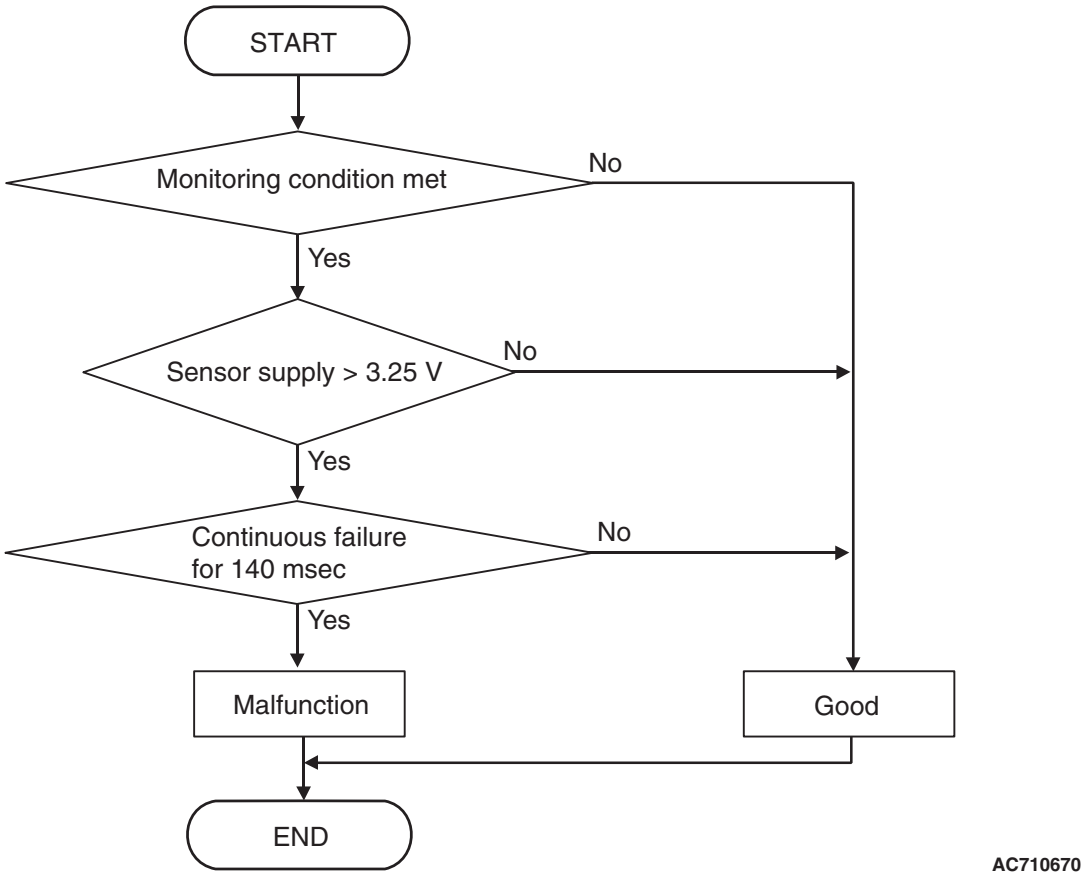
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1820: Shift fork position sensor 1 system (Voltage low range out)
- P1821: Shift fork position sensor 1 system (Voltage high range out)
- P1822: Shift fork position sensor 1 system (Output range out)
- P1824: Shift fork position sensor 1 system (Poor performance)
- P1825: Shift fork position sensor 2 system (Voltage low range out)
- P1826: Shift fork position sensor 2 system (Voltage high range out)
- P1827: Shift fork position sensor 2 system (Output range out)
- P1829: Shift fork position sensor 2 system (Poor performance)
- P1836: Shift fork 1 malfunction
- P183D: Shift fork 2 malfunction
- P1844: Shift fork 3 malfunction
- P184B: Shift fork 4 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Shift fork position sensor 1
- Shift fork position sensor 2

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Supply voltage: 3.25 V or more. (140 millisecond)

OBD-II DRIVE CYCLE PATTERN

The supply voltage remains 3.25 V or less for 140 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 1 and 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check the TC-SST-ECU power supply circuit
Refer to P.22C-369.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-369.) After repairing the power supply circuit, go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. P1805 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1806: Shift Fork Position Sensor 3 and 4 System (Power supply voltage low range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the supply voltage to the shift fork position sensor 3 and 4 is normal.

DESCRIPTIONS OF MONITOR METHODS
The supply voltage to the shift fork position sensor 3 and 4 is too low.

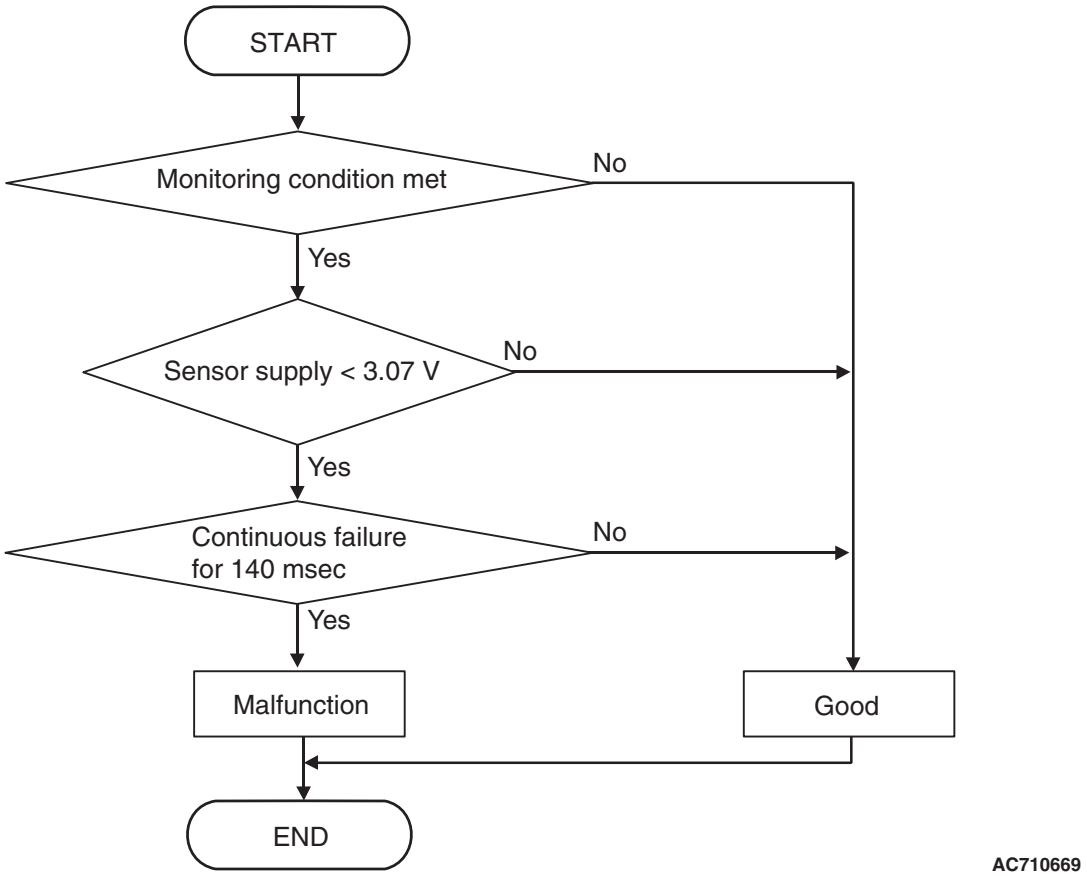
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P182A: Shift fork position sensor 3 system (Voltage low range out)
- P182B: Shift fork position sensor 3 system (Voltage high range out)
- P182C: Shift fork position sensor 3 system (Output range out)
- P182E: Shift fork position sensor 3 system (Poor performance)
- P1831: Shift fork position sensor 4 system (Voltage low range out)
- P1832: Shift fork position sensor 4 system (Voltage high range out)
- P1833: Shift fork position sensor 4 system (Output range out)
- P1835: Shift fork position sensor 4 system (Poor performance)
- P1836: Shift fork 1 malfunction
- P183D: Shift fork 2 malfunction
- P1844: Shift fork 3 malfunction
- P184B: Shift fork 4 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)
- Shift fork position sensor 3
- Shift fork position sensor 4

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Supply voltage: 3.07 V or less. (140 millisecond)

OBD-II DRIVE CYCLE PATTERN

The supply voltage remains 3.07 V or more for 140 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 3 and 4

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check the TC-SST-ECU power supply circuit
Refer to P.22C-369.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-369.) After repairing the power supply circuit, go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. P1806 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1807: Shift Fork Position Sensor 3 and 4 System (Power supply voltage high range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the supply voltage to the shift fork position sensor 3 and 4 is normal.

DESCRIPTIONS OF MONITOR METHODS
The supply voltage to the shift fork position sensor 3 and 4 is too high.

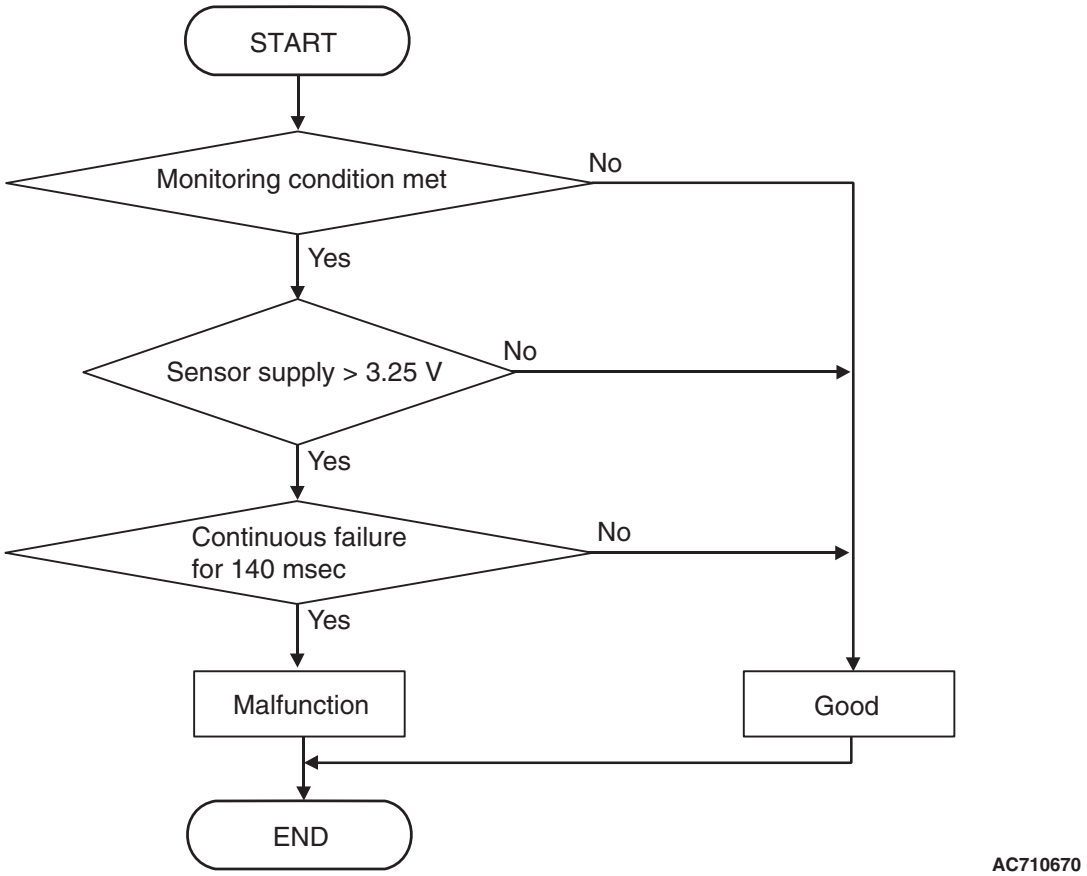
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P182A: Shift fork position sensor 3 system (Voltage low range out)
- P182B: Shift fork position sensor 3 system (Voltage high range out)
- P182C: Shift fork position sensor 3 system (Output range out)
- P182E: Shift fork position sensor 3 system (Poor performance)
- P1831: Shift fork position sensor 4 system (Voltage low range out)
- P1832: Shift fork position sensor 4 system (Voltage high range out)
- P1833: Shift fork position sensor 4 system (Output range out)
- P1835: Shift fork position sensor 4 system (Poor performance)
- P1836: Shift fork 1 malfunction
- P183D: Shift fork 2 malfunction
- P1844: Shift fork 3 malfunction
- P184B: Shift fork 4 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)
- Shift fork position sensor 3
- Shift fork position sensor 4

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Supply voltage: 3.25 V or more. (140 millisecond)

OBD-II DRIVE CYCLE PATTERN

The supply voltage remains 3.25 V or less for 140 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 3 and 4

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check the TC-SST-ECU power supply circuit
Refer to P.22C-369.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-369.) After repairing the power supply circuit, go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. P1807 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1808: TC-SST-ECU temperature, fluid temperature sensor system (Correlation error)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the temperature sensor and the fluid temperature sensor are normal.

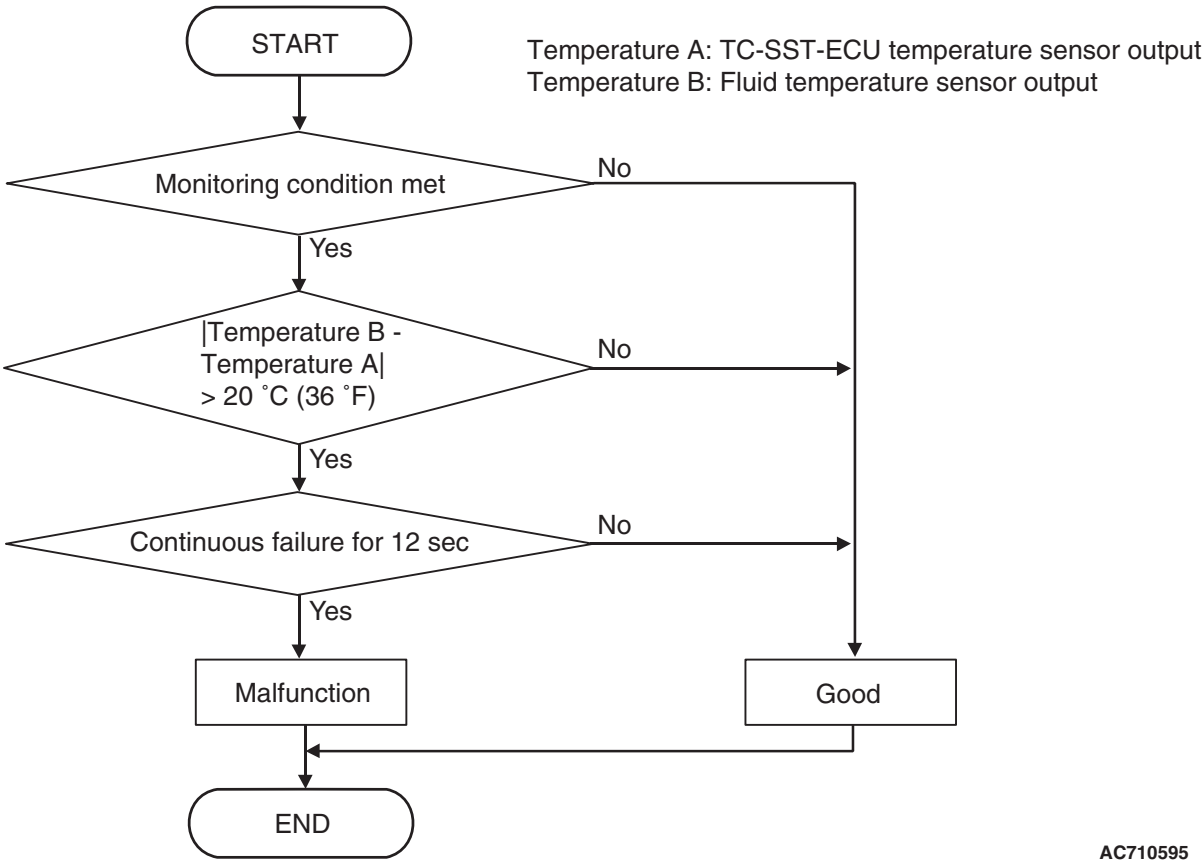
DESCRIPTIONS OF MONITOR METHODS
The difference of the output between the ECU temperature sensor and fluid temperature sensor is large.

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)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Calculated temperature ("Temperature B: Fluid temperature sensor output" – "Temperature A: TC-SST-ECU temperature sensor output"): 20°C (36°F) or more. (12 seconds)

OBD-II DRIVE CYCLE PATTERN

The difference of the calculated temperature is 20°C (36°F) or less.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
15 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P1808 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P180C: Clutch pressure cut spool sticking

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch pressure cut spool is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch pressure cut spool is determined to be seized.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
Warm up the engine and let it idle for 15 seconds. Then check that the DTC is reset.

Q: Is DTC No. P180C set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P181B: Clutch 1 (Pressure low range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch 1 pressure is normal.

DESCRIPTIONS OF MONITOR METHODS

The pressure of the clutch 1 is too low.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

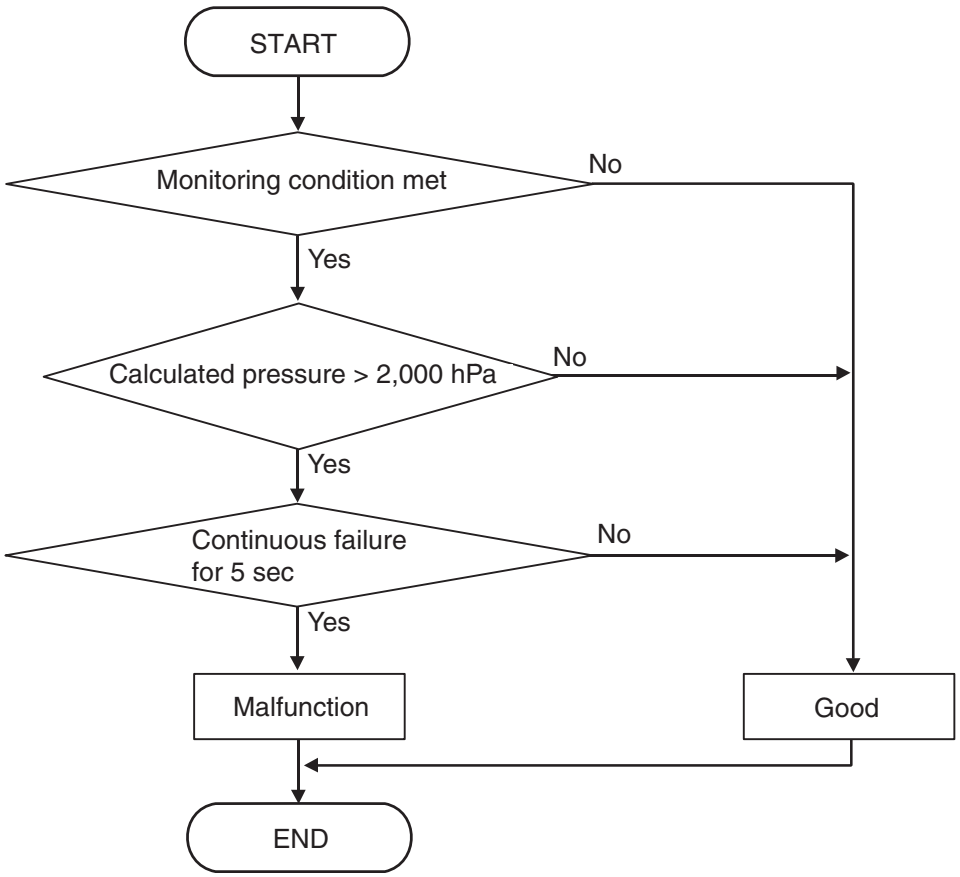
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P1836: Shift fork 1 malfunction
- P183D: Shift fork 2 malfunction

Sensor (The sensor below is determined to be normal)

- Clutch 1 pressure sensor

LOGIC FLOW CHARTS (Monitor Sequence)



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DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.

TSB Revision

- Clutch 1 (odd) state: Slip or engaged.
- Clutch/shift pressure solenoid 1: Not OFF or not in valve cleaning mode.

JUDGMENT CRITERIA

- Calculated pressure: 2,000 hPa or more. (5 seconds)

OBD-II DRIVE CYCLE PATTERN

The calculated pressure remains 2,000 hPa or less for 5 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Insufficient fluid level
- Improper installation of mechatronic assembly

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.

(2) Carry out the Item No. 3 (Teach-In) : Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

(3) With the engine idle status, check that the DTC is reset.

Q: Is the DTC No. P181B restored? or Is the line pressure test of Teach-In not completed normally ("No" is displayed in the Data list No.101: Normal End)?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Check the fluid.

Q: Is the fluid level proper?

YES : Go to Step 4

NO : Add the fluid.

STEP 4. Check the installation status of the mechatronic assembly.

Q: Is the mechatronic assembly installed correctly?

YES : Go to Step 5

NO : Install the mechatronic assembly correctly. (Refer to P.22C-533.)

STEP 5. Check whether the DTC is reset.
(1) Erase the DTC.
(2) With the engine idle status, check that the DTC is reset.

Q: Is DTC No.P181B set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then, go to Step 6.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 6. Check whether the DTC is reset.
(1) Erase the DTC.
(2) With the engine idle status, check that the DTC is reset.

Q: Is DTC No.P181B set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P181C: Clutch 1 (Pressure high range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the clutch 1 pressure is normal.

DESCRIPTIONS OF MONITOR METHODS
The pressure of the clutch 1 is too high.

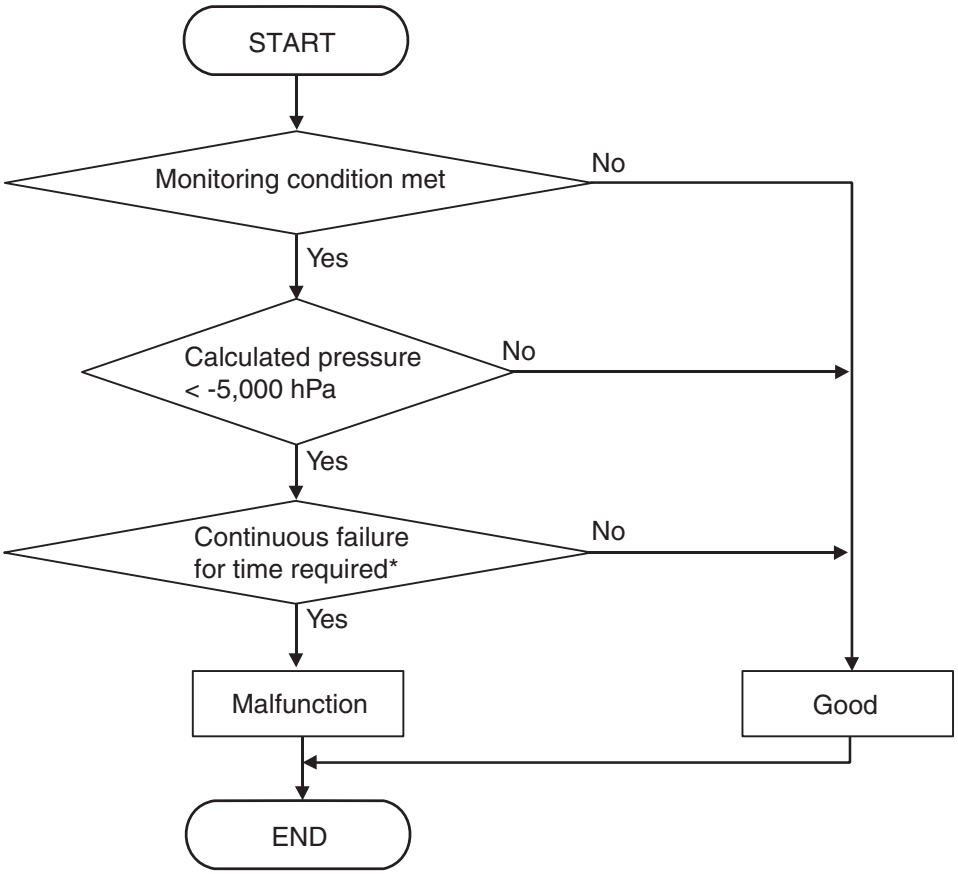
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P1836: Shift fork 1 malfunction
- P183D: Shift fork 2 malfunction

Sensor (The sensor below is determined to be normal)
- Clutch 1 pressure sensor

LOGIC FLOW CHARTS (Monitor Sequence) <Target clutch 1 (odd) pressure: 3,000 hPa or more>



*: Time required
The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10˚C (14˚F)	1,220 msec
	< -10˚C (14˚F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10˚C (14˚F)	3,220 msec
	> -10˚C (14˚F)	2,220 msec

Example of the time required
i) When the shift lever position is P: The time required is always 220 msec.
ii) When the shift lever position is "R → N":
If the transmission fluid temperature is -10˚C (14˚F) or more, the time required is 1,220 msec.
If the transmission fluid temperature is lower than -10˚C (14˚F), the time required is 2,220 msec.
iii) When shift lever position is D:
If the transmission fluid temperature is -10˚C (14˚F) or less, the time required is 3,220 msec.
If the transmission fluid temperature is higher than -10˚C (14˚F), the time required is 2,220 msec.

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DTC SET CONDITIONS <TARGET CLUTCH 1 (ODD) PRESSURE: 3,000 HPA OR MORE>

Check Conditions

- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Clutch 1 (odd) state: Slip or engaged.
- Target clutch 1 (odd) pressure: 3,000 hPa or more.

JUDGMENT CRITERIA

- Calculated pressure: –5,000 hPa or less. (Time required*)

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

OBD-II DRIVE CYCLE PATTERN <TARGET CLUTCH 1 (ODD) PRESSURE: 3,000 HPA OR MORE>

The calculated pressure remains –5,000 hPa or more for time required*.

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

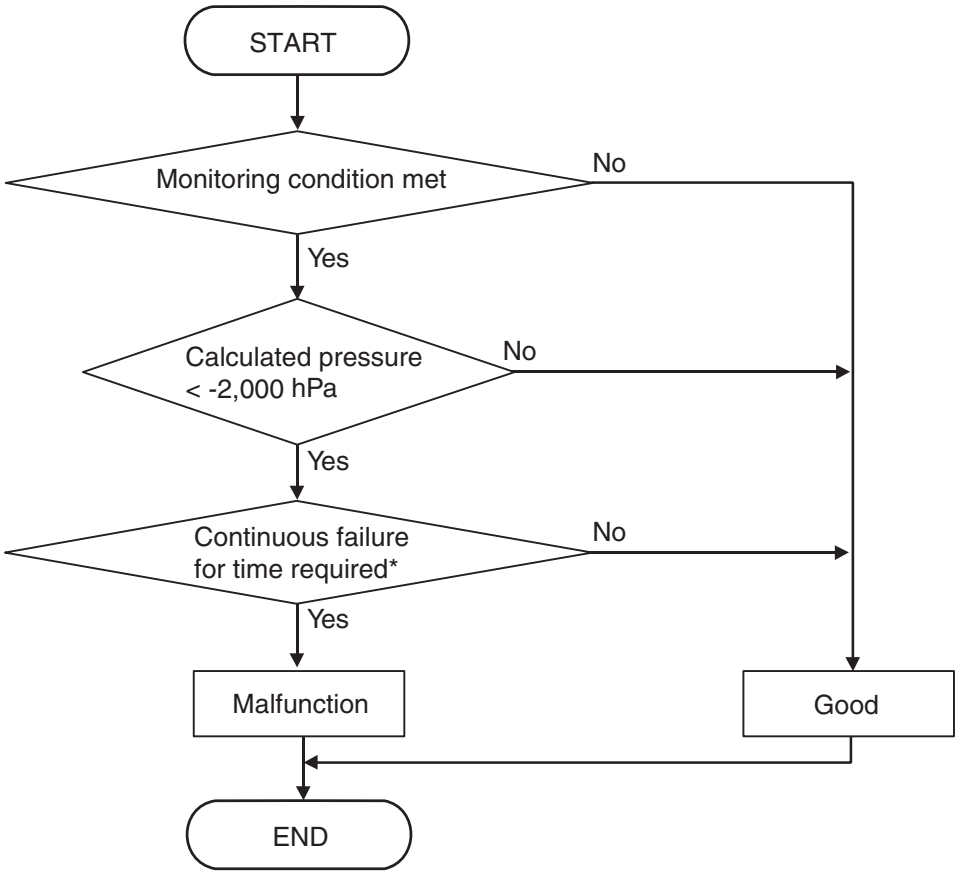
If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

LOGIC FLOW CHARTS (Monitor Sequence) <Target clutch 1 (odd) pressure: 1,400 hPa or more to 3,000 hPa or less>



*: Time required
The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D→N" or "R→N" or "R→P"	>= -10˚C (14˚F)	1,220 msec
	< -10˚C (14˚F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10˚C (14˚F)	3,220 msec
	> -10˚C (14˚F)	2,220 msec

Example of the time required
i) When the shift lever position is P: The time required is always 220 msec.
ii) When the shift lever position is "R→N":
If the transmission fluid temperature is -10˚C (14˚F) or more, the time required is 1,220 msec.
If the transmission fluid temperature is lower than -10˚C (14˚F), the time required is 2,220 msec.
iii) When shift lever position is D:
If the transmission fluid temperature is -10˚C (14˚F) or less, the time required is 3,220 msec.
If the transmission fluid temperature is higher than -10˚C (14˚F), the time required is 2,220 msec.

AC805098AB

DTC SET CONDITIONS <TARGET CLUTCH 1 (ODD) PRESSURE: 1,400 HPA OR MORE TO 3,000 HPA OR LESS>

Check Conditions

- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Clutch 1 (odd) state: Slip or engaged.
- Target clutch 1 (odd) pressure: 1,400 hPa or more.

JUDGMENT CRITERIA

- Calculated pressure: –2,000 hPa or less. (Time required*)

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

OBD-II DRIVE CYCLE PATTERN <TARGET CLUTCH 1 (ODD) PRESSURE: 1,400 HPA OR MORE TO 3,000 HPA OR LESS>

The calculated pressure remains –2,000 hPa or more for time required*.

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

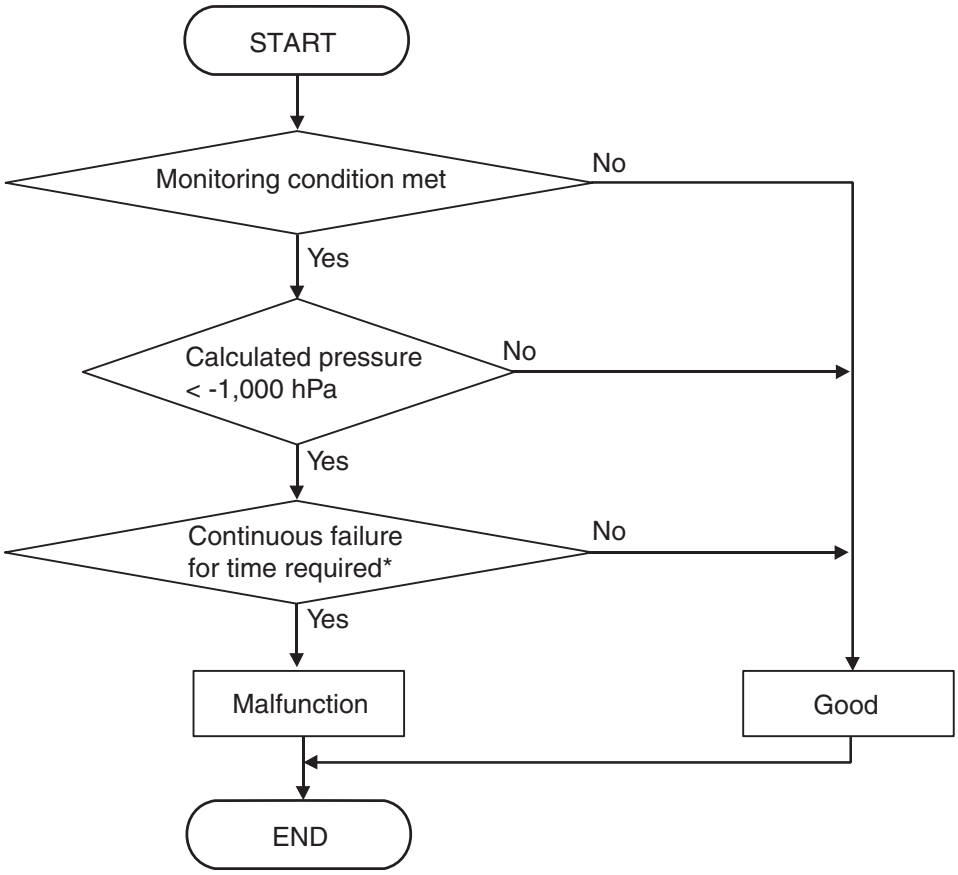
If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

LOGIC FLOW CHARTS (Monitor Sequence) <Target clutch 1 (odd) pressure: 1,400 hPa or less>



*: Time required
The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10˚C (14˚F)	1,220 msec
	< -10˚C (14˚F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10˚C (14˚F)	3,220 msec
	> -10˚C (14˚F)	2,220 msec

Example of the time required
i) When the shift lever position is P: The time required is always 220 msec.
ii) When the shift lever position is "R → N":
If the transmission fluid temperature is -10˚C (14˚F) or more, the time required is 1,220 msec.
If the transmission fluid temperature is lower than -10˚C (14˚F), the time required is 2,220 msec.
iii) When shift lever position is D:
If the transmission fluid temperature is -10˚C (14˚F) or less, the time required is 3,220 msec.
If the transmission fluid temperature is higher than -10˚C (14˚F), the time required is 2,220 msec.

AC805099 AB

DTC SET CONDITIONS <TARGET CLUTCH 1 (ODD) PRESSURE: 1,400 HPA OR LESS>

Check Conditions

- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Clutch 1 (odd) state: Slip or engaged.
- Target clutch 1 (odd) pressure: 1,400 hPa or less.

JUDGMENT CRITERIA

- Calculated pressure: –1,000 hPa or less. (Time required*)

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

OBD-II DRIVE CYCLE PATTERN <TARGET CLUTCH 1 (ODD) PRESSURE: 1,400 HPA OR LESS>

The clutch 1 (odd) pressure remains −1,000 hPa or more for time required*.

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After the test run, check that the DTC is reset.

Q: Is DTC No. P181C set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P181E: Clutch 2 (Pressure low range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch 2 pressure is normal.

DESCRIPTIONS OF MONITOR METHODS

The pressure of the clutch 2 is too low.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

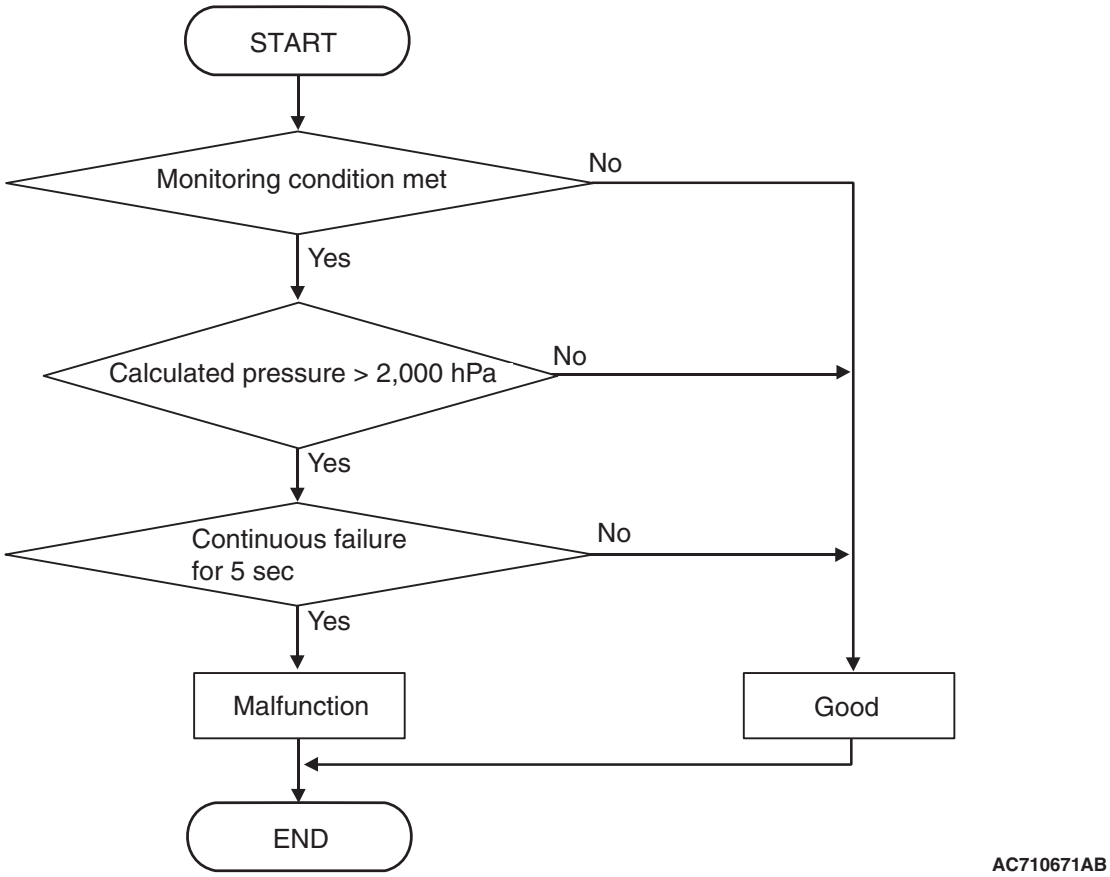
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P1844: Shift fork 3 malfunction
- P184B: Shift fork 4 malfunction

Sensor (The sensor below is determined to be normal)

- Clutch 2 pressure sensor

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Clutch 2 (even) state: Slip or engaged.
- Clutch/shift pressure solenoid 2: Not OFF or not in valve cleaning mode.

JUDGMENT CRITERIA

- Calculated pressure: 2,000 hPa or more. (5 seconds)

OBD-II DRIVE CYCLE PATTERN

The calculated pressure remains 2,000 hPa or less for 5 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Insufficient fluid level
- Improper installation of mechatronic assembly

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Carry out the Item No. 3 (Teach-In) : Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(3) With the engine idle status, check that the DTC is reset.

Q: Is the DTC No. P181E restored? or Is the line pressure test of Teach-In not completed normally ("No" is displayed in the Data list No.101: Normal End)?

YES : Go to Step 3
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Check the fluid.

Q: Is the fluid level proper?

YES : Go to Step 4
NO : Add the fluid.

STEP 4. Check the installation status of the mechatronic assembly.

Q: Is the mechatronic assembly installed correctly?

YES : Go to Step 5
NO : Install the mechatronic assembly correctly. (Refer to P.22C-533.)

STEP 5. Check whether the DTC is reset.
(1) Erase the DTC.
(2) With the engine idle status, check that the DTC is reset.

Q: Is DTC No.P181E set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then, go to Step 6.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 6. Check whether the DTC is reset.
(1) Erase the DTC.
(2) With the engine idle status, check that the DTC is reset.

Q: Is DTC No.P181E set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

TSB Revision

DTC P181F: Clutch 2 (Pressure high range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch 2 pressure is normal.

DESCRIPTIONS OF MONITOR METHODS

The pressure of the clutch 2 is too high.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

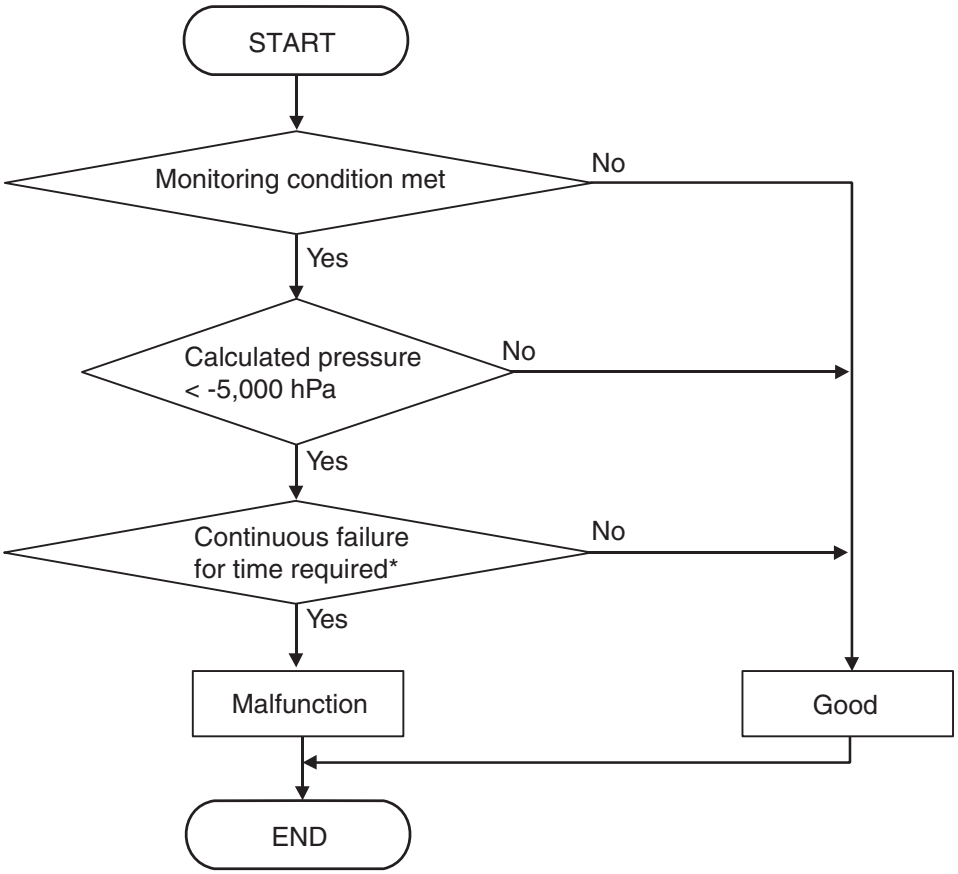
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P1844: Shift fork 3 malfunction
- P184B: Shift fork 4 malfunction

Sensor (The sensor below is determined to be normal)

- Clutch 2 pressure sensor

LOGIC FLOW CHARTS (Monitor Sequence) <Target clutch 2 (even) pressure: 3,000 hPa or more>



*: Time required
The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10˚C (14˚F)	1,220 msec
	< -10˚C (14˚F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10˚C (14˚F)	3,220 msec
	> -10˚C (14˚F)	2,220 msec

Example of the time required
i) When the shift lever position is P: The time required is always 220 msec.
ii) When the shift lever position is "R → N":
If the transmission fluid temperature is -10˚C (14˚F) or more, the time required is 1,220 msec.
If the transmission fluid temperature is lower than -10˚C (14˚F), the time required is 2,220 msec.
iii) When shift lever position is D:
If the transmission fluid temperature is -10˚C (14˚F) or less, the time required is 3,220 msec.
If the transmission fluid temperature is higher than -10˚C (14˚F), the time required is 2,220 msec.

AC805097AB

DTC SET CONDITIONS <TARGET CLUTCH 2 (EVEN) PRESSURE: 3,000 HPA OR MORE>

Check Conditions

- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Clutch 2 (even) state: Slip or engaged.
- Target clutch 2 (even) pressure: 3,000 hPa or more.

JUDGMENT CRITERIA

- Calculated pressure: –5,000 hPa or less. (Time required*)

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

OBD-II DRIVE CYCLE PATTERN <TARGET CLUTCH 2 (EVEN) PRESSURE: 3,000 HPA OR MORE>

The calculated pressure remains –5,000 hPa or more for time required*.

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

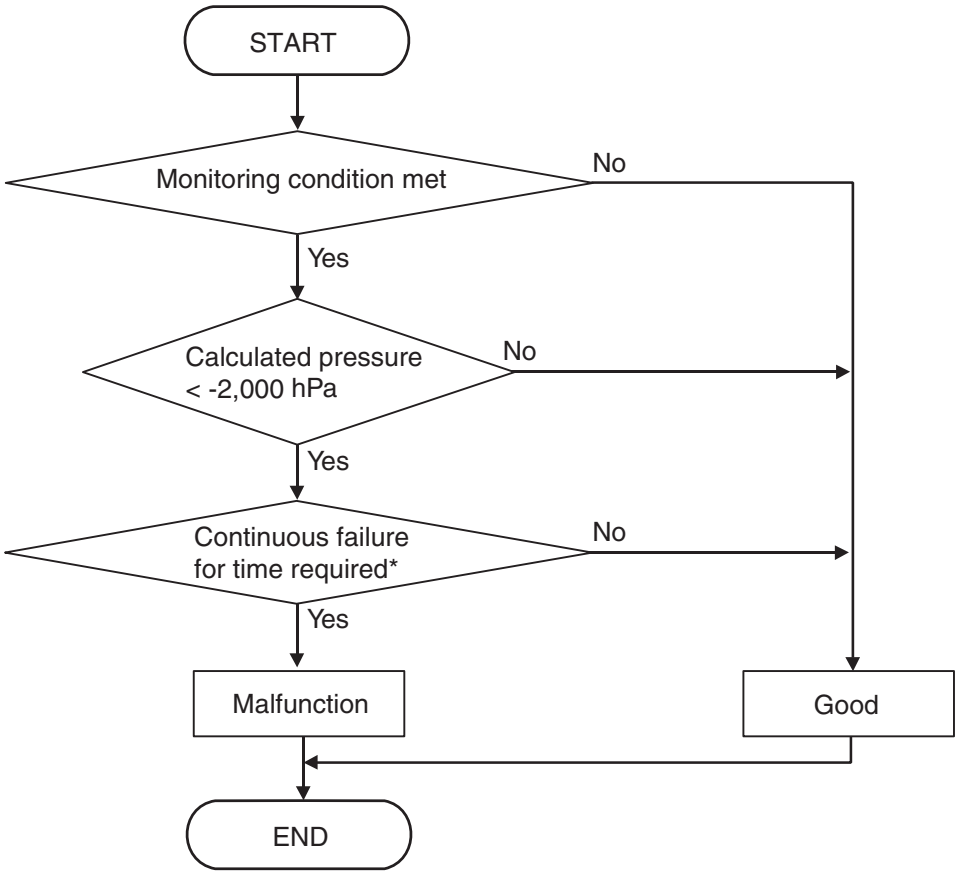
If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

LOGIC FLOW CHARTS (Monitor Sequence) <Target clutch 2 (even) pressure: 1,400 hPa or more to 3,000 hPa or less>



*: Time required
The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D→N" or "R→N" or "R→P"	>= -10˚C (14˚F)	1,220 msec
	< -10˚C (14˚F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10˚C (14˚F)	3,220 msec
	> -10˚C (14˚F)	2,220 msec

Example of the time required
i) When the shift lever position is P: The time required is always 220 msec.
ii) When the shift lever position is "R→N":
If the transmission fluid temperature is -10˚C (14˚F) or more, the time required is 1,220 msec.
If the transmission fluid temperature is lower than -10˚C (14˚F), the time required is 2,220 msec.
iii) When shift lever position is D:
If the transmission fluid temperature is -10˚C (14˚F) or less, the time required is 3,220 msec.
If the transmission fluid temperature is higher than -10˚C (14˚F), the time required is 2,220 msec.

AC805098AB

DTC SET CONDITIONS <TARGET CLUTCH 2 (EVEN) PRESSURE: 1,400 HPA OR MORE TO 3,000 HPA OR LESS>

Check Conditions

- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Clutch 2 (even) state: Slip or engaged.
- Target clutch 2 (even) pressure: 1,400 hPa or more.

JUDGMENT CRITERIA

- Calculated pressure: –2,000 hPa or less. (Time required*)

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

OBD-II DRIVE CYCLE PATTERN <TARGET CLUTCH 1 (ODD) PRESSURE: 1,400 HPA OR MORE TO 3,000 HPA OR LESS>

The calculated pressure remains –2,000 hPa or more for time required*.

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

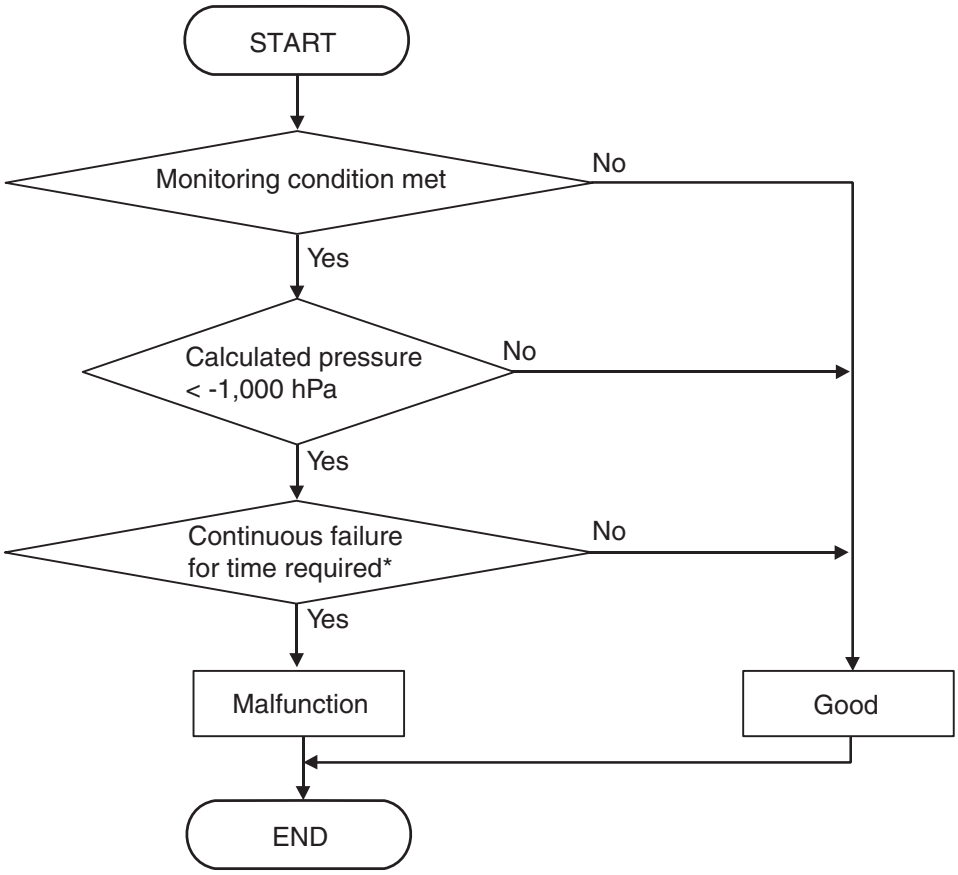
If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

LOGIC FLOW CHARTS (Monitor Sequence) <Target clutch 2 (even) pressure: 1,400 hPa or less>



*: Time required
The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10˚C (14˚F)	1,220 msec
	< -10˚C (14˚F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10˚C (14˚F)	3,220 msec
	> -10˚C (14˚F)	2,220 msec

Example of the time required
i) When the shift lever position is P: The time required is always 220 msec.
ii) When the shift lever position is "R → N":
If the transmission fluid temperature is -10˚C (14˚F) or more, the time required is 1,220 msec.
If the transmission fluid temperature is lower than -10˚C (14˚F), the time required is 2,220 msec.
iii) When shift lever position is D:
If the transmission fluid temperature is -10˚C (14˚F) or less, the time required is 3,220 msec.
If the transmission fluid temperature is higher than -10˚C (14˚F), the time required is 2,220 msec.

AC805099 AB

DTC SET CONDITIONS <TARGET CLUTCH 2 (EVEN) PRESSURE: 1,400 HPA OR LESS>

Check Conditions

- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Clutch 2 (even) state: Slip or engaged.
- Target clutch 2 (even) pressure: 1,400 hPa or less.

JUDGMENT CRITERIA

- Calculated pressure: −1,000 hPa or less. (Time required*)

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

OBD-II DRIVE CYCLE PATTERN <TARGET CLUTCH 2 (EVEN) PRESSURE: 1,400 HPA OR LESS>

The clutch 2 (even) pressure remains −1,000 hPa or more for time required*.

*: Time required

The time required for the "Rationality-high" monitor depends on the transmission fluid temperature, the shift lever position.

Shift lever position	Transmission fluid temperature	Time required
"D → N" or "R → N" or "R → P"	>= -10 °C (14 °F)	1,220 msec
	< -10 °C (14 °F)	2,220 msec
"N" or "P"	All range	220 msec
"R" or "D" or manual mode	<= -10 °C (14 °F)	3,220 msec
	> -10 °C (14 °F)	2,220 msec

Example of the time required

i) When the shift lever position is P: The time required is always 220 msec.

ii) When the shift lever position is "R → N":

If the transmission fluid temperature is -10 °C (14 °F) or more, the time required is 1,220 msec.

If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

iii) When shift lever position is D:

If the transmission fluid temperature is -10 °C (14 °F) or less, the time required is 3,220 msec.

If the transmission fluid temperature is higher than -10 °C (14 °F), the time required is 2,220 msec.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After the test run, check that the DTC is reset.

Q: Is DTC No. P181F set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1820: Shift Fork Position Sensor 1 System (Voltage low range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the voltage of the shift fork position sensor 1 is normal.

DESCRIPTIONS OF MONITOR METHODS

The voltage of the shift fork position sensor 1 is too low.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

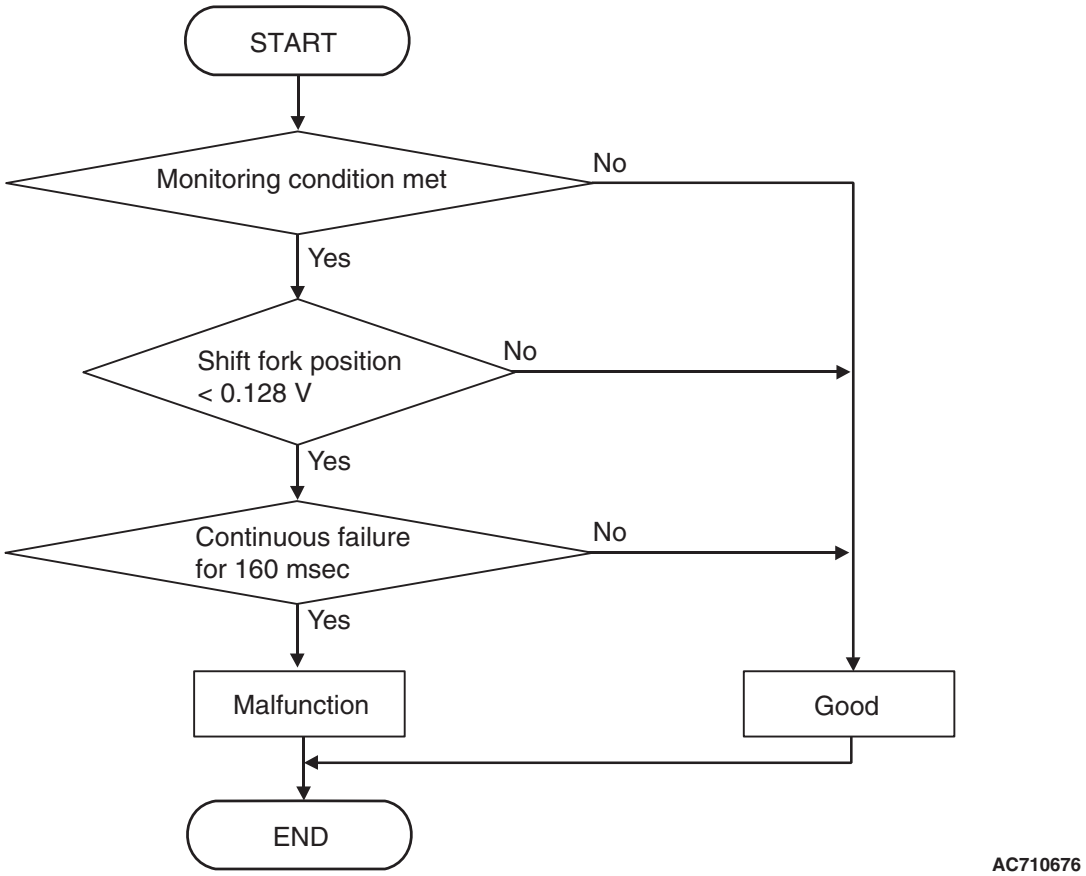
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1821: Shift fork position sensor 1 system (Voltage high range out)
- P1822: Shift fork position sensor 1 system (Output range out)
- P1823: Shift fork position sensor 1 system (Neutral)
- P1824: Shift fork position sensor 1 system (Poor performance)
- P1836: Shift fork 1 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Position sensor voltage: 0.128 V or less. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The position sensor voltage remains 0.128 V or more for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P1820 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)

"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)

(2) Perform a test run of the vehicle.

(3) Check the DTC.

Q: Is DTC No.P1820 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

DTC P1821: Shift Fork Position Sensor 1 System (Voltage high range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the voltage of the shift fork position sensor 1 is normal.

DESCRIPTIONS OF MONITOR METHODS

The voltage of the shift fork position sensor 1 is too high.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

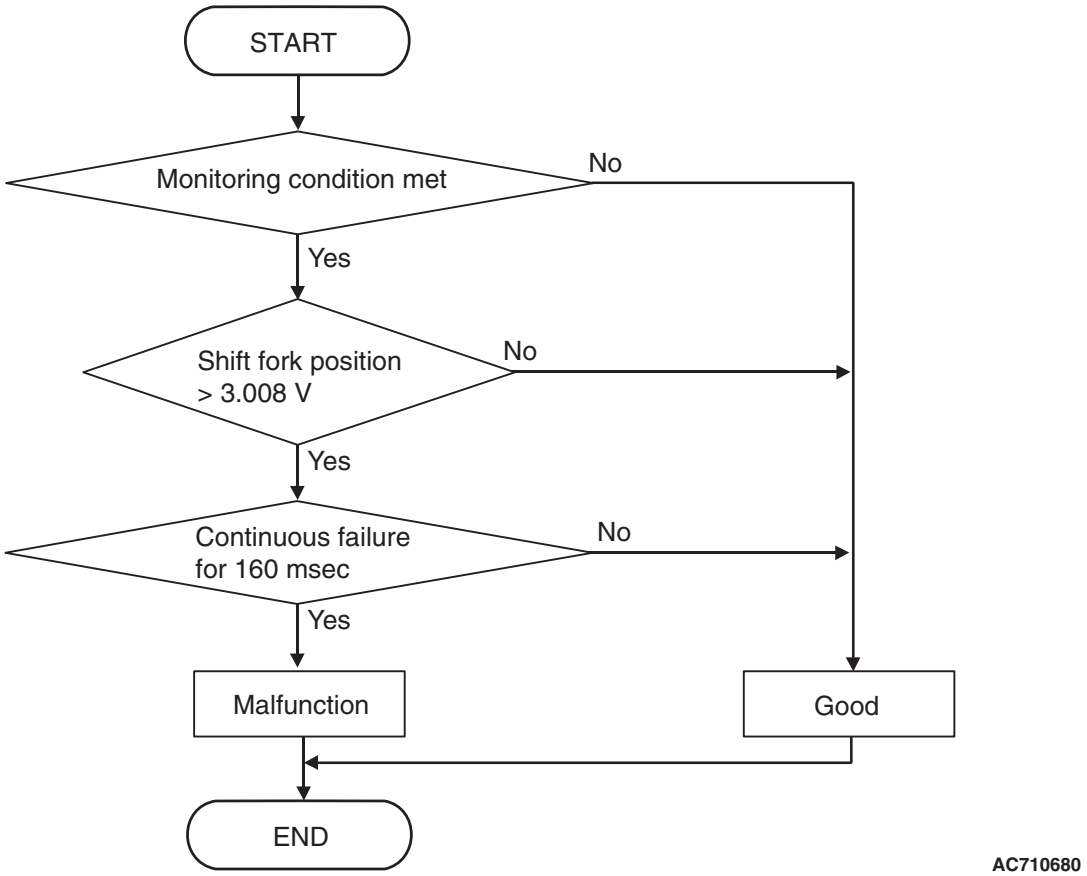
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1820: Shift fork position sensor 1 system (Voltage low range out)
- P1822: Shift fork position sensor 1 system (Output range out)
- P1823: Shift fork position sensor 1 system (Neutral)
- P1824: Shift fork position sensor 1 system (Poor performance)
- P1836: Shift fork 1 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Position sensor voltage: 3.008 V or more. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The position sensor voltage remains 3.008 V or less for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P1821 set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Perform a test run of the vehicle.
(3) Check the DTC.

Q: Is DTC No.P1821 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1822: Shift Fork Position Sensor 1 System (Output range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the output of the shift fork position sensor 1 is normal.

DESCRIPTIONS OF MONITOR METHODS

The output of the shift fork position sensor 1 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

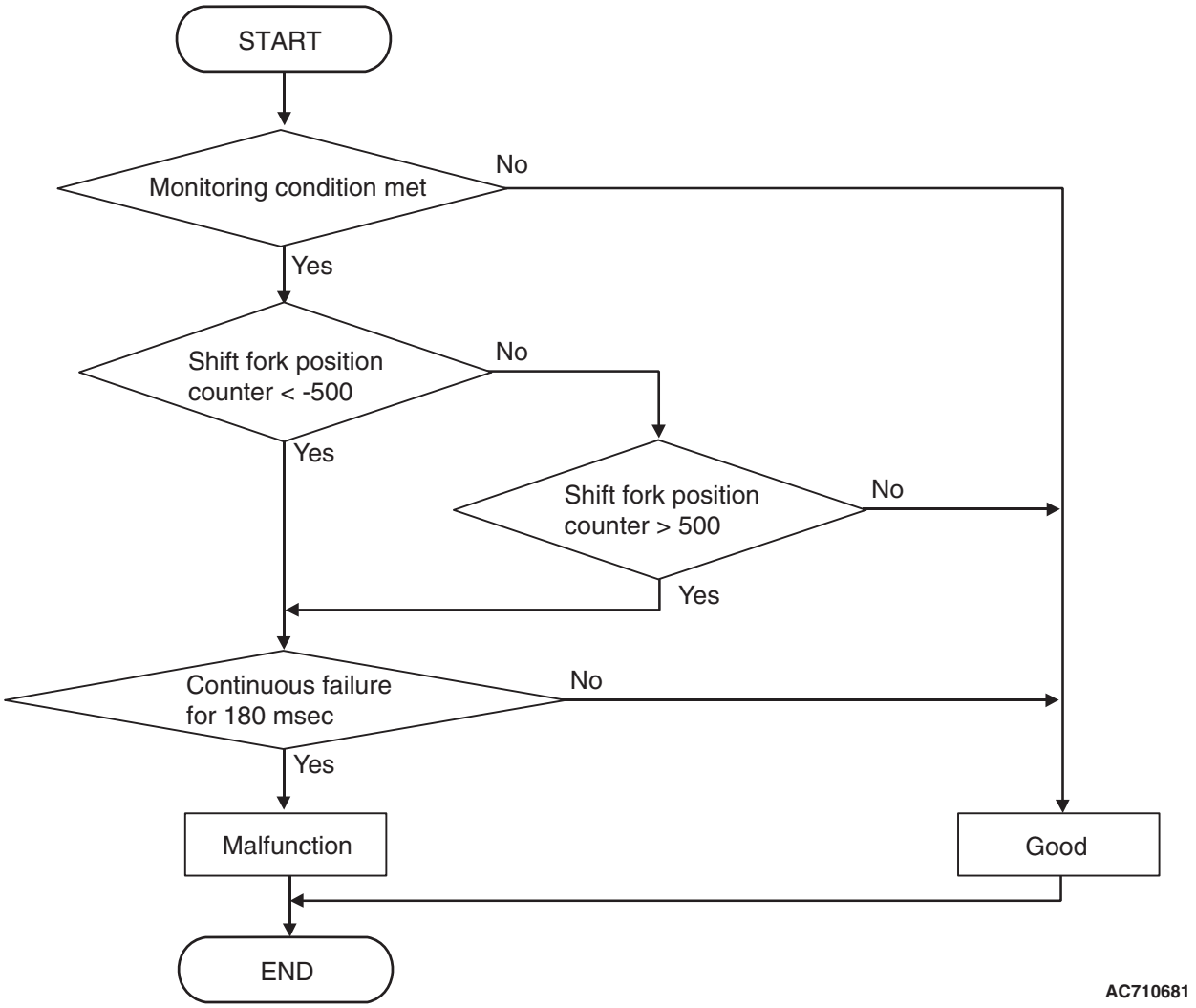
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1820: Shift fork position sensor 1 system (Voltage low range out)
- P1821: Shift fork position sensor 1 system (Voltage high range out)
- P1823: Shift fork position sensor 1 system (Neutral)
- P1824: Shift fork position sensor 1 system (Poor performance)
- P1836: Shift fork 1 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Shift system status: Gear change mode (during shift fork moving).

JUDGMENT CRITERIA

- Shift fork 1 position counter (digitized sensor value): –500 counts or less, or shift fork 1 position counter (digitized sensor value): 500 counts or more. (180 millisecond)

OBD-II DRIVE CYCLE PATTERN

The status with the shift fork 1 position counter (digitized sensor value) –500 counts or more, or with the shift fork 1 position counter (digitized sensor value) 500 counts or less continues for 180 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.

(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 5 seconds or more.)

(3) Check that the DTC is reset.

Q: Is DTC No.P1822 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)

"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)

(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 5 seconds or more.)

(3) Check the DTC.

Q: Is DTC No.P1822 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

TSB Revision

DTC P1823: Shift Fork Position Sensor 1 System (Neutral)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift fork position sensor 1 is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift fork position sensor 1 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

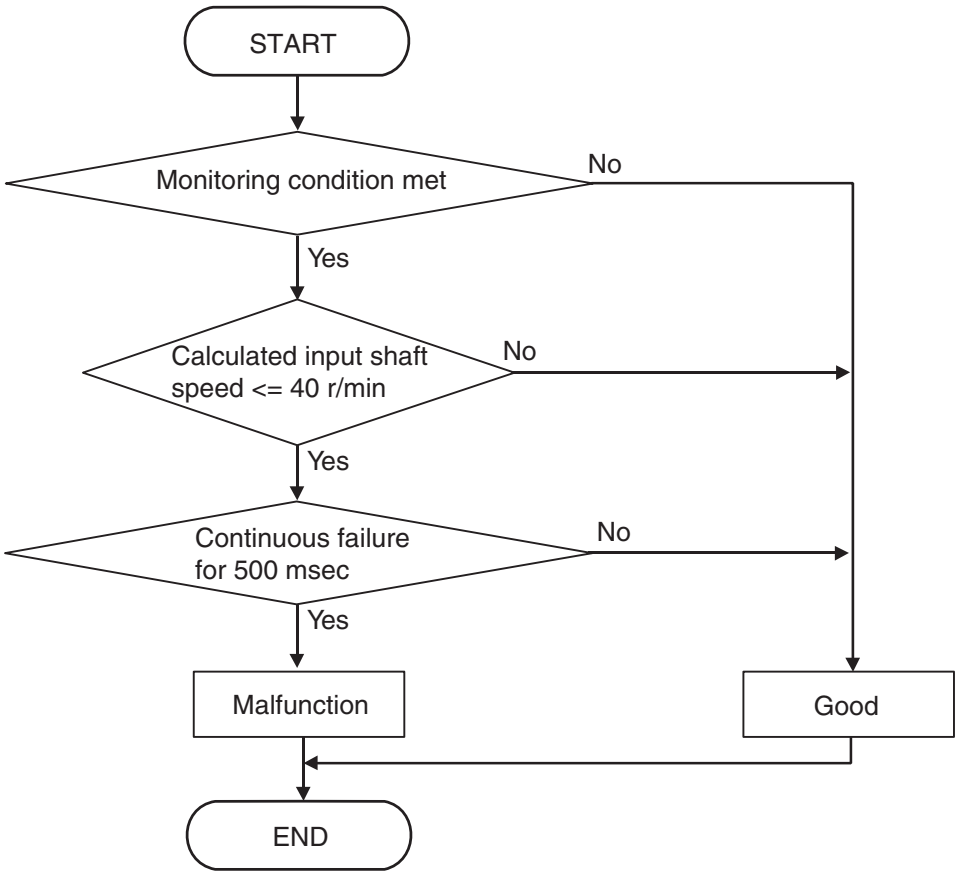
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1820: Shift fork position sensor 1 system (Voltage low range out)
- P1821: Shift fork position sensor 1 system (Voltage high range out)
- P1822: Shift fork position sensor 1 system (Output range out)
- P1824: Shift fork position sensor 1 system (Poor performance)
- P1836: Shift fork 1 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Input shaft 1 (odd) speed: 500 r/min or more.
- Input shaft 2 (even) speed: 500 r/min or more.
- Shift fork 1 position: Neutral.
- Input shaft 2 (even) gear: Engaged.
- Engine speed – input shaft 2 speed: 50 r/min or less.

JUDGMENT CRITERIA

- Calculated speed: 40 r/min or less. (500 millisecond)

OBD-II DRIVE CYCLE PATTERN

The calculated speed remains 40 r/min or more for 500 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After driving in the 3rd gear, check that the DTC is reset.

Q: Is DTC No.P1823 set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool diagnostic trouble code for other systems
Check if a shift fork and shift fork position sensor-related diagnostic trouble code No. other than P1823 is stored.

Q: Is the DTC set?

YES : Go to Step 5.
NO : Go to Step 4.

STEP 4. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 5.

STEP 5. Replace the mechatronic assembly, and check if the DTC is reset.
After driving in the 3rd gear, check that the DTC is reset.

Q: Is DTC No.P1823 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1824: Shift Fork Position Sensor 1 System (Poor performance)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift fork position sensor 1 is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift fork position sensor 1 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

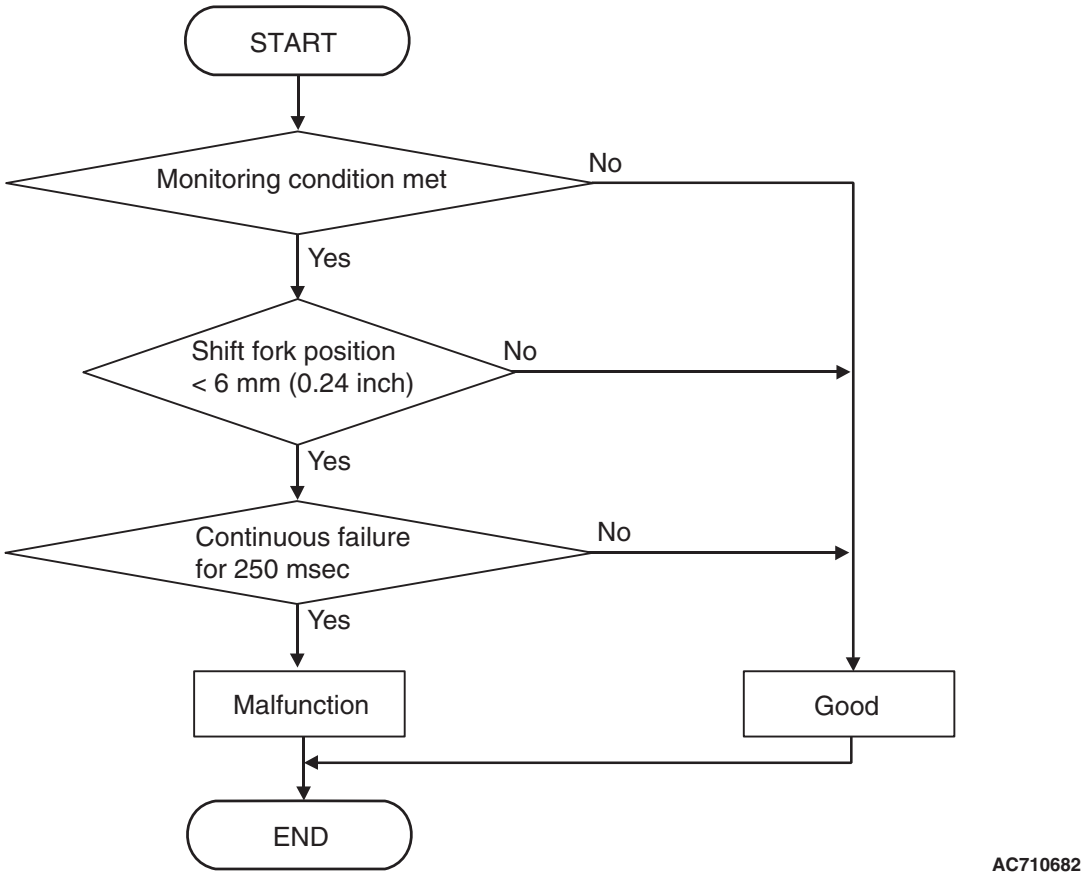
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1820: Shift fork position sensor 1 system (Voltage low range out)
- P1821: Shift fork position sensor 1 system (Voltage high range out)
- P1822: Shift fork position sensor 1 system (Output range out)
- P1823: Shift fork position sensor 1 system (Neutral)
- P1836: Shift fork 1 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence) <Shift fork 1 current gear: 1st gear>



DTC SET CONDITIONS <SHIFT FORK 1 CURRENT GEAR: 1ST GEAR>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Input shaft 1 (odd) speed: 500 r/min or more.
- Shift fork 1 current gear: 1st gear.
- Clutch 1 (odd) transmit torque: 40 N·m (30 ft-lb) or more.
- Requested shift fork: Not shift fork 1.

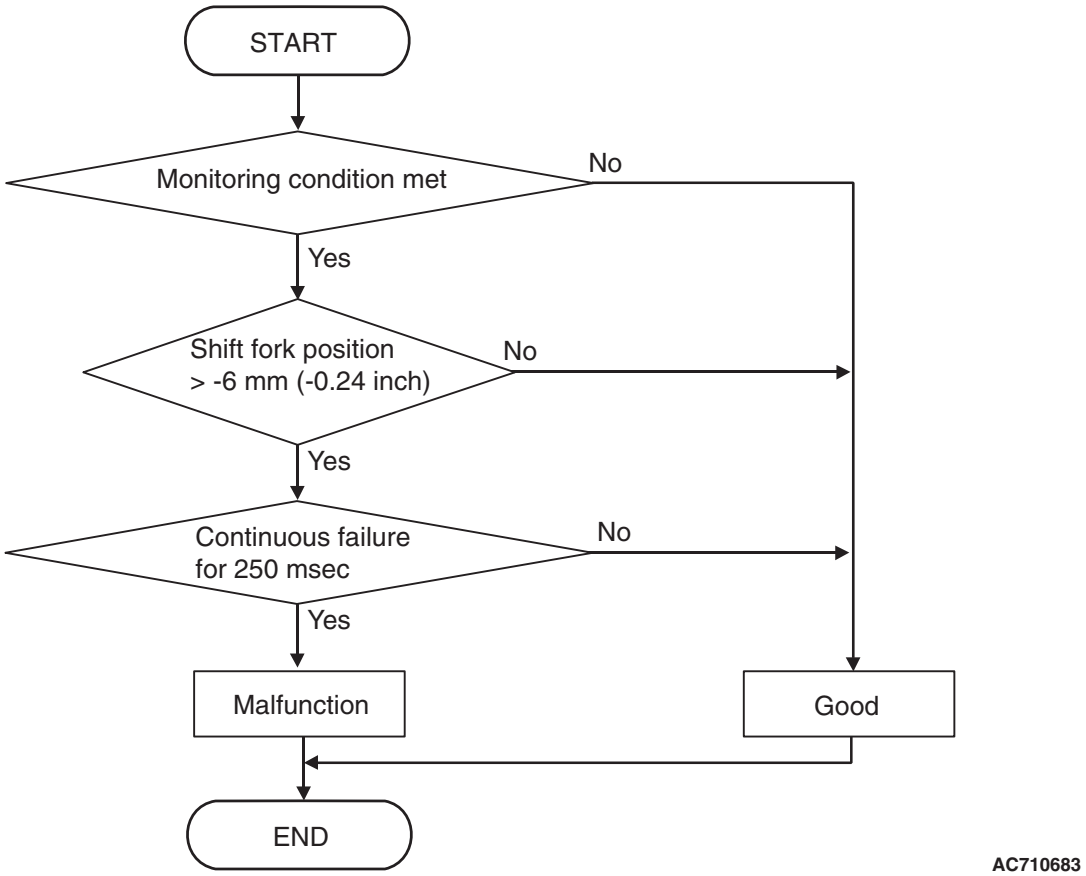
JUDGMENT CRITERIA

- Shift fork 1 position: 6 mm (0.24 inch) or less. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <SHIFT FORK 1 CURRENT GEAR: 1ST GEAR>

The travel distance of the shift fork 1 remains 6 mm (0.24 inch) or more for 250 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Shift fork 1 current gear: Reverse gear>



DTC SET CONDITIONS <SHIFT FORK 1 CURRENT GEAR: REVERSE GEAR>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Input shaft 1 (odd) speed: 500 r/min or more.
- Shift fork 1 current gear: Reverse gear.
- Clutch 1 (odd) transmit torque: 40 N·m (30 ft-lb) or more.
- Requested shift fork: Not shift fork 1.

JUDGMENT CRITERIA

- Shift fork 1 position: –6 mm (–0.24 inch) or more. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <SHIFT FORK 1 CURRENT GEAR: REVERSE GEAR>

The travel distance of the shift fork 1 remains –6 mm (–0.24 inch) or less for 250 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.
(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 5 seconds or more.)
(3) Check that the DTC is reset.

Q: Is DTC No.P1824 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)

"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 5 seconds or more.)
(3) Check the DTC.

Q: Is DTC No.P1824 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

DTC P1825: Shift Fork Position Sensor 2 System (Voltage low range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the voltage of the shift fork position sensor 2 is normal.

DESCRIPTIONS OF MONITOR METHODS

The voltage of the shift fork position sensor 2 is too low.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

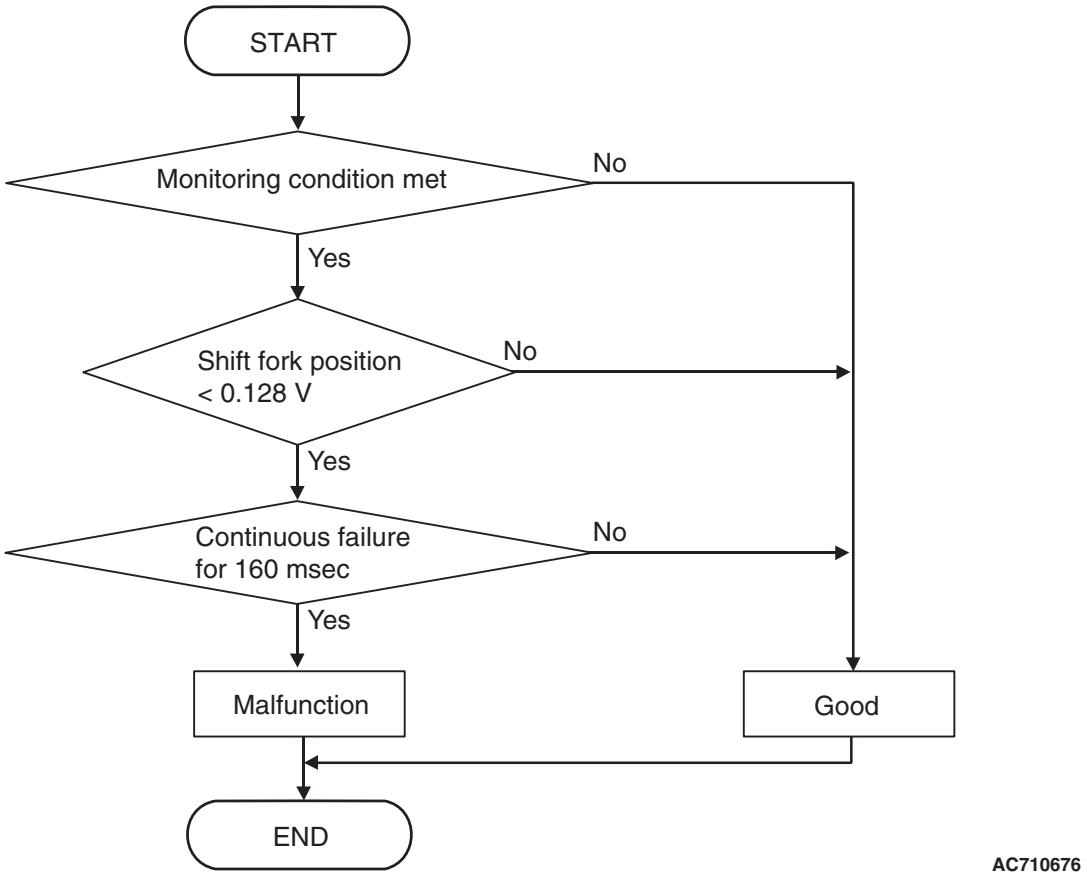
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1826: Shift fork position sensor 2 system (Voltage high range out)
- P1827: Shift fork position sensor 2 system (Output range out)
- P1828: Shift fork position sensor 2 system (Neutral)
- P1829: Shift fork position sensor 2 system (Poor performance)
- P183D: Shift fork 2 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Position sensor voltage: 0.128 V or less. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The position sensor voltage remains 0.128 V or more for 160 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

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STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P1825 set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Perform a test run of the vehicle.
(3) Check the DTC.

Q: Is DTC No.P1825 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1826: Shift Fork Position Sensor 2 System (Voltage high range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the voltage of the shift fork position sensor 2 is normal.

DESCRIPTIONS OF MONITOR METHODS

The voltage of the shift fork position sensor 2 is too high.

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)

- P1825: Shift fork position sensor 2 system (Voltage low range out)
- P1827: Shift fork position sensor 2 system (Output range out)
- P1828: Shift fork position sensor 2 system (Neutral)
- P1829: Shift fork position sensor 2 system (Poor performance)
- P183D: Shift fork 2 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd

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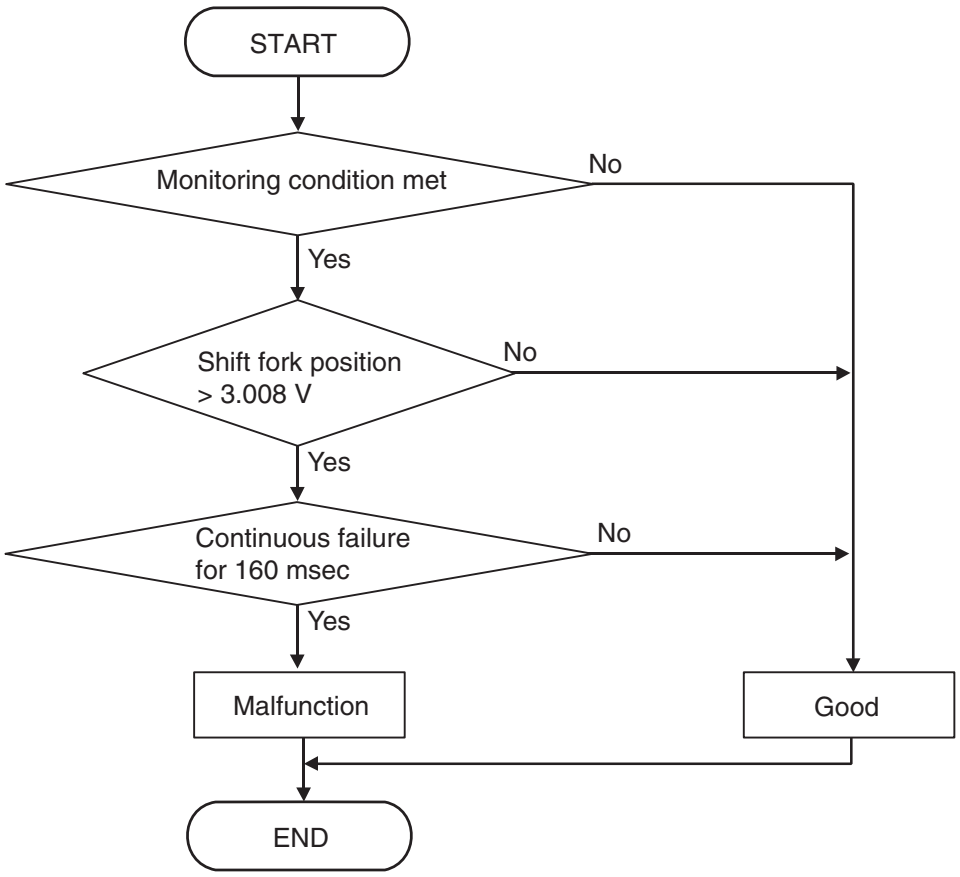
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



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DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Position sensor voltage: 3.008 V or more. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The position sensor voltage remains 3.008 V or less for 160 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P1826 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)

"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)

(2) Perform a test run of the vehicle.

(3) Check the DTC.

Q: Is DTC No.P1826 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

DTC P1827: Shift Fork Position Sensor 2 System (Output range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the output of the shift fork position sensor 2 is normal.

DESCRIPTIONS OF MONITOR METHODS

The output of the shift fork position sensor 2 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

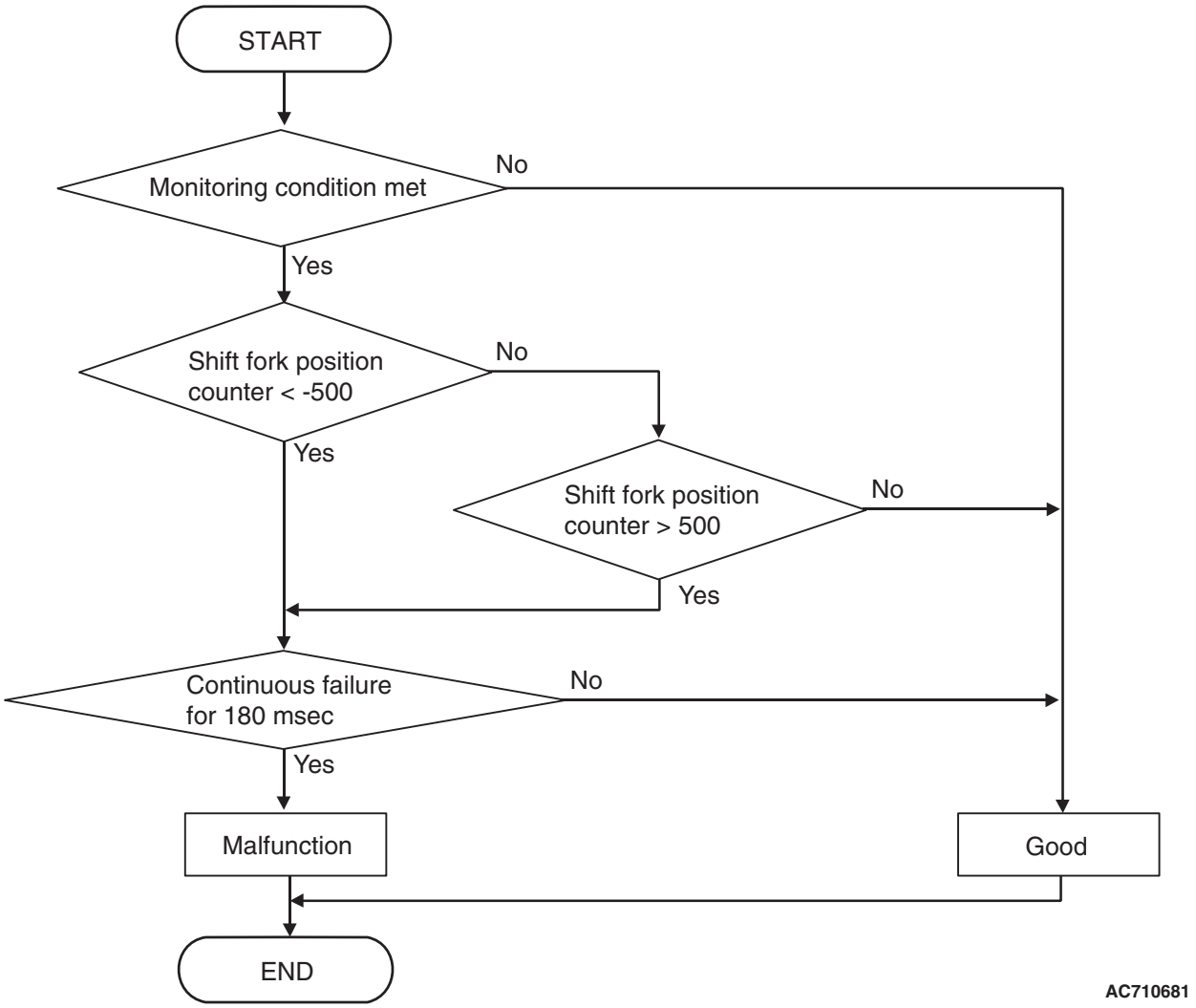
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1825: Shift fork position sensor 2 system (Voltage low range out)
- P1826: Shift fork position sensor 2 system (Voltage high range out)
- P1828: Shift fork position sensor 2 system (Neutral)
- P1829: Shift fork position sensor 2 system (Poor performance)
- P183D: Shift fork 2 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Shift system status: Gear change mode (during shift fork moving).

JUDGMENT CRITERIA

- Shift fork 2 position counter (digitized sensor value): –500 counts or less, or shift fork 2 position counter (digitized sensor value): 500 counts or more. (180 millisecond)

OBD-II DRIVE CYCLE PATTERN

The status with the shift fork 2 position counter (digitized sensor value) –500 counts or more, or with the shift fork 2 position counter (digitized sensor value) 500 counts or less continues for 180 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

After driving in the 5th gear, check that the DTC is reset.

Q: Is DTC No. P1827 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)

"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)

(2) Drive in the 5th gear.

(3) Check the DTC.

Q: Is DTC No.P1827 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

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DTC P1828: Shift Fork Position Sensor 2 System (Neutral)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift fork position sensor 2 is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift fork position sensor 2 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

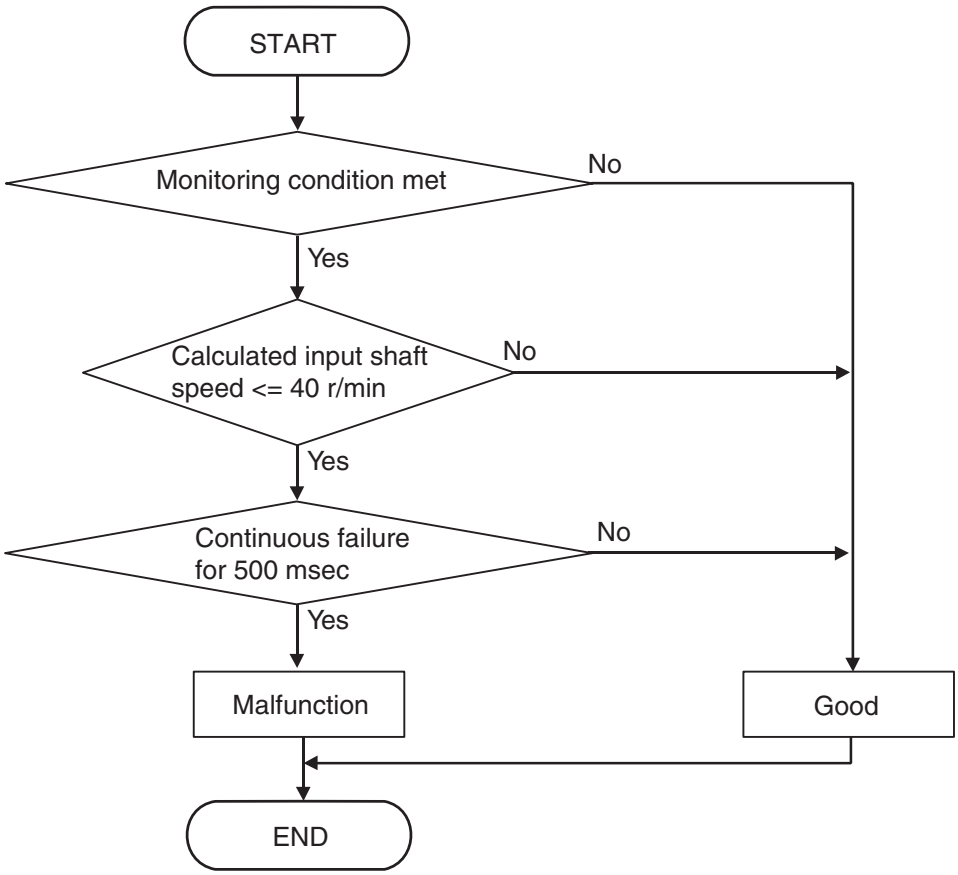
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1825: Shift fork position sensor 2 system (Voltage low range out)
- P1826: Shift fork position sensor 2 system (Voltage high range out)
- P1827: Shift fork position sensor 2 system (Output range out)
- P1829: Shift fork position sensor 2 system (Poor performance)
- P183D: Shift fork 2 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Input shaft 1 (odd) speed: 500 r/min or more.
- Input shaft 2 (even) speed: 500 r/min or more.
- Shift fork 2 position: Neutral.
- Input shaft 2 (even) gear: Engaged.
- Engine speed – input shaft 2 speed: 50 r/min or less.

JUDGMENT CRITERIA

- Calculated speed: 40 r/min or less. (500 millisecond)

OBD-II DRIVE CYCLE PATTERN

The calculated speed remains 40 r/min or more for 500 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After driving in the 3rd gear, check that the DTC is reset.

Q: Is DTC No.P1828 set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool diagnostic trouble code for other systems
Check if a shift fork and shift fork position sensor-related diagnostic trouble code No. other than P1828 is stored.

Q: Is the DTC set?

YES : Go to Step 5.
NO : Go to Step 4.

STEP 4. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 5.

STEP 5. Replace the mechatronic assembly, and check if the DTC is reset.
After driving in the 3rd gear, check that the DTC is reset.

Q: Is DTC No.P1828 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1829: Shift Fork Position Sensor 2 System (Poor performance)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift fork position sensor 2 is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift fork position sensor 2 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

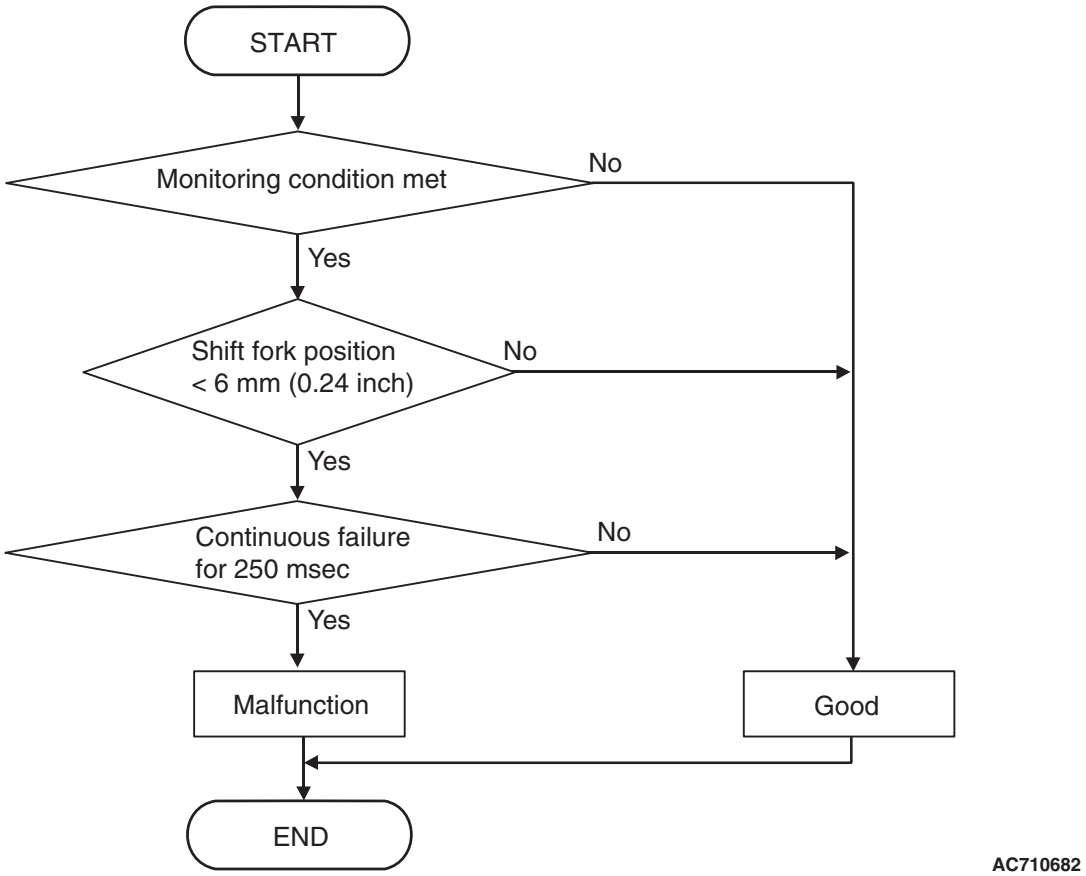
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1825: Shift fork position sensor 2 system (Voltage low range out)
- P1826: Shift fork position sensor 2 system (Voltage high range out)
- P1827: Shift fork position sensor 2 system (Output range out)
- P1828: Shift fork position sensor 2 system (Neutral)
- P183D: Shift fork 2 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1857: Odd number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence) <Shift fork 2 current gear: 5th gear>



DTC SET CONDITIONS <SHIFT FORK 2 CURRENT GEAR: 5TH GEAR>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Input shaft 1 (odd) speed: 500 r/min or more.
- Shift fork 2 current gear: 5th gear.
- Clutch 1 (odd) transmit torque: 40 N·m (30 ft-lb) or more.
- Requested shift fork: Not shift fork 2.

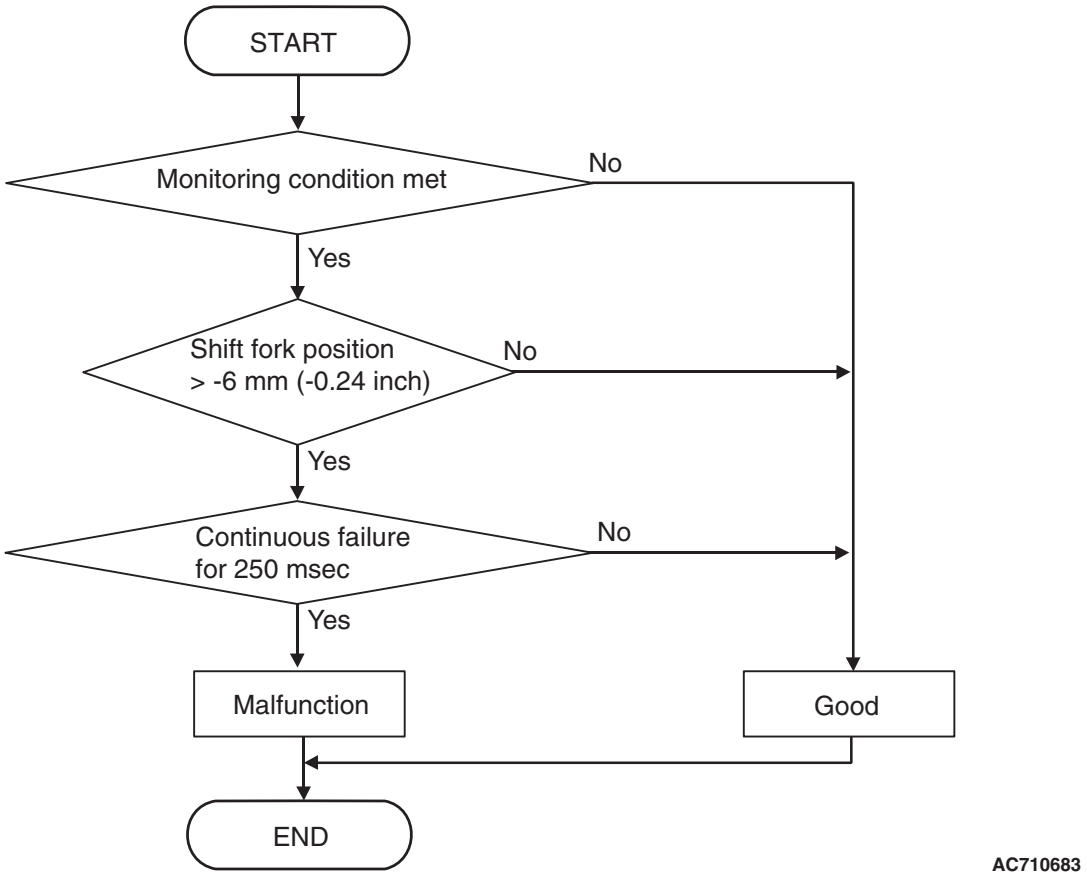
JUDGMENT CRITERIA

- Shift fork 2 position: 6 mm (0.24 inch) or less. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <SHIFT FORK 2 CURRENT GEAR: 5TH GEAR>

The travel distance of the shift fork 2 remains 6 mm (0.24 inch) or more for 250 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Shift fork 2 current gear: 3rd gear>



DTC SET CONDITIONS <SHIFT FORK 2 CURRENT GEAR: 3RD GEAR>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Input shaft 1 (odd) speed: 500 r/min or more.
- Shift fork 2 current gear: 3rd gear.
- Clutch 1 (odd) transmit torque: 40 N·m (30 ft-lb) or more.
- Requested shift fork: Not shift fork 2.

JUDGMENT CRITERIA

- Shift fork 2 position: –6 mm (–0.24 inch) or more. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <SHIFT FORK 2 CURRENT GEAR: 3RD GEAR>

The travel distance of the shift fork 2 remains –6 mm (–0.24 inch) or less for 250 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After driving in the 5th gear, check that the DTC is reset.

Q: Is DTC No. P1829 set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive in the 5th gear.
(3) Check the DTC.

Q: Is DTC No.P1829 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P182A: Shift Fork Position Sensor 3 System (Voltage low range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the voltage of the shift fork position sensor 3 is normal.

DESCRIPTIONS OF MONITOR METHODS

The voltage of the shift fork position sensor 3 is too low.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

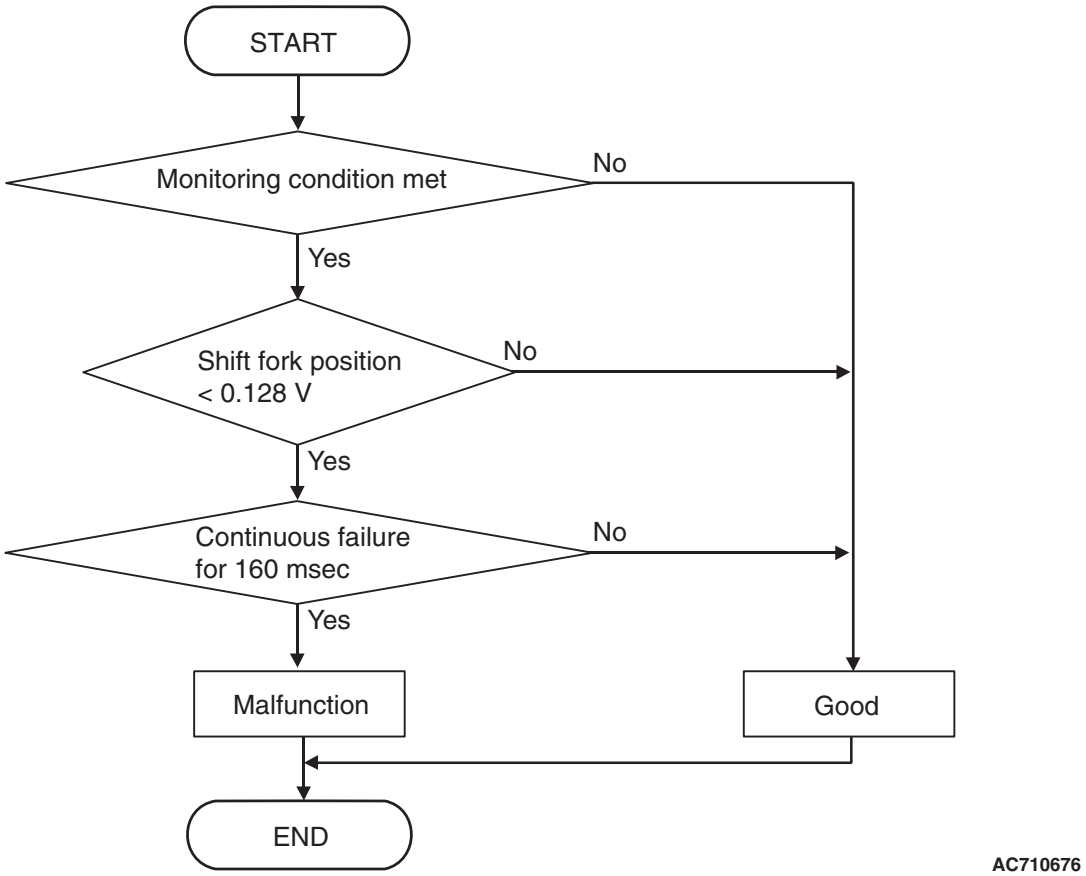
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P182B: Shift fork position sensor 3 system (Voltage high range out)
- P182C: Shift fork position sensor 3 system (Output range out)
- P182D: Shift fork position sensor 3 system (Neutral)
- P182E: Shift fork position sensor 3 system (Poor performance)
- P1844: Shift fork 3 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Position sensor voltage: 0.128 V or less. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The position sensor voltage remains 0.128 V or more for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 3

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P182A set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)

"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)

(2) Perform a test run of the vehicle.

(3) Check the DTC.

Q: Is DTC No.P182A set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

DTC P182B: Shift Fork Position Sensor 3 System (Voltage high range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the voltage of the shift fork position sensor 3 is normal.

DESCRIPTIONS OF MONITOR METHODS

The voltage of the shift fork position sensor 3 is too high.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

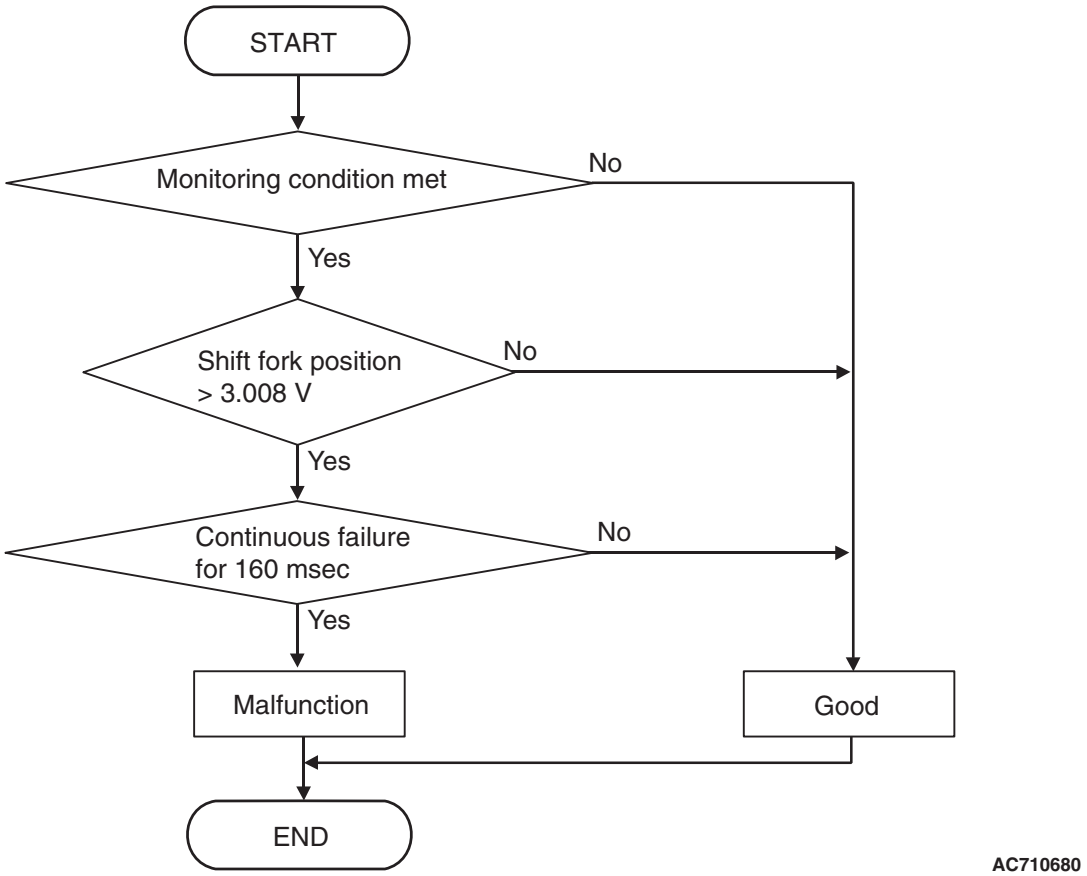
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P182A: Shift fork position sensor 3 system (Voltage low range out)
- P182C: Shift fork position sensor 3 system (Output range out)
- P182D: Shift fork position sensor 3 system (Neutral)
- P182E: Shift fork position sensor 3 system (Poor performance)
- P1844: Shift fork 3 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Position sensor voltage: 3.008 V or more. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The position sensor voltage remains 3.008 V or less for 160 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 3

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P182B set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)

"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)

(2) Perform a test run of the vehicle.

(3) Check the DTC.

Q: Is DTC No.P182B set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

DTC P182C: Shift Fork Position Sensor 3 System (Output range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the output of the shift fork position sensor 3 is normal.

DESCRIPTIONS OF MONITOR METHODS

The output of the shift fork position sensor 3 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

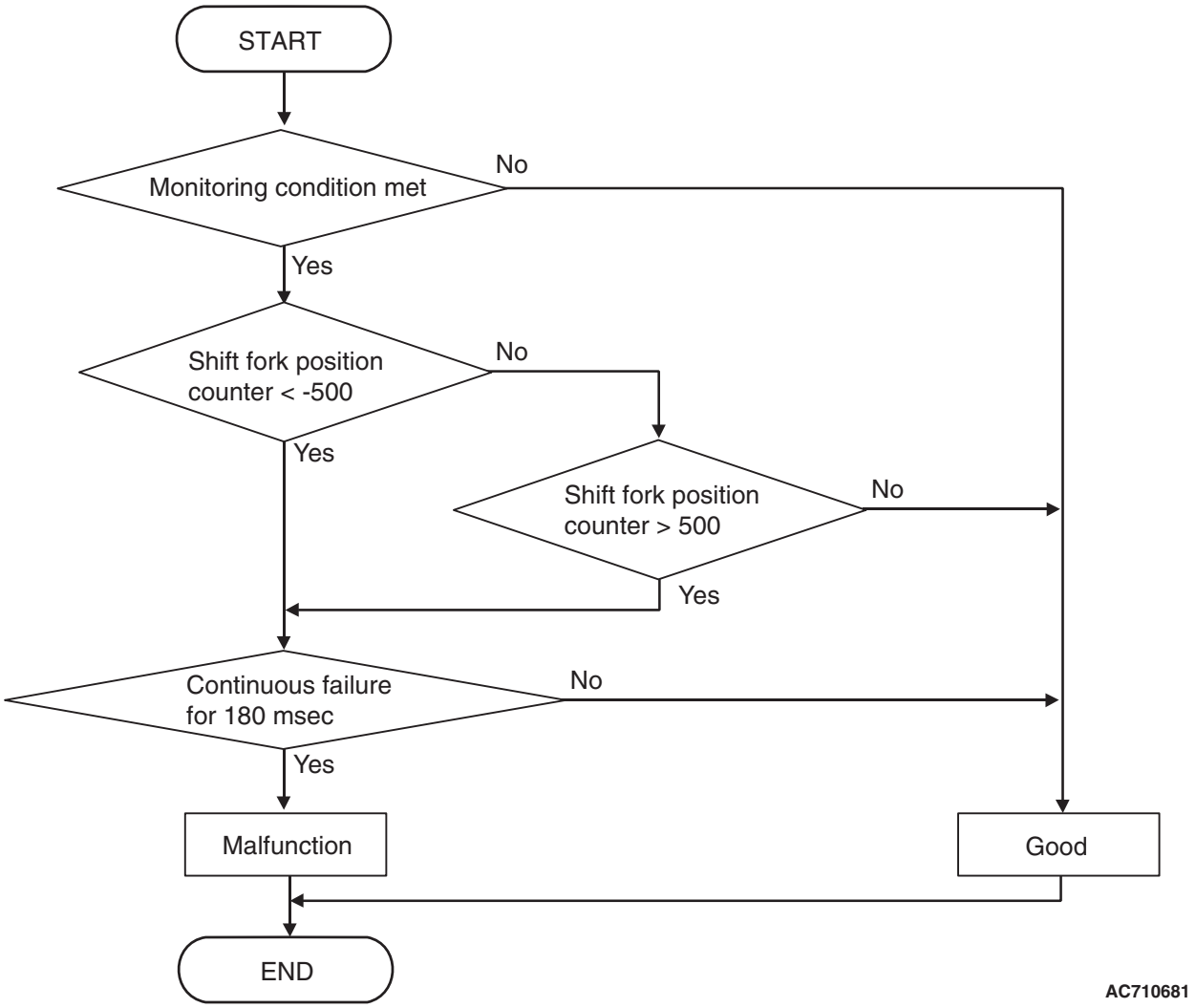
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P182A: Shift fork position sensor 3 system (Voltage low range out)
- P182B: Shift fork position sensor 3 system (Voltage high range out)
- P182D: Shift fork position sensor 3 system (Neutral)
- P182E: Shift fork position sensor 3 system (Poor performance)
- P1844: Shift fork 3 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Shift system status: Gear change mode (during shift fork moving).

JUDGMENT CRITERIA

- Shift fork 3 position counter (digitized sensor value): –500 counts or less, shift fork 3 position counter (digitized sensor value): 500 counts or more. (180 millisecond)

OBD-II DRIVE CYCLE PATTERN

The status with the shift fork 3 position counter (digitized sensor value) –500 counts or more, or with the shift fork 3 position counter (digitized sensor value) 500 counts or less continues for 180 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 3

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

After driving in the 6th gear, check that the DTC is reset.

Q: Is DTC No. P182C set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)

"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)

(2) Drive in the 6th gear.

(3) Check the DTC.

Q: Is DTC No.P182C set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

DTC P182D: Shift Fork Position Sensor 3 System (Neutral)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift fork position sensor 3 is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift fork position sensor 3 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

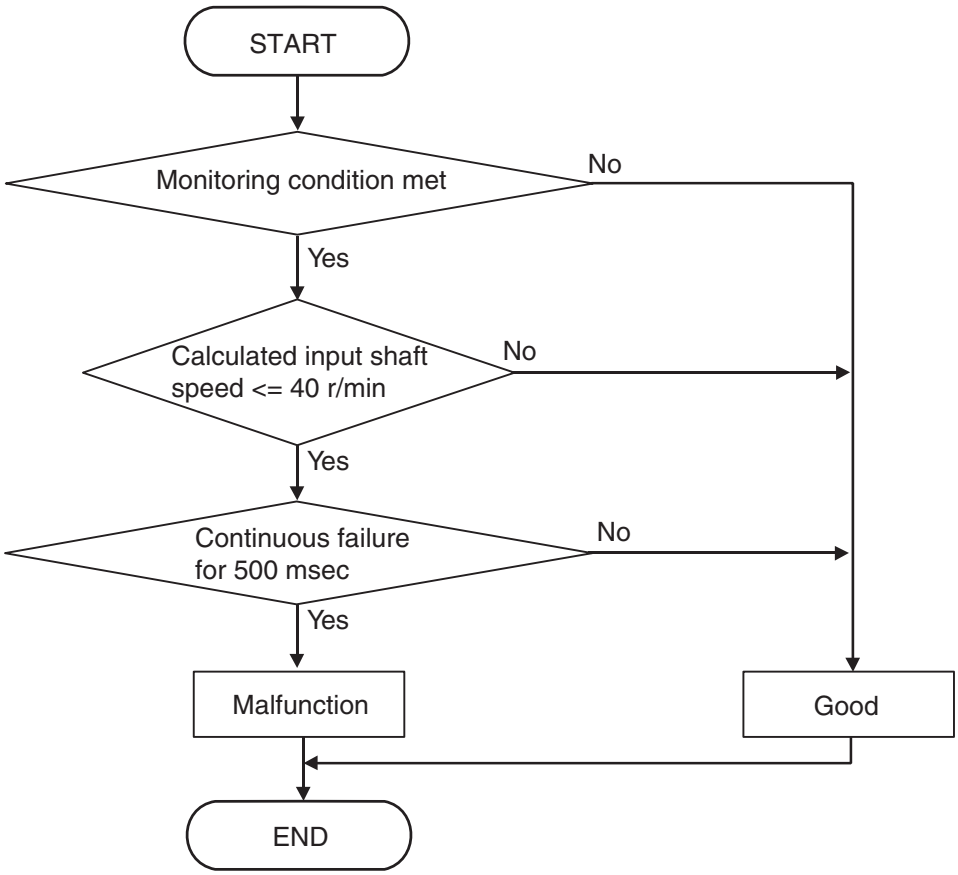
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P182A: Shift fork position sensor 3 system (Voltage low range out)
- P182B: Shift fork position sensor 3 system (Voltage high range out)
- P182C: Shift fork position sensor 3 system (Output range out)
- P182E: Shift fork position sensor 3 system (Poor performance)
- P1844: Shift fork 3 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Input shaft 1 (odd) speed: 500 r/min or more.
- Input shaft 2 (even) speed: 500 r/min or more.
- Shift fork 3 position: Neutral.
- Input shaft 1 (odd) gear: Engaged.
- Engine speed – input shaft 1 speed: 50 r/min or less.

JUDGMENT CRITERIA

- Calculated speed: 40 r/min or less. (500 millisecond)

OBD-II DRIVE CYCLE PATTERN

The calculated speed remains 40 r/min or more for 500 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 3

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After driving in the 6th gear, check that the DTC is reset.

Q: Is DTC No. P182D set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool diagnostic trouble code for other systems
Check if a shift fork and shift fork position sensor-related diagnostic trouble code No. other than P182D is stored.

Q: Is the DTC set?

YES : Go to Step 5.
NO : Go to Step 4.

STEP 4. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 5.

STEP 5. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive in the 6th gear.
(3) Check the DTC.

Q: Is DTC No.P182D set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P182E: Shift Fork Position Sensor 3 System (Poor performance)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift fork position sensor 3 is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift fork position sensor 3 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

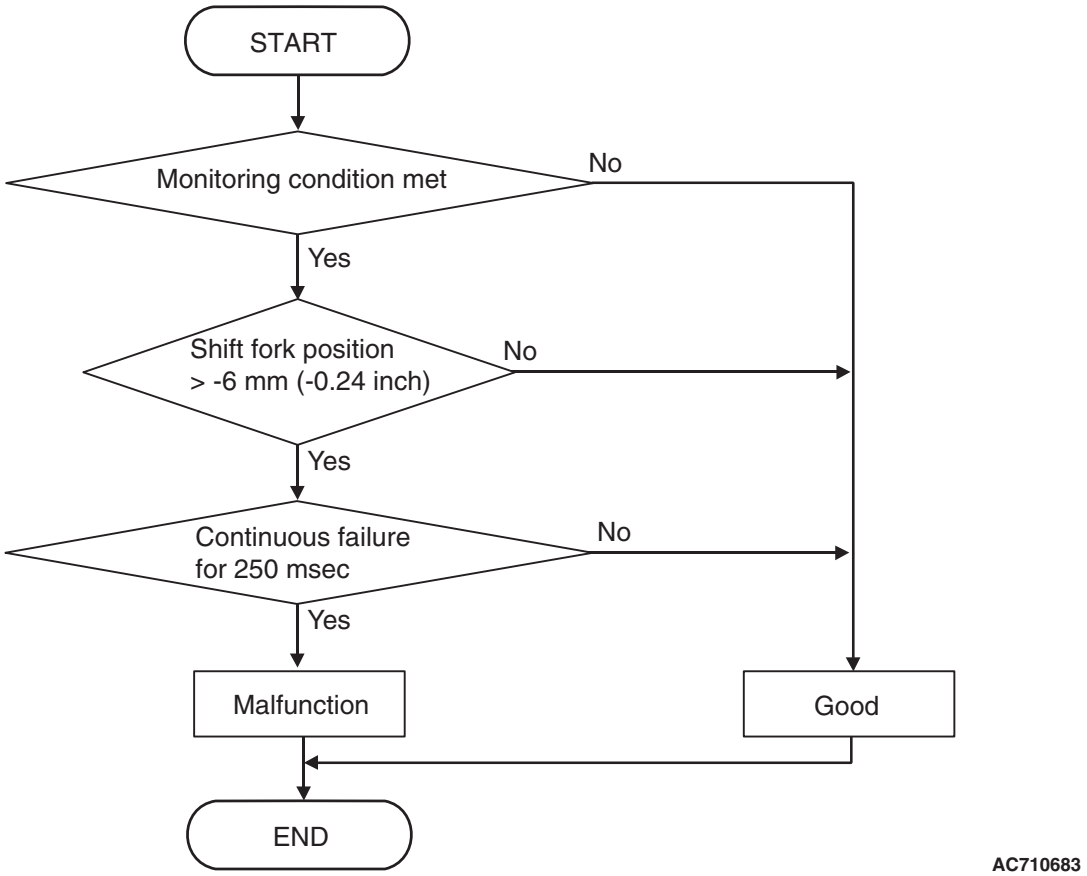
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P182A: Shift fork position sensor 3 system (Voltage low range out)
- P182B: Shift fork position sensor 3 system (Voltage high range out)
- P182C: Shift fork position sensor 3 system (Output range out)
- P182D: Shift fork position sensor 3 system (Neutral)
- P1844: Shift fork 3 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Input shaft 2 (even) speed: 500 r/min or more.
- Shift fork 3 current gear: 6th gear.
- Clutch 2 (even) transmit torque: 40 N·m (30 ft-lb) or more.
- Requested shift fork: Not shift fork 3.

JUDGMENT CRITERIA

- Shift fork 3 position: –6 mm (–0.24 inch) or more. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN

The travel distance of the shift fork 3 remains –6 mm (–0.24 inch) or less for 250 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 3

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After driving in the 6th gear, check that the DTC is reset.

Q: Is DTC No. P182E set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive in the 6th gear.
(3) Check the DTC.

Q: Is DTC No.P182E set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1831: Shift Fork Position Sensor 4 System (Voltage low range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the voltage of the shift fork position sensor 4 is normal.

DESCRIPTIONS OF MONITOR METHODS

The voltage of the shift fork position sensor 4 is too low.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

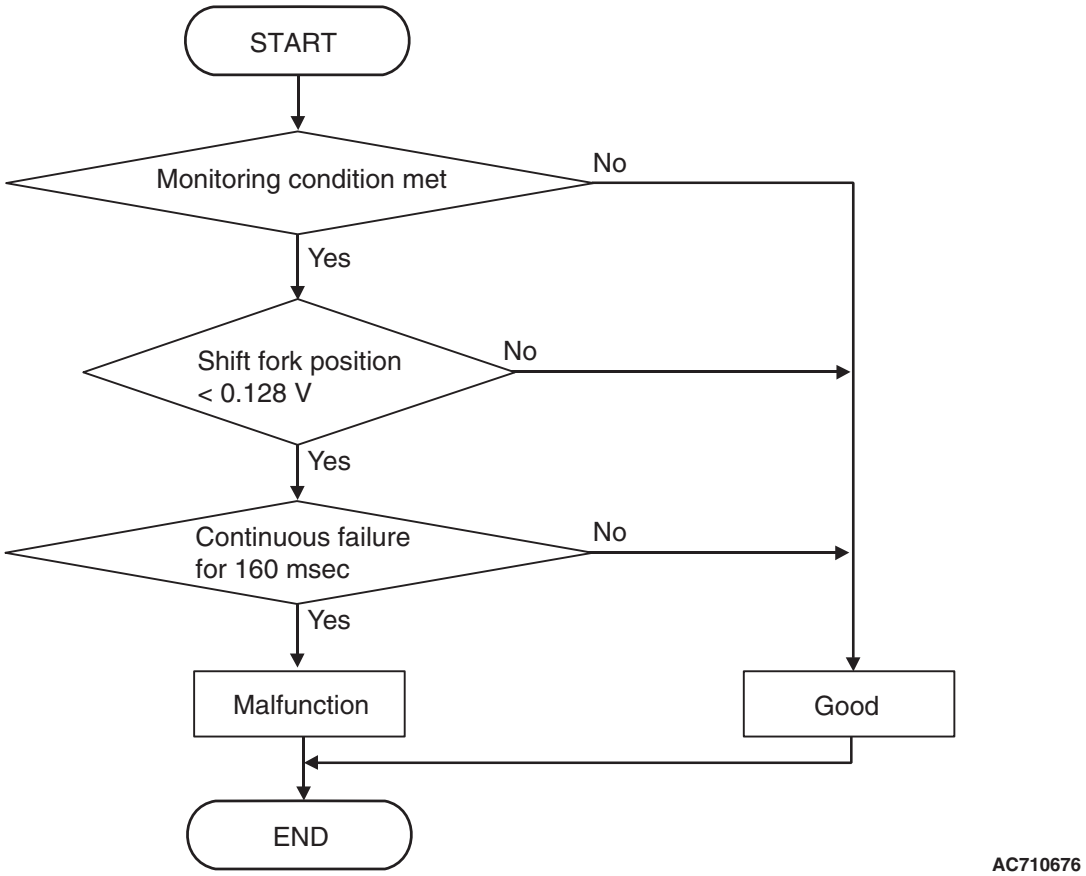
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1832: Shift fork position sensor 4 system (Voltage high range out)
- P1833: Shift fork position sensor 4 system (Output range out)
- P1834: Shift fork position sensor 4 system (Neutral)
- P1835: Shift fork position sensor 4 system (Poor performance)
- P184B: Shift fork 4 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Position sensor voltage: 0.128 V or less. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The position sensor voltage remains 0.128 V or more for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 4

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P1831 set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Perform a test run of the vehicle.
(3) Check the DTC.

Q: Is DTC No.P1831 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1832: Shift Fork Position Sensor 4 System (Voltage high range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the voltage of the shift fork position sensor 4 is normal.

DESCRIPTIONS OF MONITOR METHODS

The voltage of the shift fork position sensor 4 is too high.

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)

- P1831: Shift fork position sensor 4 system (Voltage low range out)
- P1833: Shift fork position sensor 4 system (Output range out)
- P1834: Shift fork position sensor 4 system (Neutral)
- P1835: Shift fork position sensor 4 system (Poor performance)
- P184B: Shift fork 4 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd

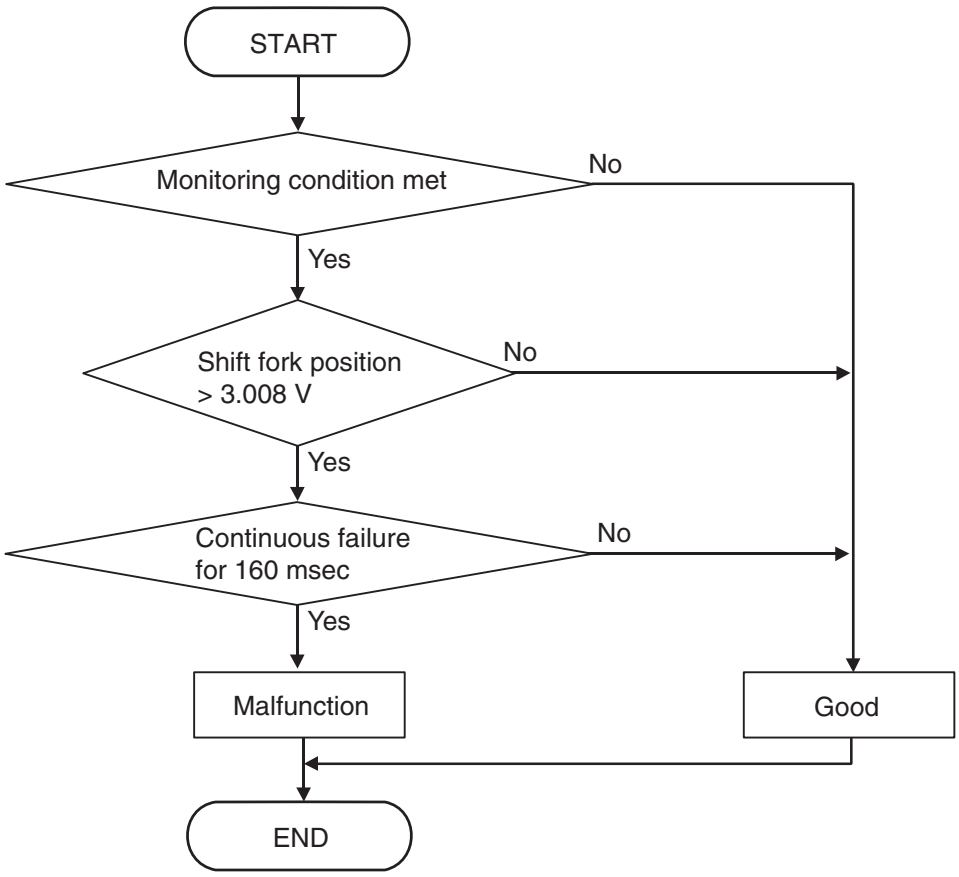
TSB Revision

- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



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DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Position sensor voltage: 3.008 V or more. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The position sensor voltage remains 3.008 V or less for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 4

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P1832 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)

"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)

(2) Perform a test run of the vehicle.

(3) Check the DTC.

Q: Is DTC No.P1832 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

DTC P1833: Shift Fork Position Sensor 4 System (Output range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the output of the shift fork position sensor 4 is normal.

DESCRIPTIONS OF MONITOR METHODS

The output of the shift fork position sensor 4 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

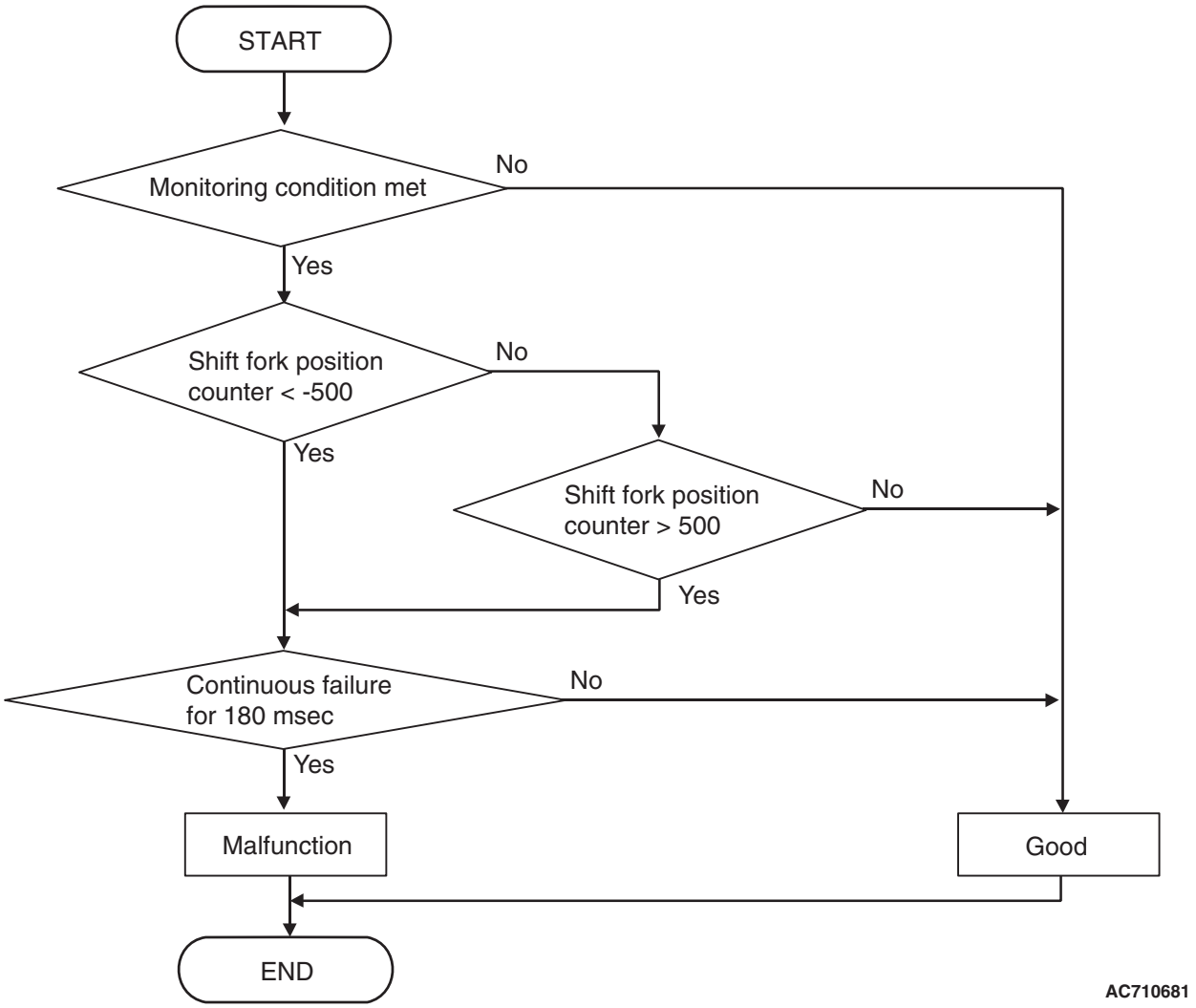
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1831: Shift fork position sensor 4 system (Voltage low range out)
- P1832: Shift fork position sensor 4 system (Voltage high range out)
- P1834: Shift fork position sensor 4 system (Neutral)
- P1835: Shift fork position sensor 4 system (Poor performance)
- P184B: Shift fork 4 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Shift system status: Gear change mode (during shift fork moving).

JUDGMENT CRITERIA

- Shift fork 4 position counter (digitized sensor value): –500 counts or less, or shift fork 4 position counter (digitized sensor value): 500 counts or more. (180 millisecond)

OBD-II DRIVE CYCLE PATTERN

The status with the shift fork 4 position counter (digitized sensor value) –500 counts or more, or with the shift fork 4 position counter (digitized sensor value) 500 counts or less continues for 180 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 4

TSB Revision

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

After driving in the 4th gear, check that the DTC is reset.

Q: Is DTC No. P1833 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)

"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)

(2) Drive in the 4th gear.

(3) Check the DTC.

Q: Is DTC No.P1833 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

TSB Revision

DTC P1834: Shift Fork Position Sensor 4 System (Neutral)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift fork position sensor 4 is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift fork position sensor 4 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

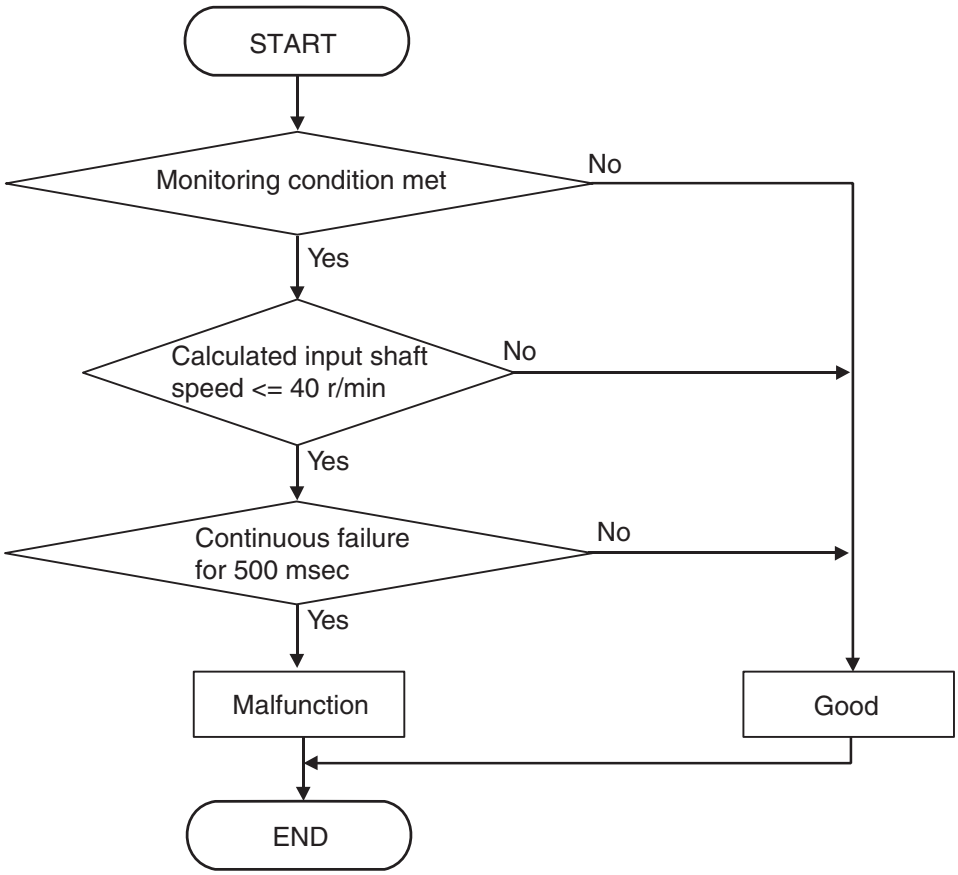
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1831: Shift fork position sensor 4 system (Voltage low range out)
- P1832: Shift fork position sensor 4 system (Voltage high range out)
- P1833: Shift fork position sensor 4 system (Output range out)
- P1835: Shift fork position sensor 4 system (Poor performance)
- P184B: Shift fork 4 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



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DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Input shaft 1 (odd) speed: 500 r/min or more.
- Input shaft 2 (even) speed: 500 r/min or more.
- Shift fork 4 position: Neutral.
- Input shaft 1 (odd) gear: Engaged.
- Engine speed – input shaft 1 speed: 50 r/min or less.

JUDGMENT CRITERIA

- Calculated speed: 40 r/min or less. (500 millisecond)

OBD-II DRIVE CYCLE PATTERN

The calculated speed remains 40 r/min or more for 500 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 4

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

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STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After driving in the 6th gear, check that the DTC is reset.

Q: Is DTC No. P1834 set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool diagnostic trouble code for other systems
Check if a shift fork and shift fork position sensor-related diagnostic trouble code No. other than P1834 is stored.

Q: Is the DTC set?

YES : Go to Step 5.
NO : Go to Step 4.

STEP 4. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 5.

STEP 5. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive in the 6th gear.
(3) Check the DTC.

Q: Is DTC No.P1834 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1835: Shift Fork Position Sensor 4 System (Poor performance)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift fork position sensor 4 is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift fork position sensor 4 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

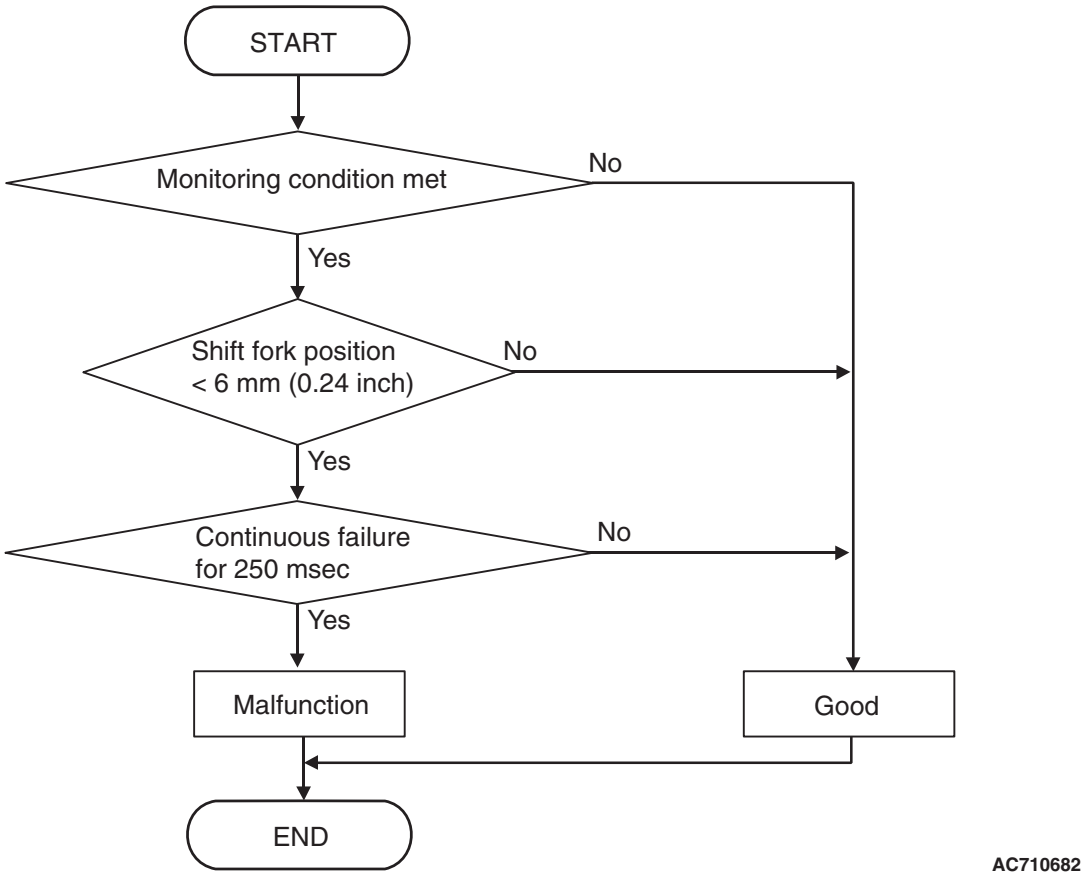
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1831: Shift fork position sensor 4 system (Voltage low range out)
- P1832: Shift fork position sensor 4 system (Voltage high range out)
- P1833: Shift fork position sensor 4 system (Output range out)
- P1834: Shift fork position sensor 4 system (Neutral)
- P184B: Shift fork 4 malfunction
- P1852: Shift fork 1 or 2 opposite direction movement
- P1855: Shift fork 3 or 4 opposite direction movement
- P1858: Even number gear axle interlock
- P1876: Gear block 1st
- P1877: Gear block 2nd
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence) <Shift fork 4 current gear: 4th gear>



DTC SET CONDITIONS <SHIFT FORK 4 CURRENT GEAR: 4TH GEAR>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Input shaft 2 (even) speed: 500 r/min or more.
- Shift fork 4 current gear: 4th gear.
- Clutch 2 (even) transmit torque: 40 N·m (30 ft-lb) or more.
- Requested shift fork: Not shift fork 4.

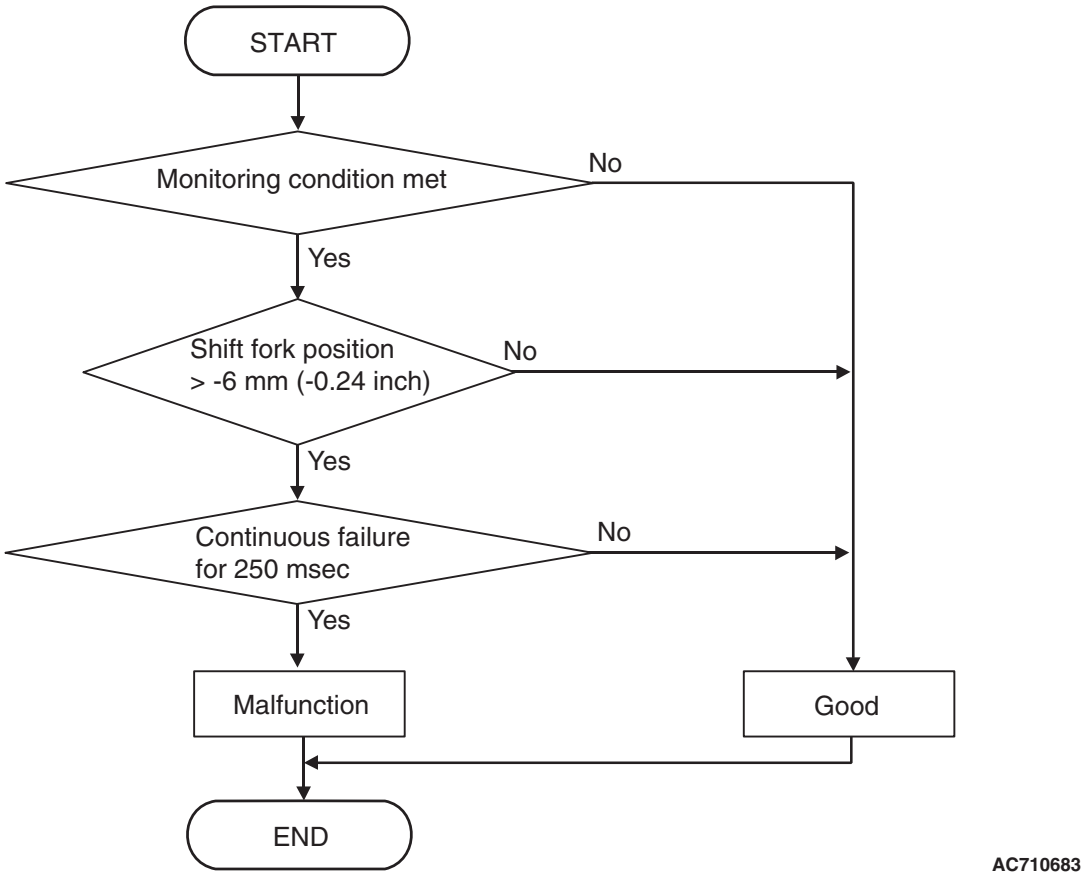
JUDGMENT CRITERIA

- Shift fork 4 position: 6 mm (0.24 inch) or less. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <SHIFT FORK 2 CURRENT GEAR: 4TH GEAR>

The travel distance of the shift fork 4 remains 6 mm (0.24 inch) or more for 250 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Shift fork 4 current gear: 2nd gear>



DTC SET CONDITIONS <SHIFT FORK 4 CURRENT GEAR: 2ND GEAR>

Check Conditions

- Voltage of battery: 8 volts or more.
- Voltage of battery: 16.5 volts or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 second or more.
- Input shaft 2 (even) speed: 500 r/min or more.
- Shift fork 4 current gear: 2nd gear.
- Clutch 2 (even) transmit torque: 40 N·m (30 ft-lb) or more.
- Requested shift fork: not shift fork 4.

JUDGMENT CRITERIA

- Shift fork 4 position: –6 mm (–0.24 in) or more. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <SHIFT FORK 2 CURRENT GEAR: 3RD GEAR>

The travel distance of the shift fork 4 remains –6 mm (–0.24 inch) or less for 250 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of shift fork position sensor 4

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After driving in the 4th gear, check that the DTC is reset.

Q: Is DTC No. P1835 set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 4.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive in the 4th gear.
(3) Check the DTC.

Q: Is DTC No.P1835 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1836: Shift Fork 1 Malfunction

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the movement of the shift fork 1 is normal.

DESCRIPTIONS OF MONITOR METHODS

The movement of the shift fork 1 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

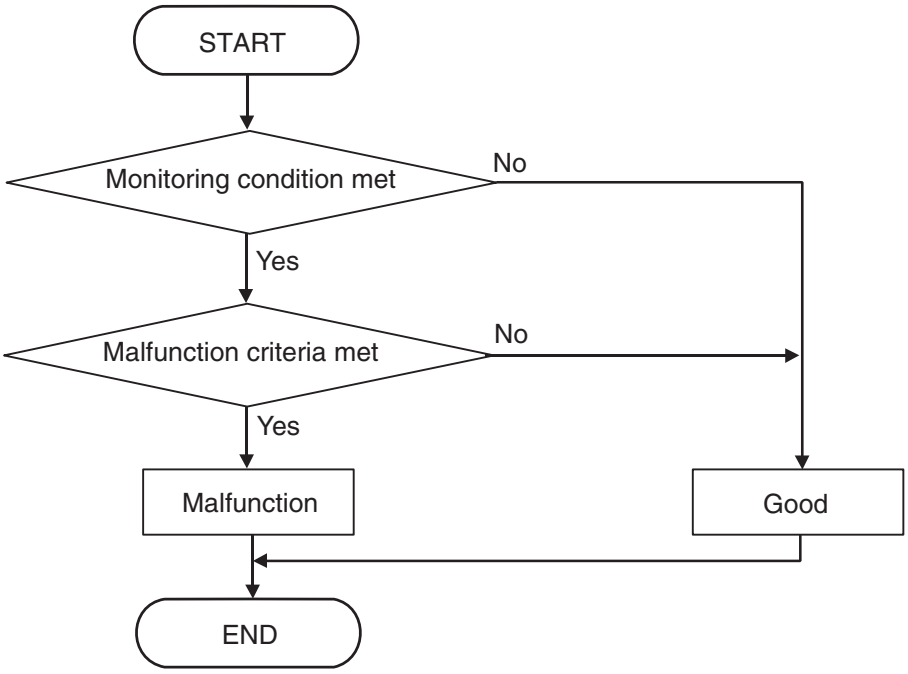
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P183D: Shift fork 2 malfunction
- P1844: Shift fork 3 malfunction

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - blocked>



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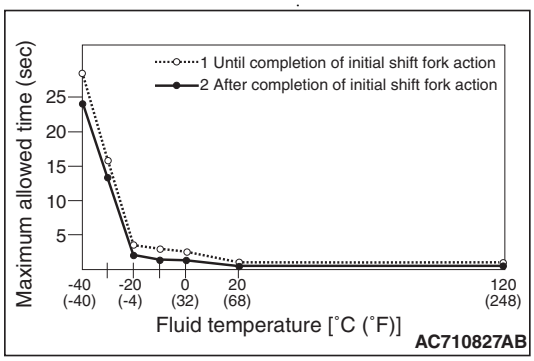
DTC SET CONDITIONS <FUNCTIONAL CHECK - BLOCKED>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Common high side 1 voltage: 7 V or more.
- Common high side 3 voltage: 7 V or more.

JUDGMENT CRITERIA



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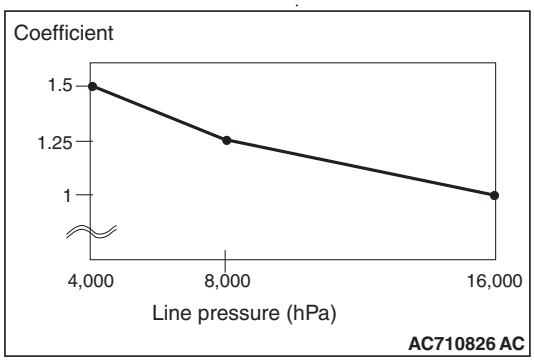
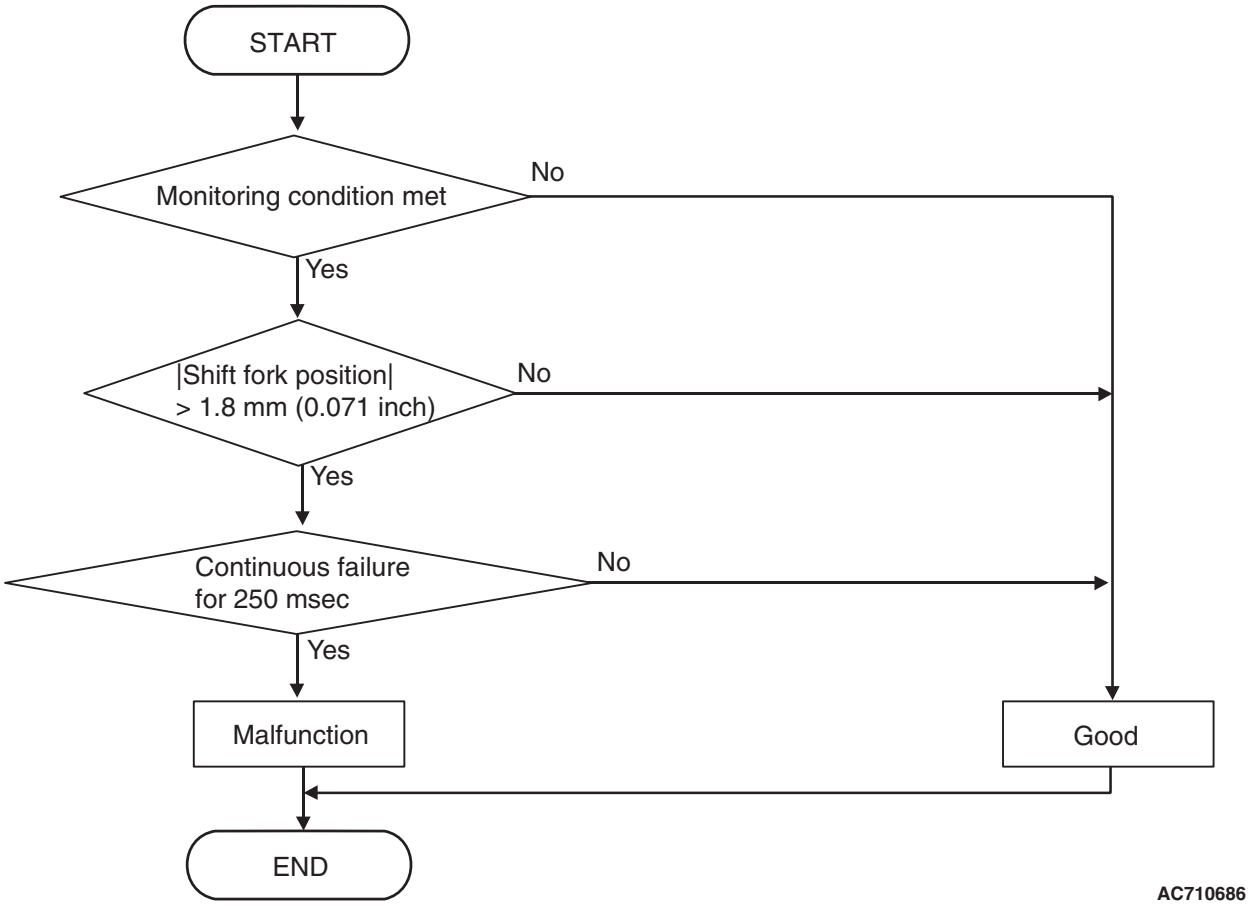


- Shift fork operation time: Shift fork operation time (threshold value) or more. (immediately)
- Shift fork operation time (threshold value): Equal the maximum allowed time x Coefficient. (immediately)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - BLOCKED>

The shift fork operation time is threshold value or less.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - Neutral>



DTC SET CONDITIONS <FUNCTIONAL CHECK - NEUTRAL>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Shift fork 1 current gear: Neutral.

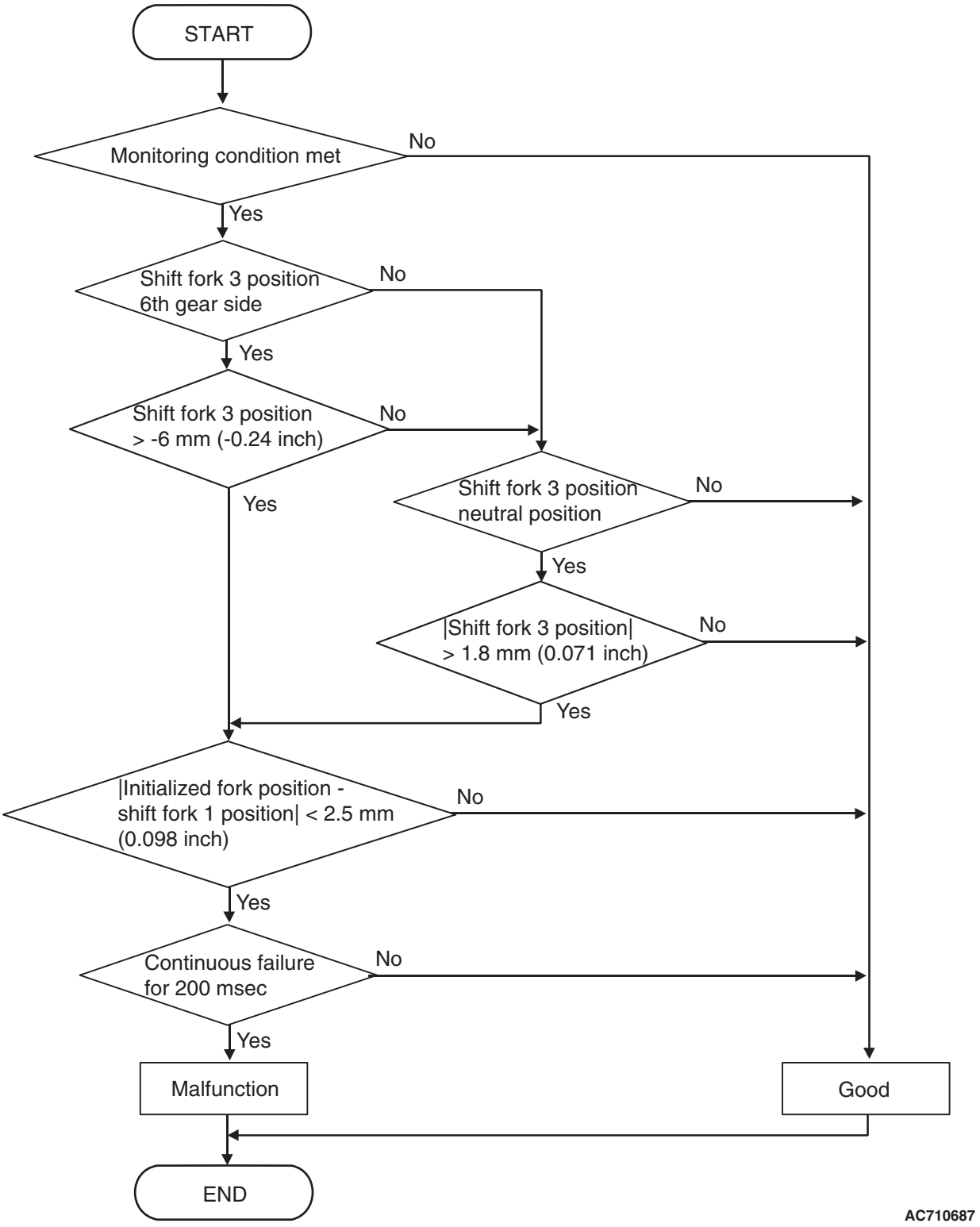
JUDGMENT CRITERIA

- Shift fork position: 1.8 mm (0.071 inch) or more. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - NEUTRAL>

The shift fork position remains 1.8 mm (0.071 inch) or less for 250 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - Shift fork 1 requested but shift fork 3 movement>



DTC SET CONDITIONS <FUNCTIONAL CHECK - SHIFT FORK 1 REQUESTED BUT SHIFT FORK 3 MOVEMENT>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Requested shift fork: Shift fork 1.

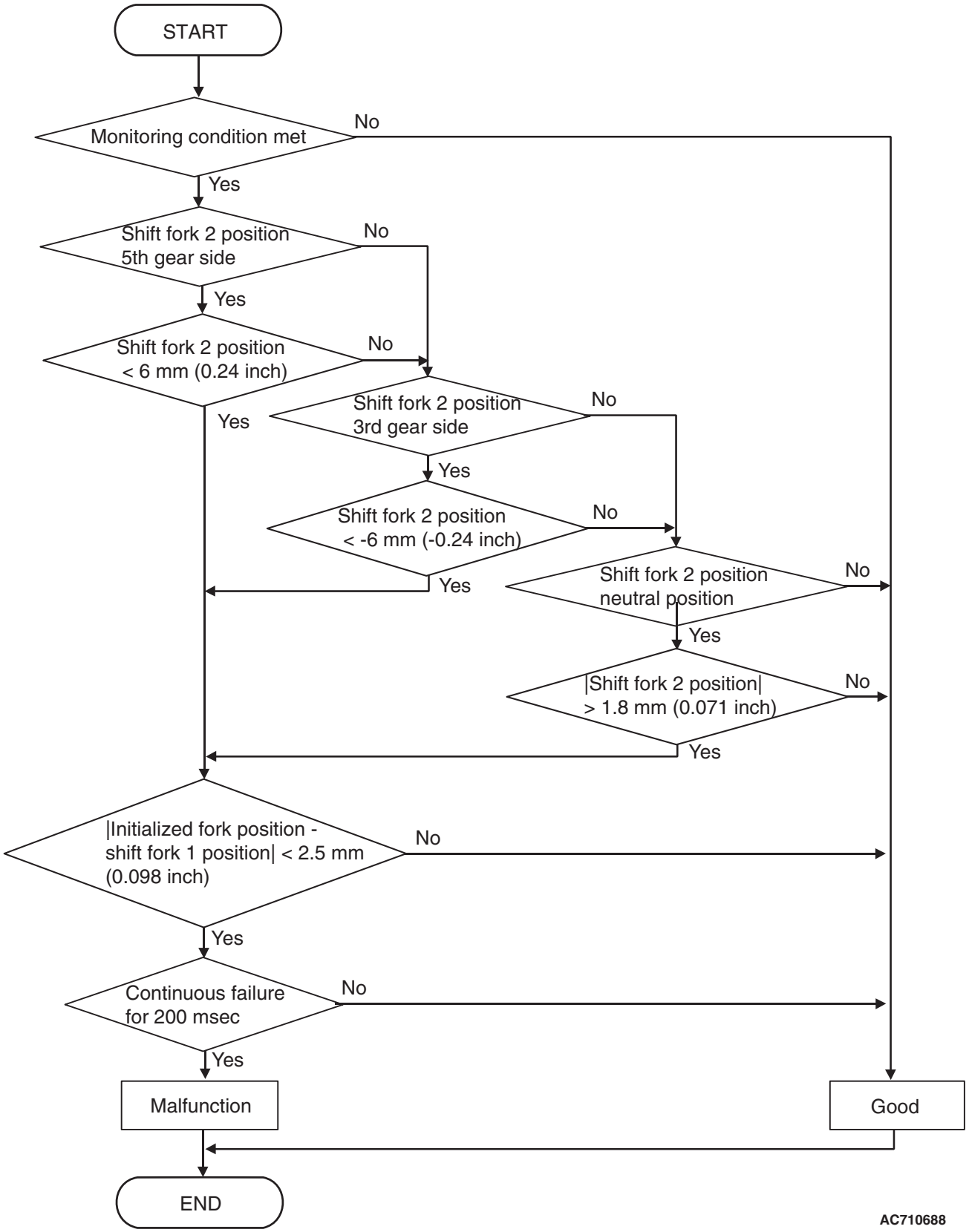
JUDGMENT CRITERIA

- Shift fork 3 position: −6 mm (−0.24 inch) [6th gear side] or more, or 1.8 mm (0.071 inch) [neutral position] or more, and initialized fork position − shift fork 1 position: 2.5 mm (0.098 inch) or less. (200 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - SHIFT FORK 1 REQUESTED BUT SHIFT FORK 3 MOVEMENT>

The status with the shift fork position −6 mm (−0.24 inch) [6th gear side] or less, or with 1.8 mm (0.071 inch) [neutral position] or less and with the initialized fork position − shift fork 1 position 2.5 mm (0.098 inch) or more continues for 200 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - Shift fork 1 requested but shift fork 2 movement>



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DTC SET CONDITIONS <FUNCTIONAL CHECK - SHIFT FORK 1 REQUESTED BUT SHIFT FORK 2 MOVEMENT>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Requested shift fork: Shift fork 1.

JUDGMENT CRITERIA

- Shift fork position: 6 mm (0.24 inch) [5th gear side] or less, or –6 mm (–0.24 inch) [3rd gear side] or more, or 1.8 mm (0.071 inch) [neutral position] or more, and initialized fork position – shift fork 1 position: 2.5 mm (0.098 inch) or less. (200 milli-second)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - SHIFT FORK 1 REQUESTED BUT SHIFT FORK 2 MOVEMENT>

The status with the shift fork position 6 mm (0.24 inch) [5th gear side] or more, or with –6 mm (–0.24 inch) [3rd gear side] or less, or with 1.8 mm (0.071 inch) [neutral position] or less and with the initialized fork position – shift fork 1 position 2.5 mm (0.098 inch) or more continues for 200 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Monitoring unit No. check

(1) Check the freeze frame data (item No. 30 to No. 37).
(2) Check which monitoring unit (No. 160, No. 172, No. 182, or No. 183) is set.

Q: Which monitoring unit is set, No. 160, No. 172, No. 182, or No. 183?

No. 160 : Go to Step 4

Other than No. 160 : Go to Step 3

STEP 3. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Drive with shifting to each gear range.
(3) Check that the DTC is reset.

Q: Is DTC No.P1836 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Check whether the DTC is reset.
(1) Erase the DTC.
(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 5 seconds or more.)
(3) Check that the DTC is reset.

Q: Is DTC No.P1836 set?

YES : Go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 5. Scan tool Teach-In
(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 6
"No" : DTC No. P181B: Carry out the troubleshooting for the DTC No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22C-129.)

STEP 6. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 7.

STEP 7. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 5 seconds or more.)
(3) Check the DTC.

Q: Is DTC No.P1836 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P183D: Shift Fork 2 Malfunction

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the movement of the shift fork 2 is normal.

DESCRIPTIONS OF MONITOR METHODS

The movement of the shift fork 2 is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

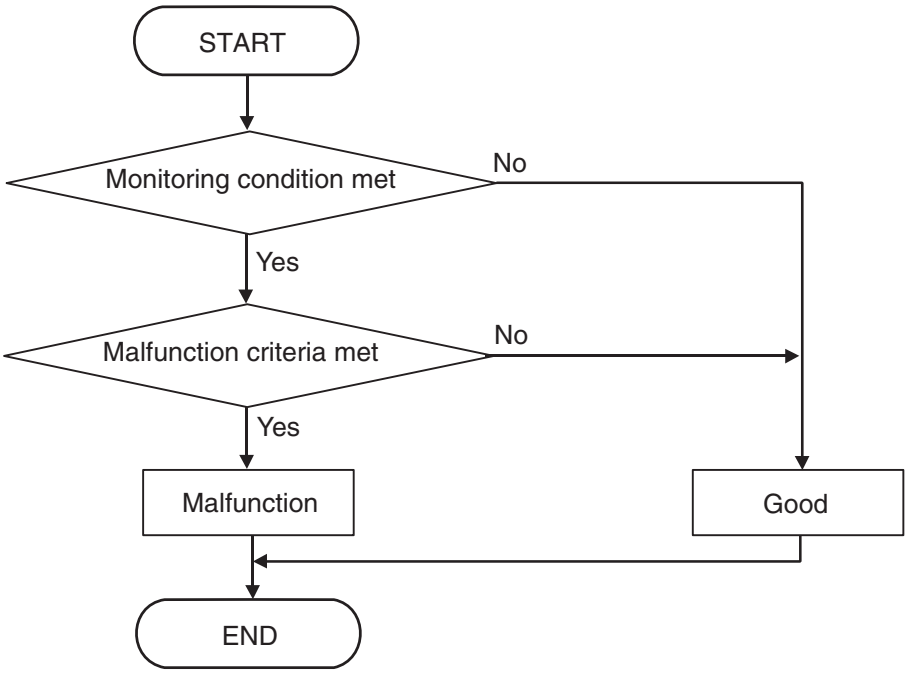
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1836: Shift fork 1 malfunction

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - blocked>

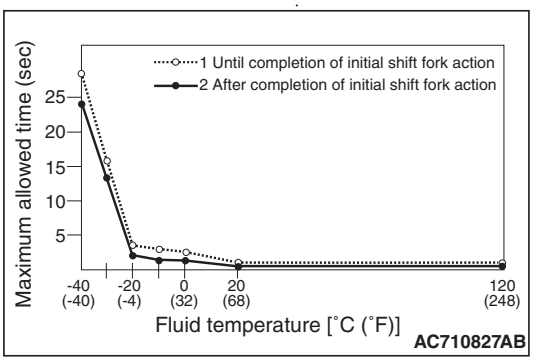


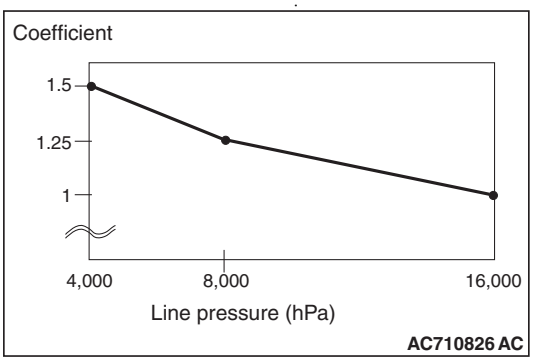
DTC SET CONDITIONS <FUNCTIONAL CHECK - BLOCKED>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Common high side 1 voltage: 7 V or more.
- Common high side 2 voltage: 7 V or more.

Judgment Criteria



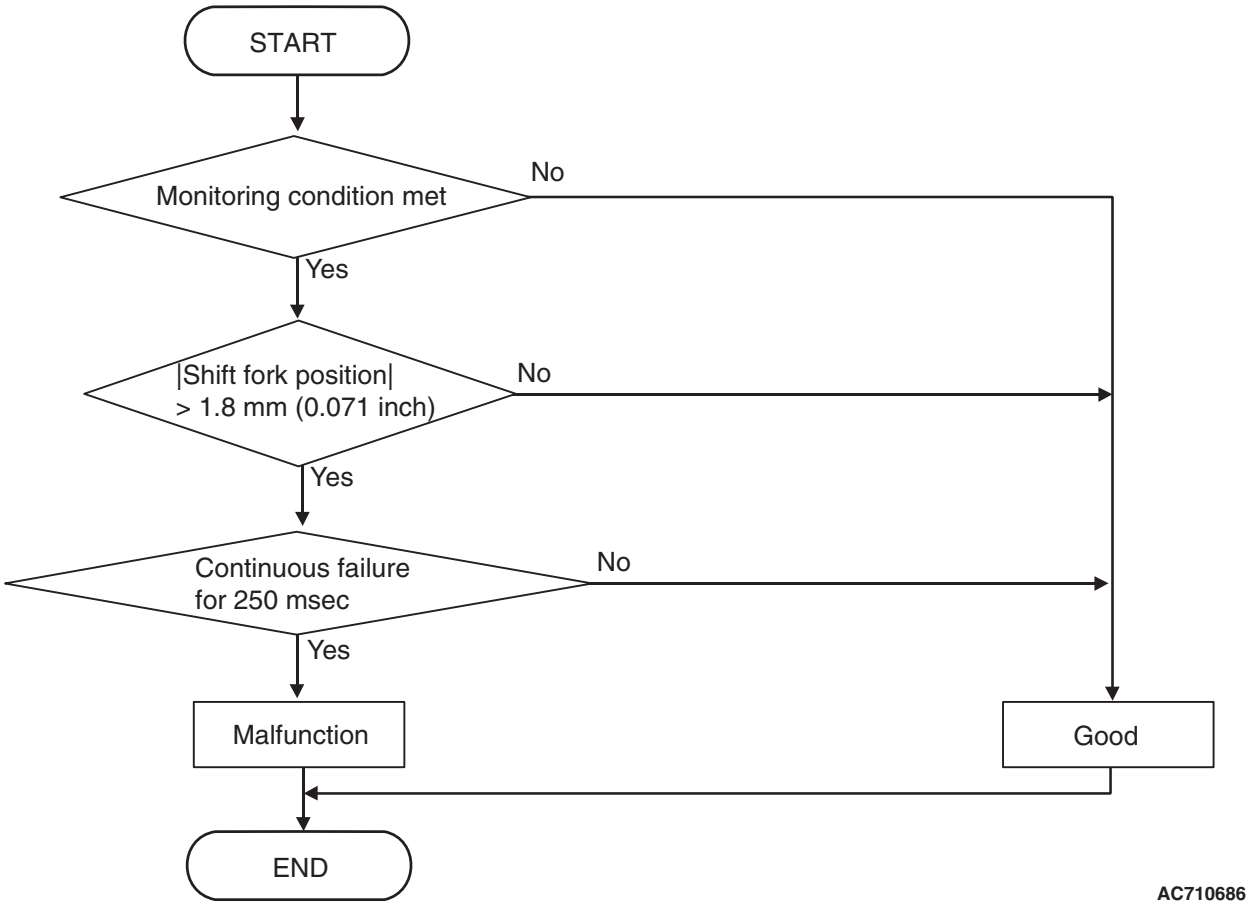


- Shift fork operation time: Shift fork operation time (threshold value) or more. (immediately)
- Shift fork operation time (threshold value): Equal the maximum allowed time x Coefficient. (immediately)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - BLOCKED>

The shift fork operation time is threshold value or less.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - Neutral>



DTC SET CONDITIONS <FUNCTIONAL CHECK - NEUTRAL>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Shift fork 2 current gear: Neutral.

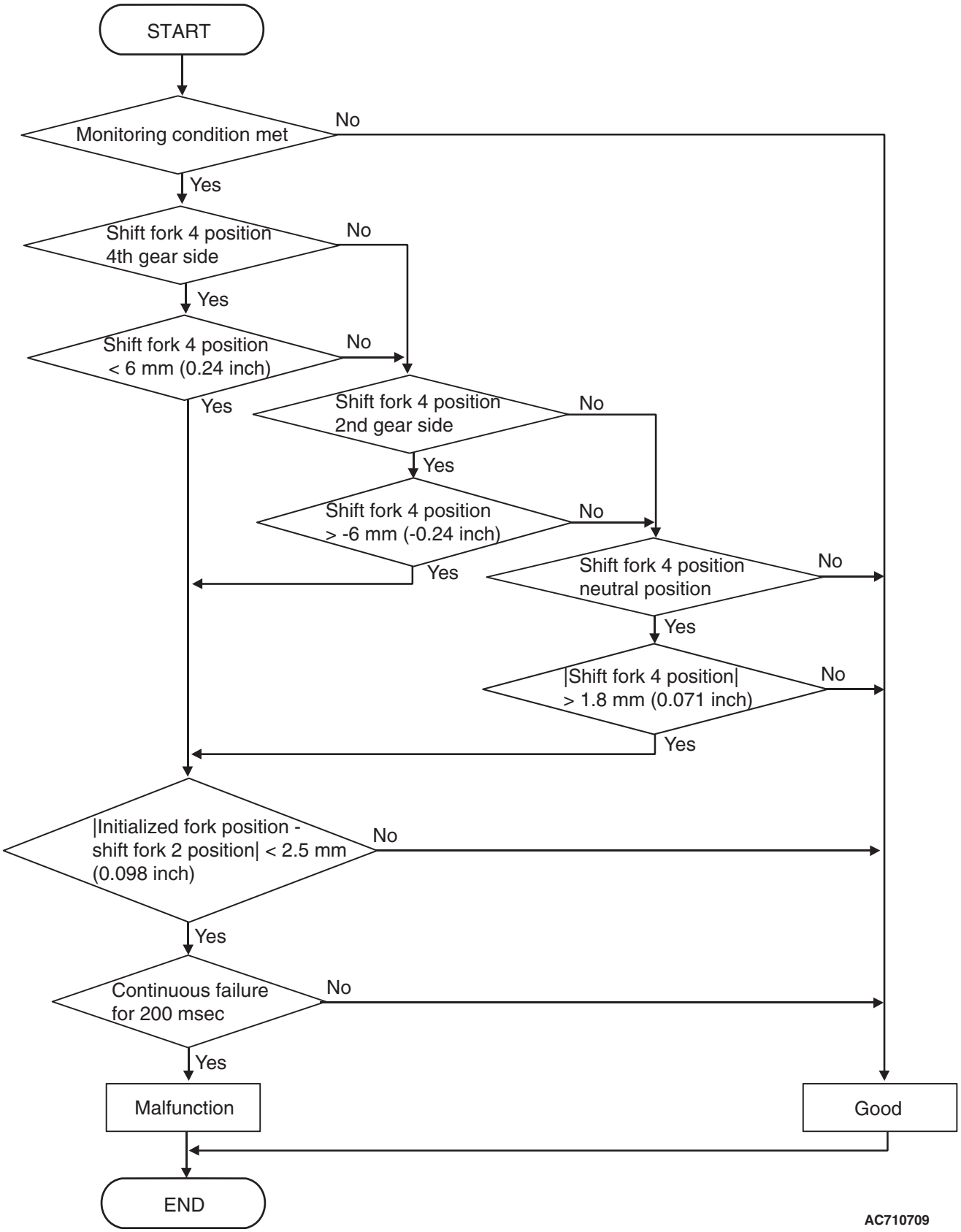
Judgment Criteria

- Shift fork position: 1.8 mm (0.071 inch) or more. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - NEUTRAL>

The shift fork position remains 1.8 mm (0.071 inch) or less for 250 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - Shift fork 2 requested but shift fork 4 movement>



TSB Revision

DTC SET CONDITIONS <FUNCTIONAL CHECK - SHIFT FORK 2 REQUESTED BUT SHIFT FORK 4 MOVEMENT>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Requested shift fork: Shift fork 2.

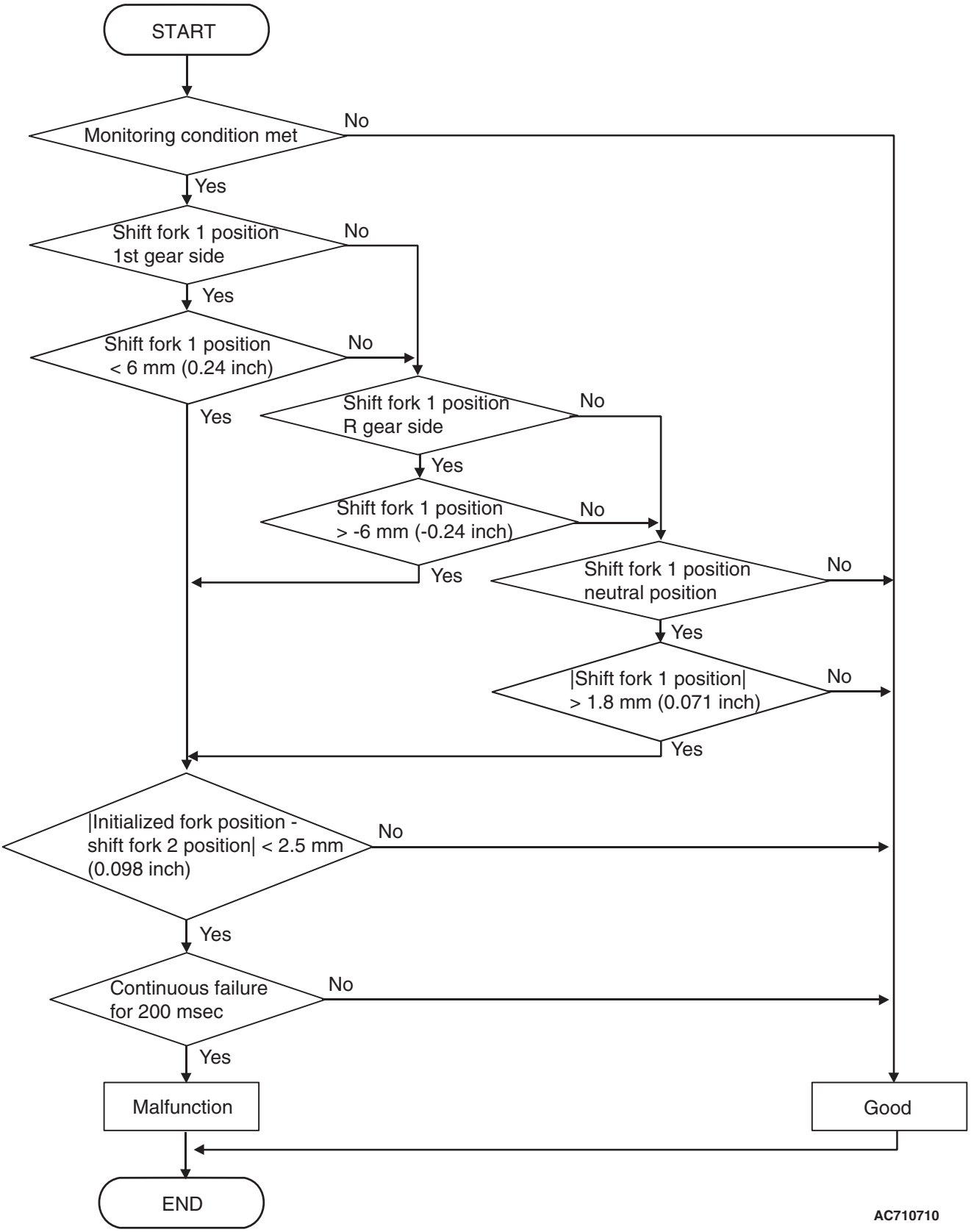
Judgment Criteria

- Shift fork position: 6 mm (0.24 inch) [4th gear side] or less, or –6 mm (–0.24 inch) [2nd gear side] or more, or 1.8 mm (0.071 inch) [neutral position] or more, and Initialized fork position – shift fork 2 position: 2.5 mm (0.098 inch) or less. (200 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - SHIFT FORK 2 REQUESTED BUT SHIFT FORK 4 MOVEMENT>

The status with the shift fork position 6 mm (0.24 inch) or more, or with –6 mm (–0.24 inch) or less, or with 1.8 mm (0.071 inch) or less and with the initialized fork position – shift fork 1 position 2.5 mm (0.098 inch) or more continues for 200 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - Shift fork 2 requested but shift fork 1 movement>



TSB Revision

DTC SET CONDITIONS <FUNCTIONAL CHECK - SHIFT FORK 2 REQUESTED BUT SHIFT FORK 1 MOVEMENT>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Requested shift fork: Shift fork 2.

Judgment Criteria

- Shift fork position: 6 mm (0.24 inch) [1st gear side] or less, or –6 mm (–0.24 inch) [reverse gear side] or more, or 1.8 mm (0.071 inch) [neutral position] or more, and initialized fork position – shift fork 2 position: 2.5 mm (0.098 inch) or less. (200 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - SHIFT FORK 2 REQUESTED BUT SHIFT FORK 1 MOVEMENT>

The status with the shift fork position 6 mm (0.24 inch) [1st gear side] or more, or with –6 mm (–0.24 inch) [reverse gear side] or less, or with 1.8 mm (0.071 inch) [neutral position] or less and with the initialized fork position – shift fork 2 position 2.5 mm (0.098 inch) or more continues for 200 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Monitoring unit No. check

(1) Check the freeze frame data (item No. 30 to No. 37).
(2) Check which monitoring unit (No. 161, No. 174, No. 184, or No. 185) is set.

Q: Which monitoring unit is set, No. 161, No. 174, No. 184, or No. 185?

No. 161 : Go to Step 4

Other than No. 161 : Go to Step 3

STEP 3. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Drive with shifting to each gear range.
(3) Check that the DTC is reset.

Q: Is DTC No.P183D set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Drive in the 3rd gear.
(3) Check that the DTC is reset.

Q: Is DTC No.P183D set?

YES : Go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 5. Scan tool Teach-In
(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 6
"No" : DTC No. P181B: Carry out the troubleshooting for the DTC No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22C-129.)

STEP 6. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 7.

STEP 7. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive in the 3rd gear.
(3) Check the DTC.

Q: Is DTC No.P183D set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1844: Shift Fork 3 Malfunction

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the movement of the shift fork 3 is normal.

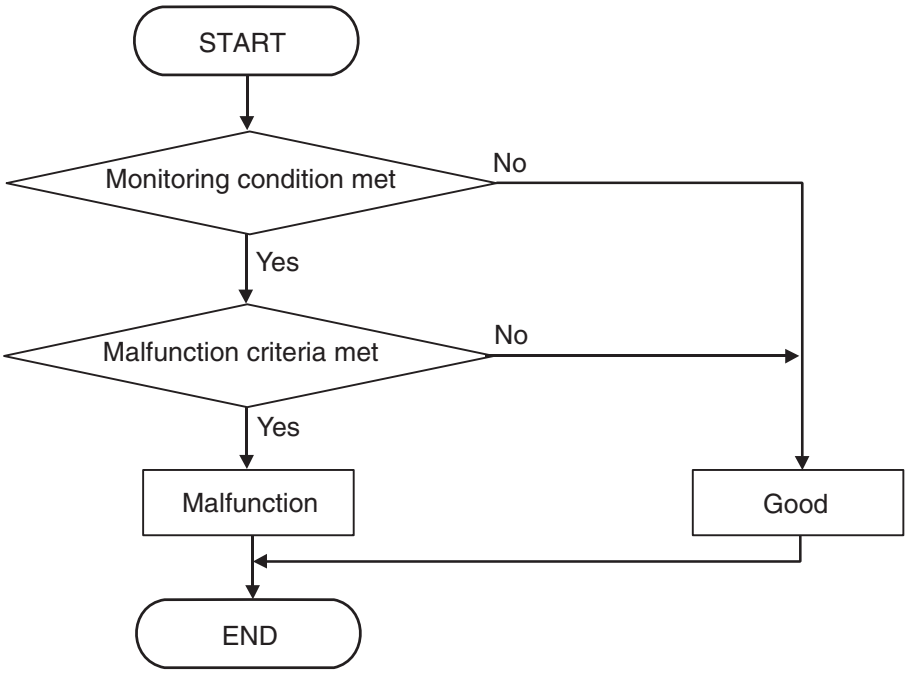
DESCRIPTIONS OF MONITOR METHODS
The movement of the shift fork 3 is determined to be abnormal.

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)
- P1836: Shift fork 1 malfunction
- P184B: Shift fork 4 malfunction

Sensor (The sensor below is determined to be normal)
- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - blocked>



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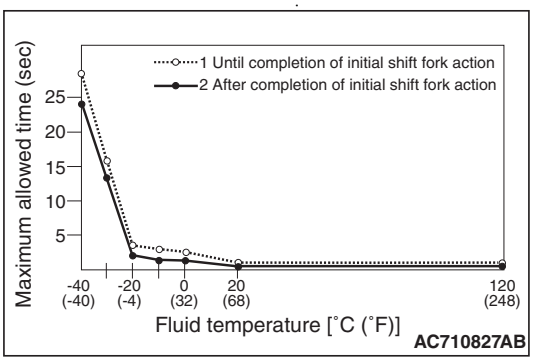
TSB Revision

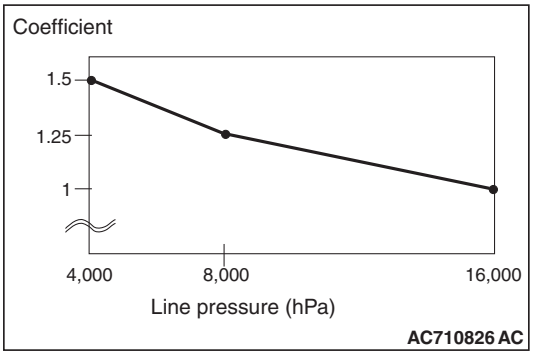
DTC SET CONDITIONS <FUNCTIONAL CHECK - BLOCKED>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Common high side 1 voltage: 7 V or more.
- Common high side 2 voltage: 7 V or more.

JUDGMENT CRITERIA



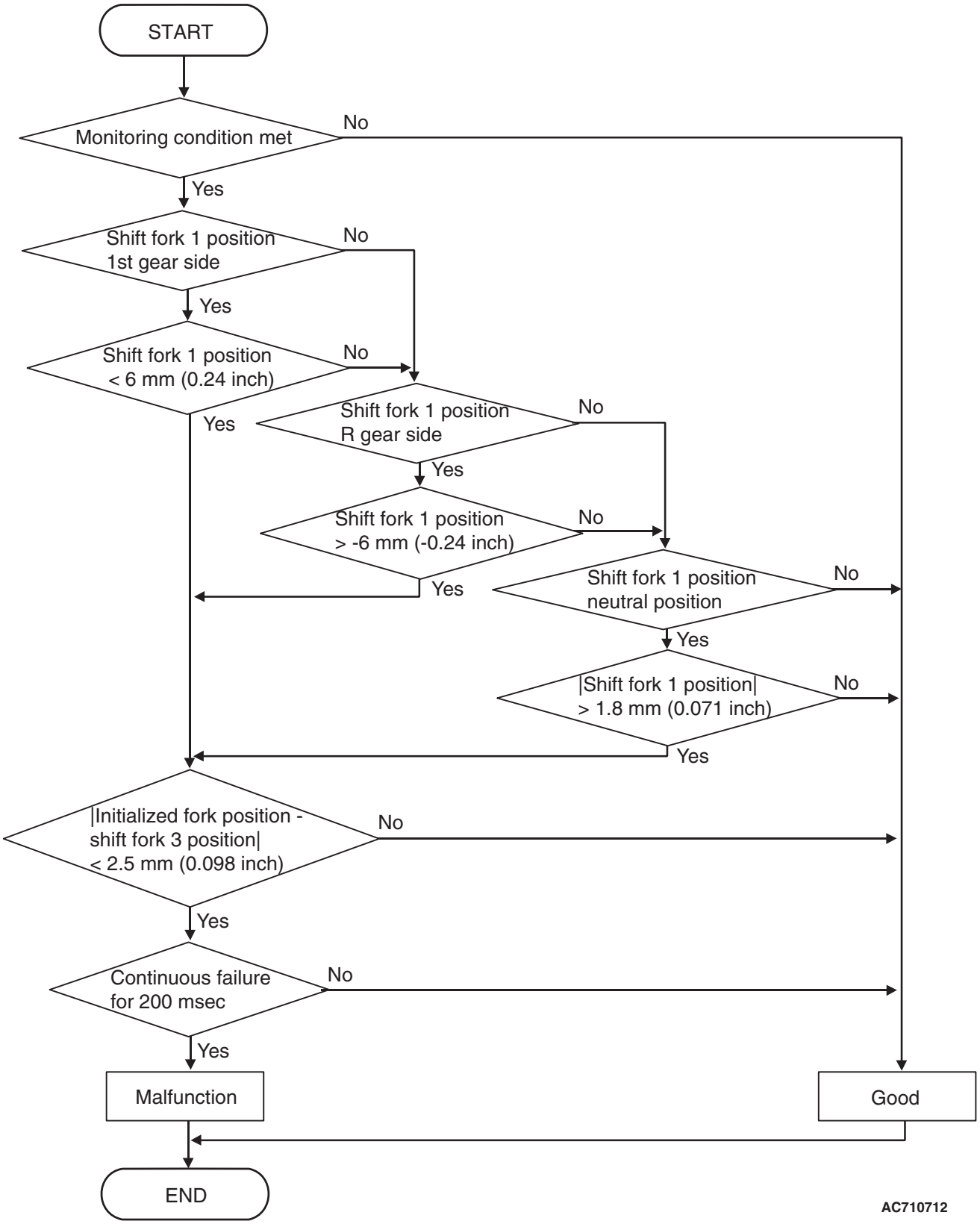


- Shift fork operation time: Shift fork operation time (threshold value) or more. (immediately)
- Shift fork operation time (threshold value): Equal the maximum allowed time x Coefficient. (immediately)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - BLOCKED>

The shift fork operation time is threshold value or less.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - Shift fork 3 requested but shift fork 1 movement>



TSB Revision

DTC SET CONDITIONS <FUNCTIONAL CHECK - SHIFT FORK 3 REQUESTED BUT SHIFT FORK 1 MOVEMENT>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Requested shift fork: Shift fork 3.

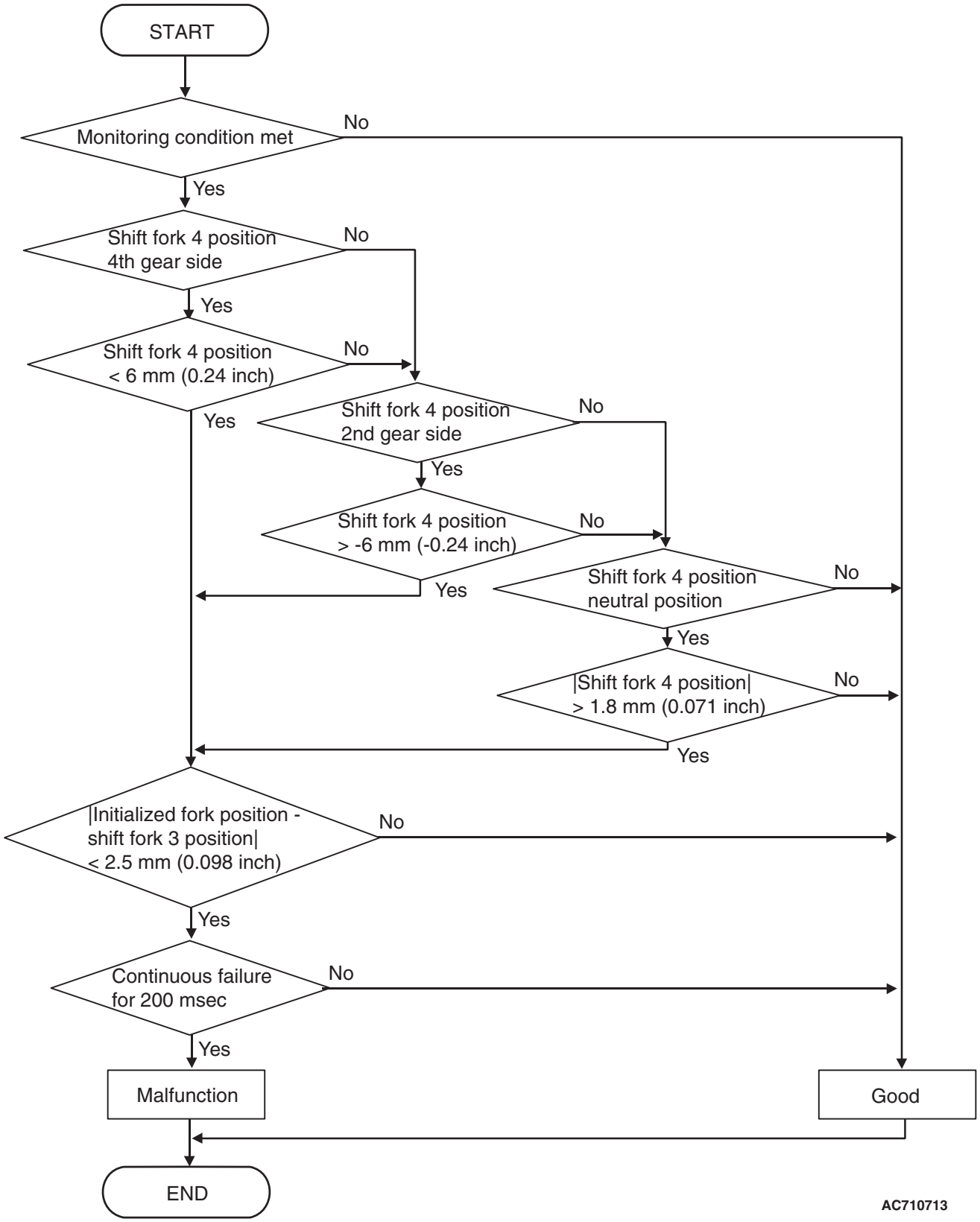
JUDGMENT CRITERIA

- Shift fork position: 6 mm (0.24 inch) [1st gear side] or less, or –6 mm (–0.24 inch) [reverse gear side] or more, or 1.8 mm (0.071 inch) [neutral position] or more and initialized fork position – shift fork 3 position: 2.5 mm (0.098 inch) or less. (200 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - SHIFT FORK 3 REQUESTED BUT SHIFT FORK 1 MOVEMENT>

The status with the shift fork position 6 mm (0.24 inch) [1st gear side] or more, or with –6 mm (–0.24 inch) [reverse gear side] or less, or with 1.8 mm (0.071 inch) [neutral position] or less and with the initialized fork position – shift fork 3 position 2.5 mm (0.098 inch) or more continues for 200 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - shift fork 3 requested but shift fork 4 movement>



TSB Revision

DTC SET CONDITIONS <FUNCTIONAL CHECK - SHIFT FORK 3 REQUESTED BUT SHIFT FORK 4 MOVEMENT>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Requested shift fork: Shift fork 3.

JUDGMENT CRITERIA

- Shift fork position: 6 mm (0.24 inch) [4th gear side] or less, or –6 mm (–0.24 inch) [2nd gear side] or more, or 1.8 mm (0.071 inch) [neutral position] or more, and initialized fork position – shift fork 3 position: 2.5 mm (0.098 inch) or less. (200 milli-second)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - SHIFT FORK 3 REQUESTED BUT SHIFT FORK 4 MOVEMENT>

The status with the shift fork position 6 mm (0.24 inch) [4th gear side] or more, or with –6 mm (–0.24 inch) [2nd gear side] or less, or with 1.8 mm (0.071 inch) [neutral position] or less and with the initialized fork position – shift fork 3 position 2.5 mm (0.098 inch) or more continues for 200 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Monitoring unit No. check

(1) Check the freeze frame data (item No. 30 to No. 37).
(2) Check which monitoring unit (No. 162, No. 178, No. 186, or No. 187) is set.

Q: Which monitoring unit is set, No. 162, No. 178, No. 186, or No. 187?

No. 162 : Go to Step 4

Other than No. 162 : Go to Step 3

STEP 3. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Drive with shifting to each gear range.
(3) Check that the DTC is reset.

Q: Is DTC No.P1844 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Drive in the 6th gear.
(3) Check that the DTC is reset.

Q: Is DTC No.P1844 set?

YES : Go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 5. Scan tool Teach-In
(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 6
"No" : DTC No. P181B: Carry out the troubleshooting for the DTC No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22C-129.)

STEP 6. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 7.

STEP 7. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive in the 6th gear.
(3) Check the DTC.

Q: Is DTC No.P1844 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P184B: Shift Fork 4 Malfunction

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the movement of the shift fork 4 is normal.

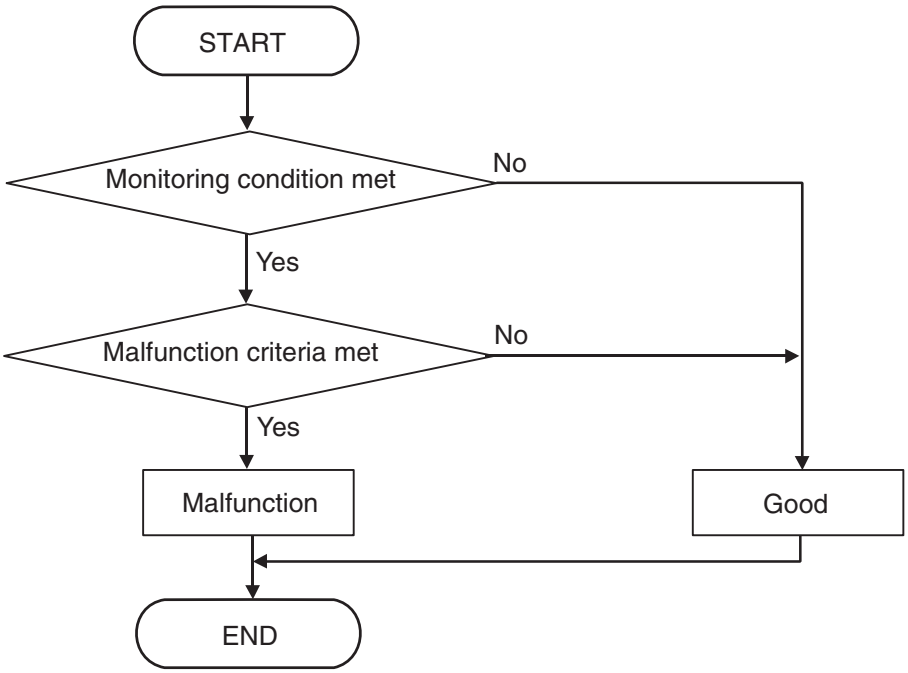
DESCRIPTIONS OF MONITOR METHODS
The movement of the shift fork 4 is determined to be abnormal.

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)
- P1844: Shift fork 3 malfunction

Sensor (The sensor below is determined to be normal)
- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - blocked>



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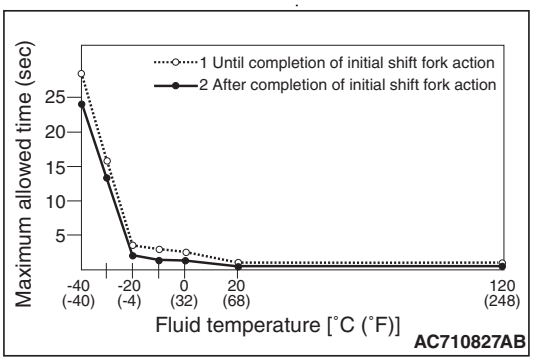
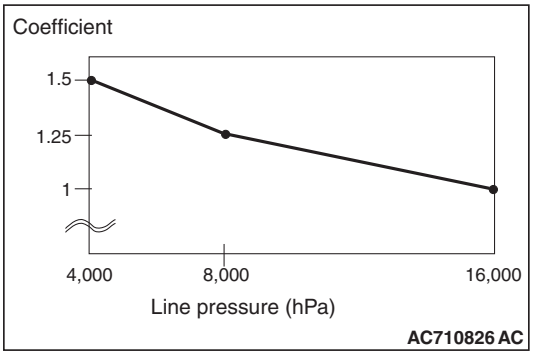
DTC SET CONDITIONS <FUNCTIONAL CHECK - BLOCKED>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Common high side 1 voltage: 7 V or more.
- Common high side 3 voltage: 7 V or more.

JUDGMENT CRITERIA



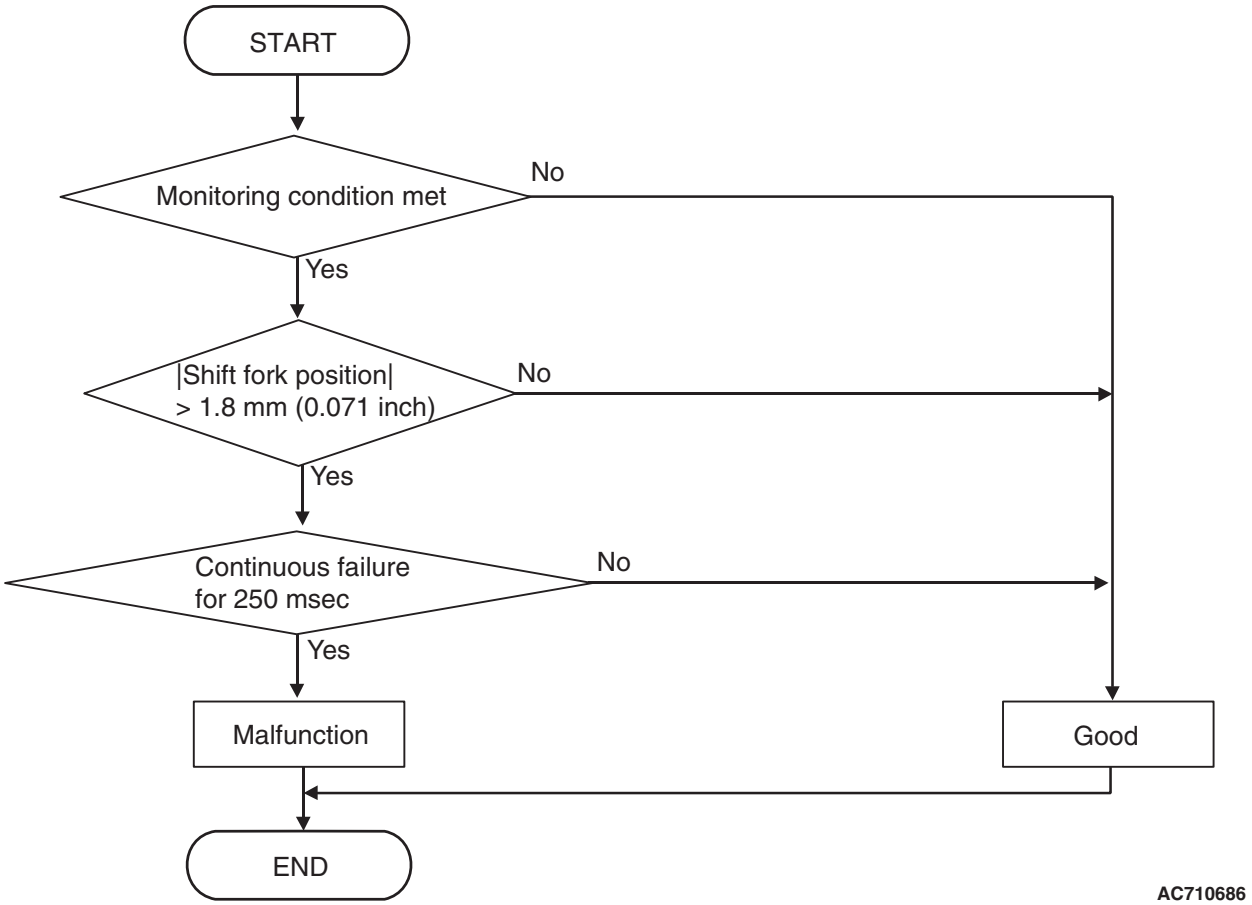


- Shift fork operation time: Shift fork operation time (threshold value) or more. (immediately)
- Shift fork operation time (threshold value): Equal the maximum allowed time x Coefficient. (immediately)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - BLOCKED>

The shift fork operation time is threshold value or less.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - Neutral>



TSB Revision

DTC SET CONDITIONS <FUNCTIONAL CHECK - NEUTRAL>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Shift fork 4 current gear: Neutral.

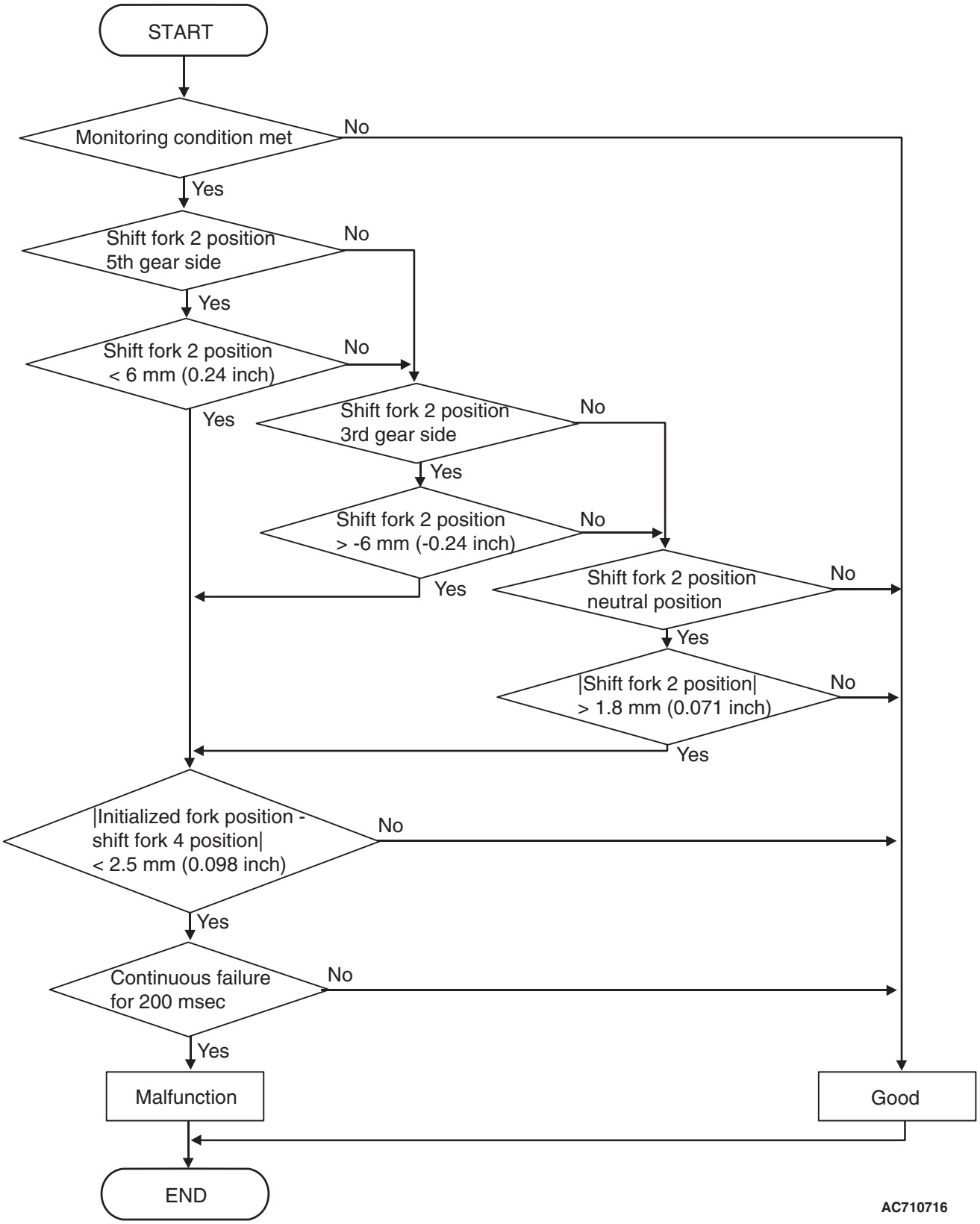
JUDGMENT CRITERIA

- Shift fork position: 1.8 mm (0.071 inch) or more. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - NEUTRAL>

The shift fork position remains 1.8 mm (0.071 inch) or less for 250 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - Shift fork 4 requested but shift fork 2 movement>



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DTC SET CONDITIONS <FUNCTIONAL CHECK - SHIFT FORK 4 REQUESTED BUT SHIFT FORK 2 MOVEMENT>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Requested shift fork: Shift fork 4.

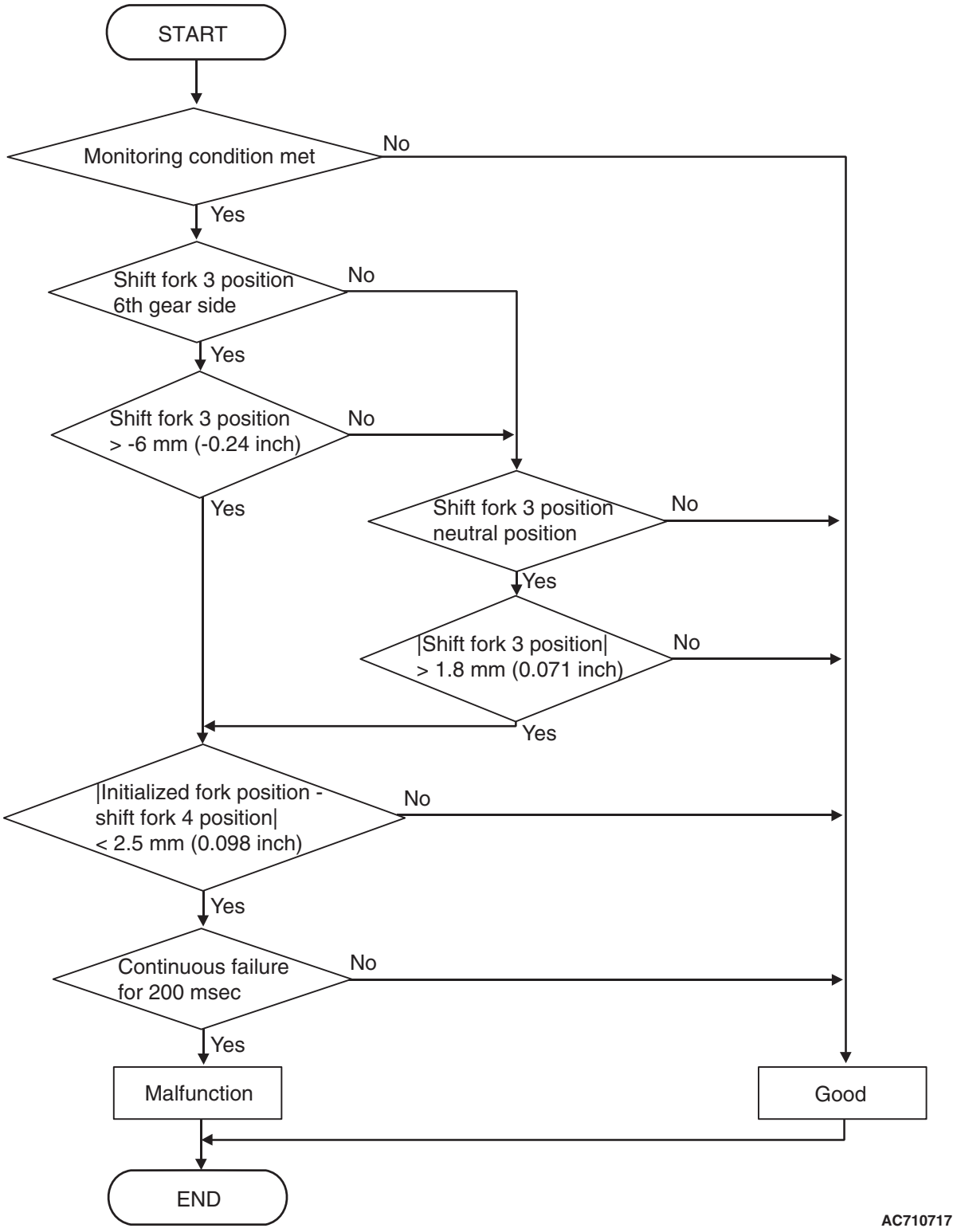
JUDGMENT CRITERIA

- Shift fork position: 6 mm (0.24 inch) [5th gear side] or less, or –6 mm (–0.24 inch) [3rd gear side] or more, or 1.8 mm (0.071 inch) [neutral position] or more, and Initialized fork position – shift fork 4 position: 2.5 mm (0.098 inch) or less. (200 milli-second)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - SHIFT FORK 4 REQUESTED BUT SHIFT FORK 2 MOVEMENT>

The status with the shift fork position 6 mm (0.24 inch) [5th gear side] or more, or with –6 mm (–0.24 inch) [3rd gear side] or less, or with 1.8 mm (0.071 inch) [neutral position] or less and with the initialized fork position – shift fork 4 position 2.5 mm (0.098 inch) or more continues for 200 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - shift fork 4 requested but shift fork 3 movement>



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DTC SET CONDITIONS <FUNCTIONAL CHECK - SHIFT FORK 4 REQUESTED BUT SHIFT FORK 3 MOVEMENT>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Requested shift fork: Shift fork 4.

JUDGMENT CRITERIA

- Shift fork position: –6 mm (–0.24 inch) [6th gear side] or more, or 1.8 mm (0.071 inch) [neutral position] or more, and initialized fork position – shift fork 4 position: 2.5mm (0.098 inch) or less. (200 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - SHIFT FORK 3 REQUESTED BUT SHIFT FORK 4 MOVEMENT>

The status of the shift fork position –6 mm (–0.24 inch) [6th gear side] or less, or with 1.8 mm (0.071 inch) [neutral position] or less and with the initialized fork position – shift fork 3 position 2.5 mm (0.098 inch) or more continues for 200 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Monitoring unit No. check

(1) Check the freeze frame data (item No. 30 to No. 37).
(2) Check which monitoring unit (No. 163, No. 180, No. 188, or No. 189) is set.

Q: Which monitoring unit is set, No. 163, No. 180, No. 188, or No. 189?

No. 163 : Go to Step 4

Other than No. 163 : Go to Step 3

STEP 3. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Drive with shifting to each gear range.
(3) Check that the DTC is reset.

Q: Is DTC No.P184B set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

TSB Revision

STEP 4. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Drive in the 4th gear.
(3) Check that the DTC is reset.

Q: Is DTC No.P184B set?

YES : Go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 5. Scan tool Teach-In
(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 6
"No" : DTC No. P181B: Carry out the troubleshooting for the DTC No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22C-129.)

STEP 6. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Go to Step 7.

STEP 7. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive in the 4th gear.
(3) Check the DTC.

Q: Is DTC No. P184B set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1852: Shift Fork 1 or 2 opposite direction movement

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the movement of the shift fork is normal.

DESCRIPTIONS OF MONITOR METHODS

The movements of the shift fork 1 and 2 are determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

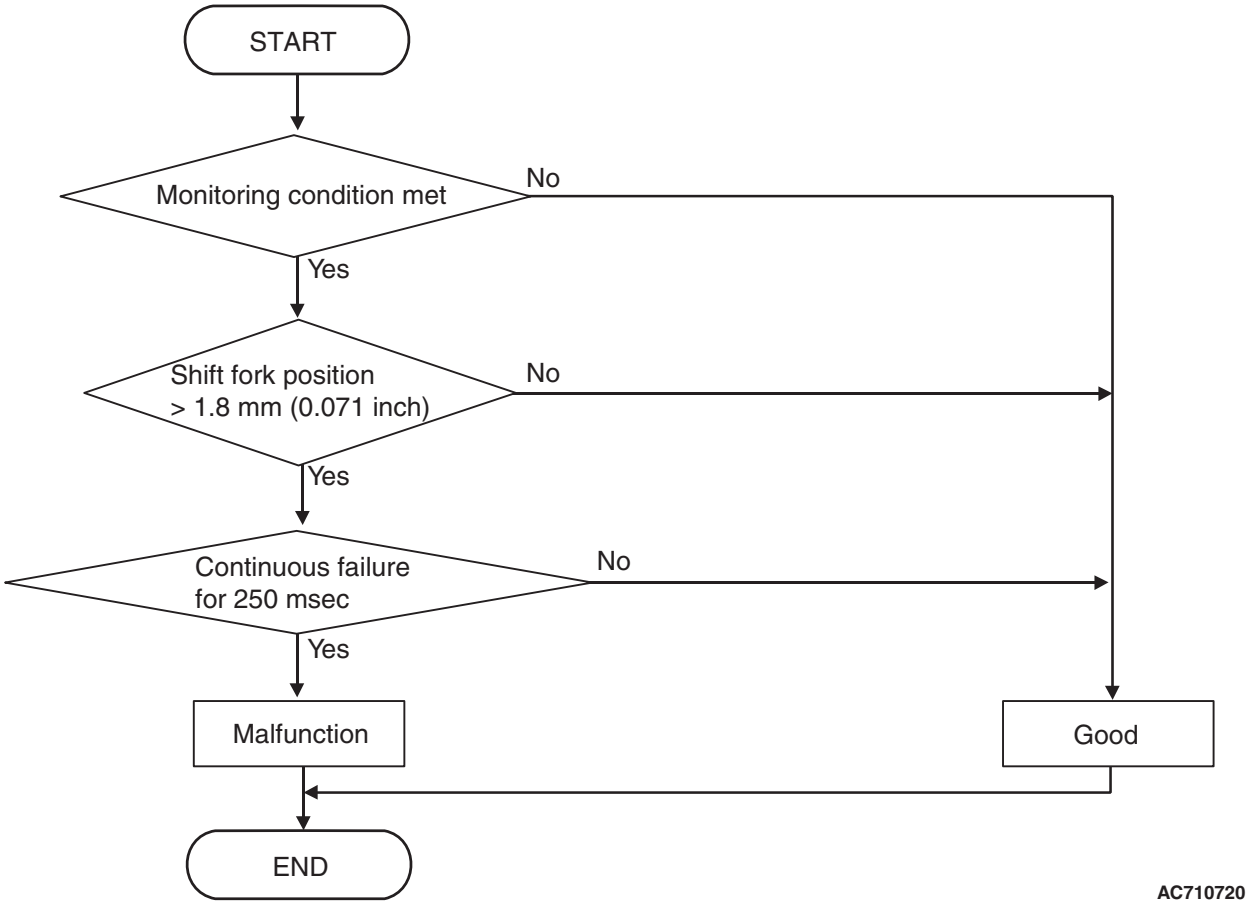
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1836: Shift fork 1 malfunction
- P183D: Shift fork 2 malfunction
- P1844: Shift fork 3 malfunction
- P184B: Shift fork 4 malfunction

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - move opposite direction right side>



DTC SET CONDITIONS <FUNCTIONAL CHECK - MOVE OPPOSITE DIRECTION RIGHT SIDE>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Shift fork 1 and 2 current gear: Neutral.
- Shift fork 1 and 2 target direction: 0 mm (0 inch) or less.

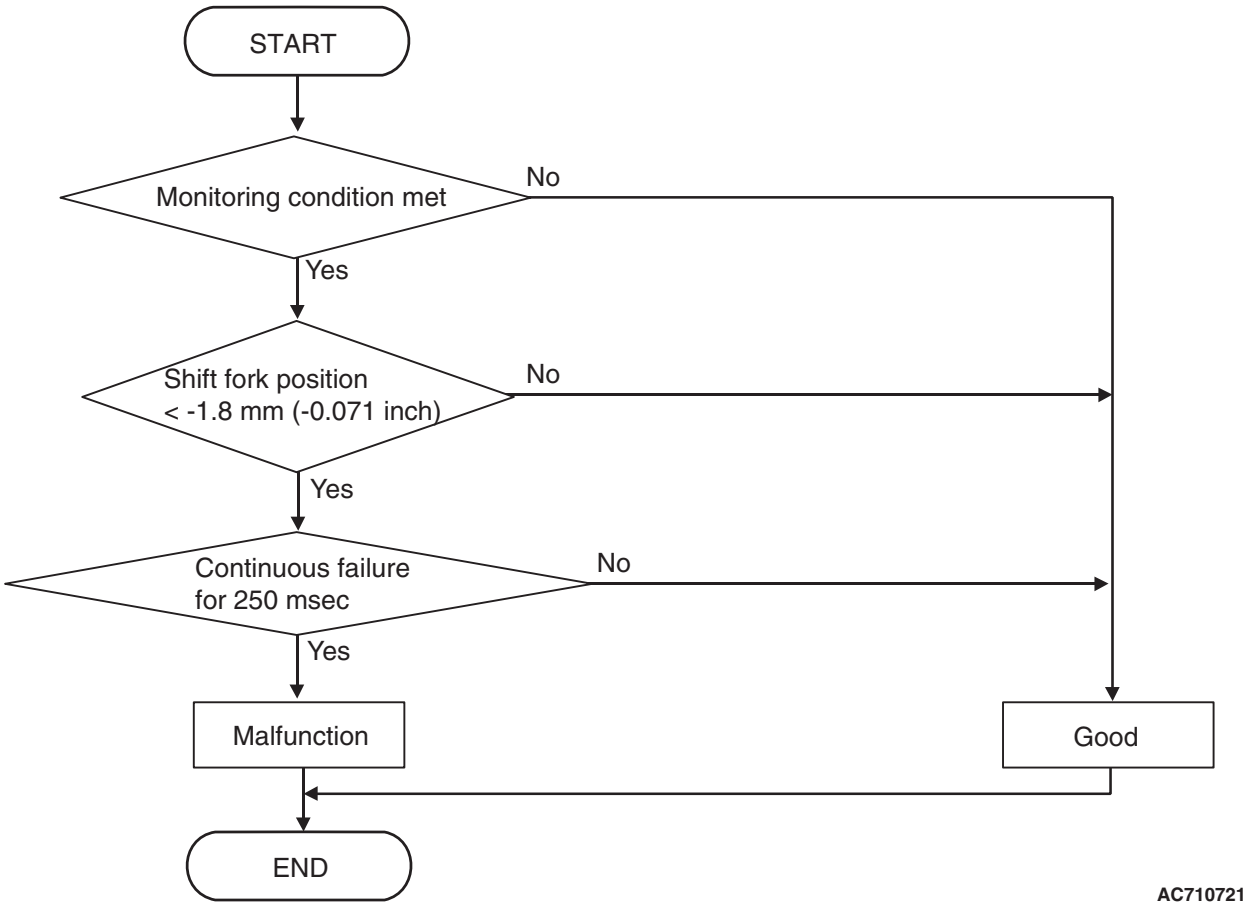
JUDGMENT CRITERIA

- Shift fork 1 and 2 position: 1.8 mm (0.071 inch) or more. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - MOVE OPPOSITE DIRECTION RIGHT SIDE>

The shift fork 1 and 2 positions remain 1.8 mm (0.071 inch) or less for 250 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - move opposite direction left side>



DTC SET CONDITIONS <FUNCTIONAL CHECK - MOVE OPPOSITE DIRECTION LEFT SIDE>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Shift fork 1 and 2 current gear: Neutral.
- Shift fork 1 and 2 target direction: 0 mm (0 inch) or more.

JUDGMENT CRITERIA

- Shift fork 1 and 2 position: –1.8 mm (–0.071 inch) or less. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - MOVE OPPOSITE DIRECTION LEFT SIDE>

The shift fork 1 and 2 positions remain –1.8 mm (–0.071 inch) or more for 250 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of valve body

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.
(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 1 second or more.)
(3) Check that the DTC is reset.

Q: Is the DTC No. P1852 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1855: Shift Fork 3 or 4 opposite direction movement

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the movement of the shift fork is normal.

DESCRIPTIONS OF MONITOR METHODS

The movements of the shift fork 3 and 4 are determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

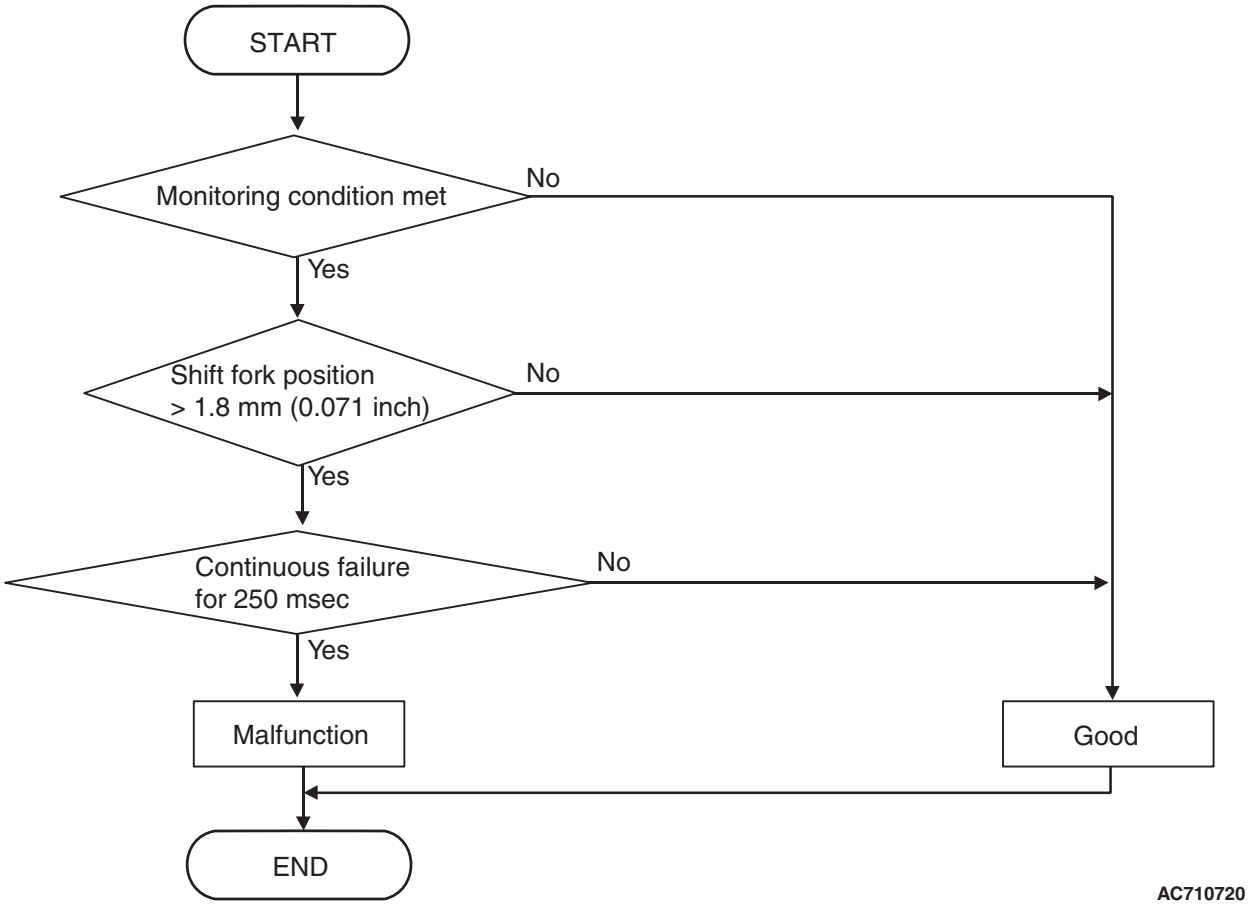
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1836: Shift fork 1 malfunction
- P183D: Shift fork 2 malfunction
- P1844: Shift fork 3 malfunction
- P184B: Shift fork 4 malfunction

TSB Revision

Sensor (The sensor below is determined to be normal)
- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - move opposite direction right side>



DTC SET CONDITIONS <FUNCTIONAL CHECK - MOVE OPPOSITE DIRECTION RIGHT SIDE>

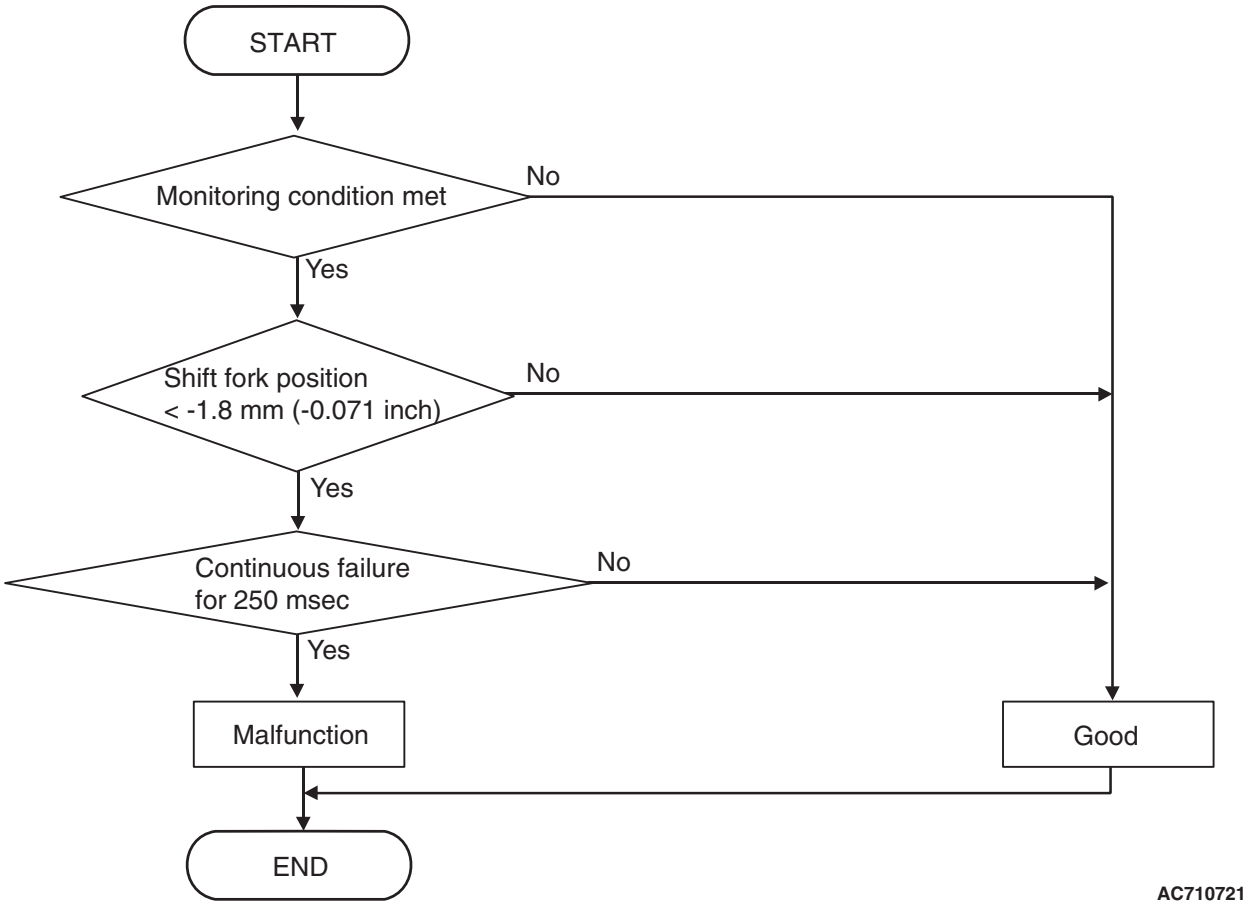
Check Conditions
- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Shift fork 3 and 4 current gear: Neutral.
- Shift fork 3 and 4 target direction: 0 mm (0 inch) or less.

JUDGMENT CRITERIA
- Shift fork 3 and 4 position: 1.8 mm (0.071 inch) or more. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - MOVE OPPOSITE DIRECTION RIGHT SIDE>

The shift fork 3 and 4 positions remain 1.8 mm (0.071 inch) or less for 250 millisecond.

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - move opposite direction left side>



DTC SET CONDITIONS <FUNCTIONAL CHECK - MOVE OPPOSITE DIRECTION LEFT SIDE>

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Shift fork 3 and 4 current gear: Neutral.
- Shift fork 3 and 4 target direction: 0 mm (0 inch) or more.

JUDGMENT CRITERIA

- Shift fork 3 and 4 position: –1.8 mm (–0.071 inch) or less. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <FUNCTIONAL CHECK - MOVE OPPOSITE DIRECTION LEFT SIDE>

The shift fork 3 and 4 positions remain –1.8 mm (–0.071 inch) or more for 250 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of valve body

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After driving in the 4th gear, check that the DTC is reset.

Q: Is the DTC No. P1855 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1857: Odd number gear axle interlock

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the gear engagement is normal.

DESCRIPTIONS OF MONITOR METHODS
The two gears are determined to be engaged in the odd number gear range.

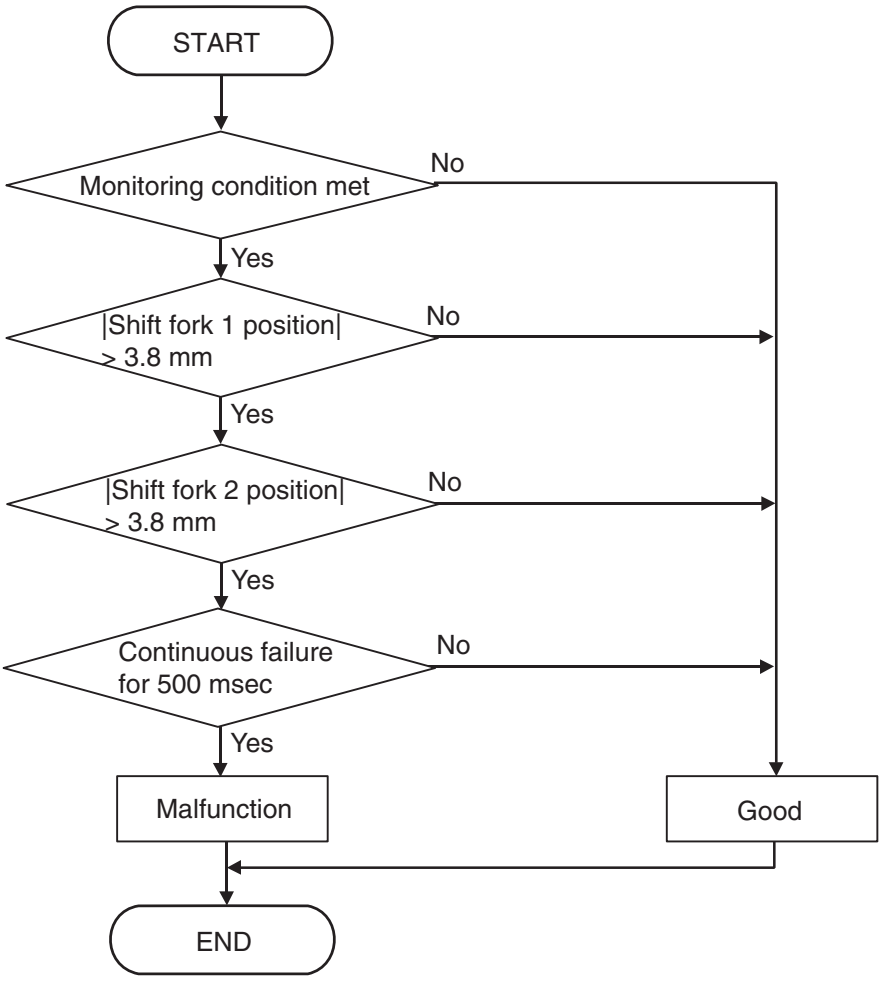
MONITOR EXECUTION
- Continuous

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)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.

JUDGMENT CRITERIA

- Shift fork 1 and 2 position: 3.8 mm (0.15 inch) or more. (500 millisecond)

OBD-II DRIVE CYCLE PATTERN

The shift fork 1 and 2 positions remain 3.8 mm (0.15 inch) or less for 500 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
(1) Erase the DTC.
(2) With the ignition switch ON, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 5 seconds or more.)
(3) Check that the DTC is reset.

Q: Is DTC No. P1857 set?

YES : Go to Step 4.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.
(1) Drive with shifting to each gear range. (Hold each gear range for 5 seconds or more.)
(2) Check that the DTC is reset.

Q: Is DTC No.P1857 set?

YES : Go to Step 4.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Scan tool diagnostic trouble code.
Check if any code from P1836, P183D, P1844, or P184B is set in addition to the diagnostic trouble code No. P1857.

Q: Check if any code from P1836, P183D, P1844, or P184B is set in addition to the diagnostic trouble code No. P1857.

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Replace the transaxle assembly. (Refer to P.22C-525.)

DTC P1858: Even number gear axle interlock

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the gear engagement is normal.

DESCRIPTIONS OF MONITOR METHODS

The two gears are determined to be engaged in the even number gear range.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

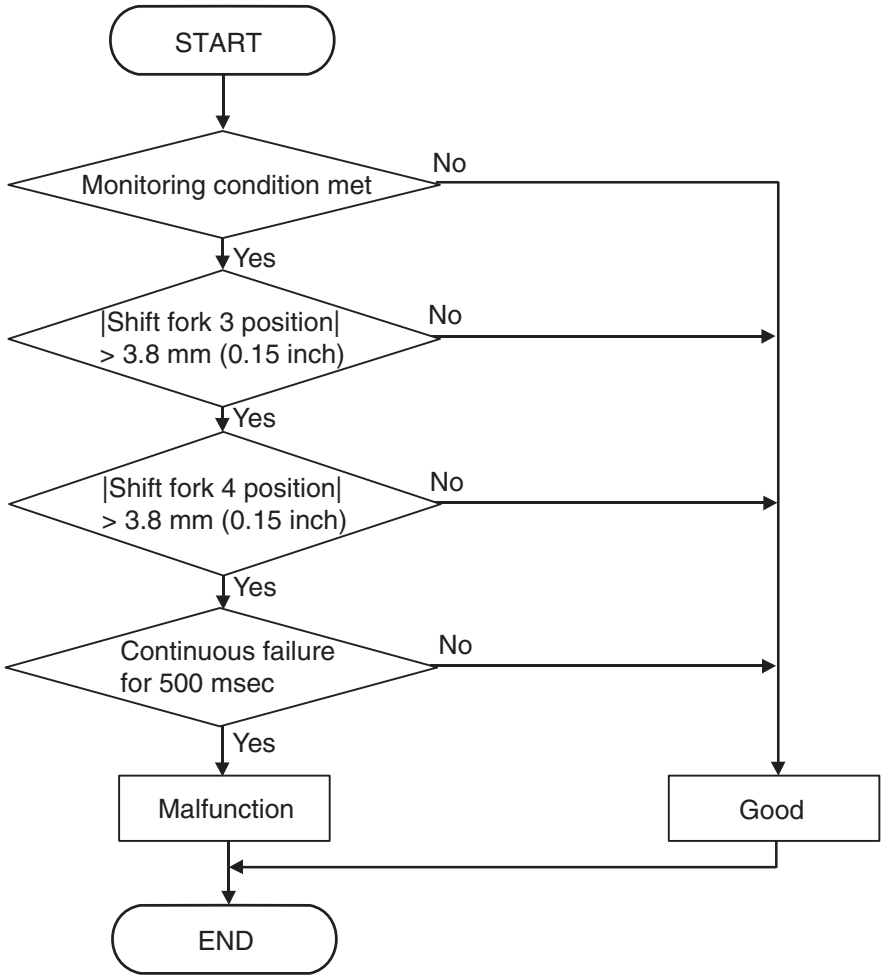
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



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DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.

TSB Revision

JUDGMENT CRITERIA

- Shift fork 3 and 4 position: 3.8 mm (0.15 inch) or more. (500 millisecond)

OBD-II DRIVE CYCLE PATTERN

The shift fork 3 and 4 positions remain 3.8 mm (0.15 inch) or less for 500 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Drive with shifting to each gear range. (Hold each gear range for 5 seconds or more.)
(3) Check that the DTC is reset.

Q: Is DTC No.P1858 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool diagnostic trouble code.

Check if any code from P1836, P183D, P1844, or P184B is set in addition to the diagnostic trouble code No. P1858.

Q: Check if any code from P1836, P183D, P1844, or P184B is set in addition to the diagnostic trouble code No. P1858.

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Replace the transaxle assembly. (Refer to P.22C-525.)

DTC P185D: Clutch open not possible

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch 1 and 2 are normal.

DESCRIPTIONS OF MONITOR METHODS

The disengagement of the clutch 1 and 2 are determined to be impossible.

PROBABLE CAUSES

- Malfunction of clutch assembly

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

After 15 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P185D set?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1862: High side 1 system (Overcurrent)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the high side 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The supply current to the high side 1 is determined to be overcurrent.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

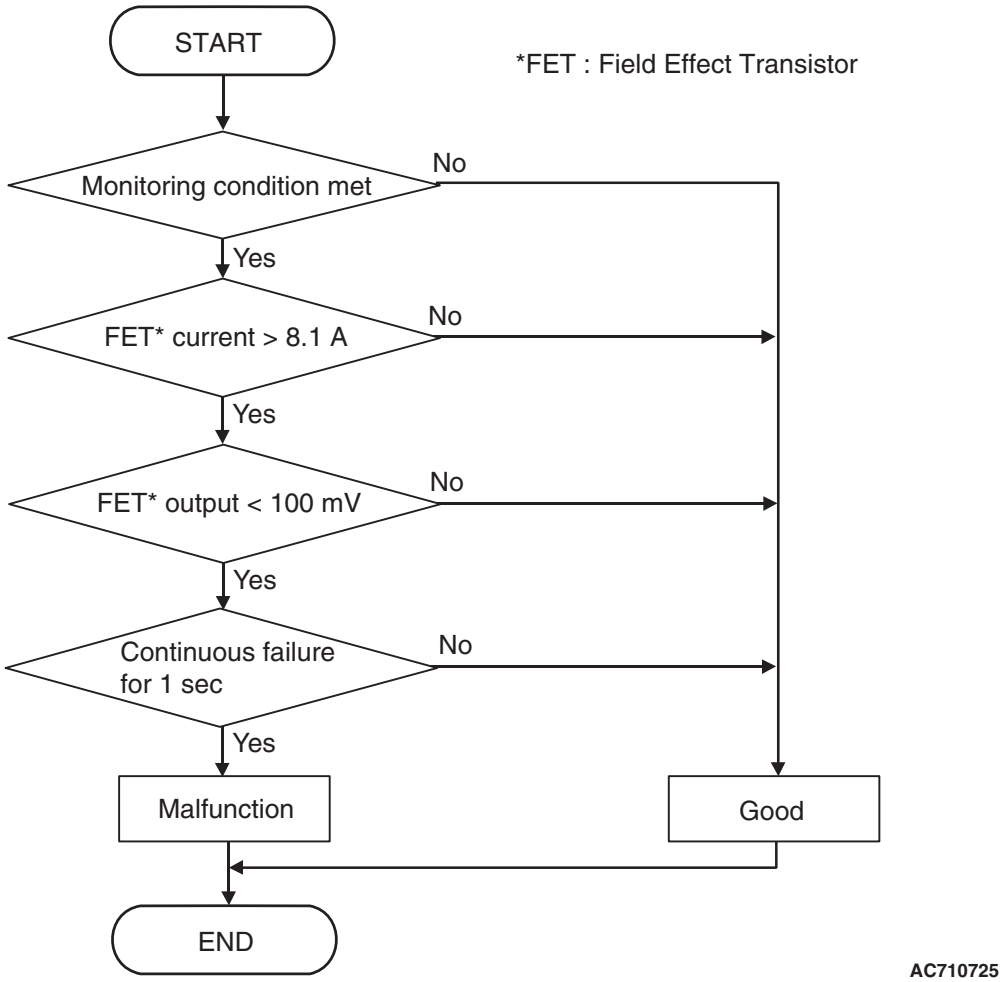
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0758: Shift select solenoid 2 system (Open circuit)
- P0976: Shift select solenoid 2 system (Short to ground)
- P0977: Shift select solenoid 2 system (Short to power supply)
- P0746: Line pressure solenoid system (Drive current range out)
- P0960: Line pressure solenoid system (Open circuit)
- P0961: Line pressure solenoid system (Overvoltage)
- P0962: Line pressure solenoid system (Short to ground)
- P0963: Line pressure solenoid system (Short to power supply)
- P0968: Shift/cooling switching solenoid system (Open circuit)
- P0970: Shift/cooling switching solenoid system (Short to ground)
- P0971: Shift/cooling switching solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)

- Shift select solenoid 2
- Line pressure solenoid
- Shift/cooling switching solenoid

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- High side 1 switch: ON.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) current: 8.1 A or more, and FET (Field Effect Transistor) output: 100 mV or less (1 second).

OBD-II DRIVE CYCLE PATTERN

The status with the current of the FET channel shunt 8.1 A or less and with the FET channel output 100 mV or more continues for 1 second.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P1862 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1863: High side 1 system (Open circuit)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the high side 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The high side 1 circuit is determined to be open.

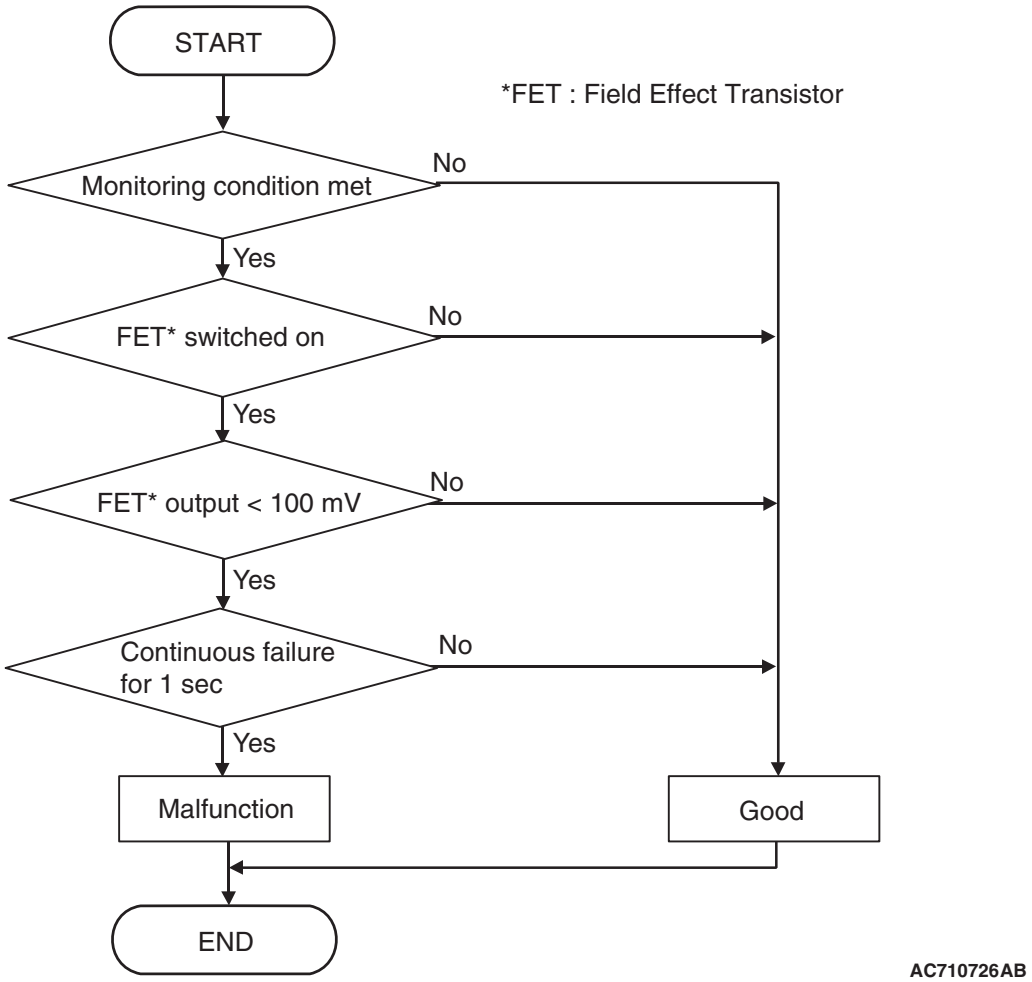
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0758: Shift select solenoid 2 system (Open circuit)
- P0976: Shift select solenoid 2 system (Short to ground)
- P0977: Shift select solenoid 2 system (Short to power supply)
- P0746: Line pressure solenoid system (Drive current range out)
- P0960: Line pressure solenoid system (Open circuit)
- P0961: Line pressure solenoid system (Overvoltage)
- P0962: Line pressure solenoid system (Short to ground)
- P0963: Line pressure solenoid system (Short to power supply)
- P0968: Shift/cooling switching solenoid system (Open circuit)
- P0970: Shift/cooling switching solenoid system (Short to ground)
- P0971: Shift/cooling switching solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)
- Shift select solenoid 2
- Line pressure solenoid
- Shift/cooling switching solenoid

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- High side 1 switch: ON.

JUDGMENT CRITERIA

- FET (Field Effect Transistor): Can't be switched on, and FET (Field Effect Transistor) output: 100 mV or less. (1 second)

OBD-II DRIVE CYCLE PATTERN

The status with the FET switch ON and with the FET channel output 100 mV or more continues for 1 second.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P1863 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1864: High side 1 system (Short to power supply)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the high side 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The high side 1 circuit is determined to be short to power supply.

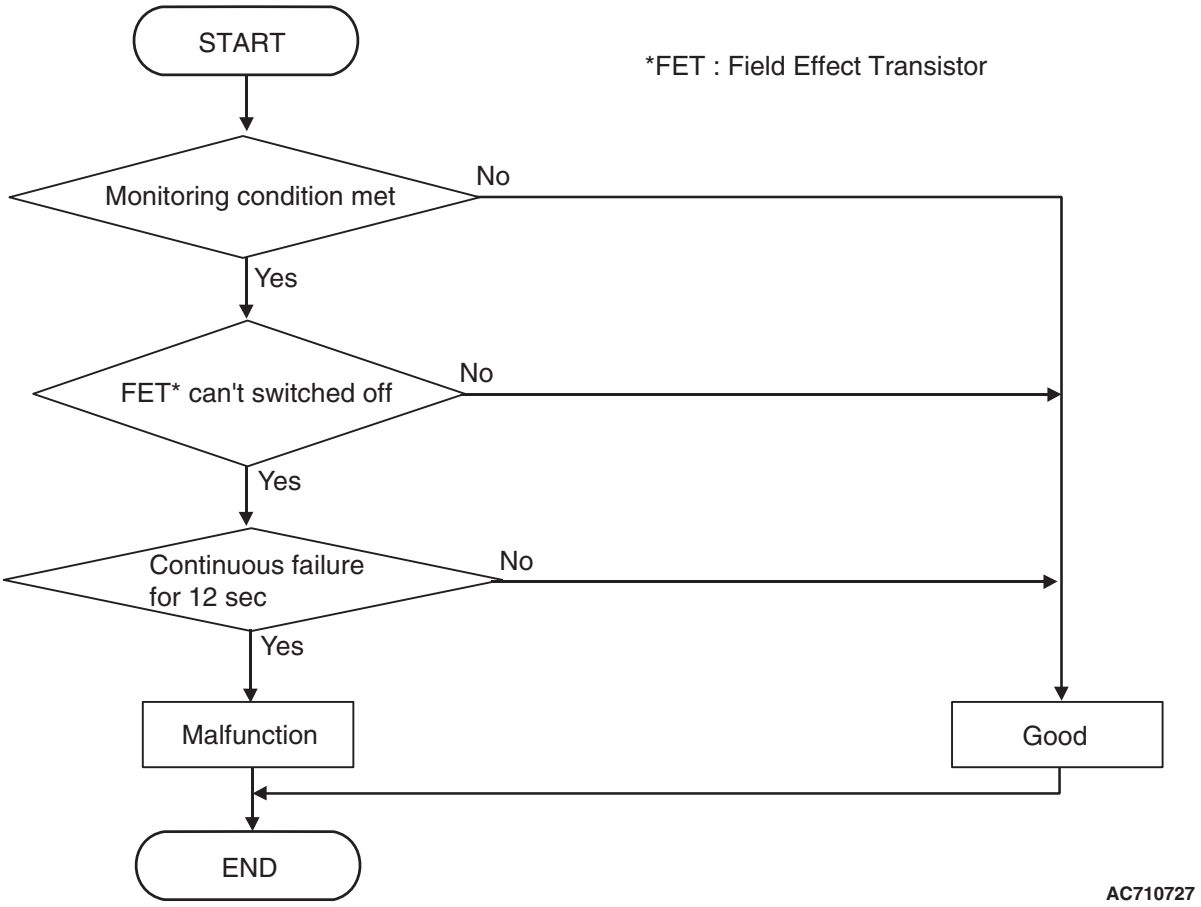
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0758: Shift select solenoid 2 system (Open circuit)
- P0976: Shift select solenoid 2 system (Short to ground)
- P0977: Shift select solenoid 2 system (Short to power supply)
- P0746: Line pressure solenoid system (Drive current range out)
- P0960: Line pressure solenoid system (Open circuit)
- P0961: Line pressure solenoid system (Overvoltage)
- P0962: Line pressure solenoid system (Short to ground)
- P0963: Line pressure solenoid system (Short to power supply)
- P0968: Shift/cooling switching solenoid system (Open circuit)
- P0970: Shift/cooling switching solenoid system (Short to ground)
- P0971: Shift/cooling switching solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)
- Shift select solenoid 2
- Line pressure solenoid
- Shift/cooling switching solenoid

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- High side 1 switch: OFF.

JUDGMENT CRITERIA

- FET (Field Effect Transistor): Can’t be switched off. (12 seconds)

OBD-II DRIVE CYCLE PATTERN

The FET switch remains OFF for 12 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 15 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P1864 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1866: High side 2 system (Overcurrent)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the high side 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The supply current to the high side 2 is determined to be overcurrent.

MONITOR EXECUTION
- Continuous

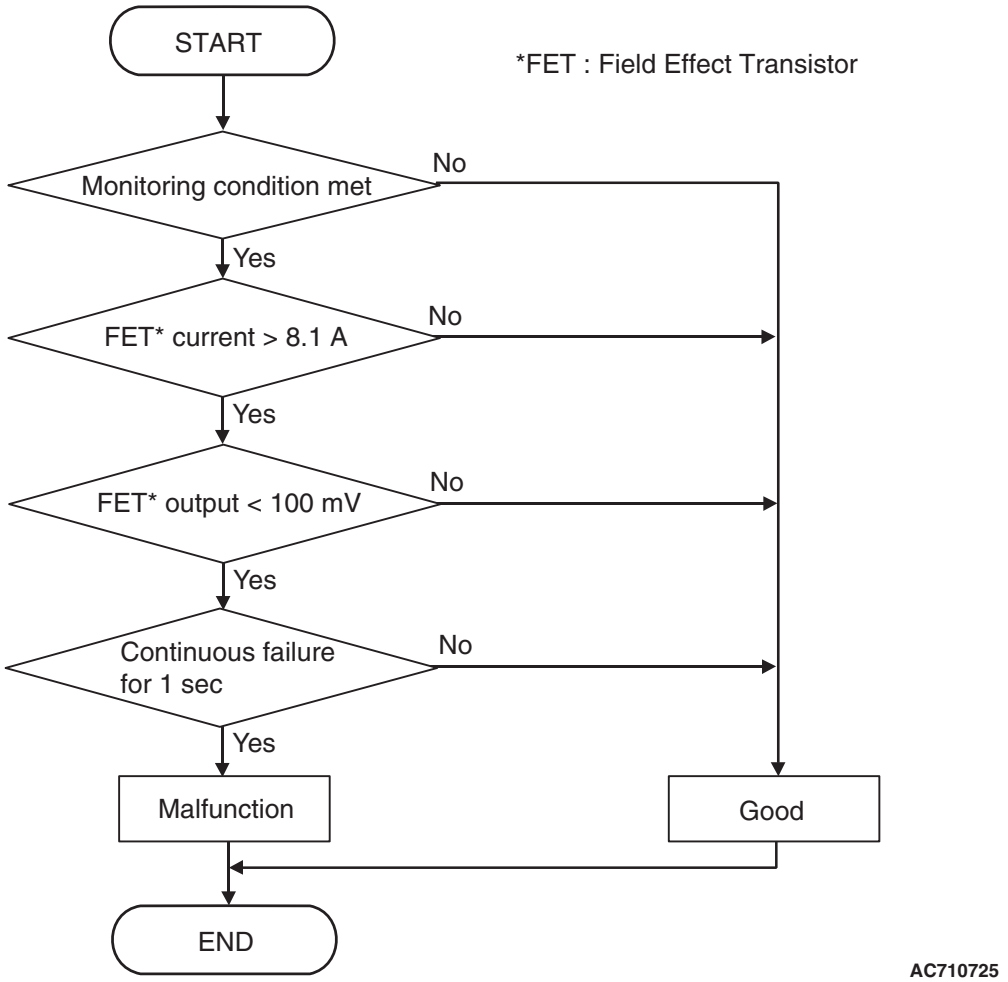
MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0776: Clutch cooling flow solenoid system (Drive current range out)
- P0777: Clutch cooling flow solenoid system (Stuck)
- P0964: Clutch cooling flow solenoid system (Open circuit)
- P0965: Clutch cooling flow solenoid system (Overvoltage)
- P0966: Clutch cooling flow solenoid system (Short to ground)
- P0967: Clutch cooling flow solenoid system (Short to power supply)
- P2718: Clutch/shift pressure solenoid 1 system (Open circuit)
- P2719: Clutch/shift pressure solenoid 1 system (Overcurrent)
- P2720: Clutch/shift pressure solenoid 1 system (Short to ground)
- P2721: Clutch/shift pressure solenoid 1 system (Short to power supply)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)
- Clutch cooling flow solenoid
- Clutch/shift pressure solenoid 1
- Clutch/shift switching solenoid 1

TSB Revision

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- High side 2 switch: ON.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) current: 8.1 A or more, and FET (Field Effect Transistor) output: 100 mV or less. (1 second)

OBD-II DRIVE CYCLE PATTERN

The status with the current of the FET channel shunt 8.1 A or less and with the FET channel output 100 mV or more continues for 1 second.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P1866 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1867: High side 2 system (Open circuit)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the high side 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The high side 2 circuit is determined to be open.

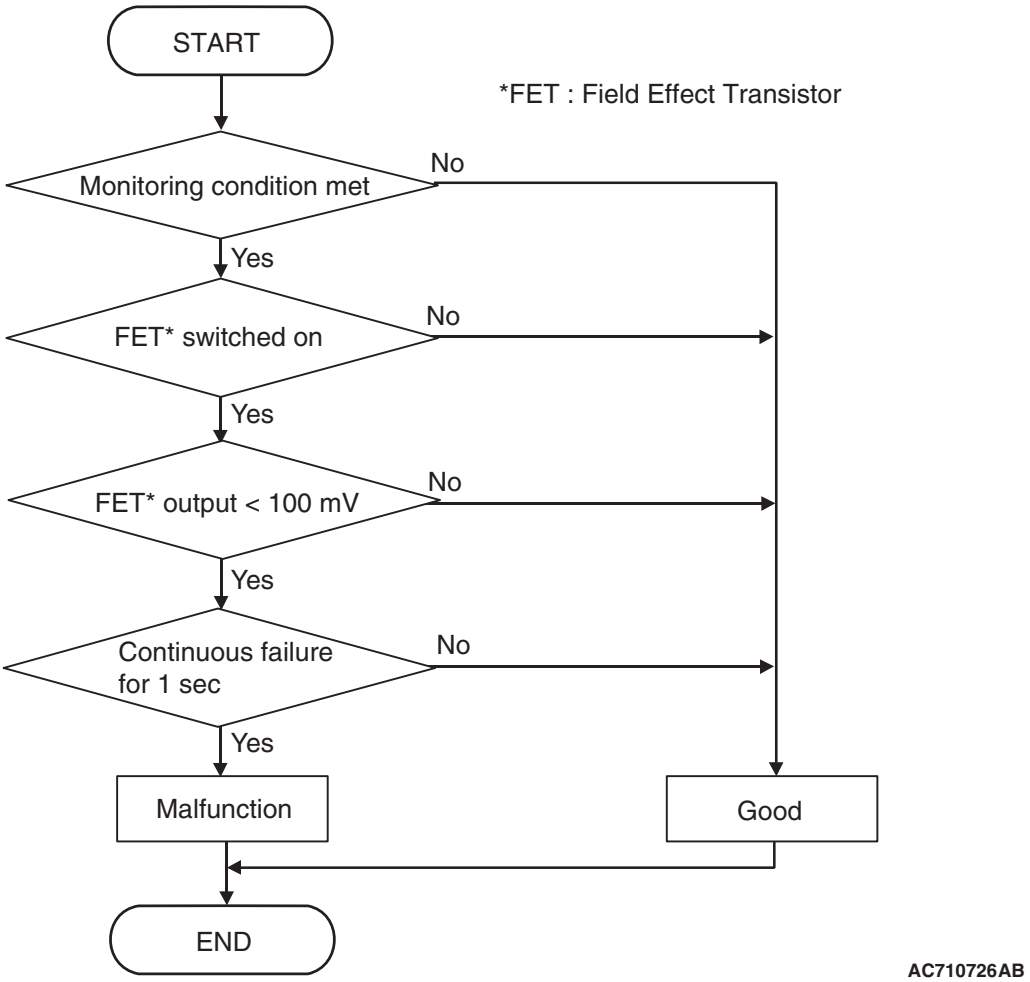
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0776: Clutch cooling flow solenoid system (Drive current range out)
- P0777: Clutch cooling flow solenoid system (Stuck)
- P0964: Clutch cooling flow solenoid system (Open circuit)
- P0965: Clutch cooling flow solenoid system (Overvoltage)
- P0966: Clutch cooling flow solenoid system (Short to ground)
- P0967: Clutch cooling flow solenoid system (Short to power supply)
- P2718: Clutch/shift pressure solenoid 1 system (Open circuit)
- P2719: Clutch/shift pressure solenoid 1 system (Overcurrent)
- P2720: Clutch/shift pressure solenoid 1 system (Short to ground)
- P2721: Clutch/shift pressure solenoid 1 system (Short to power supply)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)
- Clutch cooling flow solenoid
- Clutch/shift pressure solenoid 1
- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- High side 2 switch: ON.

JUDGMENT CRITERIA

- FET (Field Effect Transistor): Can't be switched on, and FET (Field Effect Transistor) output: 100 mV or less. (1 second)

OBD-II DRIVE CYCLE PATTERN

The status with the FET switch ON and with the FET channel output 100 mV or more continues for 1 second.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P1867 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1868: High side 2 system (Short to power supply)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the high side 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The high side 2 circuit is determined to be short to power supply.

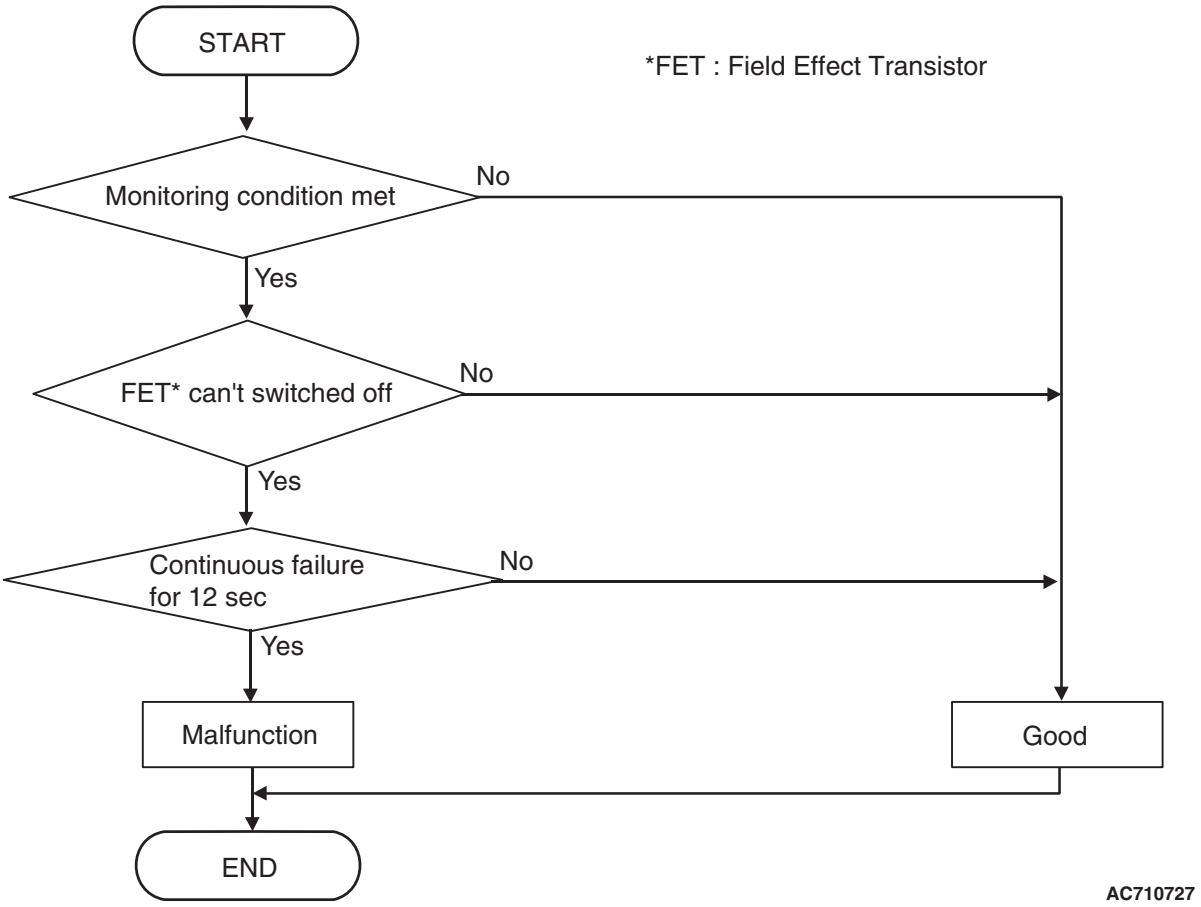
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0776: Clutch cooling flow solenoid system (Drive current range out)
- P0777: Clutch cooling flow solenoid system (Stuck)
- P0964: Clutch cooling flow solenoid system (Open circuit)
- P0965: Clutch cooling flow solenoid system (Overvoltage)
- P0966: Clutch cooling flow solenoid system (Short to ground)
- P0967: Clutch cooling flow solenoid system (Short to power supply)
- P2718: Clutch/shift pressure solenoid 1 system (Open circuit)
- P2719: Clutch/shift pressure solenoid 1 system (Overcurrent)
- P2720: Clutch/shift pressure solenoid 1 system (Short to ground)
- P2721: Clutch/shift pressure solenoid 1 system (Short to power supply)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)
- Clutch cooling flow solenoid
- Clutch/shift pressure solenoid 1
- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- High side 2 switch: OFF.

JUDGMENT CRITERIA

- FET (Field Effect Transistor): Can’t be switched off. (12 seconds)

OBD-II DRIVE CYCLE PATTERN

The FET switch remains OFF for 12 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 15 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P1868 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P186A: High side 3 system (Overcurrent)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the high side 3 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The supply current to the high side 3 is determined to be overcurrent.

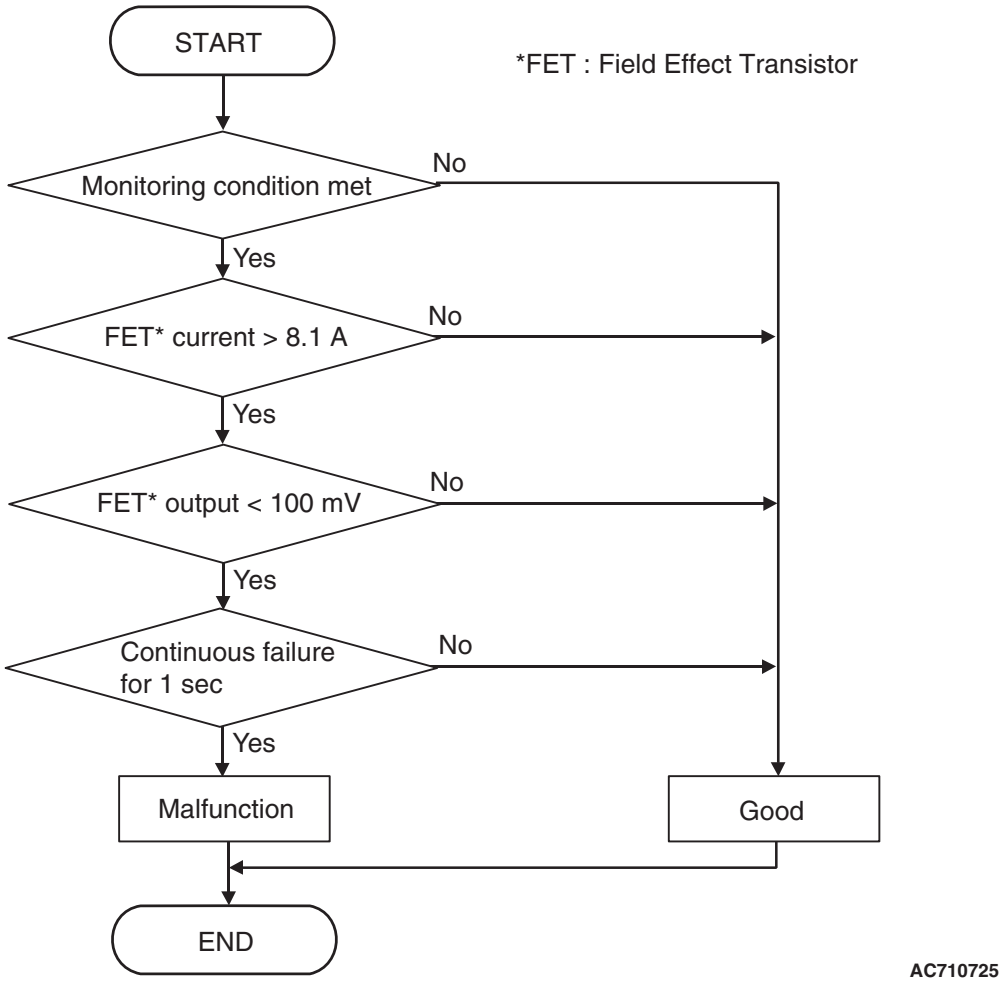
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- P2727: Clutch/shift pressure solenoid 2 system (Open circuit)
- P2728: Clutch/shift pressure solenoid 2 system (Overcurrent)
- P2729: Clutch/shift pressure solenoid 2 system (Short to ground)
- P2730: Clutch/shift pressure solenoid 2 system (Short to power supply)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)
- Shift select solenoid 1
- Clutch/shift pressure solenoid 2
- Clutch/shift switching solenoid 2

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- High side 3 switch: ON.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) current: 8.1 A or more, and FET (Field Effect Transistor) output: 100 mV or less. (1 second)

OBD-II DRIVE CYCLE PATTERN

The status with the current of the FET channel shunt 8.1 A or less and with the FET channel output 100 mV or more continues for 1 second.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 5 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P186A set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P186B: High side 3 system (Open circuit)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the high side 3 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The high side 3 circuit is determined to be open.

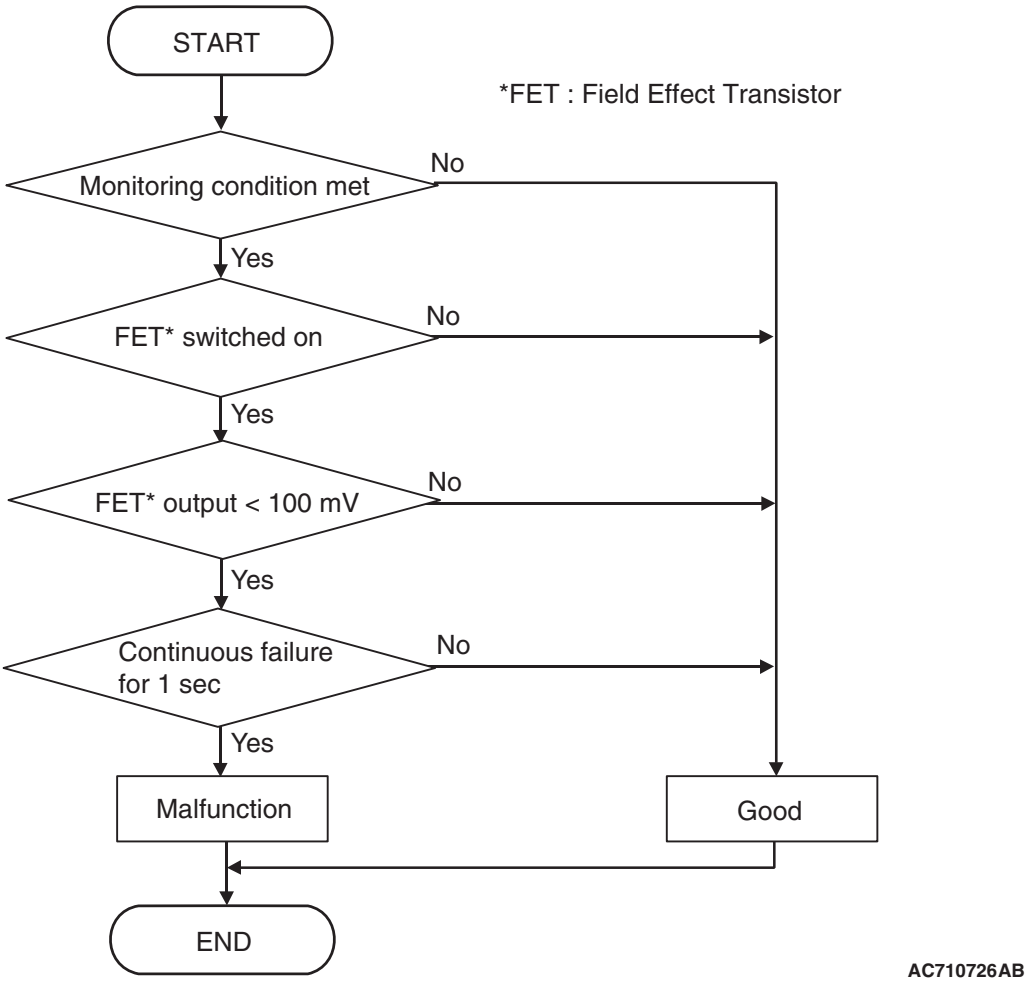
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- P2727: Clutch/shift pressure solenoid 2 system (Open circuit)
- P2728: Clutch/shift pressure solenoid 2 system (Overcurrent)
- P2729: Clutch/shift pressure solenoid 2 system (Short to ground)
- P2730: Clutch/shift pressure solenoid 2 system (Short to power supply)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)
- Shift select solenoid 1
- Clutch/shift pressure solenoid 2
- Clutch/shift switching solenoid 2

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- High side 3 switch: ON.

JUDGMENT CRITERIA

- FET (Field Effect Transistor): Can't be switched on, and FET (Field Effect Transistor) output: 100 mV or less. (1 second)

OBD-II DRIVE CYCLE PATTERN

The status with the FET switch ON and with the FET channel output 100 mV or more continues for 1 second.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P186B set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P186C: High side 3 system (Short to power supply)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the high side 3 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The high side 3 circuit is determined to be short to power supply.

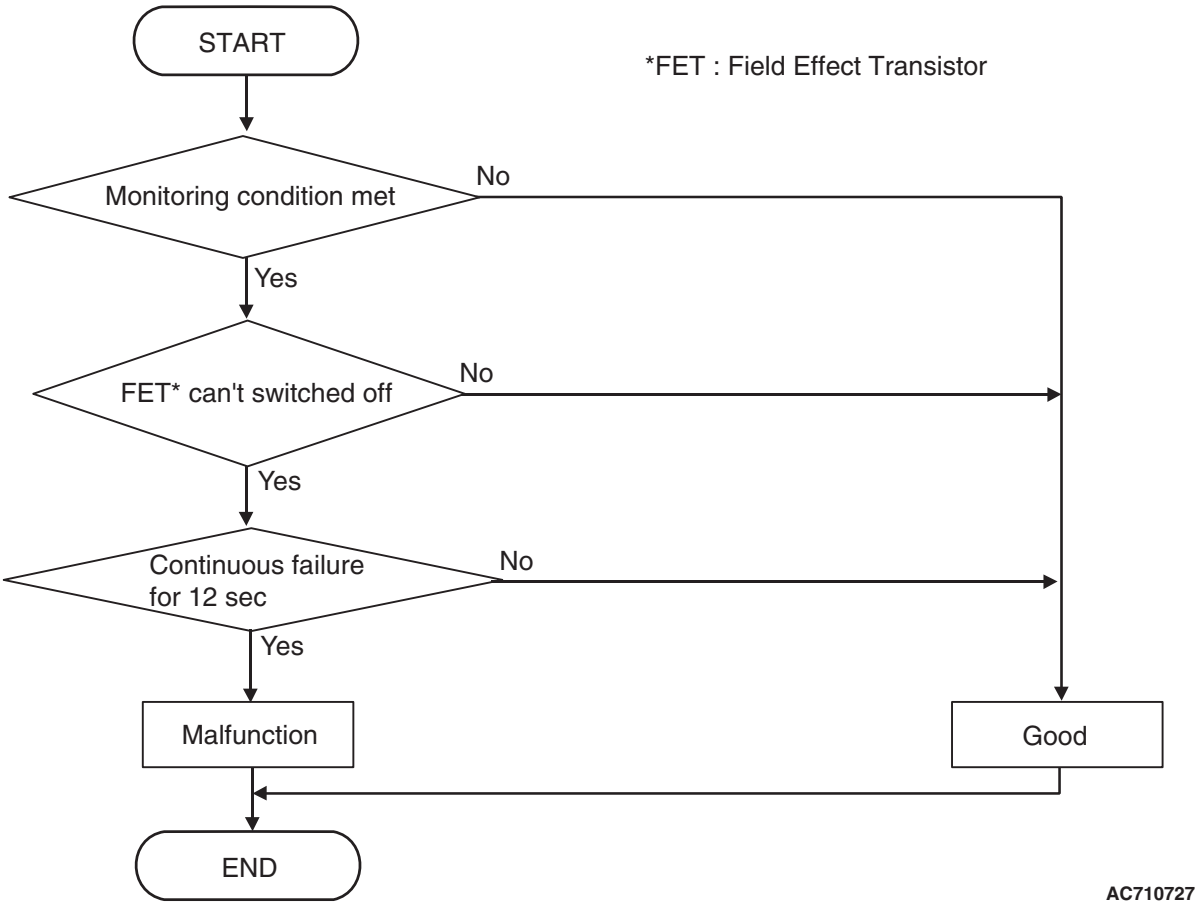
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- P2727: Clutch/shift pressure solenoid 2 system (Open circuit)
- P2728: Clutch/shift pressure solenoid 2 system (Overcurrent)
- P2729: Clutch/shift pressure solenoid 2 system (Short to ground)
- P2730: Clutch/shift pressure solenoid 2 system (Short to power supply)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)
- Shift select solenoid 1
- Clutch/shift pressure solenoid 2
- Clutch/shift switching solenoid 2

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- High side 3 switch: OFF.

JUDGMENT CRITERIA

- FET (Field Effect Transistor): Can’t be switched off. (12 seconds)

OBD-II DRIVE CYCLE PATTERN

The FET switch remains OFF for 12 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 15 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P186C set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P186D: High side 1 system (Voltage low range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the high side 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The voltage of the high side 1 circuit is determined to be too low.

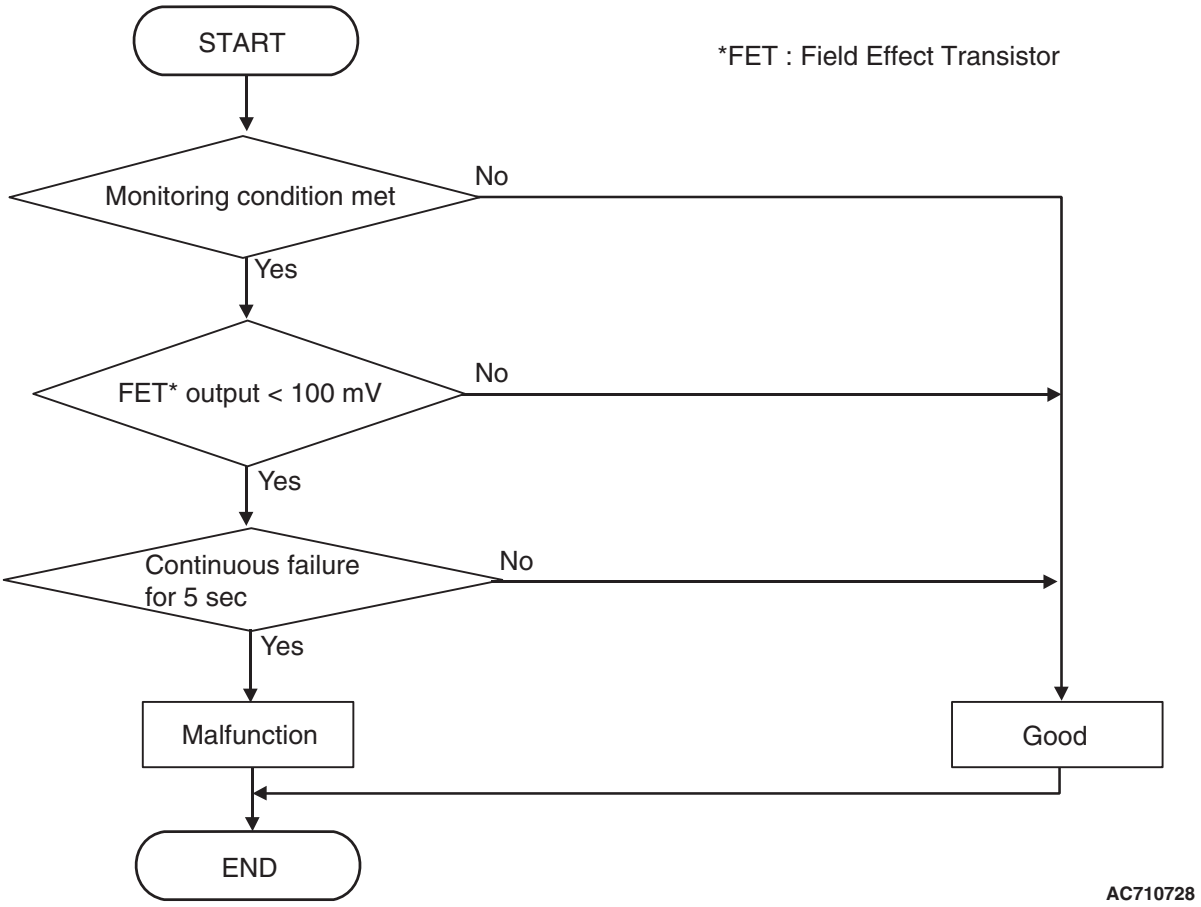
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0758: Shift select solenoid 2 system (Open circuit)
- P0976: Shift select solenoid 2 system (Short to ground)
- P0977: Shift select solenoid 2 system (Short to power supply)
- P0746: Line pressure solenoid system (Drive current range out)
- P0960: Line pressure solenoid system (Open circuit)
- P0961: Line pressure solenoid system (Overvoltage)
- P0962: Line pressure solenoid system (Short to ground)
- P0963: Line pressure solenoid system (Short to power supply)
- P0968: Shift/cooling switching solenoid system (Open circuit)
- P0970: Shift/cooling switching solenoid system (Short to ground)
- P0971: Shift/cooling switching solenoid system (Short to power supply)

Sensor (The sensor below is determined to be normal)
- Shift select solenoid 2
- Line pressure solenoid
- Shift/cooling switching solenoid

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- FET (Field Effect Transistor) of high side 1: Switched off.

JUDGMENT CRITERIA

- FET output: 100 mV or less. (5 seconds)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 5 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of power supply circuit (open circuit)

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check the TC-SST-ECU power supply circuit
Refer to P.22C-369.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-369.) After repairing the power supply circuit, go to Step 3.

STEP 3. Check whether the DTC is reset.
After 10 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P186D set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P186E: High side 2 system (Voltage low range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the high side 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The voltage of the high side 2 circuit is determined to be too low.

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)
- P0776: Clutch cooling flow solenoid system (Drive current range out)
- P0777: Clutch cooling flow solenoid system (Stuck)
- P0964: Clutch cooling flow solenoid system (Open circuit)
- P0965: Clutch cooling flow solenoid system (Overvoltage)
- P0966: Clutch cooling flow solenoid system (Short to ground)
- P0967: Clutch cooling flow solenoid system (Short to power supply)
- P2718: Clutch/shift pressure solenoid 1 system (Open circuit)
- P2719: Clutch/shift pressure solenoid 1 system (Overcurrent)
- P2720: Clutch/shift pressure solenoid 1 system (Short to ground)

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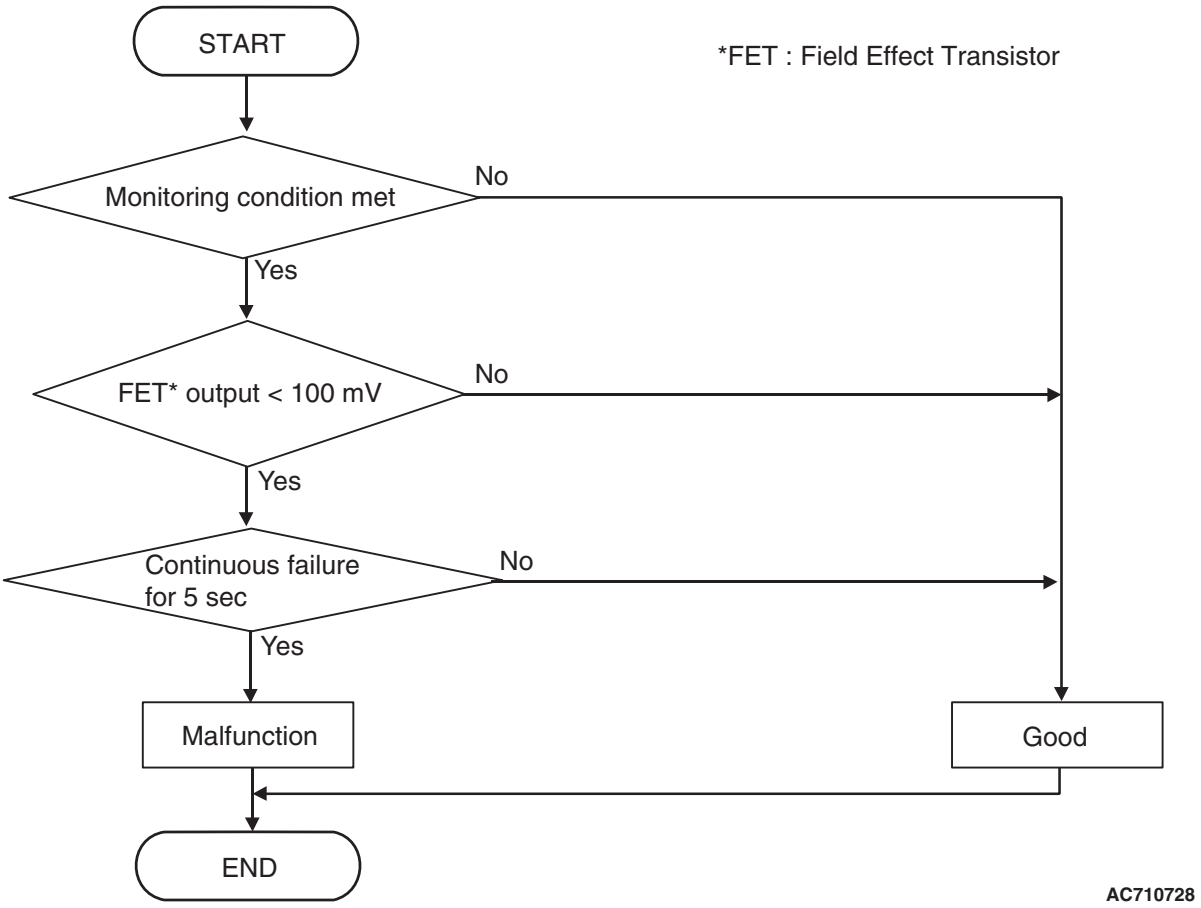
- P2721: Clutch/shift pressure solenoid 1 system (Short to power supply)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)
- Clutch cooling flow solenoid
- Clutch/shift pressure solenoid 1
- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions
- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- FET (Field Effect Transistor) of high side 2: Switched off.

JUDGMENT CRITERIA
- FET output: 100 mV or less. (5 seconds)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 5 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of power supply circuit (open circuit)

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check the TC-SST-ECU power supply circuit
Refer to P.22C-369.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-369.) After repairing the power supply circuit, go to Step 3.

STEP 3. Check whether the DTC is reset.
After 10 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P186E set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P186F: High side 3 system (Voltage low range out)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the high side 3 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The voltage of the high side 3 circuit is determined to be too low.

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)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- P2727: Clutch/shift pressure solenoid 2 system (Open circuit)

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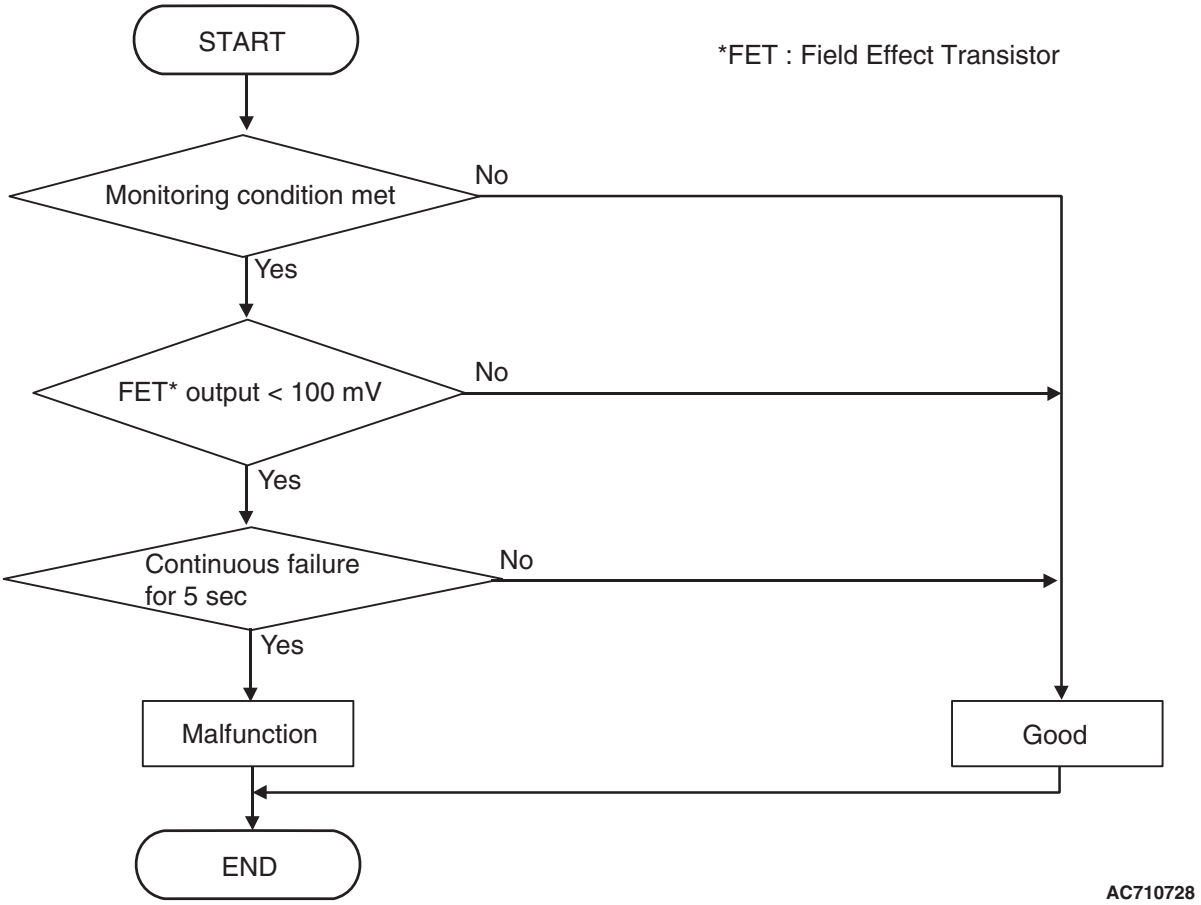
- P2728: Clutch/shift pressure solenoid 2 system (Overcurrent)
- P2729: Clutch/shift pressure solenoid 2 system (Short to ground)
- P2730: Clutch/shift pressure solenoid 2 system (Short to power supply)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)
- Shift select solenoid 1
- Clutch/shift pressure solenoid 2
- Clutch/shift switching solenoid 2

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions
- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- FET (Field Effect Transistor) of high side 3: Switched off.

JUDGMENT CRITERIA
- FET output: 100 mV or less. (5 seconds)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 5 seconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of power supply circuit (open circuit)

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check the TC-SST-ECU power supply circuit

Refer to P.22C-369.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-369.) After repairing the power supply circuit, go to Step 3.

STEP 3. Check whether the DTC is reset.

After 10 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P186F set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1870: Engine torque signal abnormality

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU receives the periodic communication data from the engine control module via the CAN bus lines, and checks the data for abnormality.

DESCRIPTIONS OF MONITOR METHODS

The engine torque signal from the engine control module is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

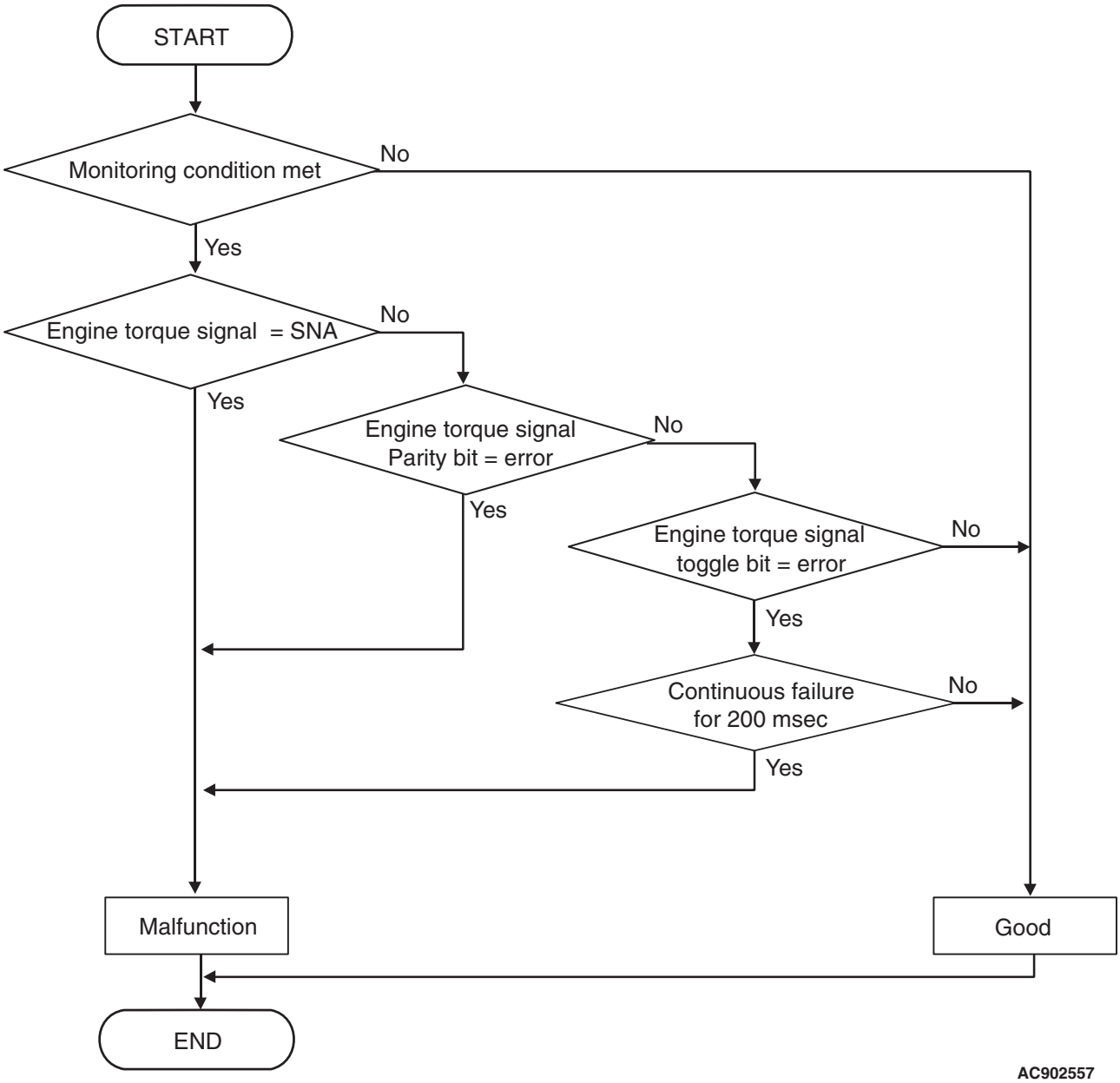
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P185D: Clutch open not possible
- U0001: Bus off
- U0100: Engine time-out error
- P1803: Shift lever system (CAN or LIN time-out error)
- P1871: APS system (Signal abnormality)
- P1872: Between shift lever and TC-SST system (Q-A function abnormality)

Sensor (The sensor below is determined to be normal)

- Clutch 1 pressure sensor
- Clutch 2 pressure sensor
- APS
- Shift lever-ECU

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Time after TC-SST-ECU start: 5 seconds or more.

JUDGMENT CRITERIA

- Engine torque signal: SNA, or parity/toggle error. (immediately)

OBD-II DRIVE CYCLE PATTERN

Receives the normal value of the engine torque signal, or the parity/toggle are normal.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of engine control module
- Malfunction of TC-SST-ECU

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DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code.

Check if the diagnostic trouble code is set to the system other than TC-SST.

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.

NO : Go to Step 3.

STEP 3. Scan tool diagnostic trouble code.

After 15 seconds with the engine idle status, check that the diagnostic trouble code for engine is set. (Refer to GROUP 13B – Troubleshooting P.13B-51.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.

NO : Go to Step 4.

STEP 4. Check whether the DTC is reset.

After 15 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No.P1870 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1871: APS system (Signal abnormality)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU receives the periodic communication data from the engine control module via the CAN bus lines, and checks the data for abnormality.

DESCRIPTIONS OF MONITOR METHODS

The APS signal from the engine control module is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

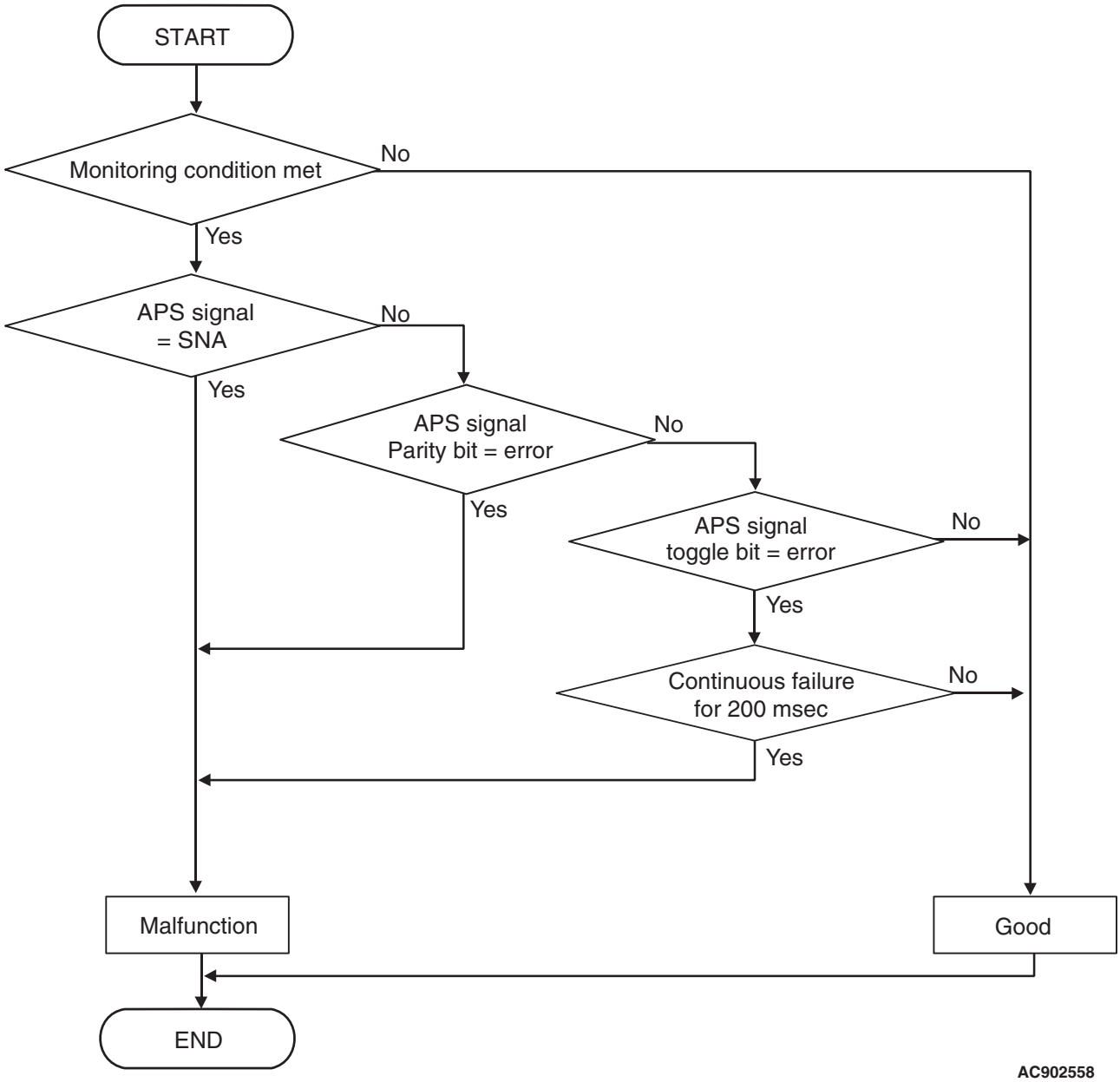
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P185D: Clutch open not possible
- U0001: Bus off
- U0100: Engine time-out error
- P1803: Shift lever system (CAN or LIN time-out error)
- P1870: Engine torque signal abnormality
- P1872: Between shift lever and TC-SST system (Q-A function abnormality)

Sensor (The sensor below is determined to be normal)

- Clutch 1 pressure sensor
- Clutch 2 pressure sensor
- APS
- Shift lever-ECU

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Time after TC-SST-ECU start: 5 seconds or more.

JUDGMENT CRITERIA

- APS signal: SNA, or parity/toggle error.

OBD-II DRIVE CYCLE PATTERN

Receives the normal value of the APS signal, or the parity/toggle are normal.

PROBABLE CAUSES

- The CAN bus line is defective.
- APS malfunction
- Malfunction of engine control module
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code.

Check if the diagnostic trouble code is set to the system other than TC-SST.

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.

NO : Go to Step 3.

STEP 3. Scan tool diagnostic trouble code.

After 15 seconds with the engine idle status, check that the diagnostic trouble code for engine is set. (Refer to GROUP 13B – Troubleshooting P.13B-51.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.

NO : Go to Step 4.

STEP 4. Check whether the DTC is reset.

After 15 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No.P1871 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1872: Between shift lever and TC-SST system (Q-A function abnormality)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the shift lever-ECU is normal.

DESCRIPTIONS OF MONITOR METHODS

The shift lever-ECU is determined to be abnormal.

PROBABLE CAUSES

- Malfunction of the shift lever-ECU
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code

Check the shift lever diagnostic trouble code. (Refer to P.22C-397.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.

NO : Go to Step 3.

STEP 3. Replace the shift lever assembly, and check if the diagnostic trouble code is reset.

(1) Replace the shift lever assembly. (Refer to P.22C-517.)
(2) Check the DTC.

Q: Is DTC No. P1872 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1873: Clutch 1 System (Pressure abnormality)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch 1 pressure is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch 1 pressure is determined to be abnormal.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch assembly
- Malfunction of engine system

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code.

Check the engine diagnostic trouble code. (Refer to GROUP 13B – Troubleshooting P.13B-51.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.

NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.

After 30 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No.P1873 set?

YES : Replace the clutch assembly. (Refer to GROUP 22D –transaxle P.22D-7.) After replacing the clutch assembly, go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Check whether the DTC is reset.
After 30 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No.P1873 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1874: Clutch 2 System (Pressure abnormality)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the clutch 2 pressure is normal.

DESCRIPTIONS OF MONITOR METHODS
The clutch 2 pressure is determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of clutch assembly
- Malfunction of engine system

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code.
Check the engine diagnostic trouble code. (Refer to GROUP 13B – Troubleshooting P.13B-51.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.
After 30 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No.P1874 set?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.) After replacing the clutch assembly, go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Check whether the DTC is reset.
After 30 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No.P1874 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1875: Damper Speed Sensor System (Poor performance)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the damper (closer to the engine than input shaft) is normal.

DESCRIPTIONS OF MONITOR METHODS

The damper speed sensor is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

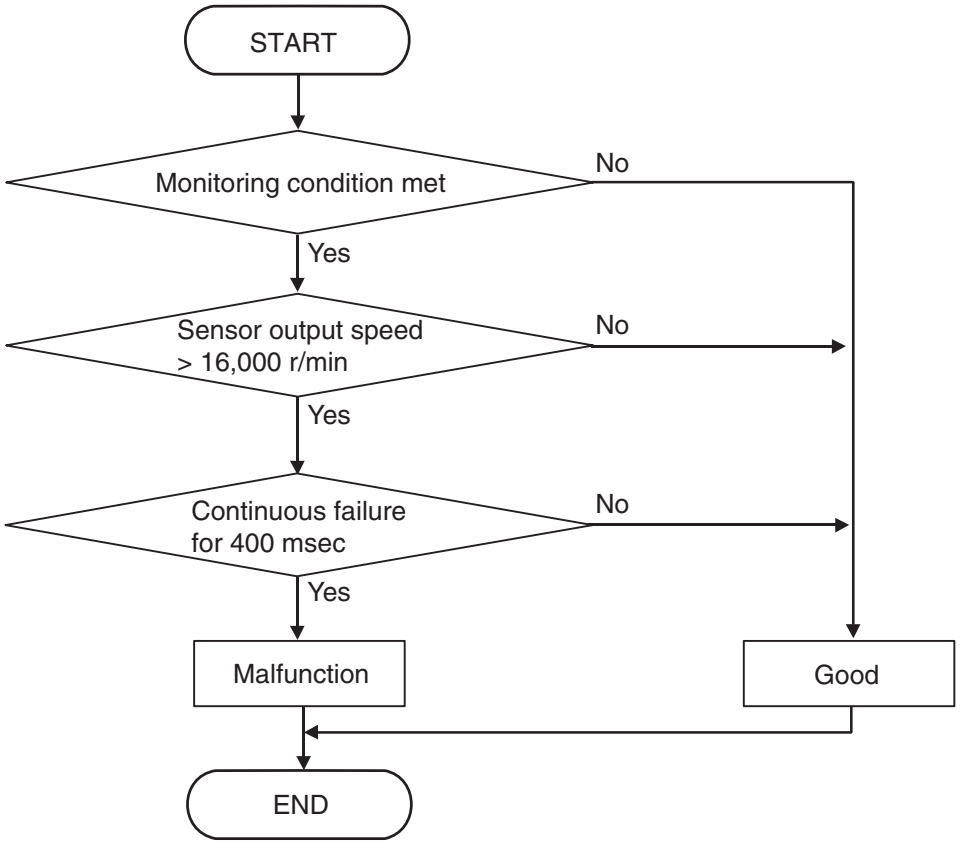
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0715: Input shaft 1 (odd number gear axle) speed sensor system (Output high range out)
- P0716: Input shaft 1 (odd number gear axle) speed sensor system (Poor performance)
- P0717: Input shaft 1 (odd number gear axle) speed sensor system (Output low range out)
- P2766: Input shaft 2 (even number gear axle) speed sensor system (Poor performance)

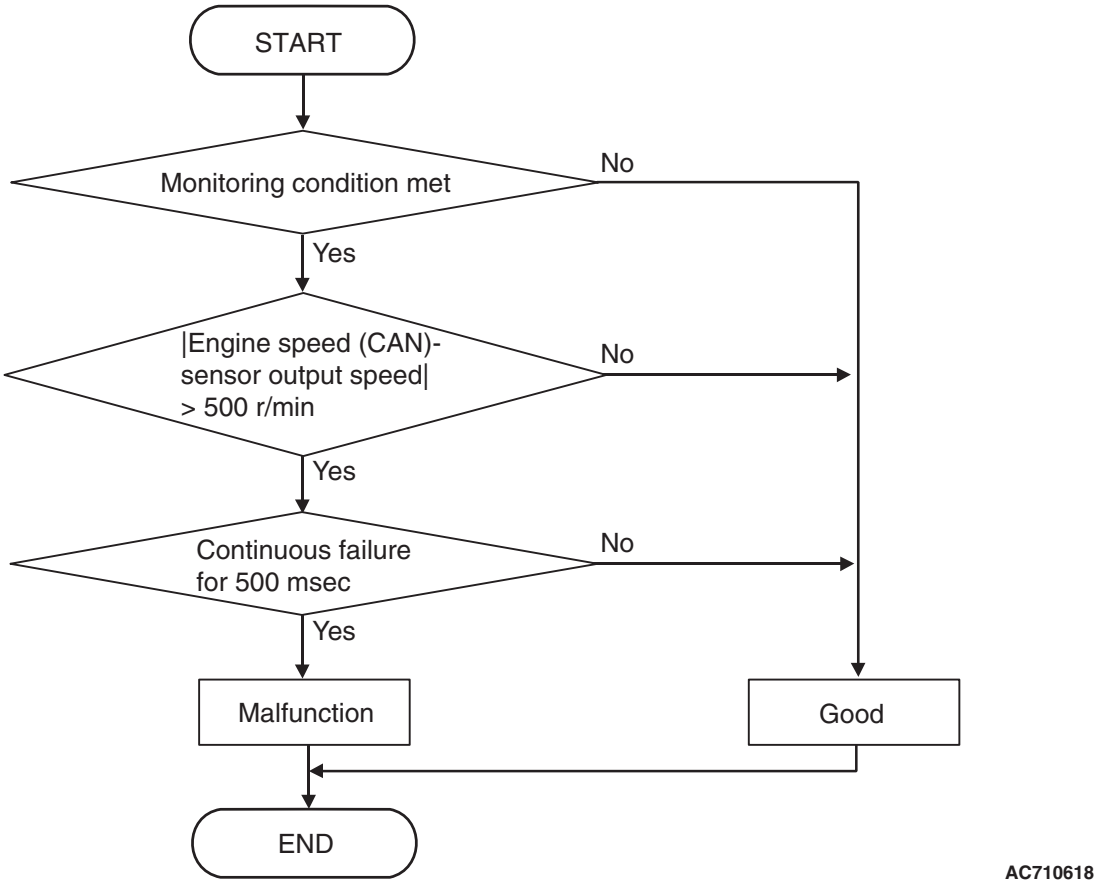
Sensor (The sensor below is determined to be normal)

- Input shaft 1 (odd number gear axle) speed sensor
- Input shaft 2 (even number gear axle) speed sensor

LOGIC FLOW CHARTS (Monitor Sequence)



LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds.

JUDGMENT CRITERIA

- Sensor output speed: 16,000 r/min or more. (400 millisecond)
- The absolute value of the "Engine speed via CAN" – "Sensor output speed" remains 500 r/min or more. (500 millisecond)

OBD-II DRIVE CYCLE PATTERN

- The output of the sensor remains 16,000 r/min or less for 400 millisecond.
- The absolute value of the "Engine speed via CAN" – "Sensor output speed" remains 500 r/min or less for 500 millisecond.

PROBABLE CAUSES

- Malfunction of damper speed sensor
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
With the vehicle stopped, hold a specific accelerator pedal angle for 20 seconds, and check that the DTC is reset.

Q: Is DTC No.P1875 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1876: Gear Block 1st

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the gear engagement is normal.

DESCRIPTIONS OF MONITOR METHODS

The engagement of the 1st gear is determined to be impossible.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.
(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 5 seconds or more.)
(3) Check that the DTC is reset.

Q: Is DTC No.P1876 set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 4
"No" : DTC No. P181B: Carry out the troubleshooting for the DTC No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22C-129.)

STEP 4. Replace the clutch assembly, and check if the DTC is reset.

(1) Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)
(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 5 seconds or more.)
(3) Check the DTC.

Q: Is DTC No.P1876 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1877: Gear Block 2nd

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the gear engagement is normal.

DESCRIPTIONS OF MONITOR METHODS

The engagement of the 2nd gear is determined to be impossible.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

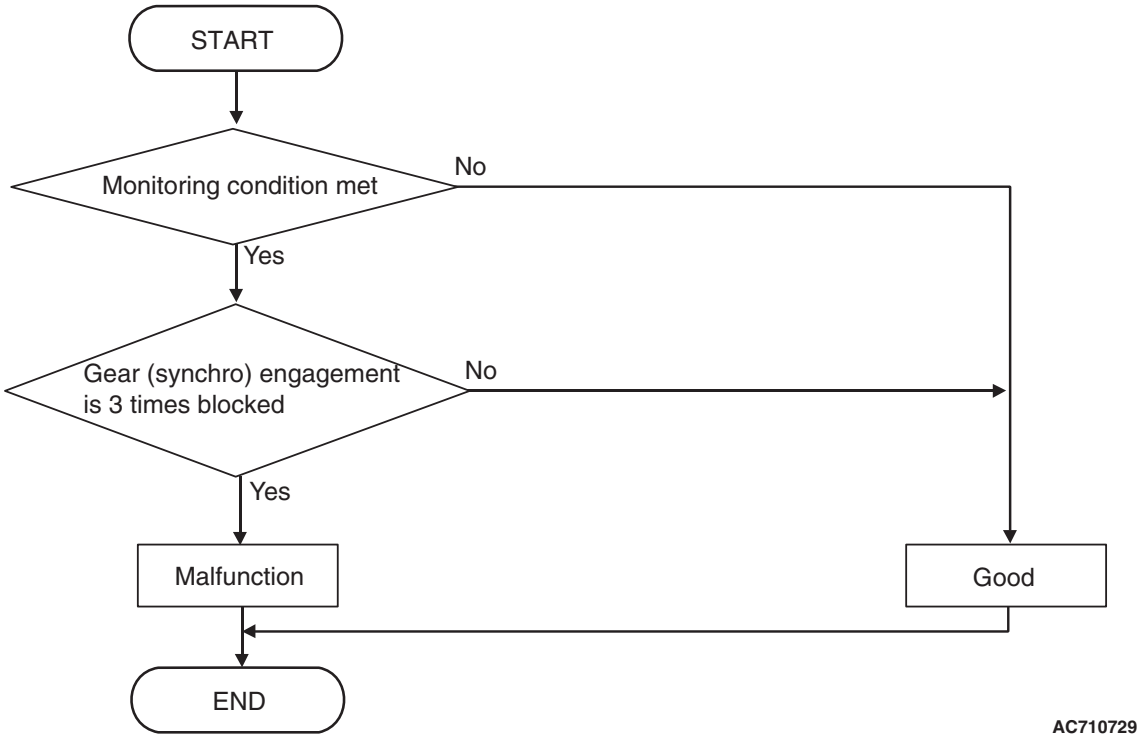
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Target gear: 2nd gear.

JUDGMENT CRITERIA

- Gear (synchro) engagement: 3 times blocked. (immediately)

OBD-II DRIVE CYCLE PATTERN

The 2nd gear is engaged.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

TSB Revision

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Drive with shifted in the 2nd gear.
(3) Check that the DTC is reset.

Q: Is DTC No.P1877 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 4

"No" : DTC No. P181B: Carry out the troubleshooting for the DTC No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22C-129.)

STEP 4. Replace the clutch assembly, and check if the DTC is reset.

(1) Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)
(2) Drive with shifted in the 2nd gear.
(3) Check the DTC.

Q: Is DTC No.P1877 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

TSB Revision

DTC P1878: Gear Block 3rd

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the gear engagement is normal.

DESCRIPTIONS OF MONITOR METHODS

The engagement of the 3rd gear is determined to be impossible.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

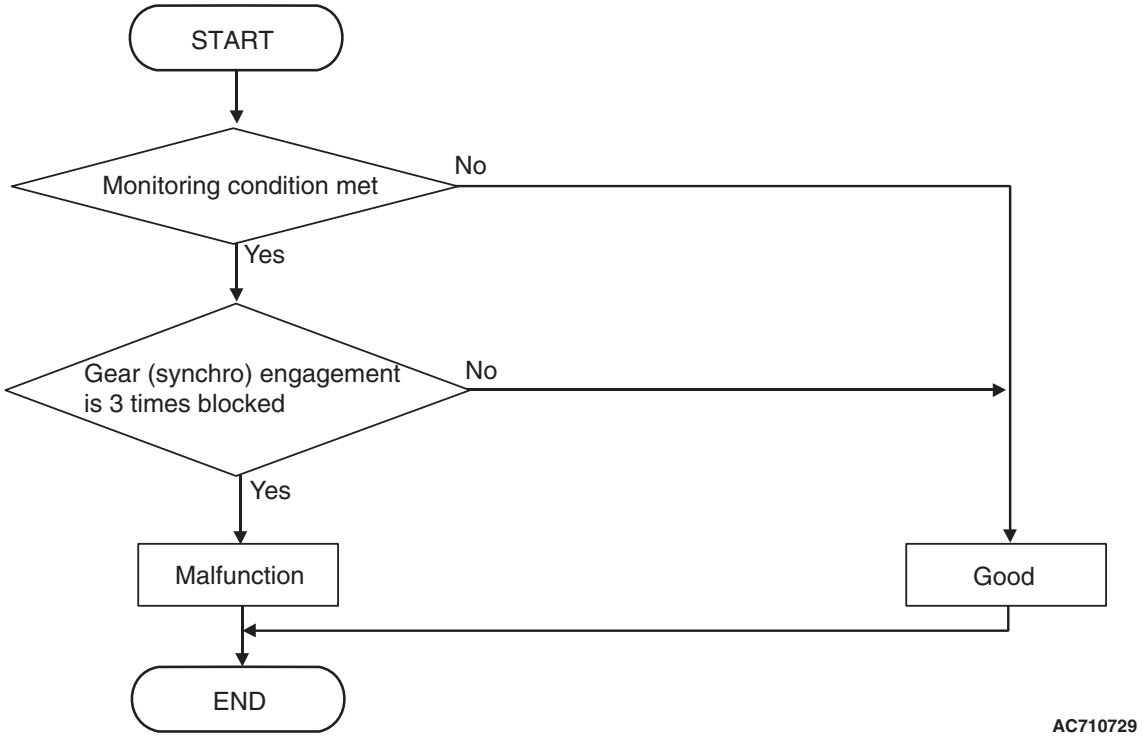
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Target gear: 3rd gear.

JUDGMENT CRITERIA

- Gear (synchro) engagement: 3 times blocked. (immediately)

OBD-II DRIVE CYCLE PATTERN

The 3rd gear is engaged.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

TSB Revision

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Drive with shifted in the 3rd gear.
(3) Check that the DTC is reset.

Q: Is DTC No.P1878 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 4

"No" : DTC No. P181B: Carry out the troubleshooting for the DTC No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22C-129.)

STEP 4. Replace the clutch assembly, and check if the DTC is reset.

(1) Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)
(2) Drive with shifted in the 3rd gear.
(3) Check the DTC.

Q: Is DTC No.P1878 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

DTC P1879: Gear Block 4th

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the gear engagement is normal.

DESCRIPTIONS OF MONITOR METHODS

The engagement of the 4th gear is determined to be impossible.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

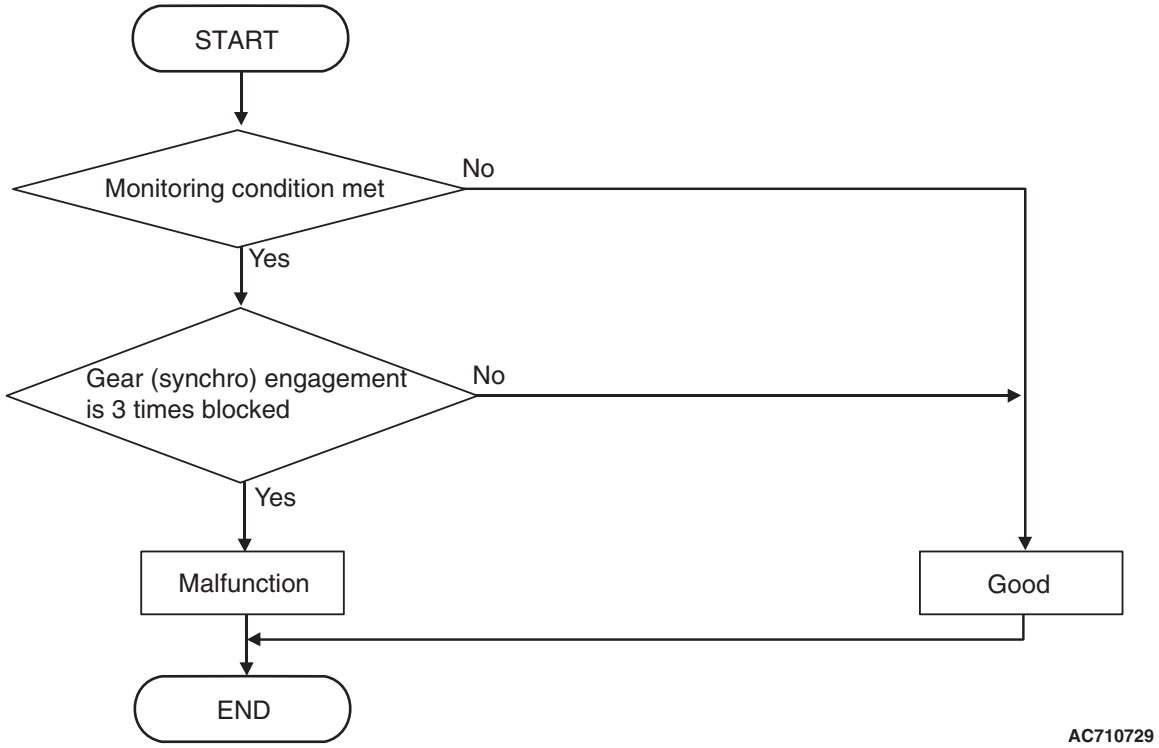
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Target gear: 4th gear.

JUDGMENT CRITERIA

- Gear (synchro) engagement: 3 times blocked. (immediately)

OBD-II DRIVE CYCLE PATTERN

The 4th gear is engaged.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

TSB Revision

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Drive with shifted in the 4th gear.
(3) Check that the DTC is reset.

Q: Is DTC No.P1879 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 4

"No" : DTC No. P181B: Carry out the troubleshooting for the DTC No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22C-129.)

STEP 4. Replace the clutch assembly, and check if the DTC is reset.

(1) Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)
(2) Drive with shifted in the 4th gear.
(3) Check the DTC.

Q: Is DTC No.P1879 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

DTC P187A: Gear Block 5th

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the gear engagement is normal.

DESCRIPTIONS OF MONITOR METHODS

The engagement of the 5th gear is determined to be impossible.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

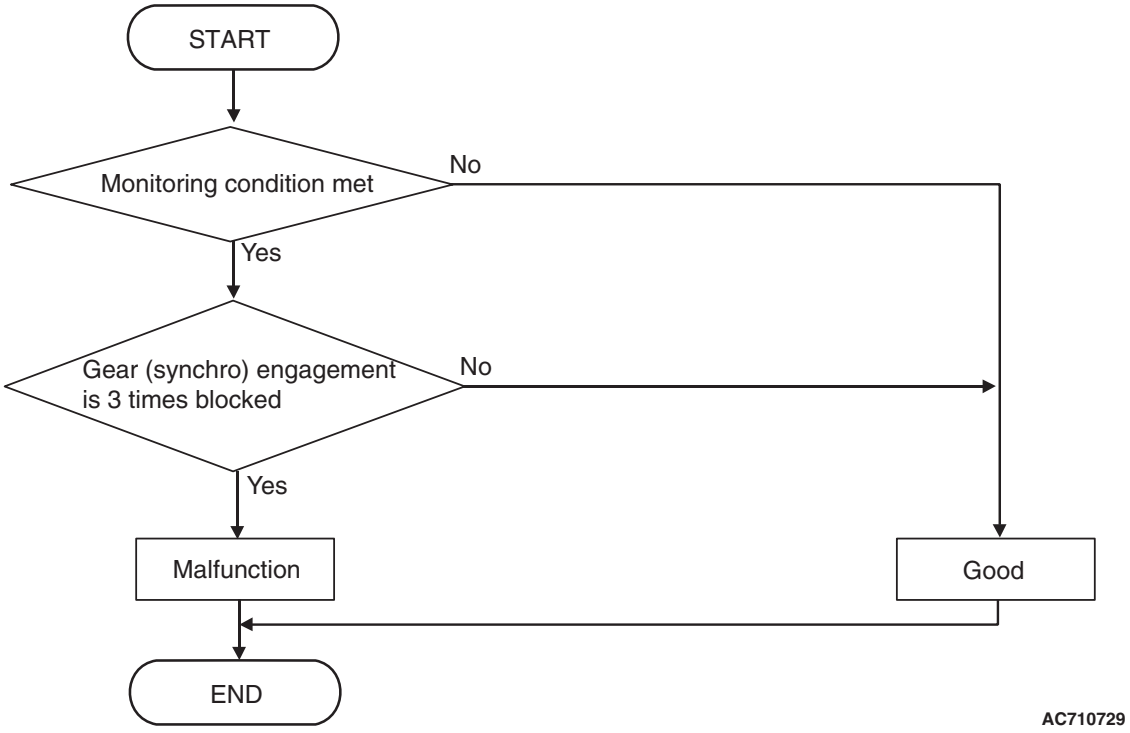
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Target gear: 5th gear.

JUDGMENT CRITERIA

- Gear (synchro) engagement: 3 times blocked. (immediately)

OBD-II DRIVE CYCLE PATTERN

The 5th gear is engaged.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

TSB Revision

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Drive with shifted in the 5th gear.
(3) Check that the DTC is reset.

Q: Is DTC No.P187A set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 4

"No" : DTC No. P181B: Carry out the troubleshooting for the DTC No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22C-129.)

STEP 4. Replace the clutch assembly, and check if the DTC is reset.

(1) Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)
(2) Drive with shifted in the 5th gear.
(3) Check the DTC.

Q: Is DTC No.P187A set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

DTC P187B: Gear Block 6th

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the gear engagement is normal.

DESCRIPTIONS OF MONITOR METHODS

The engagement of the 6th gear is determined to be impossible.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

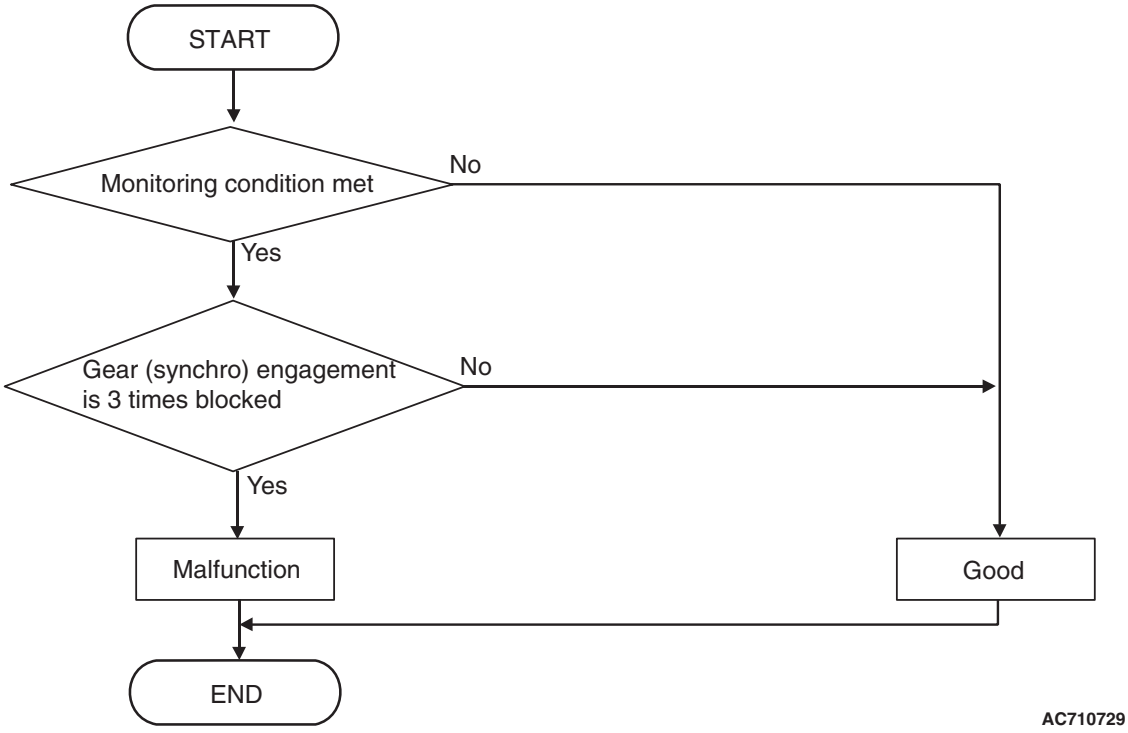
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Target gear: 6th gear.

JUDGMENT CRITERIA

- Gear (synchro) engagement: 3 times blocked. (immediately)

OBD-II DRIVE CYCLE PATTERN

The 6th gear is engaged.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

TSB Revision

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Drive with shifted in the 6th gear.
(3) Check that the DTC is reset.

Q: Is DTC No.P187B set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 4

"No" : DTC No. P181B: Carry out the troubleshooting for the DTC No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22C-129.)

STEP 4. Replace the clutch assembly, and check if the DTC is reset.

(1) Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)
(2) Drive with shifted in the 6th gear.
(3) Check the DTC.

Q: Is DTC No.P187B set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : This diagnosis is complete.

DTC P187C: Gear Block Reverse

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the gear engagement is normal.

DESCRIPTIONS OF MONITOR METHODS

The engagement of the reverse gear is determined to be impossible.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of TC-SST gear
- Malfunction of clutch assembly

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

(1) Erase the DTC.
(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 5 seconds or more.)
(3) Check that the DTC is reset.

Q: Is DTC No.P187C set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Carry out the Item No.3: Line pressure Test. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Go to Step 4

"No" : DTC No. P181B: Carry out the troubleshooting for the DTC No. P181B: Clutch 1 (Pressure low range out). (Refer to P.22C-129.)

TSB Revision

STEP 4. Replace the clutch assembly, and check if the DTC is reset.

(1) Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)
(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D → R → P. (Hold each range for 5 seconds or more.)
(3) Check the DTC.

Q: Is DTC No.P187C set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1880: EOL Mode Active

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the TC-SST setting mode is normal.

DESCRIPTIONS OF MONITOR METHODS

The TC-SST setting mode is determined to be EOL (end of line) mode.

PROBABLE CAUSES

- The setting mode changeover mistake when TC-SST is shipped.
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P1880 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

TSB Revision

DTC P1881: Twin clutch SST control mode switch system (Malfunction)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the twin clutch SST control mode switch is normal.

DESCRIPTIONS OF MONITOR METHODS

"+" and "–" signals of the twin clutch SST control mode switch is determined to be stuck on.

PROBABLE CAUSES

- Twin clutch SST control mode switch malfunction
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

After 5 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P1881 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Twin clutch SST control mode switch check

Refer to P.22C-547.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the twin clutch SST control mode switch.(Refer to P.22C-547.)

STEP 4. Shift lever assembly replacement
(1) Replace the shift lever assembly. (Refer to P.22C-517.)
(2) Check if the DTC is set.

Q: Is DTC No. P1881 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P1885: SHIFT FORK 1 JUMP OUT

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the movement of the shift fork 1 is normal.

DESCRIPTIONS OF MONITOR METHODS
The movement of the shift fork 1 is determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork
- Malfunction of valve body

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Drive with shifted in the 1st gear and reverse.
(3) Check that the DTC is reset.

Q: Is DTC No.P1885 set?

YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive with shifted in the 1st gear and reverse.
(3) Check the DTC.

Q: Is DTC No.P1885 set?
YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1886: SHIFT FORK 2 JUMP OUT

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the movement of the shift fork 2 is normal.

DESCRIPTIONS OF MONITOR METHODS
The movement of the shift fork 2 is determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork
- Malfunction of valve body

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Drive with shifted in the 3rd gear and 5th gear.
(3) Check that the DTC is reset.

Q: Is DTC No.P1886 set?
YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive with shifted in the 3rd gear and 5th gear.
(3) Check the DTC.

Q: Is DTC No.P1886 set?
YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1887: SHIFT FORK 3 JUMP OUT

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the movement of the shift fork 3 is normal.

DESCRIPTIONS OF MONITOR METHODS
The movement of the shift fork 3 is determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork
- Malfunction of valve body

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Drive with shifted in the 6th gear.
(3) Check that the DTC is reset.

Q: Is DTC No.P1887 set?
YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive with shifted in the 6th gear.
(3) Check the DTC.

Q: Is DTC No.P1887 set?
YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1888: SHIFT FORK 4 JUMP OUT

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the movement of the shift fork 4 is normal.

DESCRIPTIONS OF MONITOR METHODS
The movement of the shift fork 4 is determined to be abnormal.

PROBABLE CAUSES
- Malfunction of TC-SST-ECU
- Malfunction of TC-SST shift fork
- Malfunction of valve body

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Drive with shifted in the 2nd gear and 4th gear.
(3) Check that the DTC is reset.

Q: Is DTC No.P1888 set?
YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) Drive with shifted in the 2nd gear and 4th gear.
(3) Check the DTC.

Q: Is DTC No.P1888 set?
YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P1890 TEACH-IN NOT COMPLETED

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that Teach-In is completed normally.

DESCRIPTIONS OF MONITOR METHODS
It is judged that Teach-In is not completed normally.

PROBABLE CAUSES
- Teach-In not completed
- Malfunction of TC-SST-ECU
- Malfunction of clutch assembly

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
(1) Erase the DTC.
(2) After 10 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No.P1890 set?
YES : Go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Scan tool Teach-In

(1) Perform Teach-In (the same item as the mechatronic assembly replacement).(Refer to P.22C-24.)
(2) After 10 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No.P1890 set?

YES : Go to Step 4.
NO : This diagnosis is complete.

STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.

(1) Replace the mechatronic assembly. (Refer to P.22C-533.)
(2) After 10 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No.P1890 set?

YES : Go to Step 5.
NO : This diagnosis is complete.

STEP 5. Replace the clutch assembly, and check if the DTC is reset.

(1) Replace the clutch assembly. (Refer to GROUP 22D – Transaxle P.22D-7.)
(2) After 10 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No. P1890 set?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)
NO : This diagnosis is complete.

DTC P2718: Clutch/Shift Pressure Solenoid 1 System (Open circuit)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift pressure solenoid 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift pressure solenoid 1 circuit is determined to be open.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

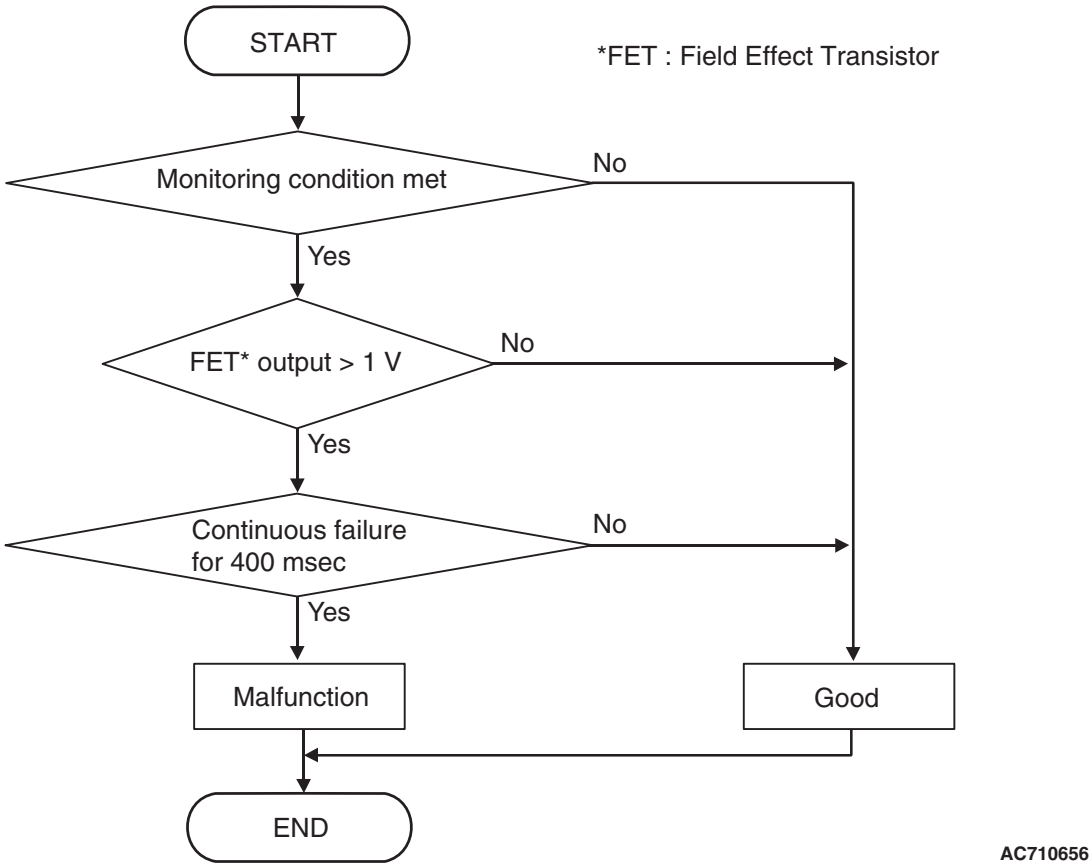
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Clutch 1 pressure sensor
- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 1 V or more. (400 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 1 V or less for 400 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2718 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2719: Clutch/Shift Pressure Solenoid 1 System (Overcurrent)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift pressure solenoid 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The supply current to the clutch/shift pressure solenoid 1 is determined to be overcurrent.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

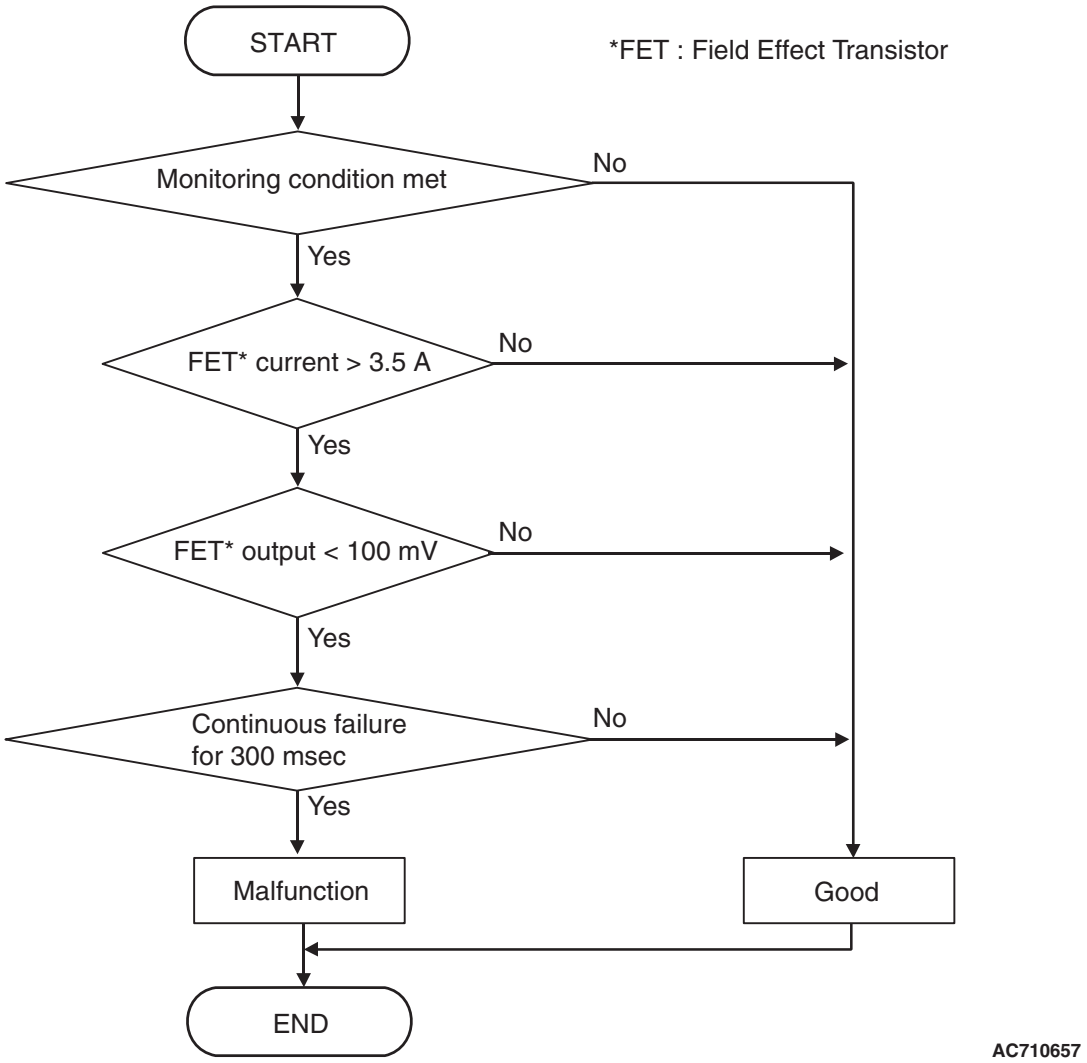
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Clutch 1 pressure sensor
- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) current: 3.5 A or more, and FET (Field Effect Transistor) output: 100 mV or less. (300 millisecond)

OBD-II DRIVE CYCLE PATTERN

The status with the current of the FET channel shunt 3.5 A or less and with the FET channel output 100 mV or more continues for 300 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
After 5 or more seconds have passed with the engine idle status, check that the DTC is reset.

Q: Is DTC No. P2719 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2720: Clutch/Shift Pressure Solenoid 1 System (Short to ground)

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the clutch/shift pressure solenoid 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS
The clutch/shift pressure solenoid 1 circuit is determined to be short to ground.

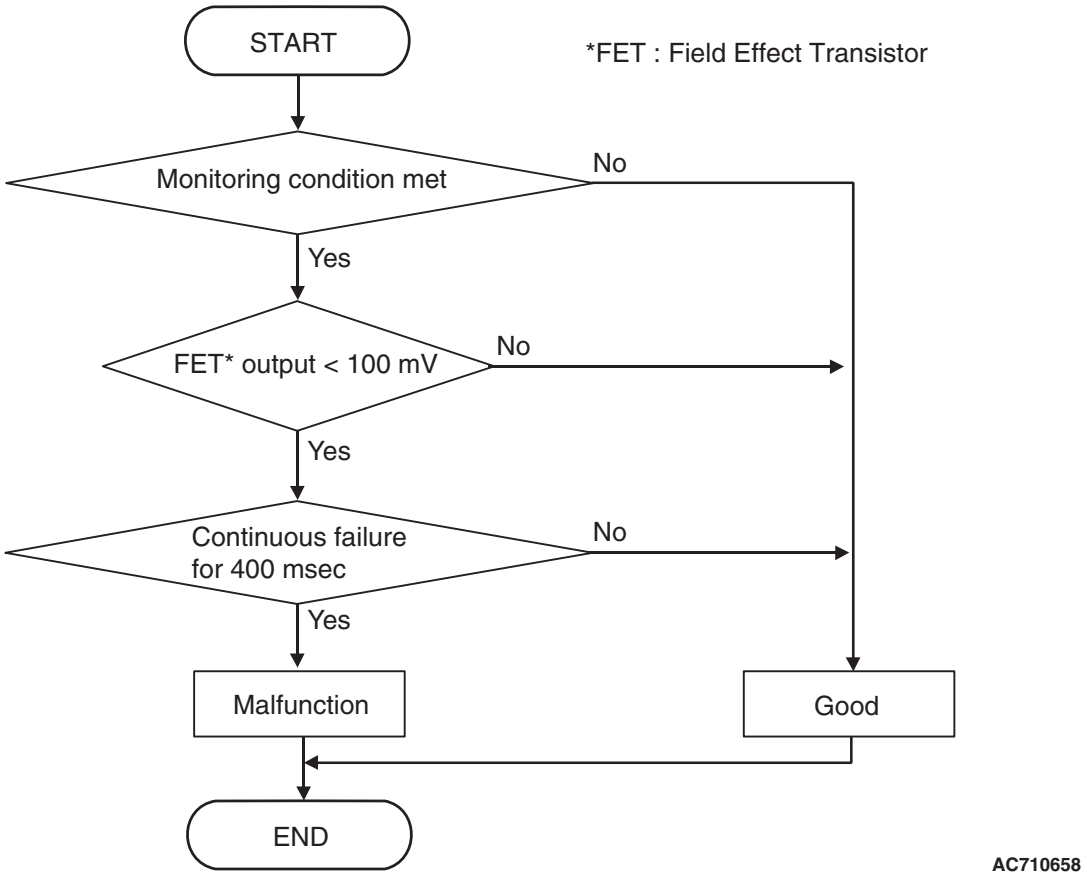
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)
- Clutch 1 pressure sensor
- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 100 mV or less. (400 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 400 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2720 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2721: Clutch/Shift Pressure Solenoid 1 System (Short to power supply)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift pressure solenoid 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift pressure solenoid 1 circuit is determined to be short to power supply.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

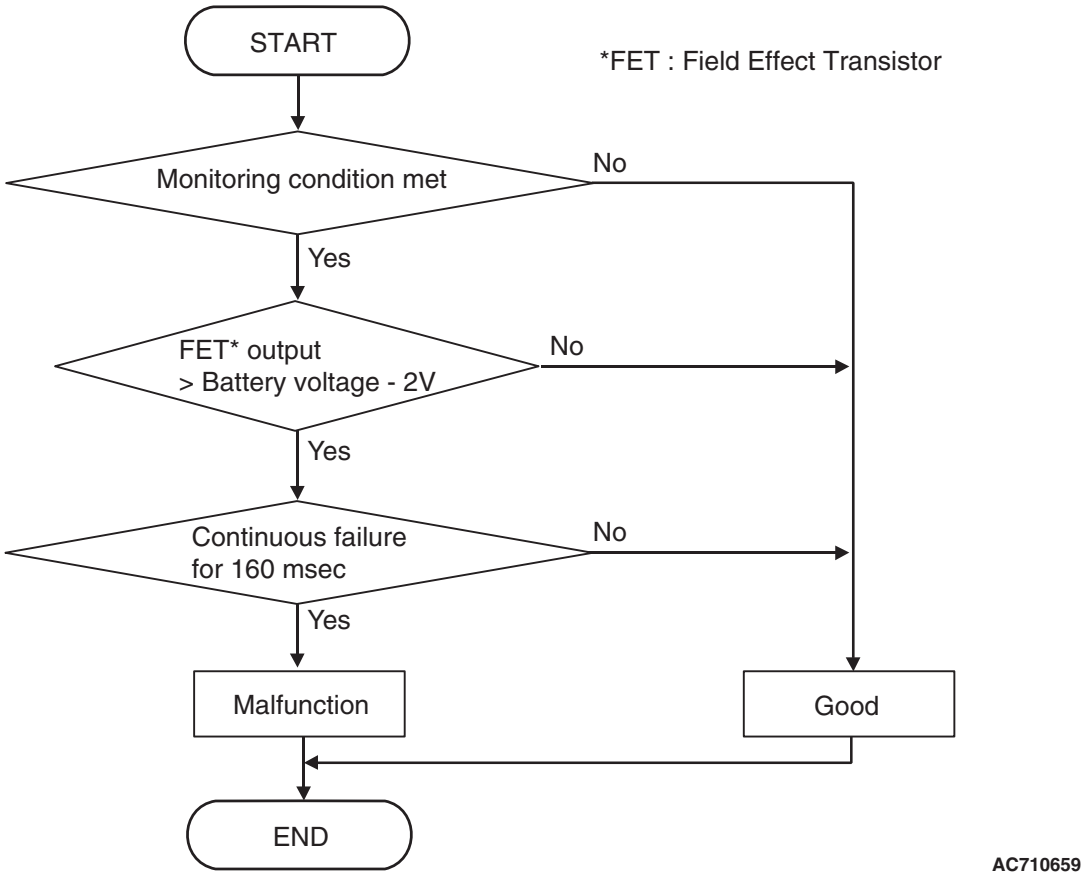
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Clutch 1 pressure sensor
- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Clutch/shift pressure solenoid 1: OFF.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: (Battery voltage – 2 V) or more. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains the battery voltage – 2 V or less for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2721 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2727: Clutch/Shift Pressure Solenoid 2 System (Open circuit)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift pressure solenoid 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift pressure solenoid 2 circuit is determined to be open.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

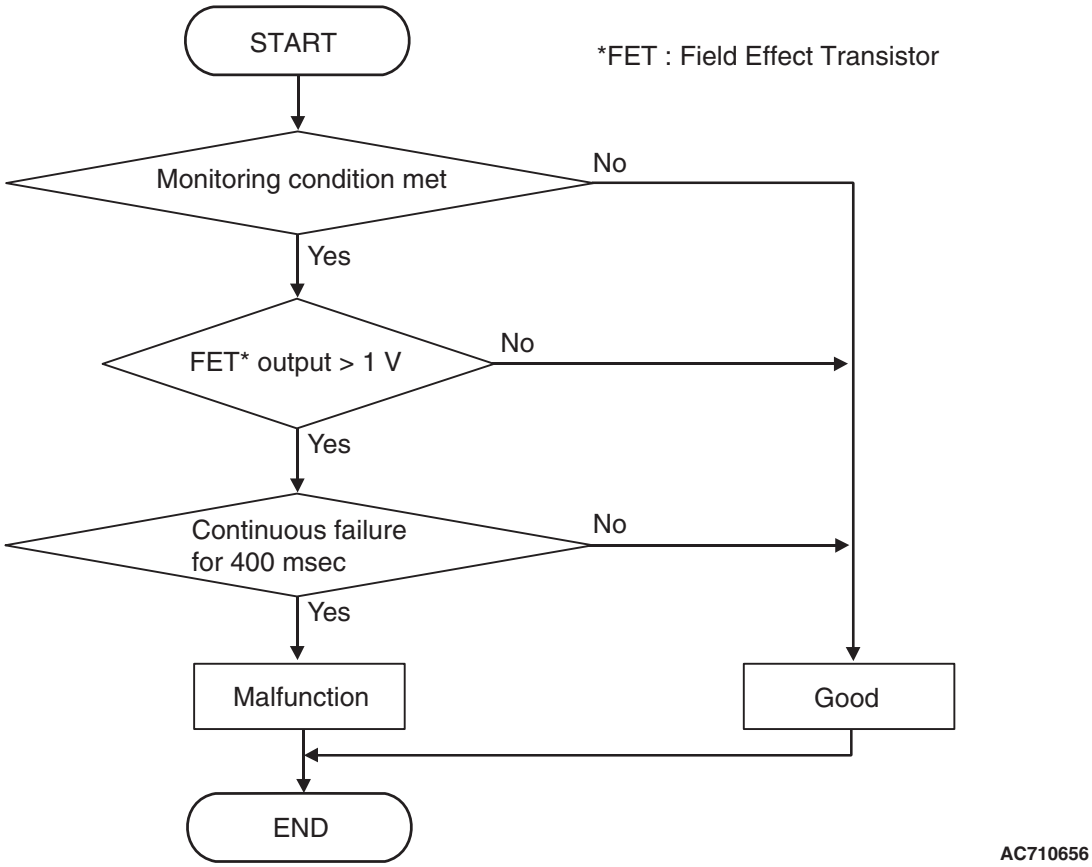
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Clutch 2 pressure sensor
- Clutch/shift switching solenoid 2

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 1 V or more. (400 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 1 V or less for 400 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2727 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2728: Clutch/Shift Pressure Solenoid 2 System (Overcurrent)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift pressure solenoid 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The supply current to the clutch/shift pressure solenoid 2 is determined to be overcurrent.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

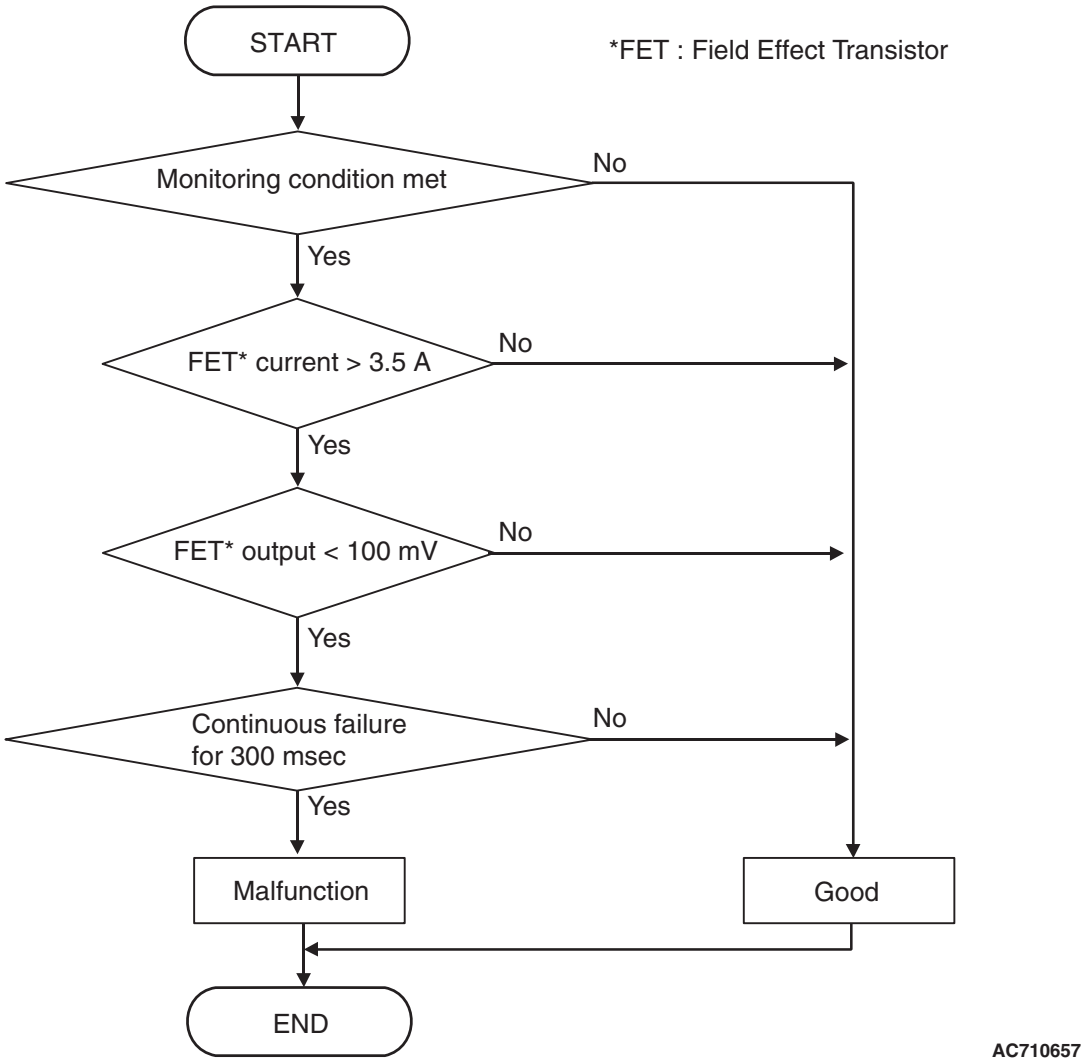
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Clutch 2 pressure sensor
- Clutch/shift switching solenoid 2

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) current: 3.5 A or more, and FET (Field Effect Transistor) output: 100 mV or less. (300 millisecond)

OBD-II DRIVE CYCLE PATTERN

The status with the current of the FET channel shunt 3.5 A or less and with the FET channel output 100 mV or more continues for 300 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2728 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2729: Clutch/Shift Pressure Solenoid 2 System (Short to ground)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift pressure solenoid 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift pressure solenoid 2 circuit is determined to be short to ground.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

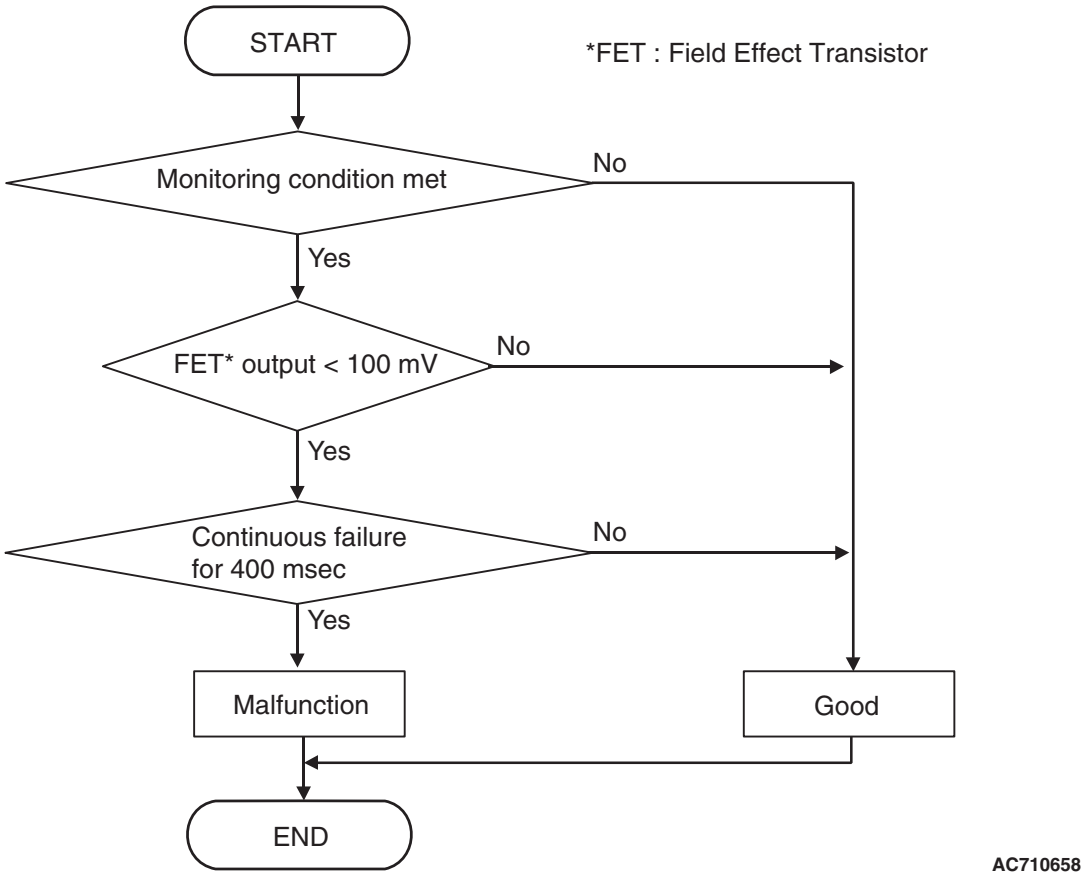
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Clutch 2 pressure sensor
- Clutch/shift switching solenoid 2

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 100 mV or less. (400 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 400 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2729 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2730: Clutch/Shift Pressure Solenoid 2 System (Short to power supply)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift pressure solenoid 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift pressure solenoid 2 circuit is determined to be short to power supply.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

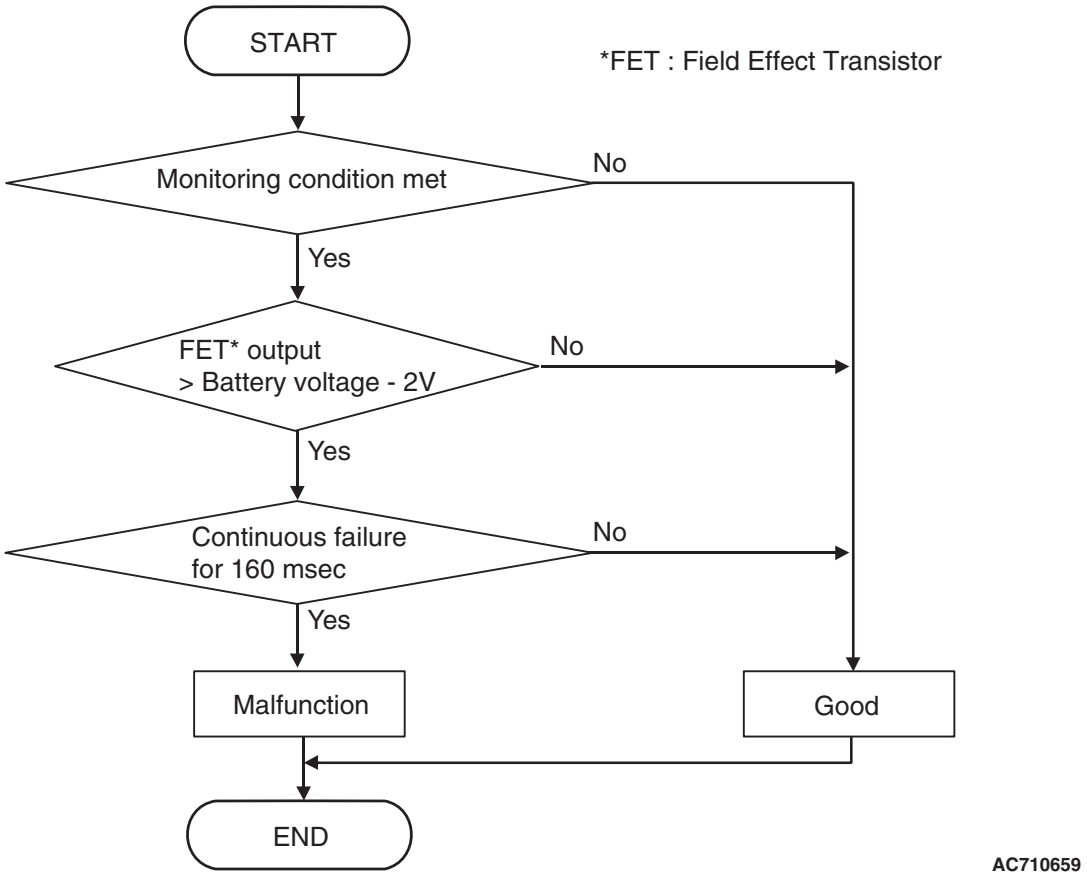
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Clutch 2 pressure sensor
- Clutch/shift switching solenoid 2

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Clutch/shift pressure solenoid 2: OFF.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: (Battery voltage – 2 V) or more. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains (Battery voltage – 2 V) or less for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift pressure solenoid 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2730 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2733: Clutch/Shift Switching Solenoid 1, spool stuck

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift switching solenoid 1 is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift switching solenoid 1 is determined to be seized.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

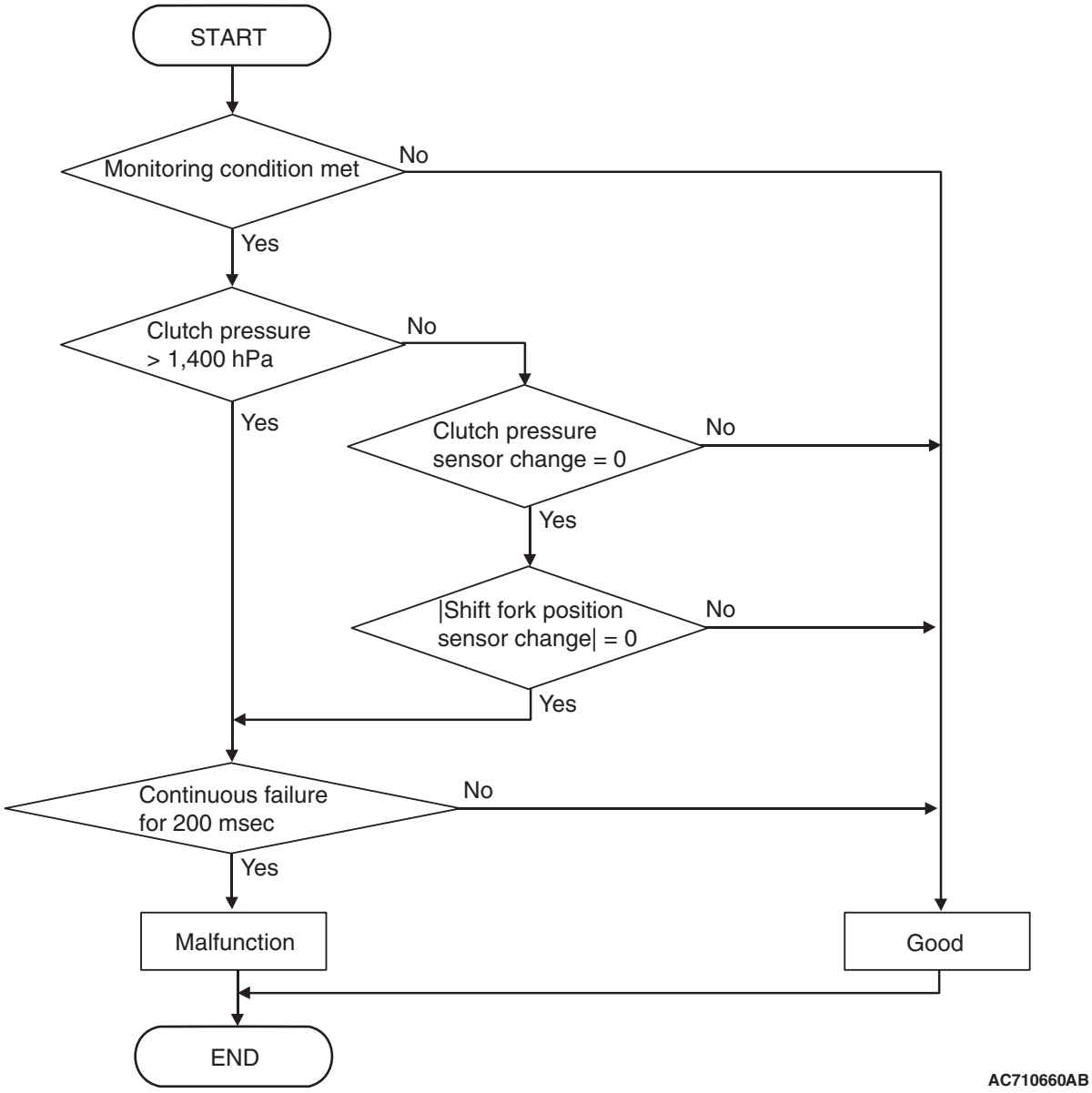
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Clutch/shift switching solenoid 1: ON.
- Clutch/shift switching solenoid 2: OFF.
- Clutch cooling flow solenoid: OFF.
- Clutch/shift pressure solenoid 1: ON.

JUDGMENT CRITERIA

- Clutch 1 (odd) pressure: 1,400 hPa or more, or clutch 1 pressure sensor (odd) change: 0, and shift fork position sensor 1 and 2 change: 0. (200 millisecond)

OBD-II DRIVE CYCLE PATTERN

The status with the clutch 1 pressure 1,400 hPa or less, or with the clutch 1 pressure sensor (odd) and shift fork position sensor 1 and 2 changed continues for 200 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Insufficient fluid level
- Malfunction of clutch/shift switching solenoid 1

TSB Revision

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

⚠ WARNING

During inspection, the vehicle might move suddenly or the engine might stop. Be sure to depress the brake pedal securely. In addition, perform the vehicle inspection in a safe place isolated from people or objects.

(1) With the brake pedal pressed, start the engine.

(2) With the engine idle status, operate the shift lever in the following sequence: P → R → D. (Hold each range for 1 seconds or more.)

(3) Check that the DTC is reset.

Q: Is DTC No.P2733 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Check the fluid.

Q: Is the fluid level proper?

YES : Go to Step 4

NO : Add the fluid.

STEP 4. Check the installation status of the mechatronic assembly.

Q: Is the mechatronic assembly installed correctly?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Install the mechatronic assembly correctly. (Refer to P.22C-533.)

DTC P2736: Clutch/Shift Switching Solenoid 1 System (Open circuit)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift switching solenoid 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift switching solenoid 1 circuit is determined to be open.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

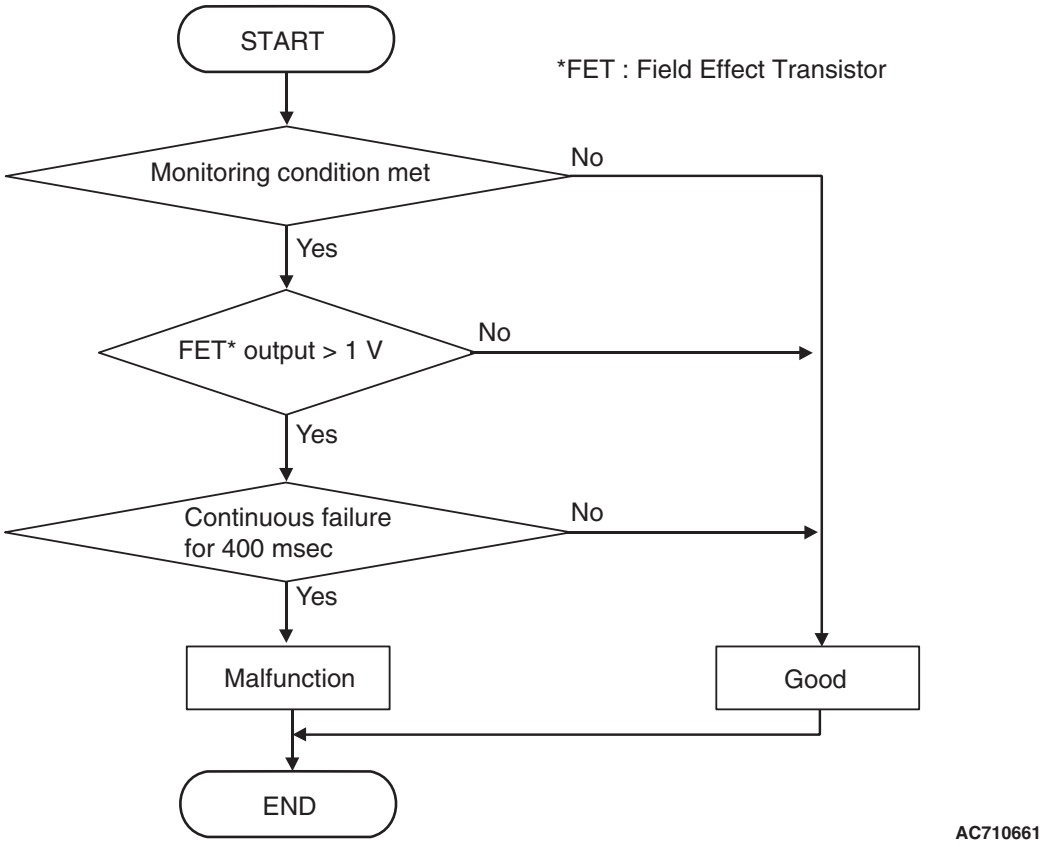
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 1 V or more. (400 millisecond)

TSB Revision

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 1 V or less for 400 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift switching solenoid 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2736 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2738: Clutch/Shift Switching Solenoid 1 System (Short to ground)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift switching solenoid 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift switching solenoid 1 circuit is determined to be short to ground.

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)

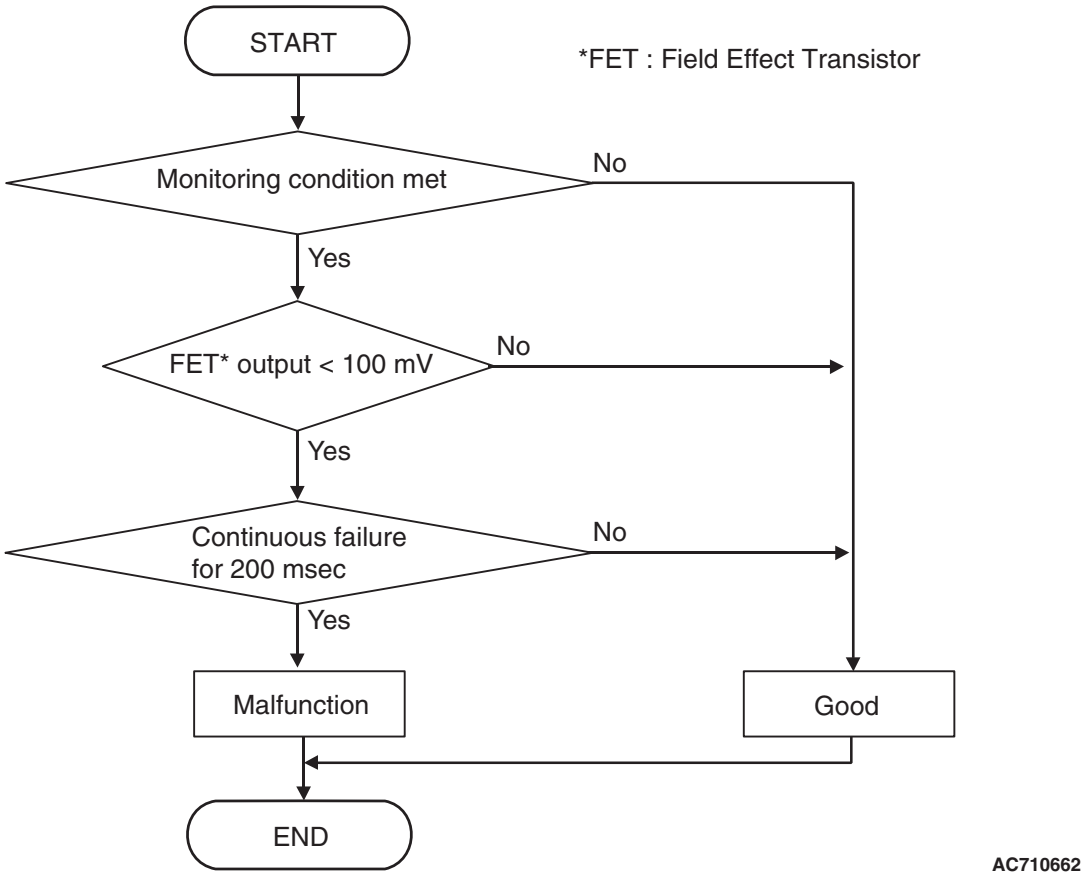
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Not applicable

TSB Revision

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 100 mV or less. (200 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 200 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift switching solenoid 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2738 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2739: Clutch/Shift Switching Solenoid 1 System (Short to power supply)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift switching solenoid 1 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift switching solenoid 1 circuit is determined to be short to power supply.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

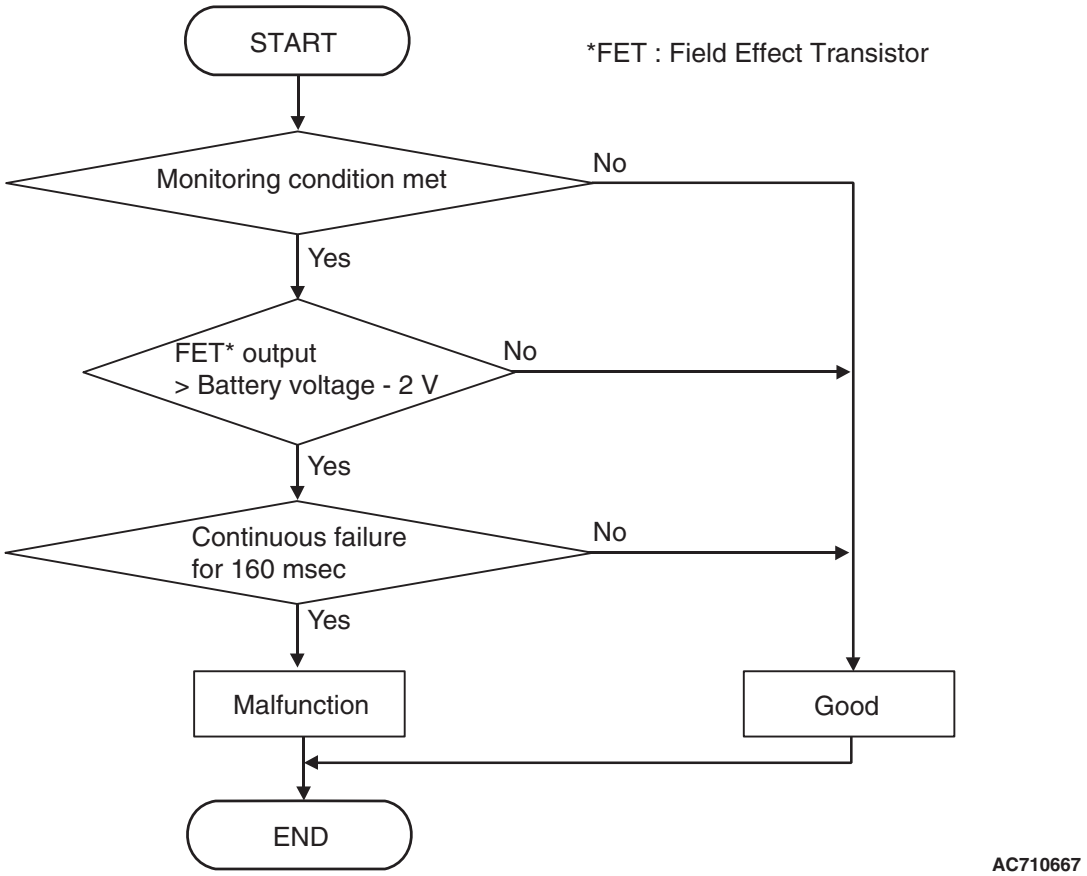
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P181B: Clutch 1 (Pressure low range out)
- P181C: Clutch 1 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Clutch / shift switching solenoid 1: OFF.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: (Battery voltage – 2 V) or more. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains (Battery voltage – 2 V) or less for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift switching solenoid 1

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2739 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2742: Fluid Temperature Sensor System (Output low range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the output of the fluid temperature sensor is normal.

DESCRIPTIONS OF MONITOR METHODS

The output is determined to be too low.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

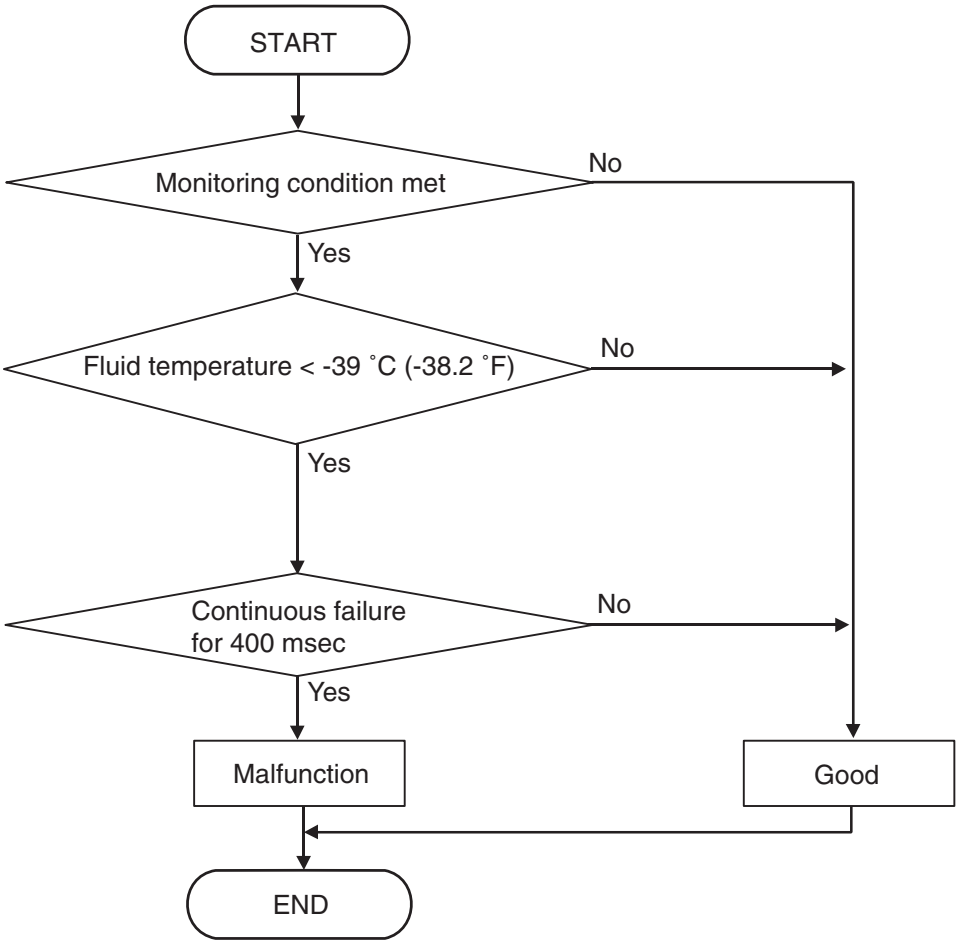
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P2743: Fluid temperature sensor system (Output high range out)
- P1808: TC-SST-ECU temperature, fluid temperature sensor system (Correlation error)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Fluid temperature: –39°C (–38.2°F) or less. (400 millisecond)

OBD-II DRIVE CYCLE PATTERN

The fluid temperature remains –39°C (–38.2°F) or more for 400 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
30 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P2742 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2743: Fluid Temperature Sensor System (Output high range out)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the output of the fluid temperature sensor is normal.

DESCRIPTIONS OF MONITOR METHODS

The output is determined to be too high.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

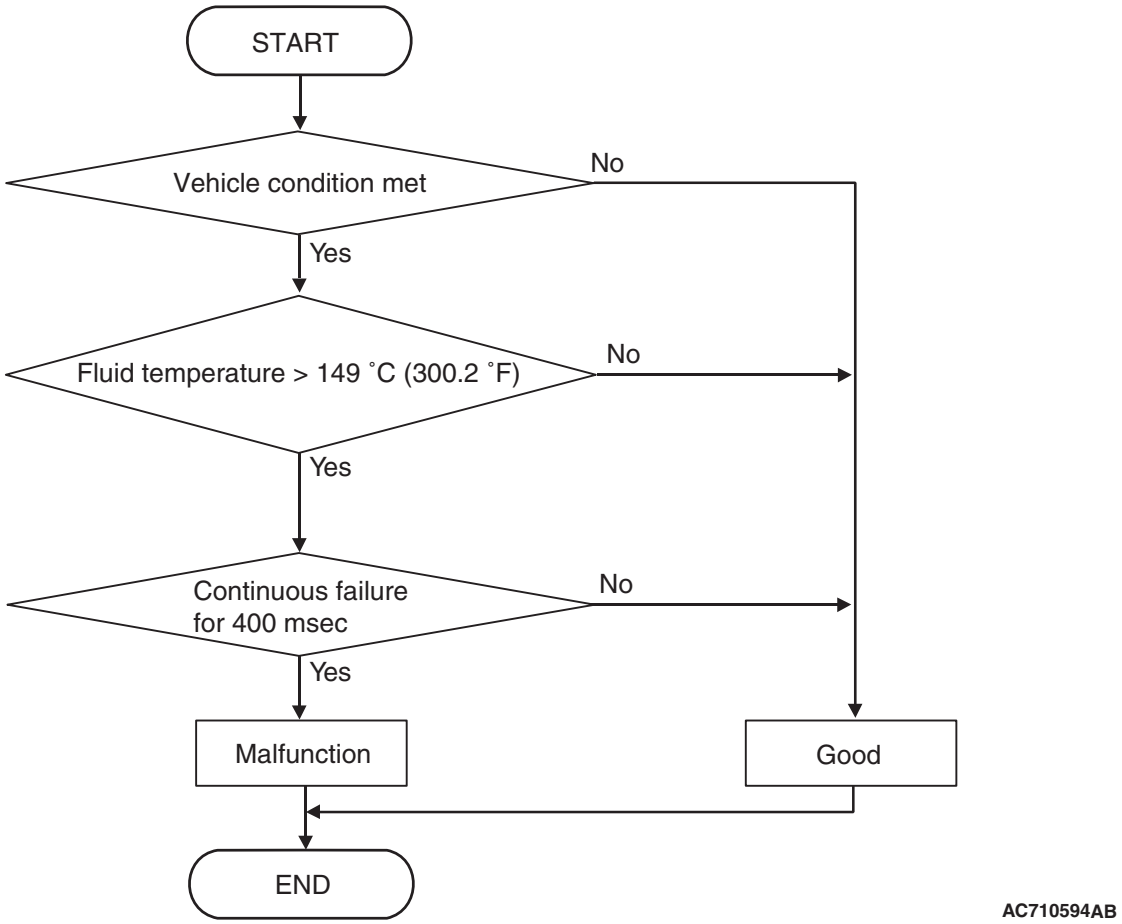
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P2742: Fluid temperature sensor system (Output low range out)
- P1808: TC-SST-ECU temperature, fluid temperature sensor system (Correlation error)

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- Fluid temperature: 149°C (300.2°F) or more. (400 millisecond)

OBD-II DRIVE CYCLE PATTERN

The fluid temperature remains 149°C (300.2°F) or more for 400 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.
30 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. P2743 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2766: Input Shaft 2 (Even number gear axle) Speed Sensor System (Poor performance)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the input shaft sensor 2 is normal.

DESCRIPTIONS OF MONITOR METHODS

The even number gear side input shaft speed (revolution) is determined to be abnormal.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

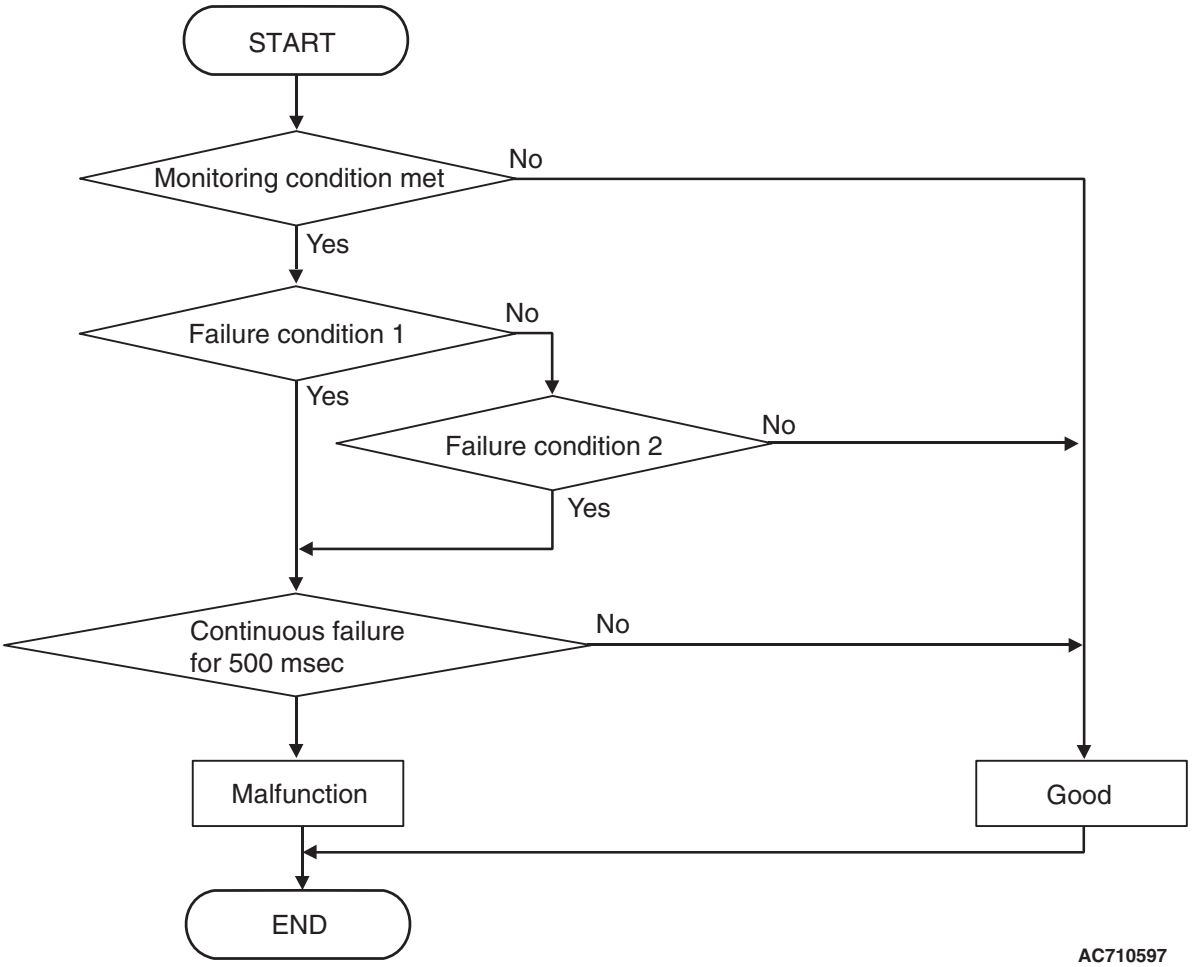
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0715: Input shaft 1 (odd number gear axle) speed sensor system (Output high range out)
- P0716: Input shaft 1 (odd number gear axle) speed sensor system (Poor performance)
- P0717: Input shaft 1 (odd number gear axle) speed sensor system (Output low range out)

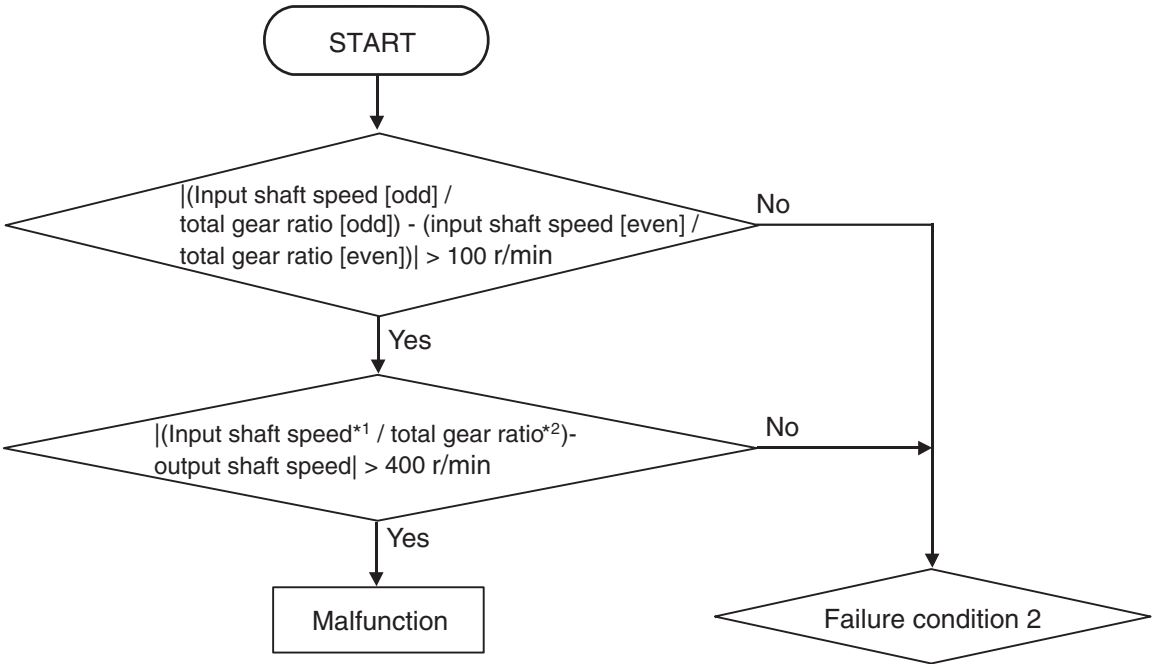
Sensor (The sensor below is determined to be normal)

- Input shaft 1 (odd number gear axle) speed sensor

LOGIC FLOW CHARTS (Monitor Sequence) <Rationality>



LOGIC FLOW CHARTS (Monitor Sequence) <Rationality (Failure condition 1)>



*1 : In case of input speed sensor A monitor, this is speed of input shaft (odd).
In case of input speed sensor B monitor, this is speed of input shaft (even).

*2 : In case of input speed sensor A monitor, this is total gear ratio of input shaft (odd).
In case of input speed sensor B monitor, this is total gear ratio of input shaft (even).

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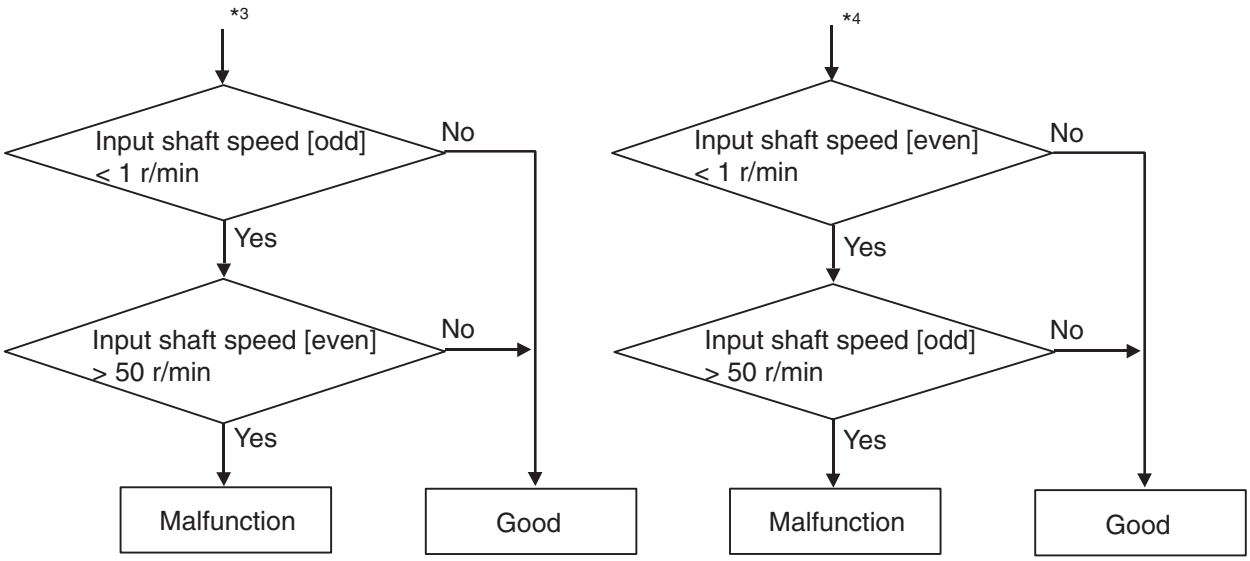
LOGIC FLOW CHARTS (Monitor Sequence) <Rationality (Failure condition 2)>



*3 :In case of input speed sensor A monitor

*4 :In case of input speed sensor B monitor

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DTC SET CONDITIONS

Check Conditions <Rationality>

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Input shaft [odd] gear: engaged.
- Input shaft [even] gear: engaged.

JUDGMENT CRITERIA <Rationality>

- Failure condition 1 or failure condition 2 (Refer to Logic Flow Charts (Monitor Sequence) <Rationality>). (500 millisecond)

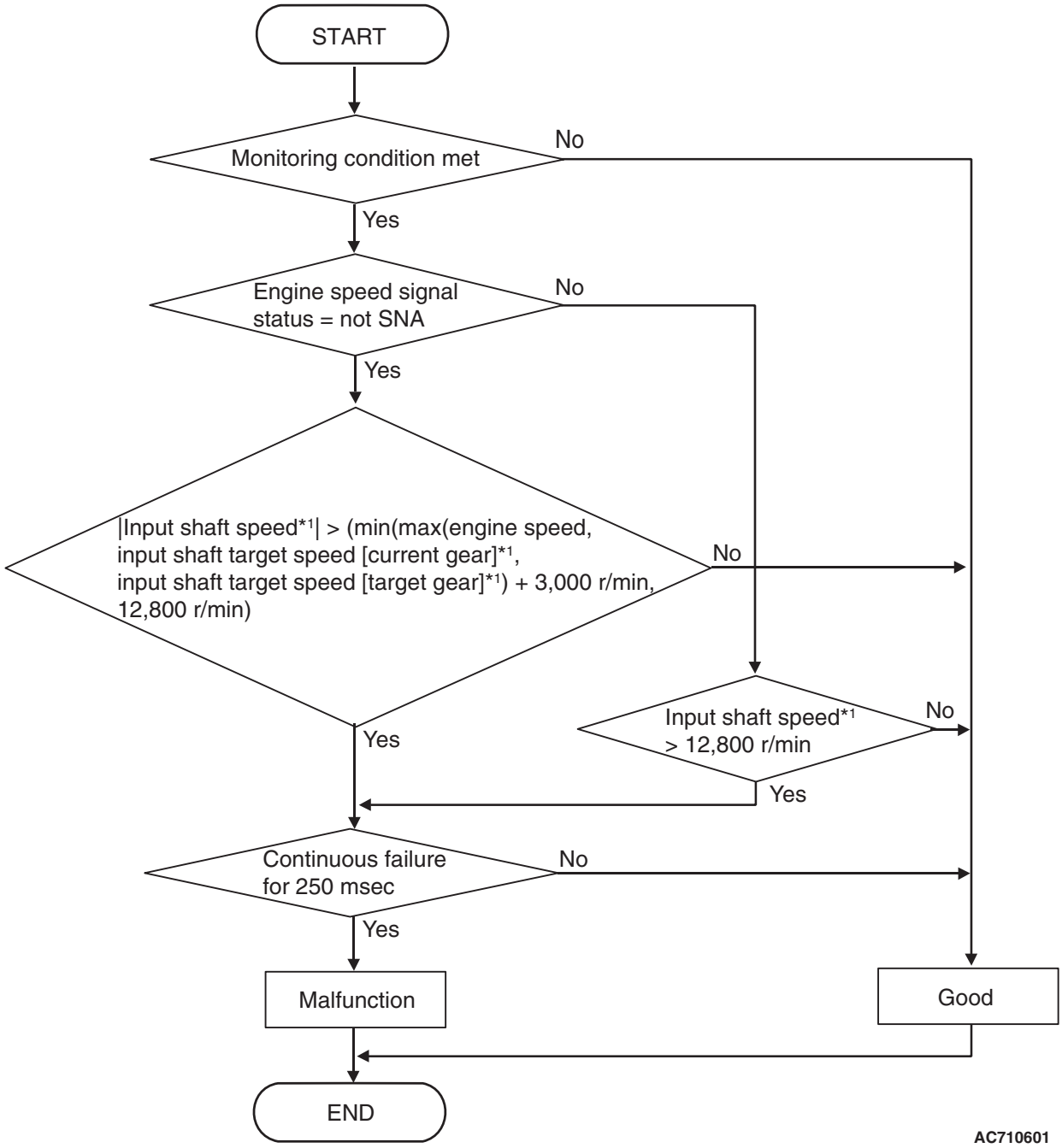
TSB Revision

OBD-II DRIVE CYCLE PATTERN

<RATIONALITY>

Each value of failure condition 1 or failure condition 2 (Logic Flow Charts (Monitor Sequence) <Rationality>) returns to the normal value and remains in the state for 500 milliseconds.

LOGIC FLOW CHARTS (Monitor Sequence) <Rationality - plausibility failure>



*1 :In case of input shaft 1 (odd) speed sensor monitor, this is speed of input shaft (odd).
In case of input shaft 2 (even) speed sensor monitor, this is speed of input shaft (even).

TSB Revision

DTC SET CONDITIONS

Check Conditions <Rationality plausibility failure>

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA <Rationality plausibility failure>

- Input shaft 2 (even) speed: Refer to Logic Flow Charts (Monitor Sequence) <Rationality plausibility failure>. (250 millisecond)

OBD-II DRIVE CYCLE PATTERN <RATIONALITY PLAUSIBILITY FAILURE>

The value of the Logic Flow Charts (Monitor Sequence) <Rationality plausibility failure> returns to the normal value and remains in the state for 250 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Monitoring unit No. check

(1) Check the freeze frame data (item No. 30 to No. 37).
(2) Check which monitoring unit (No. 115 or No. 240) is set.

Q: Which monitoring unit is set, No. 115 or No. 240?

No. 115 : Go to Step 4

No. 240 : Go to Step 3

STEP 3. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Drive the vehicle at 50 km/h (31 mph) or more.
(3) Check that the DTC is reset.

Q: Is DTC No.P2766 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Drive with shifting to each gear range.
(3) Check that the DTC is reset.

Q: Is DTC No.P2766 set?

YES : Go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 5. Scan tool Teach-In
(1) Carry out the Item No. 1: Plausibility check. (Refer to Special Function (Teach-In Reference Table P.22C-393).)
(2) After Teach-In, check which result ("Yes" or "No") is displayed in the Data list No. 101: Normal End. (Refer to Special Function (Teach-In Reference Table P.22C-393).)

Q: Which is displayed, "Yes" or "No"?

"Yes" : Replace the transaxle assembly. (Refer to P.22C-525.)
"No" : Replace the mechatronic assembly. (Refer to P.22C-533.)

DTC P2809: Clutch/Shift Switching Solenoid 2, spool stuck

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION
TC-SST-ECU checks that the clutch/shift switching solenoid 2 is normal.

DESCRIPTIONS OF MONITOR METHODS
The clutch/shift switching solenoid 2 is determined to be seized.

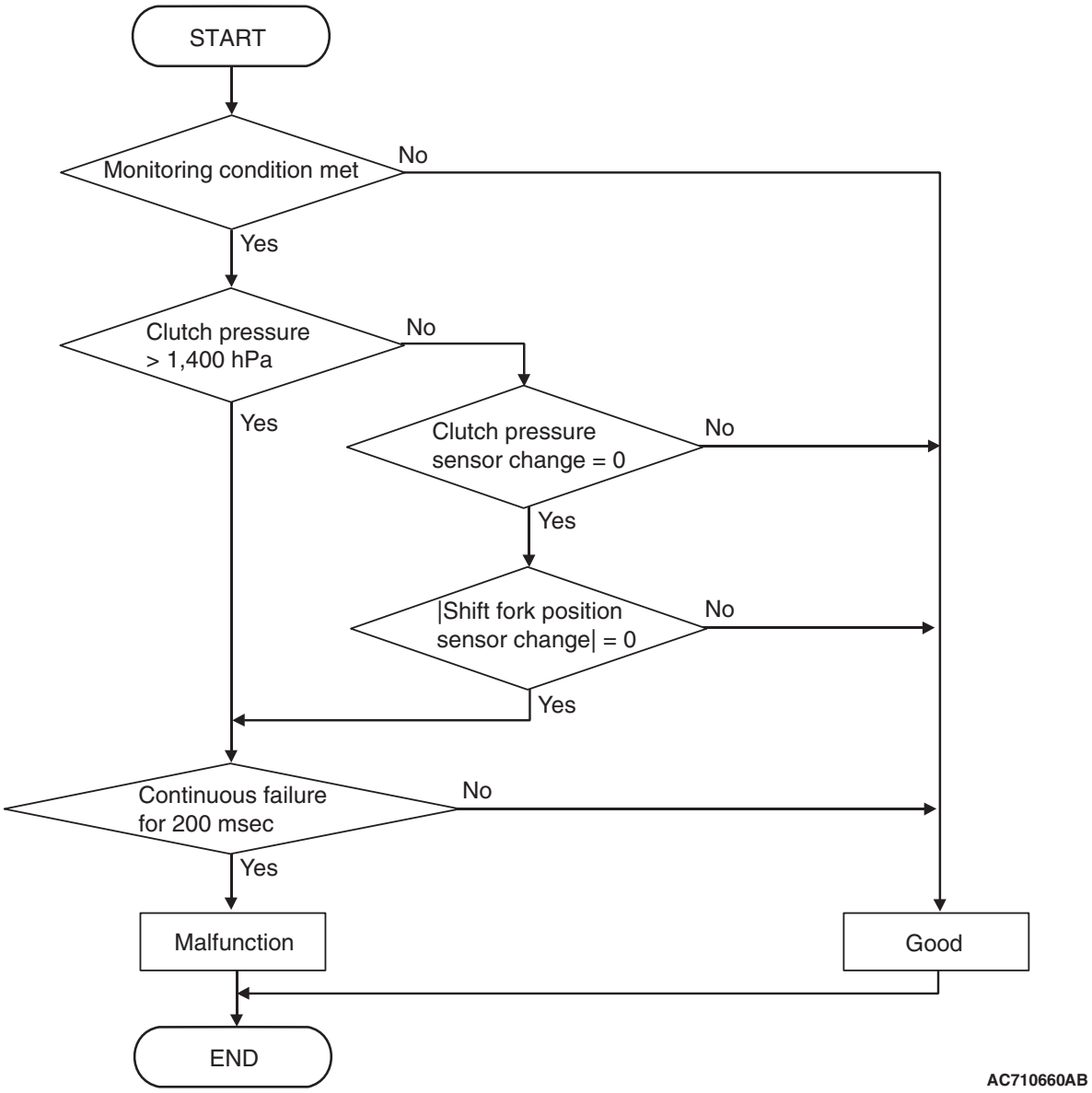
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)
- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Engine speed: 650 r/min or more.
- Time since above engine condition: 1.5 seconds or more.
- Clutch/shift switching solenoid 2: ON.
- Clutch cooling flow solenoid: OFF.
- Clutch/shift pressure solenoid 2: ON.

JUDGMENT CRITERIA

- Clutch 2 (even) pressure: 1,400 hPa or more, or clutch 2 pressure sensor (even) change: 0, and shift fork position sensor 3 and 4 change: 0. (200 millisecond)

OBD-II DRIVE CYCLE PATTERN

The status with the clutch 2 pressure 1,400 hPa or less, or with the clutch 2 pressure sensor (even) and shift fork position sensor 3 and 4 changed continues for 200 millisecond.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Insufficient fluid level
- Malfunction of clutch/shift switching solenoid 2

TSB Revision

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

After driving in the 4th gear, check that the DTC is reset.

Q: Is DTC No. P2809 set?

YES : Go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Check the fluid.

Q: Is the fluid level proper?

YES : Go to Step 4

NO : Add the fluid.

STEP 4. Check the installation status of the mechatronic assembly.

Q: Is the mechatronic assembly installed correctly?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Install the mechatronic assembly correctly. (Refer to P.22C-533.)

DTC P2812: Clutch/Shift Switching Solenoid 2 System (Open circuit)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift switching solenoid 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift switching solenoid 2 circuit is determined to be open.

MONITOR EXECUTION

- Continuous

TSB Revision

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

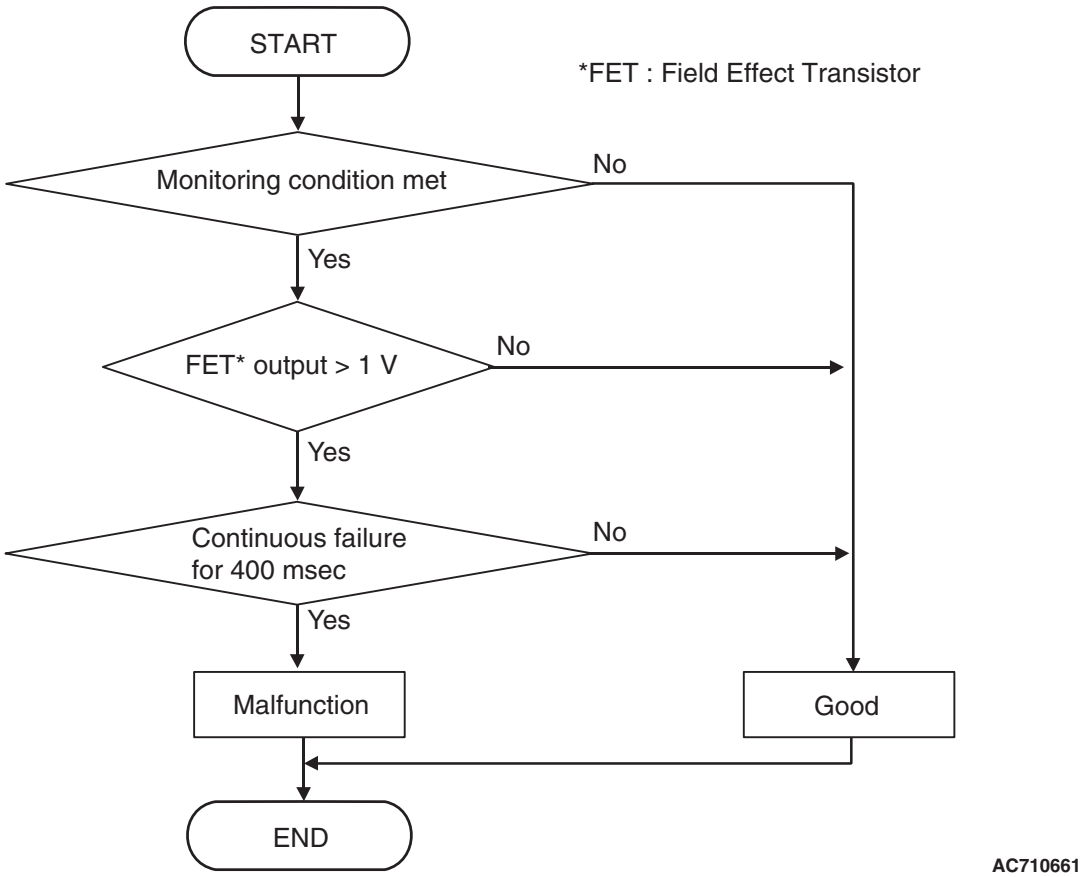
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 1 V or more. (400 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 1 V or less for 400 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift switching solenoid 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

After driving in the 4th gear, check that the DTC is reset.

Q: Is DTC No. P2812 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2814: Clutch/Shift Switching Solenoid 2 System (Short to ground)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift switching solenoid 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift switching solenoid 2 circuit is determined to be short to ground.

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)

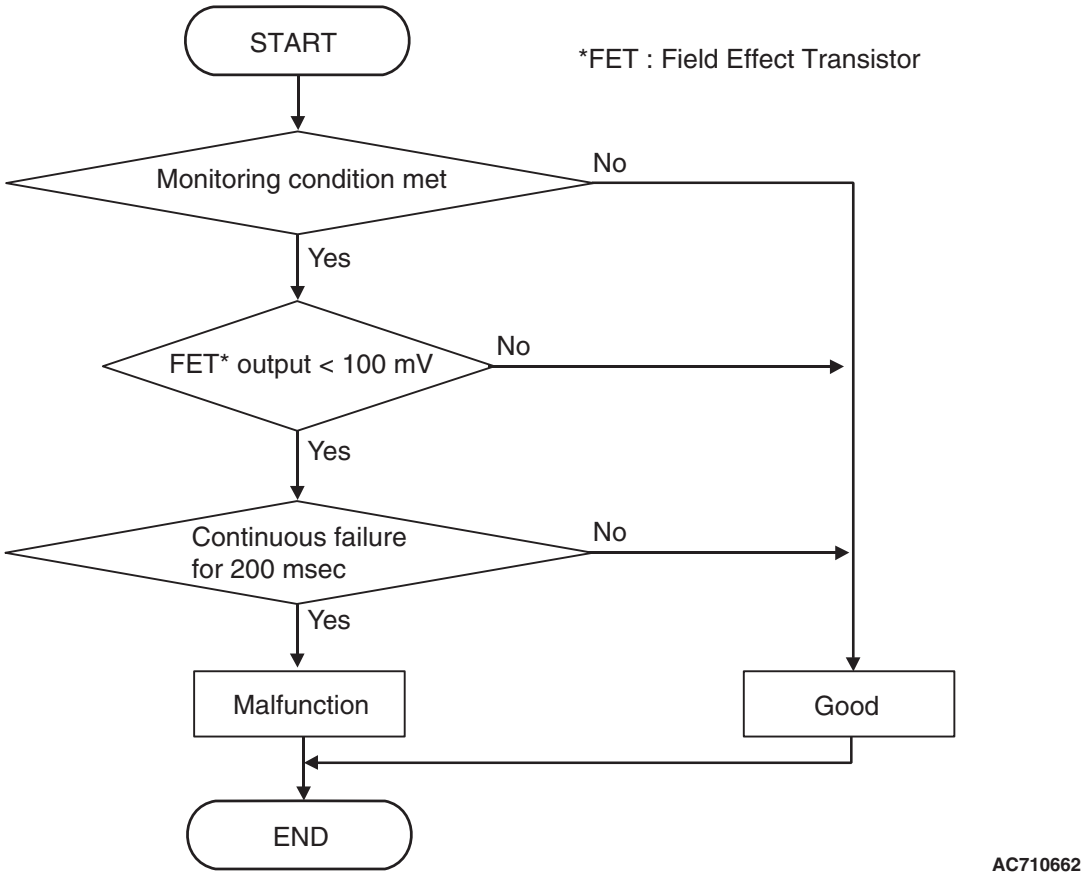
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2815: Clutch/shift switching solenoid 2 system (Short to power supply)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Clutch/shift switching solenoid 1

TSB Revision

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: 100 mV or less. (200 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains 100 mV or more for 200 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift switching solenoid 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2814 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P2815: Clutch/Shift Switching Solenoid 2 System (Short to power supply)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DIAGNOSTIC FUNCTION

TC-SST-ECU checks that the clutch/shift switching solenoid 2 circuit is normal.

DESCRIPTIONS OF MONITOR METHODS

The clutch/shift switching solenoid 2 circuit is determined to be short to power supply.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

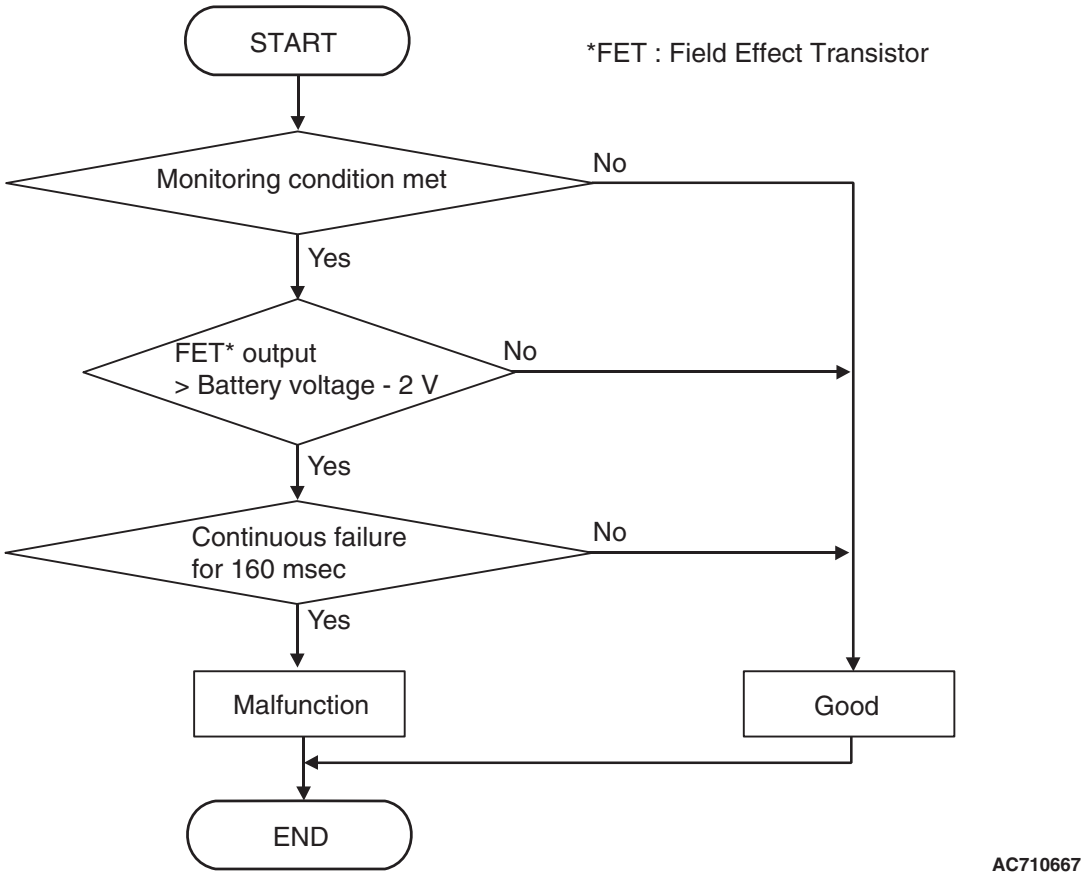
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 system (Open circuit)
- P2814: Clutch/shift switching solenoid 2 system (Short to ground)
- P181E: Clutch 2 (Pressure low range out)
- P181F: Clutch 2 (Pressure high range out)

Sensor (The sensor below is determined to be normal)

- Clutch/shift switching solenoid 1

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Clutch / shift switching solenoid 2: OFF.

JUDGMENT CRITERIA

- FET (Field Effect Transistor) output: (Battery voltage – 2 V) or more. (160 millisecond)

OBD-II DRIVE CYCLE PATTERN

The FET channel output remains (Battery voltage – 2 V) or less for 160 milliseconds.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU
- Malfunction of clutch/shift switching solenoid 2

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2815 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC U0001: Bus-off

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DESCRIPTIONS OF MONITOR METHODS

TC-SST-ECU ceases communication (bus-off).

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

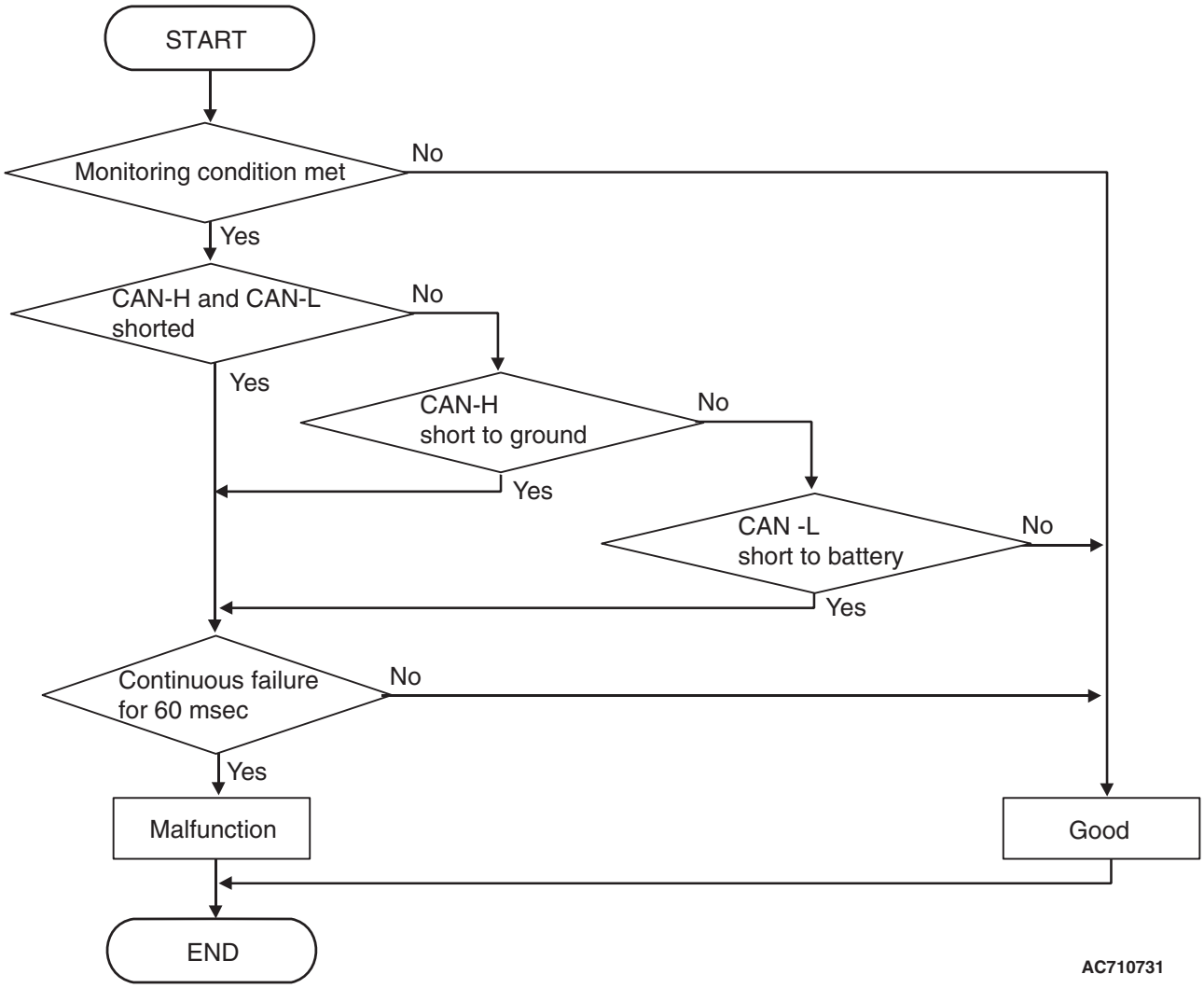
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P185D: Clutch open not possible
- U0100: Engine time-out error
- P1803: Shift lever system (CAN or LIN time-out error)
- P1870: Engine torque signal abnormality
- P1871: APS system (Signal abnormality)
- P1872: Between shift lever and TC-SST system (Q-A function abnormality)

Sensor (The sensor below is determined to be normal)

- Clutch 1 pressure sensor
- Clutch 2 pressure sensor
- APS
- Shift lever-ECU

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 8 V or more.
- Voltage of battery: 16.5 V or less.
- Time after TC-SST-ECU start: 5 seconds or more.

JUDGMENT CRITERIA

- CAN communication: Error. (60 millisecond)

OBD-II DRIVE CYCLE PATTERN

The CAN communication remains normal for 60 milliseconds.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

TSB Revision

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.
30 seconds after turning ON the ignition switch, check that the DTC is reset.

Q: Is DTC No. U0001 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC U0100: Engine Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DESCRIPTIONS OF MONITOR METHODS
The periodic communication data from the engine control module cannot be received.

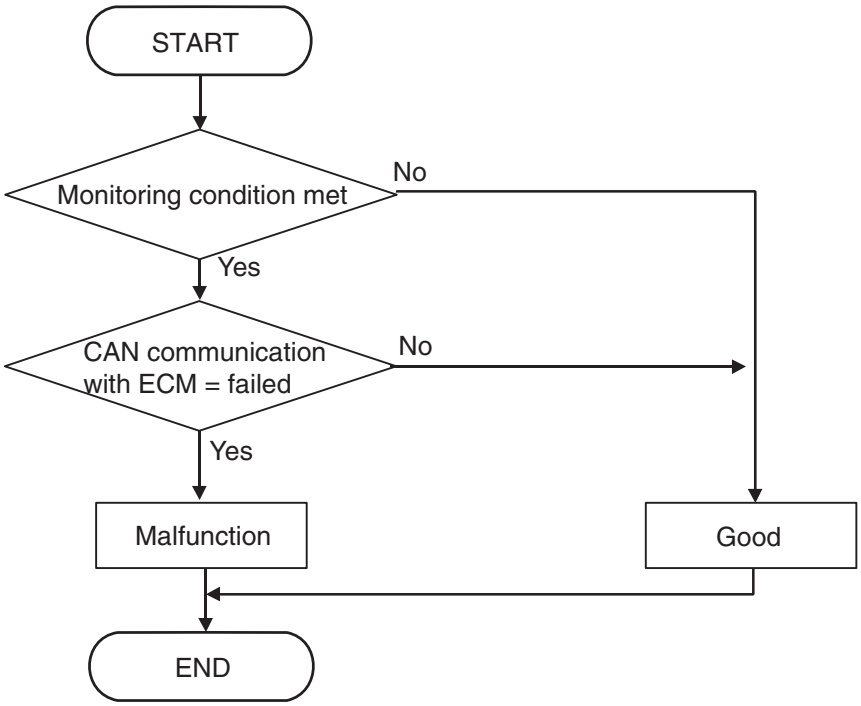
MONITOR EXECUTION
- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0848: Clutch 2 pressure sensor system (Output high range out)
- P185D: Clutch open not possible
- U0001: Bus off
- P1803: Shift lever system (CAN or LIN time-out error)
- P1870: Engine torque signal abnormality
- P1871: APS system (Signal abnormality)
- P1872: Between shift lever and TC-SST system (Q-A function abnormality)

Sensor (The sensor below is determined to be normal)
- Clutch 1 pressure sensor
- Clutch 2 pressure sensor
- APS
- Shift lever-ECU

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 10 V or more.
- Voltage of battery: 16.5 V or less.
- Time after TC-SST-ECU start: 5 seconds or more.

JUDGMENT CRITERIA

- CAN communication with ECM: Fail. (Immediately)

OBD-II DRIVE CYCLE PATTERN

Receive the signal from ECM.

PROBABLE CAUSES

- The CAN bus line is defective.
- ECM malfunction
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

TSB Revision

STEP 2. Scan tool diagnostic trouble code
Check the engine diagnostic trouble code. (Refer to GROUP 13B – Troubleshooting P.13B-51.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.
After 15 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No. U0100 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC U0103: Shift Lever Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DESCRIPTIONS OF MONITOR METHODS
The periodic communication data from the shift lever-ECU cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of the shift lever-ECU
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code
Check the shift lever diagnostic trouble code. (Refer to P.22C-397.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

TSB Revision

STEP 3. Check whether the DTC is reset.
After 10 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No. U0103 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC U0121: ASC Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DESCRIPTIONS OF MONITOR METHODS
The periodic communication data from the ASC-ECU cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of ASC-ECU
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code
Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.
After 15 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No. U0121 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC U0136: AWC Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DESCRIPTIONS OF MONITOR METHODS
The periodic communication data from the engine control module cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of AWC-ECU
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.)

STEP 2. Scan tool diagnostic trouble code
Check the AWC diagnostic trouble code. (Refer to GROUP 22C – Troubleshooting P.22C-426.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.
After 10 or more seconds have passed with the ignition switch ON position, check that the DTC is reset.

Q: Is DTC No. U0136 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC U0141: ETACS Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DESCRIPTIONS OF MONITOR METHODS
The periodic communication data from the ETACS-ECU cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of the ETACS-ECU
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:
- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code
Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.
After 15 seconds with the engine idle status, check that the DTC is reset.

Q: Is DTC No. U0141 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: The scan tool cannot communicate with TC-SST-ECU.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The CAN bus line, TC-SST-ECU power supply circuit, or TC-SST-ECU may have a problem.

PROBABLE CAUSES

- Wrong scan tool wiring harness
- The CAN bus line is defective.
- Malfunction of TC-SST-ECU power supply circuit
- Malfunction of TC-SST-ECU
- ECU malfunction of other system

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

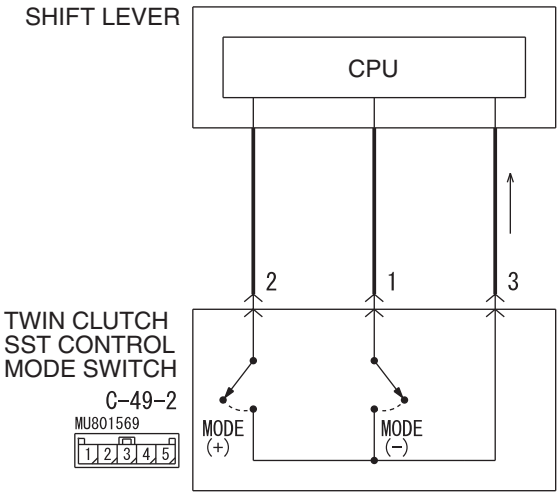
Q: Is the check result normal?

YES : Check and repair the TC-SST-ECU power supply circuit. (Refer to P.22C-369.)

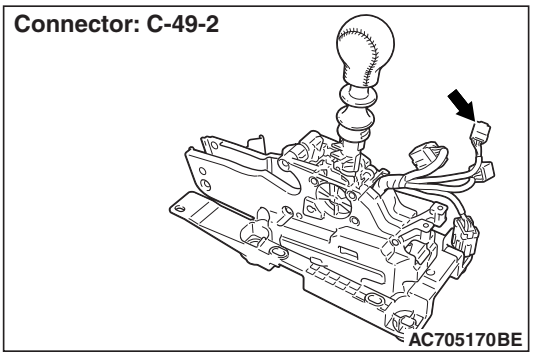
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.)

INSPECTION PROCEDURE 2: The driving mode cannot be changed.

Twin clutch sport shift transaxle control mode switch circuit



AC803069AB



⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The twin clutch SST control mode switch, or TC-SST-ECU may have a problem.

PROBABLE CAUSES

- Malfunction of the twin clutch SST control mode switch
- Damaged harness wires and connectors
- Malfunction of the shift lever-ECU
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool data list
Item No.32: Drive mode switch (Refer to data list reference table P.22C-387.)

Q: Is the check result normal?
YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)
NO : Go to Step 3.

STEP 3. Twin clutch SST control mode switch check
Refer to P.22C-547.

Q: Is the check result normal?
YES : Go to Step 4.
NO : Replace the twin clutch SST control mode switch. (Refer to P.22C-547.)

STEP 4. Twin clutch SST control mode switch connector check: C-49-2
Check for the contact with terminals.

Q: Is the check result normal?
YES : Go to Step 5.
NO : Repair the defective connector.

STEP 5. Retest the system

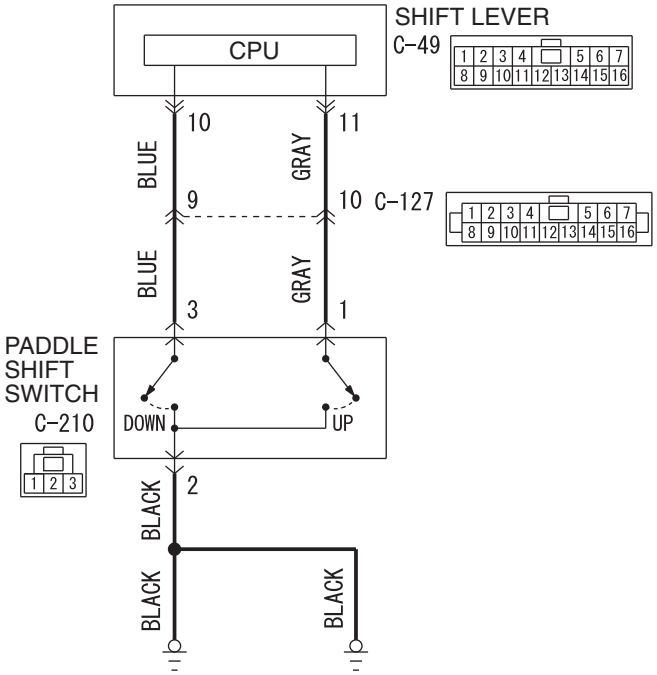
Q: Does a malfunction take place again?
YES : Go to Step 6
NO : The inspection is complete.

STEP 6. Trouble symptom recheck after replacing the shift lever assembly
(1) Replace the shift lever assembly. (Refer to P.22C-517.)
(2) Verify that the condition described by the customer exists.

Q: Does a malfunction take place again?
YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

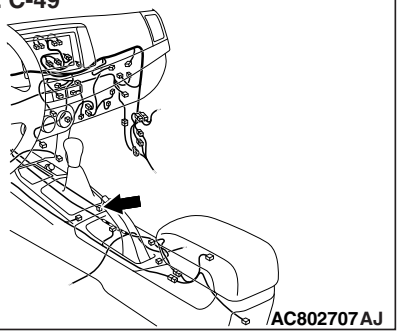
INSPECTION PROCEDURE 3: Speed change with the paddle shift is impossible.

Paddle shift switch system circuit



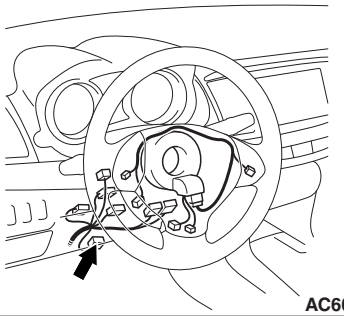
AC803077

Connector: C-49



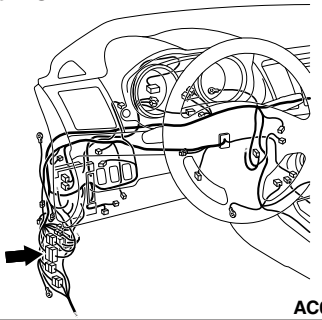
AC802707AJ

Connector: C-210



AC608147AI

Connector: C-127



AC608145BW

⚠ CAUTION

Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The paddle shift switch, or TC-SST-ECU may have a problem.

TSB Revision

PROBABLE CAUSES

- Malfunction of the paddle shift switch
- Damaged harness wires and connectors
- Malfunction of the shift lever-ECU
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Paddle shift switch check

Refer to P.22C-546.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the paddle shift assembly. (Refer to P.22C-546.)

STEP 3. Measure the resistance at C-210 paddle shift switch connector.

Disconnect the connector, and measure the resistance between terminal No.2 and ground at the wiring harness side.

OK: Continuity exists. (2 Ω or less)

Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 4.

STEP 4. Paddle shift switch connector check: C-210

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the defective connector.

STEP 5. Check the wiring harness between C-210 paddle shift switch connector terminal No.2 and the body ground.

Check the ground line for open circuit.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Repair the wiring harness.

STEP 6. Inspection of the shift lever assembly connector, intermediate connector, and paddle shift switch connector: C-49, C-127, C-210

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the defective connector.

STEP 7. Check the wiring harness between C-210 paddle shift switch connector terminal No.1 and C-49 shift lever assembly connector terminal No.11, and between C-210 paddle shift switch connector terminal No.3 and C-49 shift lever assembly connector terminal No.10.

Check the output line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 8.
NO : Repair the wiring harness.

STEP 8. Retest the system

Q: Does a malfunction take place again?

YES : Go to Step 9.
NO : The inspection is complete.

STEP 9. Trouble symptom recheck after replacing the shift lever assembly

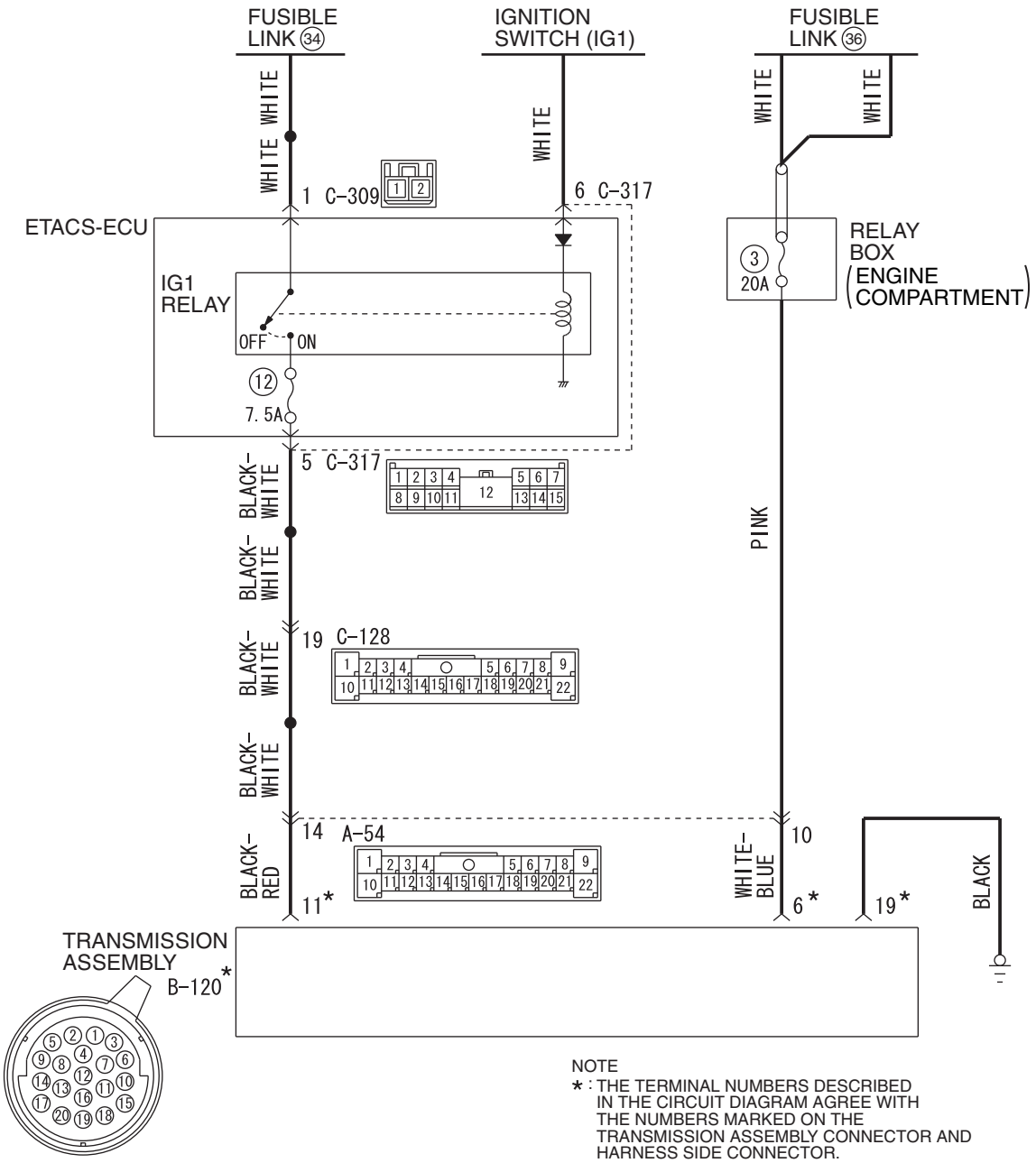
(1) Replace the shift lever assembly. (Refer to P.22C-517.)
(2) Verify that the condition described by the customer exists.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 4: TC-SST-ECU power supply circuit malfunction

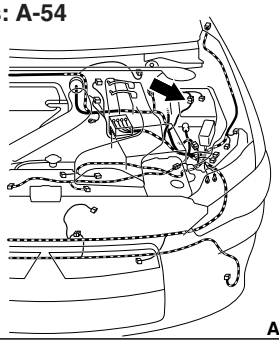
Power supply system circuit



NOTE
*: THE TERMINAL NUMBERS DESCRIBED IN THE CIRCUIT DIAGRAM AGREE WITH THE NUMBERS MARKED ON THE TRANSMISSION ASSEMBLY CONNECTOR AND HARNESS SIDE CONNECTOR.

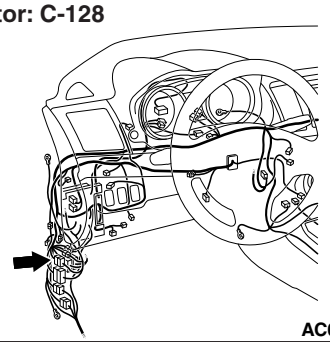
AC803079 AB

Connectors: A-54



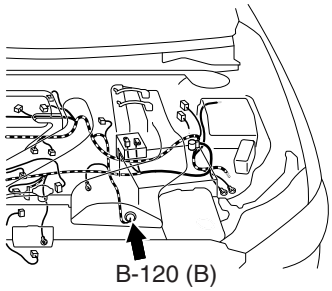
AC802703AH

Connector: C-128



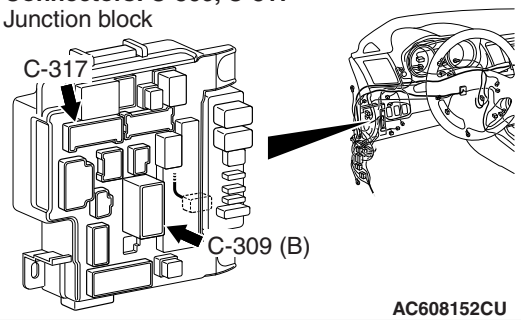
AC608145BP

Connector: B-120



AC800715AL

Connectors: C-309, C-317
Junction block



AC608152CU

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

TC-SST-ECU power supply circuit, ground circuit, or TC-SST-ECU may have a problem.

PROBABLE CAUSES

- Defective battery
- Damaged harness wires and connectors
- Malfunction of the ETACS-ECU
- Malfunction of the shift lever-ECU

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Check the battery.

Refer to GROUP 54A – Battery Test P.54A-8.

Q: Is the battery in good condition?

YES : Go to Step 2.
NO : Charge or replace the battery.

STEP 2. Measure the resistance at B-120 TC-SST-ECU connector.

Disconnect the connector, and measure the resistance between terminal No.19 and ground at the wiring harness side.

OK: Continuity exists. (2 Ω or less)

Q: Is the check result normal?

YES : Go to Step 5.
NO : Go to Step 3.

TSB Revision

STEP 3. TC-SST-ECU connector check: B-120
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the defective connector.

STEP 4. Check the wiring harness between B-120 TC-SST-ECU connector terminal No.19 and body ground.
Check the ground line for open circuit.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the wiring harness.

STEP 5. Measure the voltage at B-120 TC-SST-ECU connector.
Disconnect the connector, and measure the voltage between terminal No.6 and ground at the wiring harness side.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 8.
NO : Go to Step 6.

STEP 6. Inspection of the intermediate connector and TC-SST-ECU connector: A-54, B-120
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the defective connector.

STEP 7. Check the wiring harness between B-120 TC-SST-ECU connector terminal No.6 and fusible link No.36.
Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 8.
NO : Repair the wiring harness.

STEP 8. Scan tool diagnostic trouble code
Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 9.

STEP 9. Measure the voltage at B-120 TC-SST-ECU connector.

(1) Disconnect the connector, and measure the voltage between terminal No.11 and ground at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 12.
NO : Go to Step 10.

STEP 10. Inspection of the intermediate connector, TC-SST-ECU connector, and ETACS-ECU connector: A-54, C-128, B-120, C-317

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 11.
NO : Repair the defective connector.

STEP 11. Check the wiring harness between B-120 TC-SST-ECU connector terminal No.11 and C-317 ETACS-ECU connector terminal No.5.

Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 12.
NO : Repair the wiring harness.

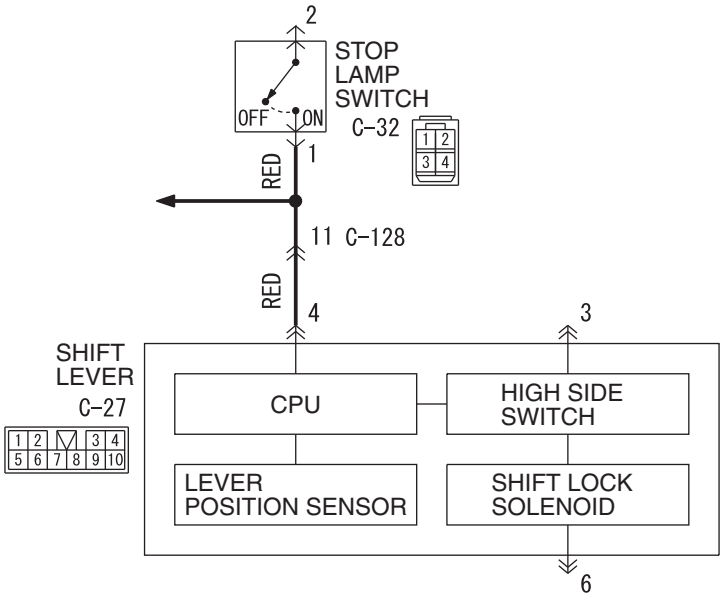
STEP 12. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

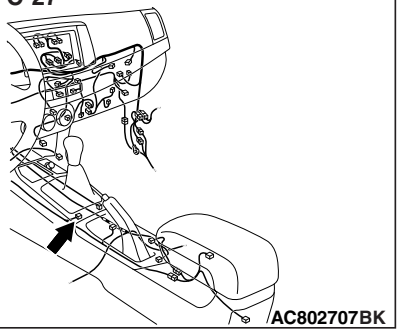
INSPECTION PROCEDURE 5: The shift lever does not operate.

Shift lock system circuit



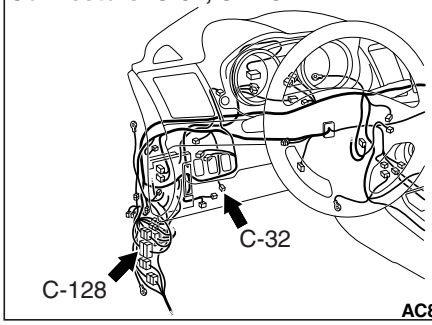
AC901771AC

Connector: C-27



AC802707BK

Connectors: C-32, C-128



AC802706BS

COMMENTS ON TROUBLE SYMPTOM

The transaxle control cable, shift lever assembly, or transaxle assembly may have a problem.

NOTE: Before performing this diagnosis, check that the stoplight illuminates when the brake pedal is depressed.
If the stoplight does not illuminate, check that the following items are normal. Then perform this diagnosis.

- *Open circuit or short to ground (including blown fuse) in stoplight switch system (power supply circuit)*
- *Stoplight switch system (output circuit) is shorted to ground.*
- *Improper installation of stoplight switch*
- *Malfunction of stoplight switch*

PROBABLE CAUSES

- Malfunction of the transaxle control cable
- Malfunction of the shift lever assembly
- Malfunction of the transaxle assembly

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DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool data list.

Item No.5: Brake SW (Refer to data list reference table P.22C-387.)

Q: Is the check result normal?

YES : Go to Step 7.
NO : Go to Step 2.

STEP 2. Shift lever-ECU connector check: C-27

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the defective connector.

STEP 3. Measure the voltage at C-27 shift lever-ECU connector.

Disconnect the connector, and measure the voltage between terminal No.4 and ground at the wiring harness side.

- **OK: 1 V or less (brake pedal released)**
- **OK: System voltage (brake pedal depressed)**

Q: Is the check result normal?

YES : Go to Step 6.
NO : Go to Step 4.

STEP 4. Inspection of the stoplight switch connector, intermediate connector: C-32, C-128

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the defective connector.

STEP 5. Check the wiring harness between C-32 stoplight switch connector terminal No.1 and C-27 shift lever-ECU connector terminal No.4.

Check the output line for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 6.
NO : Repair the wiring harness.

STEP 6. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 7. Key interlock mechanism check

Refer to P.22C-510.

Q: Is the check result normal?

YES : Go to Step 8.

NO : Adjust the key interlock mechanism. (Refer to P.22C-510.)

STEP 8. Shift lever operation check

(1) Disconnect the connection of the shift lever assembly and the transaxle control cable.
(2) Turn the ignition switch to the ON position. Check that the shift lever can be moved to each range when the brake pedal is depressed.

Q: Is the check result normal?

YES : Go to Step 9.

NO : Replace the shift lever assembly. (Refer to P.22C-517.)

STEP 9. Transaxle control cable check

(1) Connect the connection of the shift lever assembly and the transaxle control cable.
(2) Disconnect the connection of the transaxle assembly and the transaxle control cable.
(3) Turn the ignition switch to the ON position. Check that the shift lever can be moved to each range when the brake pedal is depressed.

Q: Is the check result normal?

YES : Replace the TC-SST assembly. (Refer to P.22C-533.)

NO : Check the transaxle control cable for installation condition, and repair or replace if necessary.(Refer to P.22C-517.)

INSPECTION PROCEDURE 6: Gears cannot be changed with the manual mode.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The CAN bus lines, shift lever assembly, or mechatronic assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the CAN bus lines
- Malfunction of the shift lever assembly
- Malfunction of the mechatronic assembly

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool data list.

Shift lever item No.1: Lever position (Refer to P.22C-387).
(1) Confirm that "Manual" is displayed when the shift lever position is in the manual mode.
(2) Confirm that "+" is displayed when the shift lever position is upshifted and held, and "-" is displayed when the shift lever position is downshifted and held.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Replace the shift lever assembly. (Refer to P.22C-517.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 7: The vehicle moves with the P-range.

COMMENTS ON TROUBLE SYMPTOM

The transaxle control cable, shift lever assembly, or transaxle assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the transaxle control cable
- Malfunction of the shift lever assembly
- Malfunction of the transaxle assembly

DIAGNOSTIC PROCEDURE

STEP 1. Check for transaxle control cable installation

Check the transaxle control cable for installation condition.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Install the transaxle control cable properly. (Refer to P.22C-517.)

STEP 2. Transaxle control cable operation check

1. Disconnect the connection of the transaxle assembly and the transaxle control cable.
2. Turn the ignition switch to the ON position and depress the brake pedal. Check that the transaxle control cable works when shift lever is moved to P⇔R.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Go to Step 3.

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle control cable.(Refer to P.22C-517.) Then, go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)

NO : This diagnosis is complete.

STEP 5. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 8: Slipping occurs with the D-range/R-range/manual mode, and engine racing occurs during gear shifting/driving.

COMMENTS ON TROUBLE SYMPTOM

Fluid may be insufficient or contaminated. Oil filter case assembly, mechatronic assembly, clutch assembly, or transaxle assembly may have a problem.

PROBABLE CAUSES

- Insufficient or contaminated fluid
- Malfunction of the oil filter case assembly
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transaxle assembly

DIAGNOSTIC PROCEDURE

STEP 1. Oil filter case assembly check

(1) Check if the oil filter is replaced according to the cycle specified in the Maintenance Note.
- Normal condition : 96,000 km (60,000 miles)
- Severe condition : 48,000 km (30,000 miles)

(2) Visually check that no fluid leaks form the oil filter case assembly and it is installed normally.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the oil filter case assembly. (Refer to P.22C-544.)

STEP 2. Fluid check

Check for the fluid level and if no foreign material and contamination are found.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Charge or replace the fluid.

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.) Then go to Step 5.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 5. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 9: The vehicle does not creep with the D-range/R-range/manual mode.

COMMENTS ON TROUBLE SYMPTOM

The foot brake or parking brake may be dragging. Mechatronic assembly, clutch assembly, or transaxle assembly may have a problem.

NOTE: If the fluid temperature is extremely high, the creep is controlled slightly for slip control.

PROBABLE CAUSES

- Drag of foot brake or parking brake
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transaxle assembly

DIAGNOSTIC PROCEDURE

STEP 1. Inspect the foot brake or parking brake.

Check that the foot brake or parking brake is not dragging.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Adjust the foot brake or parking brake.

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 10: The shock is large when the vehicle is stopped and the brake pedal is released with the D-range/R-range/manual mode.

COMMENTS ON TROUBLE SYMPTOM

The mechatronic assembly, or clutch assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly

DIAGNOSTIC PROCEDURE

STEP 1. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then go to Step 2.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 11: Poor acceleration

COMMENTS ON TROUBLE SYMPTOM

Fluid may be insufficient or contaminated. Engine system, mechatronic assembly, clutch assembly, or transaxle assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the engine system
- Insufficient or contaminated fluid
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transaxle assembly

DIAGNOSTIC PROCEDURE

STEP 1. Check the engine system

Q: Is the check result normal?

YES : Go to Step 2

NO : Repair the engine system.

STEP 2. Fluid check

Check for the fluid level and if no foreign material and contamination are found.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Charge or replace the fluid.

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.) Then go to Step 5.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 5. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 12: The gear shifting does not occur. (The transaxle does not upshift or downshift.)

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The CAN bus lines, mechatronic assembly, clutch assembly, or transaxle assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the CAN bus lines
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transaxle assembly

DIAGNOSTIC PROCEDURE

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827 M.U.T.-III USB Cable
  - MB991910 M.U.T.-III Main Harness A

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 13: The shift shock is large.

COMMENTS ON TROUBLE SYMPTOM

The mechatronic assembly, clutch assembly, or transaxle assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transaxle assembly

DIAGNOSTIC PROCEDURE

STEP 1. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then go to Step 2.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.) Then go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 14: Delay occurs when the lever is shifted from "N" to "D" or "N" to "R".

COMMENTS ON TROUBLE SYMPTOM

Fluid may be insufficient or contaminated.
TC-SST-ECU power supply circuit, mechatronic assembly, clutch assembly, or transaxle assembly may have a problem.

PROBABLE CAUSES

- Malfunction of TC-SST-ECU power supply circuit
- Insufficient or contaminated fluid
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transaxle assembly

DIAGNOSTIC PROCEDURE

STEP 1. Check the TC-SST-ECU power supply circuit
Refer to P.22C-369.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-369.)

STEP 2. Fluid check
Check for the fluid level and if no foreign material and contamination are found.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Charge or replace the fluid.

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.) Then go to Step 5.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 5. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 15: The engine stops when the lever is shifted from "N" to "D" or "N" to "R".

COMMENTS ON TROUBLE SYMPTOM

Engine system, mechatronic assembly, or clutch assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the engine system
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly

DIAGNOSTIC PROCEDURE

STEP 1. Check the engine system

Q: Is the check result normal?

YES : Go to Step 2

NO : Repair the engine system.

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 16: The vehicle moves with the N-range on the level ground.

COMMENTS ON TROUBLE SYMPTOM

The mechatronic assembly, or clutch assembly may have a problem.

PROBABLE CAUSES

- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly

DIAGNOSTIC PROCEDURE

STEP 1. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then go to Step 2.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 17: Judder/noise/vibration

COMMENTS ON TROUBLE SYMPTOM

Fluid may be insufficient or contaminated. Mechatronic assembly or clutch assembly may have a problem.

NOTE: The following items can become a cause of the probable causes other than transaxle. Perform this troubleshooting after checking that the following probable causes are normal.

- *Engine system*
- *Vibration of exhaust system*
- *Driveshaft malfunction (flaw, wear, looseness, large deflection)*
- *Tire*
- *Interference of the drive system and body*
- *Suspension malfunction (looseness)*

PROBABLE CAUSES

- Insufficient or contaminated fluid
- Malfunction of the mechatronic assembly
- Malfunction of the clutch assembly
- Malfunction of the transaxle assembly

DIAGNOSTIC PROCEDURE

STEP 1. Fluid check

Check for the fluid level and if no foreign material and contamination are found.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Charge or replace the fluid.

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.) Then go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-7.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-525.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DATA LIST REFERENCE TABLE

M1225006700174

Item No.	Display on scan tool	Item name	Check conditions		Normal conditions
4	Engine torque control source	Engine torque control status	Engine: Idling		Idle control
			• Engine: Idling • Accelerator pedal: Depressed		Driver request
5	Brake SW	Stoplight switch	Ignition switch: ON	Brake pedal: Depressed	ON
				Brake pedal: Released	OFF
14	Lever position	Shift lever position	Ignition switch: ON	Shift lever position: P	P
				Shift lever position: R⇔P	R-P
				Shift lever position: R	R
				Shift lever position: N⇔R	N-R
				Shift lever position: N	N
				Shift lever position: D⇔N	D-N
				Shift lever position: D	D
				Shift lever position: Manual mode	Manual
				Shift lever position: Upshift and hold	+
				Shift lever position: Downshift and hold	–
23	Current gear	Gear	Ignition switch: ON	Shift lever position: N	N
			Driving at a constant speed in 1st		1st
			Driving at a constant speed in 2nd		2nd
			Driving at a constant speed in 3rd		3rd
			Driving at a constant speed in 4th		4th
			Driving at a constant speed in 5th		5th
			Driving at a constant speed in 6th		6th
			Reverse		R
24	Target gear	Target gear	Ignition switch: ON	Shift lever position: N	N
			Driving at a constant speed in 1st		1st
			Driving at a constant speed in 2nd		2nd
			Driving at a constant speed in 3rd		3rd
			Driving at a constant speed in 4th		4th
			Driving at a constant speed in 5th		5th
			Driving at a constant speed in 6th		6th
			Reverse		R
26	Parking brake	Parking brake	Ignition switch: ON	Parking brake lever: Pulled	ON
				Parking brake lever: Released	OFF

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Item No.	Display on scan tool	Item name	Check conditions		Normal conditions
27	Vehicle speed	Vehicle speed	Steady state driving		Nearly the same as the speedometer displayed
28	ABS/ASC operation flag	ABS/ASC operation flag	ABS operated		ON
			ABS not operated		OFF
29	ABS/ASC status	ABS/ASC status	Ignition switch: ON		Error/ Diag mode, Normal mode, ASC error, Emission test
30	Paddle SW (up)	Paddle shift switch (up)	Ignition switch: ON	Paddle shift position: Upshift and hold	ON
				Paddle shift position: Other than the above	OFF
31	Paddle SW (down)	Paddle shift switch (down)	Ignition switch: ON	Paddle shift position: Downshift and hold	ON
				Paddle shift position: Other than the above	OFF
32	Drive mode (SW input)	Twin clutch SST control mode switch	Ignition switch: ON	Switch position: Up (to frontward of vehicle) operation, then hold	+
				Switch position: Down (to backward of vehicle) operation, then hold	–
				Switch position: Other than above	Default
35	ASC gear hold request	ASC gear hold request	Ignition switch: ON	Normal state	No request
				Gear hold requested	Gear hold request
37	FL speed sensor	FL wheel speed sensor	Actual driving		The same value as the ASC wheel speed is displayed
38	FR speed sensor	FR wheel speed sensor			
39	RL speed sensor	RL wheel speed sensor			
40	RR speed sensor	RR wheel speed sensor			
41	Cold shift request	Cold shift request	Cold shift requested		ON
			Cold shift not requested		OFF
43	Idle up request flag	Idle up request flag	Idle up requested		ON
			Idle up not requested		OFF
47	Torque limit by spark retard	Torque limit by spark retard	Torque limit by spark retard requested		ON
			Not requested		OFF

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Item No.	Display on scan tool	Item name	Check conditions		Normal conditions
48	Torque limit by fuel cutoff	Torque limit by fuel cutoff	Torque limit by fuel cutoff requested		ON
			Not requested		OFF
49	Torque increase request flag	Torque increase request flag	Torque increase requested		ON
			Not requested		OFF
50	Torque reduction request flag	Torque reduction request flag	Torque reduction requested		ON
			Not requested		OFF
51	Torque limit by throttle closing	Torque limit by throttle closing	Torque limit by throttle closing requested		ON
			Not requested		OFF
55	Transmission temperature sensor	Fluid temperature sensor	Ignition switch: ON		The oil temperature is displayed
56	Transmission temperature warning	Fluid temperature warning	Ignition switch: ON	When the oil temperature warning indicator is displayed	ON
				When the oil temperature warning indicator is not displayed	OFF
57	Drive mode SW	Twin clutch SST control mode switch	Ignition switch: ON	Drive mode: Normal	CITY (Normal)
				Drive mode: Sport	SPORT
58	Gear change mode	Gear change mode	Ignition switch: ON	Shift lever position: D	Auto
				Shift lever position: Manual mode	Manual

Item No.	Display on scan tool	Item name	Check conditions		Normal conditions
59	Meter displayed Gear	Meter displayed Gear	Ignition switch: ON	Shift lever position: P	P
				Shift lever position: R	R
				Shift lever position: N	N
			Shift lever position: D	Driving at a constant speed in 1st	D1
				Driving at a constant speed in 2nd	D2
				Driving at a constant speed in 3rd	D3
				Driving at a constant speed in 4th	D4
				Driving at a constant speed in 5th	D5
				Driving at a constant speed in 6th	D6
			Shift lever position: Manual mode	Driving at a constant speed in 1st	1
				Driving at a constant speed in 2nd	2
				Driving at a constant speed in 3rd	3
				Driving at a constant speed in 4th	4
				Driving at a constant speed in 5th	5
				Driving at a constant speed in 6th	6
60	Transmission fail flag	Transmission fail flag	Fail-safe function operated		ON
			Fail-safe function not operated		OFF
61	ECU operation status	TC-SST-ECU operation status	Ignition switch: ON		The ECU operation status is displayed
62	Current gear (internal data)	Current gear (internal data)	Actual driving		The current driving gear is displayed
63	Pre select gear (internal data)	Pre select gear (internal data)	Actual driving		The pre-select gear is displayed
64	Gear odd (internal data)	Gear odd (internal data)	Actual driving		The odd number gear currently engaged is displayed

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Item No.	Display on scan tool	Item name	Check conditions	Normal conditions
65	Gear even (internal data)	Gear even (internal data)	Actual driving	The even number gear currently engaged is displayed
66	Clutch (odd) temperature	Clutch (odd) temperature	Ignition switch: ON	The clutch (odd number) surface temperature is displayed
67	Clutch (even) temperature	Clutch (even) temperature	Ignition switch: ON	The clutch (even number) surface temperature is displayed
68	Clutch (odd) slip speed	Clutch (odd) slip speed	Ignition switch: ON	The clutch (odd number) slip speed is displayed
69	Clutch (even) slip speed	Clutch (even) slip speed	Ignition switch: ON	The clutch (even number) slip speed is displayed
70	Coding counter	Coding counter	Ignition switch: ON	Number of counts for performed coding is displayed
71	Battery voltage	Battery voltage	Ignition switch: ON	The battery voltage is displayed
74	Clutch (odd) pressure sensor	Clutch (odd) pressure sensor	Ignition switch: ON	The clutch (odd number) pressure is displayed
75	Clutch (even) pressure sensor	Clutch (even) pressure sensor	Ignition switch: ON	The clutch (even number) pressure is displayed
76	Shift fork position sensor 1	Shift fork position sensor 1	Driving at a constant speed in 1st	9 mm ± 1 mm
			Reverse	–9 mm ± 1 mm
77	Shift fork position sensor 2	Shift fork position sensor 2	Driving at a constant speed in 5th	9 mm ± 1 mm
			Driving at a constant speed in 3rd	–9 mm ± 1 mm
78	Shift fork position sensor 3	Shift fork position sensor 3	Driving at a constant speed in 6th	–9 mm ± 1 mm

Item No.	Display on scan tool	Item name	Check conditions	Normal conditions
79	Shift fork position sensor 4	Shift fork position sensor 4	Driving at a constant speed in 4th	9 mm ± 1 mm
			Driving at a constant speed in 2nd	–9 mm ± 1 mm
80	Clutch shift pressure solenoid 1	Clutch/shift pressure solenoid 1 system	Ignition switch: ON	The drive current of the clutch/shift pressure solenoid 1 is displayed
81	Clutch shift pressure solenoid 2	Clutch/shift pressure solenoid 2 system	Ignition switch: ON	The drive current of the clutch/shift pressure solenoid 2 is displayed
82	Clutch cooling solenoid	Clutch cooling flow solenoid	Ignition switch: ON	The drive current of the clutch cooling flow solenoid is displayed
83	Line pressure solenoid	Line pressure solenoid	Ignition switch: ON	The drive current of the line pressure solenoid is displayed
84	Input shaft (odd) speed	Input shaft 1 (odd) speed	Driving at a constant speed in odd gear	Nearly the same as the tachometer displayed
85	Input shaft (even) speed	Input shaft 2 (even) speed	Driving at a constant speed in even gear	Nearly the same as the tachometer displayed
86	Damper speed sensor	Damper speed sensor	Engine: Idling	Nearly the same as the tachometer displayed
88	ECU temperature (internal data)	TC-SST-ECU temperature (internal data)	Ignition switch: ON	The ECU temperature is displayed

SPECIAL FUNCTION

M1225028400052

TEACH-IN REFERENCE TABLE

⚠ CAUTION

Be careful with the following items when performing Item No.3: Line Pressure Test.

- **The engine speed could be high (4,000 r/min) when the Line Pressure Test is in progress. (Depending on the transaxle state, the engine speed may not be high.)**
- **After Teach-In completion, check that it completed normally. (Teach-In execution results is displayed in the following Data list.)**

TEACH-IN

Item No.	Scan tool Item Name
1	Plausibility check
2	Shift fork Teach-In
3	Line pressure Test
4	Stroke Teach-In
5	Boost Teach-In
6	Interlock Teach-In
7	Clutch Ventilation
8	Reset clutch gain

NOTE:

- *According to the transmission fluid state (fluid -filled state), Teach-In executed time is not equal.*
- *Item No.8 is not displayed when the Diag. Version of TC-SST-ECU is pre-0002. (Diag. Version can be checked by the Teach-In screen of scan tool.)*

DATA LIST

No.	Data List Item Name	Teach-In state or result	Scan tool display
100	Teach-In executing	Before execution	No
		Other than the execution conditions	Pending
		After execution	Yes → No
101	Normal End	At the normal end	Yes
		At the abnormal end	No
102	Abnormal End	At the normal end	No
		At the abnormal end	Yes
103	Timeout error	When a timeout error is not occurred	No
		When a timeout error is occurred	Yes

No.	Data List Item Name	Teach-In state or result	Scan tool display
104	Abort conditions error	When an error other than the execution conditions is not occurred	No
		When an error other than the execution conditions is occurred	Yes
110	Execute last Teach-In item	–	The previously conducted scan tool item name is displayed
111	Internal Error Data	–	The monitoring unit No. is displayed in case of an error

TC-SST-ECU TERMINAL VOLTAGE REFERENCE CHART

M1225006800096

B-120

AC803080AB

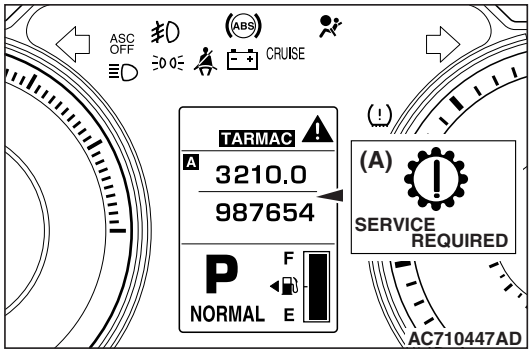
Terminal No.	Check items	Check conditions	Standard value
2	CAN_L	–	–
5	CAN_H	–	–
6	Back-up power supply	Always	Battery positive voltage
11	Power supply	Ignition switch: ON	Battery positive voltage
		Ignition switch: OFF	1 V or less
17	LIN	–	–
19	Ground	Always	1 V or less

DIAGNOSIS <SHIFT LEVER>

DIAGNOSIS FUNCTION

M1225000500246

WARNING INDICATOR



When a malfunction occurs to the shift lever, the figure (A) remains displayed on the information screen of multi information display.
If the figure (A) remains displayed on the information screen of multi information display, check whether or not a diagnostic trouble code is set.

FAIL-SAFE FUNCTION

If an abnormality occurs to the signal of sensors, switches, solenoids, or others, the shift lever-ECU performs a control for the driver safety and system protection. The control contents are as follows.

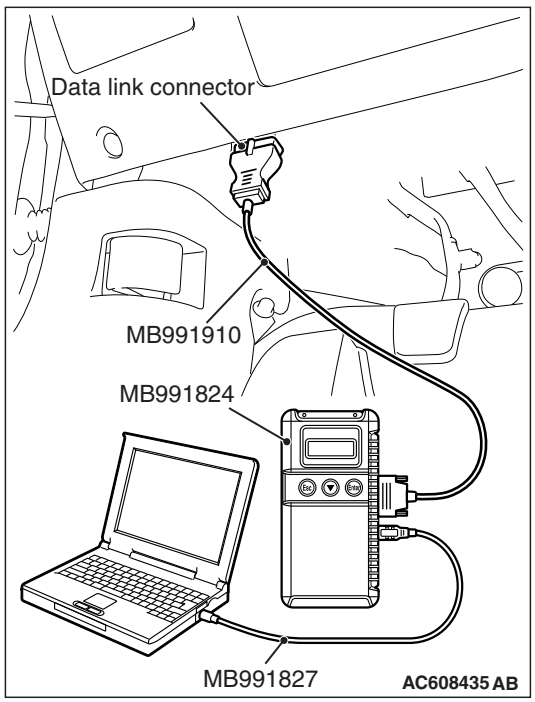
FAIL-SAFE REFERENCE TABLE

Code No.	Item	Control content
P198D	EEPROM	Normal driving can be performed, and displays an occurrence of trouble to the multi information display to warn the driver.
P198E	Lever position sensor system (Malfunction of one sensor)	Normal driving can be performed, and displays an occurrence of trouble to the multi information display to warn the driver.
P198F	Lever position sensor system (Malfunction of two sensors)	The lever position cannot be identified, and the clutch open at TC-SST side prohibits the vehicle from driving. Then displays an occurrence of trouble to the multi information display to warn the driver.

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

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle 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 MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the scan tool system on the personal computer.

NOTE: Disconnecting scan tool MB991958 is the reverse of the connecting sequence, making sure that the ignition switch is at the "LOCK" (OFF) position.

FREEZE FRAME DATA CHECK

Data of when the diagnostic trouble code is determined is obtained, and the status of ACD is stored. By analysing each data using the scan tool, troubleshooting can be carried out efficiently.

Display items of the freeze frame data are as follows.

FREEZE FRAME DATA REFERENCE TABLE

Item No.	Item	Unit/Display
4	Current trouble accumulative time	min
5	Shift lever position	• P • R-P • R • N-R • N • D-N • D • Manual • + • –
6	Battery voltage	V

DIAGNOSTIC TROUBLE CODE CHART

M1225000600209

⚠ CAUTION

During diagnosis, a DTC 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.

DTC No.	Diagnostic item	Reference page
P0563	Power supply system	P.22C-398
P198D	EEPROM system	P.22C-399
P198E	Lever position sensor system	P.22C-399
P198F		
U0001	Bus off	P.22C-400
U0100	Engine time-out error	P.22C-401
U0101	TC-SST time-out error	P.22C-401
U0121	ASC time-out error	P.22C-402
U0141	ETACS time-out error	P.22C-403

SYMPTOM CHART

M1225005200198

⚠ CAUTION

During diagnosis, a DTC 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.

Symptom	Inspection procedure No.	Reference page
The scan tool cannot communicate with the shift lever-ECU.	1	P.22C-404
Shift indicator lamp does not illuminate.	2	P.22C-404
Back-up light does not illuminate.	3	P.22C-406

Symptom	Inspection procedure No.	Reference page
The driving mode cannot be changed.	4	P.22C-410
Speed change with the paddle shift is impossible.	5	P.22C-411
Shift lever-ECU power supply circuit abnormality	6	P.22C-413

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC P0563: Power Supply System

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
The shift lever-ECU checks that the power supply circuit is normal.

DTC SET CONDITIONS
The voltage from the battery is determined to be overvoltage.

PROBABLE CAUSES
- Malfunction of the shift lever-ECU
- Generator malfunction

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P0563 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Generator system check
Refer to GROUP 16 – Charging System, On-vehicle Service P.16-9.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair or replace the generator related parts.

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. P0563 set?

YES : Shift lever assembly replacement. (Refer to P.22C-517.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P198D: EEPROM System

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

The shift lever-ECU checks that EEPROM or RAM is normal.

DTC SET CONDITIONS

The EEPROM writing data is determined to be abnormal.

PROBABLE CAUSES

- Malfunction of the shift lever-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P198D set?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC P198E, 198F: Lever Position Sensor System

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

The shift lever-ECU has lever position sensors, and checks for abnormality.

DTC SET CONDITIONS

- When one position signal is determined not to be, P198E is set.

- When two position signals are determined not to be, P198F is set.

PROBABLE CAUSES

- Malfunction of the shift lever-ECU
- Malfunction of the lever position sensor

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Are DTC Nos. P198E, P198F set?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC U0001: Bus-off

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DTC SET CONDITIONS

The shift lever-ECU ceases communication (bus-off).

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of the shift lever-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. U0001 set?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC U0100: Engine Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DTC SET CONDITIONS
The periodic communication data from the engine control module cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of engine control module
- Malfunction of the shift lever-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code
Check the engine diagnostic trouble code. (Refer to GROUP 13B – Troubleshooting P.13B-51.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. U0100 set?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC U0101: TC-SST Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

JUDGMENT CRITERIA
The periodic communication data from TC-SST-ECU cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of TC-SST-ECU
- Malfunction of the shift lever-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code
Check the TC-SST diagnostic trouble code. (Refer to P.22C-33.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. U0101 set?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC U0121: ASC Time-out Error

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

JUDGMENT CRITERIA

The periodic communication data from the ASC-ECU cannot be received.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of ASC-ECU
- Malfunction of the shift lever-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code
Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. U0121 set?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DTC U0141: ETACS Time-out Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

JUDGMENT CRITERIA
The periodic communication data from the ETACS-ECU cannot be received.

PROBABLE CAUSES
- The CAN bus line is defective.
- Malfunction of the ETACS-ECU
- Malfunction of the shift lever-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code
Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. U0141 set?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

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SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: The scan tool cannot communicate with the shift lever-ECU.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM
The CAN bus line, shift lever-ECU power supply circuit, or shift lever-ECU may have a problem.

PROBABLE CAUSES
- Wrong scan tool wiring harness
- The CAN bus line is defective.
- Malfunction of the shift lever-ECU power supply circuit
- Malfunction of the shift lever-ECU
- ECU malfunction of other system

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

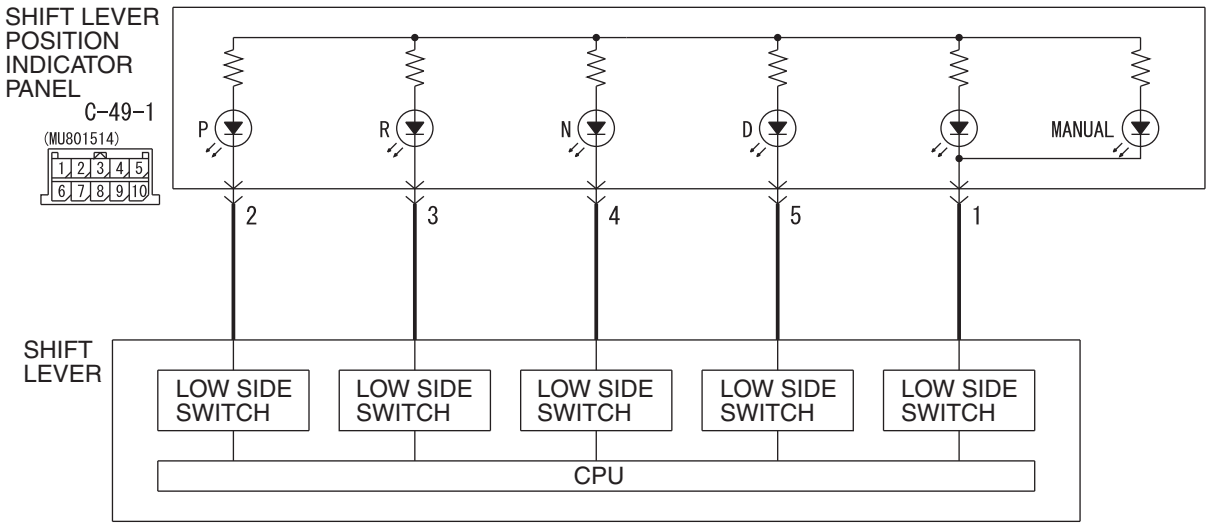
Q: Is the check result normal?

YES : Check and repair the shift lever-ECU power supply circuit. (Refer to P.22C-413.)

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.)

INSPECTION PROCEDURE 2: Shift indicator light does not illuminate.

Shift lever position indicator panel circuit



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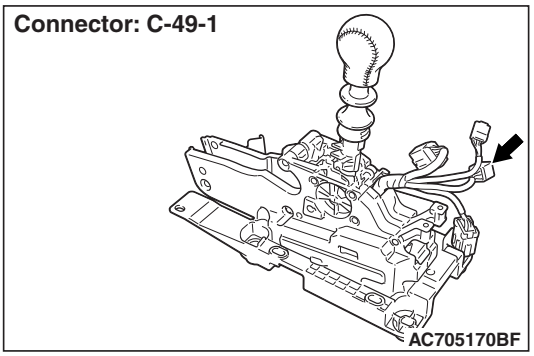

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The shift indicator light or shift lever-ECU may have a problem.

PROBABLE CAUSES

- Malfunction of the shift indicator light
- Damaged harness wires and connectors
- Malfunction of the shift lever-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool data list
Item No.1: Shift lever position (Refer to data list reference table P.22C-417.)

Q: Is the check result normal?

YES : Go to Step 3.
NO : Replace the shift lever assembly. (Refer to P.22C-517.)

STEP 3. Scan tool actuator test
Item No.1: Shift indicator (Refer to Special Function (Actuator Test Reference Table) P.22C-419.)

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)
NO : Go to Step 4.

STEP 4. Inspection of the floor console panel assembly connector: C-49-1
Check for the contact with terminals.

Q: Is the check result normal?

YES : Replace the floor console panel assembly. (Refer to GROUP 52A – Floor Console Assembly P.52A-9.)
NO : Repair the defective connector.

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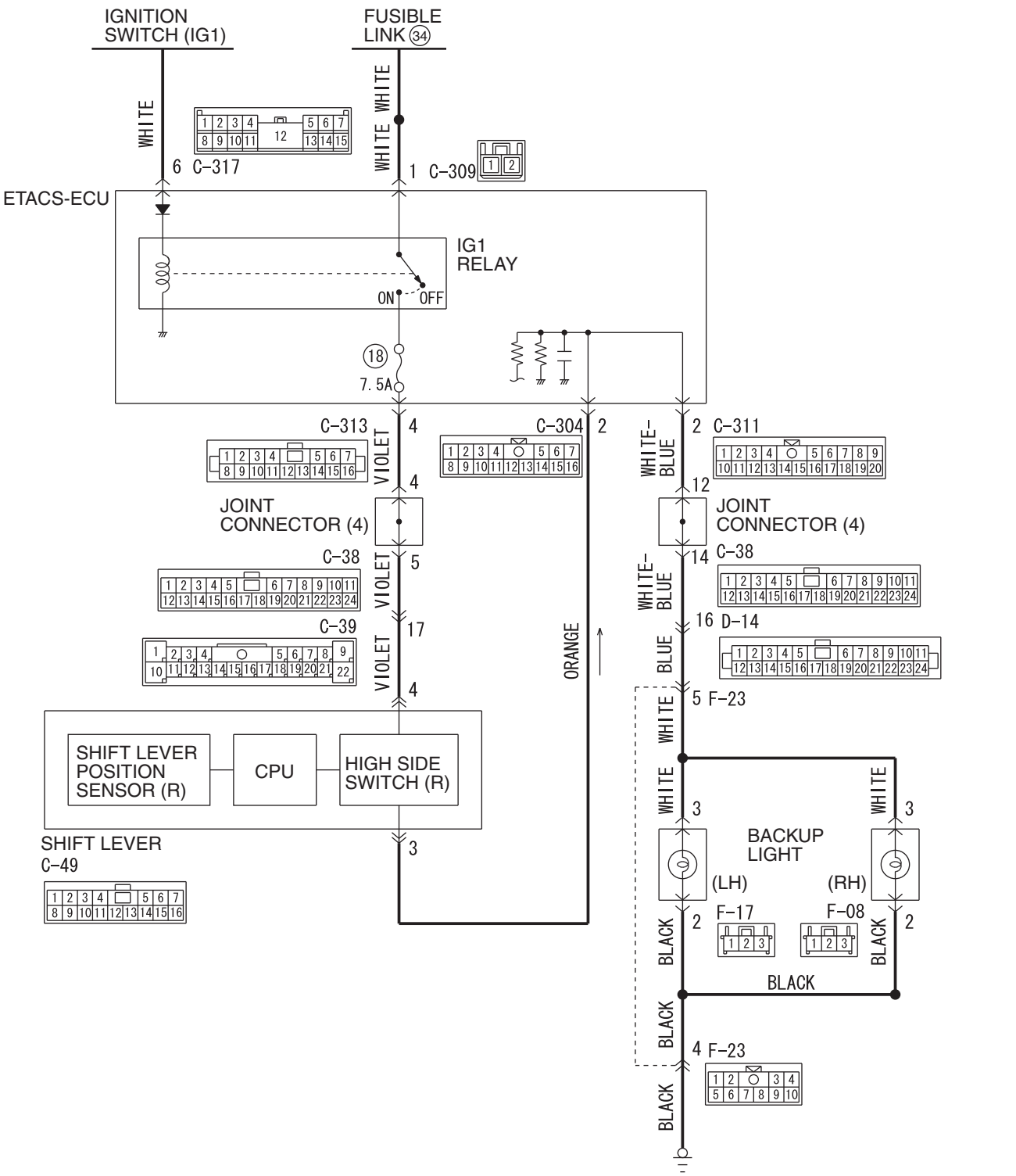
INSPECTION PROCEDURE 3: Back-up light does not illuminate.

Backup lamp switch system circuit



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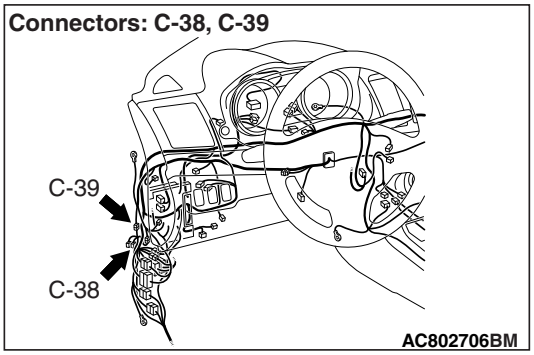
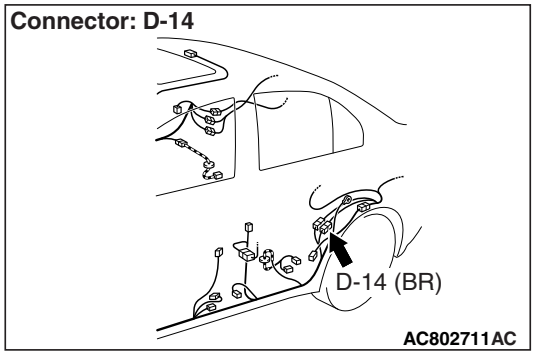
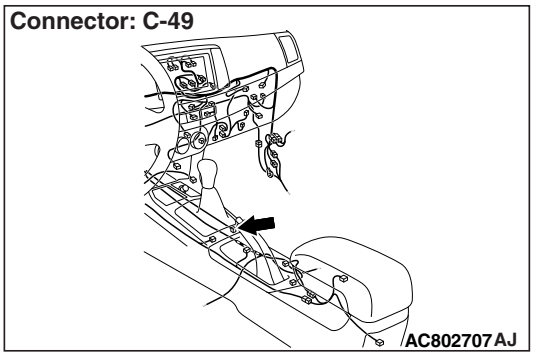
Connectors: C-38, C-39



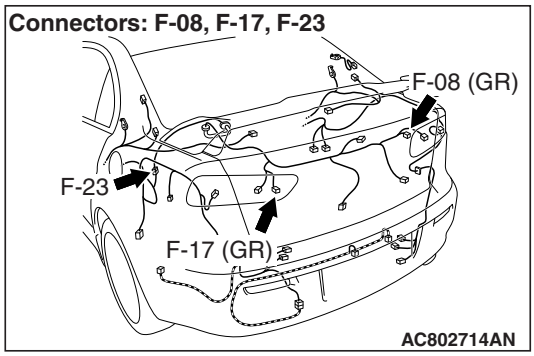
Connector: D-14



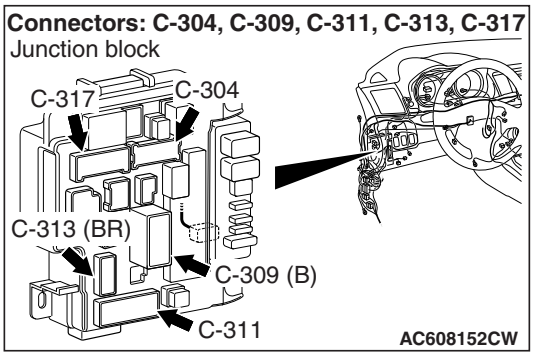
Connector: C-49



Connectors: F-08, F-17, F-23



Connectors: C-304, C-309, C-311, C-313, C-317
Junction block



⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The back-up light, ETACS-ECU, or shift lever-ECU may have a problem.

PROBABLE CAUSES

- Malfunction of the ETACS-ECU
- Malfunction of the back-up light
- Damaged harness wires and connectors
- Malfunction of the shift lever-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool actuator test
Item No.2: Back-up light (Refer to Special Function (Actuator Test Reference Table P.22C-419.))

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)
NO : Go to Step 3.

STEP 3. Scan tool diagnostic trouble code
Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Bulb check
Check if the bulb of the back-up light which does not illuminate is normal.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Replace the bulb.

STEP 5. Measure the resistance at F-08 back-up light (RH) connector and F-17 back-up light (LH) connector.
Disconnect the connector, and measure the resistance between the connector terminal No.2 and ground at the wiring harness side.

OK: Continuity exists. (2 Ω or less)

Q: Is the check result normal?

YES : Go to Step 8.
NO : Go to Step 6.

STEP 6. Inspection of theback-up light (RH) connector, back-up light (LH) connector, and intermediate connector: F-08, F-17, F-23
Check for the contact with the connector terminals.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the defective connector.

STEP 7. Check the wiring harness between F-08 back-up light (RH) connector terminal No. 2 and body ground, and between F-17 back-up light (LH) connector terminal No.2 and body ground.
Check the ground line for open circuit.

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)
NO : Repair the wiring harness.

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STEP 8. Measure the voltage at F-08 back-up light (RH) connector and F-17 back-up light (LH) connector.

(1) Disconnect the connector, and measure the voltage between the connector terminal No.3 and ground at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.
(3) Place the shift lever to the R range.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)
NO : Go to Step 9.

STEP 9. Inspection of J/C (4), intermediate connector, shift lever assembly connector, ETACS-ECU connector, and back-up light connector: C-38, C-39, C-49, C-304, C-311, C-313, D-14, F-08, F-17, F-23

Check for the contact with the connector terminals.

Q: Is the check result normal?

YES : Go to Step 10.
NO : Repair the defective connector.

STEP 10. Check the wiring harness between F-08 back-up light (RH) connector terminal No.3 and C-311 ETACS-ECU connector terminal No.2, and between F-17 back-up light (RH) connector terminal No.3 and C-311 ETACS-ECU connector terminal No.2.

Check the power supply line for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 11.
NO : Repair the wiring harness.

STEP 11. Check the wiring harness between C-49 shift lever assembly connector terminal No.3 and C-304 ETACS-ECU connector terminal No.2.

Check the power supply line for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 12.
NO : Repair the wiring harness.

STEP 12. Check the wiring harness between C-49 shift lever assembly connector terminal No.4 and C-313 ETACS-ECU connector terminal No.4.

Check the power supply line for open or short circuit.

Q: Is the check result normal?

YES : Replace the ETACS-ECU. (Refer to GROUP 54A – ETACS-ECU P.54A-772. Then go to Step 13.
NO : Repair the wiring harness.

STEP 13. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)

NO : This diagnosis is complete.

INSPECTION PROCEDURE 4: The driving mode cannot be changed.

TWIN CLUTCH SPORT SHIFT TRANSMISSION CONTROL MODE SWITCH CIRCUIT

Refer to P.22C-364.

⚠ CAUTION

Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The twin clutch SST control mode switch, or shift lever-ECU may have a problem.

PROBABLE CAUSES

- Malfunction of the twin clutch SST control mode switch
- Damaged harness wires and connectors
- Malfunction of the shift lever-ECU
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool data list

Item No.30: Drive mode switch (Refer to data list reference table P.22C-417.)

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

NO : Go to Step 3.

STEP 3. Twin clutch SST control mode switch check

Refer to P.22C-547.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the twin clutch SST control mode switch. (Refer to P.22C-547.)

STEP 4. Twin clutch SST control mode switch connector check: C-49-2
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the defective connector.

STEP 5. Trouble symptom recheck after replacing the shift lever assembly
(1) Replace the shift lever assembly. (Refer to P.22C-517.)
(2) Verify that the condition described by the customer exists.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

INSPECTION PROCEDURE 5: Speed change with the paddle shift is impossible.

PADDLE SHIFT SWITCH SYSTEM CIRCUIT
Refer to P.22C-366.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM
The paddle shift switch, or shift lever-ECU may have a problem.

PROBABLE CAUSES
- Malfunction of the paddle shift switch
- Damaged harness wires and connectors
- Malfunction of the shift lever-ECU
- Malfunction of TC-SST-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17.) After repairing the CAN bus line, go to Step 2.

STEP 2. Paddle shift switch check
Refer to P.22C-546.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Replace the paddle shift assembly. (Refer to P.22C-546.)

STEP 3. Measure the resistance at C-210 paddle shift switch connector.
Disconnect the connector, and measure the resistance between terminal No.2 and ground at the wiring harness side.

OK: Continuity exists. (2 Ω or less)

Q: Is the check result normal?

YES : Go to Step 6.
NO : Go to Step 4.

STEP 4. Paddle shift switch connector check: C-210
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the defective connector.

STEP 5. Check the wiring harness between C-210 paddle shift switch connector terminal No.2 and the body ground.
Check the ground line for open circuit.

Q: Is the check result normal?

YES : Go to Step 6.
NO : Repair the wiring harness.

STEP 6. Inspection of the shift lever assembly connector, intermediate connector, and paddle shift switch connector: C-49, C-127, C-210
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the defective connector.

STEP 7. Check the wiring harness between C-210 paddle shift switch connector terminal No.1 and C-49 shift lever assembly connector terminal No.11, and between C-210 paddle shift switch connector terminal No.3 and C-49 shift lever assembly connector terminal No.10.
Check the output line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 8.
NO : Repair the wiring harness.

STEP 8. Trouble symptom recheck after replacing the shift lever assembly
(1) Replace the shift lever assembly. (Refer to P.22C-517.)
(2) Verify that the condition described by the customer exists.

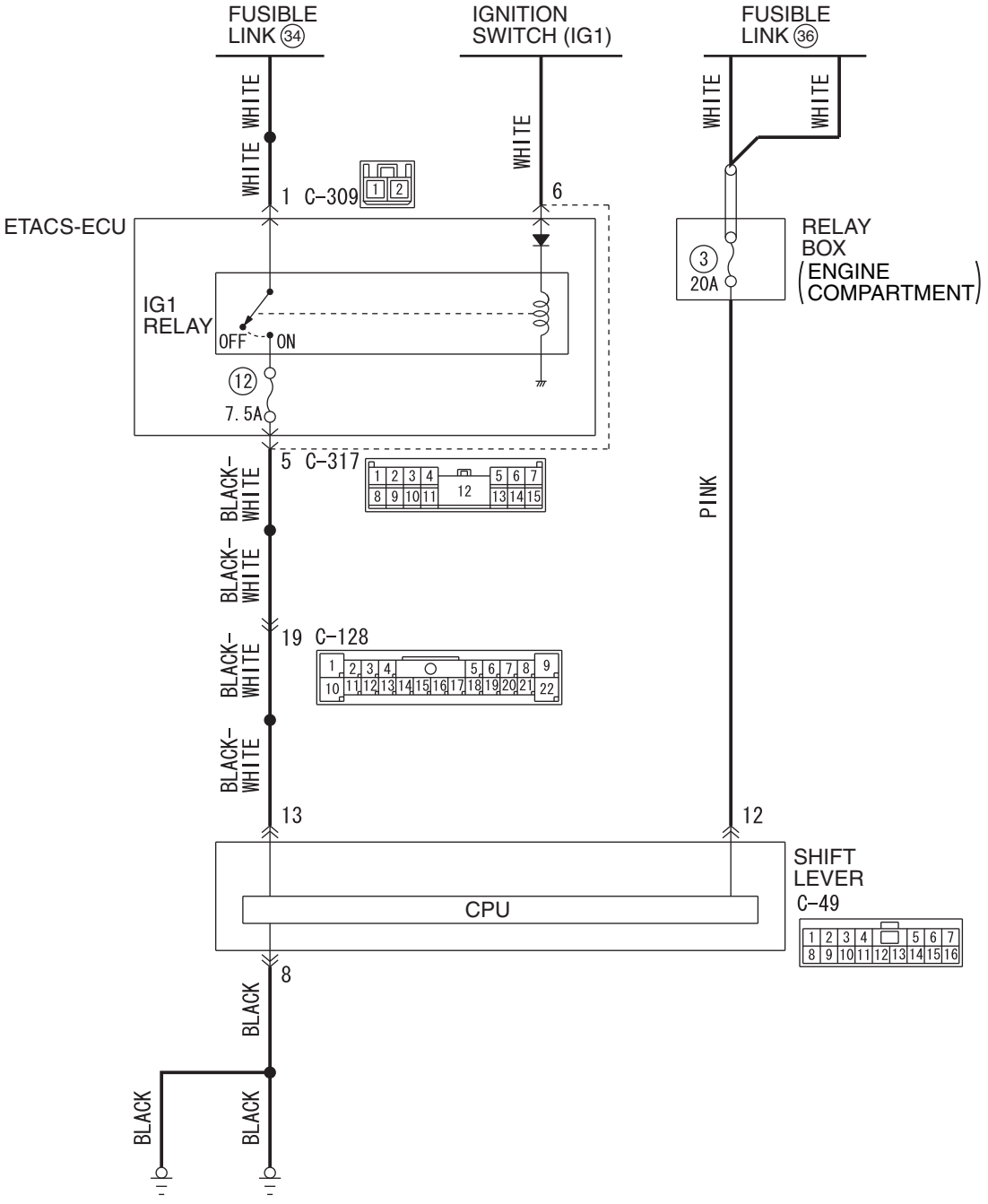
Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-533.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

TSB Revision

INSPECTION PROCEDURE 6: Shift lever-ECU power supply circuit abnormality

Power supply system circuit



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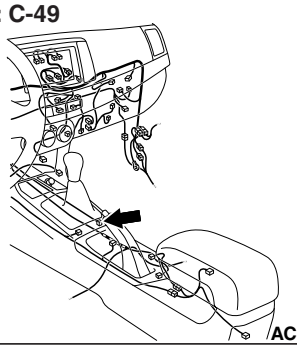
TSB Revision

Connector: C-49



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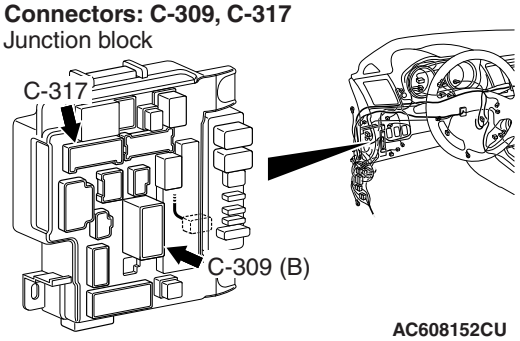
Connectors: C-309, C-317
Junction block



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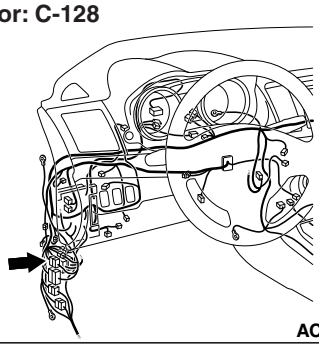
Connector: C-128



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⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

COMMENTS ON TROUBLE SYMPTOM

The shift lever-ECU power supply circuit, ground circuit, or shift lever-ECU may have a problem.

PROBABLE CAUSES

- Defective battery
- Damaged harness wires and connectors
- Malfunction of the ETACS-ECU
- Malfunction of the shift lever-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Check the battery.
Refer to GROUP 54A – Battery Test P.54A-8.

Q: Is the battery in good condition?

YES : Go to Step 2.
NO : Charge or replace the battery.

STEP 2. Measure the resistance at C-49 shift lever-ECU connector.
Disconnect the connector, and measure the resistance between terminal No.8 and ground at the wiring harness side.

OK: Continuity exists. (2 Ω or less)

Q: Is the check result normal?

YES : Go to Step 5.
NO : Go to Step 3.

STEP 3. Shift lever-ECU connector check: C-49
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the defective connector.

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STEP 4. Check the wiring harness between C-49 shift lever-ECU connector terminal No.8 and body ground.
Check the ground line for open circuit.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the wiring harness.

STEP 5. Measure the voltage at C-49 shift lever-ECU connector.
Disconnect the connector, and measure the voltage between terminal No.12 and ground at the wiring harness side.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 8.
NO : Go to Step 6.

STEP 6. Shift lever-ECU connector check: C-49
Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the defective connector.

STEP 7. Check the wiring harness between C-49 shift lever-ECU connector terminal No.12 and fusible link No.36.
Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 8.
NO : Repair the wiring harness.

STEP 8. Scan tool diagnostic trouble code
Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 9.

STEP 9. Measure the voltage at C-49 shift lever-ECU connector.
(1) Disconnect the connector, and measure the voltage between terminal No.13 and ground at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 12.
NO : Go to Step 10.

STEP 10. Inspection of the shift lever-ECU connector, intermediate connector, and ETACS-ECU connector: C-49, C-128, C-317

Check for the contact with terminals.

Q: Is the check result normal?

YES : Go to Step 11.
NO : Repair the defective connector.

STEP 11. Check the wiring harness between C-49 shift lever-ECU connector terminal No.13 and C-317 ETACS-ECU connector terminal No.5.

Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 12.
NO : Repair the wiring harness.

STEP 12. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the shift lever assembly. (Refer to P.22C-517.)
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)

DATA LIST REFERENCE TABLE

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Item No.	Display on scan tool	Check conditions		Normal conditions
1	Lever position	Shift lever position	Shift lever position: P	P
			Shift lever position: R⇔P	R-P
			Shift lever position: R	R
			Shift lever position: N⇔R	N-R
			Shift lever position: N	N
			Shift lever position: D⇔N	D-N
			Shift lever position: D	D
			Shift lever position: Manual mode	Manual
			Shift lever position: Upshift and hold	+
			Shift lever position: Downshift and hold	–
3	Battery voltage (CAN data)	Ignition switch: ON		Battery voltage (12 V)
4	Back light voltage	Ignition switch: ON	Shift lever position: R	20 – 120 digits
			Shift lever position: Other than above	10 digits or less
5	Shift lock voltage	Ignition switch: ON	• Shift lever position: P • Brake pedal: Depressed	500 digits or more
			Shift lever position: Other than above	100 digits or less
6	Battery voltage	Ignition switch: ON		520 – 920 digits
7	Shift indicator voltage (D range)	Ignition switch: ON	Shift lever position: D	10 – 370 digits
			Shift lever position: Other than above	10 digits or less
8	Shift indicator voltage (M mode)	Ignition switch: ON	Shift lever position: Manual mode	10 – 370 digits
			Shift lever position: Other than above	10 digits or less
9	Shift indicator voltage (N range)	Ignition switch: ON	Shift lever position: N	10 – 370 digits
			Shift lever position: Other than above	10 digits or less
10	Shift indicator voltage (P range)	Ignition switch: ON	Shift lever position: P	10 – 370 digits
			Shift lever position: Other than above	10 digits or less
11	Shift indicator voltage (R range)	Ignition switch: ON	Shift lever position: R	10 – 370 digits
			Shift lever position: Other than above	10 digits or less
16	Shift indicator PWM* (Day)	Ignition switch: ON		100%

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Item No.	Display on scan tool	Check conditions		Normal conditions
17	Shift indicator PWM* (Night)	Ignition switch: ON		20%
20	ILL+	Ignition switch: ON	Headlight (taillight): ON	ON
			Headlight (taillight): OFF	OFF
23	Ignition SW	Ignition switch: ON		ON
		Ignition switch: START		START
24	Shift position	• Shift lever position: Manual mode • Driving at a constant speed in 1st		1st
		• Shift lever position: Manual mode • Driving at a constant speed in 2nd		2nd
		• Shift lever position: Manual mode • Driving at a constant speed in 3rd		3rd
		• Shift lever position: Manual mode • Driving at a constant speed in 4th		4th
		• Shift lever position: Manual mode • Driving at a constant speed in 5th		5th
		• Shift lever position: Manual mode • Driving at a constant speed in 6th		6th
		Ignition switch: ON	Shift lever position: D	D
			Shift lever position: N	N
			Shift lever position: P	P
			Shift lever position: R	R
		• Shift lever position: D • Driving at a constant speed in 1st		D1
		• Shift lever position: D • Driving at a constant speed in 2nd		D2
		• Shift lever position: D • Driving at a constant speed in 3rd		D3
		• Shift lever position: D • Driving at a constant speed in 4th		D4
		• Shift lever position: D • Driving at a constant speed in 5th		D5
		• Shift lever position: D • Driving at a constant speed in 6th		D6
25	Vehicle speed	Driving at a constant speed of 20 km/h		20 mph
30	Drive mode SW (output data)	Ignition switch: ON	Switch position: Operate the switch toward the front of the vehicle, and hold it	+
			Switch position: Operate the switch toward the back of the vehicle, and hold it	–
			Switch position: Other than above	Not active

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Item No.	Display on scan tool	Check conditions		Normal conditions
32	Lever position (output data)	Ignition switch: ON	Shift lever position: P	P
			Shift lever position: R⇔P	R–P
			Shift lever position: R	R
			Shift lever position: N⇔R	N–R
			Shift lever position: N	N
			Shift lever position: D⇔N	D–N
			Shift lever position: D	D
			Shift lever position: Manual mode	Manual
			Shift lever position: Upshift and hold	+
			Shift lever position: Downshift and hold	–

*NOTE: *: PWM indicates the duty value (ratio).*

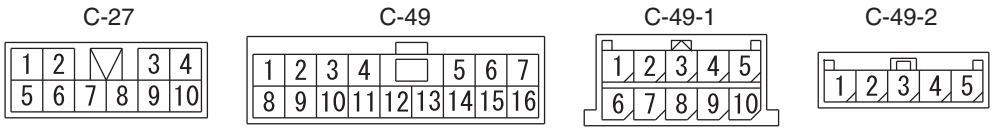
SPECIAL FUNCTION (ACTUATOR TEST REFERENCE TABLE)

M1225027200107

Item No.	Display on scan tool	Test content	Check conditions	Normal conditions
1	Shift indicator	Display the shift position requested by the scan tool for 3 seconds.	• Ignition switch: ON • Shift lever position: P • Engine: Stopped	The requested position is displayed.
2	Back up light	Illuminate the back-up light for 3 seconds.		The back-up light illuminates.

SHIFT LEVER -ECU TERMINALVOLTAGE REFERENCE CHART

M1225007800107



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Connector number	Terminal No.	Check items	Check conditions		Standard value
C-27	3	Shift lock solenoid power supply	Ignition switch: ON		Battery positive voltage
			Ignition switch: Other than above		1 V or less
	4	Stoplight switch	Brake pedal: Depressed		Battery positive voltage
			Brake pedal: Released		1 V or less
	5	Ignition switch (ACC)	Ignition switch: ACC		Battery positive voltage
			Ignition switch: Other than above		1 V or less
	6	Ground	Always		1 V or less
C-49	1	CAN_L	–		–
	2	CAN_H	–		–
	3	R range output	Ignition switch: ON	Shift lever position: R	Battery positive voltage
				Shift lever position: Other than above	1 V or less
	4	R range input	Always		Battery positive voltage
	5	N range output	Ignition switch: ON	Shift lever position: N	Battery positive voltage
				Shift lever position: Other than above	1 V or less
	6	Illumination power supply	Taillight: Turned ON		Battery positive voltage
			Taillight: Turned OFF		1 V or less
	7	P/N range input	Always		Battery positive voltage
	8	Ground	Always		–
	10	Paddle switch (Down)	Ignition switch: ON	Paddle shift position: Downshift and hold	1 V or less
				Paddle shift position: Other than the above	Battery positive voltage

TSB Revision

Connector number	Terminal No.	Check items	Check conditions		Standard value
C-49	11	Paddle switch (Up)	Ignition switch: ON	Paddle shift position: Upshift and hold	1 V or less
				Paddle shift position: Other than the above	Battery positive voltage
	12	Power supply	Always		Battery positive voltage
	13	Ignition switch (IG1)	Ignition switch: ON		Battery positive voltage
			Ignition switch: Other than above		1 V or less
	14	Illumination ground	Taillight: Turned ON		In accordance with the rheostat switch operation, the voltage changes.
			Taillight: Turned OFF		1 V or less
	15	P range output	Ignition switch: ON	Shift lever position: P	Battery positive voltage
				Shift lever position: Other than above	1 V or less
	16	LIN	–		–
C-49-1	1	Manual mode lamp	Ignition switch: ON	Shift lever position: Manual mode	1 V or less
				Shift lever position: Other than above	Battery positive voltage
	2	P range lamp	Ignition switch: ON	Shift lever position: P	1 V or less
				Shift lever position: Other than above	Battery positive voltage
	3	R range lamp	Ignition switch: ON	Shift lever position: R	1 V or less
				Shift lever position: Other than above	Battery positive voltage
	4	N range lamp	Ignition switch: ON	Shift lever position: N	1 V or less
				Shift lever position: Other than above	Battery positive voltage
	5	D range lamp	Ignition switch: ON	Shift lever position: D	1 V or less
				Shift lever position: Other than above	Battery positive voltage
	6	Illumination power supply	Taillight: Turned ON		Battery positive voltage
			Taillight: Turned OFF		1 V or less

TSB Revision

Connector number	Terminal No.	Check items	Check conditions		Standard value
C-49-1	7	Power supply	Always		Battery positive voltage
	10	Illumination ground	Taillight: Turned ON		In accordance with the rheostat switch operation, the voltage changes.
			Taillight: Turned OFF		1 V or less
C-49-2	1	Twin clutch SST control mode switch (Normal)	Ignition switch: ON	Switch position: Operate the switch toward the back of the vehicle, and hold it.	1 V or less
				Switch position: Other than above	Battery positive voltage
	2	Twin clutch SST control mode switch (Sport)	Ignition switch: ON	Switch position: Operate the switch toward the front of the vehicle, and hold it.	1 V or less
				Switch position: Other than above	Battery positive voltage
	3	Ground	Always		1 V or less
	4	Illumination ground	Taillight: Turned ON		In accordance with the rheostat switch operation, the voltage changes.
			Taillight: Turned OFF		1 V or less
	5	Illumination power supply	Taillight: Turned ON		Battery positive voltage
			Taillight: Turned OFF		1 V or less

DIAGNOSIS <ACTIVE CENTER DIFFERENTIAL (ACD)>

TROUBLESHOOTING STRATEGY

M1221007000916

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will find most ACD malfunctions.

1. Gather as much information as possible about the complaint from the customer.
2. Verify that the condition described by the customer exists.
3. Check the vehicle for any ACD Diagnostic Trouble Codes (DTCs).
4. If you can not verify the condition and there are no DTCs, the malfunction is intermittent. For information on how to cope with intermittent malfunctions, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-14.
5. If you can verify the condition but there are no DTCs, or the system can not communicate with scan tool, refer to the Symptom Chart P.22C-428.
6. If there is a DTC, record the number of the code, then erase the code from memory using scan tool.
7. Reconfirm the symptom.
8. If a DTC is set again, go to the Inspection Chart for Diagnostic Trouble Codes.
9. If a DTC is not set again, the malfunction is intermittent. For information on how to cope with intermittent malfunctions, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunction P.00-14.
10. Verify malfunction is eliminated. After repairs are completed, the complaint conditions to confirm the malfunction has been eliminated.

PRECAUTIONS FOR DIAGNOSIS

Before diagnosis, check that all the following items are normal.

- A normal steering wheel is installed correctly to the neutral position of steering column shaft assembly.
- The size of tire and wheel, specification, tire pressure, balance, and wear status are normal.
- The wheel alignment is normal.
- No modifications to the engine, suspension, or others, which can affect the ACD system, is implemented.

DIAGNOSIS FUNCTION

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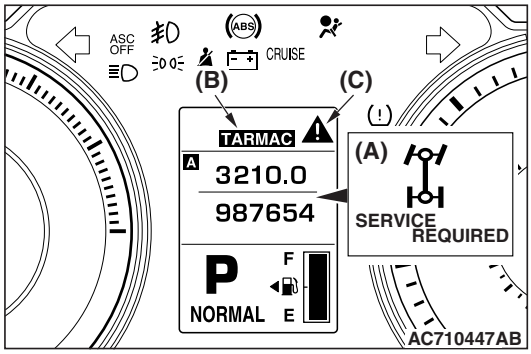


WARNING INDICATOR

When a malfunction occurs in the ACD system, the figure (A) will be displayed on the information screen of multi information display, and the mode display (B) will be turned off. Subsequently, the screen returns to the one before the warning display, and then "!" indicator (C) will illuminate.
If the indicator (C) continues to be displayed on the information screen of multi information display, check the diagnostic trouble code that is set.

FAIL-SAFE FUNCTION

If an abnormality occurs to the signal of sensors, switches, solenoids, or others, the AWC-ECU performs a control for the driver safety and system protection. The control contents are as follows.

FAIL-SAFE REFERENCE TABLE

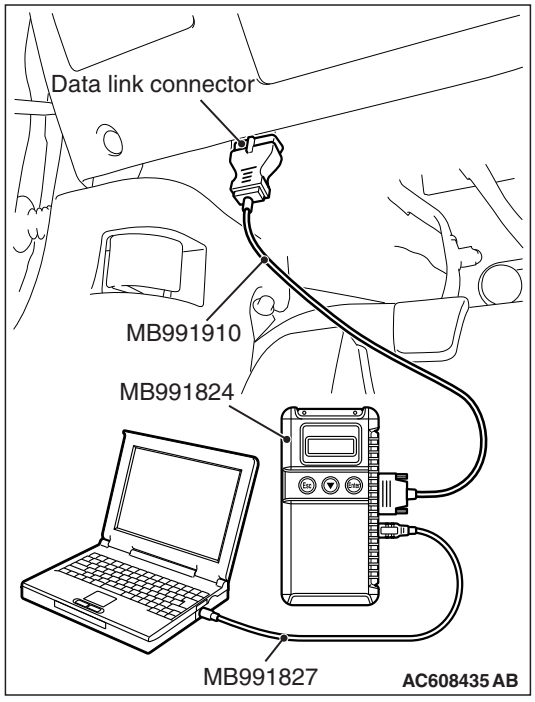
DTC No.	Item	Control content
C2203	VIN not written	Normal control
C1614	Parking brake switch	A warning is given to the driver with the trouble displayed to the multi information display, but the control is maintained because the vehicle behaviour is not affected.
C1624	EEPROM	
C161F	AWC actuator protection 1	A warning is given to the driver by the flashing of multi information display control mode, and the control is stopped.
C1621	AWC actuator protection 2	
Others (other than above)		A warning is given to the driver with the trouble displayed to the multi information display, and the control is stopped.

NOTE: All the troubles will return to a normal status when the ignition switch is turned from OFF to ON.

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

Required Special Tools:

- MB991958 Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle 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 MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

   NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated in a green color.
7. Start the scan tool system on the personal computer.

NOTE: Disconnecting scan tool MB991958 is the reverse of the connecting sequence, making sure that the ignition switch is at the "LOCK" (OFF) position.

FREEZE FRAME DATA CHECK

Data of when the diagnostic trouble code is determined is obtained, and the status of ACD is stored. By analyzing each data using the scan tool, troubleshooting can be carried out efficiently.

Display items of the freeze frame data are as follows.

DISPLAY ITEM LIST

Item No.	Item	Unit/display
1	Odometer	km
2	Ignition cycle	Count
4	Current trouble accumulative time	min
5	ACD control mode (for meter display)	• TARMAC • GRAVEL • SNOW
6	ASC control mode	• ASC ON • ASC OFF
8	Stoplight switch	• ON • OFF
9	Parking brake switch	• ON • OFF
10	ABS activation flag	• ON • OFF
11	Steering wheel sensor	deg
12	Accelerator opening angle	%
13	Wheel speed sensor <FL>	km/h
14	Wheel speed sensor <FR>	km/h
15	Wheel speed sensor <RL>	km/h
16	Wheel speed sensor <RR>	km/h
18	Yaw rate sensor	deg/s
19	Lateral G-sensor	m/s^2
20	Longitudinal G-sensor	m/s^2
21	ACD target torque	Nm

DIAGNOSTIC TROUBLE CODE CHART

M1221007800279

⚠ CAUTION

During diagnosis, a DTC 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.	Item		Reference page
C1000	Stoplight switch system		P.22C-429
C100A	FL	Wheel speed sensor system (faulty circuit)	P.22C-433
C1015	FR		
C1020	RL		
C102B	RR		
C1011	FL	Wheel speed sensor system (faulty signal)	P.22C-434
C101C	FR		
C1027	RL		
C1032	RR		
C1014	FL	Wheel speed sensor system (characteristics abnormality)	P.22C-435
C101F	FR		
C102A	RL		
C1035	RR		
C1078	Tire turning malfunction		P.22C-436
C1219	Steering wheel sensor system (faulty signal)		P.22C-438
C121A	Steering wheel sensor system (neutral learning abnormality)		P.22C-440
C123C	G and yaw rate sensor system (faulty signal)		P.22C-441
C1242	G and yaw rate sensor system (abnormality of longitudinal G sensor output signal)		P.22C-444
C1610	Electronic relay abnormality of AWC actuator power supply		P.22C-445
C1611	AWC pressure sensor system (low voltage)		P.22C-446
C1612	AWC pressure sensor system (high voltage)		P.22C-448
C1613	AWC switch system (stuck ON)		P.22C-451
C1614	Parking brake switch system (stuck ON)		P.22C-454
C1616	Cranking signal system (stuck ON)		P.22C-456
C1617	AWC CAN main data system (data not received)		P.22C-459
C161C	ACD proportioning valve system (malfunction)		P.22C-460
C161D	Electric pump relay system (faulty circuit)		P.22C-463
C161E	Electric pump system		P.22C-466
C161F	AWC actuator protection 1		This is the code that is set when the control is suspended to protect AWC actuator, and not a malfunction.

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Diagnostic trouble code No.	Item	Reference page
C1621	AWC actuator protection 2	This is the code that is set when the control is suspended to protect AWC actuator, and not a malfunction.
C1622	ACD control system (abnormal)	P.22C-468
C1624	AWC-ECU system (internal error)	P.22C-470
C1625	AWC pressure sensor system (power supply voltage abnormality)	P.22C-471
C2100	Battery voltage malfunction (low voltage)	P.22C-473
C2101	Battery voltage malfunction (high voltage)	P.22C-476
C2203	VIN not recorded	P.22C-478
C2205	Steering wheel sensor system (internal error)	P.22C-479
U0001	Bus-off	P.22C-480
U0100	Engine time-out error	P.22C-481
U0101	TC-SST time-out error	P.22C-482
U0121	ASC time-out error	P.22C-483
U0126	Steering wheel sensor time-out error	P.22C-484
U0141	ETACS time-out error	P.22C-485
U0401	Engine data error	P.22C-486
U0428	Steering wheel sensor data error	P.22C-487
U0431	ETACS data error	P.22C-488
U1415	Coding incomplete/fail	P.22C-489
U1417	Coding data malfunction	P.22C-490
U1425	TC-SST data error	P.22C-491
U1427	Wheel speed sensor data error	P.22C-492
U1428	G and yaw rate sensor data error	P.22C-493

SYMPTOM CHART

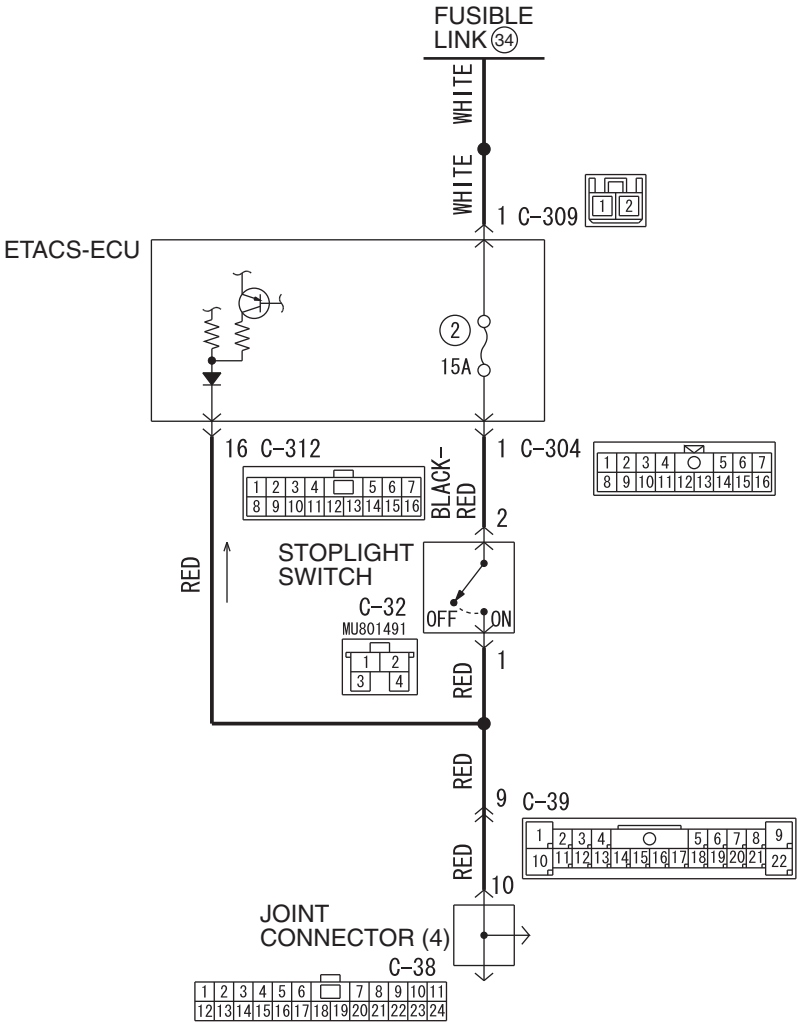
M1221007100913

Symptom	Inspection procedure No.	Reference page
Communication between the scan tool and AWC-ECU cannot be established	1	P.22C-495
Mode does not change even when the AWC switch is pressed	2	P.22C-495
AWC-ECU power supply circuit malfunction (Control mode is not displayed.)	3	P.22C-498
ACD control mode display is flashing. (Diagnostic trouble code No.C161F or C1621 is set)	–	This is the symptom that AWC-ECU suspends the control to protect the actuator during severe driving, and not a malfunction. Turn the ignition switch from OFF to ON to return to control.

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC C1000: Stoplight Switch System

Stoplight switch system circuit



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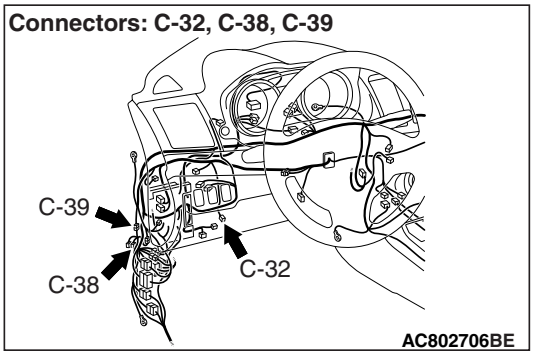

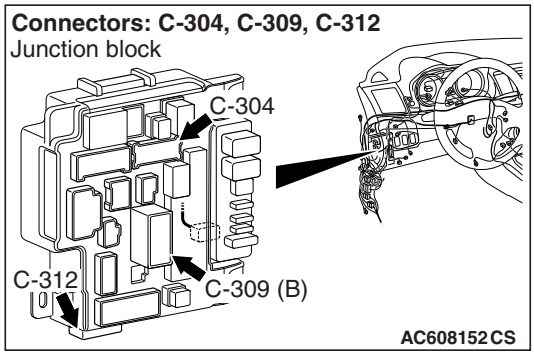

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⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU receives signals of stoplight switch from ETACS-ECU via the CAN bus lines.

DTC SET CONDITIONS

This diagnostic trouble code is set when the abnormality below is detected:

- The vehicle has run for a long time with the stop light switch turned ON.
- With the stoplight switch OFF, the vehicle speed is decelerated suddenly.

PROBABLE CAUSES

- Incorrect adjustment of stoplight switch position
- Malfunction of stoplight switch
- Stoplight malfunction
- Damaged harness wires and connectors
- Malfunction of the ETACS-ECU
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnosis Table P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1000 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Check of the stoplight on and off.

Check that the stoplight illuminates when the brake pedal is depressed, and the stoplight goes out when the brake pedal is released.

Q: Is the check result normal?

YES : Go to Step 14.
NO : Go to Step 4.

STEP 4. Stoplight switch installation status check.

Refer to GROUP 35A – On-vehicle Service P.35A-33.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Install the stoplight switch correctly. Then go to Step 18.

STEP 5. Check the stoplight switch.
Refer to GROUP 35A – Brake Pedal P.35A-34.

Q: Is the check result normal?

YES : Go to Step 6.
NO : Replace the stoplight switch. (Refer to GROUP 35A – Brake Pedal P.35A-33). Then go to Step 18.

STEP 6. ETACS-ECU connector check: C-304

Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the defective connector. Then go to Step 18.

STEP 7. Measure the voltage at the C-304 ETACS-ECU connector.
Disconnect the connector, and measure the voltage between terminal No.1 and ground at the ECU side.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 8.
NO : Replace the ETACS-ECU. (Refer to GROUP 54A – ETACS-ECU P.54A-772. Then go to Step 18.

STEP 8. Stoplight switch connector check: C-32

Q: Is the check result normal?

YES : Go to Step 9.
NO : Repair the defective connector. Then go to Step 18.

STEP 9. Voltage measurement at the C-32 stoplight switch connector.
Disconnect the connector, and measure the voltage between terminal No.2 and ground at the wiring harness side.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 11.
NO : Go to Step 10.

STEP 10. Check the wiring harness between C-304 ETACS-ECU connector terminal No.1 and C-32 stoplight switch connector terminal No.2.
Check the output line for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 11.
NO : Repair the wiring harness. Then go to Step 18.

STEP 11. J/C (4), intermediate connector, stoplight switch connector, ETACS-ECU connector check: C-38, C-39, C-32, C-312

Q: Is the check result normal?

YES : Go to Step 12.
NO : Repair the defective connector. Then go to Step 18.

STEP 12. Voltage measurement at C-38 J/C (4)
Disconnect the connector, and measure the voltage between terminal No.10 and ground at the wiring harness side.

OK: Battery positive voltage (brake pedal depressed)

Q: Is the check result normal?

YES : Go to Step 14.
NO : Go to Step 13.

STEP 13. Check the wiring harness between C-32 stoplight switch connector terminal No.1 and the C-38 J/C (4) terminal No.10.
Check the output line for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 16.
NO : Repair the wiring harness. Then go to Step 18.

STEP 14. Measure the voltage at the C-312 ETACS-ECU connector.
Disconnect the connector, and measure the voltage between terminal No.16 and ground at the wiring harness side.

- **OK: 1 V or less (brake pedal released)**
- **OK: Battery positive voltage (brake pedal depressed)**

Q: Is the check result normal?

YES : Go to Step 16.
NO : Go to Step 15.

STEP 15. Check the wiring harness between C-312 ETACS-ECU connector terminal No.16 and C-38 stoplight switch connector terminal No.1.
Check the output line for open circuit.

Q: Is the check result normal?

YES : Go to Step 16.
NO : Repair the wiring harness. Then go to Step 18.

STEP 16. Scan tool data list
Item No.39: Stoplight switch (Refer to data list reference table P.22C-501.)

Q: Is the check result normal?

YES : Go to Step 17.
NO : Replace the ETACS-ECU. (Refer to GROUP 54A – ETACS-ECU P.54A-772). Then go to Step 18.

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STEP 17. Check whether the DTC is reset.

Q: Is DTC No. C1000 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 18.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 18. Check whether the DTC is reset.

Q: Is DTC No. C1000 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

DTC C100A <FL>, C1015 <FR>, C1020 <RL>, C102B <RR>: Wheel Speed Sensor System (Faulty Circuit)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU receives the wheel speed data from ASC-ECU via the CAN communication.

DTC SET CONDITIONS

Observe the wheel speed at startup. If one or more of the wheel speed does not follow, the diagnostic trouble code of the relevant wheel speed sensor is set.

PROBABLE CAUSES

- Malfunction of wheel speed sensor
- Damaged harness wires and connectors
- Malfunction of encoder for wheel speed detection
- Malfunction of ASC-ECU
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnosis Table P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is the relevant wheel speed sensor diagnosis code No.C100A <FL>, C1015 <FR>, C1020 <RL>, or C102B <RR> set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code
Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Scan tool data list
Check the data list of the relevant wheel speed sensor. (Refer to P.22C-501).

- Item No.22: Wheel speed sensor <FL>
- Item No.23: Wheel speed sensor <FR>
- Item No.24: Wheel speed sensor <RL>
- Item No.25: Wheel speed sensor <RR>

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Replace the AWC-ECU. (Refer to P.22C-547).

DTC C1011 <FL>, C101C <FR>, C1027 <RL>, C1032 <RR>: Wheel Speed Sensor System (Faulty Signal)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
AWC-ECU receives the wheel speed data from ASC-ECU via the CAN communication.

DTC SET CONDITIONS
When an irregular change in the wheel speed sensor is detected, the diagnostic trouble code of the relevant wheel speed sensor is set.

PROBABLE CAUSES
- Malfunction of wheel speed sensor
- Damaged harness wires and connectors
- Malfunction of encoder for wheel speed detection
- Malfunction of ASC-ECU
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is the relevant wheel speed sensor diagnostic trouble code No.C1011 <FL>, C101C <FR>, C1027 <RL>, or C1032 <RR> set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code

Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Scan tool data list

Check the data list of the relevant wheel speed sensor. (Refer to P.22C-501).

- Item No.22: Wheel speed sensor <FL>
- Item No.23: Wheel speed sensor <FR>
- Item No.24: Wheel speed sensor <RL>
- Item No.25: Wheel speed sensor <RR>

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Replace the AWC-ECU. (Refer to P.22C-547).

DTC C1014 <FL>, C101F <FR>, C102A <RL>, C1035 <RR>: Wheel Speed Sensor System (Characteristics Abnormality)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU receives the wheel speed data from ASC-ECU via the CAN communication.

DTC SET CONDITIONS

If one or more of the wheel speed is out of the range of the specified value, the diagnostic trouble code of the relevant wheel speed sensor is set.

PROBABLE CAUSES

- Malfunction of wheel speed sensor
- Damaged harness wires and connectors
- Malfunction of encoder for wheel speed detection
- Malfunction of ASC-ECU
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is the relevant wheel speed sensor diagnostic trouble code No.C1014 <FL>, C101F <FR>, C102A <RL>, or C1035 <RR> set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code
Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Scan tool data list
Check the data list of the relevant wheel speed sensor. (Refer to P.22C-501).

- Item No.22: Wheel speed sensor <FL>
- Item No.23: Wheel speed sensor <FR>
- Item No.24: Wheel speed sensor <RL>
- Item No.25: Wheel speed sensor <RR>

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Replace the AWC-ECU. (Refer to P.22C-547).

DTC C1078: Tire Turning Malfunction

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU receives the wheel speed data from ASC-ECU via the CAN communication.

DTC SET CONDITIONS

The wheel speed is observed when the steering angle is in the neutral position, and the code is set when the wheel speed, which is more than the specified value, is detected.

PROBABLE CAUSES

- Tire with incorrect diameter equipped
- Improper tire pressure
- Malfunction of ASC-ECU
- Malfunction of AWC-ECU

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DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus line (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1078 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Check the tires
Check that the wheels/tires with the identical size are installed, and that each tire pressure is within the value specified on the tire pressure label.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Install the wheels/tires with the identical size, or adjust the tire pressure. Then go to Step 5.

STEP 4. Scan tool diagnostic trouble code
Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 5.

STEP 5. Scan tool data list
Check the following data list. (Refer to P.22C-501).

- Item No.22: Wheel speed sensor <FL>
- Item No.23: Wheel speed sensor <FR>
- Item No.24: Wheel speed sensor <RL>
- Item No.25: Wheel speed sensor <RR>

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Replace the AWC-ECU. (Refer to P.22C-547).

Code No.C1219: Steering Wheel Sensor System (Faulty Signal)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**
- **When the steering wheel sensor is replaced, calibrate the steering wheel sensor (Refer to GROUP 35C – On-vehicle Service P.35C-294), and initialise the steering angle correction amount stored in AWC-ECU. (Item No.1: Steering angle correction amount initialisation P.22C-504).**
- **Do not drop the G and yaw rate sensor or subject it to a shock.**
- **When G and yaw rate sensor is replaced, calibrate G and yaw rate sensor (refer to GROUP 35C – On-vehicle Service P.35C-292)**

OPERATION

AWC-ECU receives steering wheel data from the steering wheel sensor via CAN communication.

DTC SET CONDITIONS

This diagnostic trouble code is set when the abnormality below is detected:

- The tolerance of neutral position of steering wheel sensor exceeds the specified range.
- Abnormality in steering wheel sensor output value
- Abnormality is detected by a comparison of output value from the steering wheel sensor with the output values from wheel speed sensor and G and yaw rate sensor.

PROBABLE CAUSES

- Improper installation of steering wheel sensor
- Malfunction of steering wheel sensor
- Malfunction of G and yaw rate sensor
- Malfunction of wheel speed sensor
- Malfunction of AWC-ECU
- Vehicle straight-ahead position and steering wheel neutral position is not matched.

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1219 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code

Q: Is DTC No. C2205 set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Scan tool diagnostic trouble code

Check if the wheel speed sensor-related, G and yaw rate sensor-related, or steering wheel sensor-related diagnostic trouble code is set.

Q: Is the DTC set?

YES : Carry out the appropriate troubleshooting. Then go to Step 9.
NO : Go to Step 5.

STEP 5. Check of steering wheel sensor installation status

Check that the steering wheel sensor is installed correctly. (Refer to GROUP 35C – Steering Wheel Sensor P.35C-310).

Q: Is the check result normal?

YES : Go to Step 6.
NO : Install the steering wheel sensor correctly. Then go to Step 6.

STEP 6. Wheel alignment check

Q: Is the check result normal?

YES : After checking the wheel alignment, calibrate the steering wheel sensor (Refer to GROUP 35C – On-vehicle Service P.35C-294), and initialise AWC-ECU steering angle correction amount (Refer to P.22C-504). Then, go to Step 7.
NO : After adjusting the wheel alignment, calibrate the steering wheel sensor (Refer to GROUP 35C – On-vehicle Service P.35C-294), and initialise AWC-ECU steering angle correction amount (Refer to P.22C-504). Then, go to Step 7.

STEP 7. Scan tool data list

Item 11: Steering wheel sensor (Refer to P.22C-501).

Q: Is the check result normal?

YES : Go to Step 8.
NO : Replace the steering wheel sensor. (Refer to GROUP 35C – Steering Wheel Sensor P.35C-310). Then, go to Step 9.

STEP 8. Check whether the DTC is reset.

Q: Is DTC No. C1219 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then, go to Step 9.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 9. Check whether the DTC is reset.

Q: Is DTC No. C1219 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

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DTC C121A: Steering Wheel Sensor System (Neutral Learning Abnormality)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**
- **When the steering wheel sensor is replaced, calibrate the steering wheel sensor (Refer to GROUP 35C – On-vehicle Service P.35C-294), and initialise the steering angle correction amount stored in AWC-ECU. (Item No.1: Steering angle correction amount initialisation P.22C-504).**

OPERATION

Steering wheel sensor stores the neutral position learned by the scan tool. When the neutral position has not been learned, the steering wheel sensor outputs the signal indicating that the learning has not been performed.

DTC SET CONDITIONS

This DTC is set when it is detected that the steering wheel sensor has not learned the neutral position.

PROBABLE CAUSES

- Steering wheel sensor neutral point not learned
- Malfunction of steering wheel sensor
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C121A set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. Steering wheel sensor calibration.

Perform calibration of the steering wheel sensor. (Refer to GROUP 35C – On-vehicle Service P.35C-294).

Q: Has the calibration succeeded?

YES : Go to Step 4.

NO : Replace the steering wheel sensor. (Refer to GROUP 35C – Steering Wheel Sensor P.35C-310). Then, go to Step 4.

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. C121A set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then, go to Step 5.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

TSB Revision

STEP 5. Check whether the DTC is reset.

Q: Is DTC No. C121A set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC C123C: G and Yaw Rate Sensor System (Faulty Signal)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**
- **When the steering wheel sensor is replaced, calibrate the steering wheel sensor (Refer to GROUP 35C – On-vehicle Service P.35C-294), and initialise the steering angle correction amount stored in AWC-ECU. (Item No.1: Steering angle correction amount initialisation P.22C-504).**
- **Do not drop the G and yaw rate sensor or subject it to a shock.**
- **When G and yaw rate sensor is replaced, calibrate G and yaw rate sensor (refer to GROUP 35C – On-vehicle Service P.35C-292)**

OPERATION

AWC-ECU receives the G and yaw rate sensor data from ASC-ECU via the CAN communication.

DTC SET CONDITIONS

This diagnostic trouble code is set when the abnormality below is detected:

- Abnormality in G and yaw rate sensor output value
- This diagnostic trouble code is set when AWC-ECU determines that an abnormality is present by comparing the measurement values of G and yaw rate sensor with the calculation value of G and yaw rate calculated by the measurement values of the wheel speed sensor and steering wheel sensor.

PROBABLE CAUSES

- Improper installation of G and yaw rate sensor
- Malfunction of G and yaw rate sensor
- Malfunction of wheel speed sensor
- Malfunction of steering wheel sensor
- Malfunction of ASC-ECU
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C123C set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code
Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25).

Q: Is the check result normal?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Scan tool diagnostic trouble code
Check if the wheel speed sensor-related, or steering wheel sensor-related diagnostic trouble code is set.

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 5.

STEP 5. Check of G and yaw rate sensor installation status.
Check that the G and yaw rate sensor is installed correctly. (Refer to GROUP 35C – G and Yaw Rate Sensor P.35C-309).

Q: Is the check result normal?

YES : Go to Step 6.
NO : Reinstall the G and yaw rate sensor correctly. Then go to Step 6.

STEP 6. Scan tool data list
Check the following data list. (Refer to P.22C-501).

- Item No.26: Yaw rate sensor
- Item No.29: Lateral G sensor

Q: Is the check result normal?

YES : Go to Step 7.
NO : Replace the G and yaw rate sensor. (Refer to GROUP 35C – G and Yaw Rate Sensor P.35C-309). Then go to Step 11.

STEP 7. Check of steering wheel sensor installation status.
Check that the steering wheel sensor is installed correctly. (Refer to GROUP 35C – Steering Wheel Sensor P.35C-310).

Q: Is the check result normal?

YES : Go to Step 8.
NO : Install the steering wheel sensor correctly. Then go to Step 8.

STEP 8. Wheel alignment check.

Q: Is the check result normal?

YES : After checking the wheel alignment, calibrate the steering wheel sensor (Refer to GROUP 35C – On-vehicle Service P.35C-294), and initialise AWC-ECU steering angle correction amount (Refer to P.22C-504). Then go to Step 9.

NO : After adjusting the wheel alignment, calibrate the steering wheel sensor (Refer to GROUP 35C – On-vehicle Service P.35C-294), and initialise AWC-ECU steering angle correction amount (Refer to P.22C-504). Then go to Step 9.

STEP 9. Scan tool data list

Item 11: Steering wheel sensor (Refer to P.22C-501).

Q: Is the check result normal?

YES : Go to Step 10.

NO : Replace the steering wheel sensor. (Refer to GROUP 35C – Steering Wheel Sensor P.35C-310). Then go to Step 10.

STEP 10. Check whether the DTC is reset.

Q: Is DTC No. C123C set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 11.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 11. Check whether the DTC is reset.

Q: Is DTC No. C123C set?

YES : Return to Step 1.

NO : This diagnosis is complete.

DTC C1242: G and Yaw Rate Sensor System (Abnormality of Longitudinal G Sensor Output Signal)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**
- **Do not drop the G and yaw rate sensor or subject it to a shock.**
- **When G and yaw rate sensor is replaced, calibrate G and yaw rate sensor (refer to GROUP 35C – On-vehicle Service P.35C-292)**

OPERATION

AWC-ECU receives the G and yaw rate sensor data from ASC-ECU via the CAN communication.

DTC set conditions

This diagnostic trouble code is set when the abnormality below is detected:

- Abnormality in G and yaw rate sensor output value
- This diagnostic trouble code is set when AWC-ECU determines that an abnormality is present by comparing the longitudinal G that is output from the G and yaw rate sensor during braking with the calculation value calculated by the data from the wheel speed sensor.

PROBABLE CAUSES

- Improper installation of G and yaw rate sensor
- Malfunction of G and yaw rate sensor
- Malfunction of wheel speed sensor
- Malfunction of stoplight switch
- Malfunction of AWC-ECU
- Malfunction of ASC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1242 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code

Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25).

Q: Is the check result normal?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Scan tool diagnostic trouble code

Check if the stoplight switch-related, or wheel speed sensor-related diagnostic trouble code is set.

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 5.

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STEP 5. Check of G and yaw rate sensor installation status.
Check that the G and yaw rate sensor is installed correctly. (Refer to GROUP 35C – G and Yaw Rate Sensor P.35C-309).

Q: Is the check result normal?

YES : Go to Step 6.
NO : Reinstall the G and yaw rate sensor correctly. Then go to Step 6.

STEP 6. Scan tool data list
Item No.31: Longitudinal G sensor (Refer to P.22C-501).

Q: Is the check result normal?

YES : Go to Step 7.
NO : Replace the G and yaw rate sensor. (Refer to GROUP 35C – G and Yaw Rate Sensor P.35C-309). Then go to Step 8.

STEP 7. Check whether the DTC is reset.

Q: Is DTC No. C1242 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 8.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 8. Check whether the DTC is reset.

Q: Is DTC No. C1242 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC C1610: Electronic Relay Abnormality of AWC Actuator Power Supply

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

A relay is incorporated in AWC-ECU, and the power is supplied to the actuator via this relay.

DTC SET CONDITIONS

When the actuator power supply relay in AWC-ECU is seized, the code is set.

PROBABLE CAUSES

- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1610 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547).
NO : This diagnosis is complete.

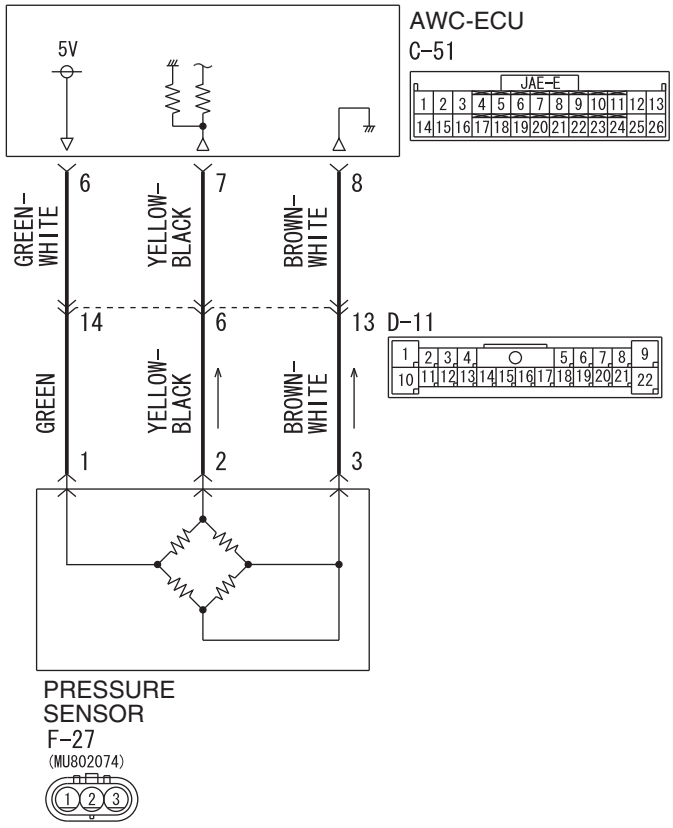
STEP 3. Check whether the DTC is reset.

Q: Is DTC No. C1610 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547).
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

DTC C1611: AWC Pressure Sensor System (Low Voltage)

AWC pressure sensor system circuit



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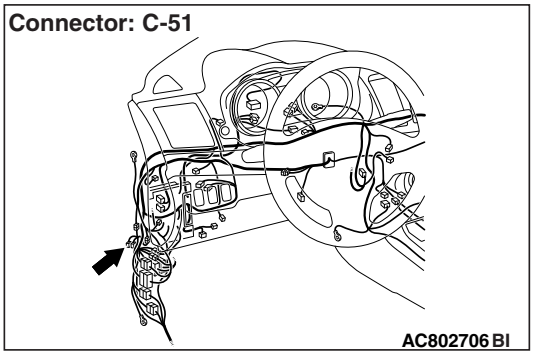
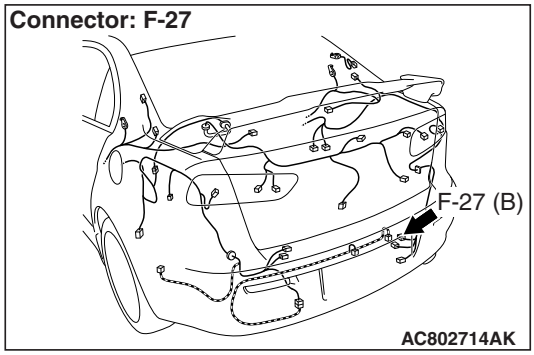
Connector: C-51



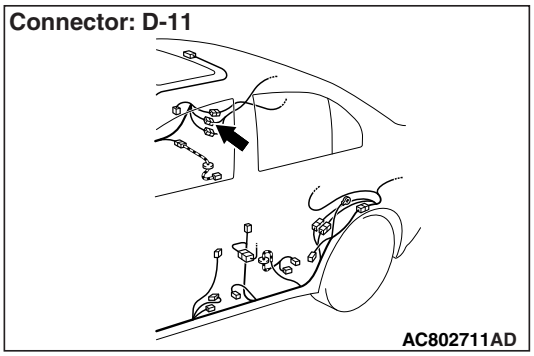
AC802706 BI

Connector: F-27



AC802714AK

Connector: D-11



AC802711AD

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU controls the electric pump by the information from AWC pressure sensor.

DTC SET CONDITIONS

The code is set when AWC pressure sensor output voltage is 0.2 V or less.

PROBABLE CAUSES

- AWC pressure sensor malfunction
- Damaged harness wires and connectors
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1611 set?

YES : Go to Step 3.

NO : This diagnosis is complete.

TSB Revision

STEP 3. AWC-ECU connector, intermediate connector, AWC pressure sensor connector check: C-51, D-11, F-27

Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the defective connector. Then go to Step 7.

STEP 4. Check the wiring harness between C-51 AWC-ECU connector terminal No.7 and F-27 AWC pressure sensor connector terminal No.2.

Check the output line for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the wiring harness. Then go to Step 7.

STEP 5. Scan tool data list

Item No.87: Pressure sensor output voltage.

OK: 0.20 – 2.67 V

Q: Is the check result normal?

YES : Go to Step 6.
NO : Replace the hydraulic unit. (Refer to P.22C-550) Then go to Step 6.

STEP 6. Check whether the DTC is reset.

Q: Is DTC No. C1611 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then, go to Step 7.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 7. Check whether the DTC is reset.

Q: Is DTC No. C1611 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC C1612: AWC Pressure Sensor System (High Voltage)

AWC PRESSURE SENSOR SYSTEM CIRCUIT

Refer to P.22C-446.

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU controls the electric pump by the information from AWC pressure sensor.

DTC SET CONDITIONS

The code is set when AWC pressure sensor output voltage is 4.6 V or more.

PROBABLE CAUSES

- AWC pressure sensor malfunction
- Damaged harness wires and connectors
- Malfunction of AWC-ECU

TSB Revision

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1612 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code
Check if the ACD-related DTC No.C1625 is set. (Refer to P.22C-426).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting. Then go to Step 9.
NO : Go to Step 4.

STEP 4. AWC-ECU connector, intermediate connector, AWC pressure sensor connector check: C-51, D-11, F-27

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the defective connector. Then go to Step 9.

STEP 5. Check the wiring harness between C-51 AWC-ECU connector terminal No.7 and F-27 AWC pressure sensor connector terminal No.2.
Check the output line for short (for short to the power supply) or open circuit.

Q: Is the check result normal?

YES : Go to Step 6.
NO : Repair the wiring harness. Then go to Step 9.

STEP 6. Check the wiring harness between C-51 AWC-ECUconnector terminal No.8 and F-27 AWC pressure sensor connector terminal No.3.
Check the ground line for open circuit.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Check D-11 intermediate connector. When no problem is found, repair the wiring harness. Then go to Step 9.

STEP 7. Scan tool data list

Item No.87: Pressure sensor output voltage.

OK: 0.20 – 2.67 V

Q: Is the check result normal?

YES : Go to Step 8.

NO : Replace the hydraulic unit. (Refer to P.22C-550). Then go to Step 8.

STEP 8. Check whether the DTC is reset.

Q: Is DTC No. C1612 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 9.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 9. Check whether the DTC is reset.

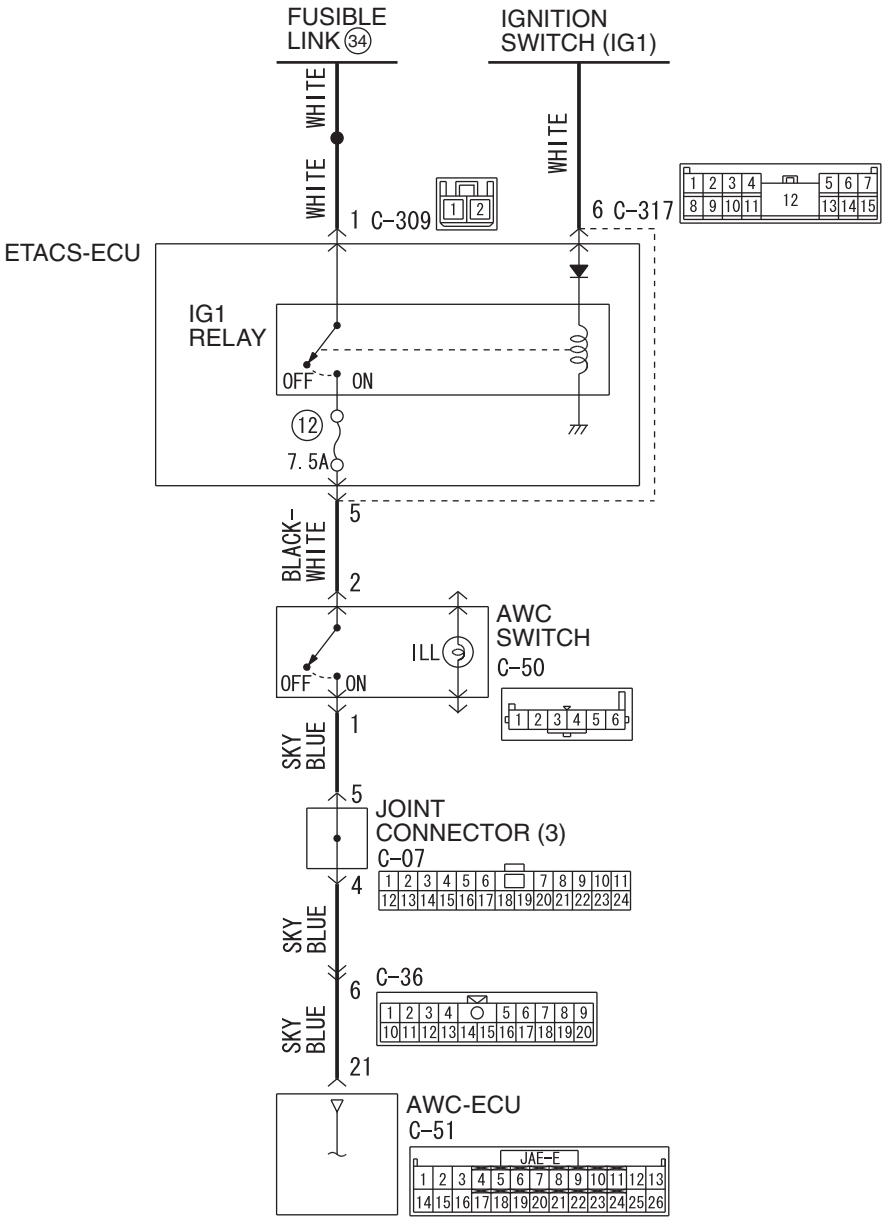
Q: Is DTC No. C1612 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

DTC C1613: AWC Switch System (Stuck ON)

AWC mode select switch system circuit



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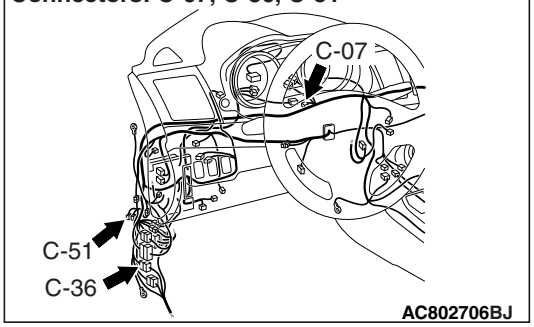
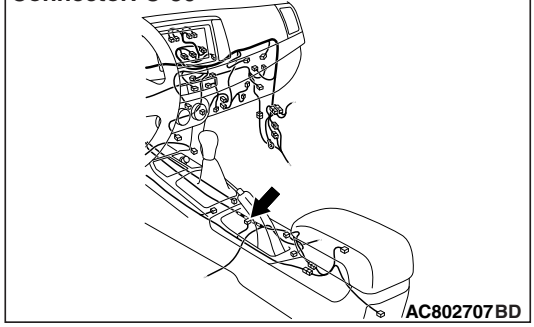
Connectors: C-07, C-36, C-51



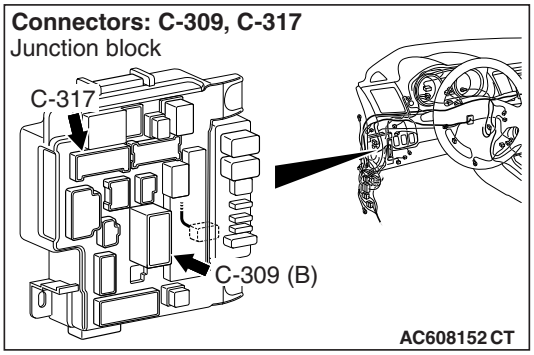
AC802706BJ

Connector: C-50



AC802707BD

TSB Revision



⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

- AWC-ECU controls the driving mode by the information from AWC switch.
- AWC-ECU sends ACD control mode to the combination meter via ETACS-ECU.

DTC SET CONDITIONS

If the AWC switch is on sticking, the code is set.

PROBABLE CAUSES

- AWC switch malfunction
- Damaged harness wires and connectors
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1613 set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. J/C (3), Intermediate connector, AWC-ECU connector, AWC switch connector check: C-07, C-36, C-51, C-50

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the defective connector. Then go to Step 8.

STEP 4. Wiring harness check between C-51 AWC-ECU connector terminal No.21 and C-50 AWC switch connector terminal No.1.

Check the output line for short (for short to the power supply) circuit.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the wiring harness. Then go to Step 8.

STEP 5. Scan tool data list

Item No.89: AWC switch (Refer to data list reference table P.22C-501).

Q: Is the check result normal?

YES : Go to Step 7.
NO : Go to Step 6.

STEP 6. AWC switch check.

Check the AWC switch. (Refer to P.22C-549).

Q: Is the check result normal?

YES : Go to Step 7.
NO : Replace the AWC switch. (Refer to P.22C-547). Then go to Step 8.

STEP 7. Check whether the DTC is reset.

Q: Is DTC No. C1613 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 8.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

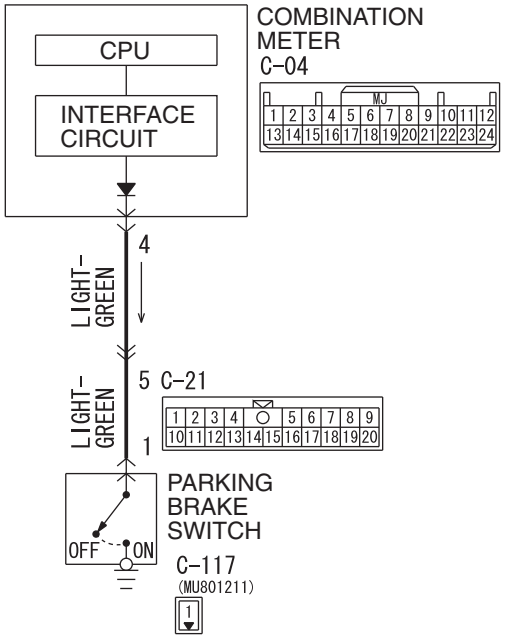
STEP 8. Check whether the DTC is reset.

Q: Is DTC No. C1613 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC C1614: Parking Brake Switch System (Stuck ON)

Parking brake switch system circuit



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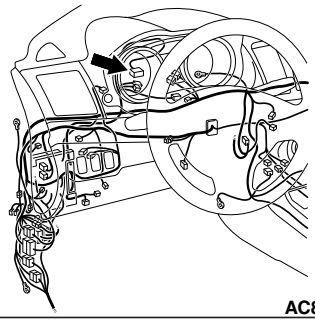
Connector: C-04



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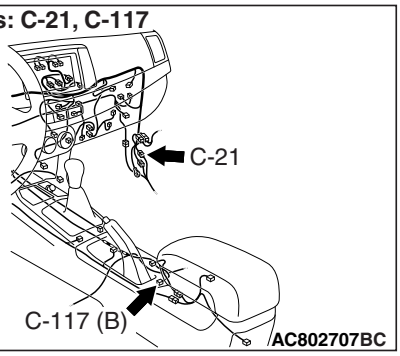
Connectors: C-21, C-117



AC802707BC

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU receives the parking brake switch signal from the combination meter via ETACS-ECU.

DTC SET CONDITIONS

If the parking brake switch is on sticking, the code is set.

PROBABLE CAUSES

- Parking brake switch malfunction
- Damaged harness wires and connectors
- Malfunction of the ETACS-ECU
- Malfunction of the combination meter
- Malfunction of AWC-ECU
- Driving with the parking brake pulled

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1614 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool data list
Item 40: Parking brake switch (Refer to data list reference table P.22C-501).

Q: Is the check result normal?

YES : Go to Step 9.
NO : Go to Step 4.

STEP 4. Scan tool diagnostic trouble code

- Check whether the combination meter-related DTC is set. (Refer to GROUP 54A – Troubleshooting P.54A-34).
- Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 5.

STEP 5. Check the parking brake switch.
Check the parking brake switch. (Refer to GROUP 36 – On-vehicle Service P.36-8).

Q: Is the check result normal?

YES : Go to Step 6.
NO : Replace the parking brake switch. (Refer to GROUP 36 – Parking Brake Lever P.36-10). Then go to Step 9.

STEP 6. Combination meter connector, intermediate connector, and parking brake switch connector check: C-04, C-21, C-117
Check the contact status of the terminals.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the defective connector. Then go to Step 9.

STEP 7. Check the wiring harness between C-04 combination meter connector terminal No.4 and C-117 parking brake switch connector terminal No.1.
Check the output line for short circuit.

Q: Is the check result normal?

YES : Replace the combination meter. (Refer to GROUP 54A – Combination Meter P.54A-126). Then go to Step 8.

NO : Repair the wiring harness. Then go to Step 8.

STEP 8. Check whether the DTC is reset.

Q: Is DTC No. C1614 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 9.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 9. Check whether the DTC is reset.

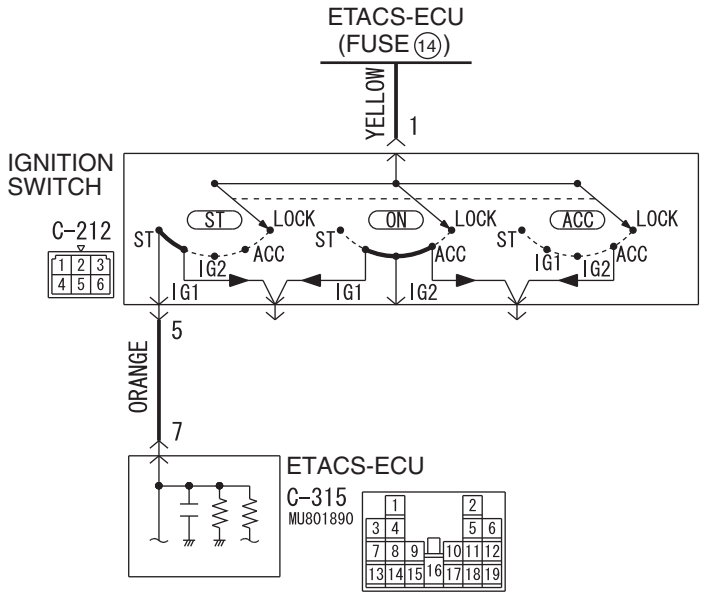
Q: Is DTC No. C1614 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

DTC C1616: Cranking Signal System (Stuck ON)

Cranking signal system circuit



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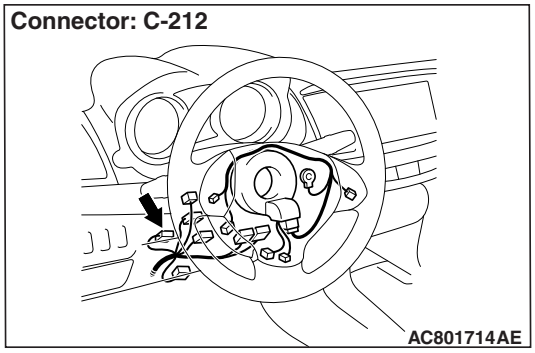

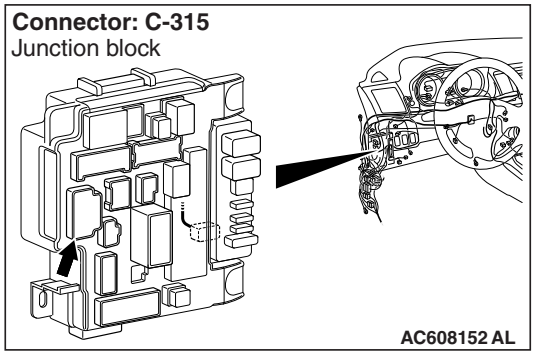

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU receives the signal of the ignition switch from ETACS-ECU via CAN communication.

DTC SET CONDITIONS

The code is set when the cranking signal is set for five seconds or more continuously while driving.

PROBABLE CAUSES

- Malfunction of the ETACS-ECU
- Ignition switch malfunction
- Damaged harness wires and connectors
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1616 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code

- Check the KOS diagnostic trouble code. (Refer to GROUP 42B – Troubleshooting P.42B-28).
- Check the WCM diagnostic trouble code. (Refer to GROUP 42C – Troubleshooting P.42C-17).
- Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

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STEP 4. Scan tool data list

Item 42: Ignition switch (Refer to data list reference table P.22C-501.)

Q: Is the check result normal?

YES : Go to Step 9.
NO : Go to Step 5.

STEP 5. Ignition switch check

(1) Disconnect C-212 ignition switch connector, and check the continuity between the terminals No.1 and No.5 at the ignition switch side.
(2) Turn the ignition switch to the "ON" position.

OK: No continuity

Q: Is the check result normal?

YES : Go to Step 6.
NO : Replace the ignition switch. (Refer to GROUP 54A – Ignition Switch P.54A-23). Then go to Step 10.

STEP 6. Ignition switch connector, ETACS-ECU connector check: C-212, C-315

Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the defective connector. Then go to Step 10.

TEP 7. Check the wiring harness between C-212 ignition switch connector terminal No.5 and C-315 ETACS-ECU connector terminal No.7.

Check the power supply line for short (for short to the power supply) circuit.

Q: Is the check result normal?

YES : Go to Step 8.
NO : Repair the wiring harness. Then go to Step 10.

STEP 8. Scan tool data list

ETACS item No.287: Starter switch (Refer to GROUP 54A – ETACS P.54A-726).

Q: Is the check result normal?

YES : Go to Step 9.
NO : Replace the ETACS-ECU. (Refer to GROUP 54A – ETACS-ECU P.54A-772). Then go to Step 9.

STEP 9. Check whether the DTC is reset.

Q: Is DTC No. C1616 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 10.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 10. Check whether the DTC is reset.

Q: Is DTC No. C1616 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC C1617: AWC CAN Main Data System (Data Not Received)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU receives various data from ECU via CAN communication.

DTC SET CONDITIONS

The code is set when the signal necessary for AWC control cannot be received.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of engine control module
- Malfunction of ASC-ECU
- Malfunction of steering wheel sensor
- Malfunction of the ETACS-ECU
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1617 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code

Check if the AWC-related DTC No.U0100, U0101, U0121, U0126, or U0141 is set. (Refer to P.22C-426).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Scan tool diagnostic trouble code

- Check the engine diagnostic trouble code. (Refer to GROUP 13B – Troubleshooting P.13B-51).
- Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25).
- Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 5.

STEP 5. Check whether the DTC is reset.

Q: Is DTC No. C1617 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 6.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

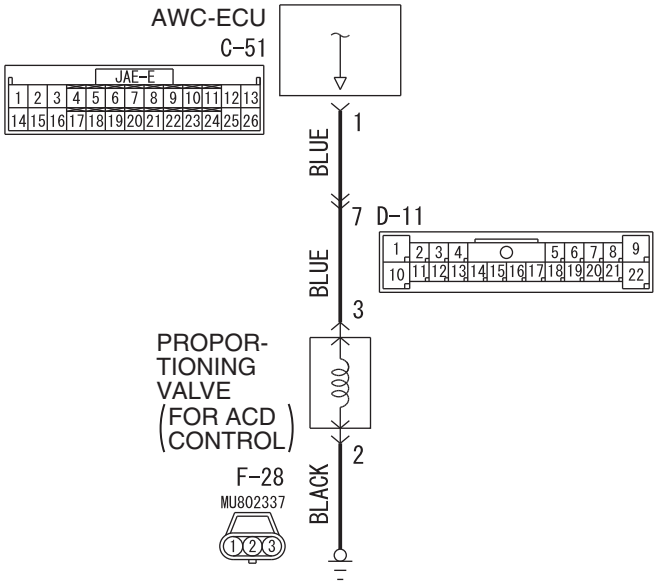
STEP 6. Check whether the DTC is reset.

Q: Is DTC No. C1617 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC C161C: ACD Proportioning Valve System (Malfunction)

ACD proportioning valve system



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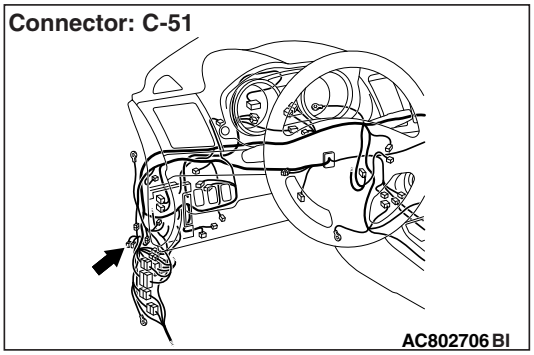
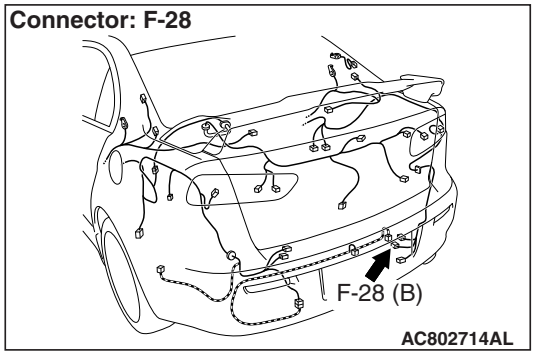
Connector: C-51



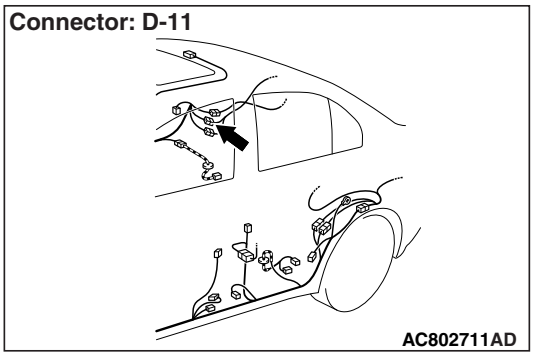
AC802706 BI

Connector: F-28



AC802714AL

Connector: D-11



AC802711AD

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU controls ACD proportioning valve.

DTC SET CONDITIONS

The code is set when the current monitor value of the ACD proportioning valve solenoid is determined to be abnormal.

PROBABLE CAUSES

- ACD proportioning valve malfunction
- Damaged harness wires and connectors
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C161C set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. ACD proportioning valve check.
Measure the resistance of ACD proportioning valve.

Standard value: 3.7 ± 0.3 Ω

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the hydraulic unit. (Refer to P.22C-550). Then go to Step 8.

STEP 4. AWC-ECU connector, intermediate connector, proportioning valve (for ACD) connector check: C-51, D-11, F-28

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the defective connector. Then go to Step 8.

STEP 5. Check the wiring harness between C-51 AWC-ECU connector terminal No.1 and F-28 proportioning valve (for ACD) connector terminal No.3 and between F-28 proportioning valve (for ACD) connector terminal No.2 and body ground.
Check the power supply line for open or short circuit, and check the ground line for open circuit.

Q: Is the check result normal?

YES : Go to Step 6.
NO : Repair the wiring harness. Then go to Step 8.

STEP 6. Scan tool data list
Item 92: ACD proportion valve (Refer to data list reference table P.22C-501).

Q: Is the check result normal?

YES : Go to Step 7.
NO : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 8.

STEP 7. Check whether the DTC is reset.

Q: Is DTC No. C161C set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 8.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

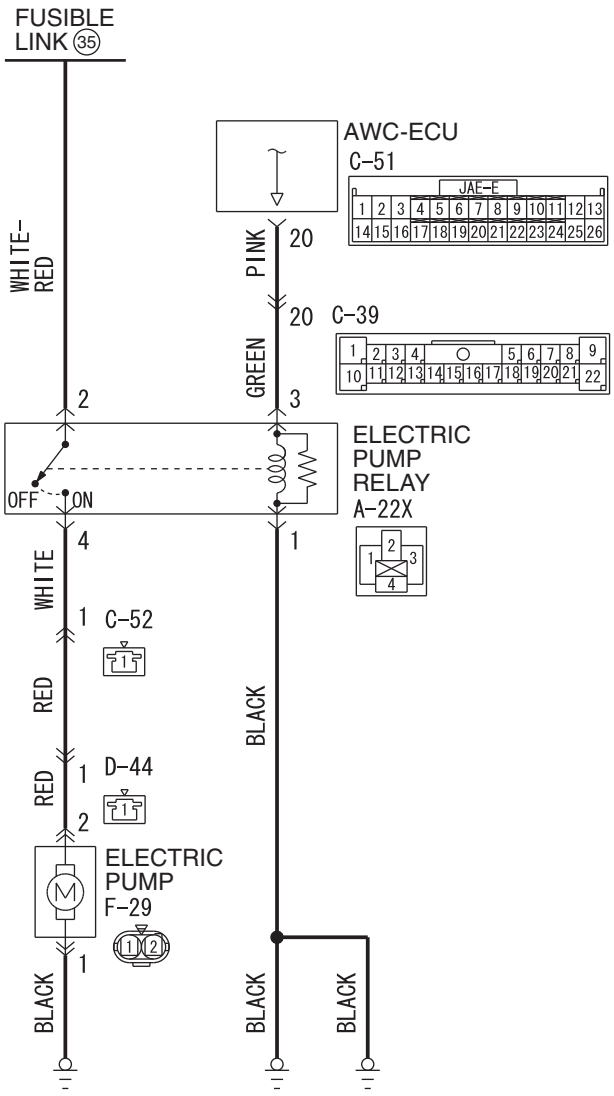
STEP 8. Check whether the DTC is reset.

Q: Is DTC No. C161C set?

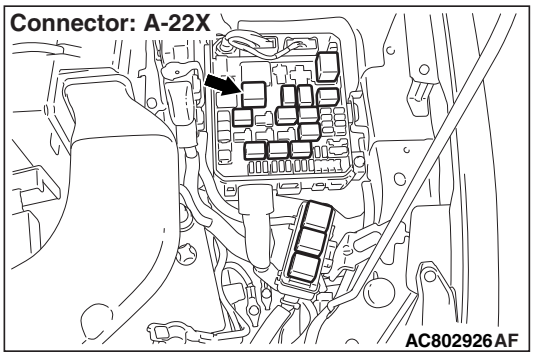
YES : Return to Step 1.
NO : This diagnosis is complete.

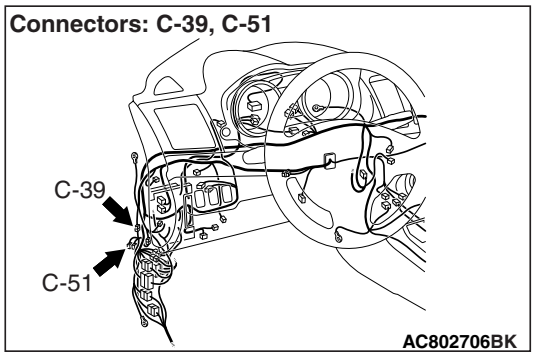
DTC C161D: Electric Pump Relay System (Faulty Circuit)

AWC pump relay circuit system circuit



AC803124 AC





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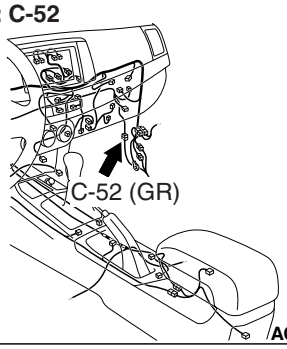
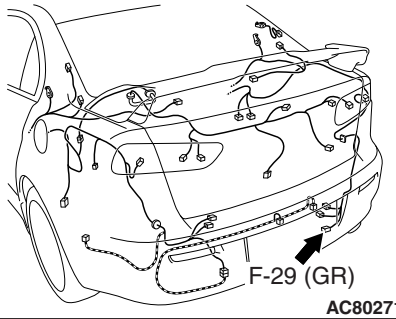
Connector: C-52



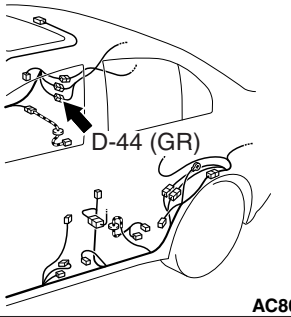
AC802707BJ

Connector: F-29



AC802714 AM

Connector: D-44



AC802711AL

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU operates the electric pump via the electric pump relay.

DTC SET CONDITIONS

The code is set when the electric pump relay coil side circuit is open or shorted.

PROBABLE CAUSES

- Electric pump relay malfunction
- Damaged harness wires and connectors
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C161D set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. Scan tool actuator test

OK: Operating sound of the electric pump can be heard.

Q: Is the check result normal?

YES : Go to Step 9.
NO : Go to Step 4.

STEP 4. Electric pump relay check.
Check the electric pump relay. (Refer to P.22C-547).

Q: Is the check result normal?

YES : Go to Step 5.
NO : Replace the electric pump relay. (Refer to P.22C-547). Then go to Step 9.

STEP 5. Electric pump relay connector, AWC-ECU connector check: A-22X, C-51

Q: Is the check result normal?

YES : Go to Step 6.
NO : Repair the defective connector. Then go to Step 9.

STEP 6. Check the wiring harness between A-22X electric pump relay connector terminal No.3 and C-51 AWC-ECU connector terminal No.20.
Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Check C-31 intermediate connector. When no problem is found, repair the wiring harness. Then go to Step 9.

STEP 7. Check the wiring harness between A-22X electric pump relay connector terminal No.1 and body ground.
Check the ground line for open circuit.

Q: Is the check result normal?

YES : Go to Step 8.
NO : Repair the wiring harness. Then go to Step 9.

STEP 8. Check whether the DTC is reset.

Q: Is DTC No. C161D set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 9.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 9. Check whether the DTC is reset.

Q: Is DTC No. C161D set?

YES : Return to Step 1.
NO : This diagnosis is complete.

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DTC C161E: Electric Pump System

AWC PUMP RELAY SYSTEM CIRCUIT

Refer to P.22C-463.

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**
- **Since the fluid in the hydraulic unit will be hardened under low temperature, the load of the pump increases and the motor may not operate normally. Therefore, completely remove snow and ice from the hydraulic unit and leave the vehicle under temperature of 0°C or higher for 4 hours or more before performing the troubleshooting.**

OPERATION

AWC-ECU controls the electric pump by the information from AWC pressure sensor and electric pump relay.

DTC SET CONDITIONS

The code is set when the electric pump operation signal is output from AWC-ECU, and when the AWC pressure sensor signal is not reached the specified pressure after the specified time has elapsed.

PROBABLE CAUSES

- Fluid malfunction (low fluid level)
- AWC pressure sensor malfunction
- Electric pump relay malfunction
- Hydraulic unit malfunction
- Electric pump malfunction
- Damaged harness wires and connectors
- Malfunction of AWC-ECU
- Used under low temperature condition

DIAGNOSTIC PROCEDURE

STEP 1. Check whether the diagnostic trouble code is reset.

As for vehicles under low temperature condition, carry out the contents of the precautions, and then check the diagnostic trouble code again.

Q: Is diagnostic trouble code No.C161E set?

YES : Go to Step 2.
NO : This diagnosis is complete.

STEP 2. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. C161E set?

YES : Go to Step 4.
NO : This diagnosis is complete.

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STEP 4. Fluid check
Check that the fluid level is adequate. (Refer to P.22C-511).

Q: Is the check result normal?

YES : Go to Step 5.
NO : Add the fluid.

STEP 5. Scan tool diagnostic trouble code
Check if the ACD diagnostic trouble code No.C1611, C1612, C1625, or C161D is set. (Refer to P.22C-426).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 6.

STEP 6. Scan tool actuator test

OK: Operating sound of the electric pump can be heard.

Q: Is the check result normal?

YES : Go to Step 14.
NO : Go to Step 7.

STEP 7. Electric pump relay check.
Check the electric pump relay. (Refer to P.22C-547).

Q: Is the check result normal?

YES : Go to Step 8.
NO : Replace the electric pump relay. (Refer to P.22C-547). Then go to Step 15.

STEP 8. Electric pump relay connector check: A-22X

Q: Is the check result normal?

YES : Go to Step 9.
NO : Repair the defective connector. Then go to Step 15.

STEP 9. Check the wiring harness between A-22X electric pump relay connector terminal No.2 and fusible link (35).
Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 10.
NO : Repair the wiring harness. Then go to Step 15.

STEP 10. Electric pump connector check: F-29

Q: Is the check result normal?

YES : Go to Step 11.
NO : Repair the defective connector. Then go to Step 15.

STEP 11. Check the wiring harness between A-22X electric pump relay connector terminal No.4 and F-29 electric pump connector terminal No.2.
Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 12.
NO : Check C-136 and D-13 intermediate connectors. When no problem is found, repair the wiring harness. Then go to Step 15.

STEP 12. Check the wiring harness between F-29 electric pump connector terminal No.1 and body ground.
Check the ground line for open circuit.

Q: Is the check result normal?

YES : Go to Step 13.
NO : Repair the wiring harness. Then go to Step 15.

STEP 13. Check whether the DTC is reset.

Q: Is DTC No. C161E set?

YES : Replace the hydraulic unit. (Refer to P.22C-550). Then go to Step 14.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 14. Check whether the DTC is reset.

Q: Is DTC No. C161E set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 15.
NO : This diagnosis is complete.

STEP 15. Check whether the DTC is reset.

Q: Is DTC No. C161E set?

YES : Return to Step 2.
NO : This diagnosis is complete.

DTC C1622: ACD Control System (Abnormal)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU provides power supply to the ACD proportioning valve.

DTC SET CONDITIONS

This diagnostic trouble code is set if any condition below is found:

- When ACD clutch is protected.
- When the current value of the ACD proportioning valve solenoid exceeds the specified value for a prolonged period.

PROBABLE CAUSES

- The driving and road conditions are severe.
- Malfunction of AWC-ECU

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DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1622 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code
Check other ACD diagnostic trouble code. (Refer to P.22C-426).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. C1622 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 5.
NO : This diagnosis is complete. (The clutch protection activated in such driving or road condition as ACD control is applied for a prolonged period).

STEP 5. Check whether the DTC is reset.

Q: Is DTC No. C1622 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC C1624: AWC-ECU System (Internal Error)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU monitors the malfunction in the ECU.

DTC SET CONDITIONS

The code is set when a malfunction is found in AWC-ECU.

PROBABLE CAUSES

- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1624 set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code

Check other ACD diagnostic trouble code. (Refer to P.22C-426).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.

NO : Go to Step 4.

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. C1624 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 5.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 5. Check whether the DTC is reset.

Q: Is DTC No. C1624 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

DTC C1625: AWC Pressure Sensor System (Power Supply Voltage Abnormality)

AWC PRESSURE SENSOR SYSTEM CIRCUIT

Refer to P.22C-446.

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU monitors the AWC pressure sensor power supply voltage.

DTC SET CONDITIONS

The code is set when the power supply voltage to the AWC pressure sensor is outside the specified value.

PROBABLE CAUSES

- AWC pressure sensor malfunction
- Damaged harness wires and connectors
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C1625 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Voltage measurement at F-27 AWC pressure sensor connector

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

OK: Approx. 5 V

Q: Is the check result normal?

YES : Go to Step 6.
NO : Go to Step 4.

STEP 4. AWC-ECU connector, AWC pressure sensor connector check: C-51, F-27

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the defective connector. Then go to Step 8.

STEP 5. Check the wiring harness between C-51 AWC-ECU connector terminal No.6 and F-27 AWC pressure sensor connector terminal No.1.

Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 6.

NO : Check D-11 intermediate connector. When no problem is found, repair the wiring harness. Then go to Step 8.

STEP 6. Scan tool data list

Item No.86: Pressure sensor power supply voltage (Refer to data list reference table P.22C-501).

Q: Is the check result normal?

YES : Go to Step 7.

NO : Replace the hydraulic unit. (Refer to P.22C-550). Then go to Step 7.

STEP 7. Check whether the DTC is reset.

Q: Is DTC No. C1625 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 8.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 8. Check whether the DTC is reset.

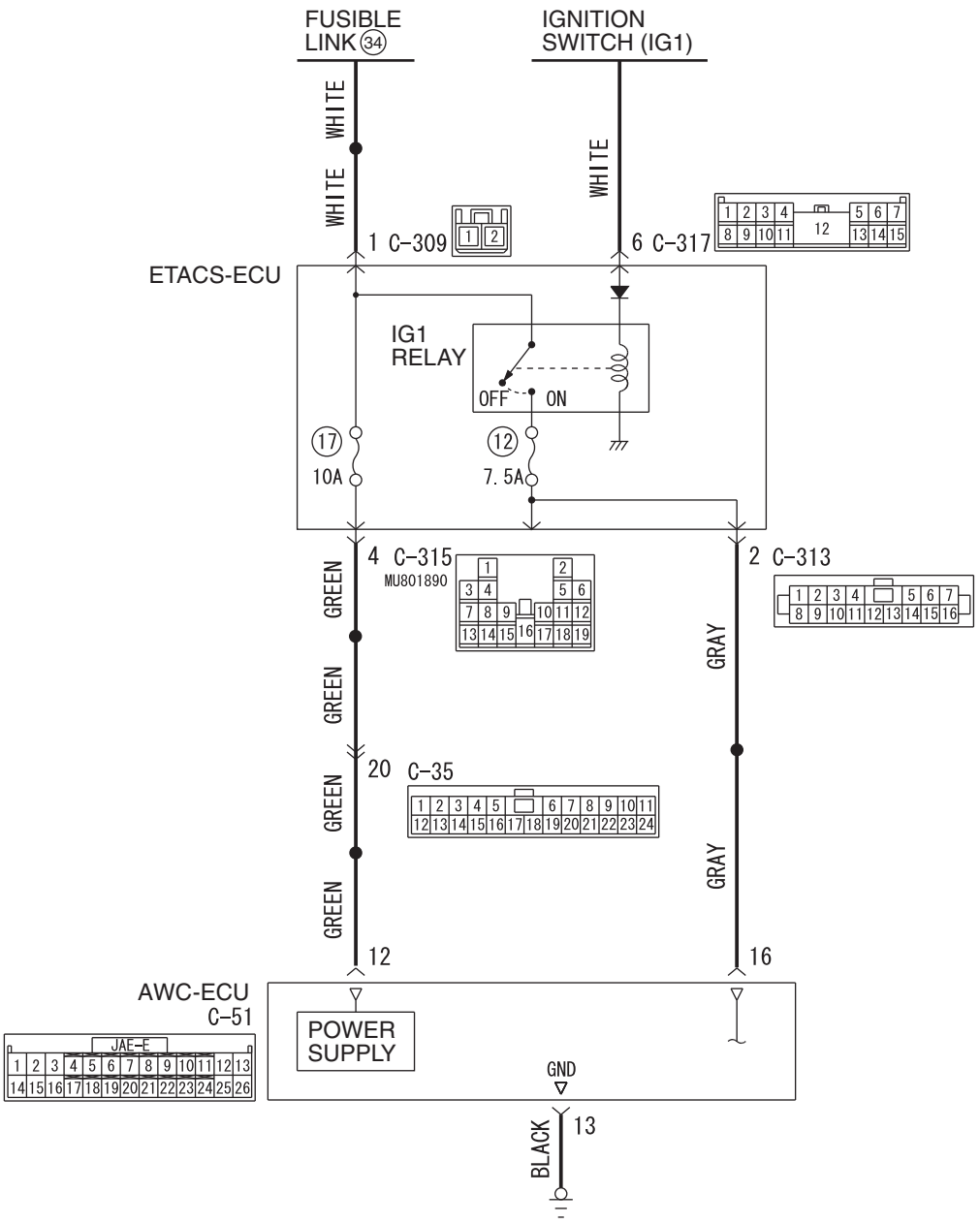
Q: Is DTC No. C1625 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

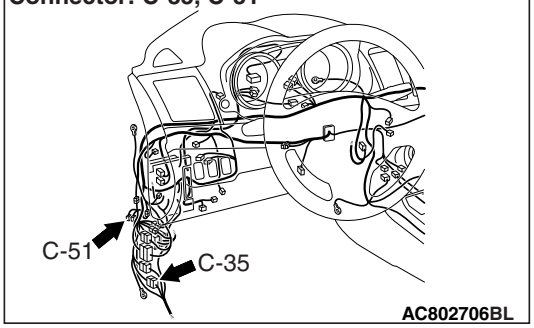
DTC C2100: Battery Voltage Malfunction (Low Voltage)

Power supply system circuit



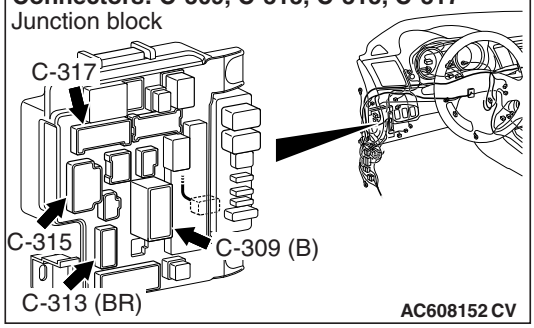
AC803125 AB

Connector: C-35, C-51



AC802706BL

Connectors: C-309, C-313, C-315, C-317
Junction block



AC608152 CV

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⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
AWC-ECU power supply is provided from the battery via ETACS-ECU.

DTC SET CONDITIONS
This diagnostic trouble code is set when the abnormality below is detected:
- When the AWC-ECU power supply voltage and solenoid valve power supply voltage are 9 V or less.

PROBABLE CAUSES
- Malfunction of the ETACS-ECU
- Defective battery
- Charging system failed
- Damaged harness wires and connectors
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C2100 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code
Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Check the battery.
Refer to GROUP 54A – Battery Test P.54A-8.

Q: Is the check result normal?

YES : Go to Step 6.
NO : Charge or replace the battery. Then go to Step 5.

STEP 5. Check the charging system.
Refer to GROUP 16 – Charging System P.16-9.

Q: Is the check result normal?

YES : Go to Step 6.
NO : Repair or replace the charging system component(s).

STEP 6. Voltage measurement at C-51 AWC-ECU connector

Disconnect the connector, and measure the voltage between terminal No.12 and ground at the wiring harness side.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 10.
NO : Go to Step 7.

STEP 7. AWC-ECU connector, ETACS-ECU connector check: C-51, C-315

Q: Is the check result normal?

YES : Go to Step 8.
NO : Repair the defective connector. Then go to Step 13.

STEP 8. Check the wiring harness between C-51 AWC-ECU connector terminal No.12 and C-315 ETACS-ECU connector terminal No.4.

Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 9.
NO : Check C-35 intermediate connector. When no problem is found, repair the wiring harness. Then go to Step 13.

STEP 9. Scan tool data list

Item No.43: Battery voltage (Refer to data list reference table P.22C-501).

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Replace the ETACS-ECU. (Refer to GROUP 54A – ETACS-ECU P.54A-772). Then go to Step 13.

STEP 10. AWC-ECU connector check: C-51

Q: Is the check result normal?

YES : Go to Step 11.
NO : Repair the defective connector. Then go to Step 13.

STEP 11. Check the wiring harness between C-51 AWC-ECU connector terminal No.13 and body ground.

Check the ground line for open circuit.

Q: Is the check result normal?

YES : Go to Step 12.
NO : Repair the wiring harness. Then go to Step 13.

STEP 12. Scan tool data list

Item No.43: Battery voltage (Refer to data list reference table P.22C-501).

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

NO : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 13.

STEP 13. Check whether the DTC is reset.

Q: Is DTC No. C2100 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

DTC C2101: Battery Voltage Malfunction (High Voltage)

POWER SUPPLY SYSTEM CIRCUIT

Refer to P.22C-473.

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU power supply is provided from the battery via ETACS-ECU.

DTC SET CONDITIONS

The code is set when the AWC-ECU power supply voltage and solenoid valve power supply voltage are 18 V or more.

PROBABLE CAUSES

- Loose battery terminal
- Defective battery
- Charging system failed
- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C2101 set?

YES : Go to Step 3.

NO : This diagnosis is complete.

STEP 3. Scan tool diagnostic trouble code
Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Battery terminal check
Check that the battery terminal is not loose.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Securely install the battery terminal. Then go to Step 5.

STEP 5. Check the charging system.
Refer to GROUP 16 – Charging System P.16-9.

Q: Is the check result normal?

YES : Go to Step 6.
NO : Repair or replace the charging system component(s).

STEP 6. Check the battery.
Refer to GROUP 54A – Battery Test P.54A-8.

Q: Is the check result normal?

YES : Go to Step 7.
NO : Replace the battery. Then go to Step 7.

STEP 7. Voltage measurement at C-51 AWC-ECU connector
Disconnect the connector, and measure the voltage between terminal No.12 and ground at the wiring harness side.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 11.
NO : Go to Step 8.

STEP 8. AWC-ECU connector, ETACS-ECU connector check: C-51, C-315

Q: Is the check result normal?

YES : Go to Step 9.
NO : Repair the defective connector. Then go to Step 12.

STEP 9. Check the wiring harness between C-51 AWC-ECUconnector terminal No.12 and C-315 ETACS-ECU connector terminal No.4.
Check the power supply line for short circuit.

Q: Is the check result normal?

YES : Go to Step 10.
NO : Check C-35 intermediate connector. When no problem is found, repair the wiring harness. Then go to Step 12.

STEP 10. Scan tool data list

Item No.43: Battery voltage (Refer to data list reference table P.22C-501).

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

NO : Replace the ETACS-ECU. (Refer to GROUP 54A – ETACS-ECU P.54A-772). Then go to Step 12.

STEP 11. Scan tool data list

Item No.43: Battery voltage (Refer to data list reference table P.22C-501).

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

NO : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 12.

STEP 12. Check whether the DTC is reset.

Q: Is DTC No. C2101 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

DTC C2203: VIN not Recorded

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU receives chassis number information from the engine control module.

DTC SET CONDITIONS

When the chassis number is not written.
(AWC-ECU receives chassis number information from the engine control module via CAN, and writes to AWC-ECU.)

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of engine control module
- VIN not written
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code
Check whether engine-related diagnostic trouble code No.P0630 is set. (Refer to GROUP 13B – Troubleshooting P.13B-51).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. C2203 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 4.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. C2203 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC C2205: Steering Wheel Sensor System (Internal Error)

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**
- **When the steering wheel sensor is replaced, calibrate the steering wheel sensor (Refer to GROUP 35C – On-vehicle Service P.35C-294), and initialise the steering angle correction amount stored in AWC-ECU. (Item No.1: Steering angle correction amount initialisation P.22C-504).**

OPERATION

AWC-ECU receives the self-diagnosis status of steering wheel sensor.

DTC SET CONDITIONS

The code is set when abnormality is detected by the self-diagnosis of the steering wheel sensor.

PROBABLE CAUSES

- Malfunction of steering wheel sensor
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. C2205 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Scan tool data list

Item 13: Steering wheel sensor (Refer to P.22C-501).

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the steering wheel sensor. (Refer to GROUP 35C – Steering Wheel Sensor P.35C-310). Then go to Step 5.

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. C2205 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 5. Check whether the DTC is reset.

Q: Is DTC No.C2205 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC U0001: Bus-off

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

DTC SET CONDITIONS

The code is set when AWC-ECU ceases (bus-off).

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of AWC-ECU
- ECU malfunction of other system

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. U0001 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 3.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. U0001 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC U0100: Engine Time-out Error

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU communicates with the engine control module via the CAN bus lines.

DTC SET CONDITIONS

The code is set when the signal sent from engine control module cannot be received for a certain period.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of engine control module
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool diagnostic trouble code

Check the engine diagnostic trouble code. (Refer to GROUP 13B –Troubleshooting P.13B-51).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. U0100 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 4.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

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STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U0100 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC U0101: TC-SST Time-out Error

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU communicates with TC-SST-ECU via the CAN bus lines.

DTC SET CONDITIONS

The code is set when the signal sent from TC-SST-ECU cannot be received for a certain period.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of TC-SST-ECU
- ETACS coding data error
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool diagnostic trouble code

Check the TC-SST diagnostic trouble code. (Refer to P.22C-33).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. ETACS-ECU coding data check.

Check the transaxle coding data stored in ETACS-ECU for any abnormality. (Refer to GROUP 00 – Coding Reference Table P.00-33).

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the ETACS-ECU. (Refer to GROUP 54A – ETACS-ECU P.54A-772). Then go to Step 5.

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U0101 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 5.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 5. Check whether the DTC is reset.

Q: Is DTC No. U0101 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

DTC U0121: ASC Time-out Error

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU communicates with the ASC-ECU via the CAN bus lines.

DTC SET CONDITIONS

The code is set when the signal sent from the ASC-ECU cannot be received for a certain period.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of ASC-ECU
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool diagnostic trouble code

Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.

NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. U0121 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U0121 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC U0126: Steering Wheel Sensor Time-out Error

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**
- **When the steering wheel sensor is replaced, calibrate the steering wheel sensor (Refer to GROUP 35C – On-vehicle Service P.35C-294), and initialise the steering angle correction amount stored in AWC-ECU. (Item No.1: Steering angle correction amount initialisation P.22C-504).**

OPERATION

AWC-ECU communicates with the steering wheel sensor via the CAN bus lines.

DTC SET CONDITIONS

The code is set when the signal sent from steering wheel sensor cannot be received for a certain period.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of steering wheel sensor
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool data list

Item No.11: Steering wheel sensor (Refer to data list reference table P.22C-501).

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Replace the steering wheel sensor. (Refer to GROUP 35C – Steering Wheel Sensor P.35C-310). Then go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. U0126 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 4.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U0126 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC U0141: ETACS Time-out Error

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU communicates with the ETACS-ECU via the CAN bus lines.

DTC SET CONDITIONS

The code is set when the signal sent from ETACS-ECU cannot be received for a certain period.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of the ETACS-ECU
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool diagnostic trouble code

Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. U0141 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 4.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U0141 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC U0401: Engine Data Error

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION
AWC-ECU communicates with the engine control module via the CAN bus lines.

DTC SET CONDITIONS
The code is set when abnormality is detected in the signal received from the engine control module.

PROBABLE CAUSES
- The CAN bus line is defective.
- Engine malfunction
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?
YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool diagnostic trouble code
Check the engine diagnostic trouble code. (Refer to GROUP 13B – Troubleshooting P.13B-51).

Q: Is the DTC set?
YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Scan tool data list
Check the following data list. (Refer to data list reference table P.22C-501).
- Item No.15: Engine speed
- Item No.16: Engine torque (Driver request value)

Q: Is the check result normal?
YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Go to Step 4.

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U0401 set?
YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 5. Check whether the DTC is reset.

Q: Is DTC No. U0401 set?
YES : Return to Step 1.
NO : This diagnosis is complete.

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DTC U0428: Steering Wheel Sensor Data Error

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**
- **When the steering wheel sensor is replaced, calibrate the steering wheel sensor (Refer to GROUP 35C – On-vehicle Service P.35C-294), and initialise the steering angle correction amount stored in AWC-ECU. (Item No.1: Steering angle correction amount initialisation P.22C-504).**

OPERATION

AWC-ECU communicates with the steering wheel sensor via the CAN bus lines.

DTC SET CONDITIONS

The code is set when abnormality is detected in the signal received from the steering wheel sensor.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of steering wheel sensor
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool data list

Item No.11: Steering wheel sensor (Refer to P.22C-501).

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

NO : Replace the steering wheel sensor. (Refer to GROUP 35C – Steering Wheel Sensor P.35C-310). Then go to Step 3.

STEP 3. Check whether the DTC is reset.

Q: Is DTC No. U0428 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U0428 set?

YES : Return to Step 1.

NO : This diagnosis is complete.

TSB Revision

DTC U0431: ETACS Data Error

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU communicates with the ETACS-ECU via the CAN bus lines.

DTC SET CONDITIONS

The code is set when abnormality is detected in the signal received from the ETACS-ECU.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of the ETACS-ECU
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool diagnostic trouble code

Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Scan tool data list

Check the following data list. (Refer to data list reference table P.22C-501).

- Item No. 39: Stoplight switch
- Item No.43: Battery positive voltage

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Go to Step 4.

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U0431 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 5. Check whether the DTC is reset.

Q: Is DTC No. U0431 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

TSB Revision

DTC U1415: Coding incomplete/fail

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**
- **When the diagnostic trouble code No.U1415 is set in AWC-ECU, the diagnostic trouble code may also be set in ETACS-ECU. When the diagnostic trouble code is set in ETACS-ECU, perform the diagnosis of the diagnostic trouble code for ETACS-ECU first.**

OPERATION

AWC-ECU receives the vehicle information stored in ETACS-ECU via CAN bus lines.

DTC SET CONDITIONS

The diagnostic trouble code is set when the AWC-ECU coding has not been performed.

PROBABLE CAUSES

- Variant coding for ETACS-ECU has not been implemented.
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool diagnostic trouble code

Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. ETACS-ECU coding data check

Using the scan tool, check if there is any abnormality to the coding data stored in the ETACS-ECU. (Refer to GROUP 00 – Coding Reference Table P.00-33).

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the ETACS-ECU. (Refer to GROUP 54A – ETACS-ECU P.54A-772). Then go to Step 5.

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U1415 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

TSB Revision

STEP 5. Check whether the DTC is reset.

Q: Is DTC No. U1415 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC U1417: Coding Data Malfunction

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the communication circuit is normal.**
- **When the diagnostic trouble code No.U1417 is set in AWC-ECU, the diagnostic trouble code may also be set in ETACS-ECU. When the diagnostic trouble code is set in ETACS-ECU, perform the diagnosis of the diagnostic trouble code for ETACS-ECU first.**

OPERATION

AWC-ECU receives the vehicle information stored in ETACS-ECU via CAN bus lines.

DTC SET CONDITIONS

The code is set when the vehicle information received from ETACS-ECU is not correct.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of the ETACS-ECU
- Malfunction of AWC-ECU
- ETACS-ECU has been interchanged between two vehicles.

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool diagnostic trouble code

Check the ETACS diagnostic trouble code. (Refer to GROUP 54A – Troubleshooting P.54A-678).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. ETACS-ECU coding data check

Using the scan tool, check if there is any abnormality to the coding data stored in the ETACS-ECU. (Refer to GROUP 00 – Coding Reference Table P.00-33).

Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the coding data or replace ETACS-ECU. (Refer to GROUP 54A – ETACS-ECU P.54A-772). Then go to Step 5.

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U1417 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 5. Check whether the DTC is reset.

Q: Is DTC No. U1417 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC U1425: TC-SST Data Error

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU communicates with TC-SST-ECU via the CAN bus lines.

DTC SET CONDITIONS

The code is set when abnormality is detected in the signal received from the TC-SST-ECU.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of TC-SST-ECU
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool diagnostic trouble code

Check the TC-SST diagnostic trouble code. (Refer to P.22C-33).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Scan tool data list

Item No.17: T/M shift range (Refer to P.22C-501).

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Go to Step 4.

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STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U1425 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 5. Check whether the DTC is reset.

Q: Is DTC No. U1425 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

DTC U1427: Wheel Speed Sensor Data Error

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

OPERATION

AWC-ECU communicates with the ASC-ECU via the CAN bus lines.

DTC SET CONDITIONS

The code is set when abnormality is detected in the signal received from the wheel speed sensor.

PROBABLE CAUSES

- The CAN bus line is defective.
- Malfunction of ASC-ECU
- Malfunction of wheel speed sensor
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool diagnostic trouble code

Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Scan tool data list

Check the data list below. (Refer to P.22C-501).

- Item No.22: Wheel speed sensor <FL>
- Item No.23: Wheel speed sensor <FR>
- Item No.24: Wheel speed sensor <RL>
- Item No.25: Wheel speed sensor <RR>

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Go to Step 4.

STEP 4. Check whether the DTC is reset.

Q: Is DTC No. U1427 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 5.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 5. Check whether the DTC is reset.

Q: Is DTC No. U1427 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

Code No.U1428: G and Yaw Rate Sensor Data Error

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**
- **Do not drop the G and yaw rate sensor or subject it to a shock.**
- **When G and yaw rate sensor is replaced, calibrate G and yaw rate sensor (refer to GROUP 35C – On-vehicle Service P.35C-292)**

OPERATION

AWC-ECU receives the G and yaw rate sensor data from ASC-ECU via the CAN communication.

DTC SET CONDITIONS

The code is set when abnormality is detected in the signal received from the G and yaw rate sensor.

PROBABLE CAUSES

- Malfunction of G and yaw rate sensor
- Malfunction of ASC-ECU
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

STEP 2. Scan tool diagnostic trouble code

Check the ASC diagnostic trouble code. (Refer to GROUP 35C – Troubleshooting P.35C-25).

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 3.

STEP 3. Scan tool diagnostic trouble code

Check if the ACD diagnostic trouble code No. C123C, C1242 is set. (Refer to P.22C-426).

Q: Is the check result normal?

YES : Perform the relevant troubleshooting.
NO : Go to Step 4.

STEP 4. Scan tool data list

Check the data list below. (Refer to P.22C-501).

- Item No.26: Yaw rate sensor
- Item No.29: Lateral G sensor
- Item No.31: Longitudinal G sensor

Q: Is the check result normal?

YES : Go to Step 5.
NO : Replace the G and yaw rate sensor. (Refer to GROUP 35C – G and Yaw Rate Sensor P.35C-309). Then go to Step 6.

STEP 5. Check whether the DTC is reset.

Q: Is DTC No.U1428 set?

YES : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 6.
NO : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

STEP 6. Check whether the DTC is reset.

Q: Is DTC No.U1428 set?

YES : Return to Step 1.
NO : This diagnosis is complete.

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Communication between the scan tool and AWC-ECU cannot be established

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect trouble symptom may occur. Prior to this diagnosis, always diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

COMMENTS ON TROUBLE SYMPTOM
CAN bus line, AWC-ECU power supply circuit, or AWC-ECU may have a problem.

PROBABLE CAUSES
- Wrong scan tool wiring harness
- The CAN bus line is defective.
- AWC-ECU power supply circuit malfunction
- Malfunction of AWC-ECU
- ECU malfunction of other system

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Check/repair the AWC-ECU power supply circuit. (Refer to P.22C-498.)

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17).

INSPECTION PROCEDURE 2: Mode does not change even when the AWC switch is pressed

AWC MODE SELECT SWITCH SYSTEM CIRCUIT
Refer to P.22C-451.

⚠ CAUTION
- **If there is any problem in the CAN bus lines, an incorrect trouble symptom may occur. Prior to this diagnosis, always diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

COMMENTS ON TROUBLE SYMPTOM
AWC switch or AWC-ECU may have a problem.

PROBABLE CAUSES
- AWC switch malfunction
- Malfunction of the ETACS-ECU
- Malfunction of the combination meter
- Damaged harness wires and connectors
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Retest the system.

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Go to Step 3.

STEP 3. Scan tool data list
Item No.89: AWC switch (Refer to data list reference table P.22C-501).

Q: Is the check result normal?

YES : Go to Step 11.
NO : Go to Step 4.

STEP 4. AWC switch check.
Check the AWC switch. (Refer to P.22C-549).

Q: Is the check result normal?

YES : Go to Step 5.
NO : Replace the AWC switch. (Refer to P.22C-547). Then go to Step 13.

STEP 5. Measure the voltage at C-50 AWC switch connector.
(1) Disconnect the connector, and measure the voltage between terminal No.2 and ground at the harness side.
(2) Turn the ignition switch to the "ON" position.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 8.
NO : Go to Step 6.

STEP 6. AWC switch connector, ETACS-ECU connector check: C-50, C-317

Q: Is the check result normal?

YES : Go to Step 7.
NO : Repair the defective connector. Then go to Step 13.

STEP 7. Check the wiring harness between C-50 AWC switch connector terminal No.2 and C-317 ETACS-ECU connector terminal No.5.

Check the power supply line for short or open circuit.

Q: Is the check result normal?

YES : Replace the ETACS-ECU. (Refer to GROUP 54A – ETACS-ECU P.54A-772). Then go to Step 12.

NO : Repair the wiring harness. Then go to Step 13.

STEP 8. Voltage measurement at C-51 AWC-ECU connector

(1) With C-51 AWC-ECU connector connected, measure the voltage between terminal No.21 and ground at the harness side.

(2) Turn the ignition switch to the "ON" position.

OK: Battery voltage (Press and hold the AWC switch)

OK: 1 V or less (Release the AWC switch)

Q: Is the check result normal?

YES : Go to Step 11.

NO : Go to Step 9.

STEP 9. Intermediate connector, AWC-ECU connector, AWC switch connector check: C-36, C-51, C-50

Q: Is the check result normal?

YES : Go to Step 10.

NO : Repair the defective connector. Then go to Step 13.

STEP 10. Wiring harness check between C-51 AWC-ECU connector terminal No.21 and C-50 AWC switch connector terminal No.1

Check the output line for short or open circuit.

Q: Is the check result normal?

YES : Go to Step 12.

NO : Repair the wiring harness. Then go to Step 11.

STEP 11. Scan tool data list

Combination meter item No.F13, F14, F15: Mode display (Refer to GROUP 54A – Combination Meter P.54A-95).

Q: Is the check result normal?

YES : Go to Step 12.

NO : Replace the combination meter. (Refer to GROUP 54A – Combination Meter P.54A-126). Then go to Step 12.

STEP 12. Retest the system.

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

NO : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 13.

STEP 13. Retest the system.

Q: Is the check result normal?

YES : Return to Step 1.

NO : This diagnosis is complete.

INSPECTION PROCEDURE 3: AWC-ECU power supply circuit malfunction (Control mode is not displayed.)

POWER SUPPLY SYSTEM CIRCUIT

Refer to P.22C-473.

⚠ CAUTION

- **If there is any problem in the CAN bus lines, an incorrect trouble symptom may occur. Prior to this diagnosis, always diagnose the CAN bus lines.**
- **Whenever the ECU is replaced, ensure that the CAN bus lines are normal.**

COMMENTS ON TROUBLE SYMPTOM

AWC-ECU power supply circuit, ground circuit, or AWC-ECU may have a problem.

PROBABLE CAUSES

- Malfunction of the ETACS-ECU
- Damaged harness wires and connectors
- Malfunction of AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-17). After repairing the CAN bus line, go to Step 2.

STEP 2. Retest the system.

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).

NO : Go to Step 3.

STEP 3. Voltage measurement at C-51 AWC-ECU connector

Disconnect the connector, and measure the voltage between terminal No.12 and ground at the wiring harness side.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 6.
NO : Go to Step 4.

STEP 4. AWC-ECU connector, ETACS-ECU connector check: C-51, C-315

Q: Is the check result normal?

YES : Go to Step 5.
NO : Repair the defective connector. Then go to Step 13.

STEP 5. Check the wiring harness between C-51 AWC-ECU connector terminal No.12 and C-315 ETACS-ECU connector terminal No.4.

Check the wiring harness for open circuit.

Q: Is the check result normal?

YES : Go to Step 12.
NO : Check C-35 intermediate connector. When no problem is found, repair the wiring harness. Then go to Step 13.

STEP 6. Voltage measurement at C-51 AWC-ECU connector

(1) Disconnect the connector, and measure the voltage between terminal No.16 and ground at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.

OK: Battery positive voltage

Q: Is the check result normal?

YES : Go to Step 9.
NO : Go to Step 7.

STEP 7. AWC-ECU connector, ETACS-ECU connector check: C-51, C-313

Q: Is the check result normal?

YES : Go to Step 8.
NO : Repair the defective connector. Then go to Step 13.

STEP 8. Check the wiring harness between C-51 AWC-ECU connector terminal No.16 and C-313 ETACS-ECU connector terminal No.2.

Check the wiring harness for open circuit.

Q: Is the check result normal?

YES : Go to Step 12.
NO : When no problem is found, repair the wiring harness. Then go to Step 11.

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STEP 9. AWC-ECU connector check: C-51

Q: Is the check result normal?

YES : Go to Step 10.
NO : Repair the defective connector. Then go to Step 13.

TEP 10. Check the wiring harness between C-51 AWC-ECU connector terminal No.13 and body ground.
Check the wiring harness for open circuit.

Q: Is the check result normal?

YES : Go to Step 11.
NO : Repair the wiring harness. Then go to Step 13.

STEP 11. Scan tool data list
Item No.43: Battery voltage (Refer to data list reference table P.22C-501).

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14).
NO : Replace the AWC-ECU. (Refer to P.22C-547). Then go to Step 13.

STEP 12. Retest the system.

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-14.)
NO : Replace the ETACS-ECU. (Refer to GROUP 54A – ETACS-ECU P.54A-772). Then go to Step 13.

STEP 13. Retest the system.

Q: Is the check result normal?

YES : Return to Step 1.
NO : This diagnosis is complete.

DATA LIST REFERENCE TABLE

M1221011200162

Item No.	Display on scan tool	Check conditions		Normal condition
1	ACD control mode	TARMAC is selected (displayed on multi information display).		TARMAC
		GRAVEL is selected (displayed on multi information display).		GRAVEL
		SNOW is selected (displayed on multi information display).		SNOW
2	T/M gear position hold request	Perform a test run of the vehicle.	Retention requested	ON
			Retention not requested	OFF
3	System fail	Normal		Correct
		Faulty		Malfunction
4	ACD target torque (for Meter)	Perform a test run of the vehicle.		0 – 5 seg
11	Steering angle sensor	Steering wheel: Steered 90° to right		R90 deg
		Steering wheel: Steered 90° to left		L90 deg
12	Steering angle speed	Steering wheel: Without steering wheel operation		0 deg/s
		Steering wheel: With steering wheel operation		Changes depending on the turning speed.
13	Steering angle sensor (status)	Normal		Correct
		Faulty		Malfunction
		Neutral point not learned		Neutral not learned
		Neutral point not learned or failed		Neutral not learned and Malfunction
14	Accelerator position	Release the accelerator pedal		18 – 22%
		Depress the accelerator pedal		Increases in response to the depression amount
		Accelerator pedal fully opened		80% or more
15	Engine speed	Idling and test run		Nearly the same as the tachometer display
16	Engine torque (Driver request)	Operate the accelerator pedal		The torque changes
17	T/M Gear position	Shift lever position: P		P
		Shift lever position: R		R
		Shift lever position: Drive at D		D1 – D6
		Shift lever position: Manual mode		M/T
18	FL wheel speed (raw value)	– (reference because of rpm)		–
19	FR wheel speed (raw value)			
20	RL wheel speed (raw value)			
21	RR wheel speed (raw value)			

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Item No.	Display on scan tool	Check conditions	Normal condition
22	FL wheel speed sensor	Perform a test run of the vehicle.	Nearly the same as the speedometer display
23	FR wheel speed sensor		
24	RL wheel speed sensor		
25	RR wheel speed sensor		
26	Yaw rate sensor	Perform a test run of the vehicle.	−100 – 100 deg/s
29	Lateral G sensor	Vehicle is stopped (horizontal state).	−1.1 – 1.1 m/s^2
		Perform a test run of the vehicle.	−10 – 10 m/s^2
31	Longitudinal G sensor	Vehicle is stopped (horizontal state).	−1.1 – 1.1 m/s^2
		Perform a test run of the vehicle.	−10 – 10 m/s^2
39	Stoplight switch	Brake pedal: Depressed	ON
		Brake pedal: Released	OFF
40	Parking brake switch	Parking brake lever: Pulled	ON
		Parking brake lever: Released	OFF
41	Back up lamp switch	Shift lever: Operated to reverse	ON
		Shift lever: Other than above	OFF
42	Ignition switch	Ignition switch: ON	ON
		Ignition switch: START	START
43	Battery voltage	Ignition switch: ON	Battery positive voltage
44	IOD fuse	Fuse inserted	ON
		Fuse removed	OFF
45	Odometer	Ignition switch: ON	The same as the meter display
46	ETACS coding status	Coding incomplete	Not complete
		Coding data requested	Data request
		Coding completed	Complete
47	ECU connection (ABS)	ASC-ECU connected	Present
		ASC-ECU disconnected	Not present
48	ECU connection (ENGINE)	Engine control module connected	Present
		Engine control module disconnected	Not present
49	ECU connection (T/M)	SST-ECU connected	Present
		SST-ECU disconnected	Not present
50	ECU connection (SAS)	Steering sensor connected	Present
		Steering sensor disconnected	Not present
51	Coding status	Coding incomplete	Not complete
		Coding completed	Complete
52	T/M type	5M/T	5M/T
		TC-SST	SST

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Item No.	Display on scan tool	Check conditions		Normal condition
53	Rear diff type	Mechanical differential		LOM
		AYC differential		AYC
58	ABS fail flag	Faulty		ON
		Normal		OFF
59	ABS activation flag	Activated		ON
		Not activated		OFF
65	ASC fail flag	Faulty		ON
		Normal		OFF
66	ASC switch mode	When ASC is ON		ON
		When ASC is OFF		OFF
68	ASC activation flag	Activated		ON
		Not activated		OFF
83	IG1	ON		ON
		OFF		OFF
84	ECU power supply voltage	Ignition switch: ON		10 – 16 V
85	Output load voltage	Ignition switch: ON		10 – 16 V
86	Pressure sensor power voltage	Ignition switch: ON		Approx. 5 V
87	Pressure sensor output voltage	Immediately after electric pump motor operation		1.86 – 2.67 V
88	Pressure sensor	Immediately after electric pump motor operation		1– 1.6 MPa
89	Mode SW	Mode selection switch: Pressed		ON
		Mode selection switch: Released		OFF
92	ACD proportion valve (indicated)	During ACD operation		50 – 1,000 mA
96	Motor relay drive indication	ON		ON
		OFF		OFF
97	Yaw rate sensor (adjusted value)	Ignition switch: ON		–6 – 6 deg/s
98	SAS (adjusted value)	Ignition switch: ON		–15 – 15 deg
99	Lateral G sensor(adjusted value)	Ignition switch: ON		–1.7 – 1.7 m/s^2
100	Longitudinal G (adjusted value)	Ignition switch: ON		–3 – 3 m/s^2
101	Chassis Number writing counter	Ignition switch: ON		Writing count
102	Chassis Number (original) lock	Ignition switch: ON	Locked	Lock
			Unlocked	Unlock
103	Mileage counter	Ignition switch: ON		Counter value
104	Coding counter	Ignition switch: ON		Coding count

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SPECIAL FUNCTION REFERENCE TABLE

M1221011300136

ACTUATOR TEST TABLE

Item No.	Check items	Test content	Normal conditions
1	Air bleeding <ACD>	According to the steering angle of steering wheel, energize the proportioning valve, and operate the proportioning valve for 5 minutes.	No air comes out from the bleeder screw established to the transfer.
3	Oil level check	Operate the direction valve to left and right for 20 seconds.	Oil level of reservoir tank is adequate.
4	Electric pump operation	Operate the electric pump for 3 seconds.	Operating sound of the electric pump can be heard.
5	ACD operation check	Operate the proportioning valve <ACD> for 1 minute, and supply the maximum hydraulic pressure to the multiplate clutch.	The tight corner braking phenomenon occurs.
8	Control OFF	Turn OFF the electric pump relay, and turn OFF the ACD control.	With the actual driving of vehicle, there is a difference between when the control is ON and OFF.

⚠ CAUTION

Since the fluid in the hydraulic unit will be hardened under low temperature, all the inspection items in the table may not be checked properly. Therefore, completely remove snow and ice from the hydraulic unit and leave the vehicle under temperature of 0°C (32°F) or higher for 4 hours or more before performing the actuator test.

1. The actuator test can be performed only when all the following conditions are satisfied.
   - Every wheel speed sensor input is 20 km/h (12.4 mph) or less.
   - No system malfunction is detected.
   - The steering angle of steering wheel is within ±30° from the neutral position.
2. With the actuator test, when any of the conditions below is met, the forced activation will be cancelled.
   - Any of the wheel speed sensors detects an input of 20 km/h (12.4 mph) or more (excluding item No.8 "Control OFF").
   - A system malfunction is detected.
   - The forced activation time has elapsed.
   - Scan tool is removed.
   - Scan tool clear key is operated.

SENSOR NEUTRAL POSITION LEARNED INITIALIZATION LIST

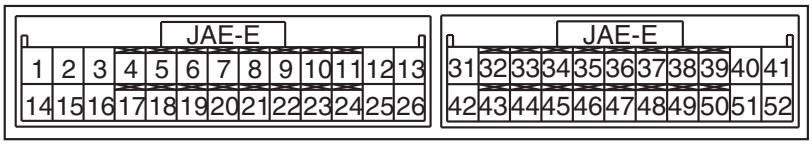
Item No.	Item	Initialization contents
1	Steering angle correction amount initialization	Reset the steering angle sensor neutral position learned value.

The sensor neutral position learned value initialization can be performed only when the vehicle is stopped.

4WD-ECU TERMINAL VOLTAGE REFERENCE CHART FOR ACD

M1221011400122

C-51



AC506684AL

Terminal No.	Inspection Items	Inspection requirement		Normal Condition
1	Proportioning valve (for ACD)	With the actuator test (item No.1), operate the proportioning valve <ACD>.	While executing the actuator test	0.2–4 V
			After completing the actuator test	1 V or less
4	CAN-H	–		–
5	CAN-L	–		–
6	Pressure sensor power supply	Ignition switch: ON		Approx.5 V
7	Pressure sensor output voltage	Ignition switch: ON		0.5–2.7 V
8	Pressure sensor ground	Any time		1 V or less
12	Power supply	Any time		Battery voltage
13	Ground	Any time		1 V or less
16	Ignition switch	Ignition switch: ON		Battery voltage
		Ignition switch: OFF		1 V or less
17	Back up power supply	Any time		Battery voltage
20	Electric pump relay	While the electric pump motor is operating		Battery voltage
21	AWC switch	Ignition switch: ON	Press and hold the switch.	Battery voltage
			Release the switch.	1 V or less

ON-VEHICLE SERVICE

TRANSMISSION FLUID LEAKAGE CHECK

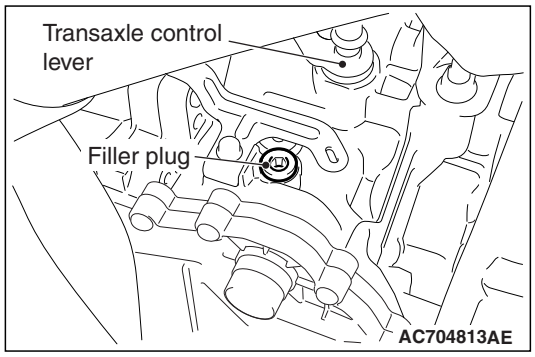
M1225029700034

1. Clean the transaxle exterior, and visually check the transaxle for fluid leaks.
2. If the fluid is leaking from the oil pan or the oil seal, replace the part. If the fluid is leaking from the part other than the oil pan and the oil seal, replace the transaxle assembly.

TRANSMISSION FLUID LEVEL CHECK

M1225008000212

1. Remove the engine room under cover front B assembly. (Refer to GROUP 51 – Under Cover P.51-17.)
2. Start the engine, and let it run at idle to warm it up for 15 minutes.
3. Move the shift lever to every position (P, R, N, D, manual mode) (Hold for 20 seconds in each position), and then move it to the P range.
4. Stop the engine.
5. Remove the air cleaner element and air cleaner intake duct. (Refer to GROUP 15 – Air Cleaner P.15-10.)
6. Remove the filler plug.



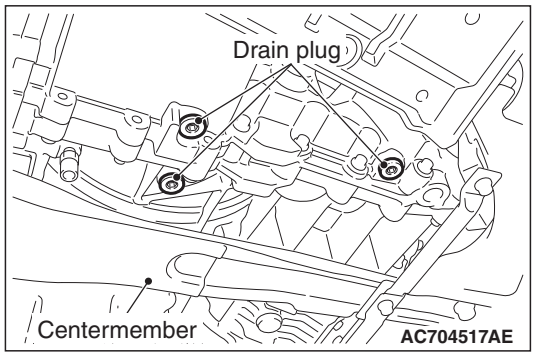
⚠ CAUTION

- **The drained fluid can be reused if it is between the replacement intervals.**

  <Replacement interval>
  - **Normal condition: 96,000 km (60,000 miles)**
  - **Severe condition: 48,000 km (30,000 miles)**
- **When reusing the drained fluid, make sure that no foreign object gets into the fluid.**

7. Remove the drain plugs, and leave it for 3 minutes to drain the fluid.

   NOTE: Because the fluid in the oil cooler, oil filter, and transaxle assembly cannot be drained, the amount of drained fluid will be approximately 5.5 dm^3 (approximately 5.8 quarts).



8. Tighten the drain plugs to the specified torque.

   Tightening torque: 35 ± 5 N·m (26 ± 4 ft-lb)

⚠ CAUTION

Measure the drained fluid. If the drained fluid is less than approximately 5.5 dm^3 (approximately 5.8 quarts), add new fluid to make it approximately 5.5 dm^3 (approximately 5.8 quarts).

9. Fill the fluid into the filler plug.

   Brand name: Dia Queen SSTF-I

   Filling amount: Approximately 5.5 dm^3 (approximately 5.8 quarts)

10. Tighten the filler plug to the specified torque.

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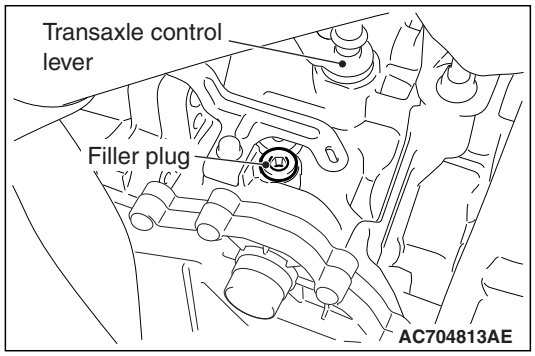
Tightening torque: 35 ± 5 N·m (26 ± 4 ft-lb)

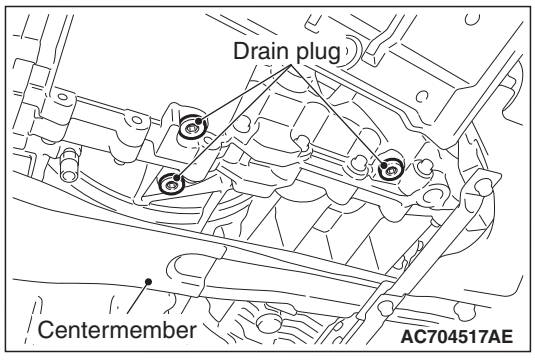
11. Install the air cleaner element and air cleaner intake duct. (Refer to GROUP 15 – Air Cleaner P.15-10.)
12. Install the engine room under cover front B assembly. (Refer to GROUP 51 – Under Cover P.51-17.)

TRANSMISSION FLUID CHANGE

M1225008100220

1. Remove the engine room under cover front B assembly. (Refer to GROUP 51 – Under Cover P.51-17.)
2. Start the engine, and let it run at idle to warm it up for 15 minutes.
3. Move the shift lever to every position (P, R, N, D, manual mode) (Hold for 20 seconds in each position), and then move it to the P range.
4. Stop the engine.
5. Remove the air cleaner element and air cleaner intake duct. (Refer to GROUP 15 – Air Cleaner P.15-10.)
6. Remove the filler plug.





7. Remove the drain plug, and leave it for 3 minutes to drain the fluid.

   NOTE: Because the fluid in the oil cooler, oil filter, and transaxle assembly cannot be drained, the amount of drained fluid will be approximately 5.5 dm^3 (approximately 5.8 quarts).
8. Tighten the drain plug to the specified torque.

   Tightening torque: 35 ± 5 N·m (26 ± 4 ft-lb)
9. Fill the fluid into the filler plug.

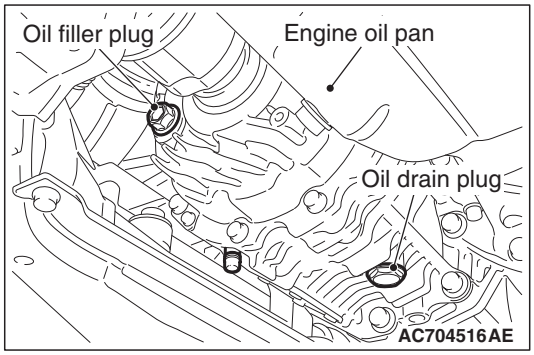
   Brand name: Dia Queen SSTF-I

   Filling amount: Approximately 5.5 dm^3 (approximately 5.8 quarts)
10. Tighten the filler plug to the specified torque.

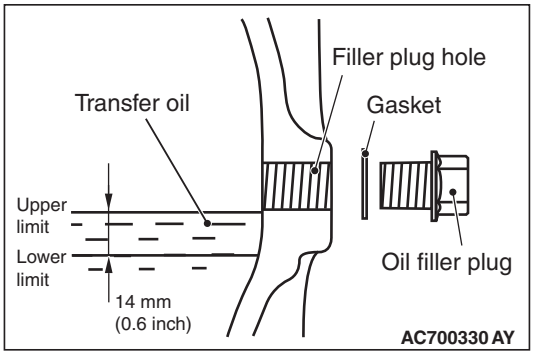
    Tightening torque: 35 ± 5 N·m (26 ± 4 ft-lb)
11. Install the air cleaner element and air cleaner intake duct. (Refer to GROUP 15 – Air Cleaner P.15-10.)
12. Install the engine room under cover front B assembly. (Refer to GROUP 51 – Under Cover P.51-17.)

TRANSFER OIL CHECK

M1221001100410



1. Remove the engine room under cover front B assembly. (Refer to GROUP 51, Under Cover P.51-17.)
2. Remove the filler plug and gasket.



3. Check that the oil level is not 14 mm (0.6 inch) below the bottom of the oil filler plug hole.
4. Check that the oil is not excessively foul and has moderate viscosity.
5. If the oil level is not in between the upper limit and the lower limit, refill the specified oil to the bottom of the oil filler plug hole.

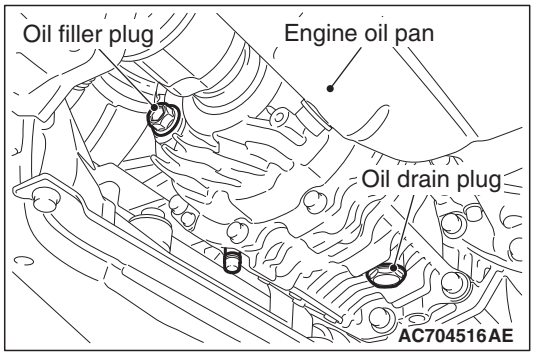
   Brand name: DiaQueen LSD gear oil
6. Install the filler plug and new gasket, then tighten them to the specified torque.

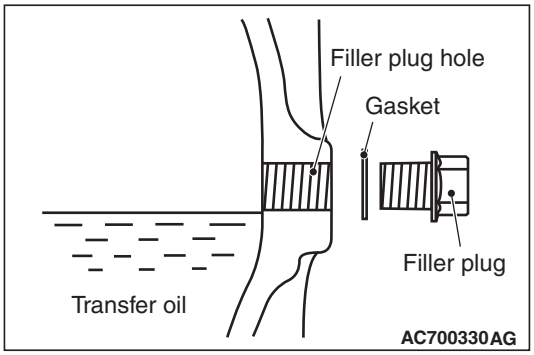
   Tightening torque: 32 ± 2 N·m (24 ± 1 ft-lb)
7. Install the engine room under cover front B assembly. (Refer to GROUP 51, Under Cover P.51-17.)

TRANSFER OIL CHANGE

M1221001200428

1. Remove the engine room under cover front B assembly. (Refer to GROUP 51, Under Cover P.51-17.)





2. Remove the drain plug and gasket to drain the oil.
3. Install the drain plug and new gasket, then tighten them to the specified torque.

   Tightening torque: 32 ± 2 N·m (24 ± 1 ft-lb)
4. Remove the filler plug and gasket, then fill the oil up to the lower edge of the filler plug hole.

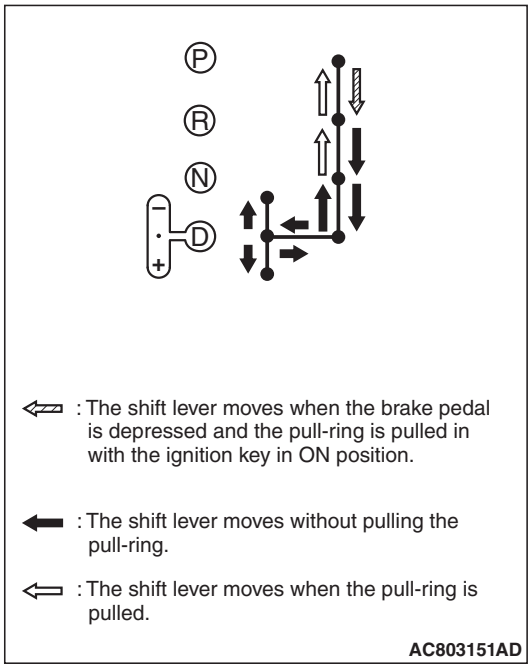
   Brand name: DiaQueen LSD gear oil

   Quantity: 0.8 dm^3 (0.85 quarts)
5. Install the filler plug and new gasket, then tighten them to the specified torque.

   Tightening torque: 32 ± 2 N·m (24 ± 1 ft-lb)
6. Install the engine room under cover front B assembly. (Refer to GROUP 51, Under Cover P.51-17.)

SHIFT LEVER OPERATION CHECK

M1225008400180



1. Check that the engine starts when the shift lever is in the N (Brake pedal is depressed) or P range, and that the engine does not start in other ranges.
2. Start the engine, and release the parking brake. Then, check that the vehicle travels forward when the shift lever is in the D range or the mode is set to the manual mode, and that the vehicle travels backward when the shift lever is set in the R range.
3. Stop the engine.
4. Turn ON the ignition switch, and move the shift lever from the P to R range. Check that the back-up light becomes on at this time.

   NOTE: Because the misoperation preventive device is equipped, the shift lever cannot be moved out of the P position unless the ignition switch is turned to the position other than LOCK (OFF) and the brake pedal is depressed.

KEY INTERLOCK MECHANISM CHECK

M1225008500154

1. Perform the following checks.

Inspection procedure	Check conditions		Items to be checked (Normal status)
1	Brake pedal: Depressed	Ignition switch position: LOCK (OFF) or ACC	The shift lever cannot be moved out of the P position.
2		Ignition switch position: ON	The shift lever can be moved from the P position to other positions smoothly.
3	Shift lever position: Other than P		The ignition switch cannot be turned to the LOCK (OFF) position.
4	Shift lever position: P		The ignition switch can be turned to the LOCK (OFF) position smoothly.

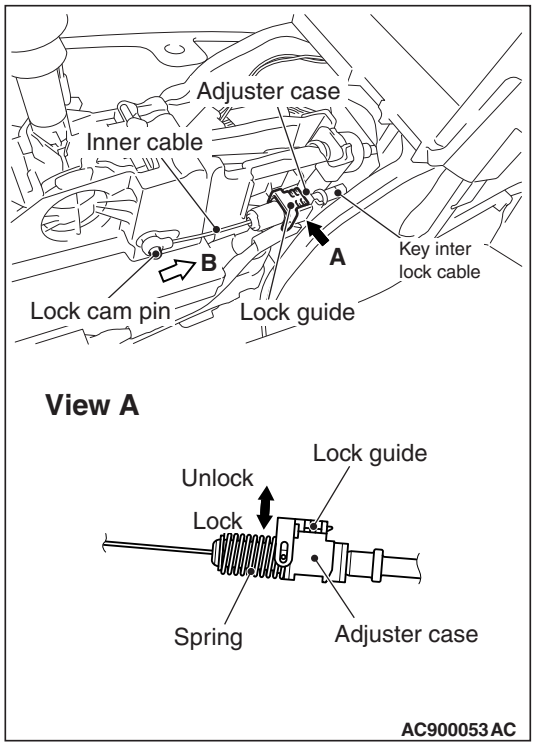
2. If there is a problem with above operations, install the key interlock cable according to the procedure below. (Automatic adjustment)
   (1) Disconnect the key interlock cable connection (shift lever side).(Refer to P.22C-521.)

⚠ CAUTION

Leave the ignition switch in the LOCK (OFF) position until the key interlock cable installation is completed.

   (2) Move the shift lever to the P position, and turn the ignition switch to the LOCK (OFF) position.
   (3) Install the tip of key interlock cable to the lock cam of shift lever assembly, using a caution not to twist the inner cable.
   (4) Install the adjuster case with its lock guide pulled up (unlocked).
   (5) With the lock cam pin pushed in the direction B as shown in the figure to remove the slack from the key interlock cable, securely lower the lock guide and lock it.

   NOTE: The lock position of the key interlock cable is automatically adjusted by a spring.



SHIFT LOCK MECHANISM CHECK

M1225008600128

SYSTEM CHECK

Inspection procedure	Check conditions		Items to be checked (Normal status)	Possible cause of abnormality
1	Release the brake pedal.	Ignition switch position: LOCK (OFF) or ACC	The shift lever cannot be moved out of the P position.	• Shift lever assembly abnormality (seizure, damage, or others) • Electrical circuit abnormality (short circuit in solenoid or wiring harness) • Key interlock mechanism abnormality
2	Depress the brake pedal.			• Shift lever assembly abnormality (seizure, damage, or others) • Key interlock mechanism abnormality
3	Release the brake pedal.	Ignition switch position: ON		• Shift lever assembly abnormality (seizure, damage, or others) • Electrical circuit abnormality (short circuit in solenoid or wiring harness)
4	Depress the brake pedal.		The shift lever can be moved from the P position to other positions smoothly.	• Shift lever assembly abnormality (seizure, damage, or others) • Electrical circuit abnormality (open circuit in solenoid or wiring harness)

COMPONENTS CHECK

1. Troubleshoot the shift lever.
2. Remove the shift lever assembly. Then, check that there is no damage to each part, and that the shift lever can be moved to each position.(Refer to P.22C-517.)
3. After performing the check above, if an abnormality is found, replace the shift lever assembly.

ACD CONTROL FLUID CHECK

M1225008700103

<WHEN THE SCAN TOOL IS NOT USED>

1. Remove the trunk room side trim lid on the right of the trunk room.
2. If the vehicle has been run, leave it for 90 min. or more in an ordinary temperature {10 – 30°C (50 – 86°F)} to allow the accumulator internal pressure to drop.

   NOTE: If the ambient temperature is 10°C (50°F) or less, allow more time to leave the vehicle to stand idle.

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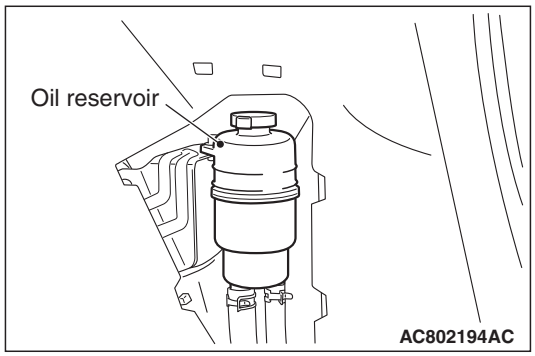


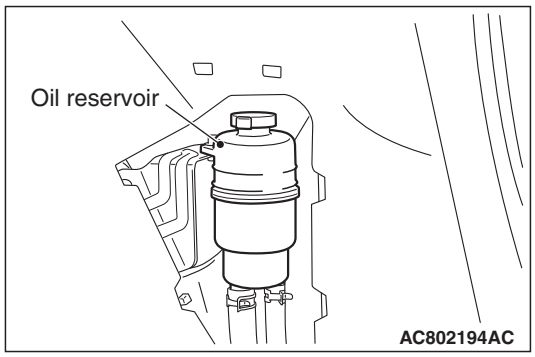
3. Check that the oil reservoir fluid level is in between MAX and MIN.
4. If the fluid level is not in between MAX and MIN, fill the specified fluid.
   Brand name: DIAMOND ATF SP III
5. Install the trunk room side trim lid.

<WHEN THE SCAN TOOL IS USED>

1. Remove the trunk room side trim lid on the right of the trunk room.

⚠ CAUTION
Turn the ignition switch to the "LOCK (OFF)" position before connecting or disconnecting the scan tool.

2. Set the scan tool to the 16-pin diagnosis connector. (Refer to P.22C-423.)
3. Turn the ignition switch to the ON position.
4. Using the scan tool, forcibly activate the hydraulic unit (item No. 03) to reduce the pressure inside the accumulator.
   NOTE:
   - *With the forced activation (oil level check mode), the hydraulic unit direction valve is operated 20 seconds to right and left, and then the operation is cancelled automatically. Also, using the clear key on the scan tool, the activation can be forcibly cancelled.*
   - *When the functions are suspended by the fail-safe function, the hydraulic unit cannot be forcibly activated.*



5. Check that the oil reservoir fluid level is in between MAX and MIN.
6. If the fluid level is not in between MAX and MIN, fill the specified fluid.
   Brand name: DIAMOND ATF SP III
7. Install the trunk room side trim lid.

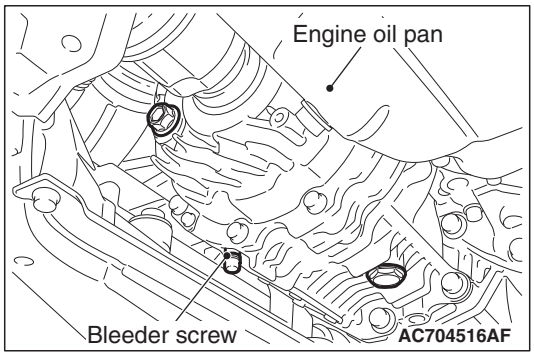
ACD BLEEDING

M1225008800092

⚠ CAUTION

At low temperature the fluid viscosity is so high that air bleeding becomes degenerated. Air bleeding should be done at normal temperatures {10 to 30°C (50 to 86°F)}.

1. Raise the vehicle.
2. Remove the engine room under cover front B assembly. (Refer to GROUP 51 – Under Cover P.51-17.)
3. Remove the bleeder screw cap of the transfer, then connect the vinyl hose.



⚠ CAUTION

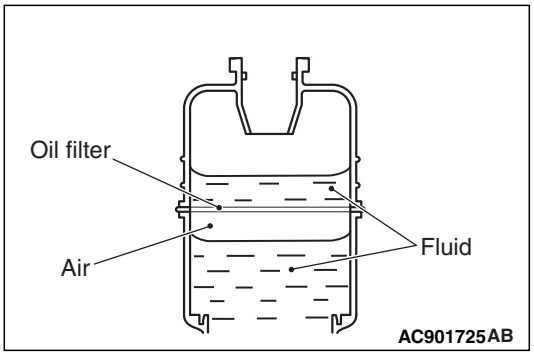
Before connecting or disconnecting scan tool, always turn the ignition switch to the LOCK (OFF) position.

4. Connect scan tool to the data link connector. (Refer to P.22C-423.)
5. Position the steering wheel in a straight ahead direction.
6. Turn the ignition switch to the "ON" position.
7. Perform the actuator test (item No.01) of scan tool to forcibly activate the hydraulic unit.

   NOTE:
   - *The forced activation (item No.01: Air bleeding mode) is continued for 5 minutes, then it will be cancelled automatically. Also, using the clear key on the scan tool, the activation can be forcibly cancelled.*
   - *When the hydraulic unit functions are stopped due to the fail-safe, the forced activation cannot be performed.*
8. From the straight-ahead position, gradually rotate the steering wheel to the right or left. Loosen the bleeder screw, and check that the air is bled with fluid.

⚠ CAUTION

- **Keep the fluid level above the oil filter while air-bleeding. If you fail to do so, an "air layer" will be present below the oil filter. This can cause the fluid not to be added below the oil filter.**
- **If the fluid level should have decreased below the oil filter, squeeze and release the feed hose so that the fluid should be added below the oil filter.**



9. After bleeding the air, tighten the bleeder screw.
10. Repeat Steps 7 and 8 for two to three times. After checking that air mixing is eliminated, tighten the bleeder screw to the specified torque.

    Tightening torque: 5.0 ± 1.0 N·m (44 ± 9 in-lb)

⚠ CAUTION

If the air bleeding is insufficient, the noise from the hydraulic unit occurs, which may deteriorate the pump durability.

11. After the air bleeding is complete, check the fluid level. (Refer to P.22C-511).
12. Install the engine room under cover front B assembly. (Refer to GROUP 51 – Under Cover P.51-17.)

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ACD OPERATION CHECK

M1225008900107

⚠ CAUTION

Before connecting or disconnecting scan tool, always turn the ignition switch to the LOCK (OFF) position.

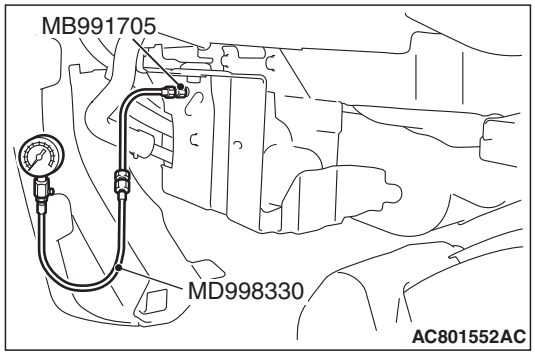
1. Connect scan tool to the data link connector. (Refer to P.22C-423.)
2. Start the engine.
3. Position the steering wheel in a straight ahead direction.
4. Drive the vehicle at 20 km/h (12.4 mph) or less, carry out the scan tool actuator test (item No.05), and forcibly activate the ACD. Then, turn the steering wheel 180° or more to the right or left, and check that tight corner braking occurs.

   NOTE:
   - *The forced activation (item No.05: ACD operation check mode) is continued for 1 minute, then it will be cancelled automatically. Also, using the clear key on the scan tool, the activation can be forcibly cancelled.*
   - *When the ACD functions are stopped due to the fail-safe, the forced activation cannot be performed.*
   - *The occurrence levels of body vibration and noise caused by the tight corner braking phenomenon will differ depending on the conditions of tire and road surface.*
   - *If the tight corner braking phenomenon does not occur, the system may have an abnormality. Therefore, check the hydraulic pressure.*

HYDRAULIC PRESSURE CHECK

M1225009000118

1. Remove the rear wheel (RH), then remove the rear wheel splash shield. (Refer to GROUP 42A – Splash shield P.42A-14).
2. Raise the vehicle.
3. Disconnect the hydraulic unit from the ACD pressure tube assembly. Then, connect the special tool below to the hydraulic unit side.
   - Hose adapter (MB991705)
   - Oil pressure gauge (MD998330)



4. Bleed the system. (Refer to P.22C-513.)

⚠ CAUTION

Before connecting or disconnecting scan tool, always turn the ignition switch to the LOCK (OFF) position.

5. Connect scan tool to the data link connector. (Refer to P.22C-423.)
6. Turn the ignition switch to the "ON" position.
7. Perform the actuator test (item No.05) of scan tool to forcibly activate ACD.

   NOTE:
   - *The forced activation (item No.05: ACD operation check mode) is continued for 1 minute, then it will be cancelled automatically. Also, using the clear key on the scan tool, the activation can be forcibly cancelled.*

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- *When the ACD functions are stopped due to the fail-safe, the forced activation cannot be performed.*

⚠ CAUTION

During the hydraulic pressure check, fill the fluid so that the fluid constantly remains in the oil reservoir.

8. Check that the generated hydraulic pressure of the hydraulic unit is within the standard value.

   Standard valve: 0.9 – 1.1 MPa (130 – 159 psi)

9. If the measured value exceeds the standard value, replace the hydraulic unit.
10. After applying oil to the flare nut thread of ACD pressure tube assembly, connect the assembly to the hydraulic unit, then tighten to the specified torque.

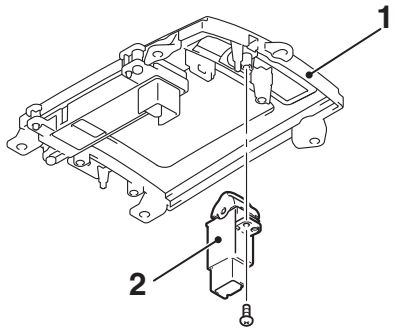
    Tightening torque: 26 ± 4 N·m (19 ± 3 ft-lb)

11. Perform the air bleeding. (Refer to P.22C-513).

TWIN CLUTCH SST CONTROL MODE SWITCH

REMOVAL AND INSTALLATION

M1225009200093



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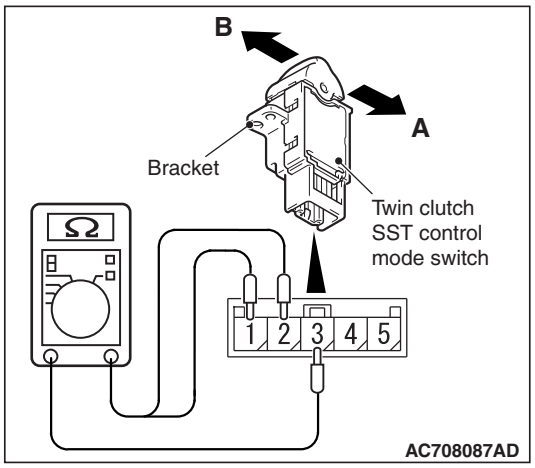
Removal steps

1. Floor console panel assembly (Refer to GROUP 52A – Floor Console Assembly P.52A-9.)
2. Twin clutch SST control mode switch

INSPECTION

TWIN CLUTCH SST CONTROL MODE SWITCH CHECK

M1225009100104



1. Check the continuity between the connector terminals of twin clutch SST control mode switch.

Terminal number	Switch position	Continuity
2 – 3	Operate to direction A, then hold.	Yes (2 Ω or less)
	Other than above	Not present
1 – 3	Operate to direction B, then hold.	Yes (2 Ω or less)
	Other than above	Not present

2. When other than above, replace the twin clutch SST control mode switch.

TRANSMISSION CONTROL

REMOVAL AND INSTALLATION

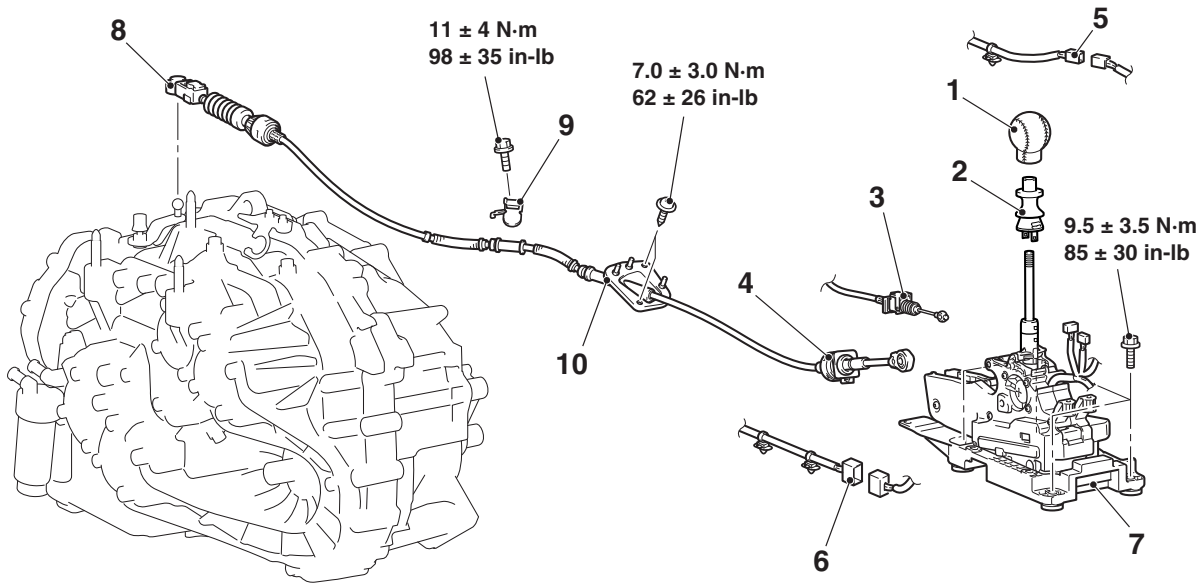
M1225009600206

⚠ CAUTION

When the transaxle control cable is disconnected, check after the installation that the cable is properly connected, and that the parking lock mechanism operates normally. At this time, do not check by simply using the display on the combination meter and shift indicator panel. Always check according to the procedure below.

- **With the P range, the vehicle does not move on a slight slope or when pushed by hands.**
- **When driving at 5 km/h (3.1 mph) or less, the vehicle stops when the shift lever is moved to the P range.**

Post-installation Operation
- Key interlock mechanism check (Refer to P.22C-510.)
- Shift lock mechanism check (Refer to P.22C-511.)
- Shift lever operation check (Refer to P.22C-509.)



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Shift lever assembly removal steps

1. Shift knob
   - Floor console bracket (A) (Refer to GROUP 52A – Floor Console Assembly P.52A-9.)
<<A>> >>C<< 2. Pull ring
>>B<< 3. Key interlock cable connection (shift lever side)
4. Transaxle control cable connection (shift lever side)
5. Shift lever-ECU connector connection
6. Shift lock solenoid connector connection
7. Shift lever assembly

Transaxle control cable removal steps

1. Shift knob
   - SRS-ECU (Refer to GROUP 52B – SRS-ECU P.52B-416.)
   - G and yaw rate sensor and G and yaw rate sensor bracket (Refer to GROUP 35C – G and Yaw Rate Sensor P.35C-309.)
>>A<< 4. Transaxle control cable connection (shift lever side)
   - Air cleaner assembly (Refer to GROUP 15 – Air Cleaner P.15-10.)
   - Battery (Refer to GROUP 54A – Battery P.54A-10.)
>>A<< 8. Transaxle control cable connection (transaxle side)

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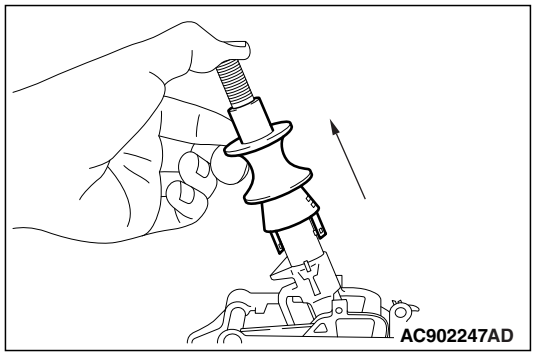
Transaxle control cable removal steps (Continued)

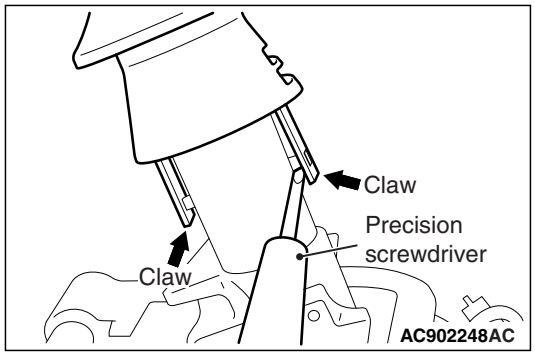
9. Transaxle control cable bracket
10. Transaxle control cable

REMOVAL SERVICE POINT

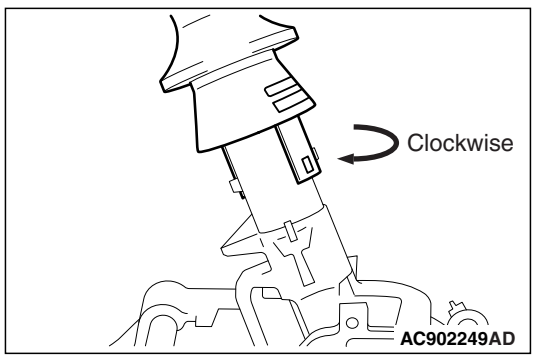
<<A>> PULL RING REMOVAL



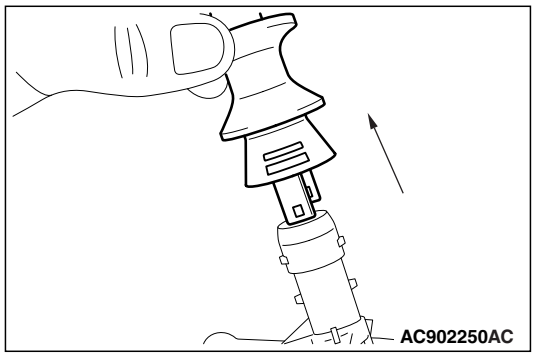
1. Pull the pull ring upward as shown in the figure. (Carry out the following operation with the pull ring pulled upward.)



2. Raise the claw using a precision screwdriver.



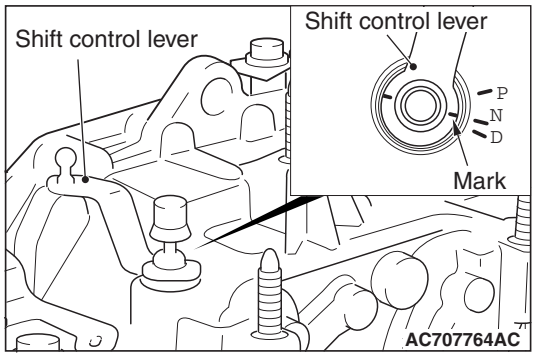
3. Remove the pull ring by turning it clockwise, and pull it out upward.



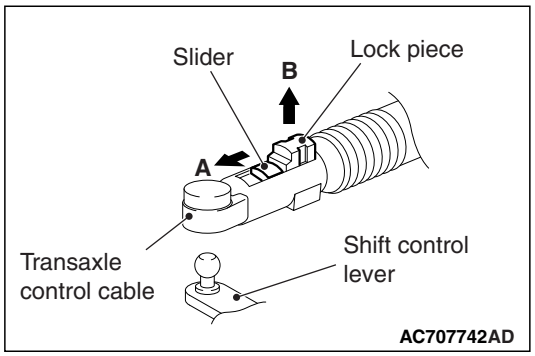
INSTALLATION SERVICE POINTS

>>A<< TRANSAXLE CONTROL CABLE (TRANSAXLE SIDE/SHIFT LEVER SIDE) INSTALLATION

1. Connect the transaxle control cable (shift lever side) to the shift lever assembly.
2. Operate the lever so that the shift control lever positioning mark is set to the N position.

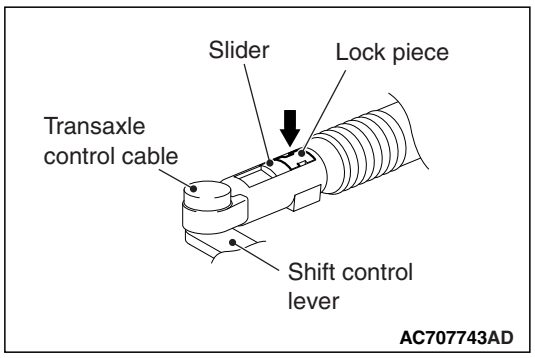


3. Move the slider of the transaxle control cable (transaxle side) tip to the direction A to pull up the lock piece to the direction B.
4. Install the transaxle control cable (transaxle side) in the transaxle control cable bracket at the top of transaxle.
5. Move the shift lever to the N⇔D position three times or more, and shift to the N position.



6. Connect the transaxle control cable to the shift control lever, and firmly push down the lock piece of transaxle control cable to lock it.

   NOTE:
   - *The slider automatically returns to the fixed position by the spring.*
   - *The lock position of transaxle control cable is automatically adjusted by a spring.*

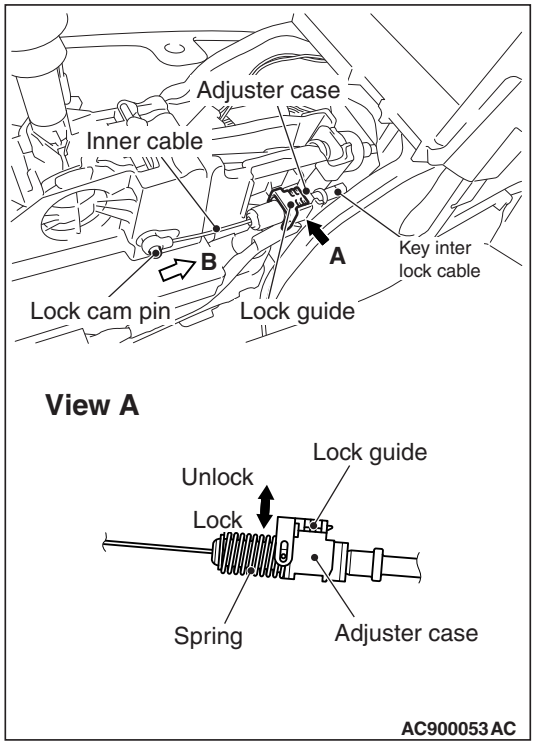


>>B<< KEY INTERLOCK CABLE INSTALLATION

⚠ CAUTION

Leave the ignition switch in the LOCK (OFF) position until the key interlock cable installation is completed.

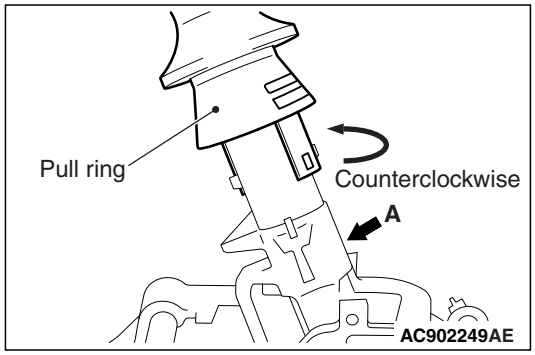
1. Move the shift lever to the P position, and turn the ignition switch to the LOCK (OFF) position.



2. Install the tip of key interlock cable to the lock cam pin of shift lever assembly, using a caution not to twist the inner cable.
3. Install the adjuster case with its lock guide pulled up (unlocked).
4. With the lock cam pin pushed in the direction B as shown in the figure to remove the slack from the key interlock cable, securely lower the lock guide and lock it.

   NOTE: The lock position of the key interlock cable is automatically adjusted by a spring.

>>C<< PULL RING INSTALLATION



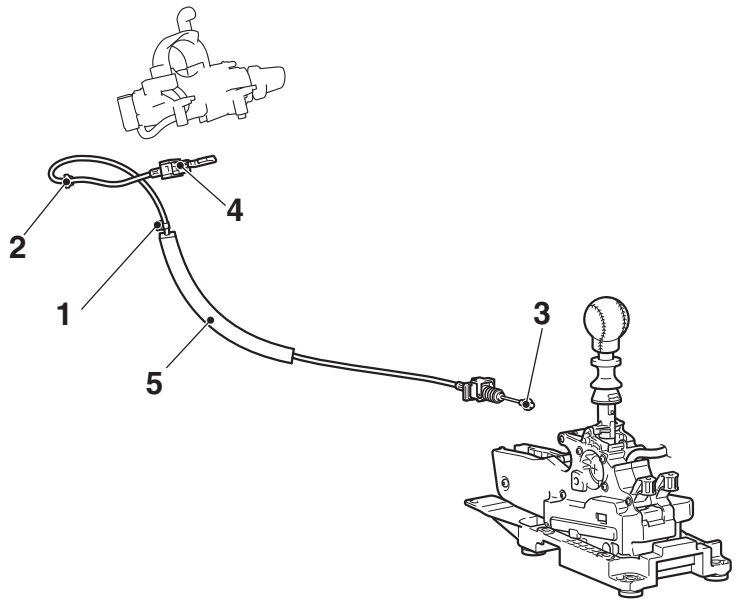
1. With the A in the figure raised, install the pull ring by turning it counterclockwise.

KEY INTERLOCK AND SHIFT LOCK MECHANISMS

REMOVAL AND INSTALLATION

M1225009800181

Pre-removal Operation	Post-installation Operation
• Floor console bracket (A) and floor console side cover removal (Refer to GROUP 52A – Floor Console Assembly P.52A-9.) • Instrument panel cover lower removal <Vehicles with instrument panel cover lower> (Refer to GROUP 52A – Instrument Lower Panel P.52A-8.) • Steering column lower cover removal (Refer to GROUP 37 – Steering Column Shaft P.37-37.) • Foot duct (driver's side) removal (Refer to GROUP 55A – Duct P.55A-203.)	• Foot duct (driver's side) installation (Refer to GROUP 55A – Duct P.55A-203.) • Steering column lower cover installation (Refer to GROUP 37 – Steering Column Shaft P.37-37.) • Instrument panel cover lower installation <Vehicles with instrument panel cover lower> (Refer to GROUP 52A – Instrument Lower Panel P.52A-8.) • Floor console bracket (A) and floor console side cover installation (Refer to GROUP 52A – Floor Console Assembly P.52A-9.) • Key interlock mechanism check (Refer to P.22C-510.) • Shift lock mechanism check (Refer to P.22C-511.) • Shift lever operation check (Refer to P.22C-509.)



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Removal steps (Cont.)

1. Band clip
2. Wiring harness clip

>>**B**<< 3. Key interlock cable connection (shift lever side)

<<**A**>> >>**A**<< 4. Key interlock cable connection (steering side)

5. Key interlock cable

REMOVAL SERVICE POINT

<<A>> KEY INTERLOCK CABLE (STEERING SIDE) REMOVAL

Turn the ignition switch to the ACC position and then pull the key interlock cable out from the ignition key cylinder.

TSB Revision

INSTALLATION SERVICE POINTS

>>A<< KEY INTERLOCK CABLE (STEERING SIDE) INSTALLATION

Turn the ignition switch to the ACC position and then install the key interlock cable to the ignition key cylinder.

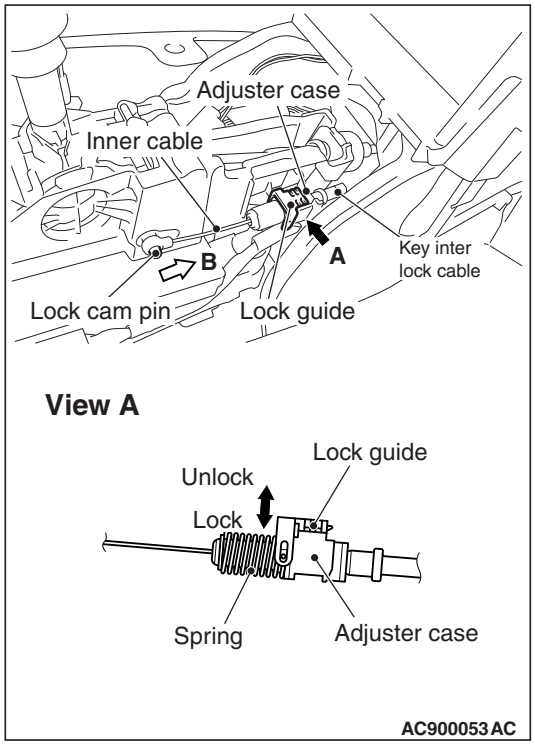
>>B<< KEY INTERLOCK CABLE (SHIFT LEVER SIDE) INSTALLATION

⚠ CAUTION

Leave the ignition switch in the LOCK (OFF) position until the key interlock cable installation is completed.

1. Move the shift lever to the P position, and turn the ignition switch to the LOCK (OFF) position.
2. Install the tip of key interlock cable to the lock cam pin of shift lever assembly, using a caution not to twist the inner cable.
3. Install the adjuster case with its lock guide pulled up (unlocked).
4. With the lock cam pin pushed in the direction B as shown in the figure to remove the slack from the key interlock cable, securely lower the lock guide and lock it.

   NOTE: The lock position of the key interlock cable is automatically adjusted by a spring.

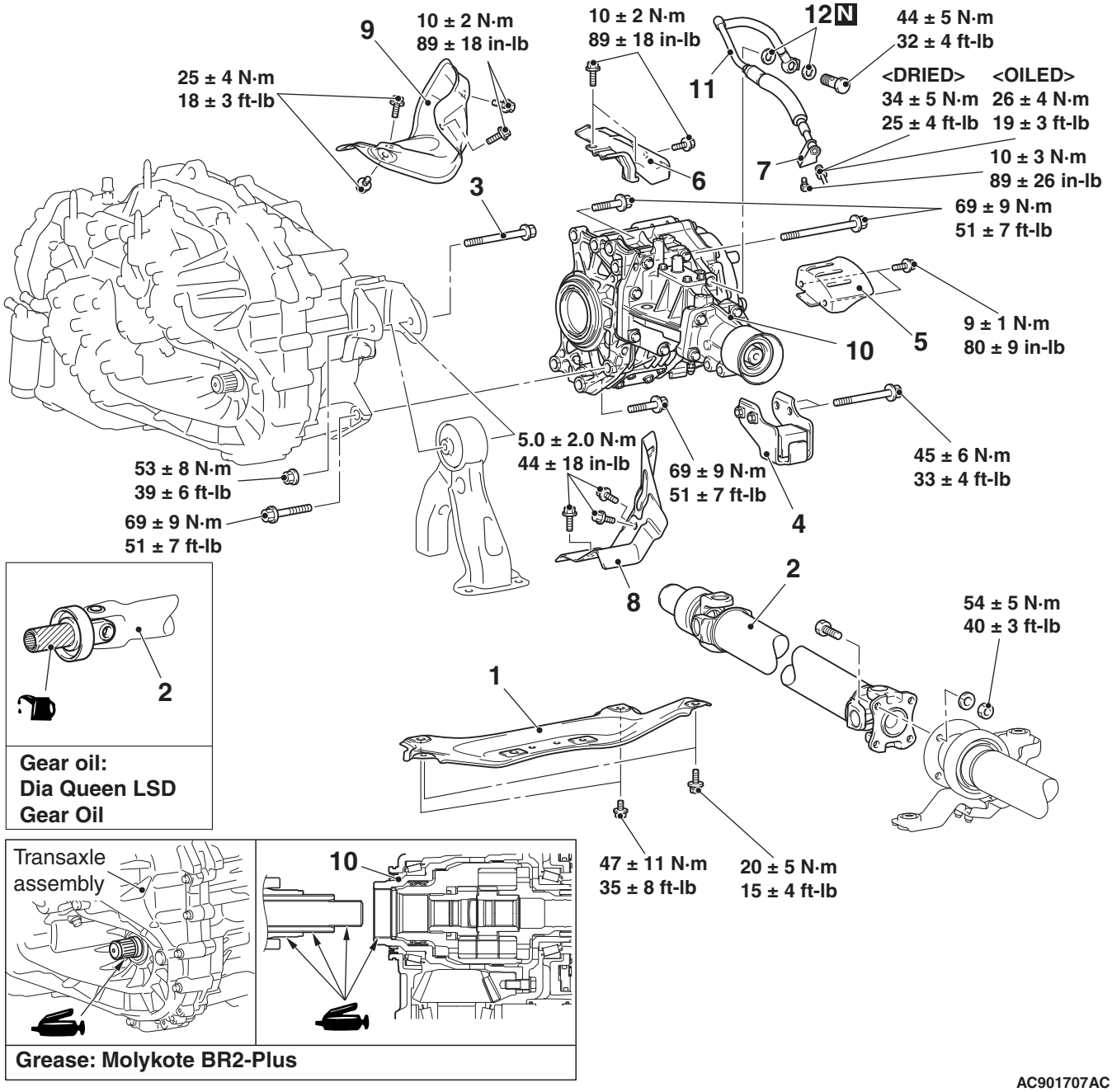


TRANSFER ASSEMBLY

REMOVAL AND INSTALLATION

M1225010000275

Pre-removal Operation	Post-installation Operation
• Engine Room Under Cover Front B Assembly Removal (Refer to GROUP 51 – Under Cover P.51-17.) • Transfer Oil Draining (Refer to P.22C-508.)	• ACD Bleeding (Refer to P.22C-513.) • Transfer Oil Filling (Refer to P.22C-508.) • Engine Room Under Cover Front B Assembly Installation (Refer to GROUP 51 – Under Cover P.51-17.)



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<<A>>

Removal steps

1. Front floor backbone brace
2. Front propeller shaft assembly

Removal steps

- Front driveshaft assembly (Refer to GROUP 26 – Driveshaft Assembly P.26-21.)

TSB Revision

Removal steps
- Center member and front roll stopper assembly (Refer to GROUP 32 – Engine Roll Stopper and Center Member P.32-14.)
- Front exhaust pipe removal (Refer to GROUP 15 – Exhaust Pipe and Main Muffler P.15-30.)

3. Rear roll stopper center bolt
4. Dynamic damper
5. Driveshaft heat protector
6. Transfer heat protector
7. Transfer pressure hose assembly connection
8. Steering gear and linkage heat protector
9. Turbocharger protector A

<<B>> 10. Transfer assembly

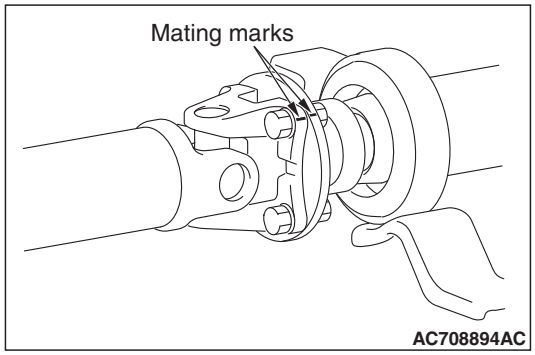
>>A<< 11. Transfer pressure hose assembly

12. Gasket

REMOVAL SERVICE POINTS

<<A>> FRONT PROPELLER SHAFT ASSEMBLY REMOVAL

Make mating marks on the front propeller shaft assembly and companion flange, then remove the connecting nut.



<<B>> TRANSFER ASSEMBLY REMOVAL

Move the engine and transaxle assembly toward the front of the vehicle to create a gap between the engine/transaxle assembly and the crossmember. Pull out the transfer assembly through this gap.

INSTALLATION SERVICE POINT

>>A<< TRANSFER PRESSURE HOSE ASSEMBLY INSTALLATION

⚠ CAUTION

When installing the transfer pressure hose assembly, use caution that the assembly does not interfere with surrounding components.

TRANSAXLE ASSEMBLY

REMOVAL AND INSTALLATION

M1225010200321

⚠ CAUTION

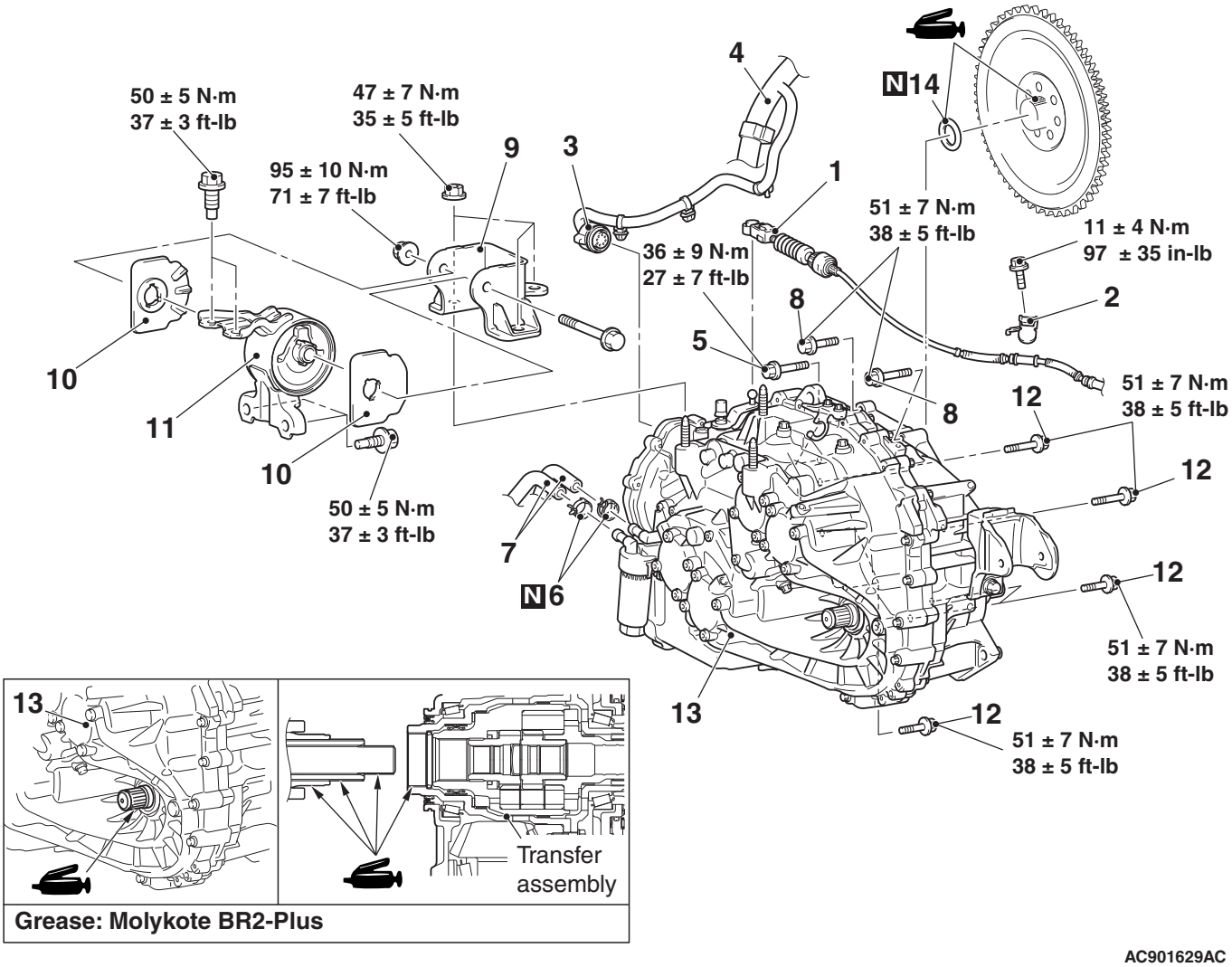
- **When the transaxle assembly is replaced, save the vehicle identification number and perform the variant coding. Refer to the "M.U.T.-III Owner's Manual" and perform coding.**
- **When the mechatronic assembly is replaced, reprogram the ECU and carry out the following Teach-In (Refer to P.22C-24).**
- **When the clutch assembly is replaced, the following Teach-In must be carried out (Refer to P.22C-24).**
- **When the transaxle control cable is disconnected, check after the installation that the cable is properly connected, and that the parking lock mechanism operates normally. At this time, do not check by simply using the display on the combination meter and shift indicator panel. Always check according to the procedure below.**
  - **When driving at 5 km/h (3.1 mph) or less, the vehicle stops when the shift lever is moved to the P range.**
  - **With the P range, the vehicle does not move on a slight slope or when pushed by hands.**
- **Drain the fluid remaining in the oil cooler before installing the transaxle assembly.**
- **Do not refill the fluid when replacing the transaxle assembly with a new one.**

NOTE:

- *The new transaxle assembly is filled with 7.6 dm^3 (8.0 qt) of the fluid (including the oil cooler).*
- *The transaxle assembly has a sealed structure, and the fluid does not drain out from parts other than the oil cooler hose.*

Pre-removal Operation
- Engine Room Under Cover Front B and Engine Room Side Cover Removal (Refer to GROUP 51 – Under Cover P.51-17.)
- Engine Upper Cover Removal (Refer to GROUP 16 – Ignition Coil P.16-56.)
- Air Cleaner Assembly and Air Cleaner Bracket Removal (Refer to GROUP 15 – Air Cleaner P.15-10.)
- Headlight Support Panel Cover Removal (Refer to GROUP 51 – Front Bumper Assembly and Radiator Grille P.51-3.)
- Battery Removal (Refer to GROUP 54A – Battery P.54A-10.)
- Radiator Cap Assembly Mounting Bolt, Radiator Condenser Tank, and Radiator Condenser Tank Bracket Removal (Refer to GROUP 14 – Radiator P.14-53.)
- Relay Box Mounting Bolt Removal
- Water Pump Pulley Removal (Refer to GROUP 14 – Water Pump P.14-40.)

Post-installation Operation
- Water Pump Pulley Installation (Refer to GROUP 14 – Water Pump P.14-40.)
- Relay Box Mounting Bolt Installation
- Radiator Cap Assembly Mounting Bolt, Radiator Condenser Tank, and Radiator Condenser Tank Bracket Installation (Refer to GROUP 14 – Radiator P.14-53.)
- Battery Installation (Refer to GROUP 54A – Battery P.54A-10.)
- Headlight Support Panel Cover Installation (Refer to GROUP 51 – Front Bumper Assembly and Radiator Grille P.51-3.)
- Air Cleaner Assembly and Air Cleaner Bracket Installation (Refer to GROUP 15 – Air Cleaner P.15-10.)
- Engine Upper Cover Installation (Refer to GROUP 11C – Camshaft P.11C-26.)
- Engine Room Under Cover Front B and Engine Room Side Cover Installation (Refer to GROUP 51 – Under Cover P.51-17.)



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TSB Revision

Removal steps

>>D<<
- Transmission fluid draining and refilling (Refer to P.22C-507.)

<<A>>
- Strut tower bar (Refer to GROUP 42A – Strut Tower Bar P.42A-16.)

>>C<<
1. Transaxle control cable connection
2. Transaxle control cable bracket

<<B>>
3. Transaxle assembly connector connection
4. Control wiring harness connection

<<C>>
5. Starter mounting bolt
6. Hose clip
7. Oil cooler hose assembly connection

Removal steps

<<D>>
- Front axle crossmember assembly (Refer to GROUP 32 – Crossmember P.32-21.)
- Transfer assembly (Refer to P.22C-523.)

8. Transaxle assembly upper part coupling bolt

<<E>>
9. Transaxle mounting bracket

>>B<<
10. Transaxle mounting insulator stopper
11. Transaxle mounting insulator

<<F>>
- Engine assembly support

12. Transaxle assembly lower part coupling bolt

>>A<<
13. Transaxle assembly

>>A<<
14. O-ring

Required Special Tools:

- MB991895: Engine Hanger
- MB991928: Engine Hanger
- MB991930: Joint (90)
- MB991932: Foot (standard)
- MB992201: Engine hanger plate

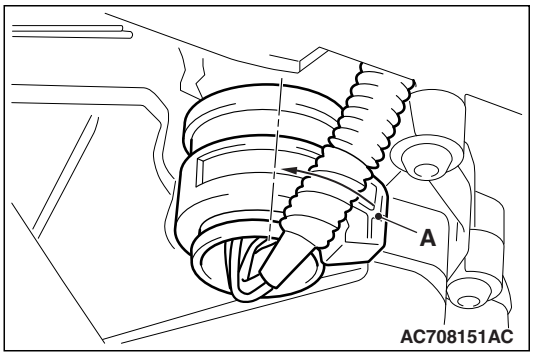
REMOVAL SERVICE POINTS

<<A>> STRUT TOWER BAR REMOVAL

After removing the strut tower bar, temporarily install the strut assembly.

<<B>> TRANSAXLE ASSEMBLY CONNECTOR REMOVAL

Rotate the section A of the connector 90° to the direction of the arrow to disconnect the connector.



<<C>> STARTER MOUNTING BOLT REMOVAL

Remove the starter with its connector connected. Keep the starter fixed to the engine side.

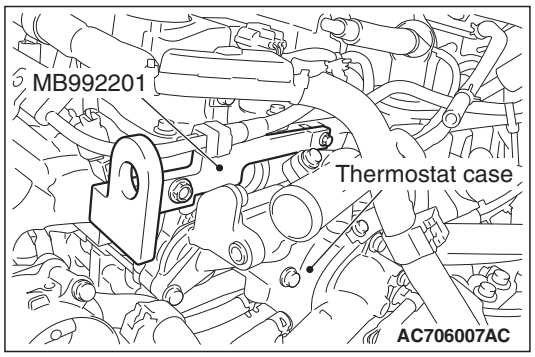
<<D>> TRANSAXLE ASSEMBLY UPPER PART COUPLING BOLT REMOVAL

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

<<E>> TRANSAXLE MOUNTING BRACKET REMOVAL

1. Place a garage jack against the transaxle case with a piece of wood in between to support the engine and transaxle assembly.
2. Operate the garage jack so that the engine and transaxle assembly weight is not applied to the transaxle mounting insulator, and remove the transaxle mounting bracket.

<<F>> ENGINE ASSEMBLY SUPPORTING



1. Remove the vacuum pipe assembly (refer to GROUP 14 – Water Hose and Water Pipe P.14-45), and install the engine hanger plate (Special tool: MB992201), then tighten the bolts to the specified torque.

   Tightening torque: 11± 1 N·m (97 ± 9 in-lb)

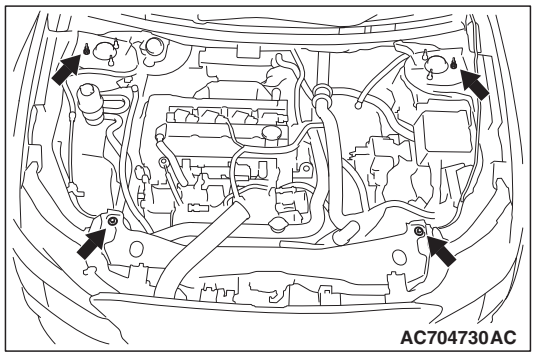
2. <When engine hanger (special tool MB991928) is used>

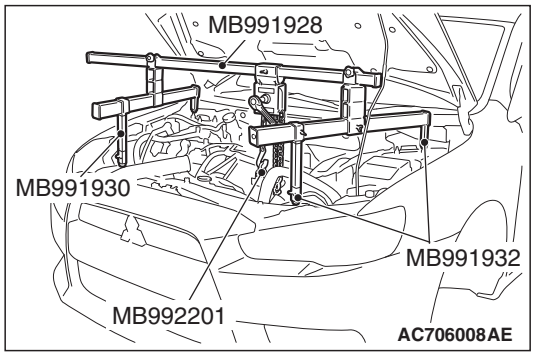
   (1) Assemble the engine hanger (special tool MB991928). (Set following parts to the base hanger.)

   - Slide bracket (HI)
   - Foot x 4 (standard) (MB991932)
   - Joint x 2 (90) (MB991930)

   (2) Set the feet of the special tool as shown in the figure.

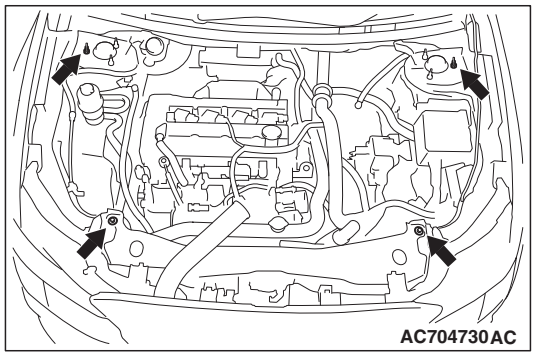
   NOTE: Adjust the engine hanger balance by sliding the slide bracket (HI).





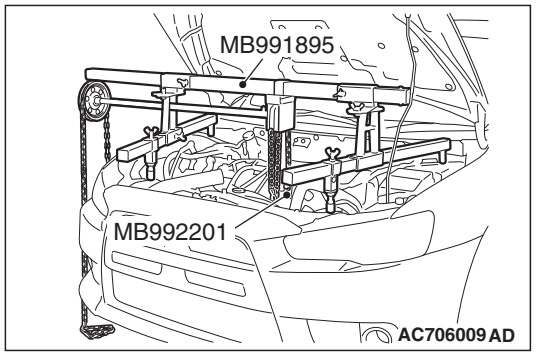
   (3) Set the chain to the engine hanger plate (Special tool: MB992201) to support the engine and transaxle assembly. Remove the garage jack, and then remove the transaxle assembly upper part coupling bolts that have been loosened previously.

3. <Engine mechanical hanger (special tool MB991895) is used>



(1) Set the feet of the engine mechanical hanger (special tool MB991895) as shown in the figure.

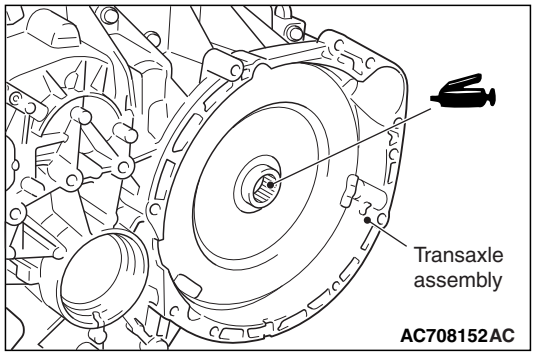
NOTE: Slide the front foot of the engine mechanical hanger (Special tool: MB991895) to balance the engine hanger.



(2) Set the chain to the engine hanger plate (Special tool: MB992201) to support the engine and transaxle assembly. Remove the garage jack, and then remove the transaxle assembly upper part coupling bolts that have been loosened previously.

INSTALLATION SERVICE POINTS

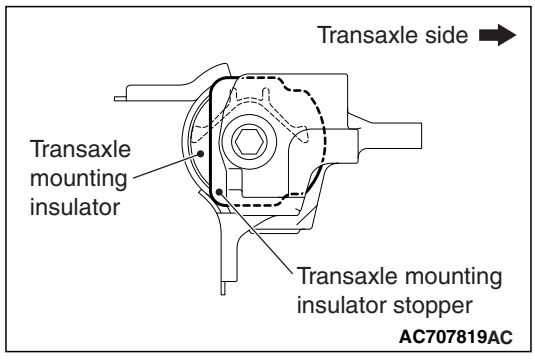
>>A<< O-RING/TRANSAXLE ASSEMBLY INSTALLATION



Apply the specified grease to the flywheel spline section, O-ring, and spline section of transaxle assembly input shaft.

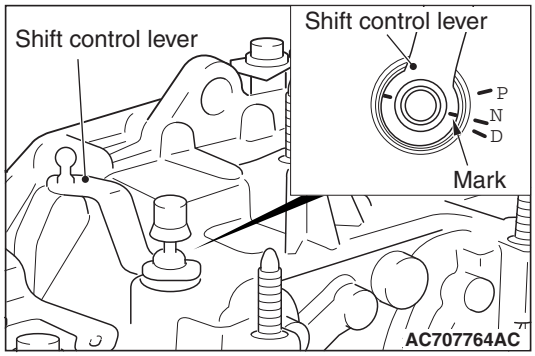
Grease
Brand name: Molykote BR2-Plus

>>B<< TRANSAXLE MOUNTING INSULATOR STOPPER INSTALLATION

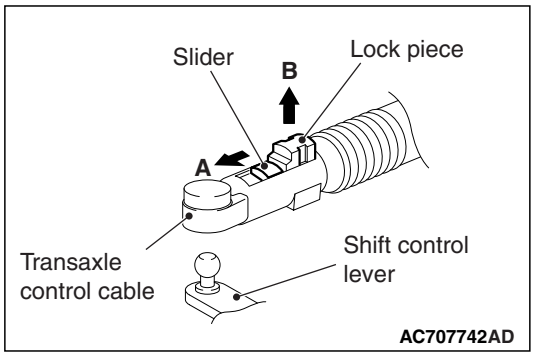


Install the transaxle mounting insulator stopper as shown in the figure.

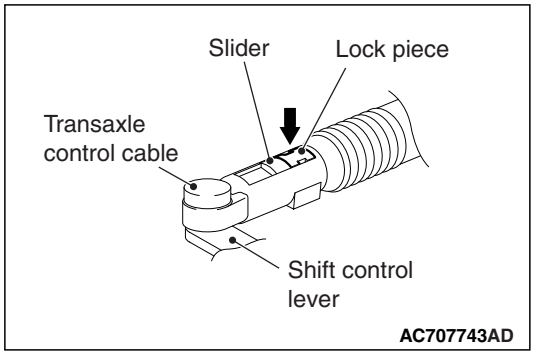
>>C<< TRANSAXLE CONTROL CABLE INSTALLATION



1. Operate the lever so that the shift control lever positioning mark is set to the N position.



2. Move the slider of the transaxle control cable (transaxle side) tip to the direction A to pull up the lock piece to the direction B.
3. Install the transaxle control cable (transaxle side) in the transaxle control cable bracket at the top of transaxle.
4. Move the shift lever to the N⇔D position three times or more, and shift to the N position.



5. Connect the transaxle control cable to the shift control lever, and firmly push down the lock piece of transaxle control cable to lock it.

   NOTE:
   - *The slider automatically returns to the fixed position by the spring.*
   - *The lock position of transaxle control cable is automatically adjusted by a spring.*

>>D<< TRANSMISSION FLUID REFILLING

⚠ CAUTION

Refill 6.1 dm^3 (6.4 qt) of the transmission fluid.

NOTE: The fluid capacity of the oil cooler assembly and the oil cooler hose is 0.6 dm^3 (0.6 qt).

⚠ CAUTION

- **If the transaxle assembly is repaired, fill new fluid and check the transmission fluid level. (Refer to P.22C-506.)**
- **When the transaxle assembly is not repaired, the drained fluid can be reused if it is between the replacement intervals.**

OIL PAN

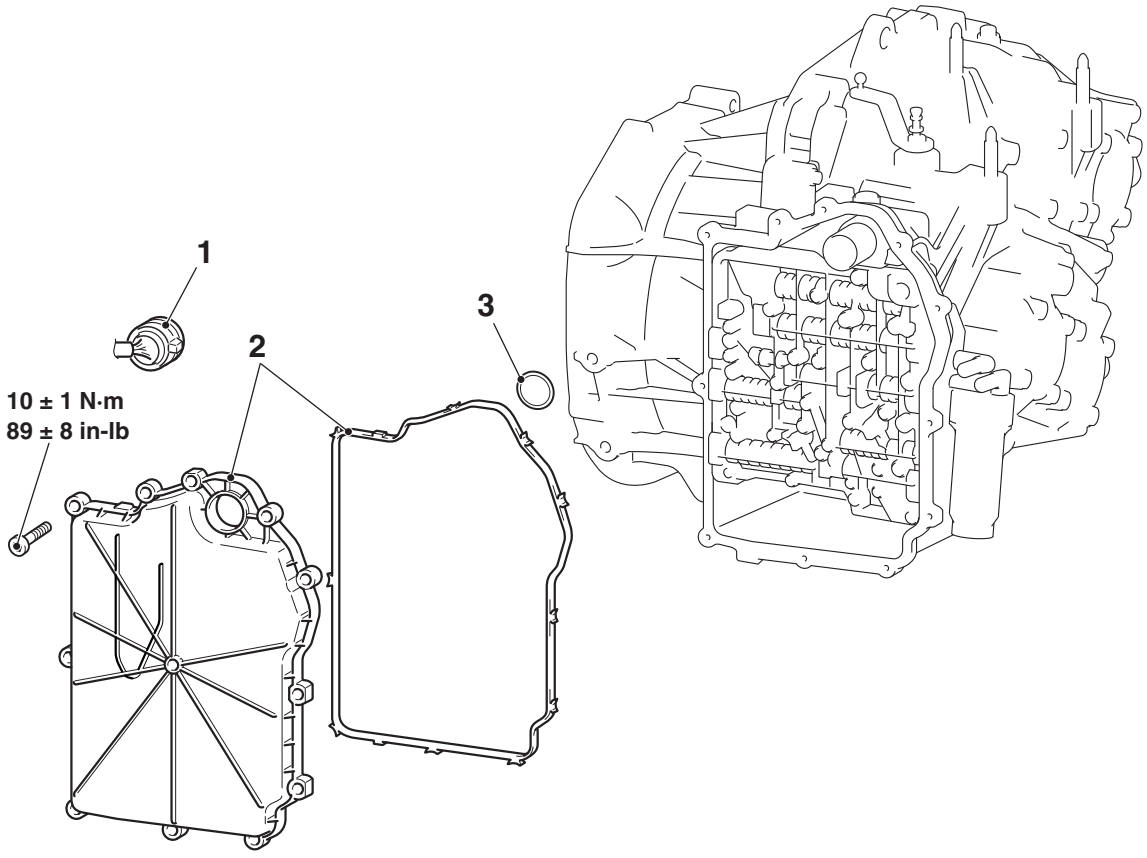
REMOVAL AND INSTALLATION

M1225028800210

⚠ CAUTION

If a fluid leakage is present in the area around the oil pan, clean around the oil pan. After cleaning, warm up the engine. Only if a fluid leakage is present in the area around the oil pan again, replace the oil pan assembly.

Pre-removal and Post-installation Operation
Charge Air Cooler Outlet Air Hose and Charge Air Cooler Outlet Air Hose E Removal and Installation (Refer to GROUP 15 – Charge Air Cooler P.15-12.)



AC901761AC

Removal steps

>>B<< • Transmission Fluid Draining and Refilling (Refer to P.22C-507.)

<<A>> 1. Transaxle assembly connector connection

Removal steps (Continued)

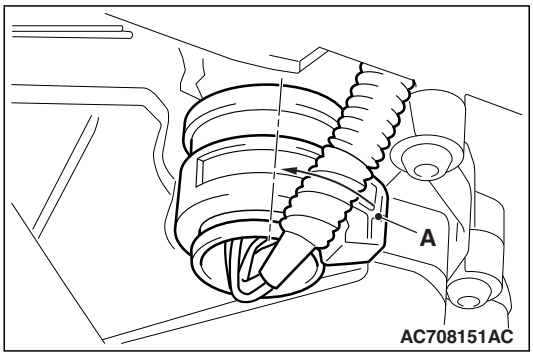
<<B>> >>A<< 2. Oil pan assembly

3. O-ring

TSB Revision

REMOVAL SERVICE POINTS

<<A>> TRANSAXLE ASSEMBLY CONNECTOR DISCONNECTION



Rotate the section A of the connector 90° to the direction of the arrow to disconnect the connector.

<<B>> OIL PAN ASSEMBLY REMOVAL

⚠ CAUTION

When removing the oil pan assembly, pay attention to avoid damage to the connector and the O-ring between the oil pan assembly and the connector.

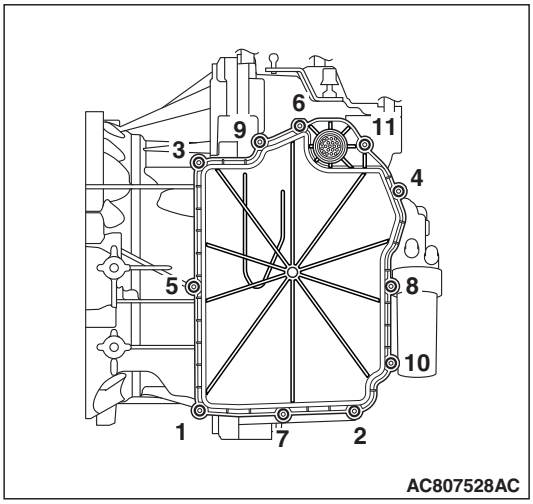
INSTALLATION SERVICE POINTS

>>A<< OIL PAN ASSEMBLY INSTALLATION

1. Completely degrease the oil pan assembly installation surface on the transaxle side.
2. Remove the gasket from the oil pan assembly, and completely degrease the groove of the oil pan assembly (gasket installation area) and the gasket. Then, install the gasket to the groove of the oil pan assembly.

⚠ CAUTION

When installing the oil pan assembly, pay attention to avoid damage to the connector and the O-ring installed to the connector.



3. Tighten the screws to the specified torque in the order shown in the figure.

Tightening torque: 10 ± 1 N·m (89 ± 8 in-lb)

>>B<< TRANSMISSION FLUID REFILLING

⚠ CAUTION

- **If the oil pan assembly and the internal components are repaired, fill new fluid and check the transmission fluid level. (Refer to P.22C-506.)**
- **If the oil pan assembly and the internal components are not repaired, the drained fluid can be reused if it is between the replacement intervals.**

MECHATRONIC ASSEMBLY, MANUAL CONTROL LEVER

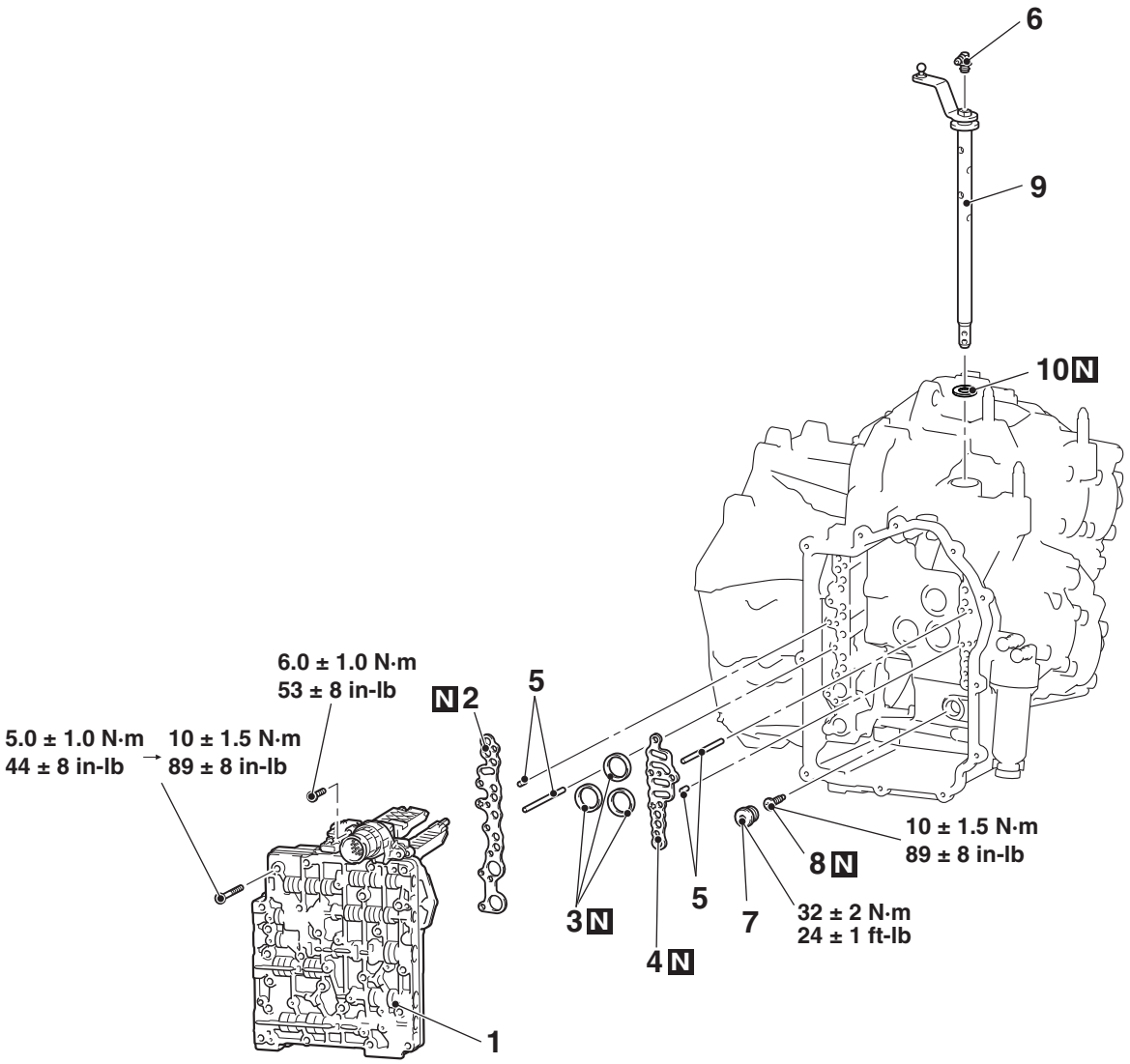
REMOVAL AND INSTALLATION

M1225029600026

⚠ CAUTION

When the mechatronic assembly is replaced, reprogram the ECU and carry out the following Teach-In (Refer to P.22C-24).

Pre-removal and Post-installation Operation
Oil Pan Removal and Installation (Refer to P.22C-531.)



AC900881AB

Removal steps

<<A>> >>B<< 1. Mechatronic assembly
>>B<< 2. Gasket A
3. Gasket B
>>B<< 4. Gasket C
5. Pin

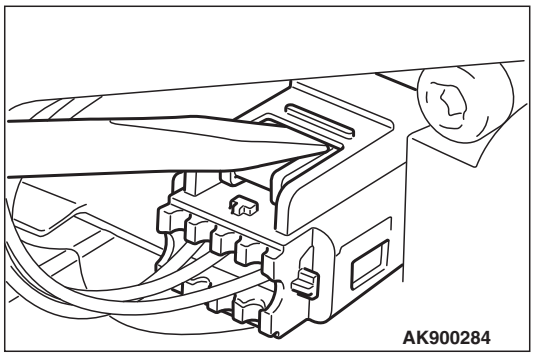
Removal steps (Continued)

6. Breather nipple
<<B>> >>A<< 7. Plug
<<B>> >>A<< 8. Bolt
<<B>> 9. Manual control shaft
10. Oil seal

TSB Revision

REMOVAL SERVICE POINTS

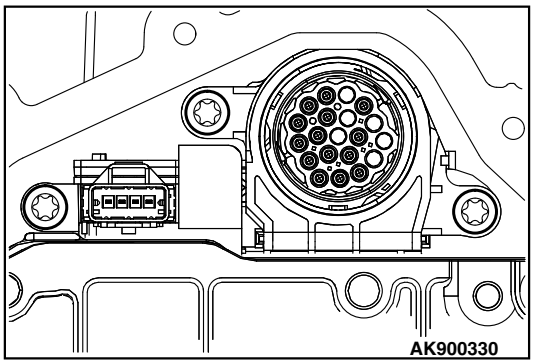
<<A>> MECHATRONIC ASSEMBLY REMOVAL



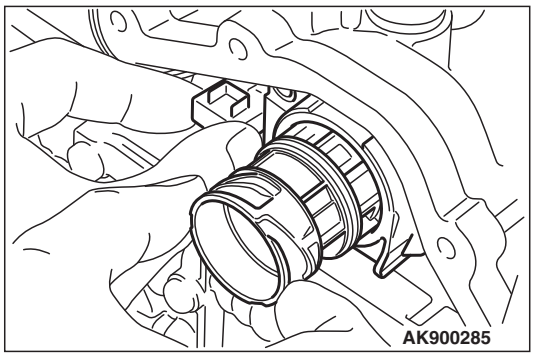
1. Remove the connector carefully.

⚠ CAUTION

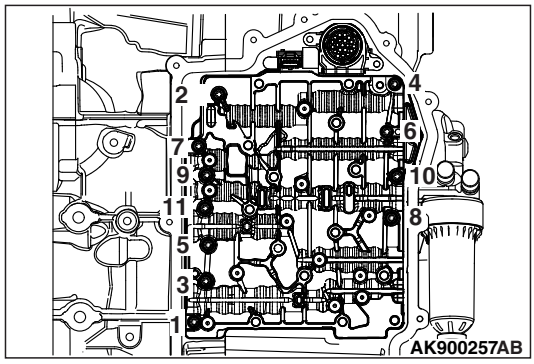
When removing bolt, use magnetic tools to prevent them from falling out.



2. Remove the three bolts.

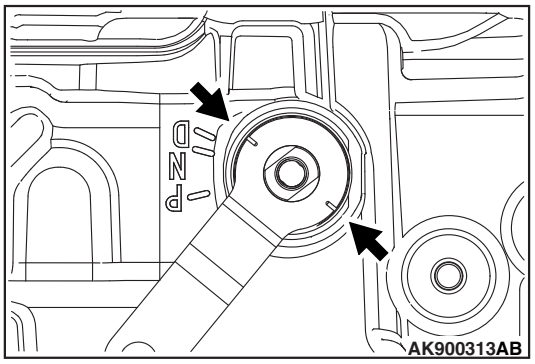


3. Pull carefully at the connector to loose by approx. 2 - 3 mm (0.08 - 0.1 inch).

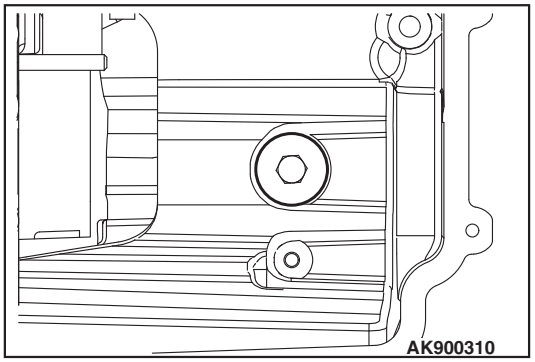


4. Remove the bolts in the order shown and remove the mechatronic assembly carefully.

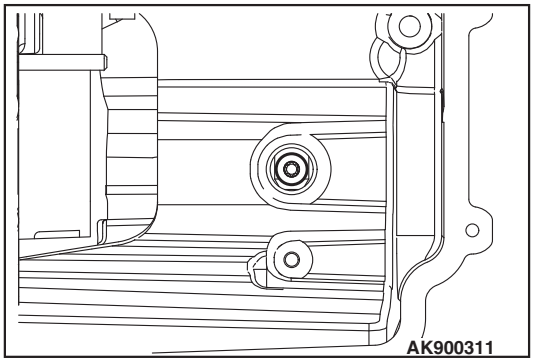
<<B>> PLUG/BOLT/MANUAL CONTROL SHAFT REMOVAL



1. Move the lever from D in clock direction to the service position as shown.



2. Remove the plug.

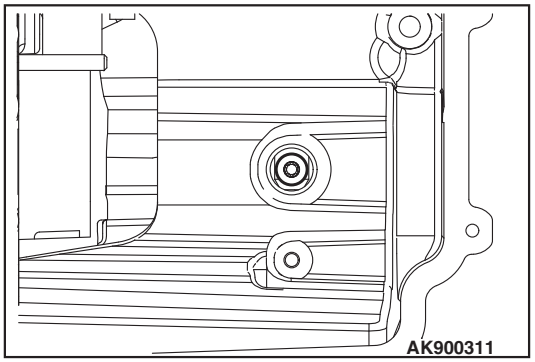


⚠ CAUTION
When removing bolt, use magnetic tools to prevent them from falling out.

3. When removing the bolt located behind the plug, pay attention to the bolt not to fall in the transaxle case.
4. Remove the manual control shaft carefully.

INSTALLATION SERVICE POINTS

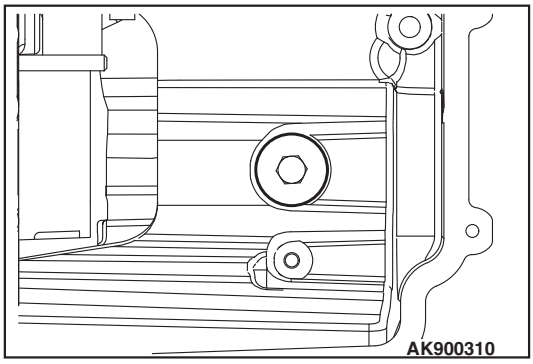
>>A<< MANUAL CONTROL SHAFT/PLUG/BOLT INSTALLATION



⚠ CAUTION
When installing bolt, use magnetic tools to prevent them from falling out.

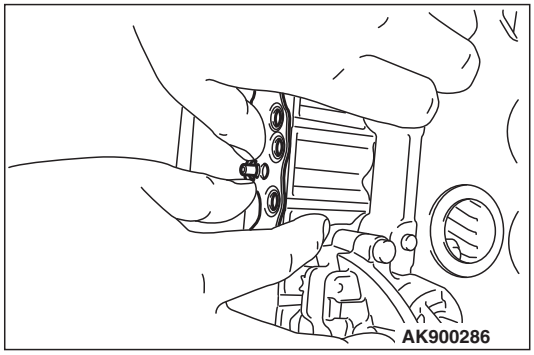
1. Install the manual control shaft carefully and tighten the bolt to the specified torque.

Tightening torque: 10 ± 1.5 N·m (89 ± 8 in-lb)

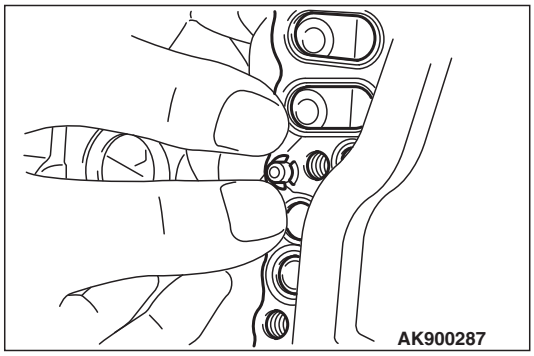


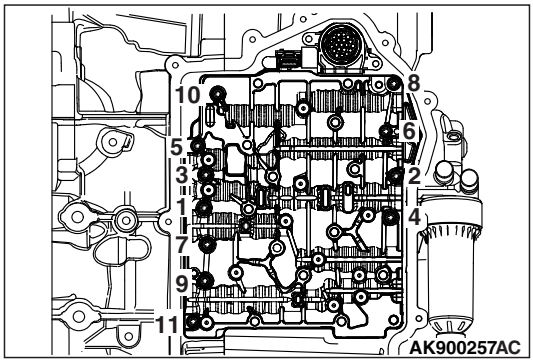
2. Tighten the plug to the specified torque.
   Tightening torque: 32 ± 2 N·m (24 ± 1 ft-lb)

>>B<< GASKET A/GASKET C/MECHATRONIC ASSEMBLY INSTALLATION



1. As shown in the illustration, fix the gasket to the transaxle case by pushing the gasket at the area to which the gasket dowel pin is inserted.



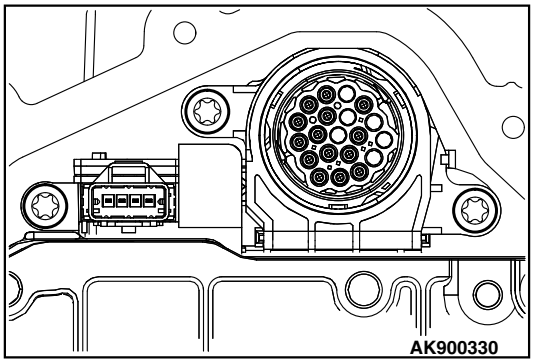


2. Install the mechatronic assembly carefully and tighten the mechatronic assembly mounting bolts to the specified torque in the order of number shown in the figure.

   Tightening torque: 5.0 ± 1.0 N·m (44 ± 8 in-lb)

3. Tighten again the mechatronic assembly mounting bolts to the specified torque in the order of number shown in the figure.

   Tightening torque: 10 ± 1.5 N·m (89 ± 8 in-lb)



⚠ CAUTION

When installing bolt, use magnetic tools to prevent them from falling out.

4. Tighten the bolts to the specified torque.

   Tightening torque: 6.0 ± 1.0 N·m (53 ± 8 in-lb)

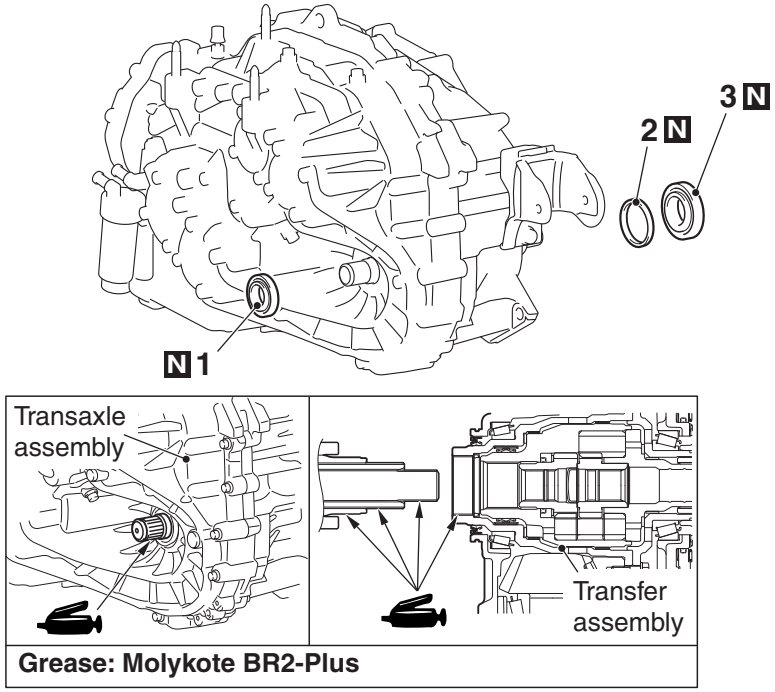
5. Install the connector.

TRANSAXLE CASE OIL SEAL

REMOVAL AND INSTALLATION

M1225029000206

Pre-removal Operation	Post-installation Operation
• Transmission Fluid Draining (Refer to P.22C-507.)	• Transmission Fluid Refilling (Refer to P.22C-507.) • Transmission Fluid Level Check (Refer to P.22C-506.)



Transaxle case oil seal (LH) removal steps

- Front driveshaft assembly (LH) (Refer to GROUP 26 – Driveshaft assembly P.26-21.)

<<A>> >>C<< 1. Transaxle case oil seal (LH)

Transaxle case oil seal (RH) removal steps

- Transfer assembly (Refer to P.22C-523.)

>>B<< 2. V ring

<<A>> >>A<< 3. Transaxle case oil seal (RH)

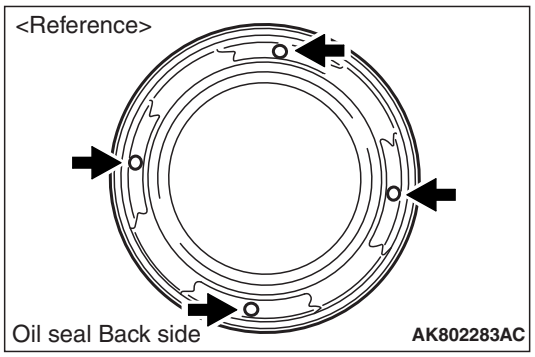
Required Special Tools:

- MB992310: Oil seal installer
- MB992311: Oil seal guide
- MB992312: Oil seal installer
- MB992313: Oil seal guide
- MB992314: V ring guide

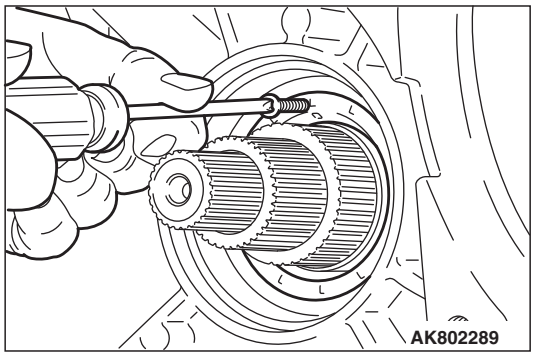
TSB Revision

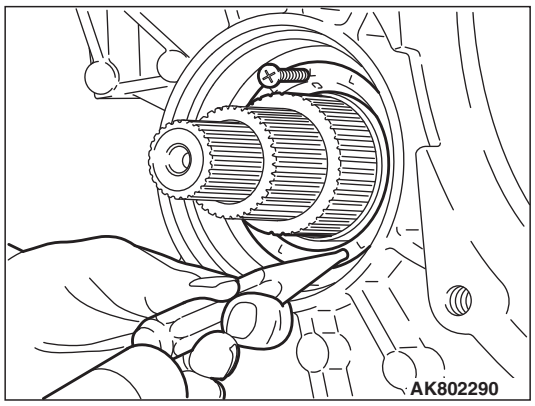
REMOVAL SERVICE POINTS

<<A>> TRANSAXLE CASE OIL SEAL (LH)/TRANSAXLE CASE OIL SEAL (RH) REMOVAL

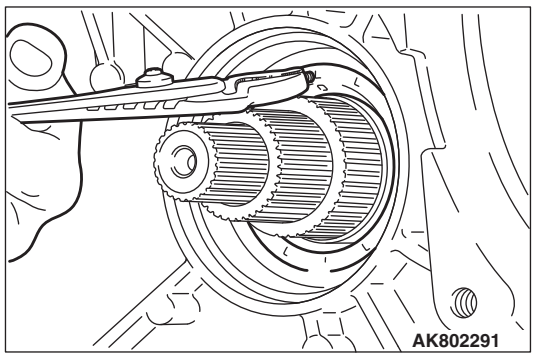


1. Insert the tapping screw (ϕ 3 mm [0.1 inch]) to one of four hollows (round shape) on the oil seal by turning it 2 or 3 times.





2. Tap the opposite side of the inserted tapping screw using a knock pin punch to press in the oil seal approximately 1 mm (0.04 inch).

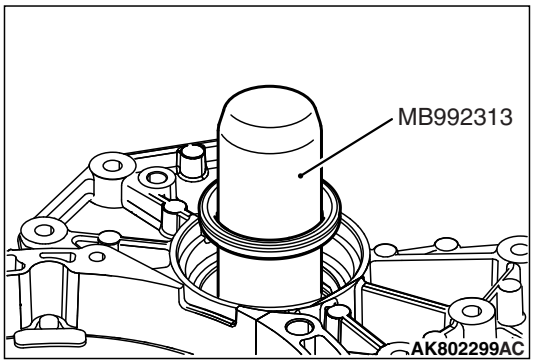


3. Hold the inserted tapping screw with pliers or similar tools, and remove the oil seal.

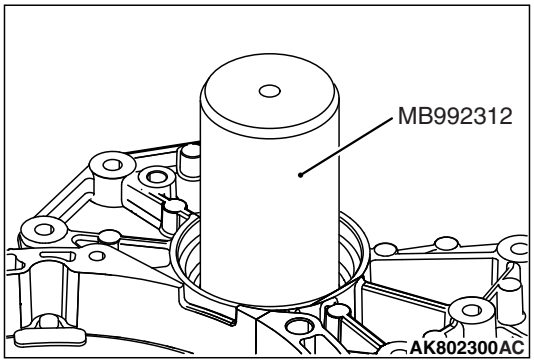
   NOTE: If the transaxle case oil seal (RH) is replaced, the V-ring must also be replaced.

INSTALLATION SERVICE POINTS

>>A<< TRANSAXLE CASE OIL SEAL (RH) INSTALLATION

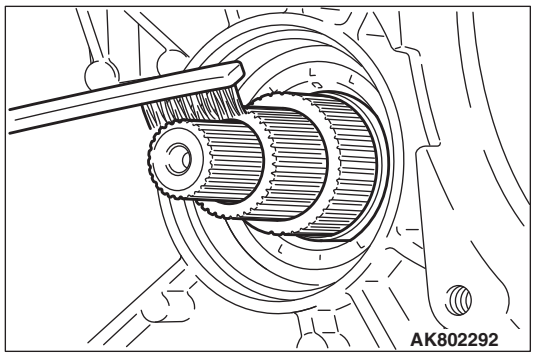


1. Apply the transaxle oil to the oil seal guide (special tool: MB992313). Insert the oil seal to oil seal guide (special tool: MB992313).

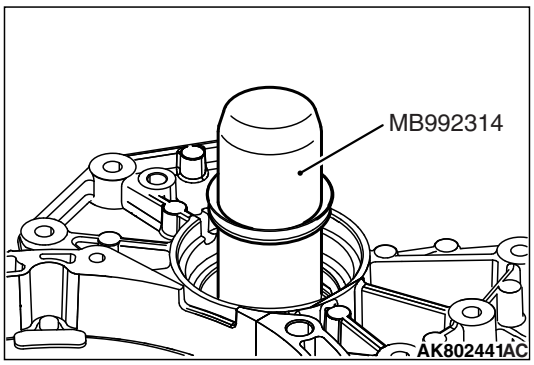


2. Use special tool oil seal installer (special tool: MB992312) to install the oil seal to the transaxle case.

>>B<< V RING INSTALLATION

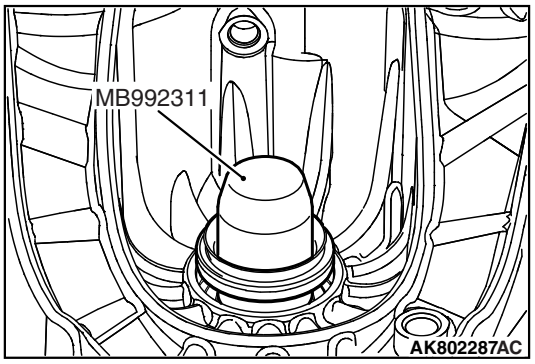


1. Clean the spline with a brush or the like.

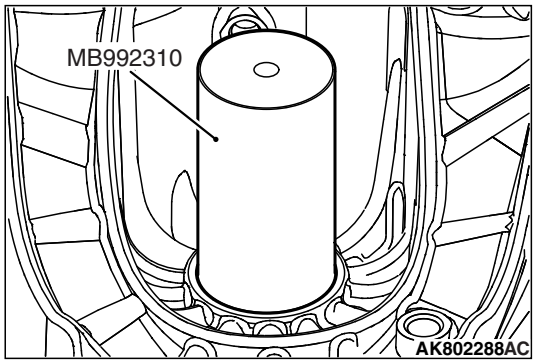


2. Apply the transaxle oil to the V ring guide (special tool: MB992314). Insert the V ring to V ring guide (special tool: MB992314), and install the V ring to the transaxle case.
3. Check that the V ring is installed securely.

>>C<< TRANSAXLE CASE OIL SEAL (LH) INSTALLATION



1. Apply the transaxle oil to the oil seal guide (special tool: MB992311). Insert the oil seal to oil seal guide (special tool: MB992311).



2. Use special tool oil seal installer (special tool: MB992310) to install the oil seal to the transaxle case.

OIL COOLER

REMOVAL AND INSTALLATION

M1225010400336

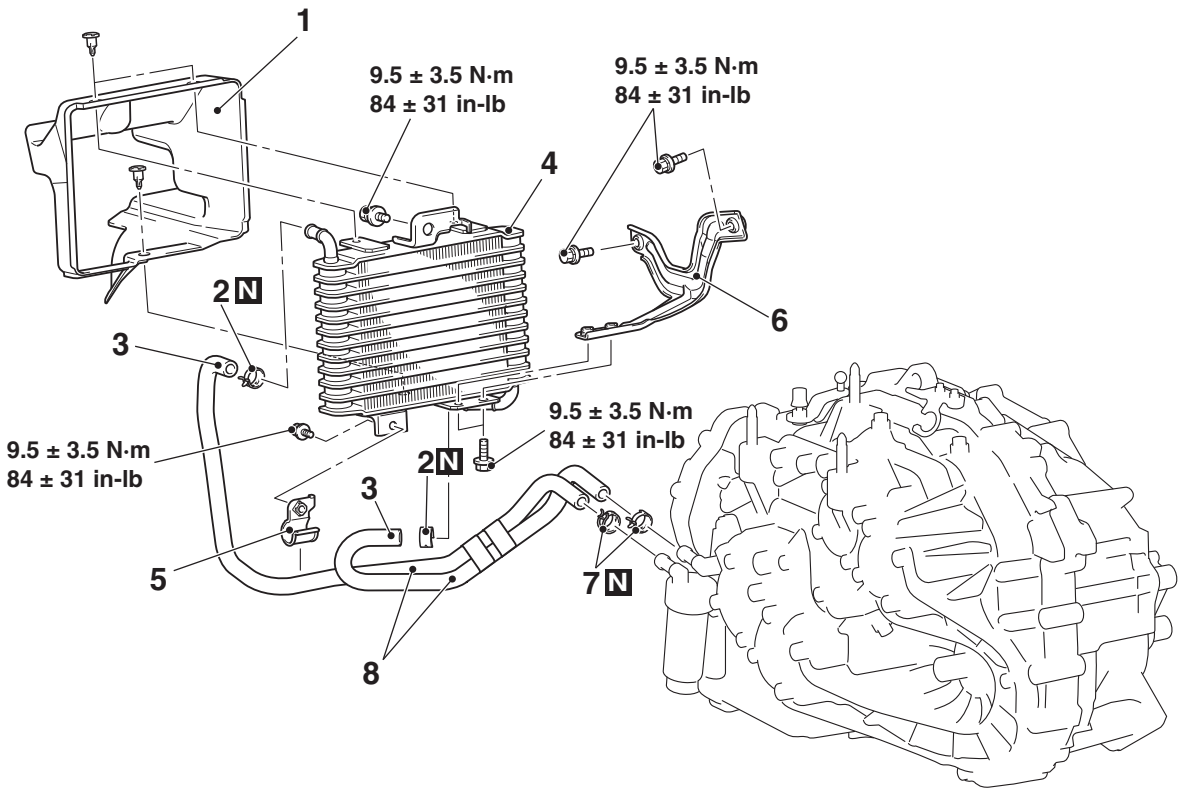
⚠ CAUTION

Do not refill the fluid when replacing the transaxle assembly and the oil cooler with new ones at the same time.

NOTE:

- *The new transaxle assembly is filled with 7.6 dm^3 (8.0 qt) of the fluid (including the oil cooler).*
- *The transaxle assembly has a sealed structure, and the fluid does not drain out from parts other than the oil cooler hose.*

Pre-removal and Post-installation Operation
Front bumper and radiator grille assembly removal and installation (Refer to GROUP 51 – Front Bumper and Radiator Grille Assembly P.51-3.)



AC705841AJ

Removal steps

>>A<< • Transmission fluid draining and refilling (Refer to P.22C-507.)
1. Oil cooler duct
2. Hose clip
3. Oil cooler hose assembly connection

Removal steps (Continued)

4. Oil cooler assembly
5. Hose clamp
6. Oil cooler bracket
7. Hose clip
8. Oil cooler hose assembly

TSB Revision

INSTALLATION SERVICE POINT

>>A<< TRANSMISSION FLUID REFILLING

⚠ CAUTION

Refill 6.1 dm^3 (6.4 qt) of the transmission fluid.

NOTE: The fluid capacity of the oil cooler assembly and the oil cooler hose assembly is 0.6 dm^3 (0.6 qt).

⚠ CAUTION

- **If the oil cooler is repaired, fill new fluid and check the transmission fluid level. (Refer to P.22C-506.)**
- **When the oil cooler is not repaired, the drained fluid can be reused if it is between the replacement intervals.**

OIL FILTER

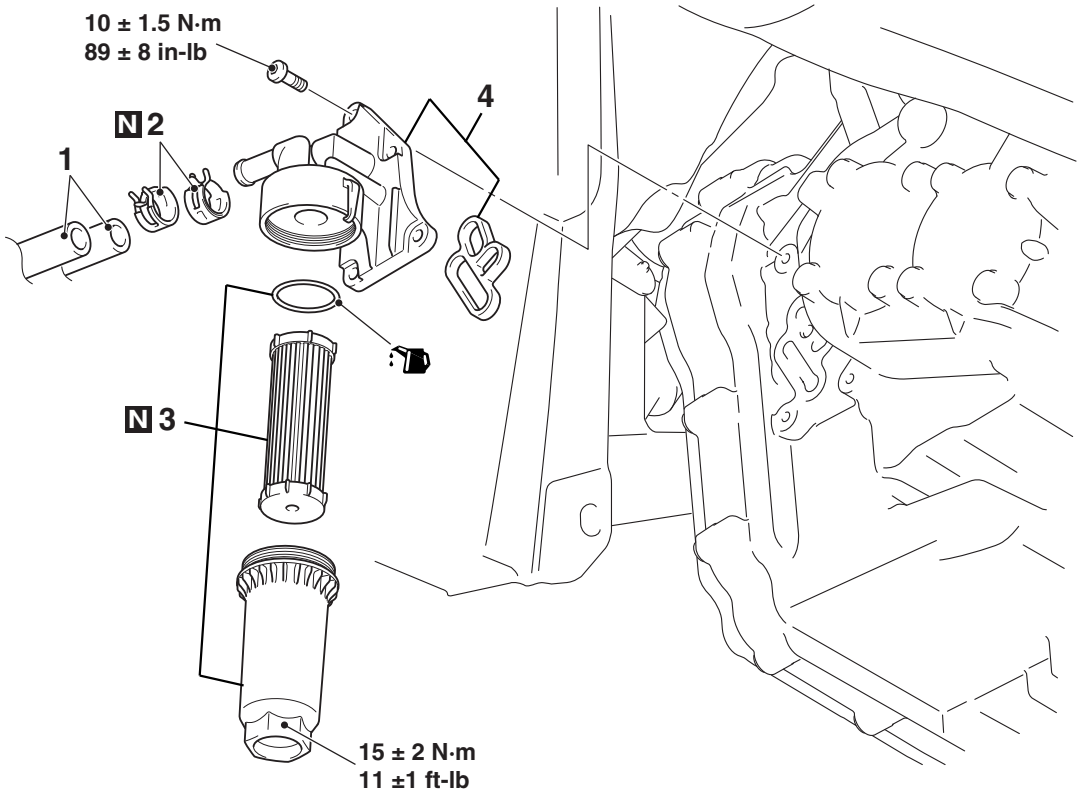
REMOVAL AND INSTALLATION

M1225028600142

⚠ CAUTION

If a fluid leakage is present in the area around the oil filter bracket, clean around the oil filter bracket. After cleaning, warm up the engine. Only if a fluid leakage is present in the area around the oil filter bracket again, replace the oil filter bracket assembly.

Pre-removal and Post-installation Operation
Engine Room Side Cover <LH> (Refer to GROUP 51 – Under Cover P.51-17).



AC807228AK

Removal steps

<<A>> >>B<<
- Transmission fluid draining and refilling (Refer to P.22C-507.)

1. Oil cooler hose assembly connection

Removal steps (Continued)

2. Hose clip
3. Oil filter case assembly

>>A<<
4. Oil filter bracket assembly

REMOVAL SERVICE POINT

<<A>> TRANSMISSION FLUID DRAINING

Drain the fluid in the transaxle assembly and the oil cooler.

TSB Revision

INSTALLATION SERVICE POINTS

>>A<< OIL FILTER BRACKET ASSEMBLY INSTALLATION

1. Completely degrease the oil filter bracket assembly installation surface on the transaxle side.
2. Remove the gasket from the oil filter bracket assembly, and completely degrease the groove of the oil filter bracket assembly (gasket installation area) and the gasket. Then, install the gasket to the groove of the oil filter bracket assembly.
3. Tighten the screws to the specified torque.

Tightening torque: 10 ± 1.5 N·m (89 ± 8 in-lb)

>>B<< TRANSMISSION FLUID REFILLING

⚠ CAUTION

Refill 6.2 dm^3 (6.6 qt) of the transmission fluid.

NOTE: The fluid capacity of the oil cooler assembly and the oil cooler hose is 0.6 dm^3 (0.6 qt), and the fluid capacity of the oil filter case assembly is 0.1 dm^3 (0.1 qt).

⚠ CAUTION

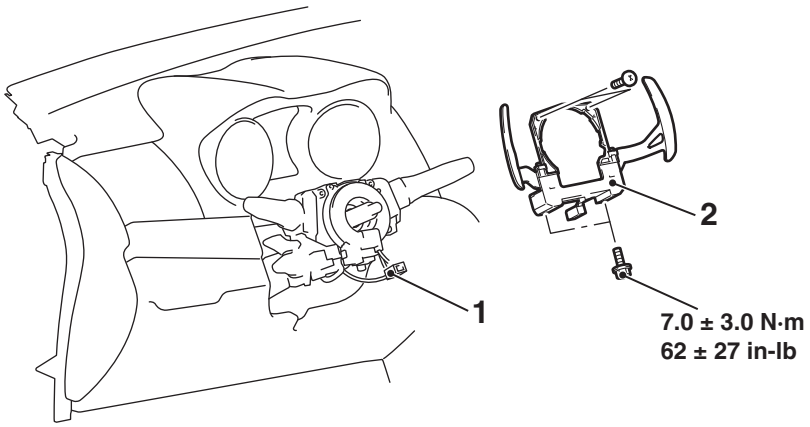
- **If the fluid leakage from the oil filter is repaired, fill new fluid and check the transmission fluid level. (Refer to P.22C-506.)**
- **When the oil filter is replaced, the drained fluid can be reused if it is between the replacement intervals.**

PADDLE SHIFT ASSEMBLY

REMOVAL AND INSTALLATION

M1225010600095

Pre-removal Operation	Post-installation Operation
• Steering wheel assembly and driver's air bag module removal (Refer to GROUP 37 – Steering Wheel P.37-32.) • Steering column lower cover and steering column upper cover removal (Refer to GROUP 37 – Steering Shaft P.37-37.)	• Steering column lower cover and steering column upper cover installation (Refer to GROUP 37 – Steering Shaft P.37-37.) • Steering wheel assembly and driver's air bag module installation (Refer to GROUP 37 – Steering Wheel P.37-32.) • Steering wheel at straight-ahead position check.



AC710518 AC

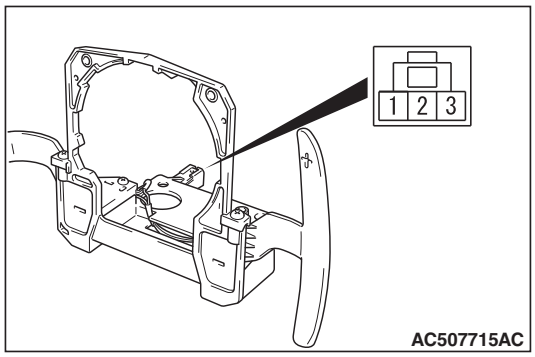
Removal steps

1. Paddle shift switch connector connection
2. Paddle shift assembly

INSPECTION

PADDLE SHIFT SWITCH CHECK

M1225011300097



AC507715AC

1. Check the continuity between the paddle shift switch connector terminals.

Standard value:

Paddle shift lever	Terminal number	Resistance value
Upshift and hold the lever.	1 – 2	Continuity exists. (2 Ω or less)
Downshift and hold the lever.	2 – 3	
No operation	No continuity between the terminals	

2. In the cases other than the above, replace the paddle shift assembly.

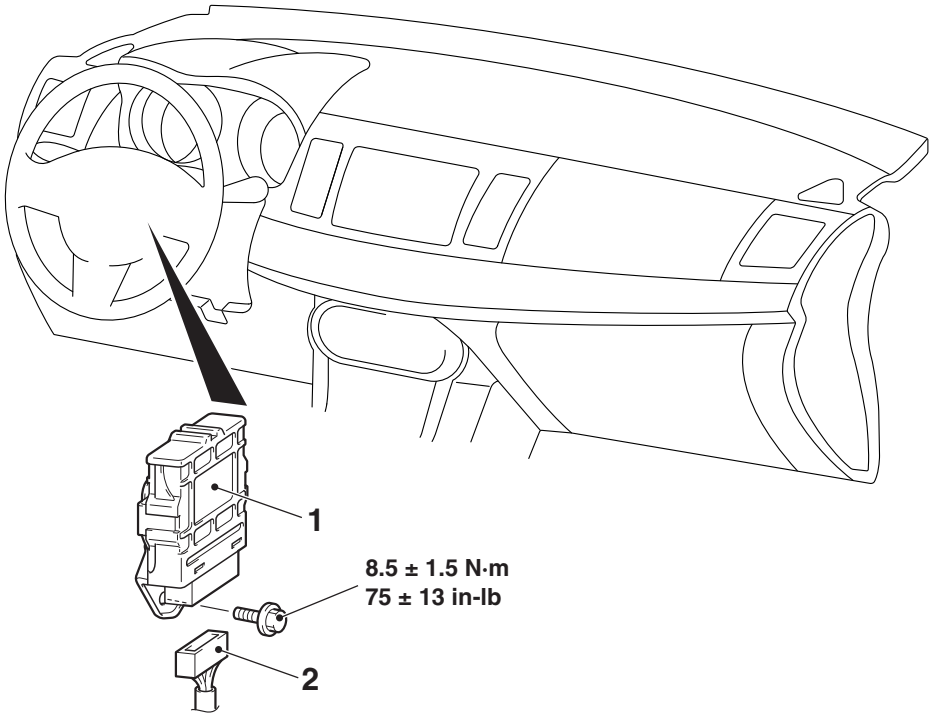
TSB Revision

AWC-ECU

REMOVAL AND INSTALLATION

M1225010800099

Pre-removal and Post-installation Operation
- Bottom Cover Removal and Installation (Refer to GROUP 52A – Glove box P.52A-6.)



AC710454 AD

Removal steps
1. AWC-ECU
2. AWC-ECU connector connection

SENSOR, SWITCH AND RELAY

REMOVAL AND INSTALLATION

M1225011200090

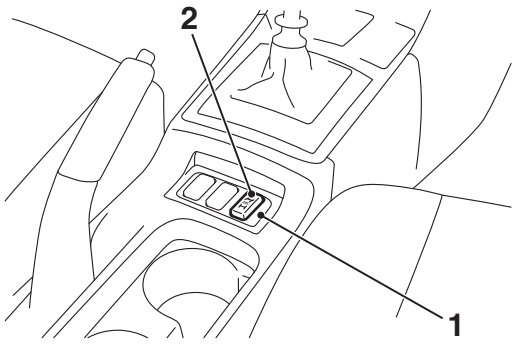
STEERING WHEEL SENSOR
Refer to GROUP 35C – Steering Wheel Sensor P.35C-310.

G AND YAW RATE SENSOR
Refer to GROUP 35C – G and Yaw Rate Sensor P.35C-309.

WHEEL SPEED SENSOR
Refer to GROUP 35C – Wheel Speed Sensor P.35C-306.

TSB Revision

AWC SWITCH

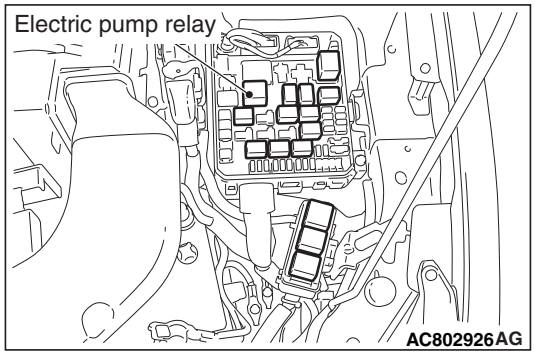


AC802596AC

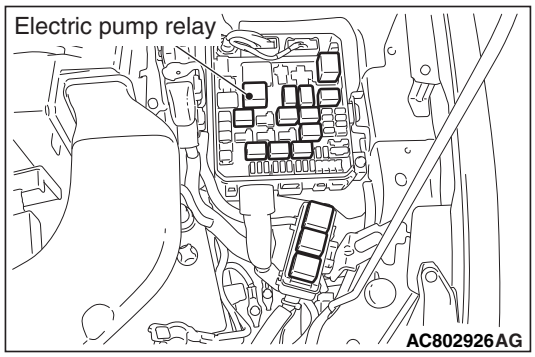
Removal Steps

1. Floor console switch panel (Refer to GROUP 52A – Floor console assembly P.52A-9)
2. AWC switch

ELECTRIC PUMP RELAY



AC802926AG



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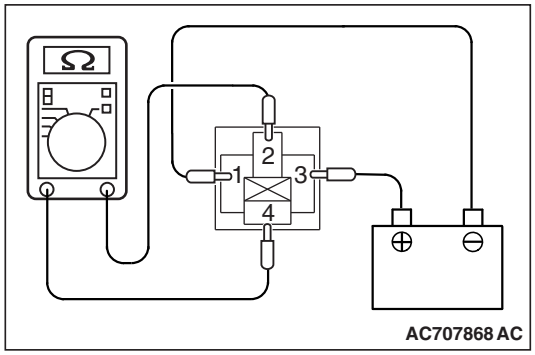


AC707868AC

INSPECTION

ELECTRIC PUMP RELAY CHECK

M1221021700083

1. Using a jumper wire, connect the positive battery terminal (+) to the electric pump relay terminal No.3, and the negative battery terminal (-) to the terminal No.1.
2. Check for continuity between the electric pump relay terminals No.2 and No.4.

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

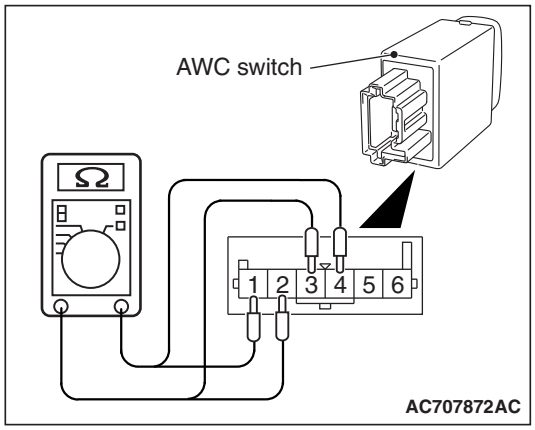
3. If defective, replace the electric pump relay.

TSB Revision

AWC SWITCH CHECK

M1221021800080

Check the continuity between the AWC switch connector terminals.



AWC selection switch terminal No.	AWC selection switch	Continuity
1 – 2	ON	Yes (2 Ω or less)
	OFF	No
3 – 4	–	Present

1. When other than above, replace the AWC switch.

HYDRAULIC UNIT

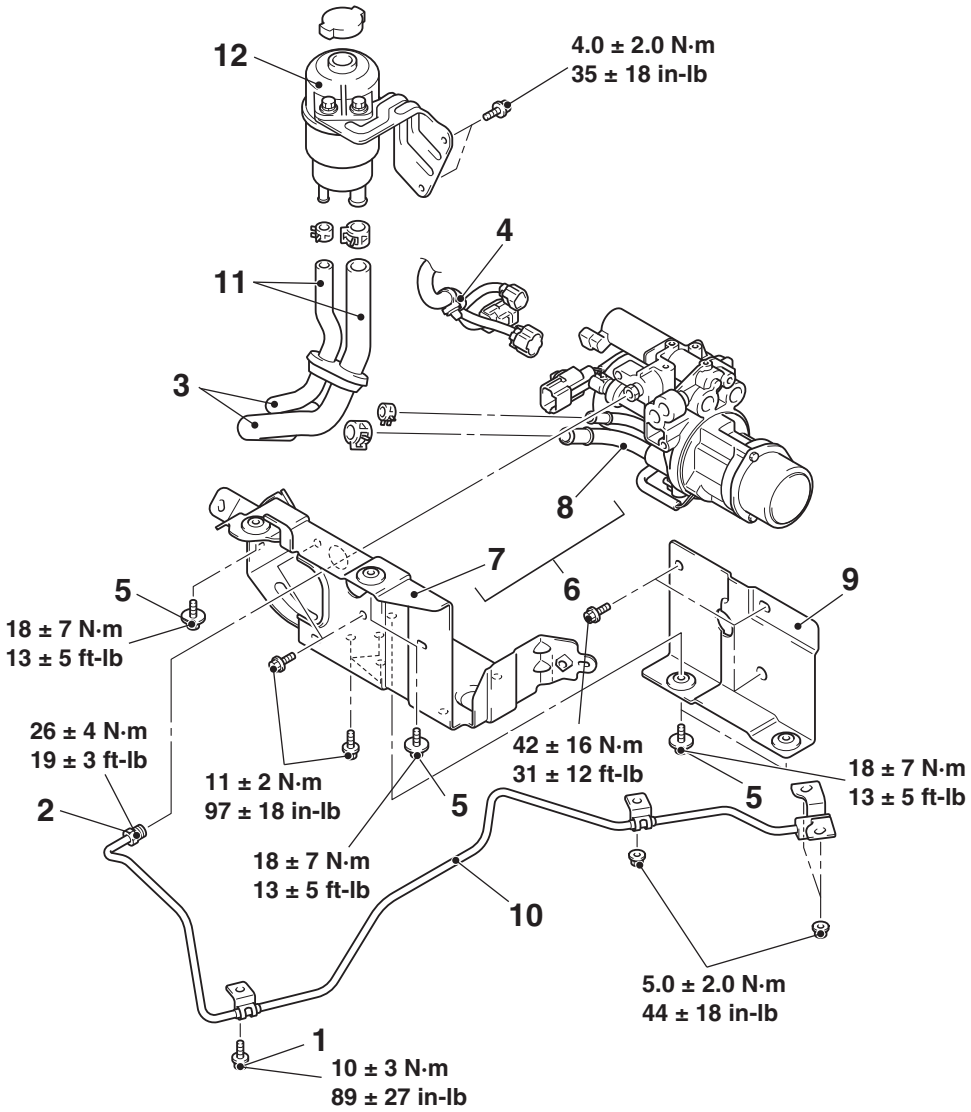
REMOVAL AND INSTALLATION

M1225011000096

⚠ CAUTION

- **When inserting the reservoir hose assembly, do not lubricate.**
- **Perform with care that the foreign objects do not intrude into the hydraulic unit and hose joint.**

Pre-removal operation	Post-installation operation
• Rear wheel (RH) removal • Rear wheelhouse splash shield removal (Refer to GROUP 42A – Splash Shield P.42A-14.) • Trunk side trim (RH) removal (Refer to GROUP 52A – Interior Trim P.52A-12.)	• Bleeding (Refer to On-vehicle Service – ACD Bleeding P.22C-513.) • Trunk side trim (RH) installation (Refer to GROUP 52A – Interior Trim P.52A-12.) • Rear wheelhouse splash shield installation (Refer to GROUP 42A – Splash Shield P.42A-14.) • Rear wheel (RH) installation



AC800723AC

Removal steps

1. ACD pressure tube assembly mounting bolt
2. ACD pressure tube assembly and hydraulic unit connection

Removal steps (Continued)

3. Reservoir hose assembly and hydraulic unit connection
4. Hydraulic unit connector connection

TSB Revision

Removal steps (Continued)

5. Hydraulic unit bracket A, hydraulic unit, and hydraulic unit bracket B connecting bolt

>>**B**<<

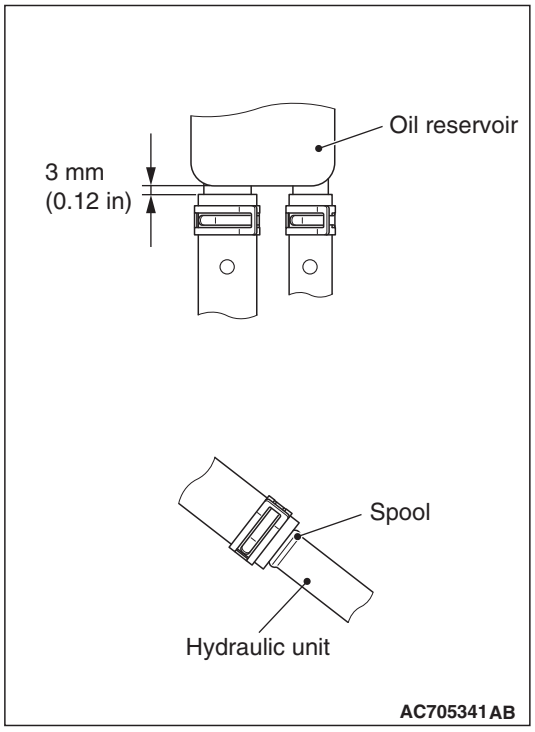
6. Hydraulic unit and hydraulic unit bracket B
7. Hydraulic unit bracket B
8. Hydraulic unit
9. Hydraulic unit bracket A
10. ACD pressure tube assembly

>>**A**<<

11. Reservoir hose assembly
12. Oil reservoir

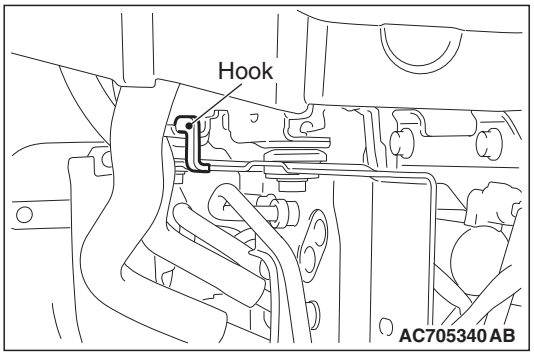
INSTALLATION SERVICE POINTS

>>A<< RESERVOIR HOSE ASSEMBLY INSTALLATION



1. On the oil reservoir side, insert the hose to the position shown in the figure.
2. On the hydraulic unit side, insert the hose to the spool shown in the figure.

>>B<< HYDRAULIC UNIT AND HYDRAULIC UNIT BRACKET B INSTALLATION



Insert the hook of hydraulic unit bracket B into the body panel, and tighten the mounting bolt.

NOTES