GROUP 22C

TWIN CLUTCH-SPORTRONIC SHIFT TRANSMISSION (TC-SST)

CONTENTS

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GENERAL INFORMATION

M1225000100152

Item		Specification
Transaxle model		W6DGA
Transaxle 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	1.008
	6th	0.775
	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)

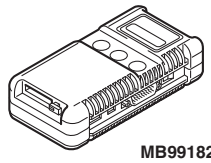
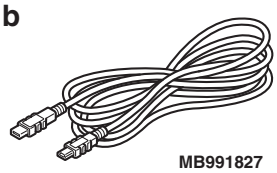
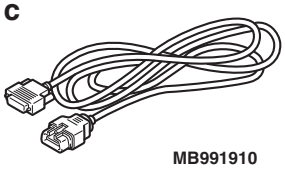
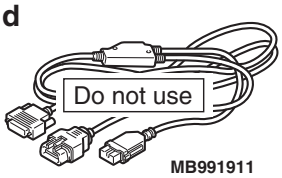
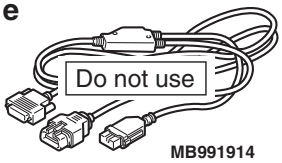
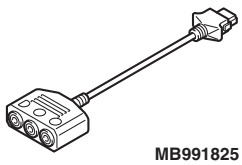
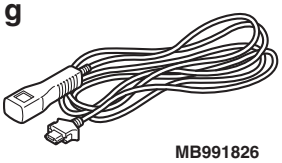
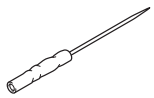
LUBRICANT

M1225000200137

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)
AWC fluid dm ^{3} (qt)		DIAMOND ATF SP III	1.0 (1.06)
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

M1225000300015

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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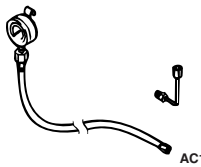
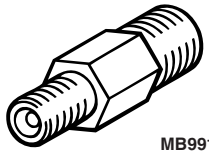
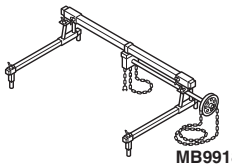
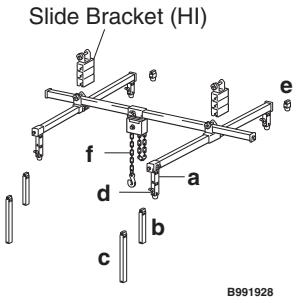
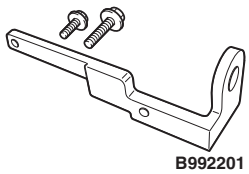
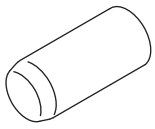
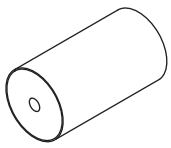
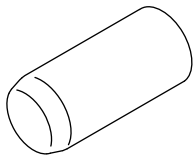
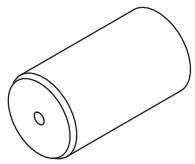
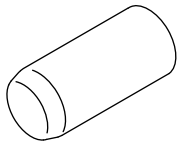
Tool	Tool number and name	Supersession	Application
 AC103525	MD998330 (Includes MD998331) Oil pressure gauge (3.0 MPa, 427 psi)	MD998330-01	Measurement of hydraulic pressure
 MB991705	MB991705	Adapter	
 MB991895	MB991895 Engine hanger	Tool not available	When the engine hanger is used: Supporting the 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

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.

M1225024900011

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.

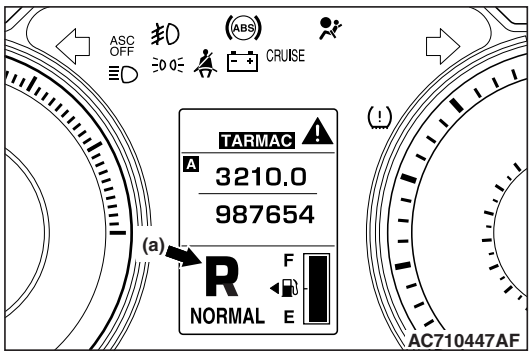
M1225007900018

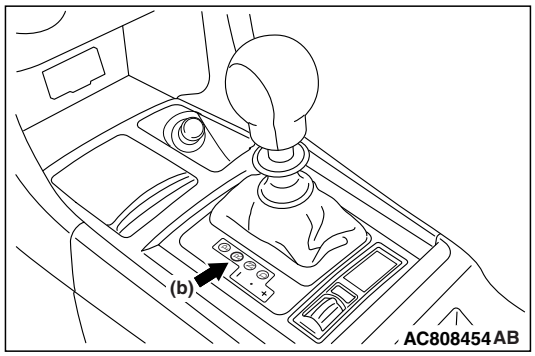
1. Gather as much information as possible about the complaint from the customer.
2. Verify that the condition described by the customer exists.
3. Check the vehicle for any TC-SST Diagnostic Trouble Codes (DTCs).
4. If you cannot verify the condition and there are no DTCs, the malfunction is intermittent. 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.00-15.
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-20.
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.00-15.
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.

TC-SST TEACH-IN

M1225029400088

⚠ 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.

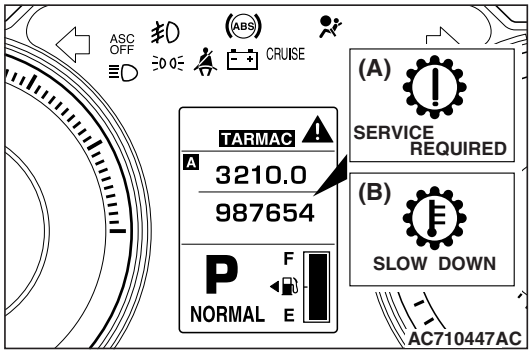
<CLUTCH ASSEMBLY REPLACEMENT>

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

DIAGNOSIS FUNCTION

M1225000500428

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

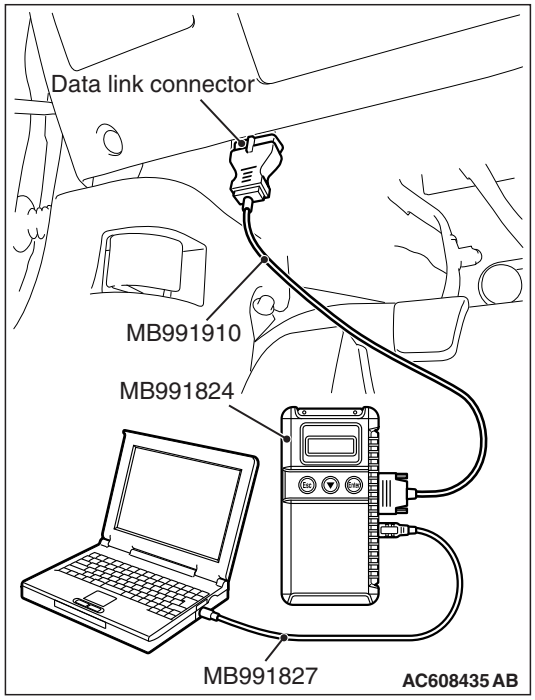
DTC No.			Control content
P0702 P1803 P1804 P1805	P1806 P1807 P1857 P1858	P185D P1866 P1868 P1872	Clutch open prohibits the vehicle from driving, and displays an occurrence of trouble to the multi information display to warn the driver.
P0776 P0777 P0964 P0965 P0966	P0968 P0970 P0971 P1852 P2733	P2736 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.

DTC 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.

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PERMANENT DTC

Refer to GROUP 13A –Multiport Fuel Injection (MFI) Diagnosis, Diagnostic Function P.13A-9.

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 • S-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-15)
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
41	Highside driver 2 state	• ON • OFF

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Item No.	Item	Unit/Display
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-21
P0701	081	EEPROM system (Malfunction)	2	P.22C-22
P0702	087, 088	Internal control module, monitoring processor system (Malfunction)	1	P.22C-22
P0712*	136	TC-SST-ECU temperature sensor system (Output low range out)	2	P.22C-23
P0713*	101	TC-SST-ECU temperature sensor system (Output high range out)	2	P.22C-25
P0715*	090	Input shaft 1 (odd number gear axle) speed sensor system (Output high range out)	2	P.22C-27
P0716*	114, 138	Input shaft 1 (odd number gear axle) speed sensor system (Poor performance)	2	P.22C-29
P0717*	070	Input shaft 1 (odd number gear axle) speed sensor system (Output low range out)	2	P.22C-34
P0725	258	Engine speed signal abnormality	2	P.22C-36
P0746*	107, 108	Line pressure solenoid system (Drive current range out)	1	P.22C-37
P0753*	039	Shift select solenoid 1 system (Open circuit)	1	P.22C-40
P0758*	042	Shift select solenoid 2 system (Open circuit)	1	P.22C-42
P0776*	110, 111	Clutch cooling flow solenoid system (Drive current range out)	1	P.22C-44
P0777*	112	Clutch cooling flow solenoid system (Stuck)	1	P.22C-46
P0841*	117	Clutch 1 pressure sensor system (Poor performance)	2	P.22C-49
P0842*	004	Clutch 1 pressure sensor system (Output low range out)	2	P.22C-51
P0843*	005	Clutch 1 pressure sensor system (Output high range out)	2	P.22C-53
P0846*	121	Clutch 2 pressure sensor system (Poor performance)	2	P.22C-55

DTC No.	Monitoring unit No.	Diagnostic item	Judgment drive cycle	Reference page
P0847*	006	Clutch 2 pressure sensor system (Output low range out)	2	P.22C-57
P0848*	007	Clutch 2 pressure sensor system (Output high range out)	2	P.22C-59
P0960*	030	Line pressure solenoid system (Open circuit)	1	P.22C-61
P0961*	077	Line pressure solenoid system (Overcurrent)	1	P.22C-63
P0962*	029	Line pressure solenoid system (Short to ground)	1	P.22C-65
P0963*	028	Line pressure solenoid system (Short to power supply)	1	P.22C-67
P0964*	033	Clutch cooling flow solenoid system (Open circuit)	1	P.22C-69
P0965*	078	Clutch cooling flow solenoid system (Overcurrent)	1	P.22C-71
P0966*	032	Clutch cooling flow solenoid system (Short to ground)	1	P.22C-73
P0967*	031	Clutch cooling flow solenoid system (Short to power supply)	1	P.22C-75
P0968*	036	Shift/cooling switching solenoid system (Open circuit)	1	P.22C-77
P0970*	035	Shift/cooling switching solenoid system (Short to ground)	1	P.22C-79
P0971*	034	Shift/cooling switching solenoid system (Short to power supply)	1	P.22C-81
P0973*	038	Shift select solenoid 1 system (Short to ground)	1	P.22C-83
P0974*	037	Shift select solenoid 1 system (Short to power supply)	1	P.22C-85
P0976*	041	Shift select solenoid 2 system (Short to ground)	1	P.22C-87
P0977	040	Shift select solenoid 2 system (Short to power supply)	1	P.22C-89
P1637*	082	EEPROM system (DTC storing malfunction)	1	P.22C-90
P1676*	109	Coding incomplete	1	P.22C-92
P1802	089, 230	Shift lever system (LIN communication malfunction)	2	P.22C-94
P1803	233	Shift lever system (CAN or LIN time-out error)	1	P.22C-96
P1804*	024	Shift fork position sensor 1 and 2 system (Power supply voltage low range out)	1	P.22C-98
P1805*	025	Shift fork position sensor 1 and 2 system (Power supply voltage high range out)	1	P.22C-100
P1806*	026	Shift fork position sensor 3 and 4 system (Power supply voltage low range out)	1	P.22C-102
P1807*	027	Shift fork position sensor 3 and 4 system (Power supply voltage high range out)	1	P.22C-104
P1808*	105	TC-SST-ECU temperature, fluid temperature sensor system (Correlation error)	1	P.22C-106
P180C	113	Clutch pressure cut spool sticking	2	P.22C-108
P181B*	124	Clutch 1 (Pressure low range out)	2	P.22C-109
P181C*	125	Clutch 1 (Pressure high range out)	2	P.22C-111

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DTC No.	Monitoring unit No.	Diagnostic item	Judgment drive cycle	Reference page
P181E*	129	Clutch 2 (Pressure low range out)	2	P.22C-120
P181F*	130	Clutch 2 (Pressure high range out)	2	P.22C-123
P1820*	008	Shift fork position sensor 1 system (Voltage low range out)	1	P.22C-133
P1821*	009	Shift fork position sensor 1 system (Voltage high range out)	1	P.22C-135
P1822*	144	Shift fork position sensor 1 system (Output range out)	1	P.22C-137
P1823*	158	Shift fork position sensor 1 system (Neutral)	1	P.22C-140
P1824*	156	Shift fork position sensor 1 system (Poor performance)	2	P.22C-143
P1825*	010	Shift fork position sensor 2 system (Voltage low range out)	1	P.22C-147
P1826*	011	Shift fork position sensor 2 system (Voltage high range out)	1	P.22C-149
P1827*	146	Shift fork position sensor 2 system (Output range out)	1	P.22C-152
P1828*	218	Shift fork position sensor 2 system (Neutral)	1	P.22C-155
P1829*	152	Shift fork position sensor 2 system (Poor performance)	2	P.22C-158
P182A*	012	Shift fork position sensor 3 system (Voltage low range out)	1	P.22C-162
P182B*	013	Shift fork position sensor 3 system (Voltage high range out)	1	P.22C-164
P182C*	148	Shift fork position sensor 3 system (Output range out)	1	P.22C-166
P182D*	219	Shift fork position sensor 3 system (Neutral)	1	P.22C-169
P182E*	153	Shift fork position sensor 3 system (Poor performance)	2	P.22C-172
P1831*	014	Shift fork position sensor 4 system (Voltage low range out)	1	P.22C-174
P1832*	015	Shift fork position sensor 4 system (Voltage high range out)	1	P.22C-177
P1833*	150	Shift fork position sensor 4 system (Output range out)	1	P.22C-179
P1834*	159	Shift fork position sensor 4 system (Neutral)	1	P.22C-182
P1835*	157	Shift fork position sensor 4 system (Poor performance)	2	P.22C-185
P1836*	160, 172, 182, 183	Shift fork 1 malfunction	1	P.22C-188
P183D*	161, 174, 184, 185	Shift fork 2 malfunction	1	P.22C-196
P1844*	162, 178, 186, 187	Shift fork 3 malfunction	1	P.22C-204
P184B*	163, 180, 188, 189	Shift fork 4 malfunction	1	P.22C-211
P1852*	190, 191	Shift fork 1 or 2 opposite direction movement	1	P.22C-219

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DTC No.	Monitoring unit No.	Diagnostic item	Judgment drive cycle	Reference page
P1855*	192, 193	Shift fork 3 or 4 opposite direction movement	1	P.22C-222
P1857*	194	Odd number gear axle interlock	1	P.22C-224
P1858*	195	Even number gear axle interlock	1	P.22C-227
P185D	223	Clutch open not possible	1	P.22C-229
P1862*	059	High side 1 system (Overcurrent)	1	P.22C-230
P1863*	060	High side 1 system (Open circuit)	1	P.22C-232
P1864*	061	High side 1 system (Short to power supply)	1	P.22C-234
P1866*	062	High side 2 system (Overcurrent)	1	P.22C-236
P1867*	063	High side 2 system (Open circuit)	1	P.22C-238
P1868*	064	High side 2 system (Short to power supply)	1	P.22C-240
P186A*	065	High side 3 system (Overcurrent)	1	P.22C-242
P186B*	066	High side 3 system (Open circuit)	1	P.22C-244
P186C*	067	High side 3 system (Short to power supply)	1	P.22C-246
P186D*	173	High side 1 system (Voltage low range out)	1	P.22C-248
P186E*	177	High side 2 system (Voltage low range out)	1	P.22C-250
P186F*	179	High side 3 system (Voltage low range out)	1	P.22C-252
P1870*	205	Engine torque signal abnormality	2	P.22C-254
P1871*	203	APS system (Signal abnormality)	1	P.22C-257
P1872	220	Between shift lever and TC-SST system (Q-A function abnormality)	1	P.22C-260
P1873	212, 216	Clutch 1 system (Pressure abnormality)	2	P.22C-261
P1874	213, 217	Clutch 2 system (Pressure abnormality)	2	P.22C-262
P1875*	139, 207	Damper speed sensor system (Poor performance)	2	P.22C-263
P1876	196	Gear block 1st	3	P.22C-266
P1877*	197	Gear block 2nd	2	P.22C-268
P1878*	198	Gear block 3rd	2	P.22C-270
P1879*	199	Gear block 4th	2	P.22C-272
P187A*	200	Gear block 5th	2	P.22C-274
P187B*	201	Gear block 6th	2	P.22C-276
P187C	202	Gear block reverse	3	P.22C-278
P1880	137	EOL Mode Active	1	P.22C-279
P1881	268	Twin clutch SST control mode switch system (Malfunction)	2	P.22C-280
P1885	168, 170	Shift fork 1 jump out	3	P.22C-281
P1886	164, 166	Shift fork 2 jump out	3	P.22C-282

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DTC No.	Monitoring unit No.	Diagnostic item	Judgment drive cycle	Reference page
P1887	165	Shift fork 3 jump out	3	P.22C-283
P1888	169, 171	Shift fork 4 jump out	3	P.22C-284
P1890	132	Teach-In not completed	2	P.22C-285
P2718*	045	Clutch/shift pressure solenoid 1 system (Open circuit)	1	P.22C-286
P2719*	079	Clutch/shift pressure solenoid 1 system (Overcurrent)	1	P.22C-288
P2720*	044	Clutch/shift pressure solenoid 1 system (Short to ground)	1	P.22C-290
P2721*	043	Clutch/shift pressure solenoid 1 system (Short to power supply)	1	P.22C-292
P2727*	048	Clutch/shift pressure solenoid 2 system (Open circuit)	1	P.22C-294
P2728*	080	Clutch/shift pressure solenoid 2 system (Overcurrent)	1	P.22C-296
P2729*	047	Clutch/shift pressure solenoid 2 system (Short to ground)	1	P.22C-298
P2730*	046	Clutch/shift pressure solenoid 2 system (Short to power supply)	1	P.22C-300
P2733*	134	Clutch/shift switching solenoid 1, spool stuck	1	P.22C-302
P2736*	051	Clutch/shift switching solenoid 1 system (Open circuit)	1	P.22C-305
P2738*	050	Clutch/shift switching solenoid 1 system (Short to ground)	1	P.22C-306
P2739*	049	Clutch/shift switching solenoid 1 system (Short to power supply)	1	P.22C-308
P2742*	135	Fluid temperature sensor system (Output low range out)	2	P.22C-310
P2743*	103	Fluid temperature sensor system (Output high range out)	2	P.22C-312
P2766*	115, 240	Input shaft 2 (even number gear axle) speed sensor system (Poor performance)	2	P.22C-314
P2809*	141	Clutch/shift switching solenoid 2, spool stuck	1	P.22C-319
P2812*	054	Clutch/shift switching solenoid 2 system (Open circuit)	1	P.22C-321
P2814*	053	Clutch/shift switching solenoid 2 system (Short to ground)	1	P.22C-323
P2815*	052	Clutch/shift switching solenoid 2 system (Short to power supply)	1	P.22C-325
U0001*	083	Bus off	1	P.22C-327
U0100*	116	Engine time-out error	1	P.22C-329
U0103	123	Shift lever time-out error	1	P.22C-331
U0121	122	ASC time-out error	1	P.22C-332
U0136	209	AWC time-out error	1	P.22C-333
U0141	120	ETACS time-out error	1	P.22C-334

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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-335
The driving mode cannot be changed.	2	P.22C-336
Speed change with the paddle shift is impossible.	3	P.22C-338
TC-SST-ECU power supply circuit malfunction	4	P.22C-341
The shift lever does not operate.	5	P.22C-345
Gears cannot be changed with the manual mode.	6	P.22C-348
The vehicle moves with the P-range.	7	P.22C-349
Slipping occurs with the D-range/R-range/manual mode, and engine racing occurs during gear shifting/driving.	8	P.22C-350
The vehicle does not creep with the D-range/R-range/manual mode.	9	P.22C-351
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-352
Poor acceleration	11	P.22C-352
The gear shifting does not occur. (The transmission does not upshift or downshift.)	12	P.22C-353
The shift shock is large.	13	P.22C-354
Delay occurs when the lever is shifted N →D or N →R.	14	P.22C-355
The engine stops when the lever is shifted N →D or N →R.	15	P.22C-356
The vehicle moves with the N-range on the level ground.	16	P.22C-357
Judder/vibration/noise	17	P.22C-357

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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-15.) 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 13A –Troubleshooting P.13A-48.)

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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) After repairing the CAN bus line, go to Step 2.

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

Refer to P.22C-341.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-341.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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

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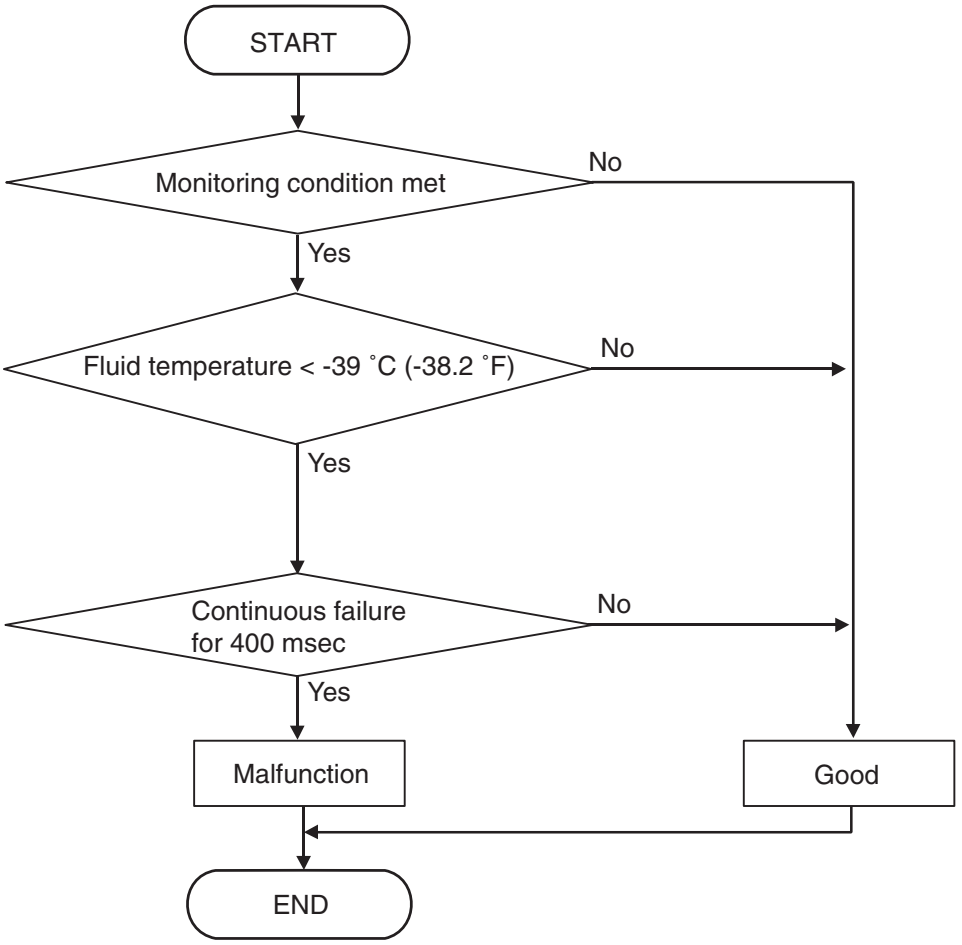
LOGIC FLOW CHARTS (Monitor Sequence)



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

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

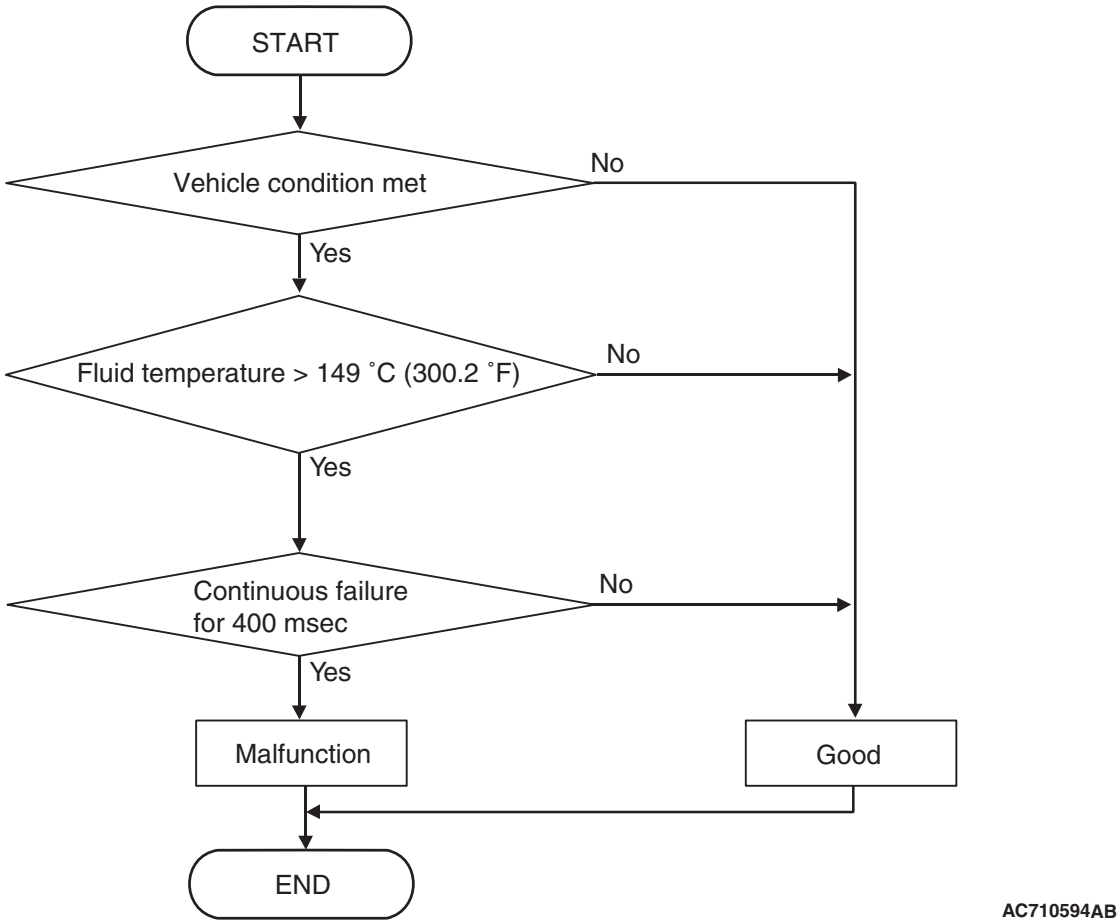
MONITOR EXECUTION
- Continuous

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-15.) After repairing the CAN bus line, go to Step 2.

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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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

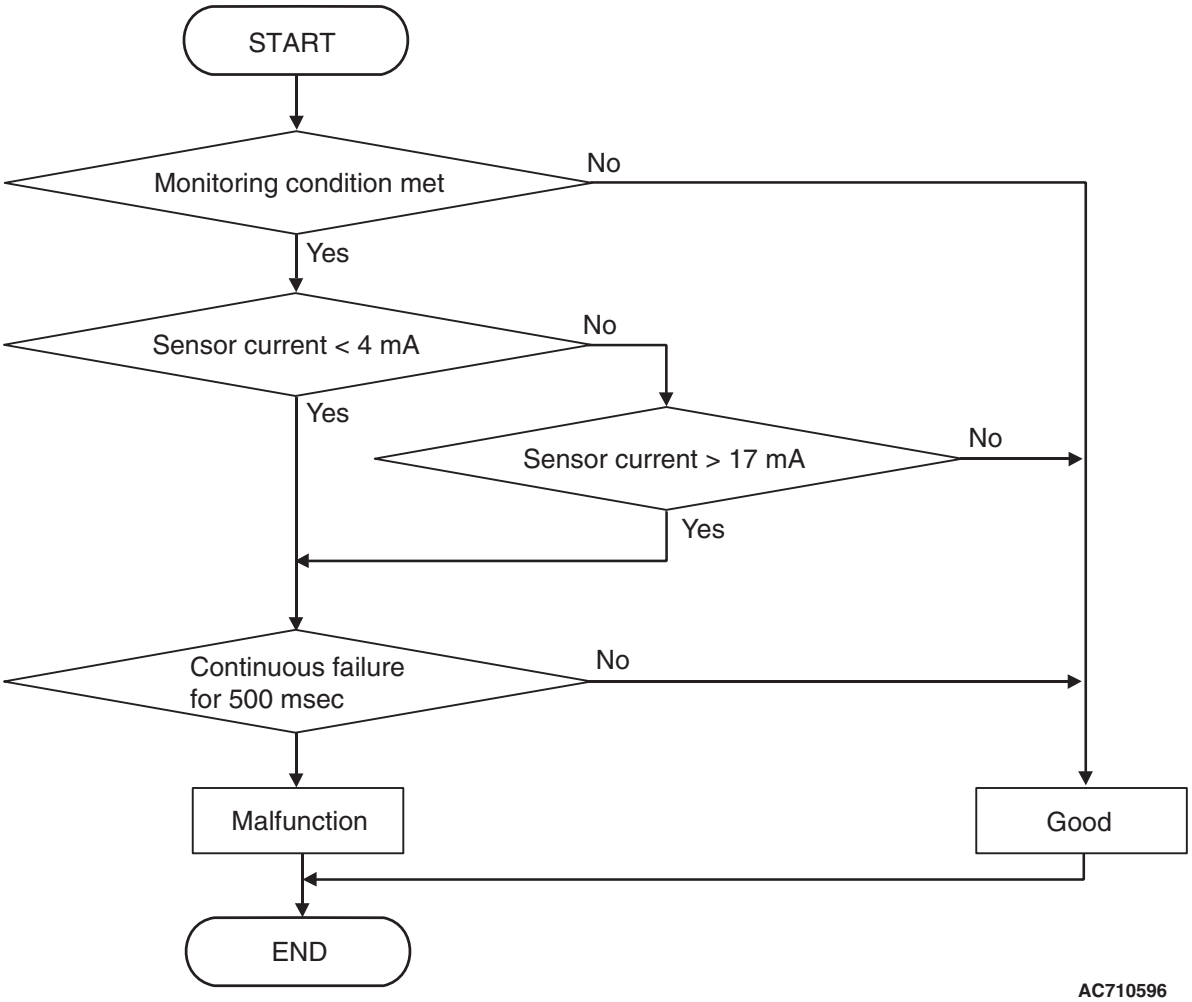
DESCRIPTIONS OF MONITOR METHODS
The output of the input shaft 1 (odd number gear axle) is determined to be too high.

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

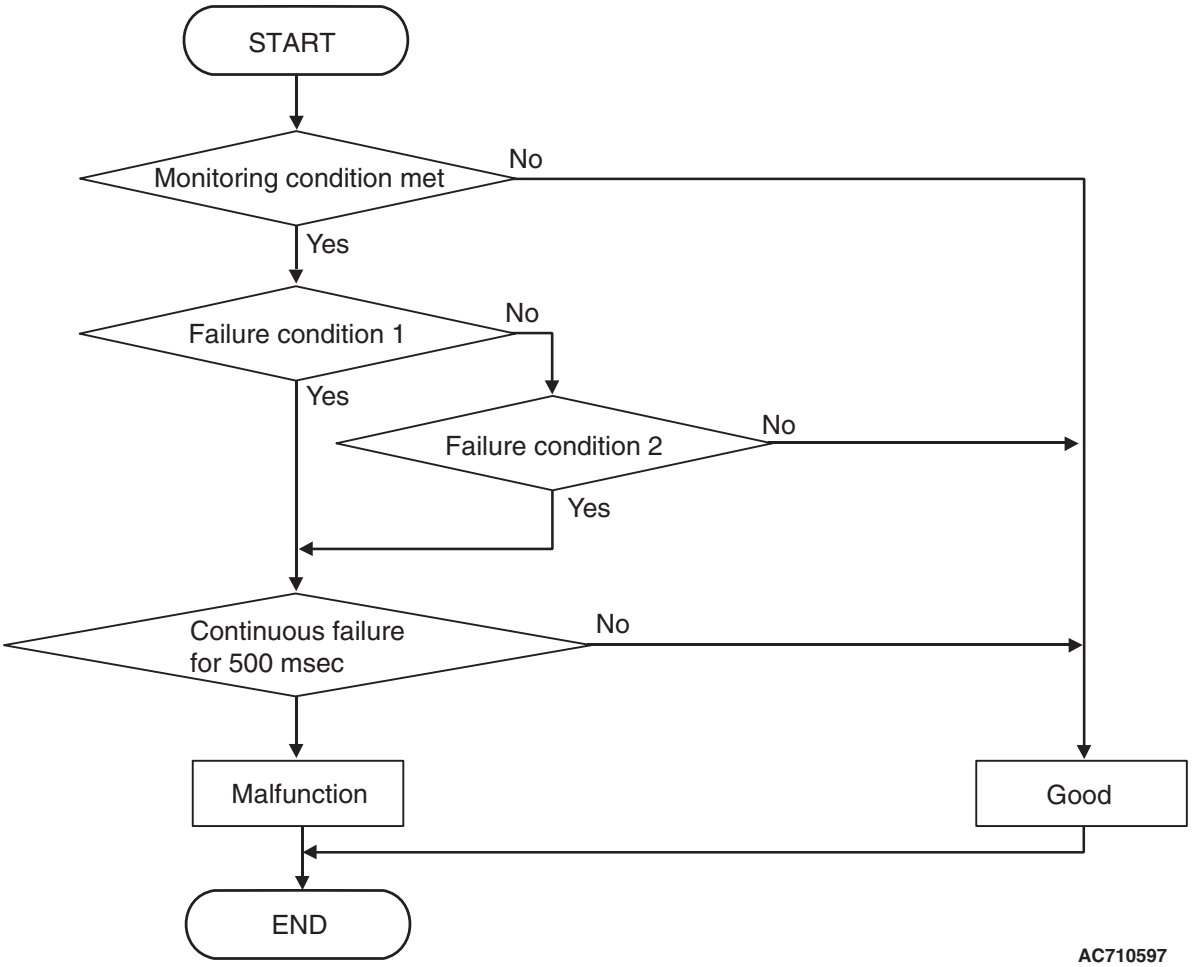
DESCRIPTIONS OF MONITOR METHODS
The rotation speed of the input shaft 1 (odd number gear axle) is determined to be abnormal.

MONITOR EXECUTION
- Continuous

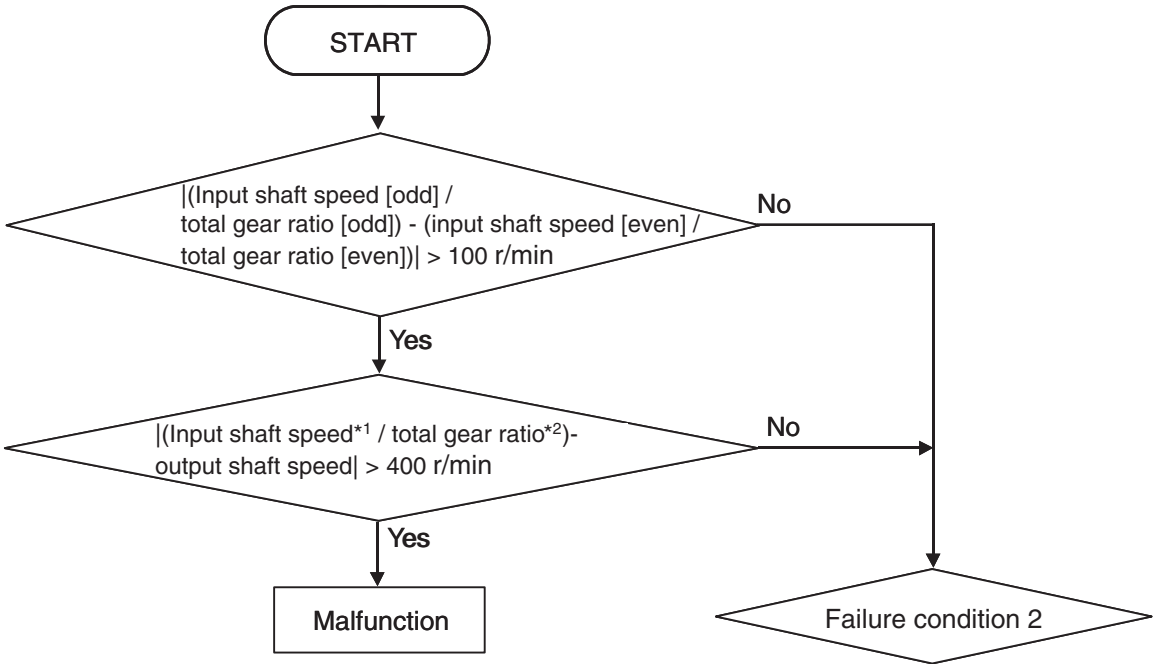
MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0715: Input shaft 1 (odd number gear axle) speed sensor system (Output high range out)
- P0717: Input shaft 1 (odd number gear axle) speed sensor system (Output 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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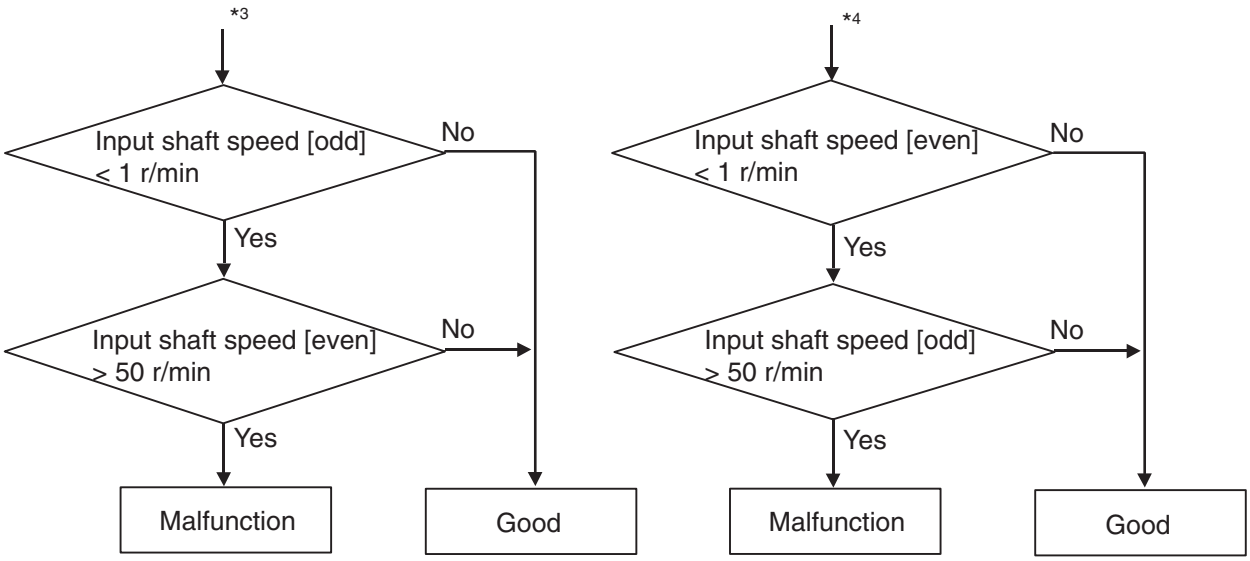
LOGIC FLOW CHARTS (Monitor Sequence) <Rationality (Failure condition 2)>



*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>

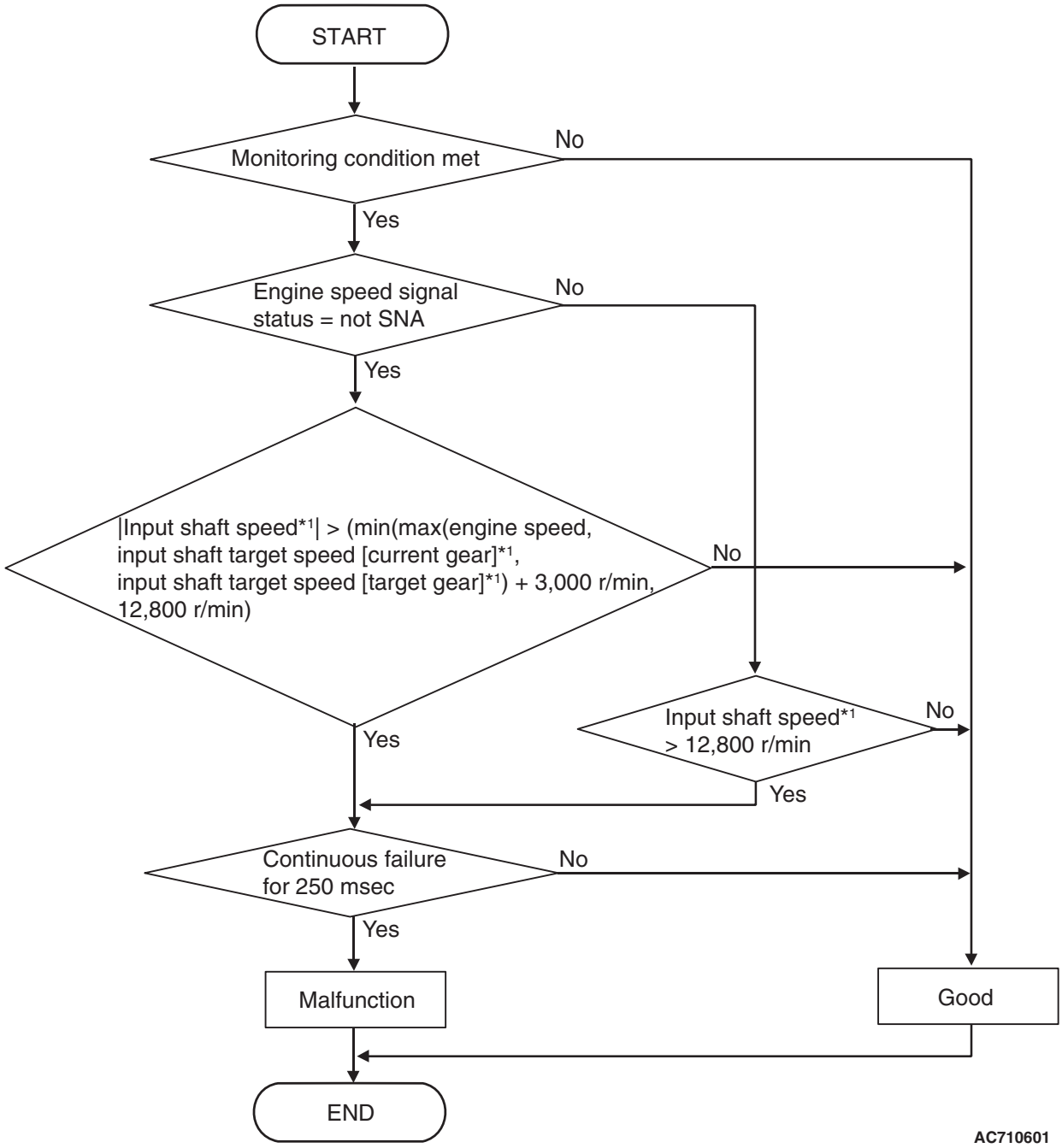
- Failure condition 1 or failure condition 2 (Refer to Logic Flow Charts (Monitor Sequence) <Rationality>). (500 millisecond)

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.00-15.)

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-365).)
(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-365).)

Q: Which is displayed, "Yes" or "No"?
"Yes" : Replace the mechatronic assembly. (Refer to P.22C-421.)
"No" : Replace the transaxle assembly. (Refer to P.22C-412.)

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.

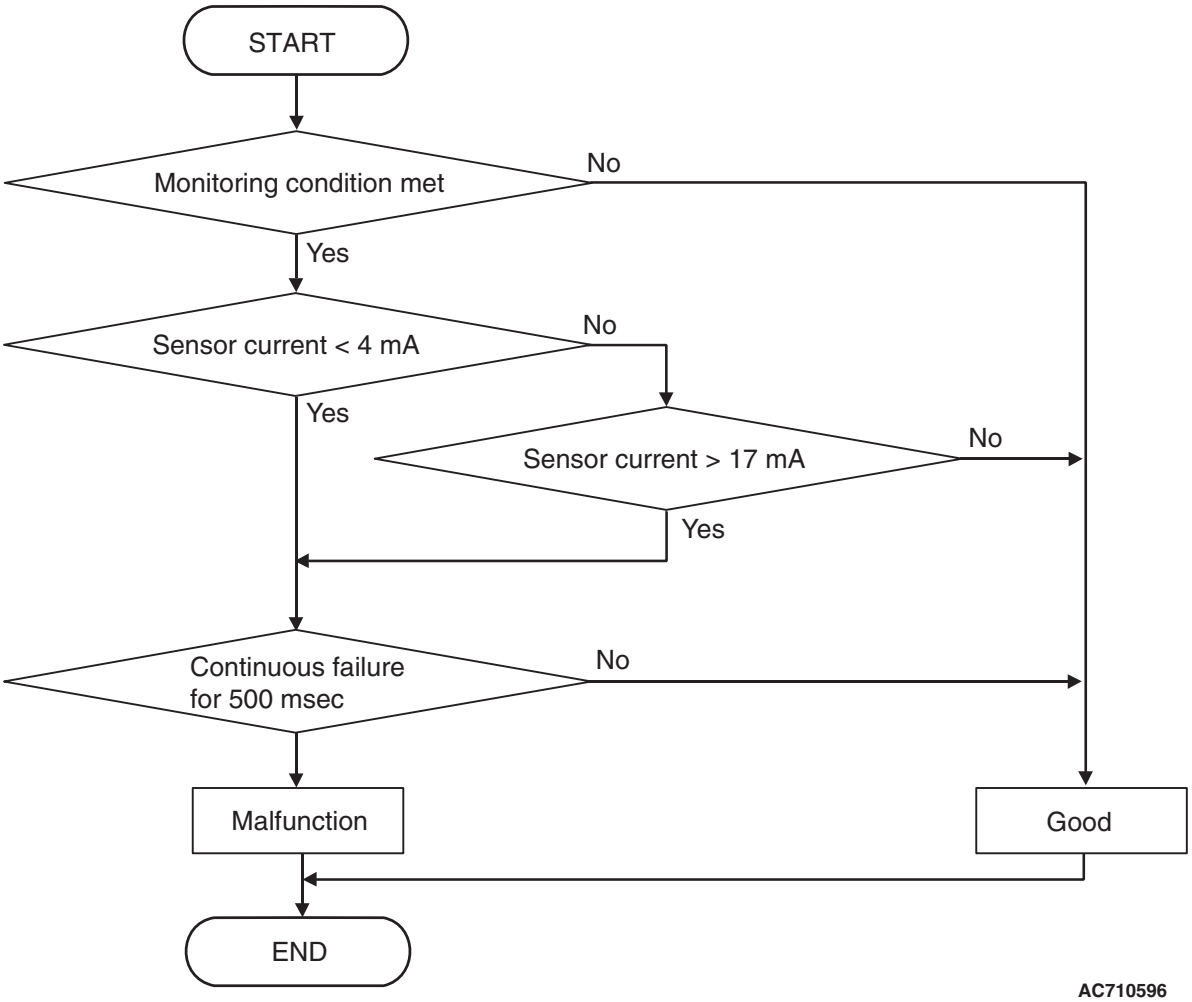
DESCRIPTIONS OF MONITOR METHODS
The output of the input shaft 1 (odd number gear axle) speed sensor is determined to be too low.

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

DTC 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-15.) 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 13A –Troubleshooting P.13A-48.)

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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

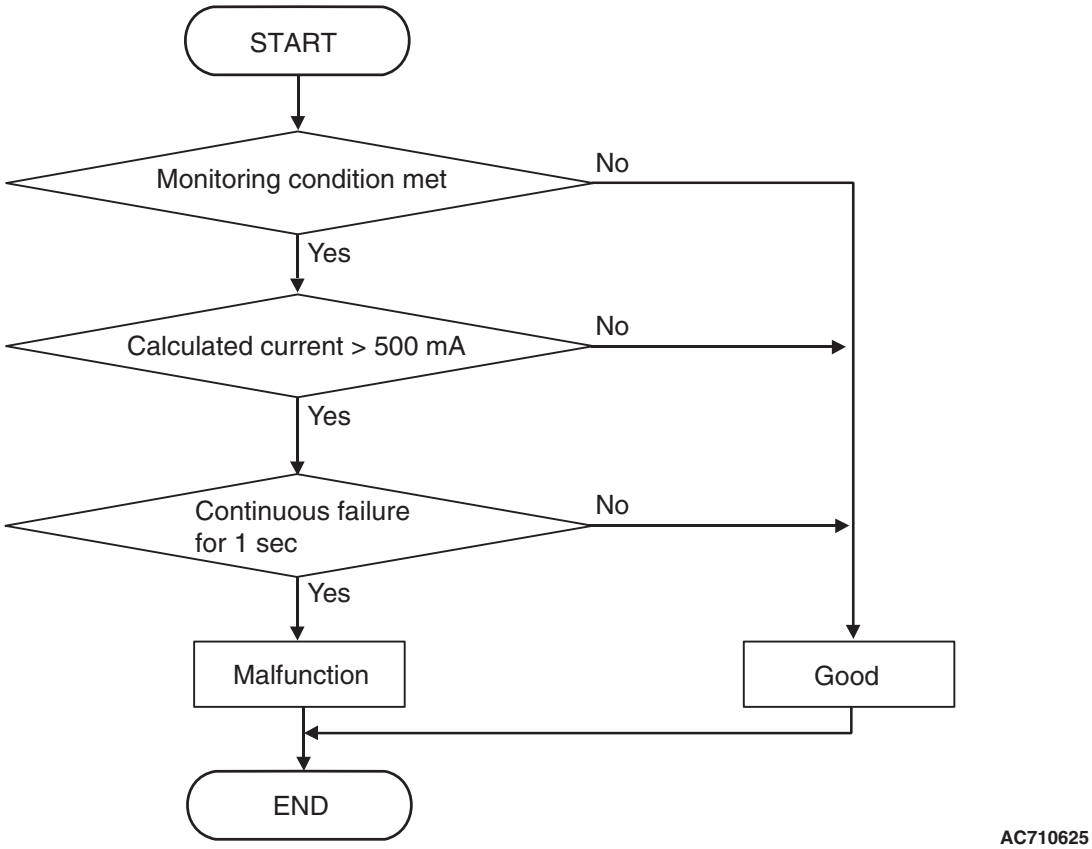
MONITOR EXECUTION
- Continuous

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.

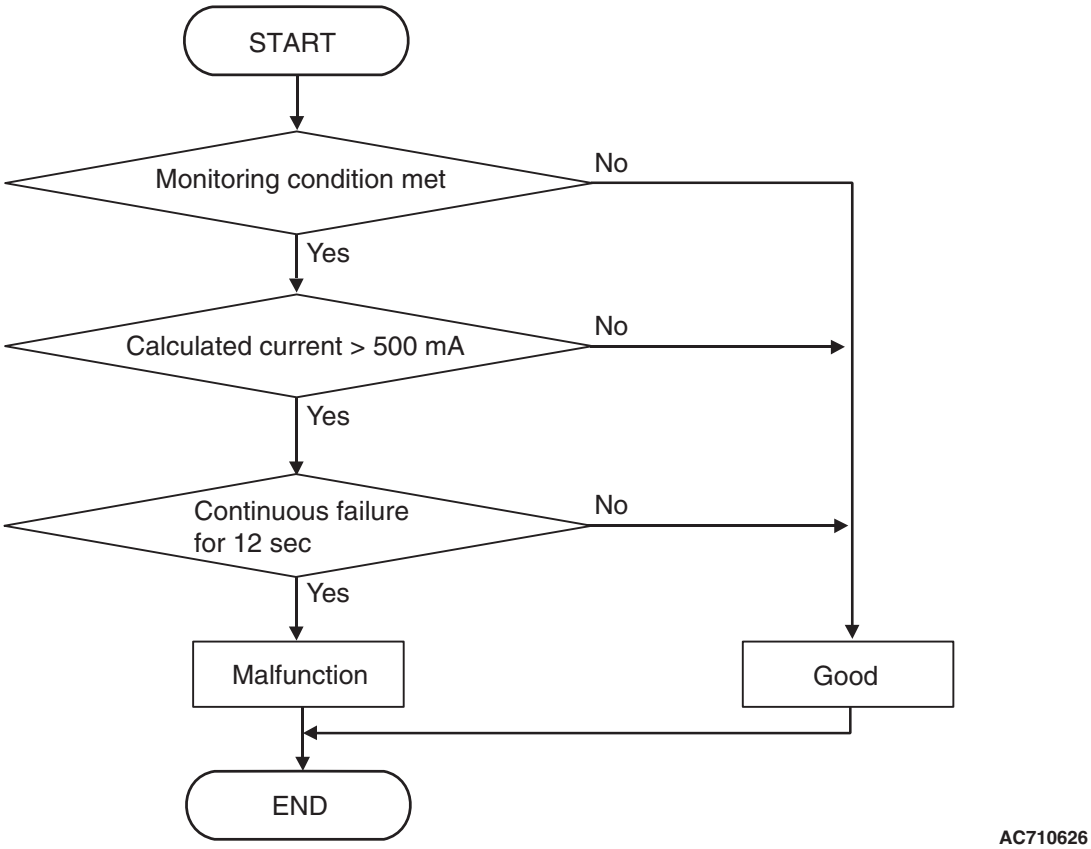
JUDGMENT CRITERIA <Rationality-high>

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

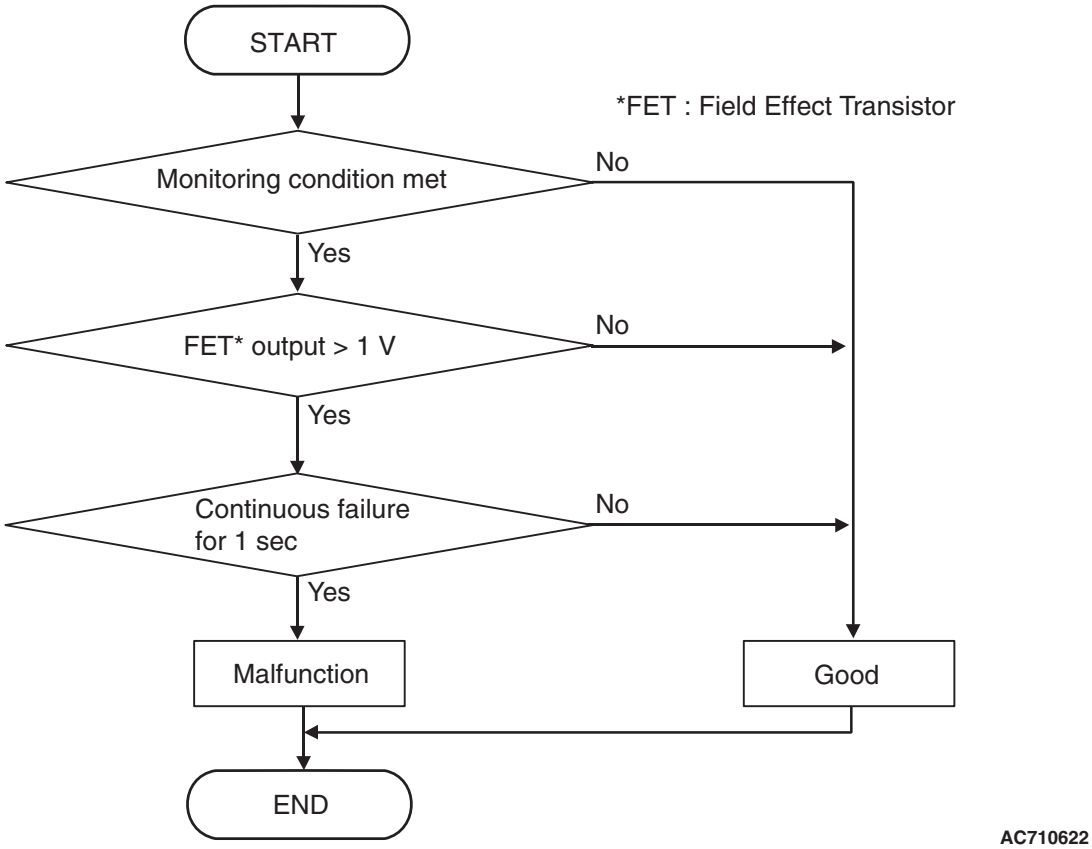
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

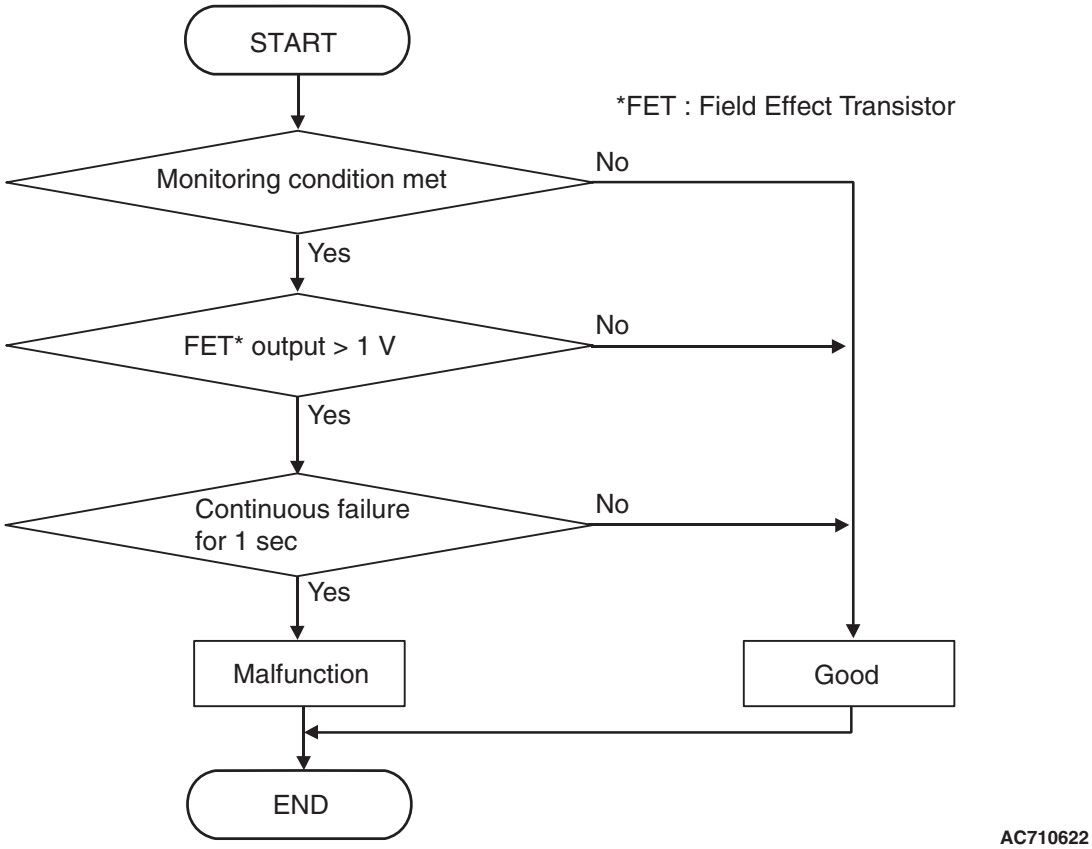
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

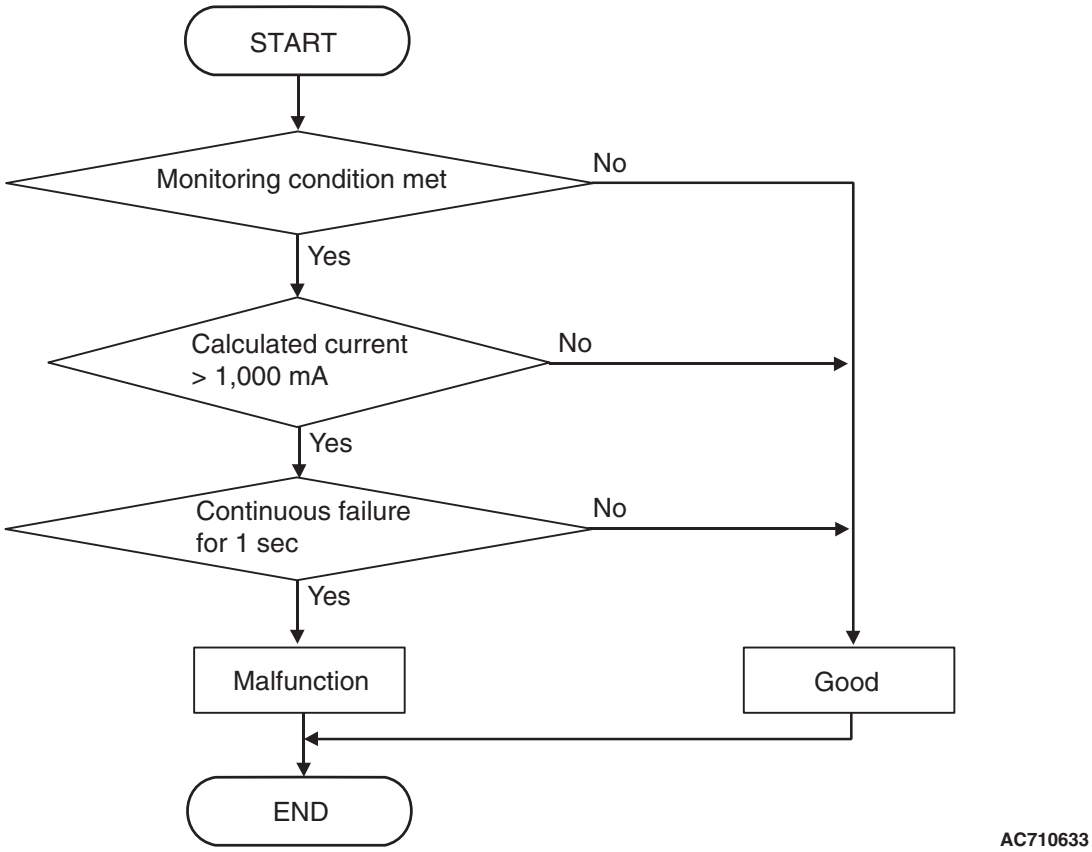
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

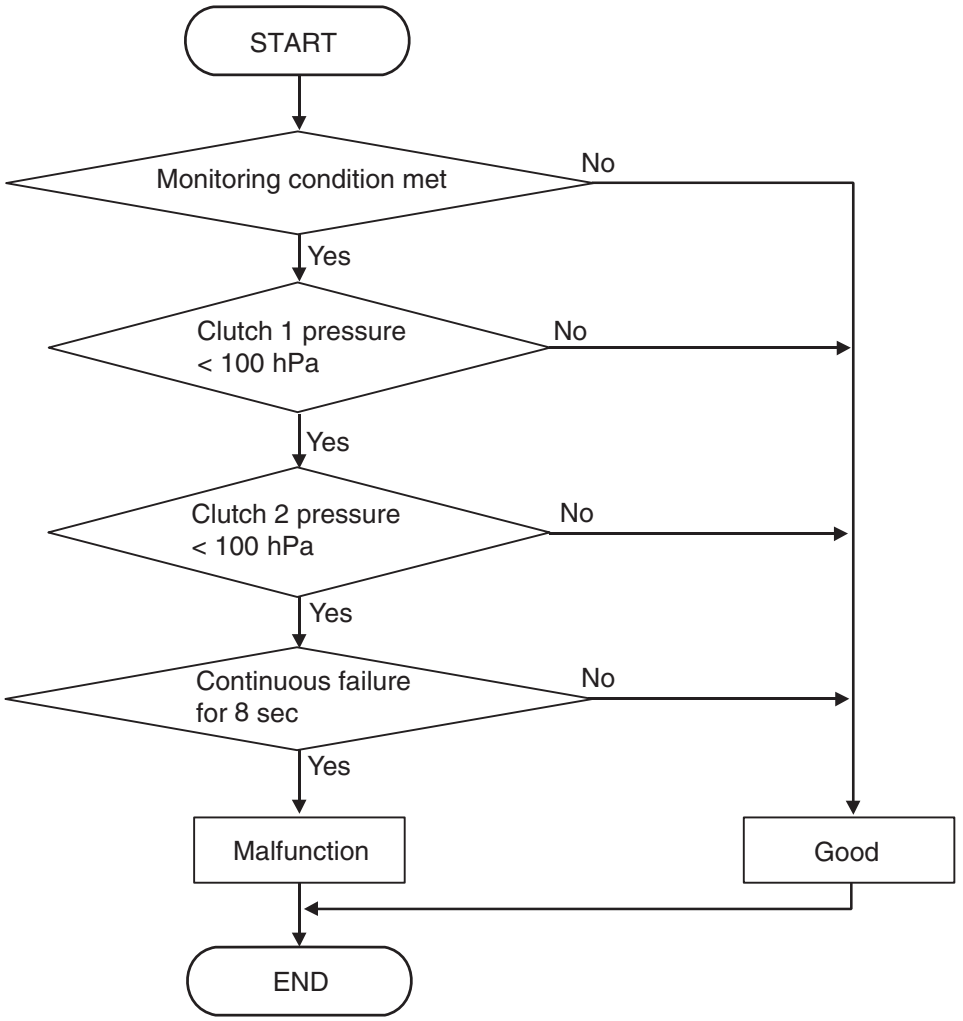
MONITOR EXECUTION
- Continuous

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)



AC710635AC

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-15.) 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-365).)
(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.00-15.)

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-421.)

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-421.) Then, go to Step 6.
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-412.)
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)

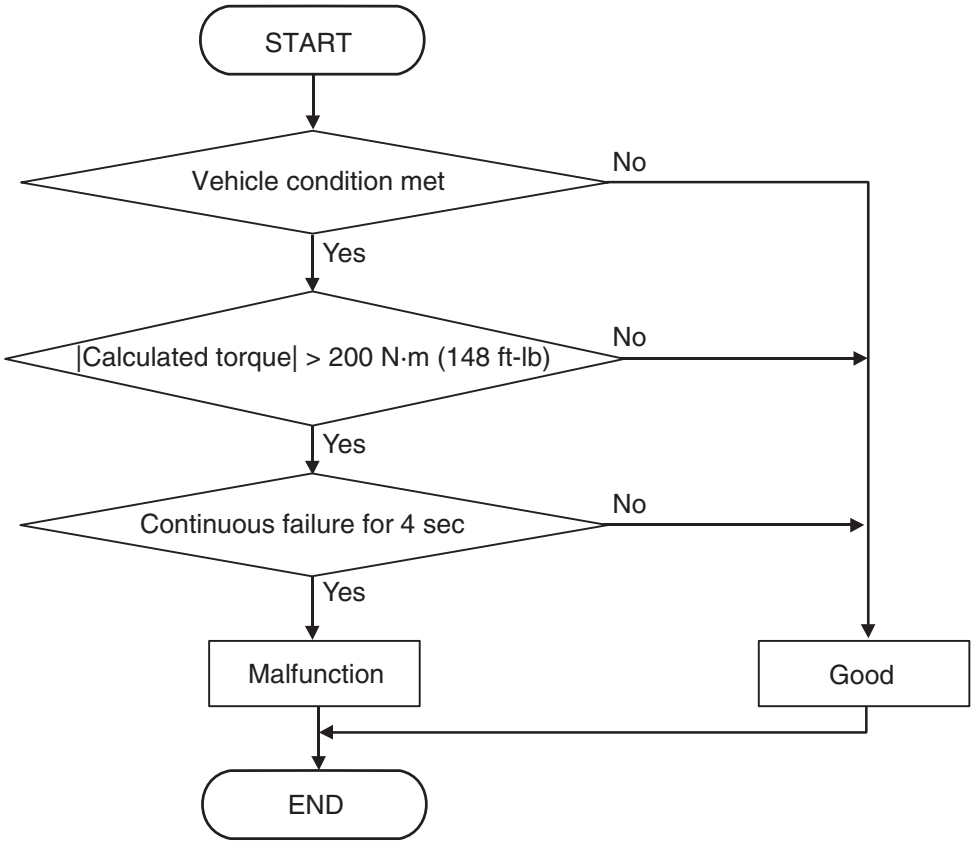
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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)



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-15.) 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 13A –Troubleshooting P.13A-48.)

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-6.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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

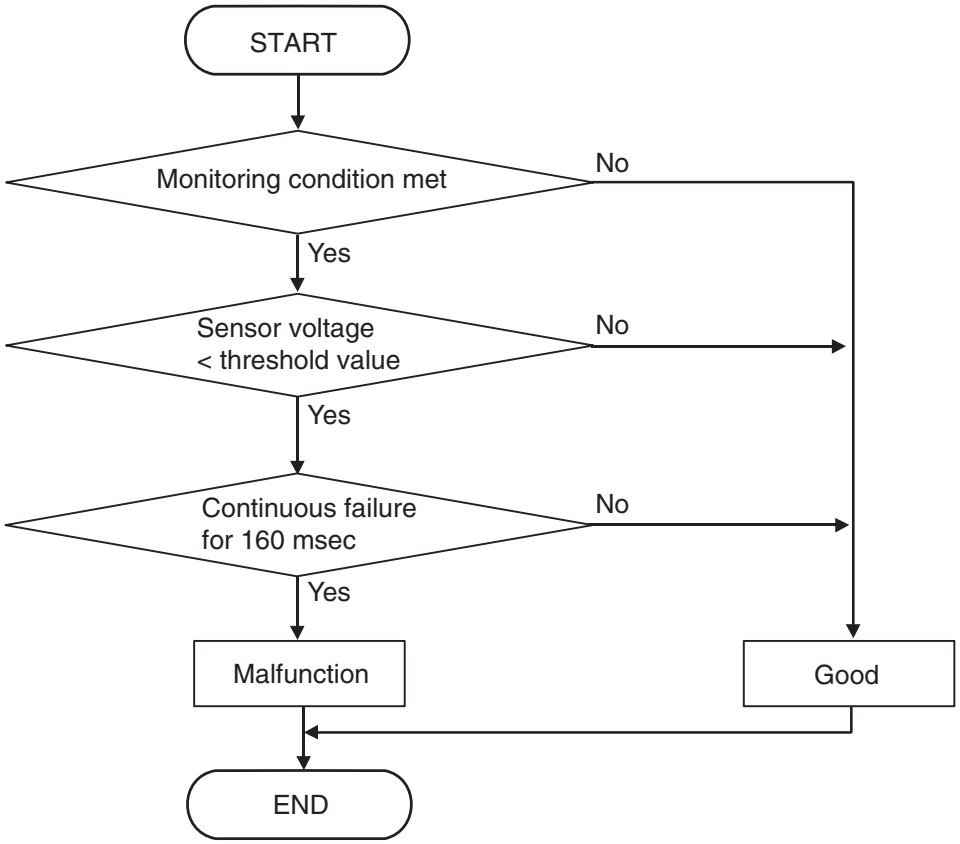
MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0841: Clutch 1 pressure sensor system (Poor performance)

TSB Revision

- 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)



AC710620

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-15.) 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. P0842 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

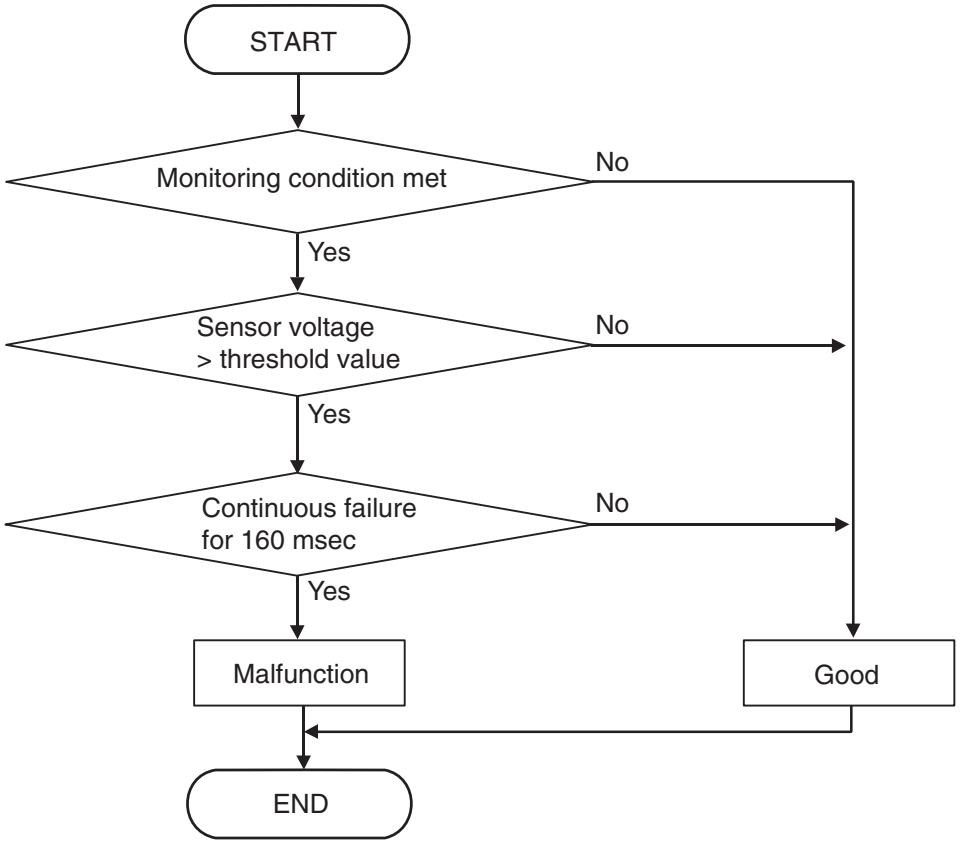
- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- 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)

TSB Revision

- 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)



AC710621

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-15.) 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 diagnostic trouble code is reset.

Q: Is DTC No. P0843 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

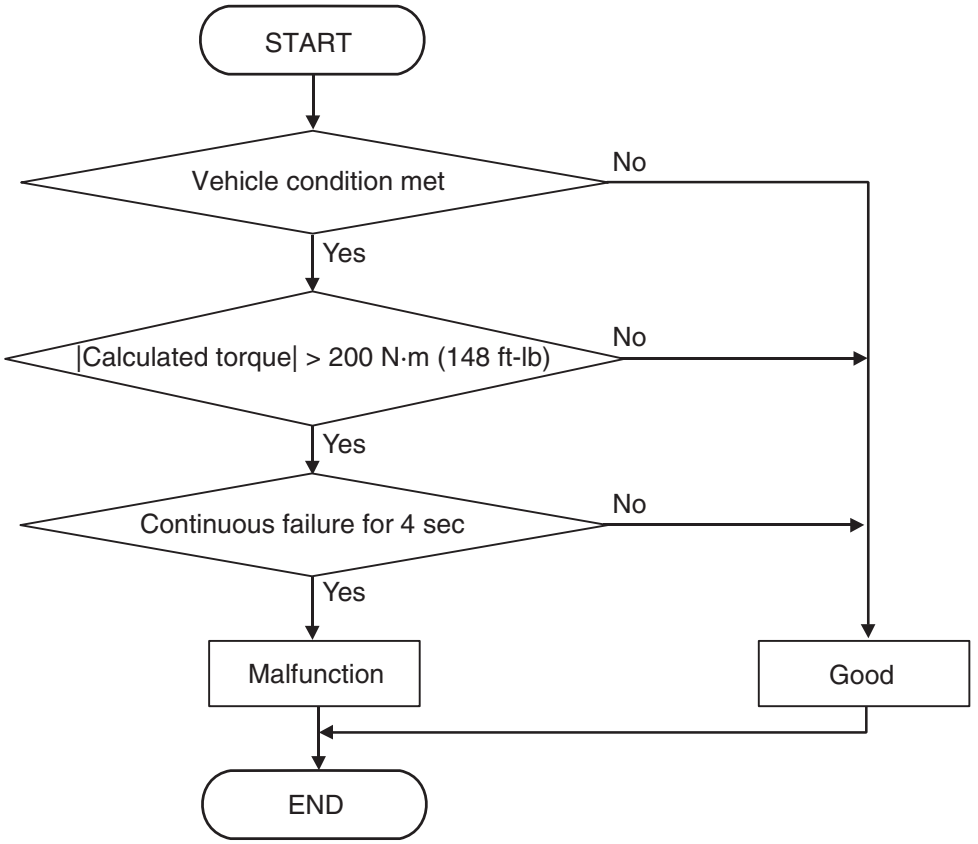
MONITOR EXECUTION
- Continuous

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)



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-15.) 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 13A –Troubleshooting P.13A-48.)

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-6.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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

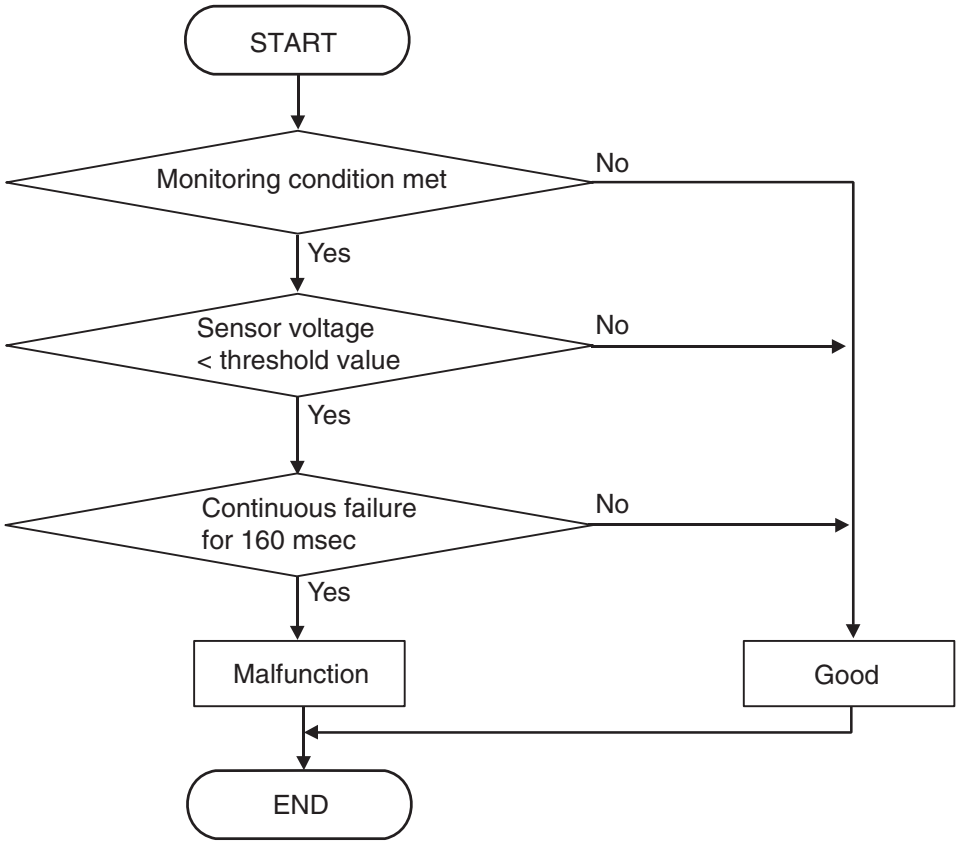
MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0846: Clutch 2 pressure sensor system (Poor performance)

TSB Revision

- 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

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-15.) 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. P0847 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

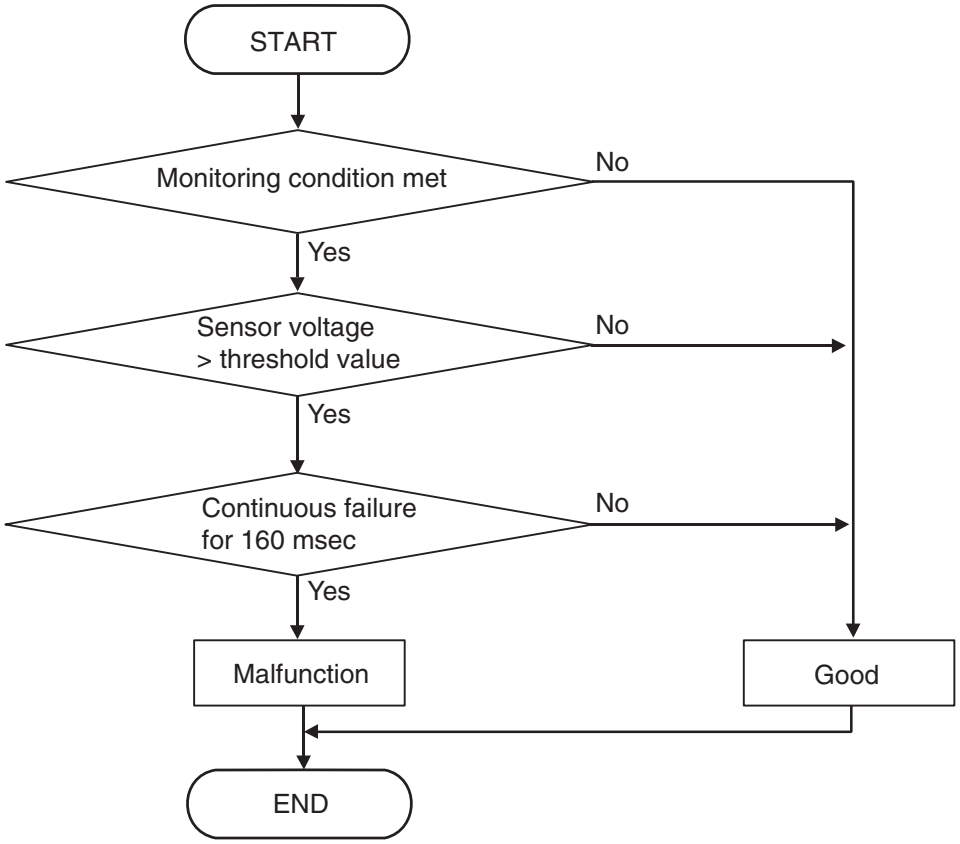
- P0846: Clutch 2 pressure sensor system (Poor performance)
- P0847: Clutch 2 pressure sensor system (Output low range out)
- P0753: Shift select solenoid 1 system (Open circuit)
- P0973: Shift select solenoid 1 system (Short to ground)
- P0974: Shift select solenoid 1 system (Short to power supply)
- 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)

TSB Revision

- 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)



AC710621

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-15.) 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. P0848 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

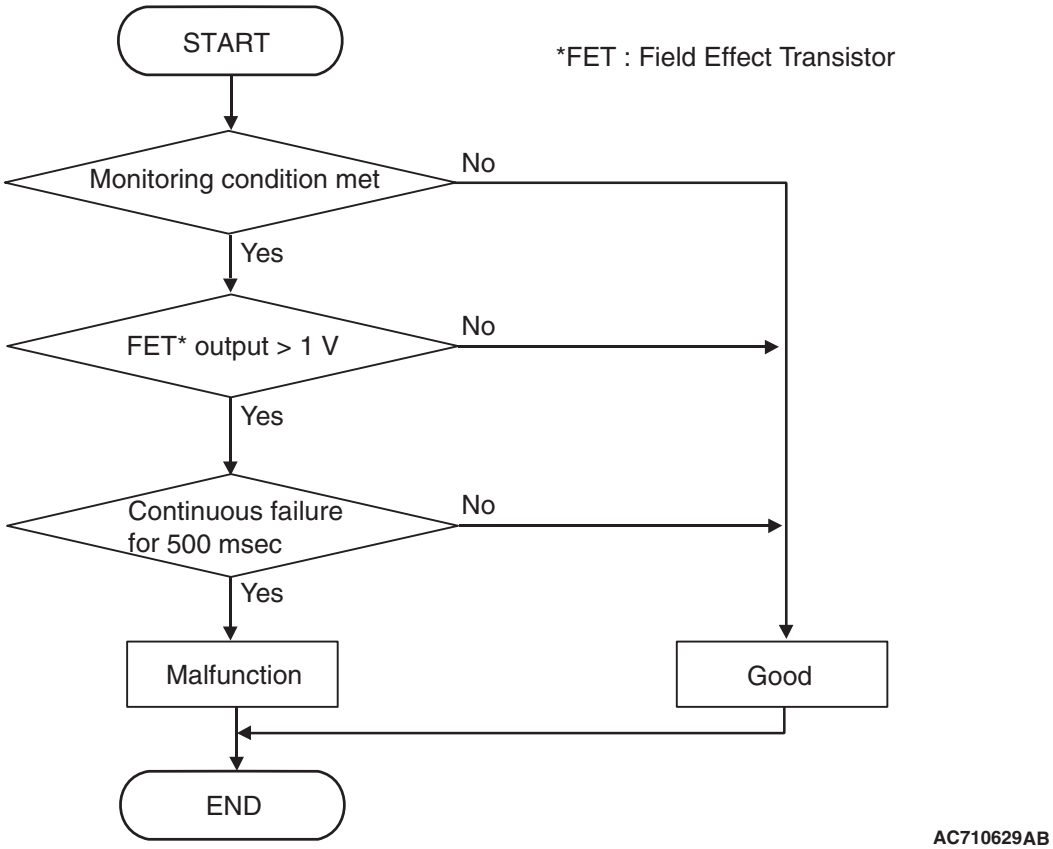
MONITOR EXECUTION
- Continuous

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

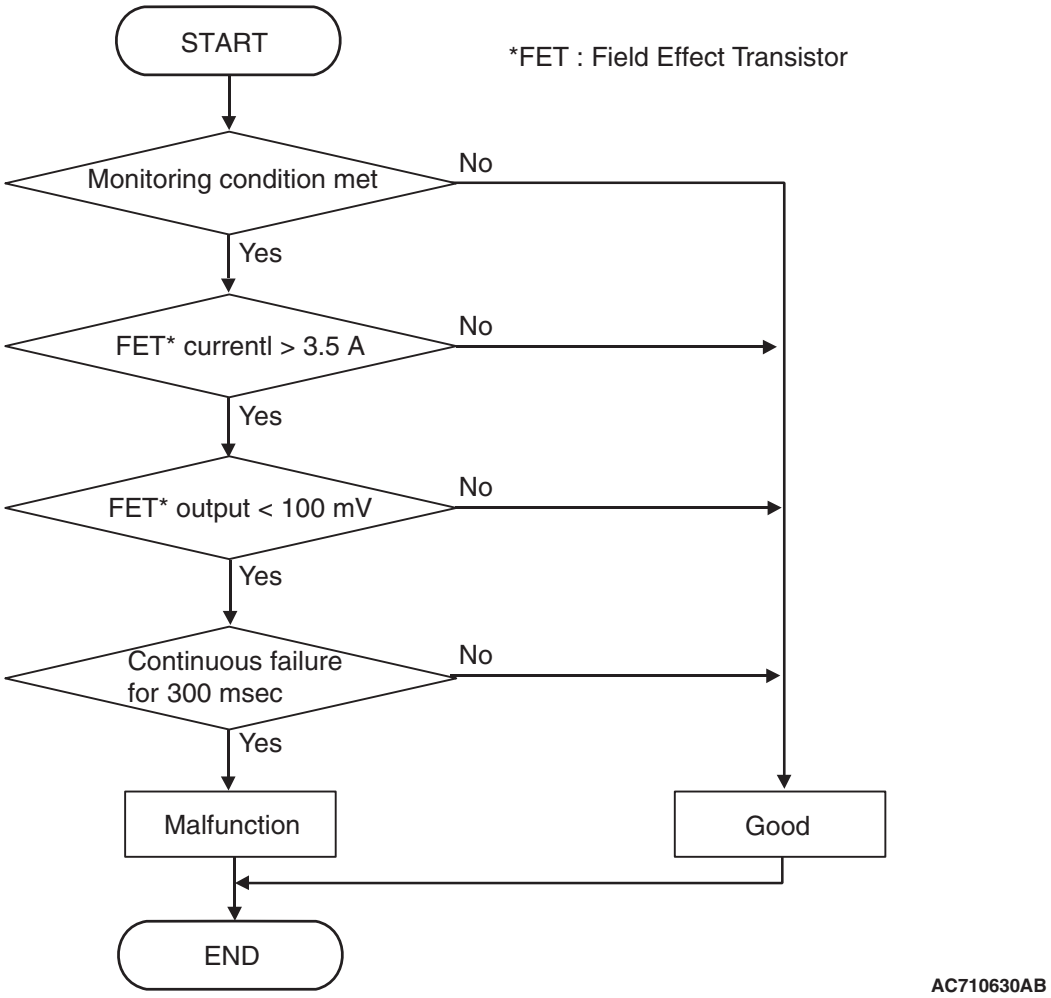
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

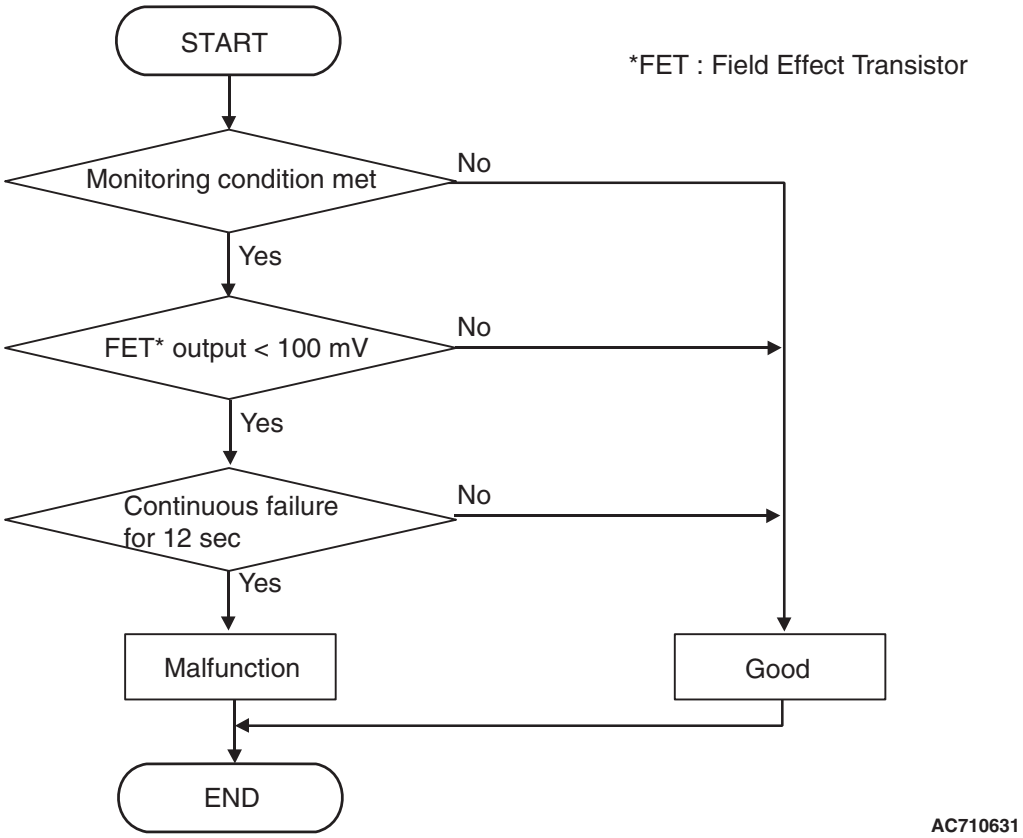
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

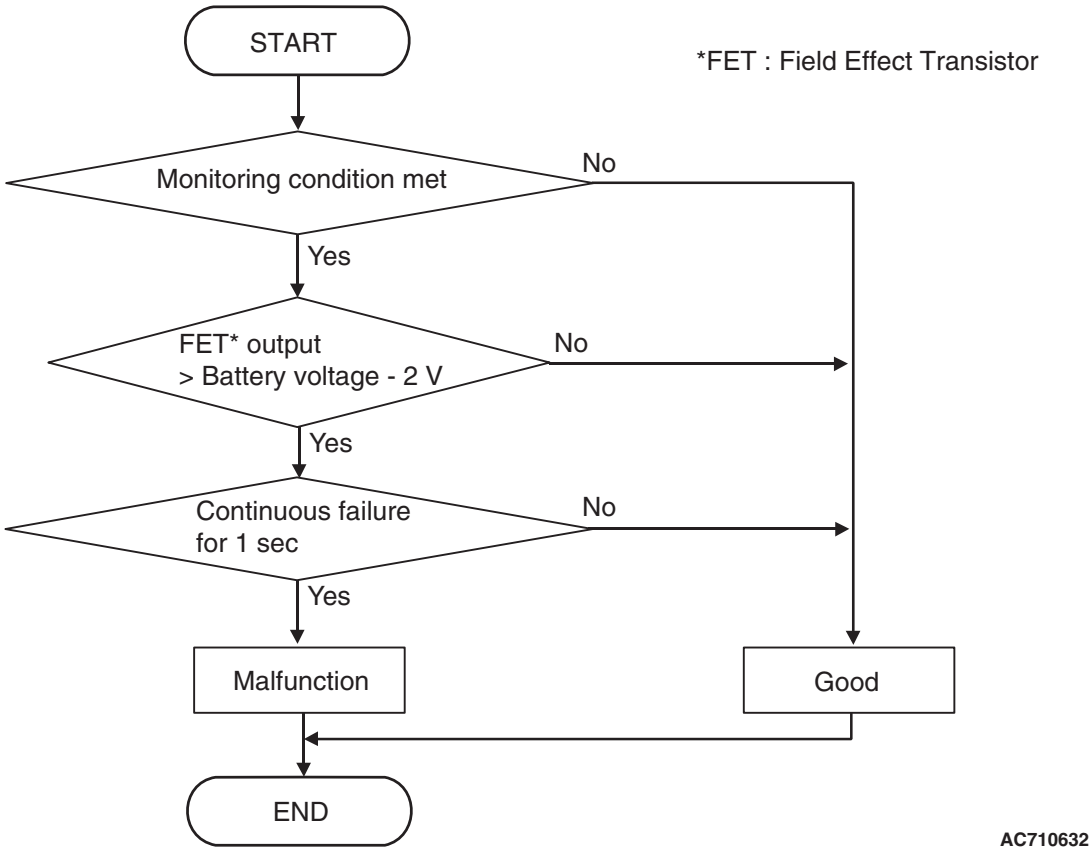
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

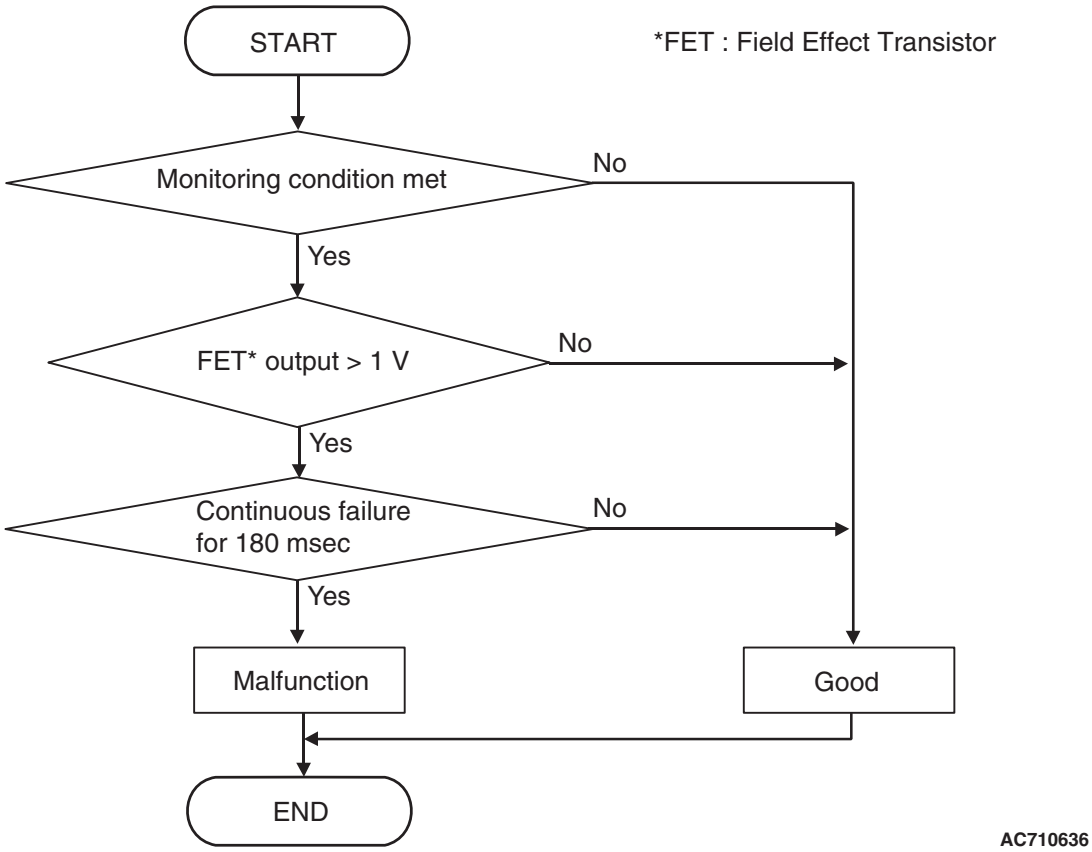
MONITOR EXECUTION
- Continuous

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

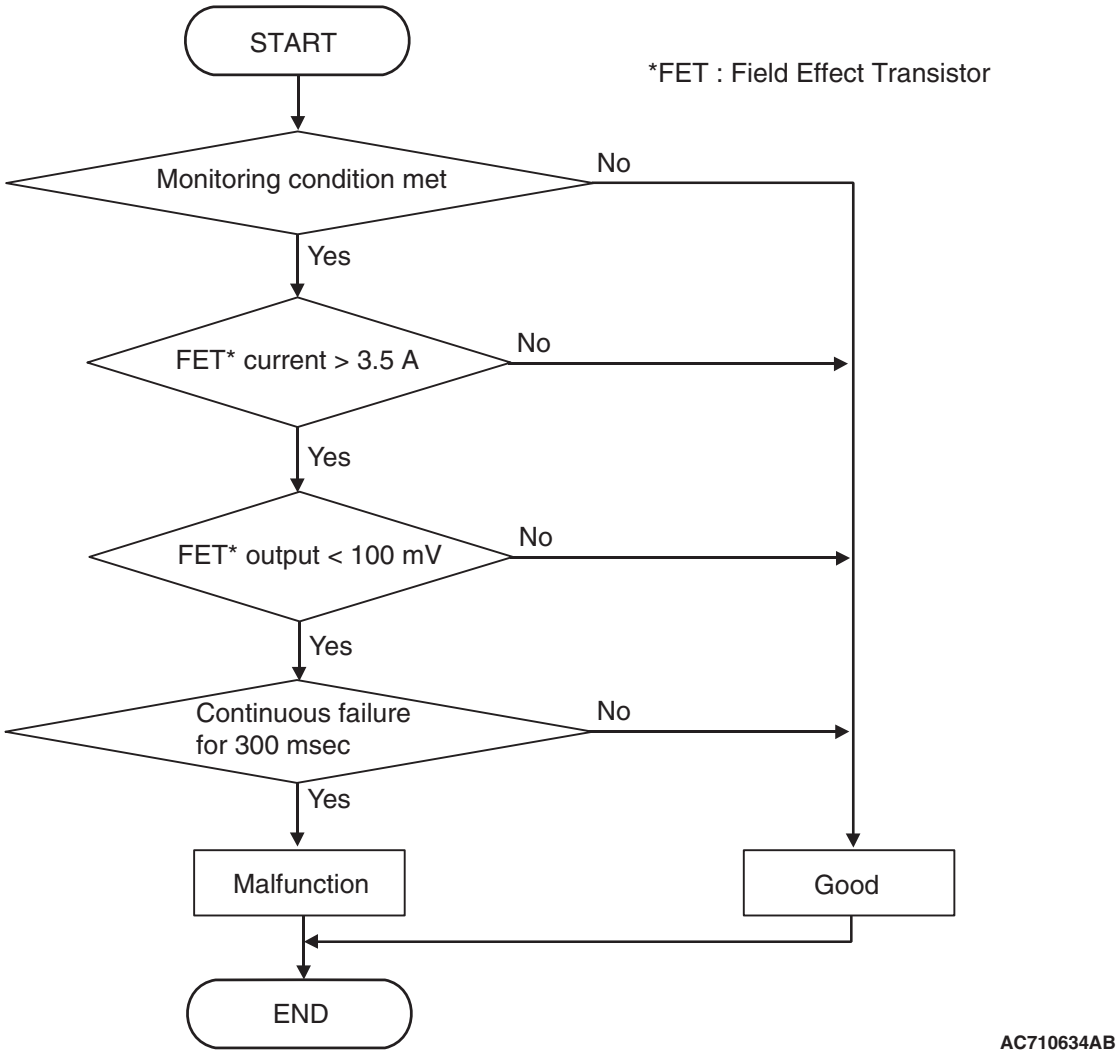
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

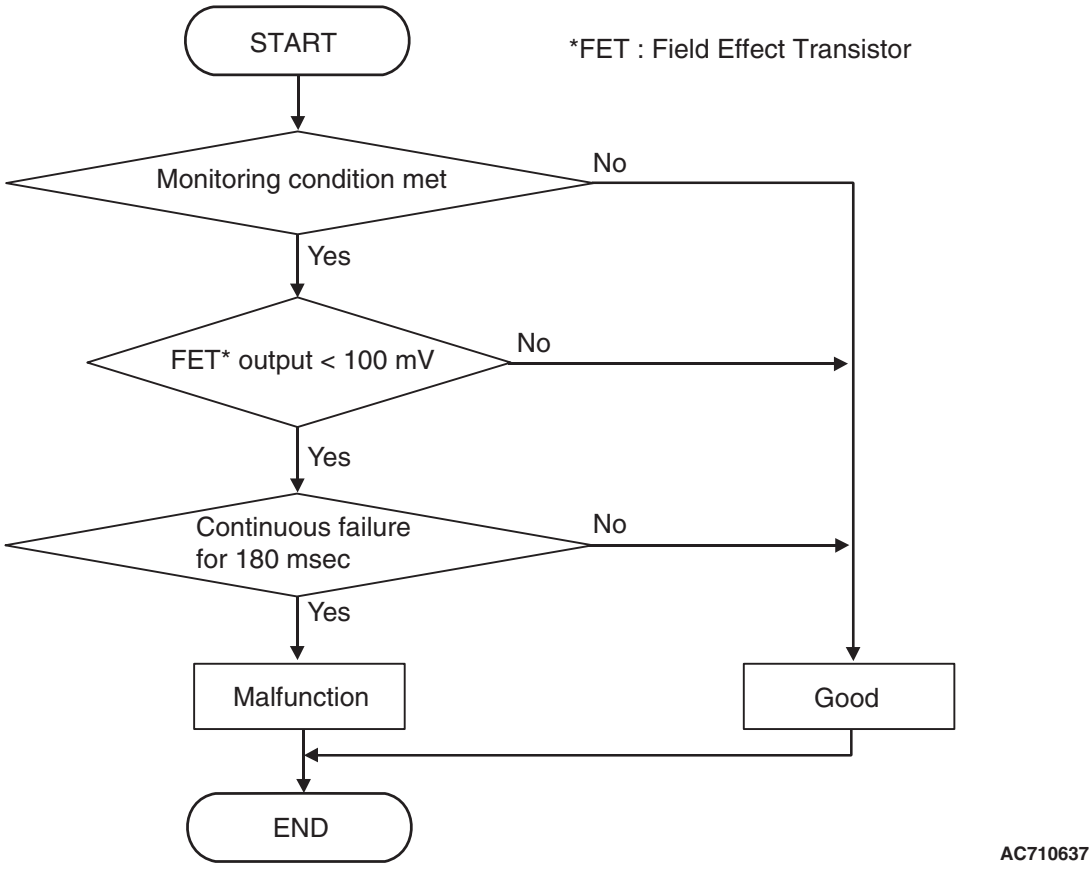
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

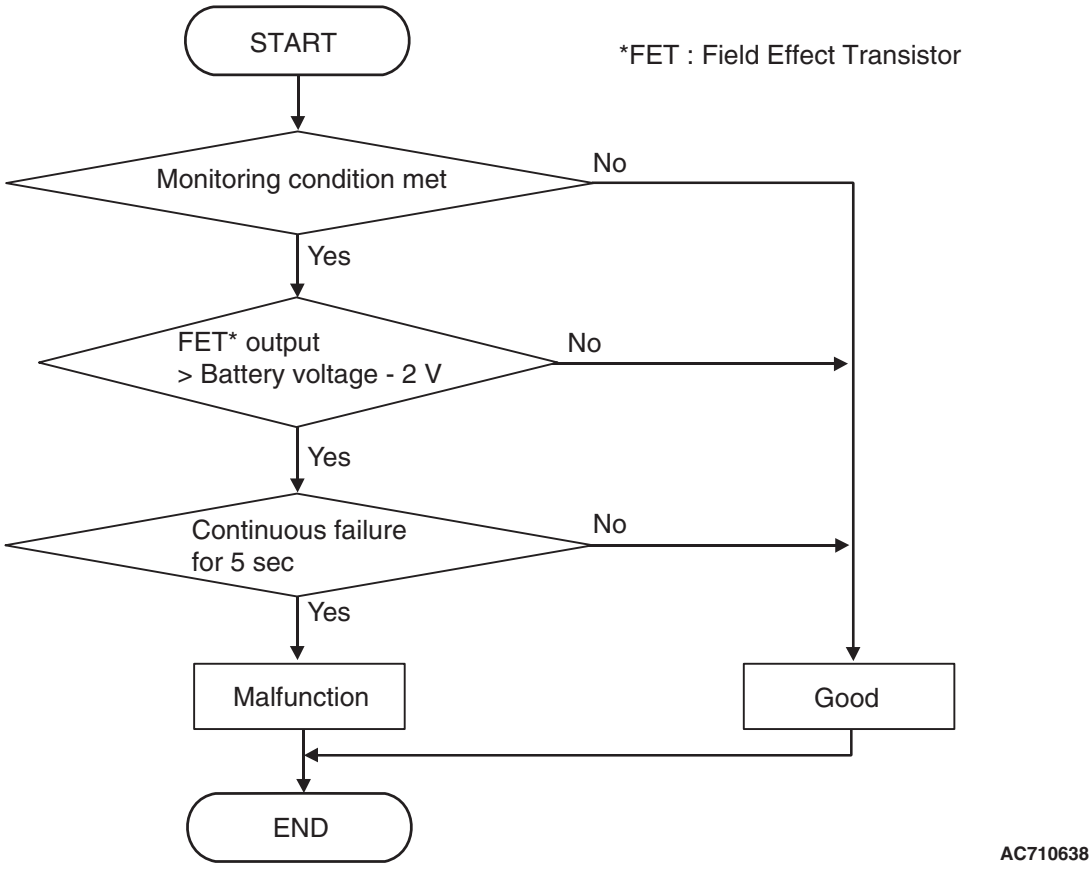
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

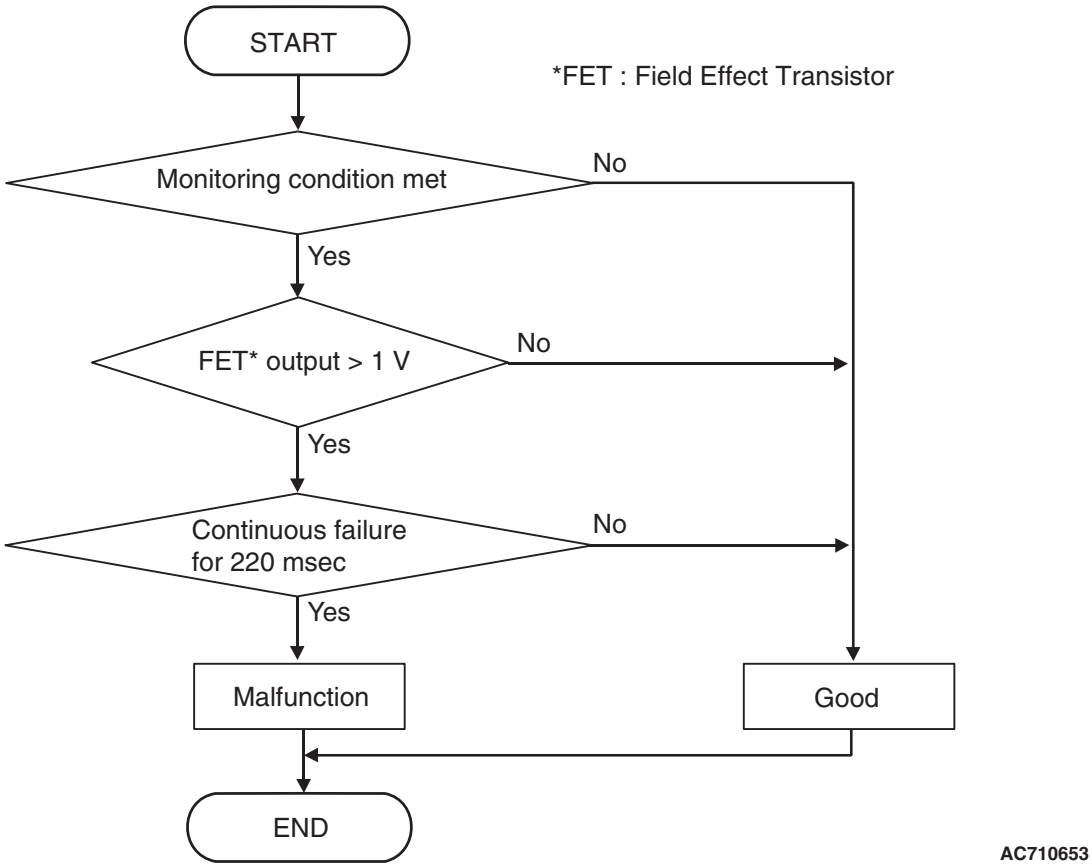
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

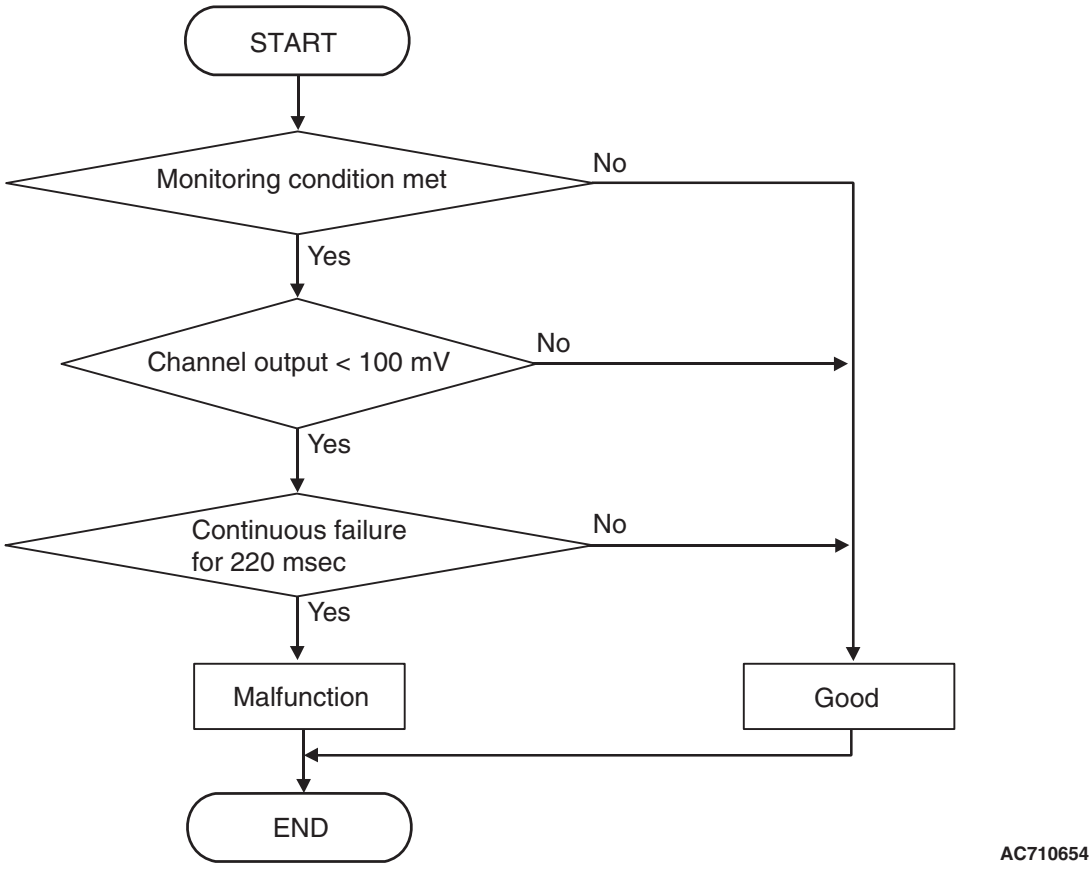
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

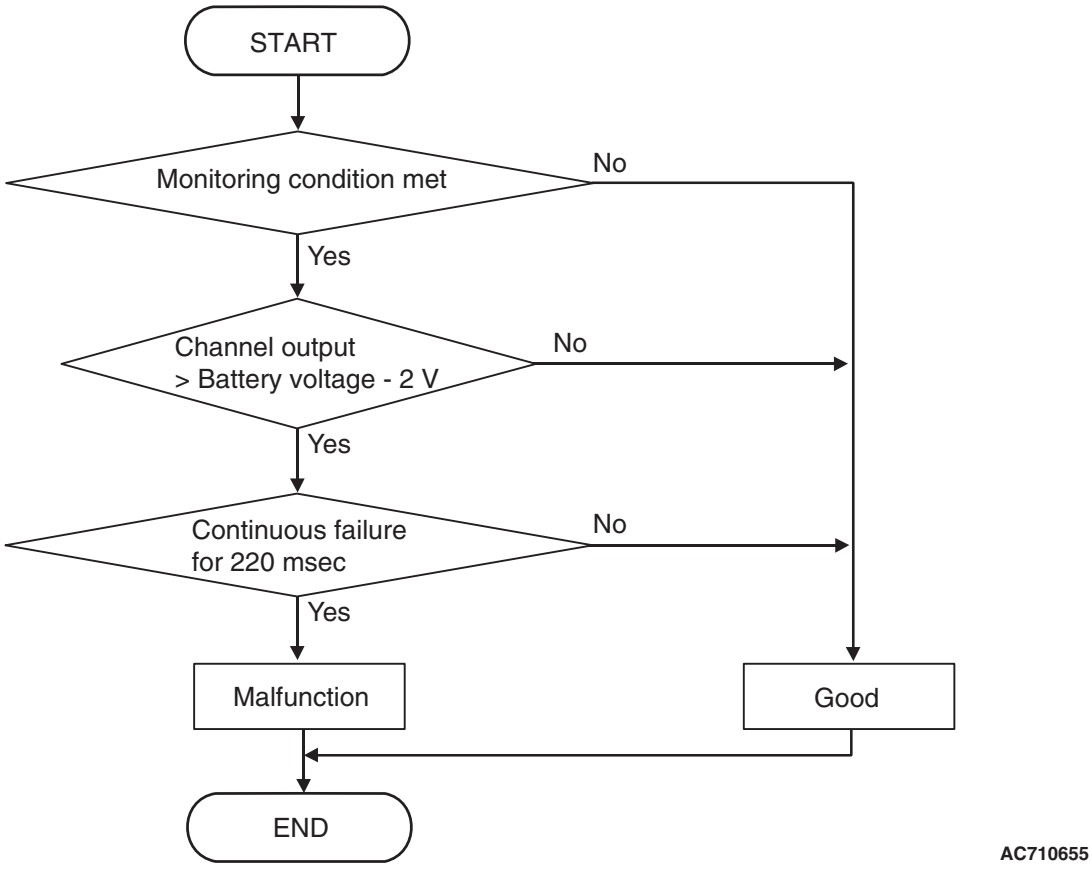
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

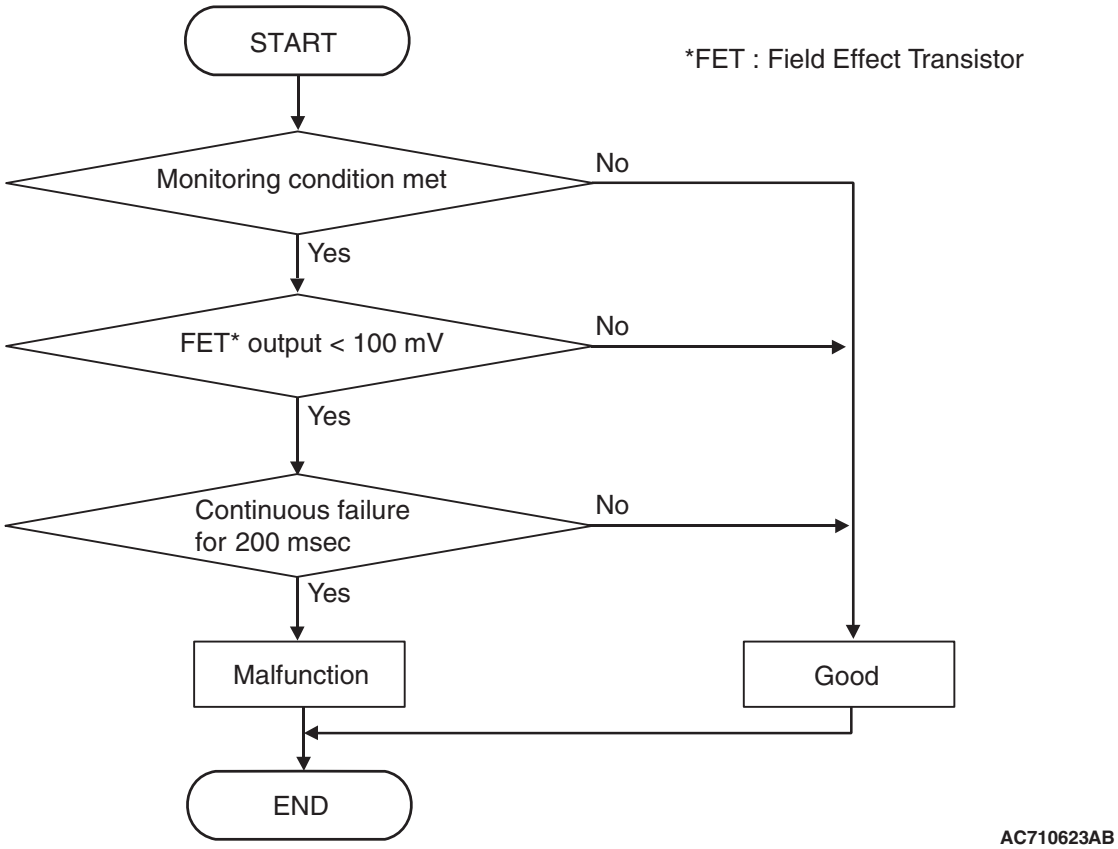
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

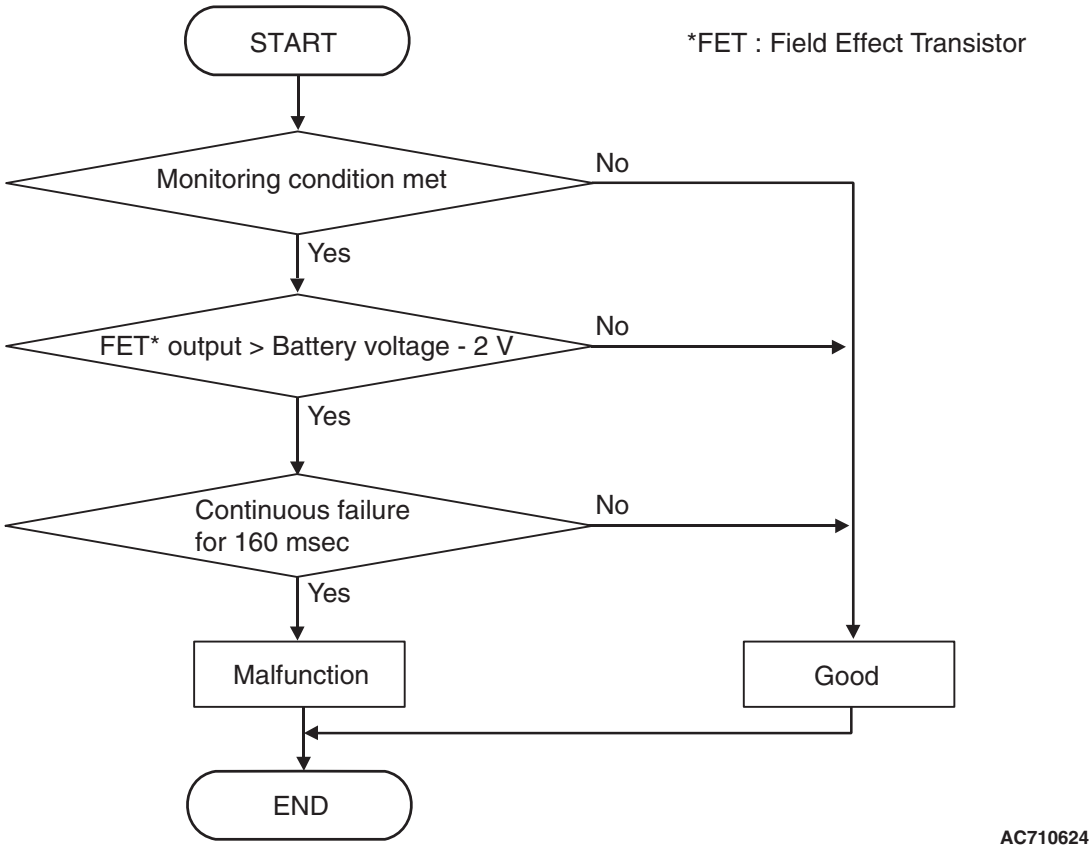
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

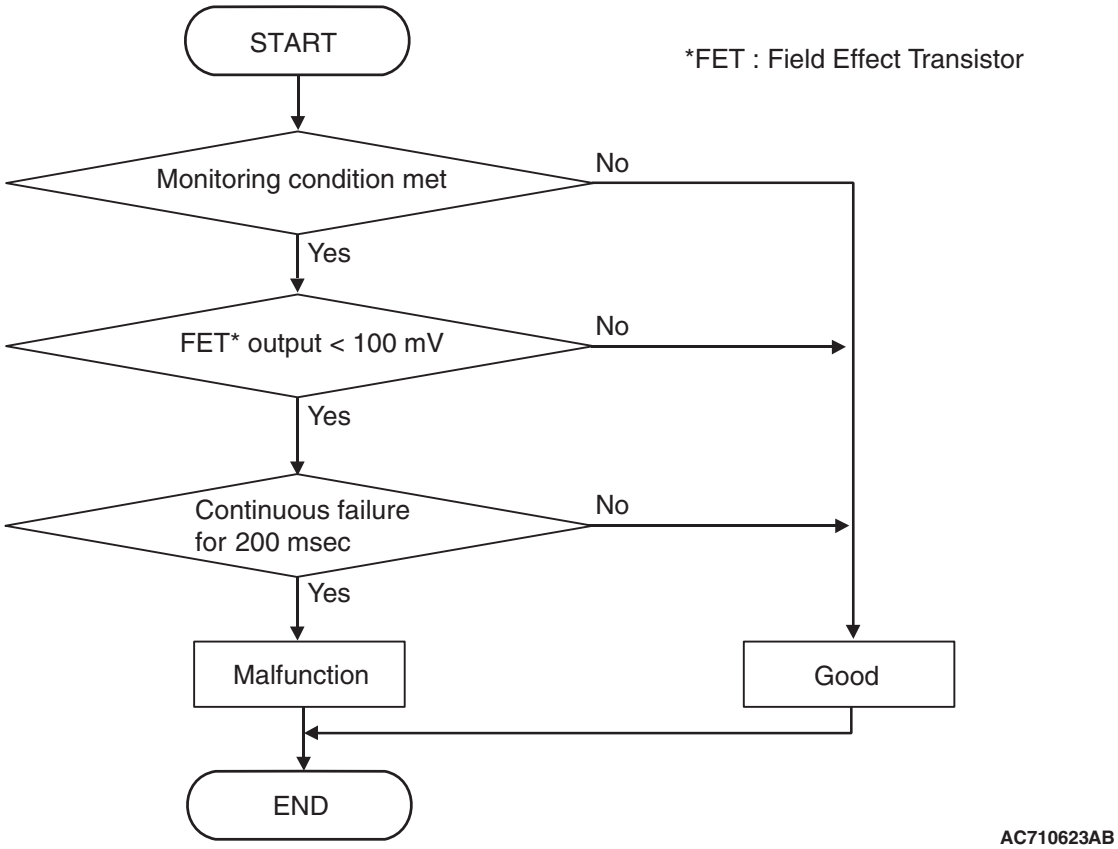
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

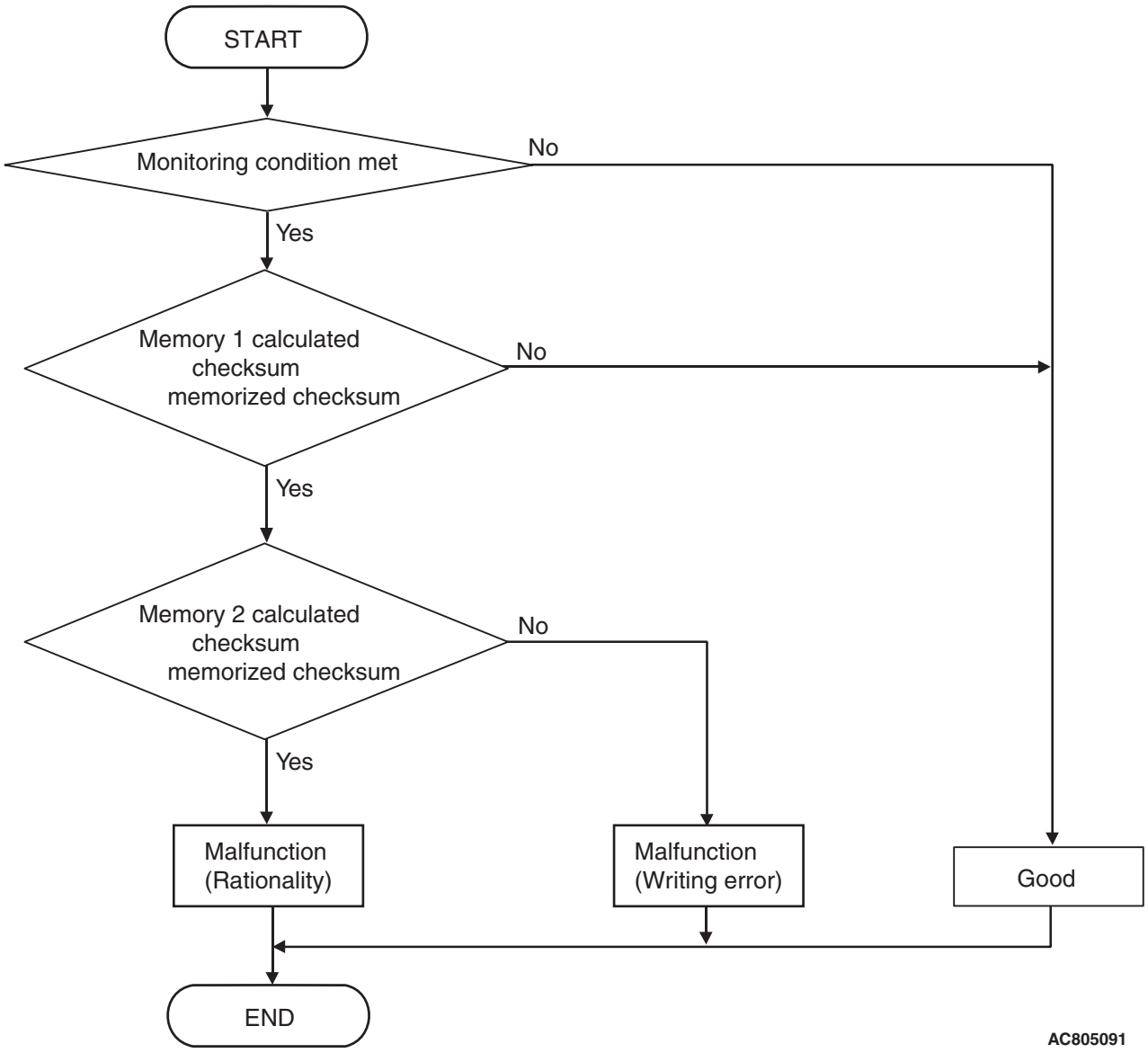
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.)

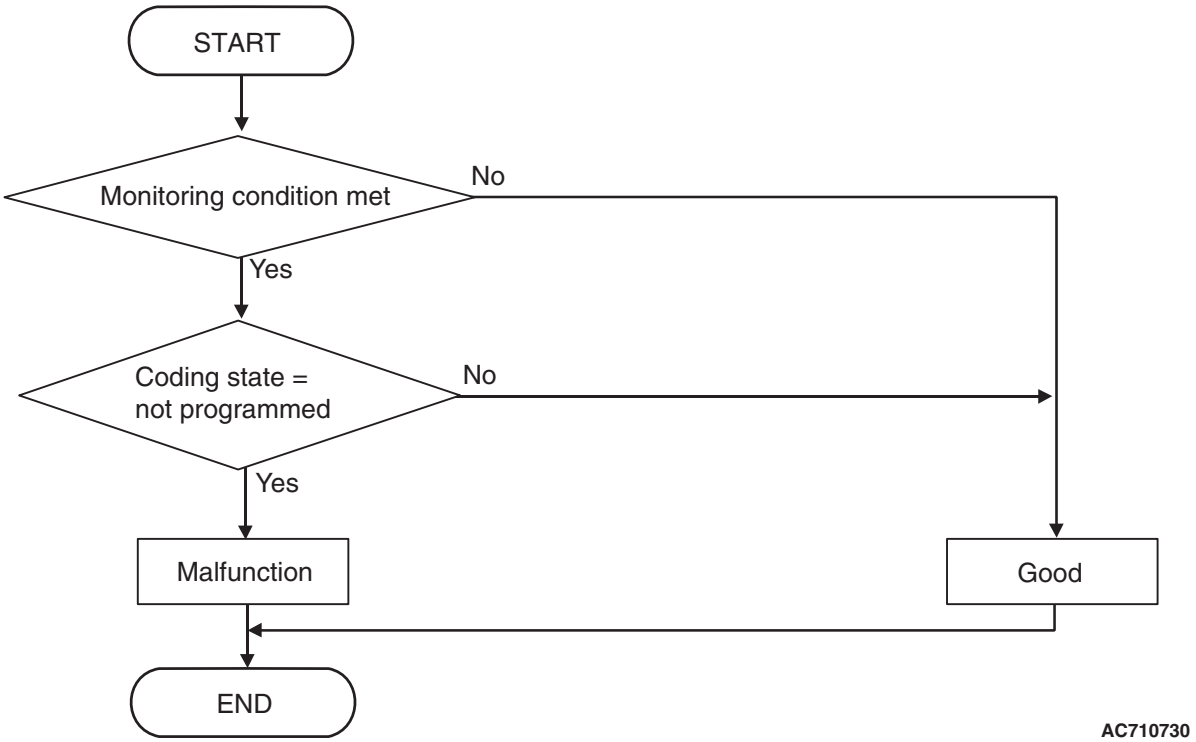
MONITOR EXECUTION
- Continuous

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-15.) 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.

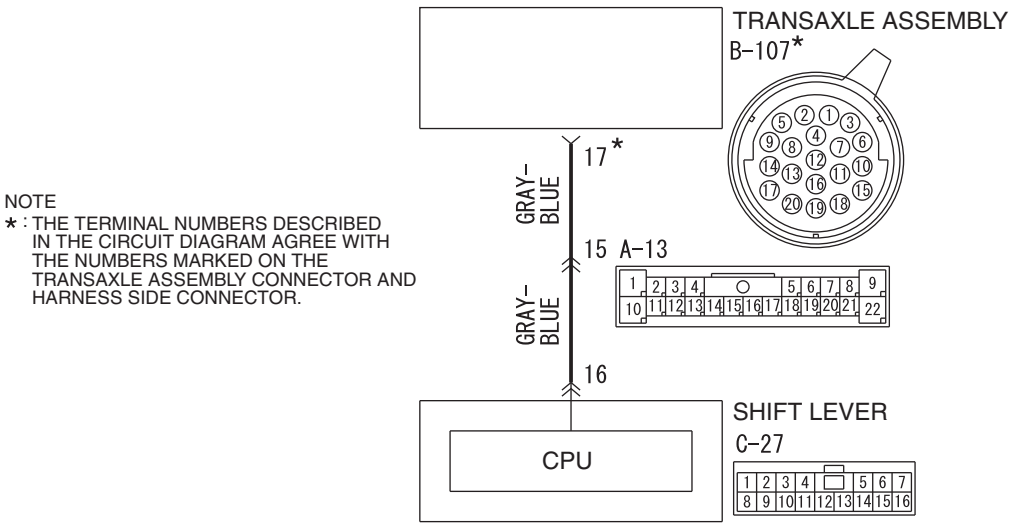
Q: Is DTC No. P1676 set?

YES : Perform coding (Refer to the "Scan tool operation manual" and perform coding.) or Replace the mechatronic assembly (Refer to P.22C-421).

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

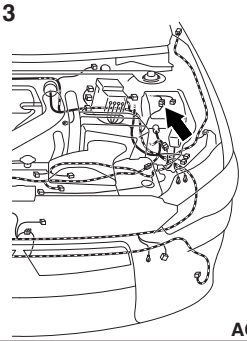
DTC P1802: Shift Lever System (LIN communication malfunction)

LIN communication system circuit



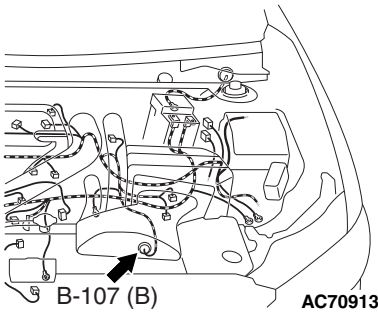
W8H22M013A

Connector: A-13



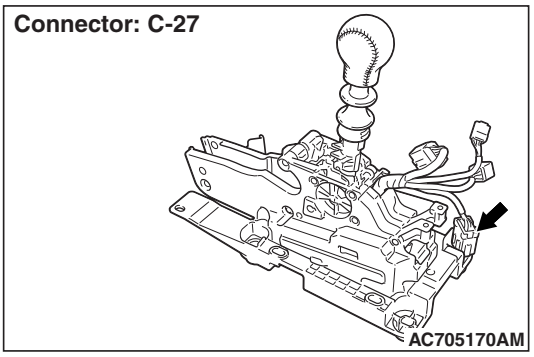
AC708949AO

Connector: B-107



AC709137AD

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-15.) 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-370.)

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.
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-404.)
(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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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

SHIFT LEVER SYSTEM CIRCUIT
Refer to P.22C-94.

⚠ 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

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-15.) 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-370.)

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-404.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

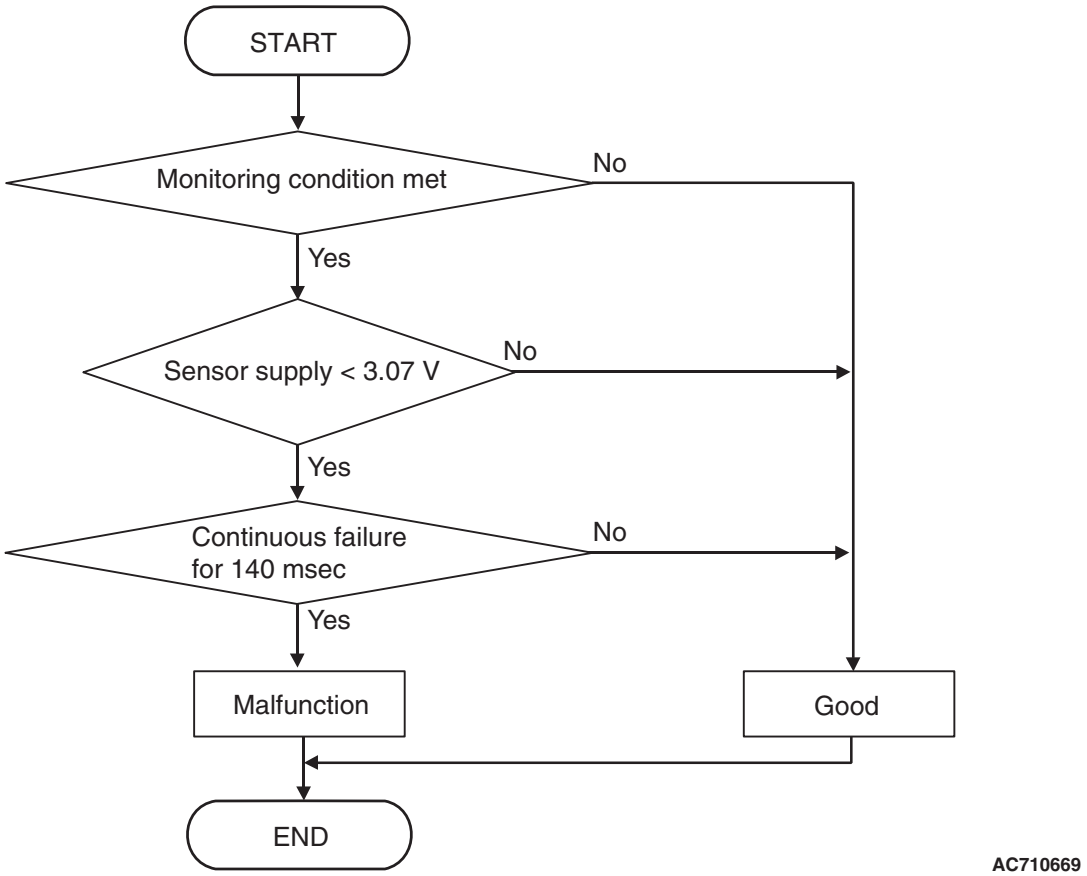
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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

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-15.) 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-341.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-341.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

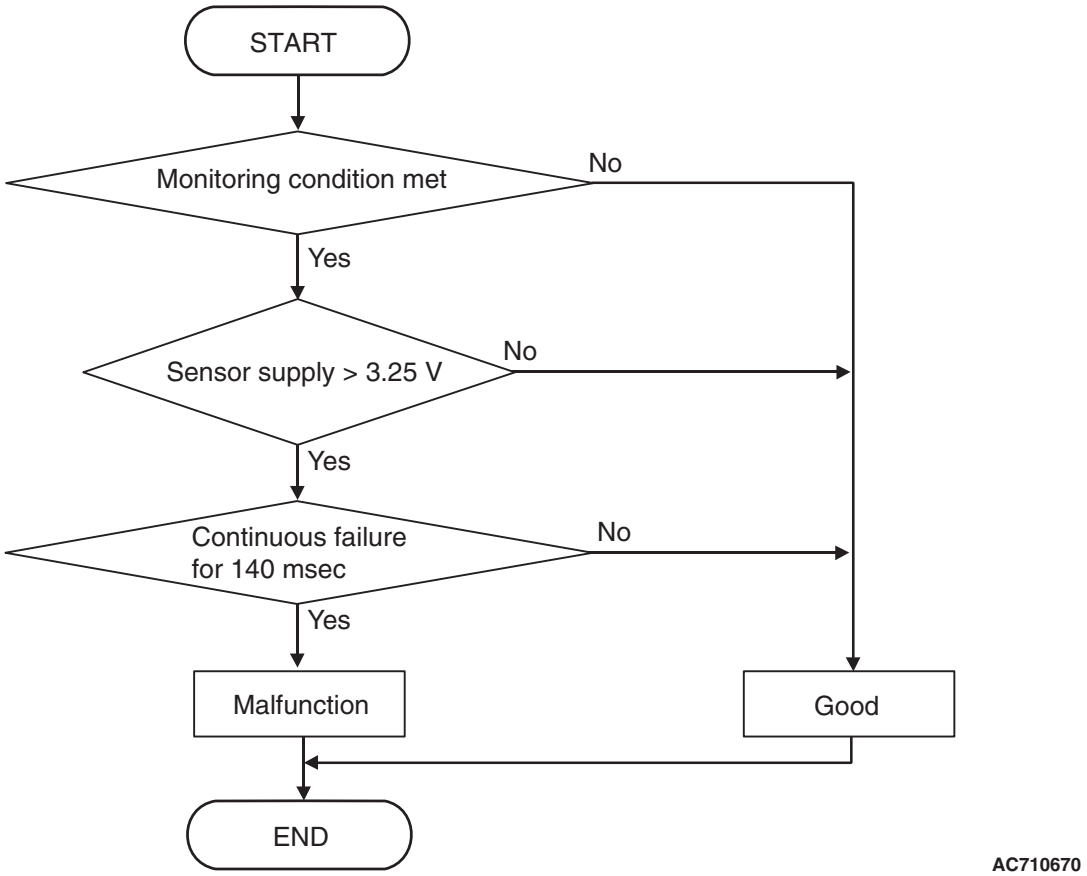
MONITOR EXECUTION
- Continuous

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-15.) 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-341.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-341.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

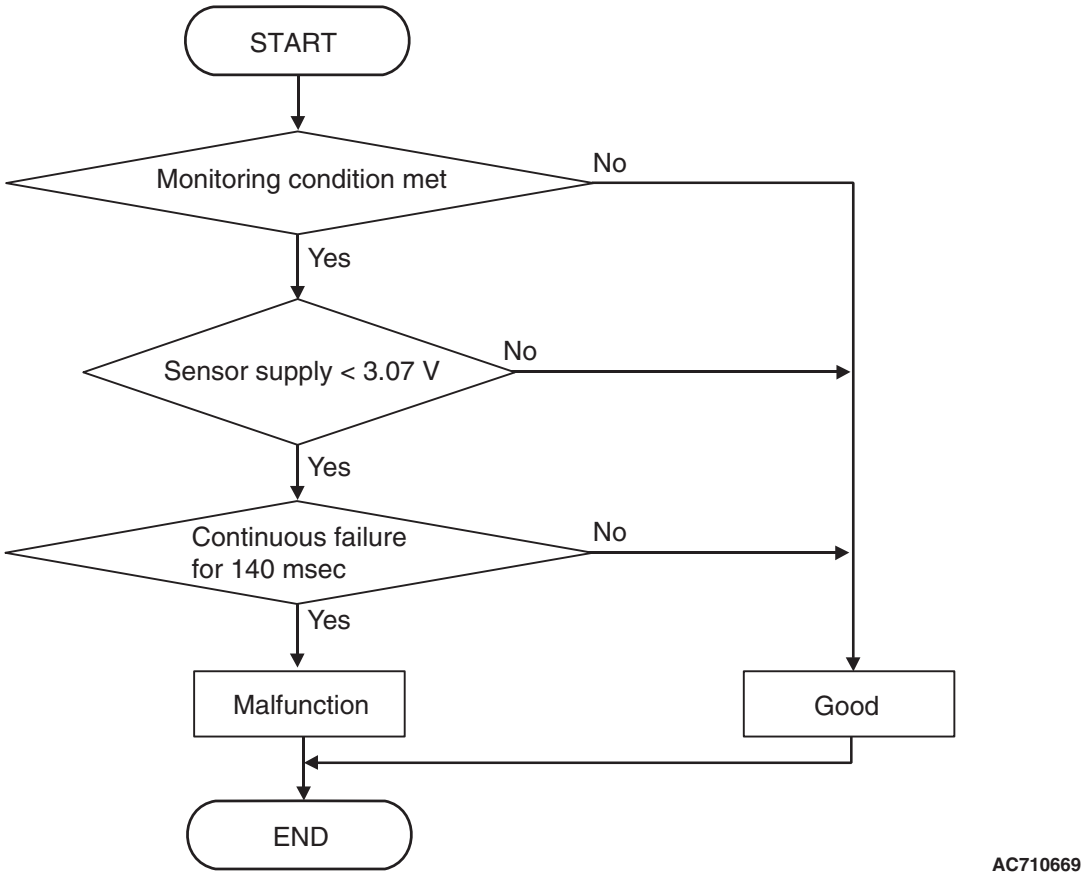
MONITOR EXECUTION
- Continuous

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-15.) 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-341.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-341.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

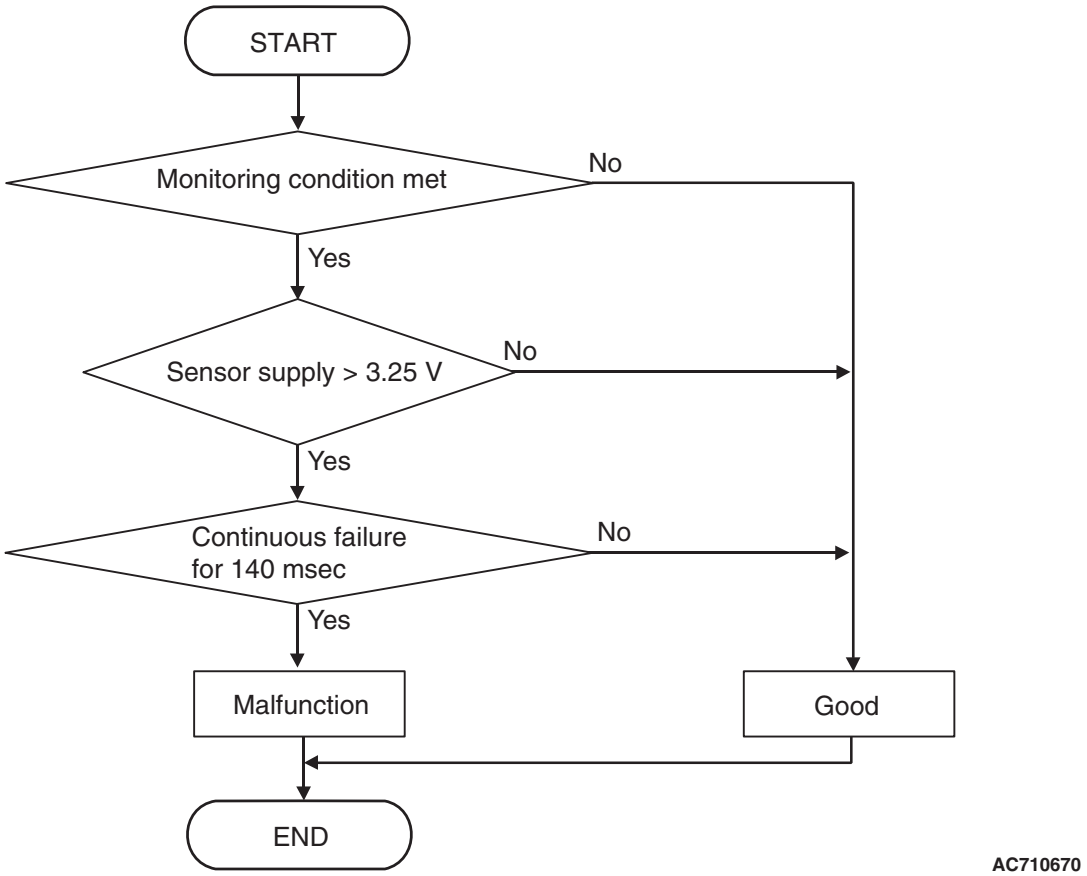
MONITOR EXECUTION
- Continuous

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-15.) 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-341.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-341.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

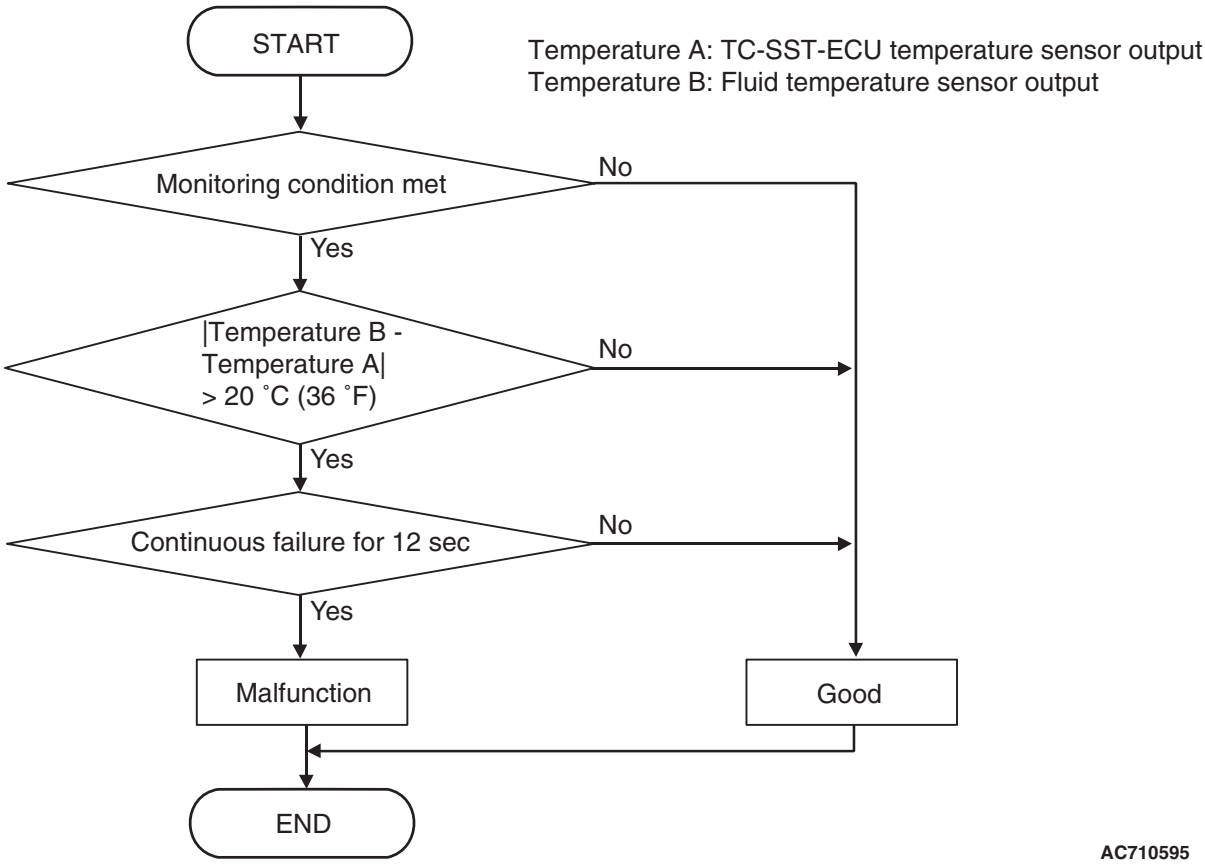
DESCRIPTIONS OF MONITOR METHODS
The difference of the output between the ECU temperature sensor and fluid temperature sensor is large.

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

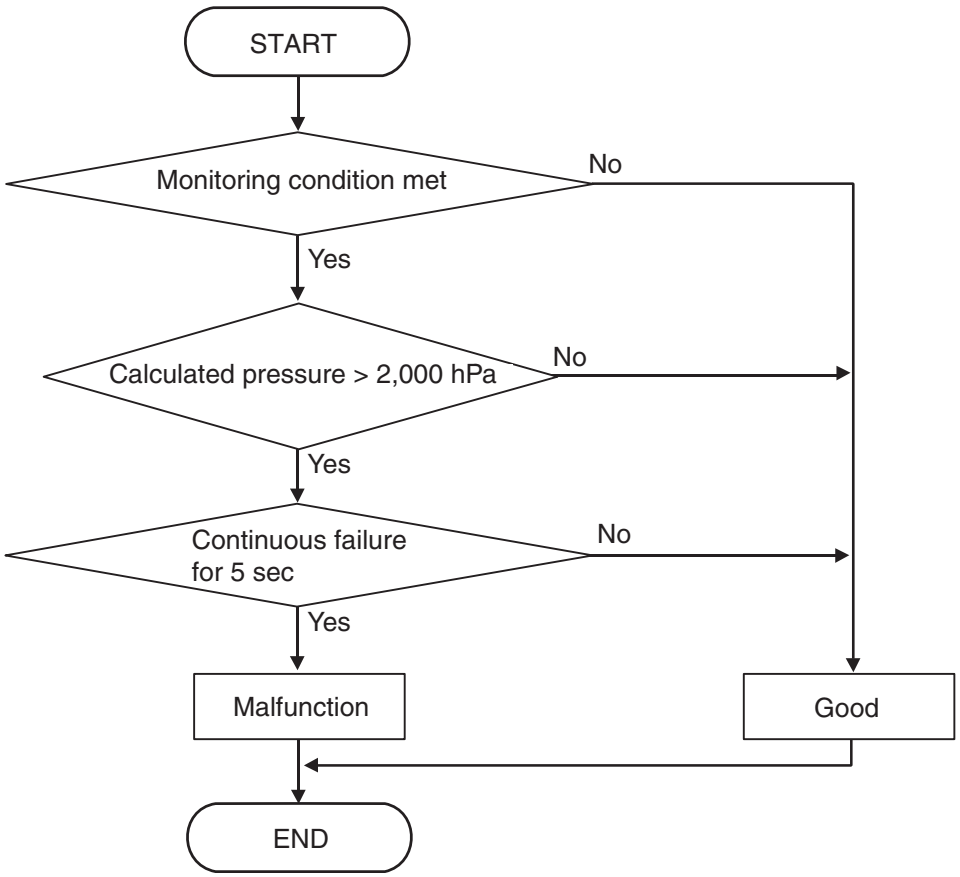
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-365).)

(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.00-15.)

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-421.)

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-421.) Then, go to Step 6.
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-412.)
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.

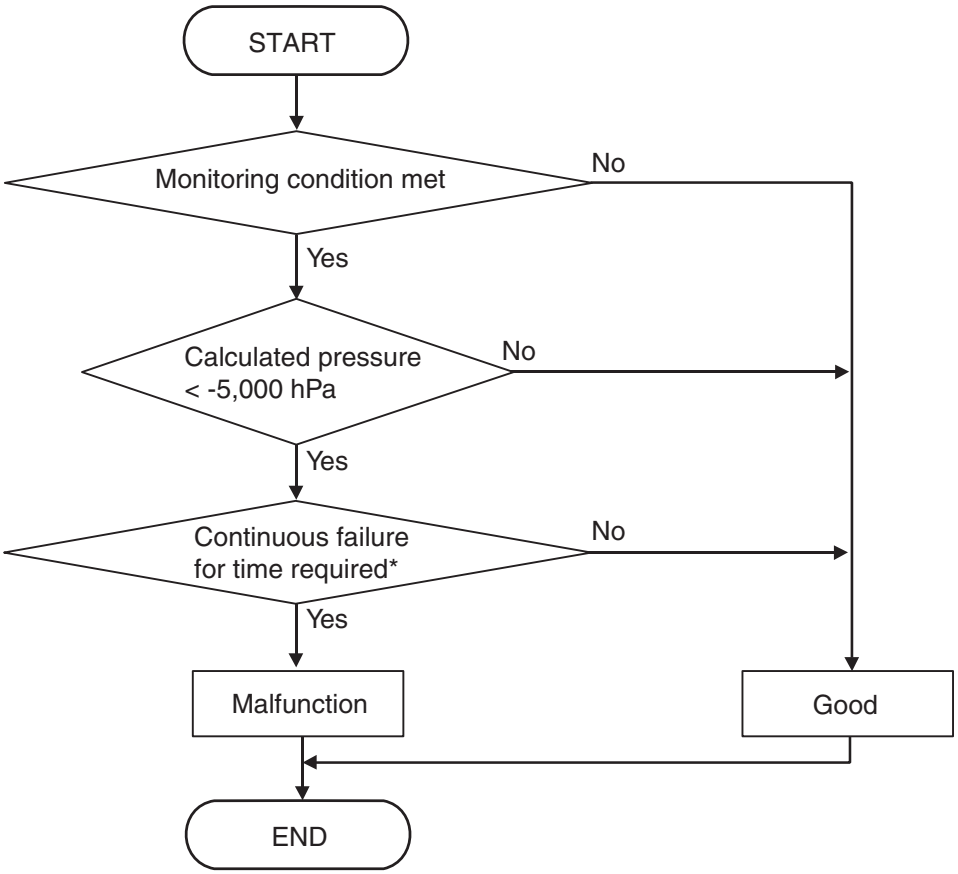
MONITOR EXECUTION
- Continuous

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.

TSB Revision

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.

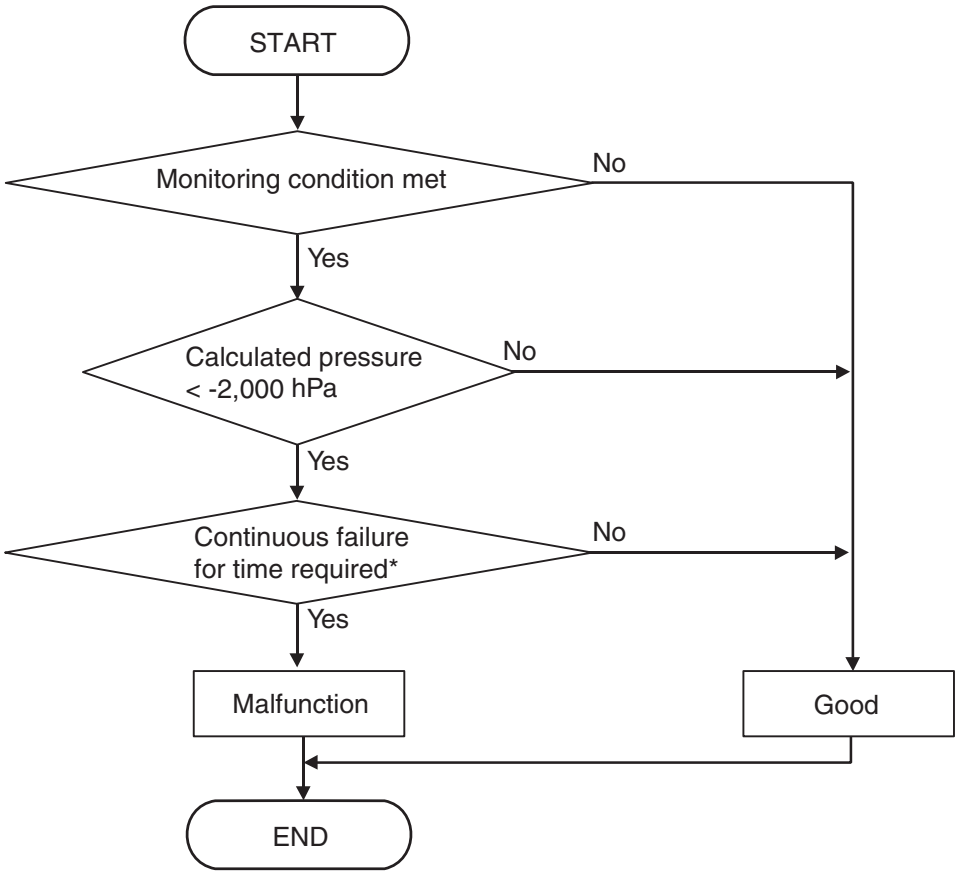
If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

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.

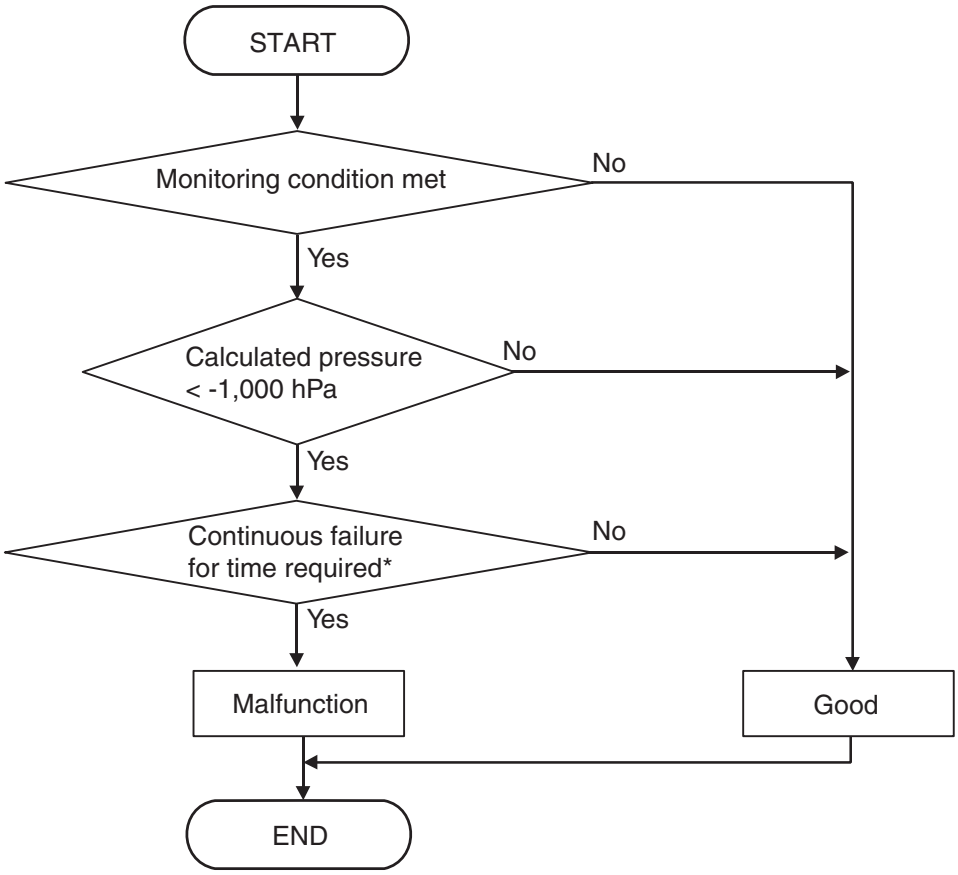
If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

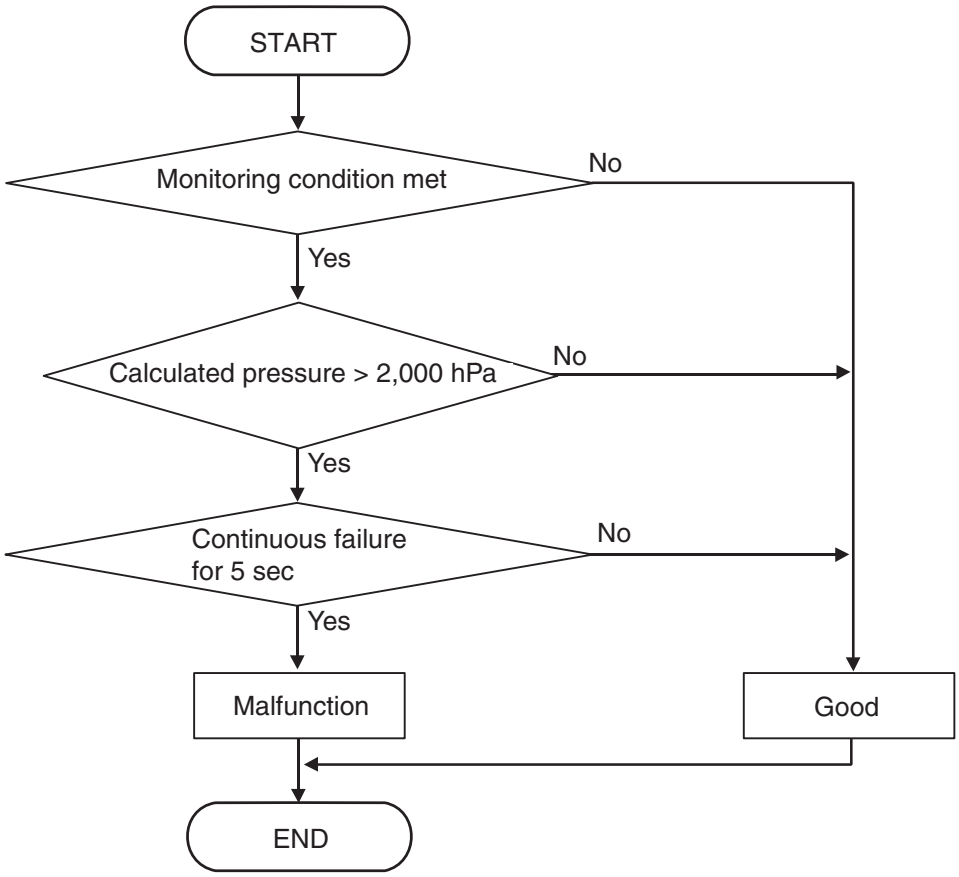
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-365).)
(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.00-15.)

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-421.)

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-421.) Then, go to Step 6.
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-412.)
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)

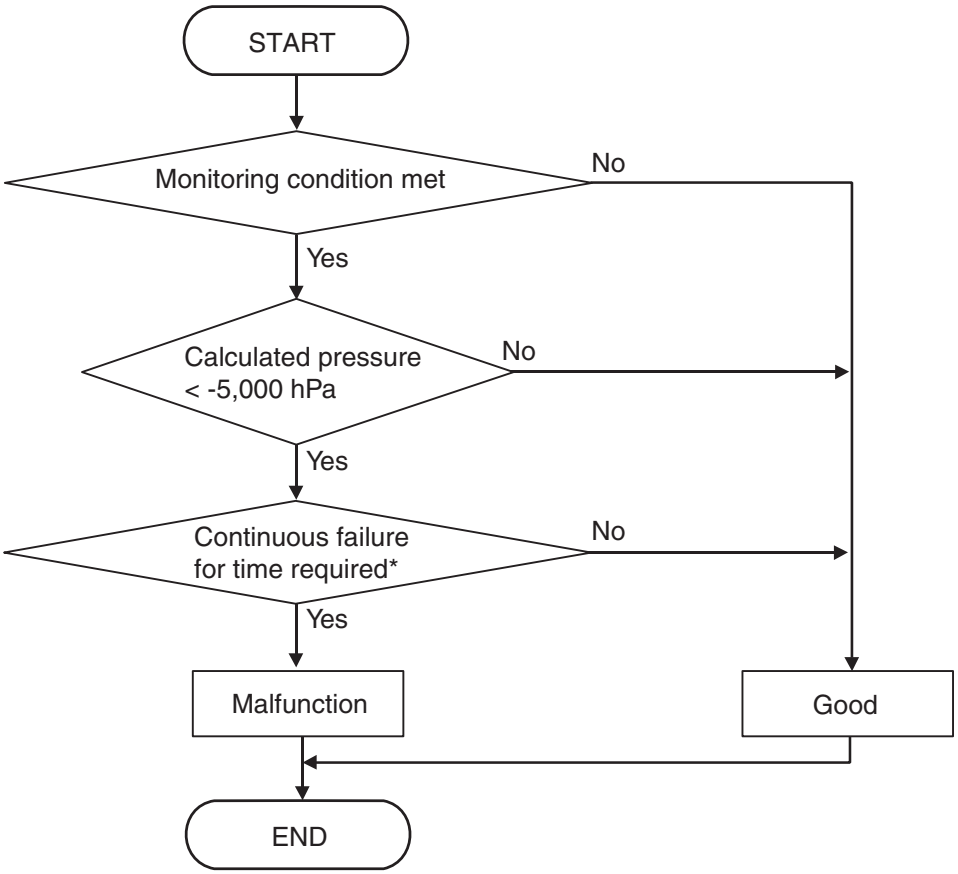
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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.

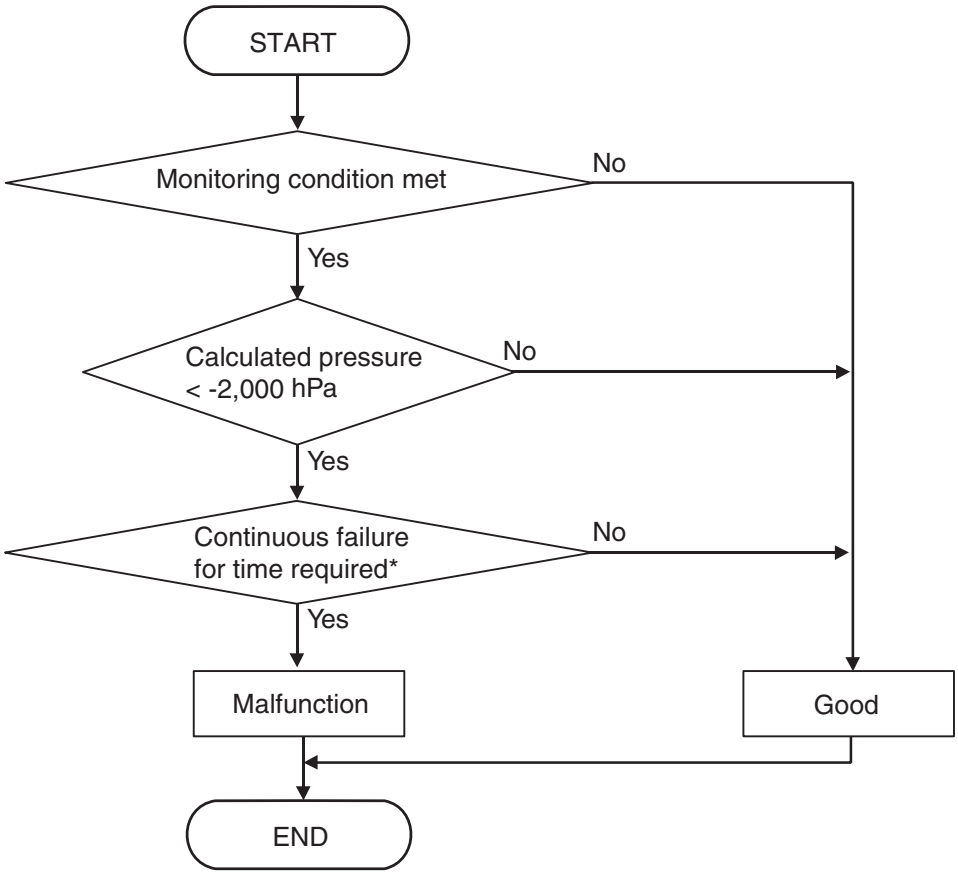
If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

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.

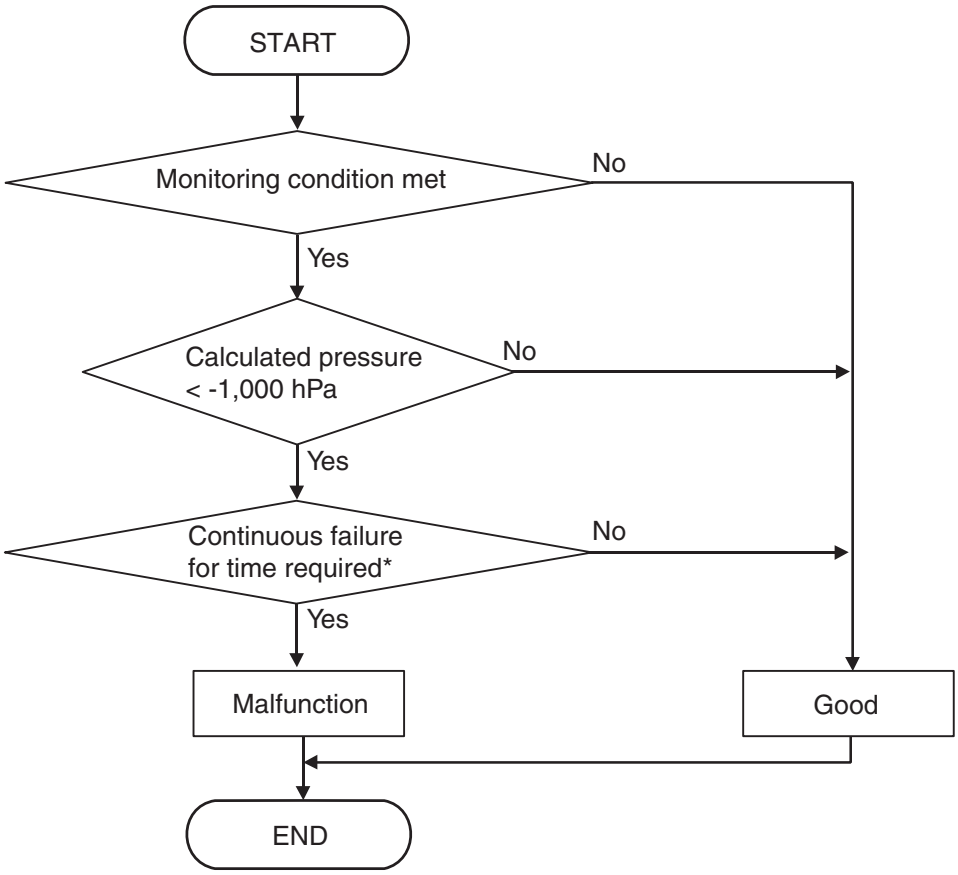
If the transmission fluid temperature is lower than -10 °C (14 °F), the time required is 2,220 msec.

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.

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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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

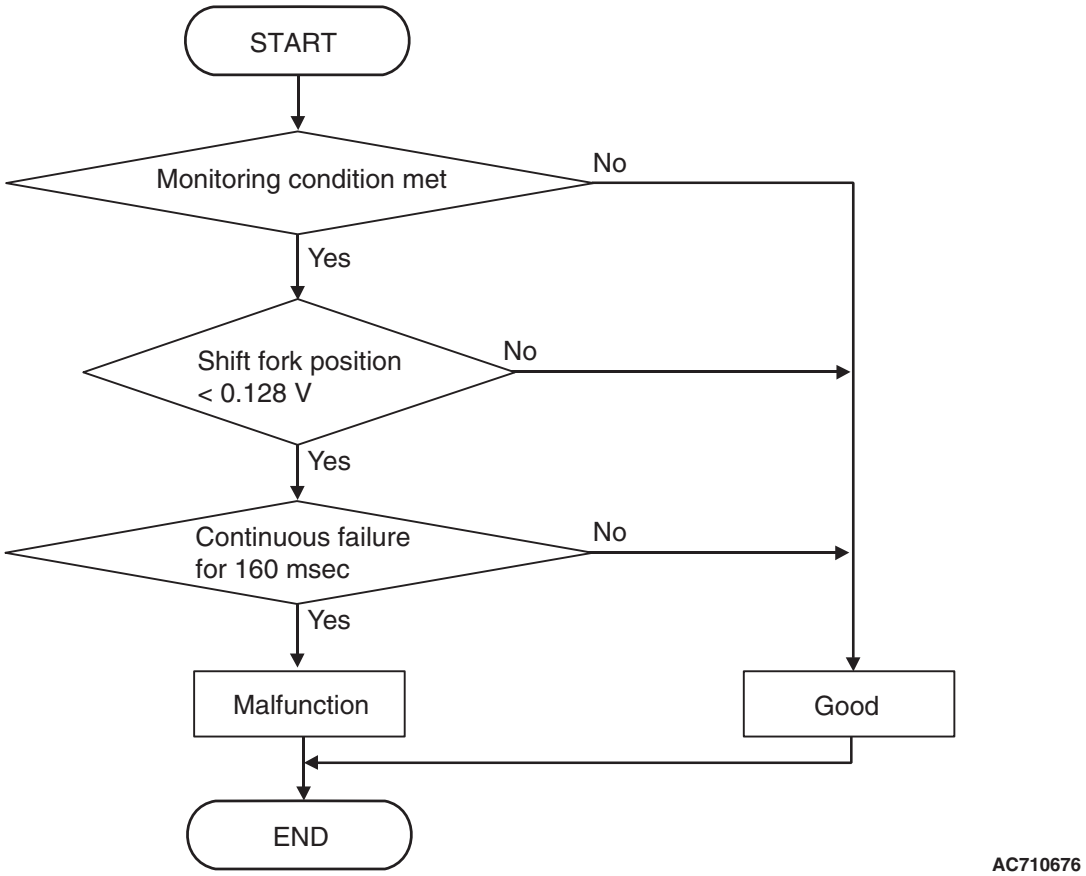
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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

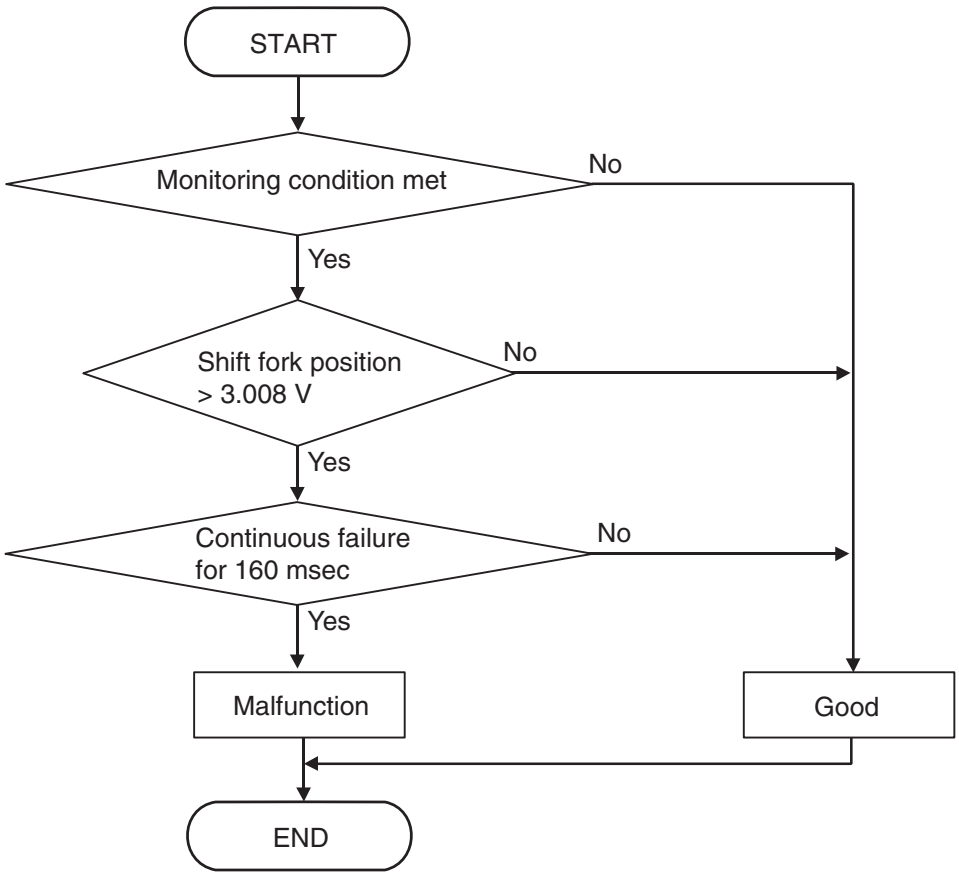
TSB Revision

- 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 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-15.) After repairing the CAN bus line, go to Step 2.

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.00-15.)

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-365).)
(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-365).)

Q: Which is displayed, "Yes" or "No"?
"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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

TSB Revision

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

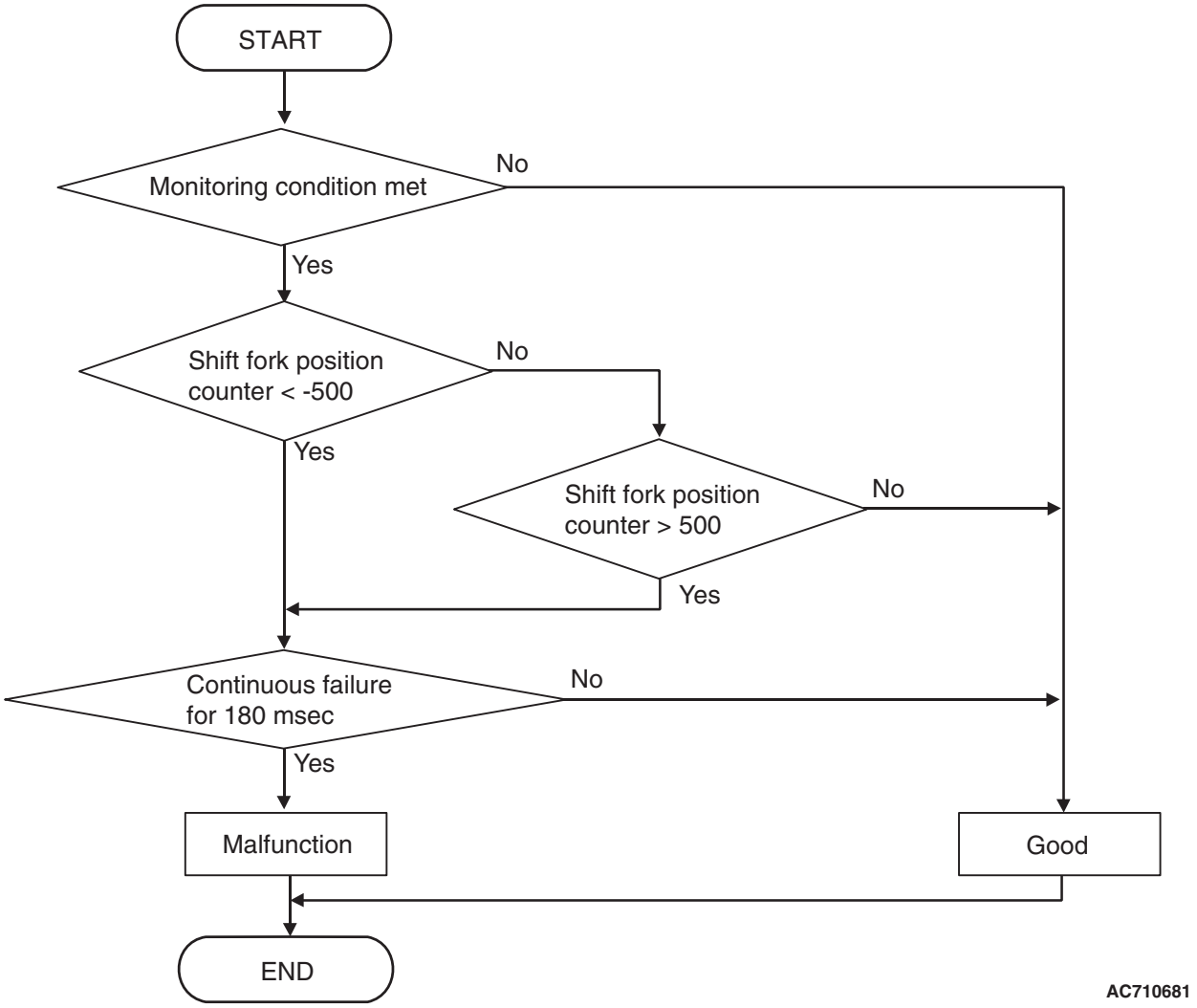
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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.

TSB Revision

- 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-15.) 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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)

"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-421.)
(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-412.)
NO : This diagnosis is complete.

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.

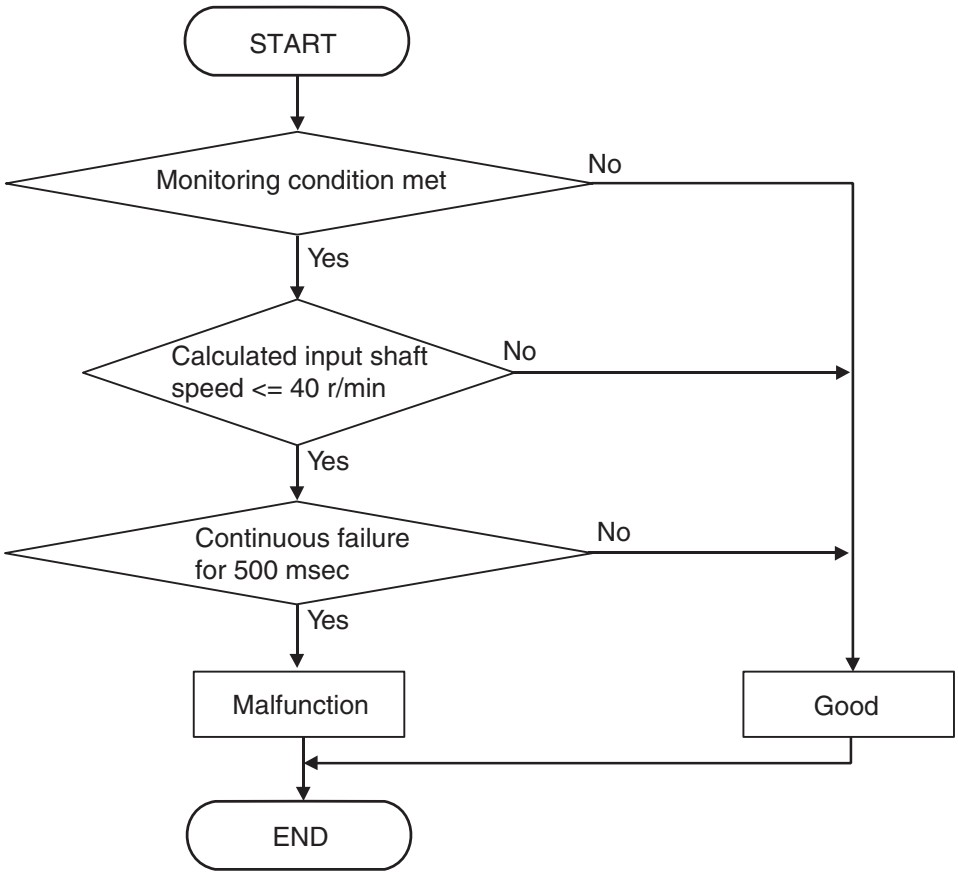
MONITOR EXECUTION
- Continuous

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

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-15.) 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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-412.)
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)

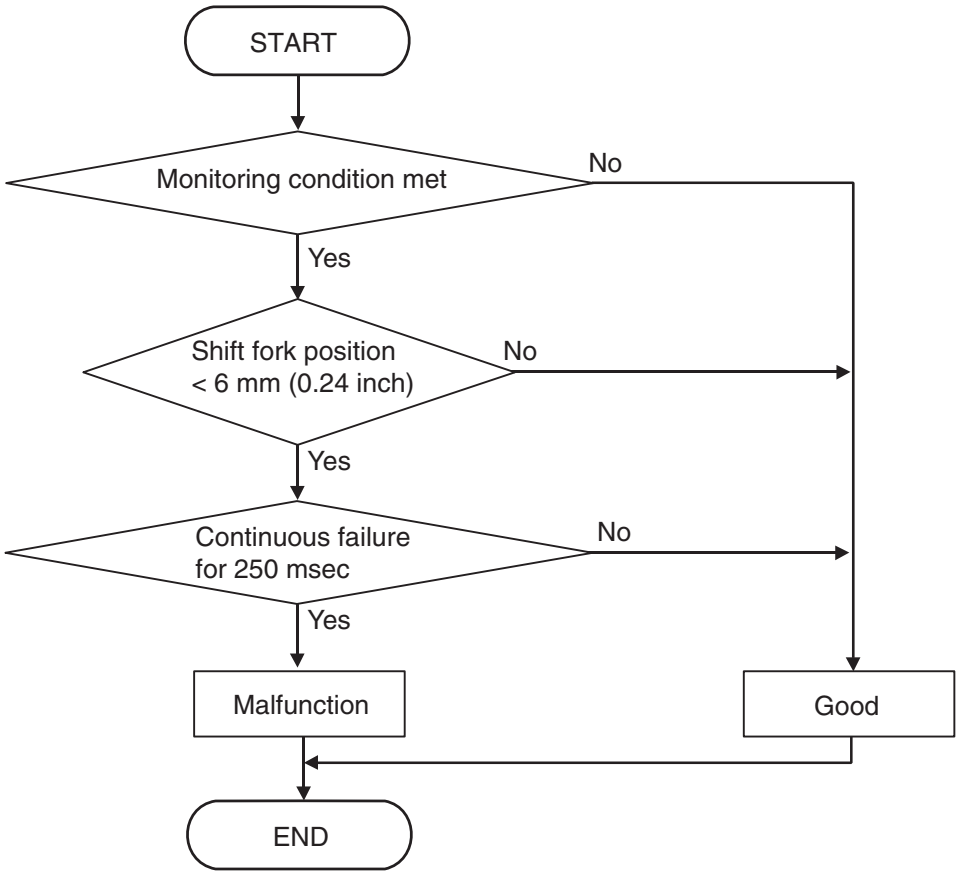
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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.

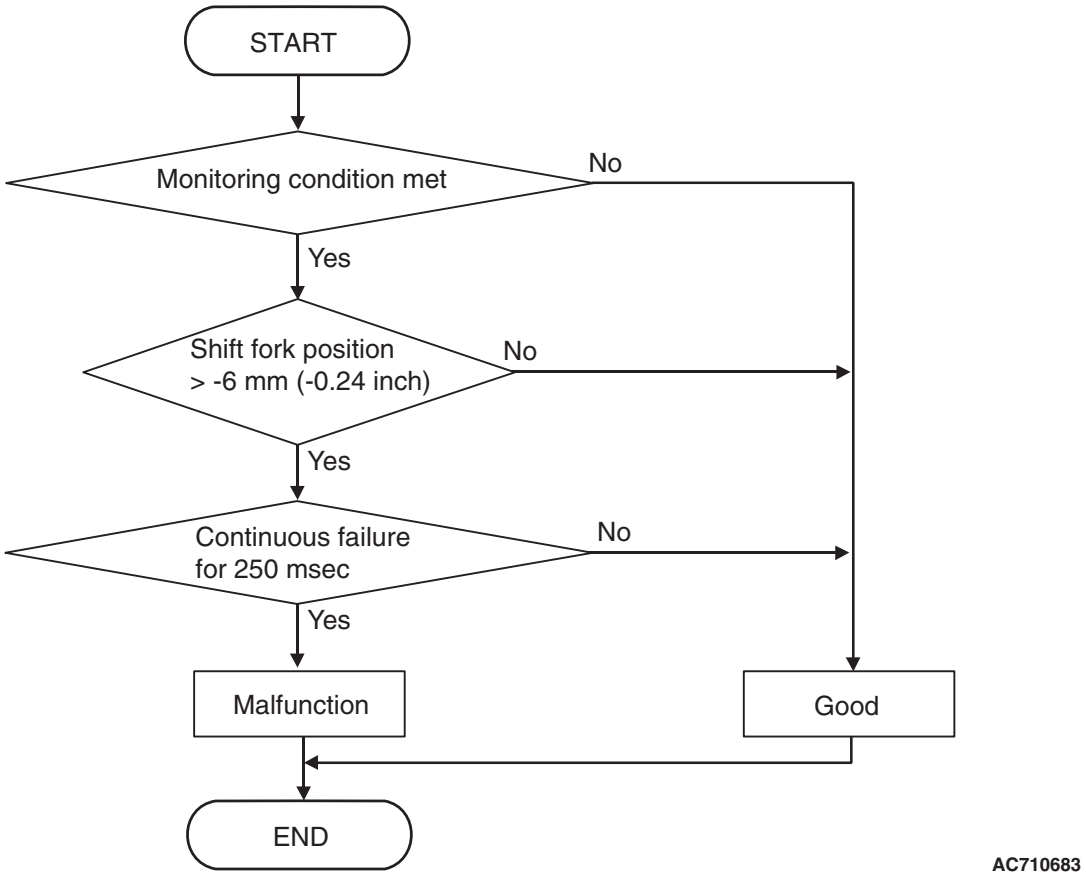
JUDGMENT CRITERIA

- 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-15.) 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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)

"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-421.)
(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-412.)

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)

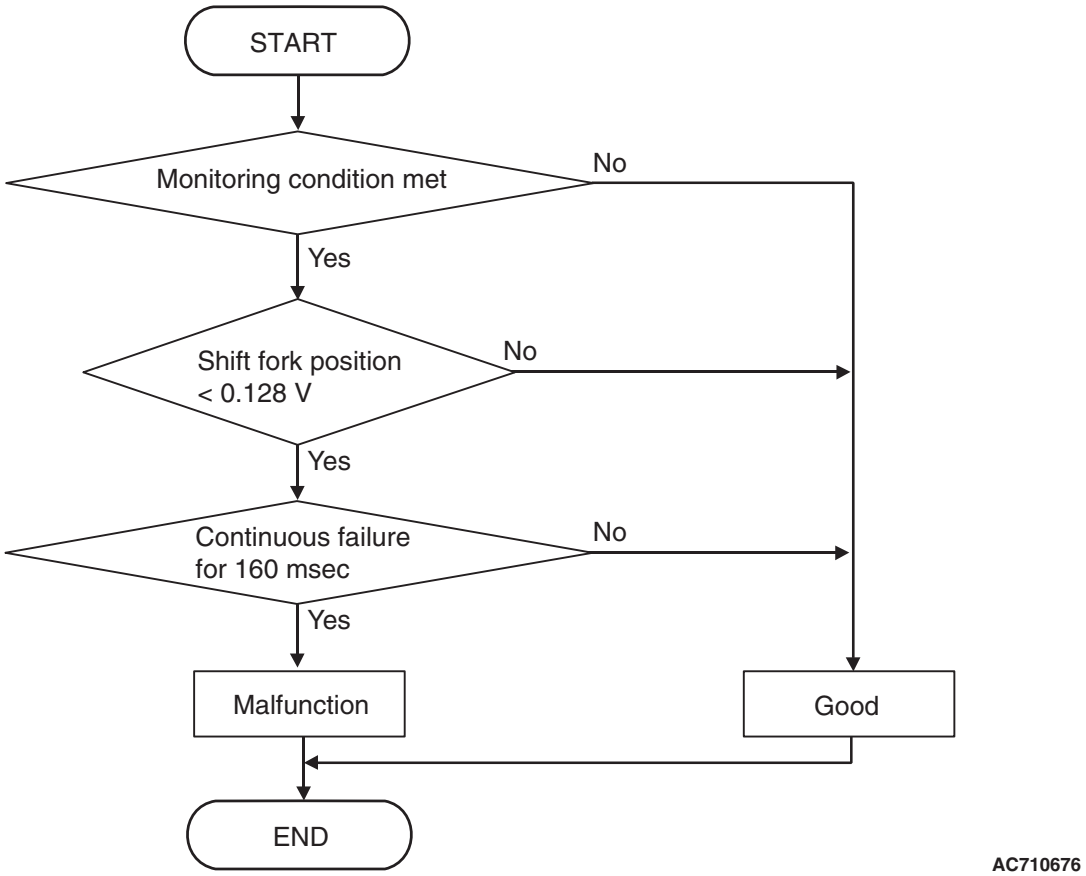
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) After repairing the CAN bus line, go to Step 2.

TSB Revision

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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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

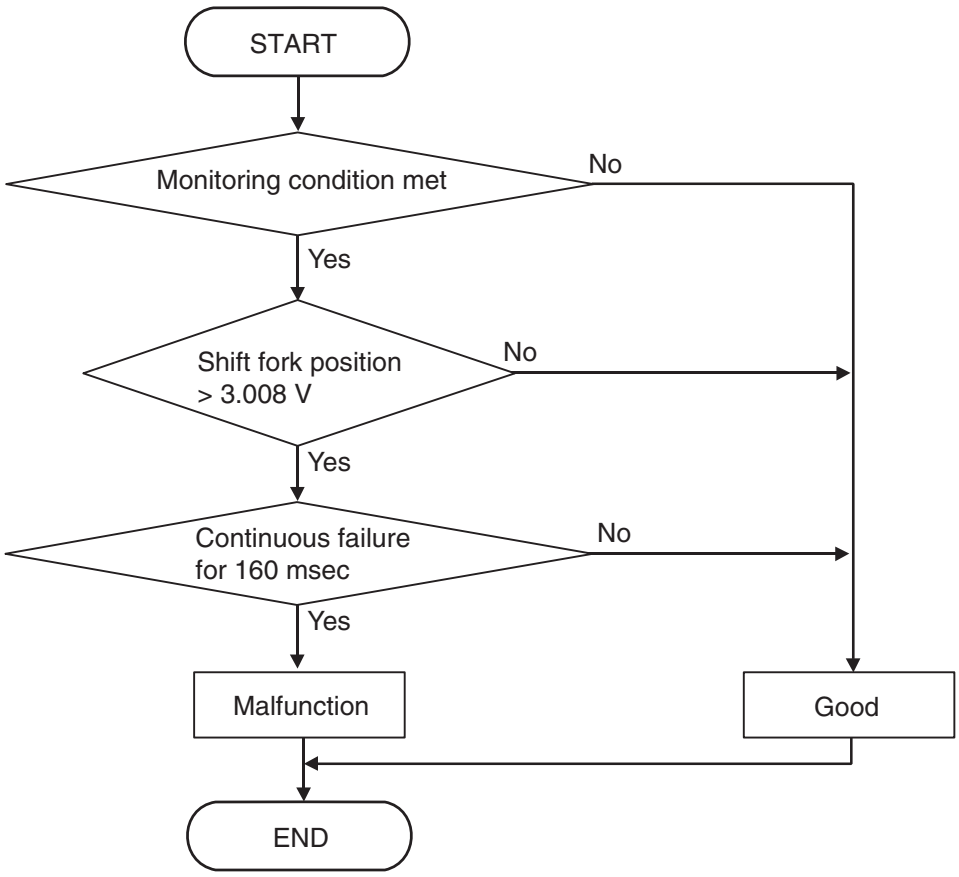
TSB Revision

- 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 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-15.) 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.00-15.)

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-365).)

(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)

"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-421.)

(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-412.)

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)

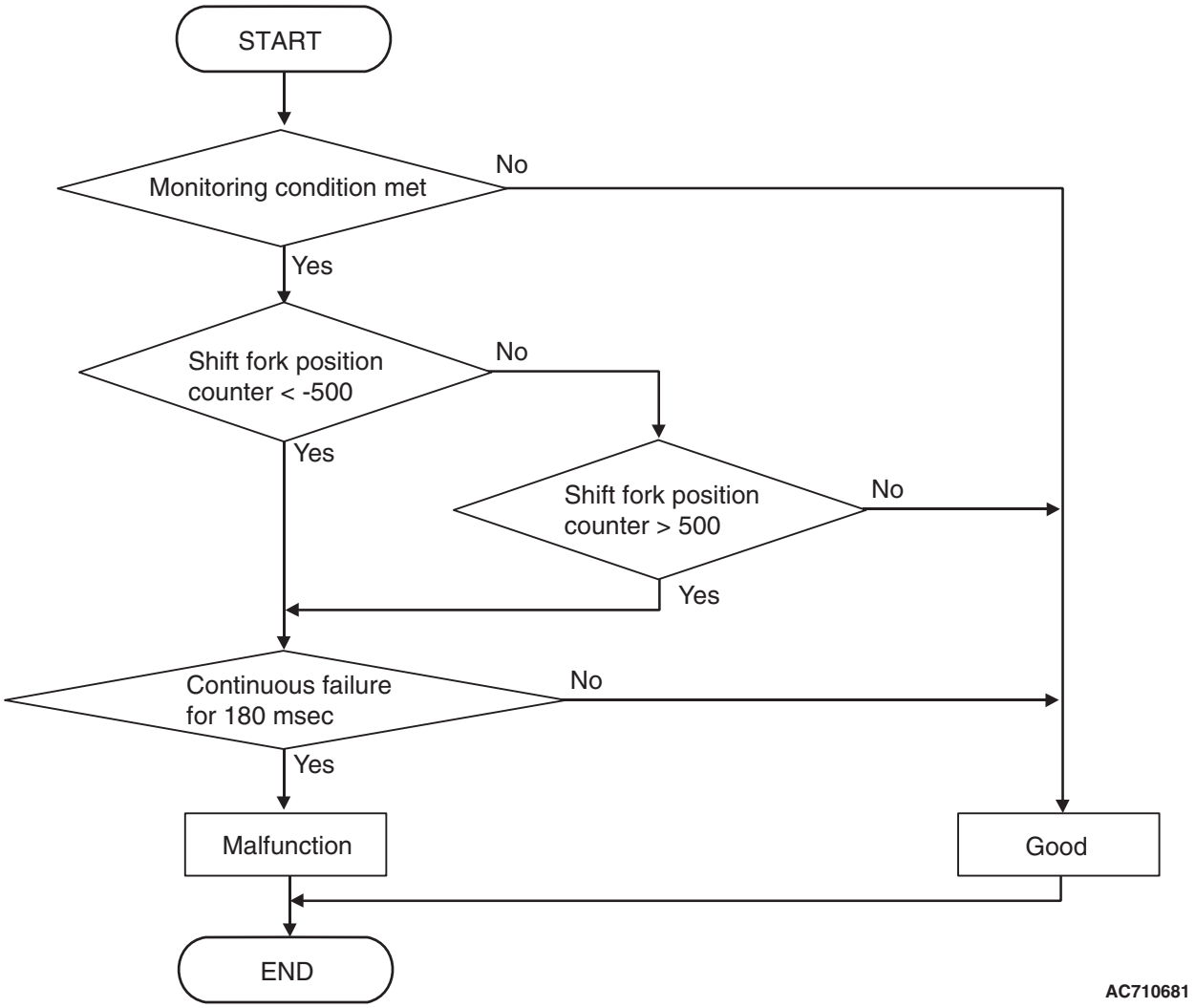
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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.00-15.)

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-365).)

(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)

"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-421.)

(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-412.)

NO : This diagnosis is complete.

TSB Revision

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)

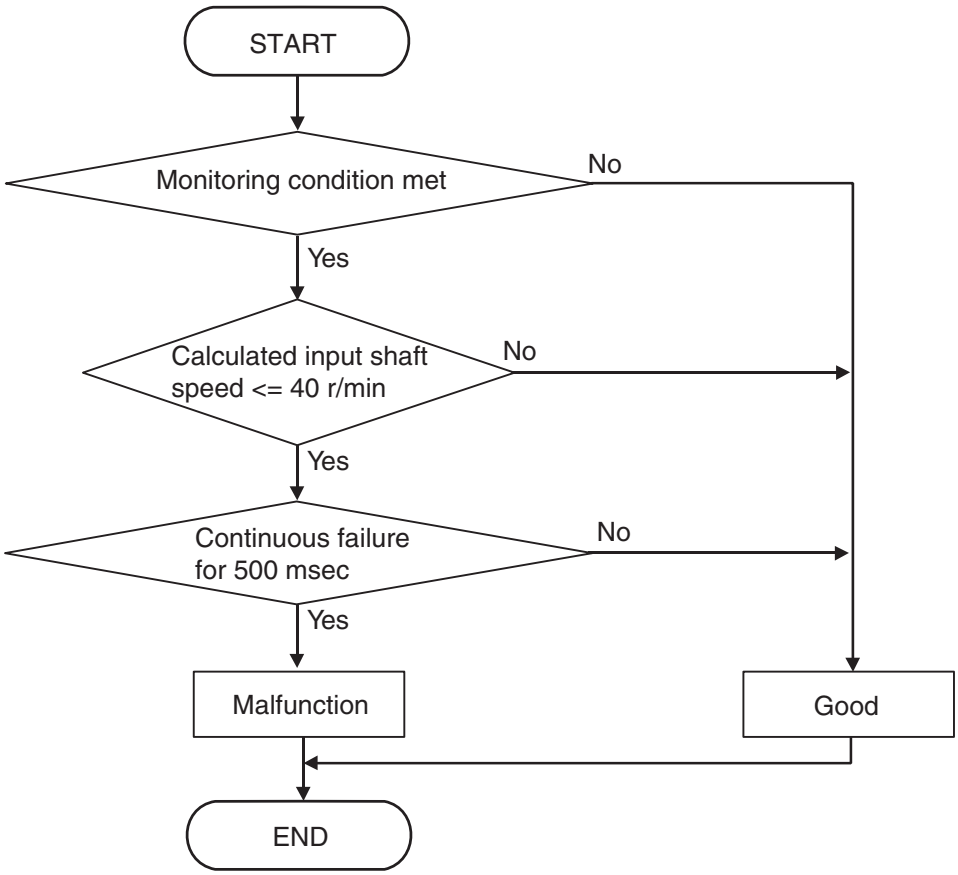
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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)



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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 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

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-15.) 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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-412.)
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)

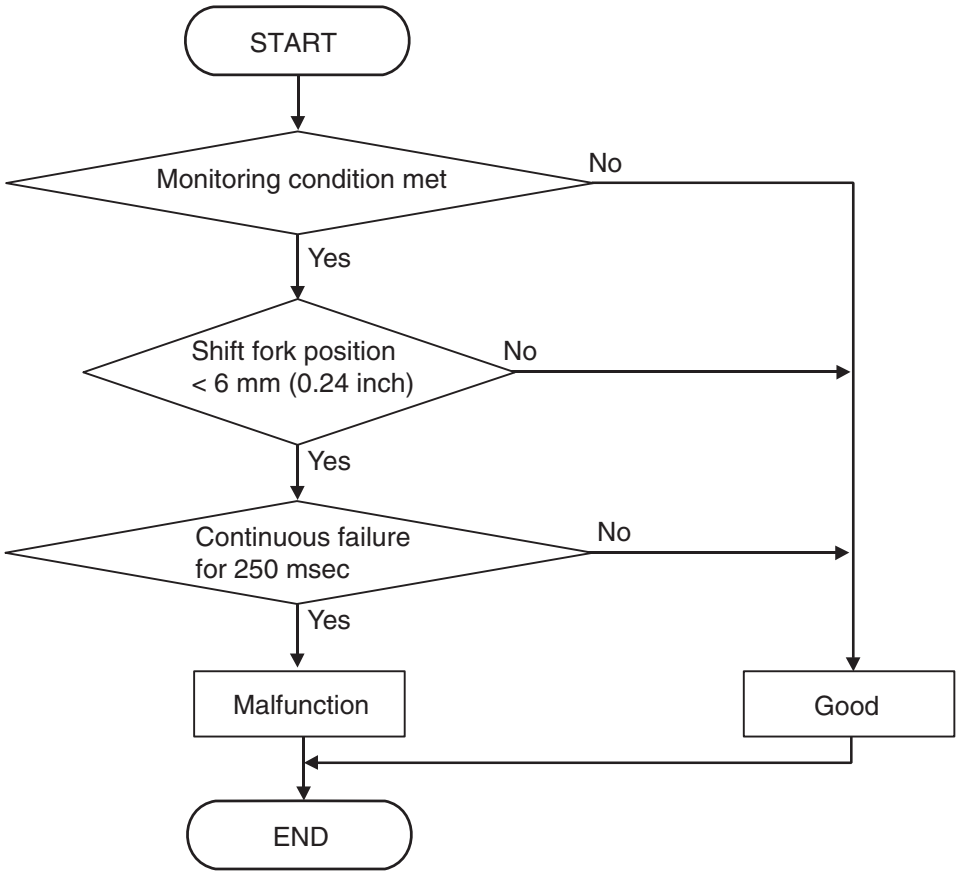
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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.

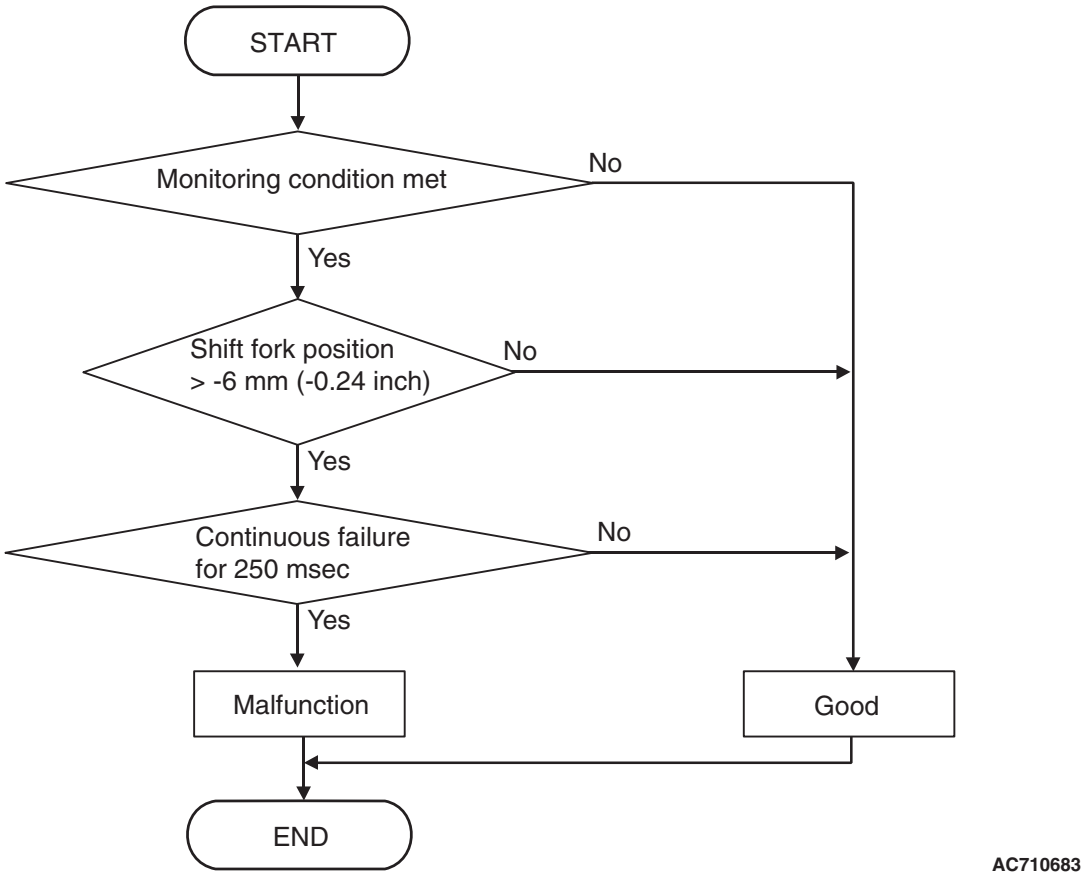
JUDGMENT CRITERIA

- 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-15.) 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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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)

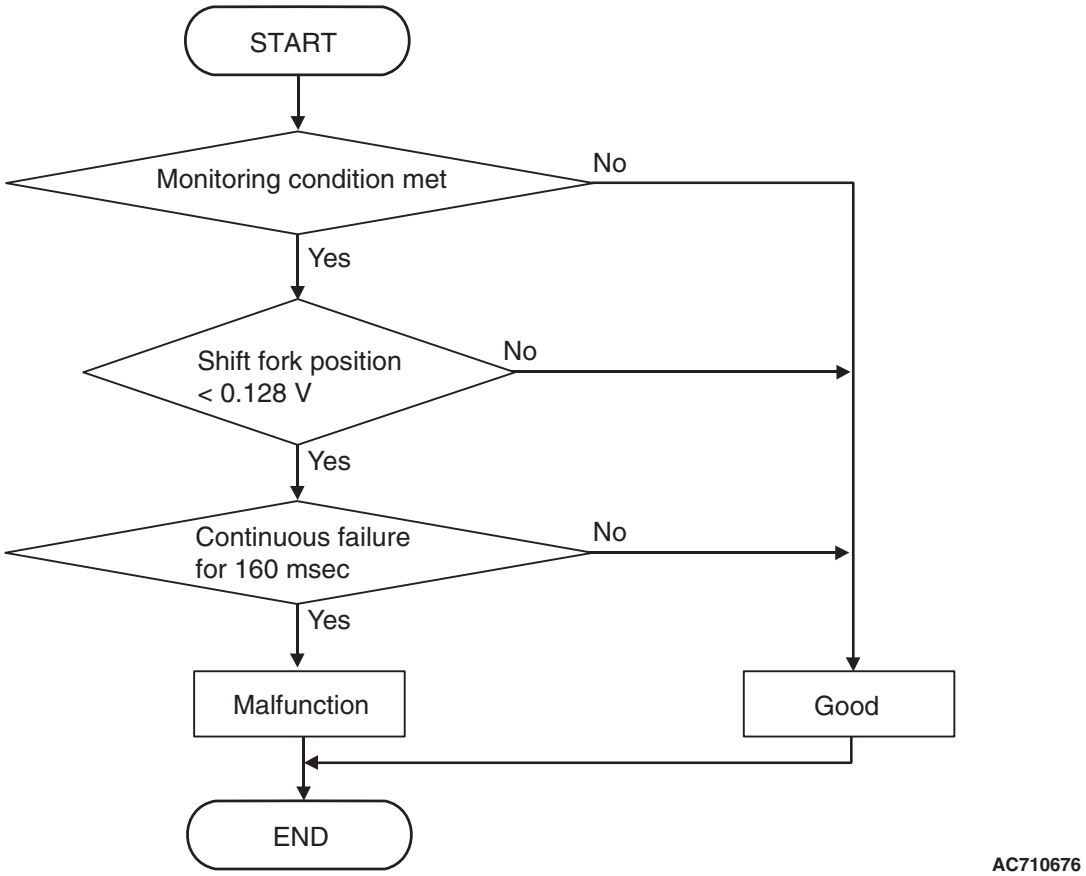
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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

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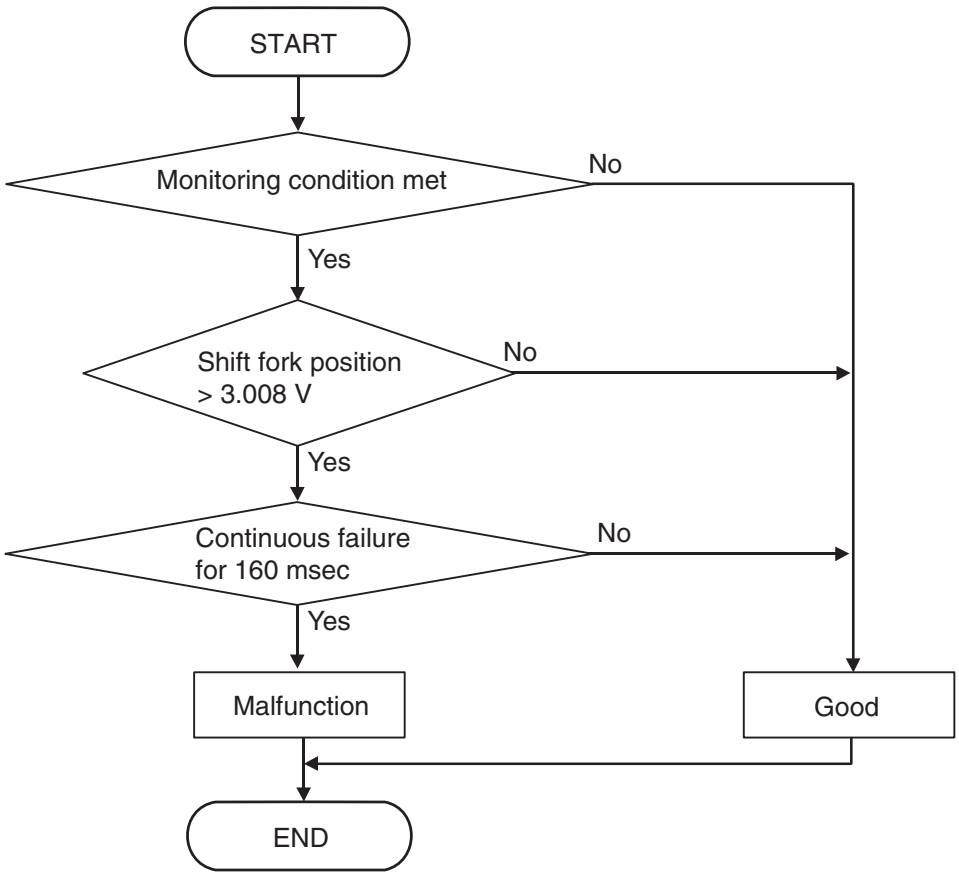
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

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 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-15.) After repairing the CAN bus line, go to Step 2.

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.00-15.)

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-365).)
(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-365).)

Q: Which is displayed, "Yes" or "No"?
"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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

TSB Revision

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

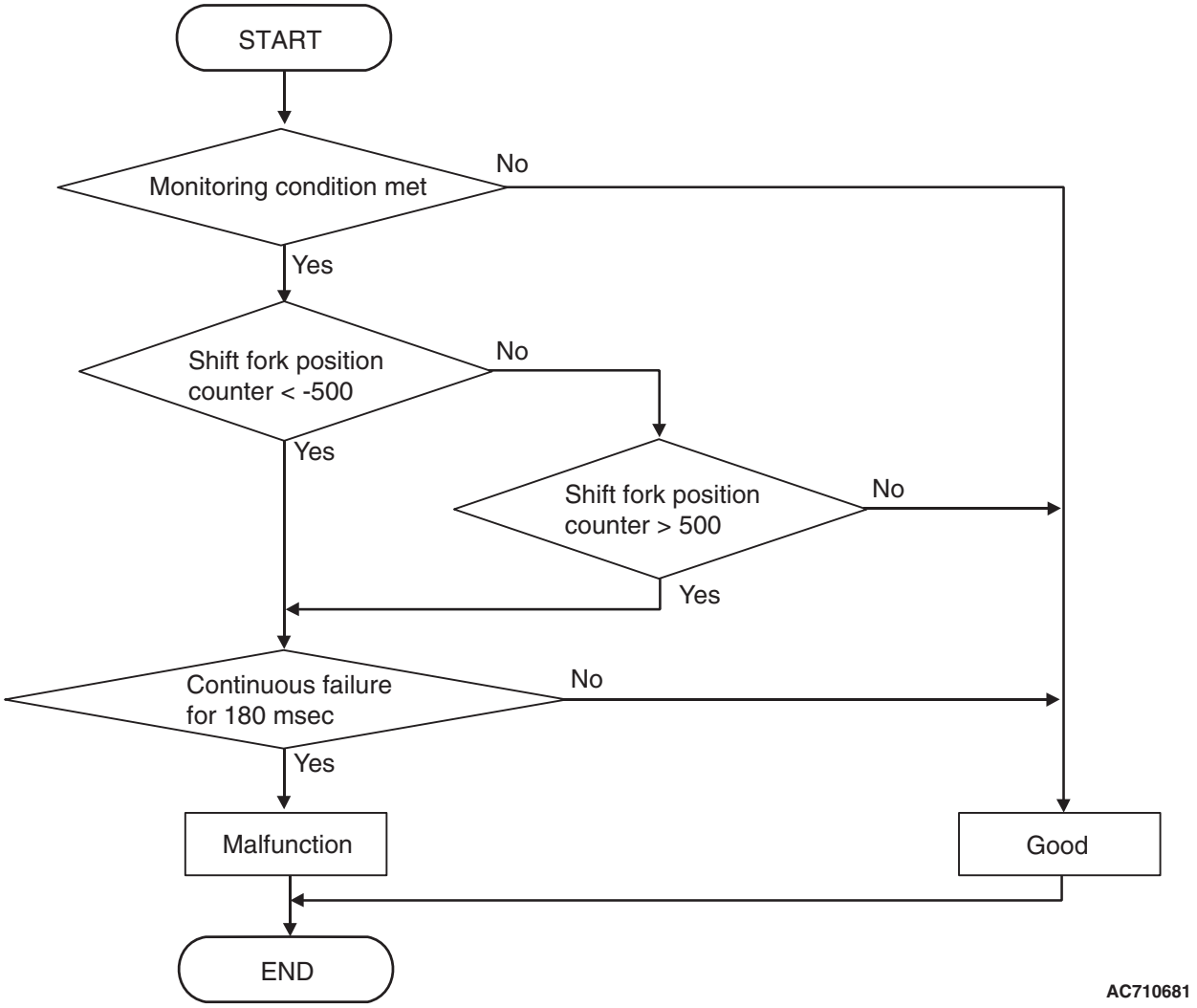
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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.00-15.)

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-365).)

(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)

"No" : Go to Step 4.

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STEP 4. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-421.)
(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-412.)
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.

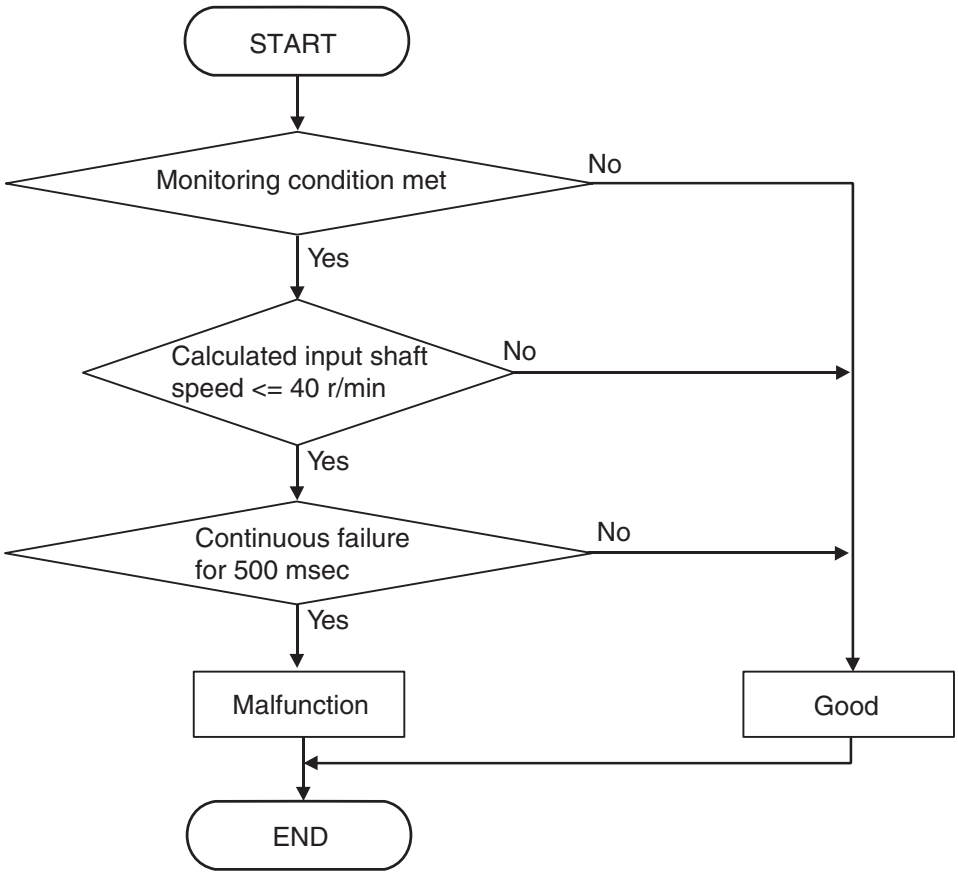
MONITOR EXECUTION
- Continuous

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)



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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 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

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-15.) 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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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)

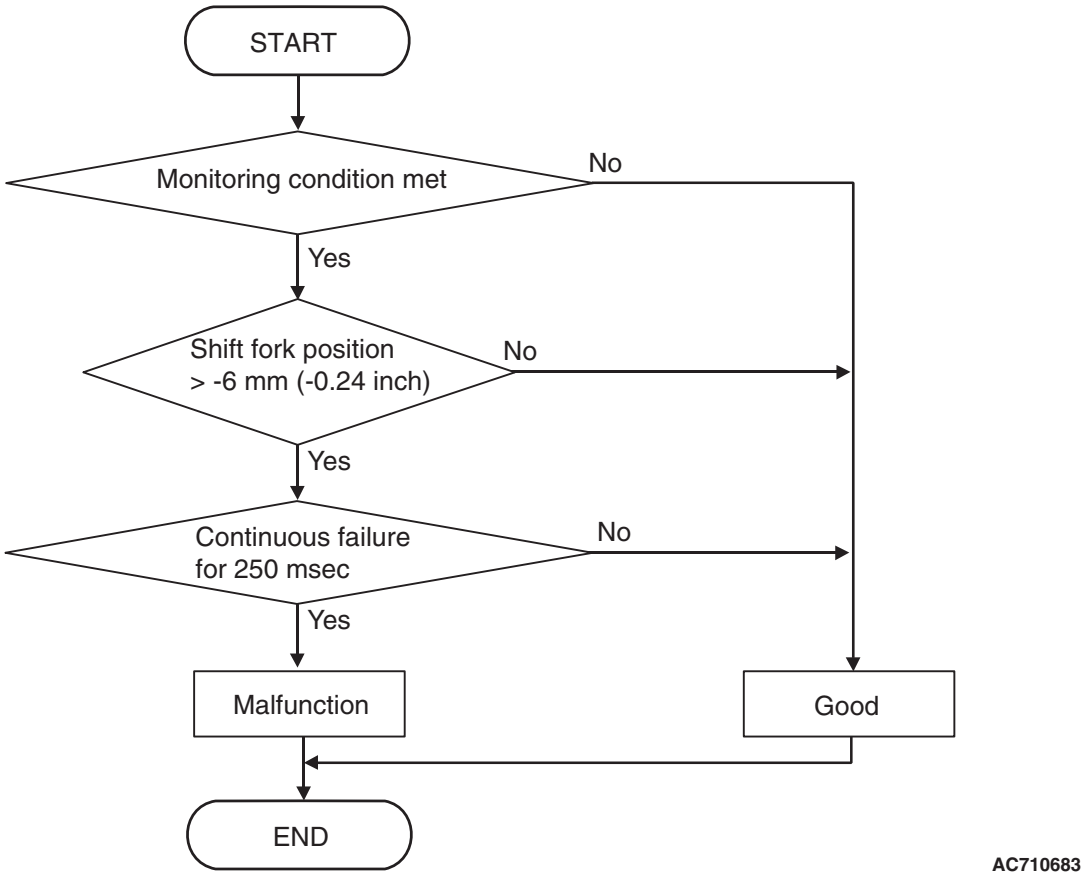
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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.00-15.)

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-365).)
(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-365).)

Q: Which is displayed, "Yes" or "No"?
"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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

TSB Revision

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

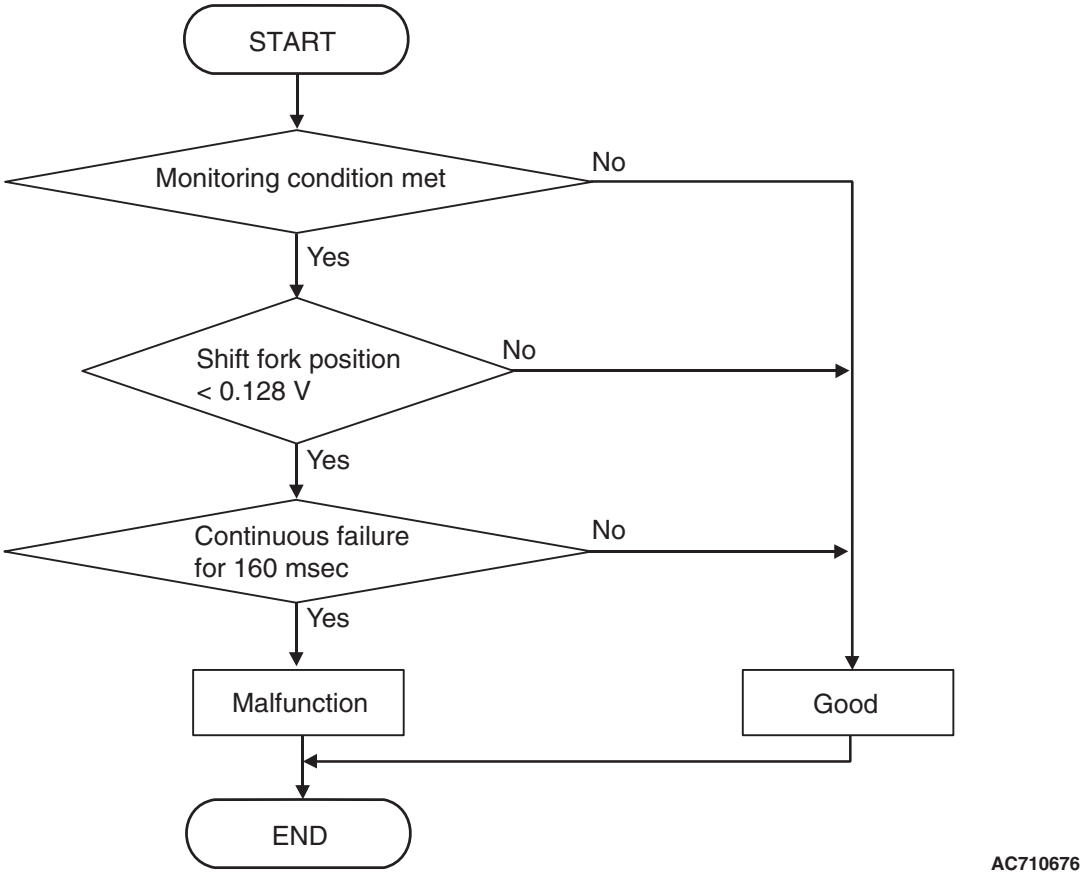
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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)



AC710676

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

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-15.) After repairing the CAN bus line, go to Step 2.

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.00-15.)

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-365).)

(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)

"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-421.)

(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-412.)

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)

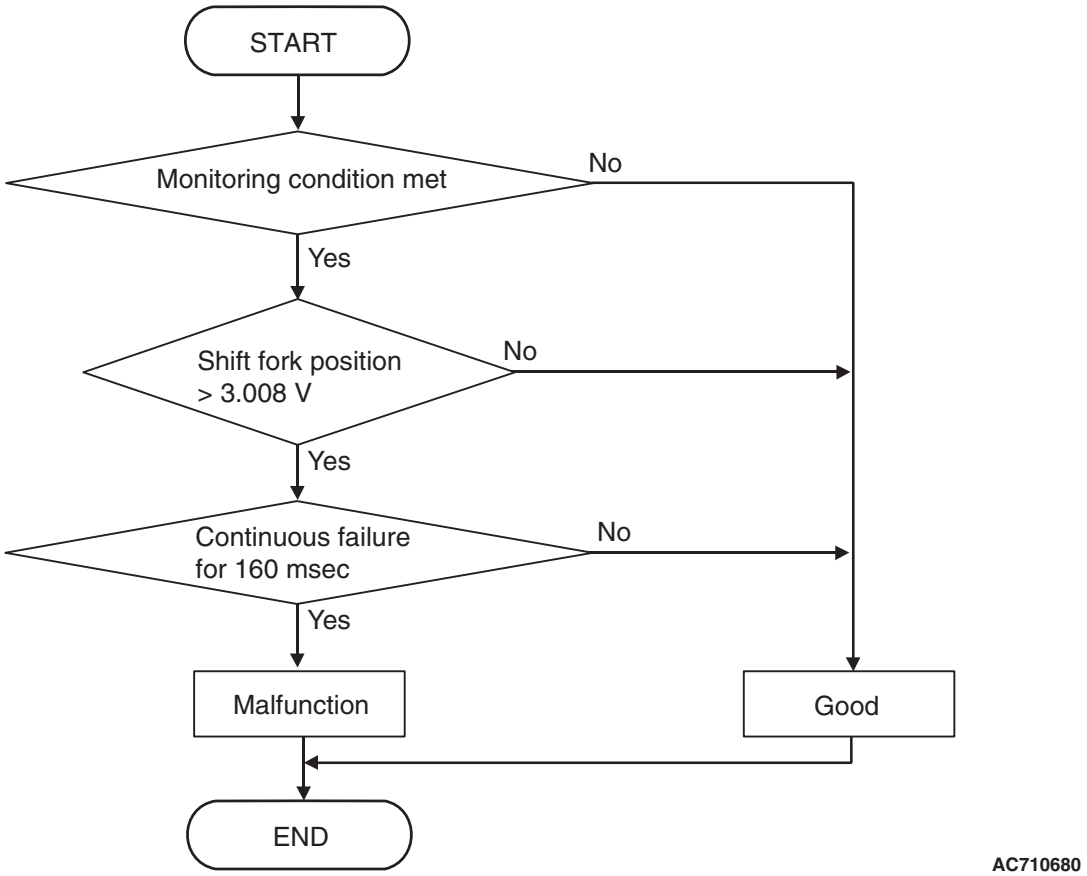
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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
- 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 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-15.) After repairing the CAN bus line, go to Step 2.

TSB Revision

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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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

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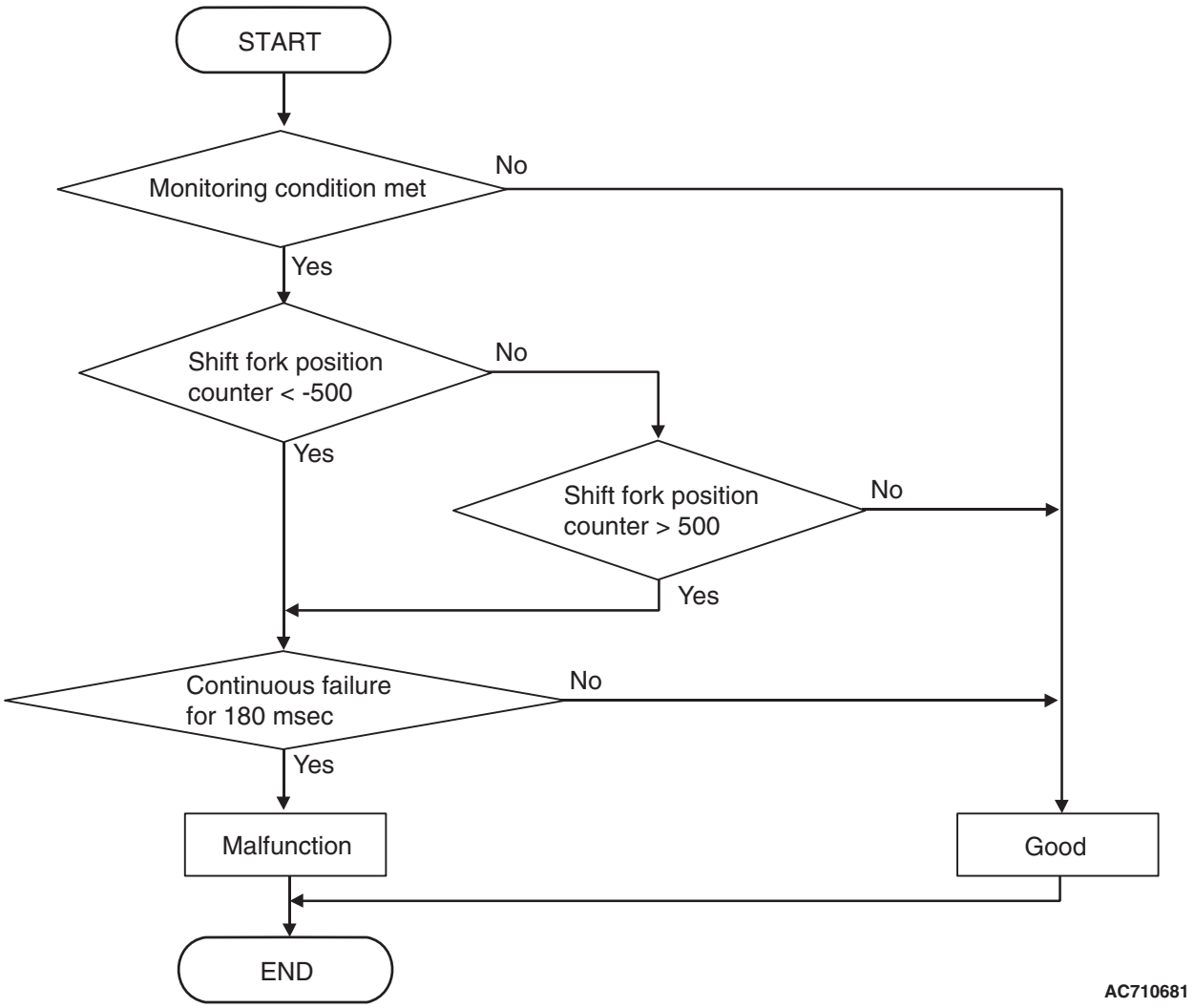
- P1878: Gear block 3rd
- P1879: Gear block 4th
- P187A: Gear block 5th
- P187B: Gear block 6th
- P187C: Gear block reverse

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



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

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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 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-15.) 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.00-15.)

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-365).)

(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)

"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-421.)

(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-412.)

NO : This diagnosis is complete.

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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)

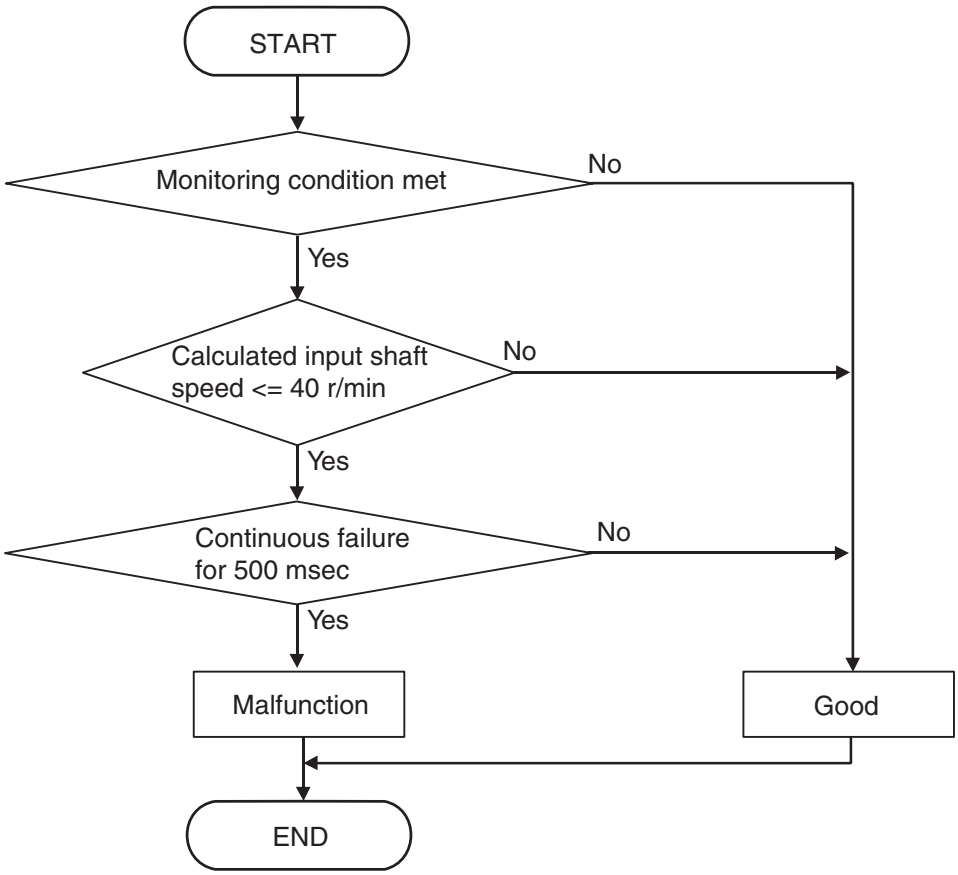
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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)



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

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-15.) 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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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)

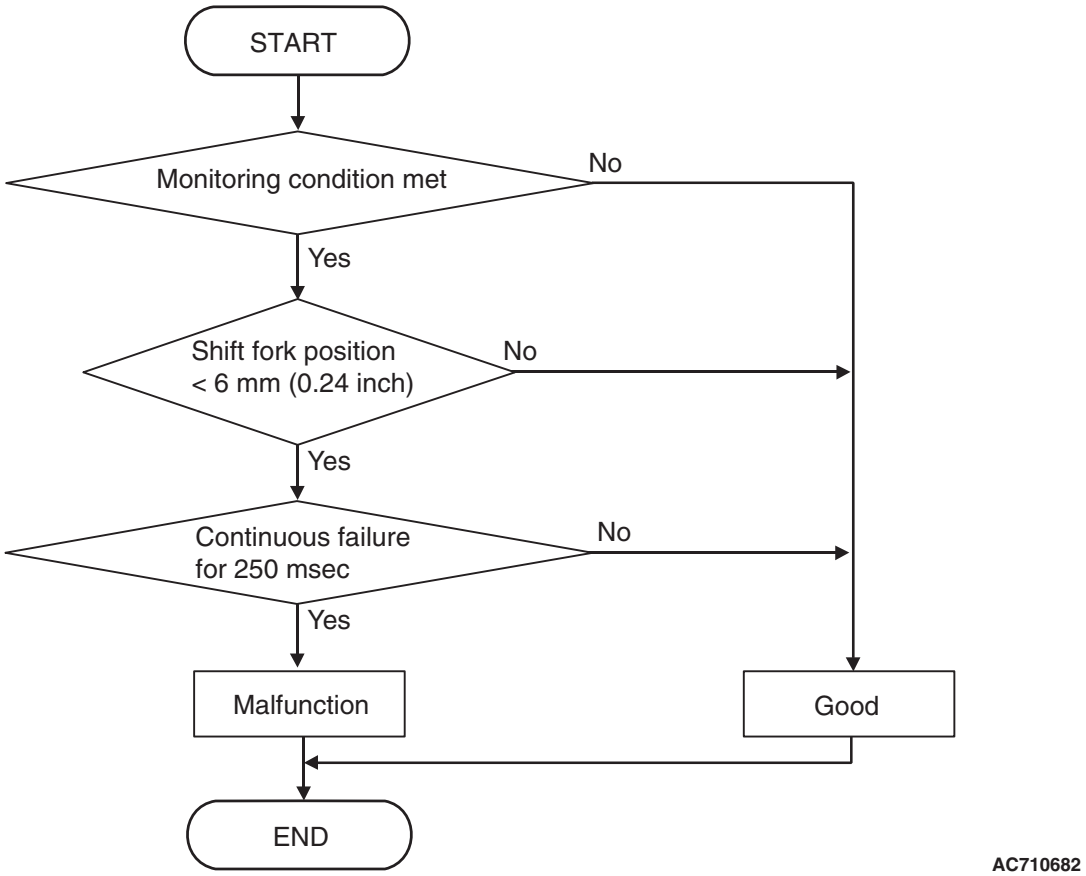
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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.

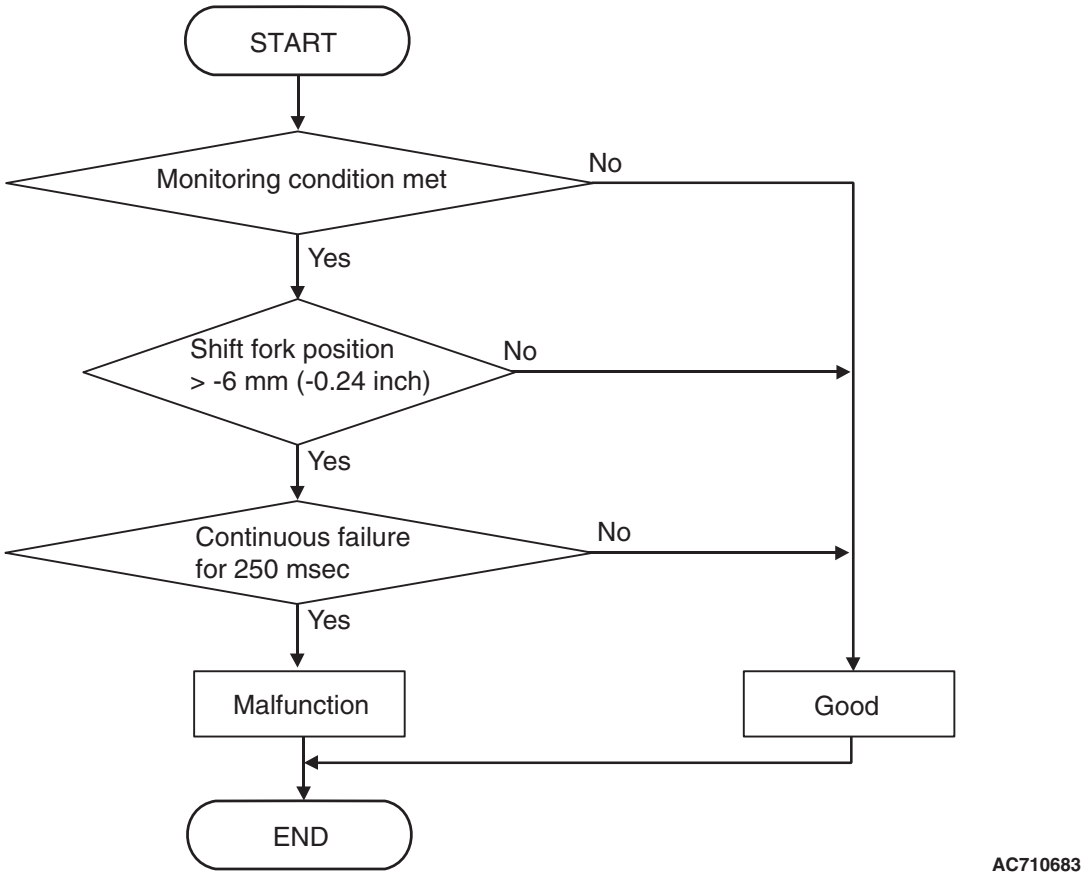
JUDGMENT CRITERIA

- 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-15.) 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.00-15.)

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-365).)
(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-365).)

Q: Which is displayed, "Yes" or "No"?
"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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

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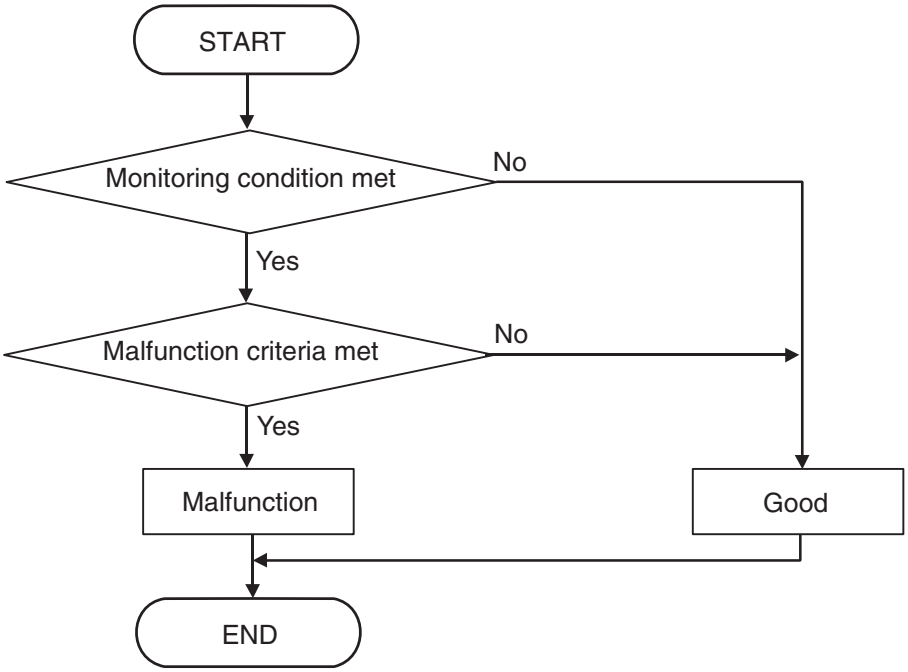
MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

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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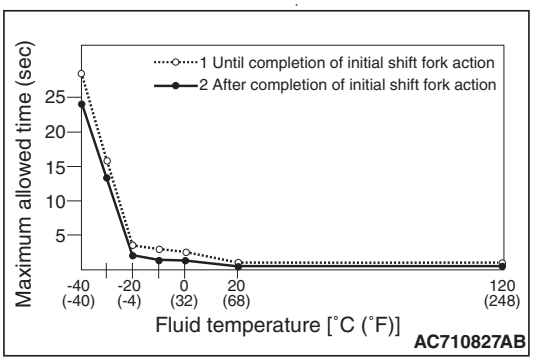
DTC SET CONDITIONS <FUNCTIONAL CHECK - BLOCKED>

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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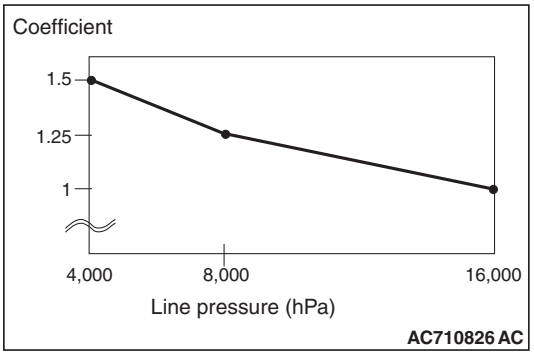

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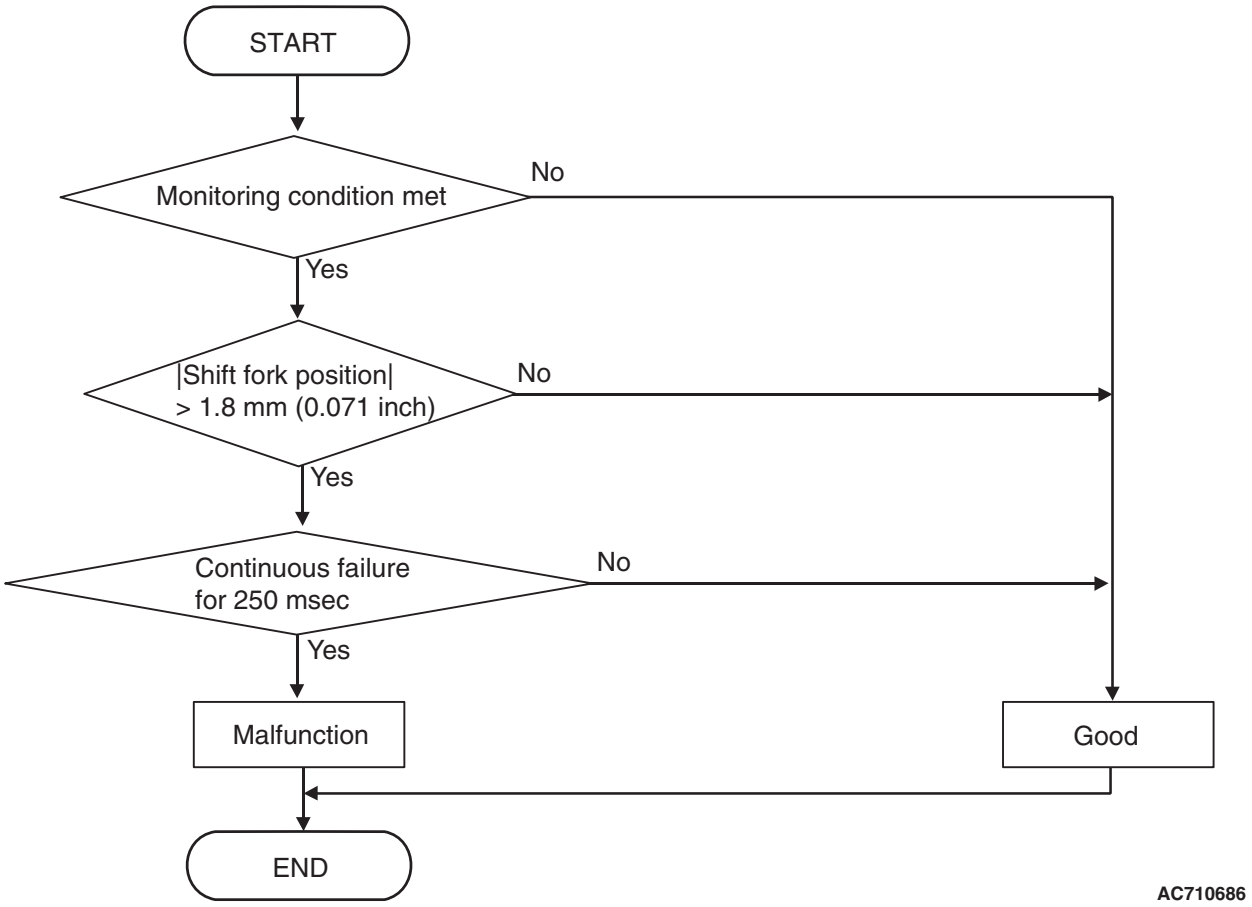
- Shift fork operation time: Shift fork operation time (threshold value) or more. (immediately)
- Shift fork operation time (threshold value): Equal the maximum allowed time x Coefficient. (immediately)

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.

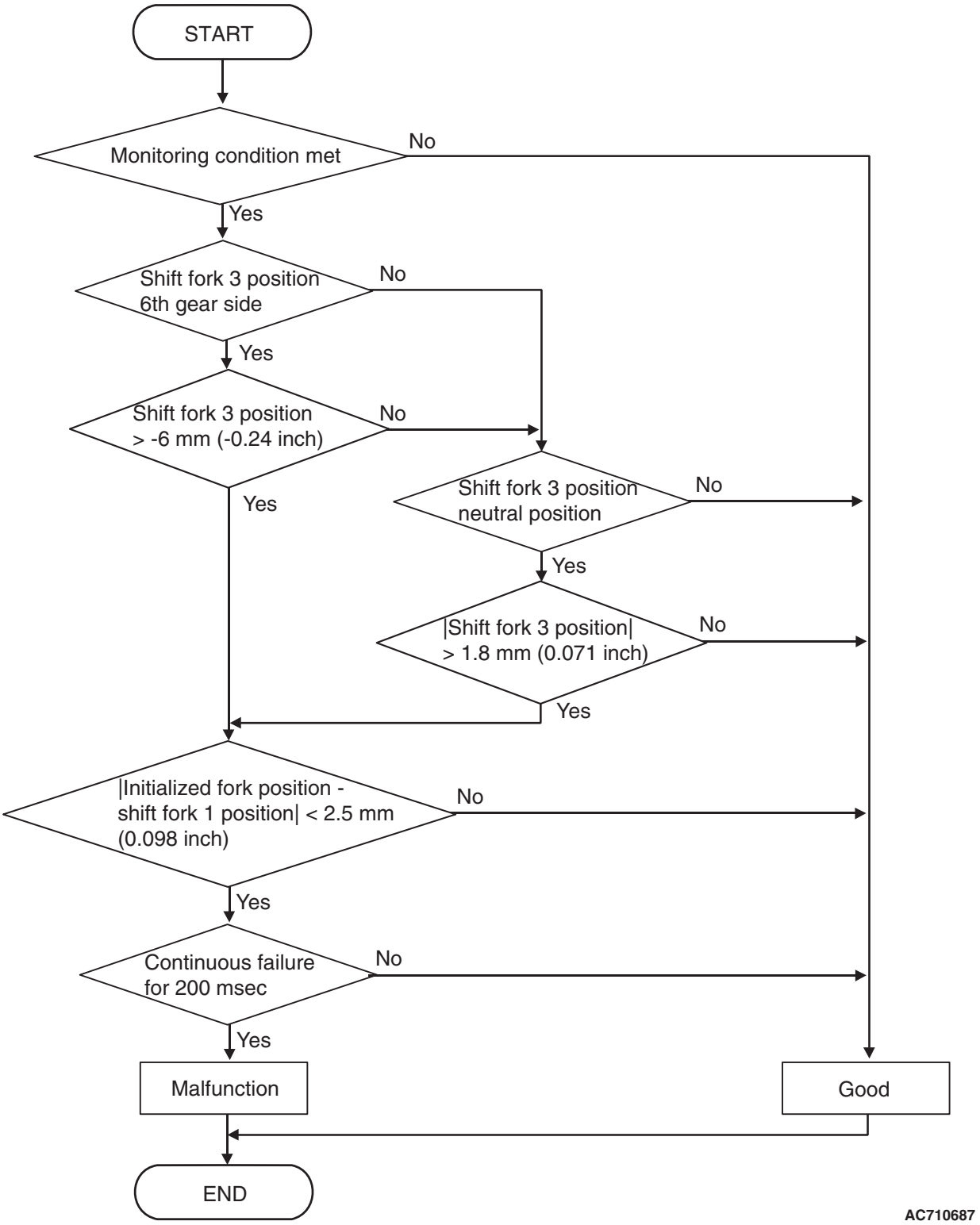
JUDGMENT CRITERIA

- 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.

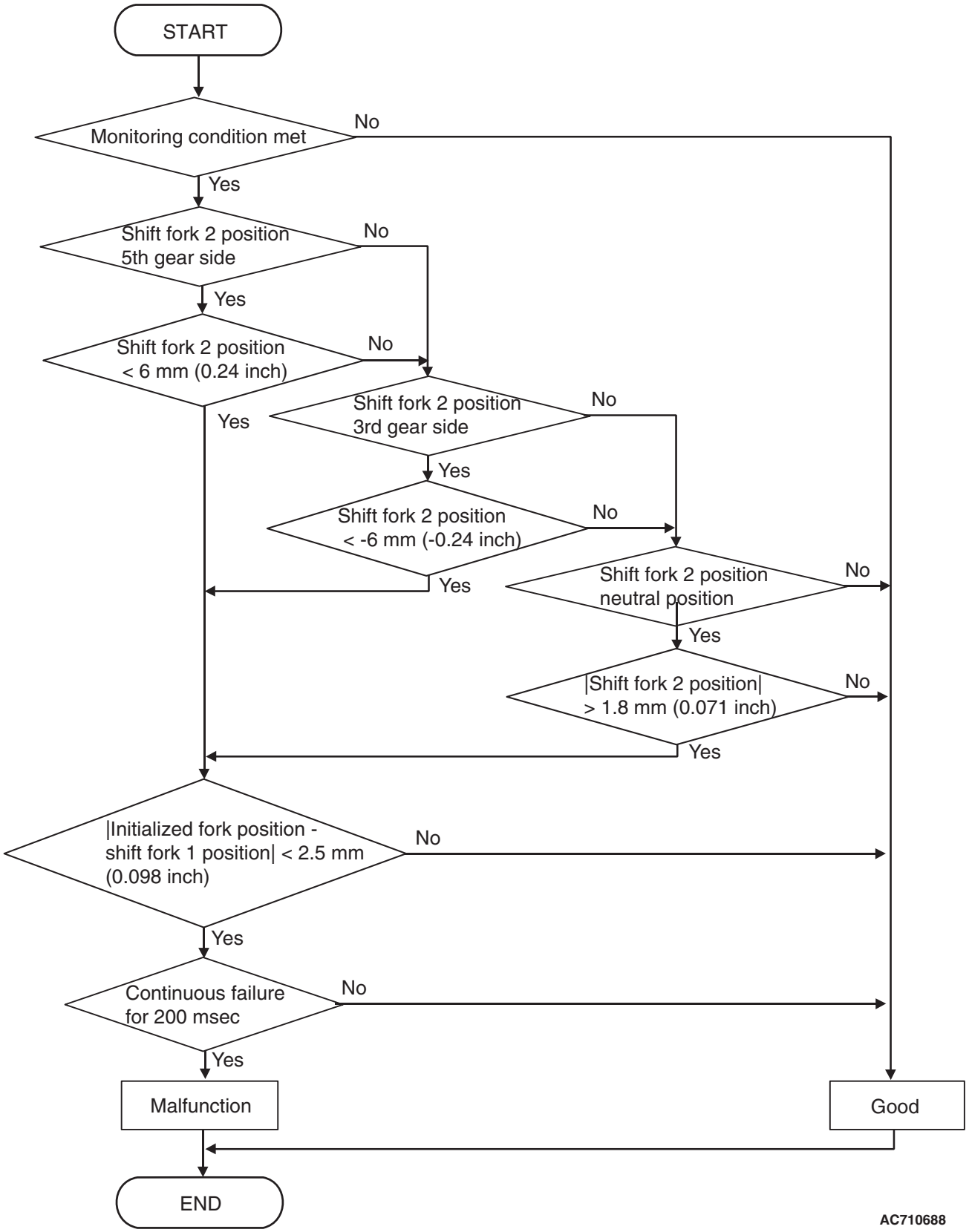
JUDGMENT CRITERIA

- 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>



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 millisecond)

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.00-15.)

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-365).)
(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-365).)

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-109.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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)

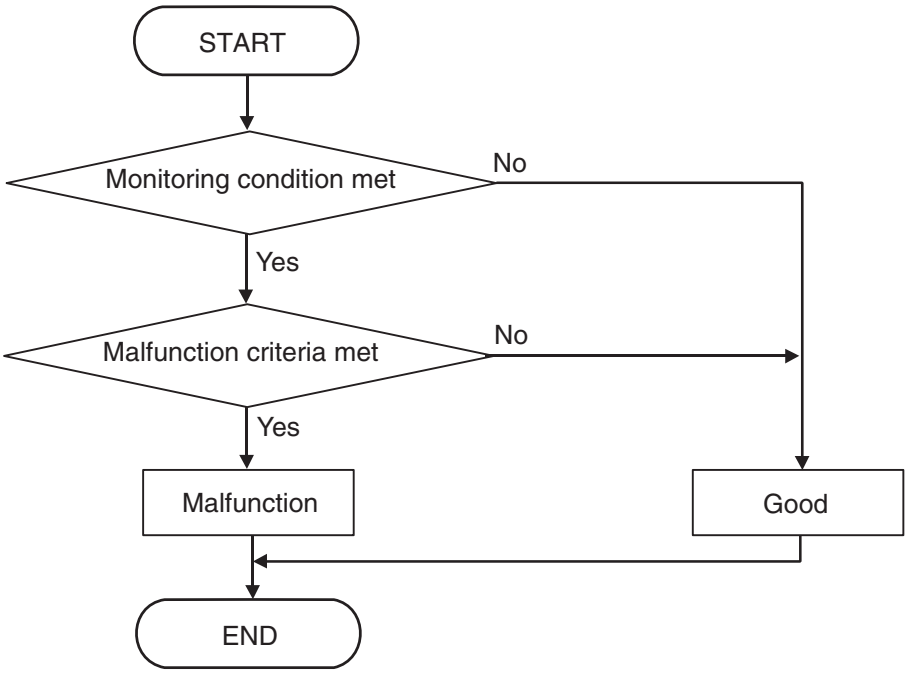
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1836: Shift fork 1 malfunction

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence) <Functional check - blocked>

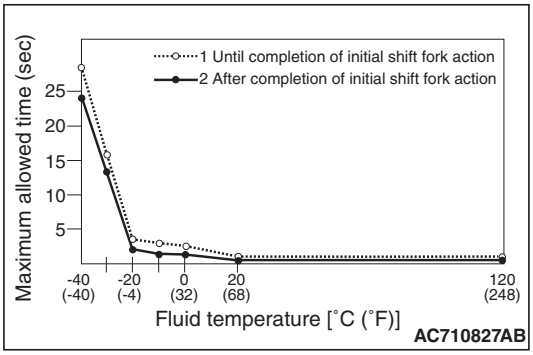


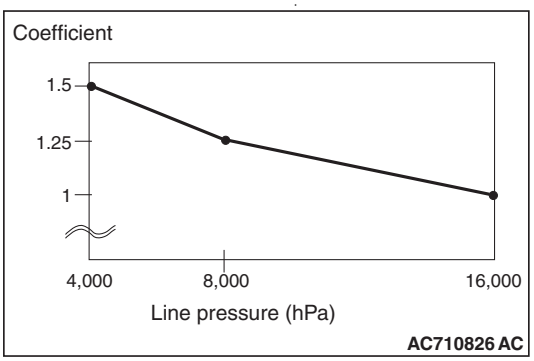
DTC SET CONDITIONS <FUNCTIONAL CHECK - BLOCKED>

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



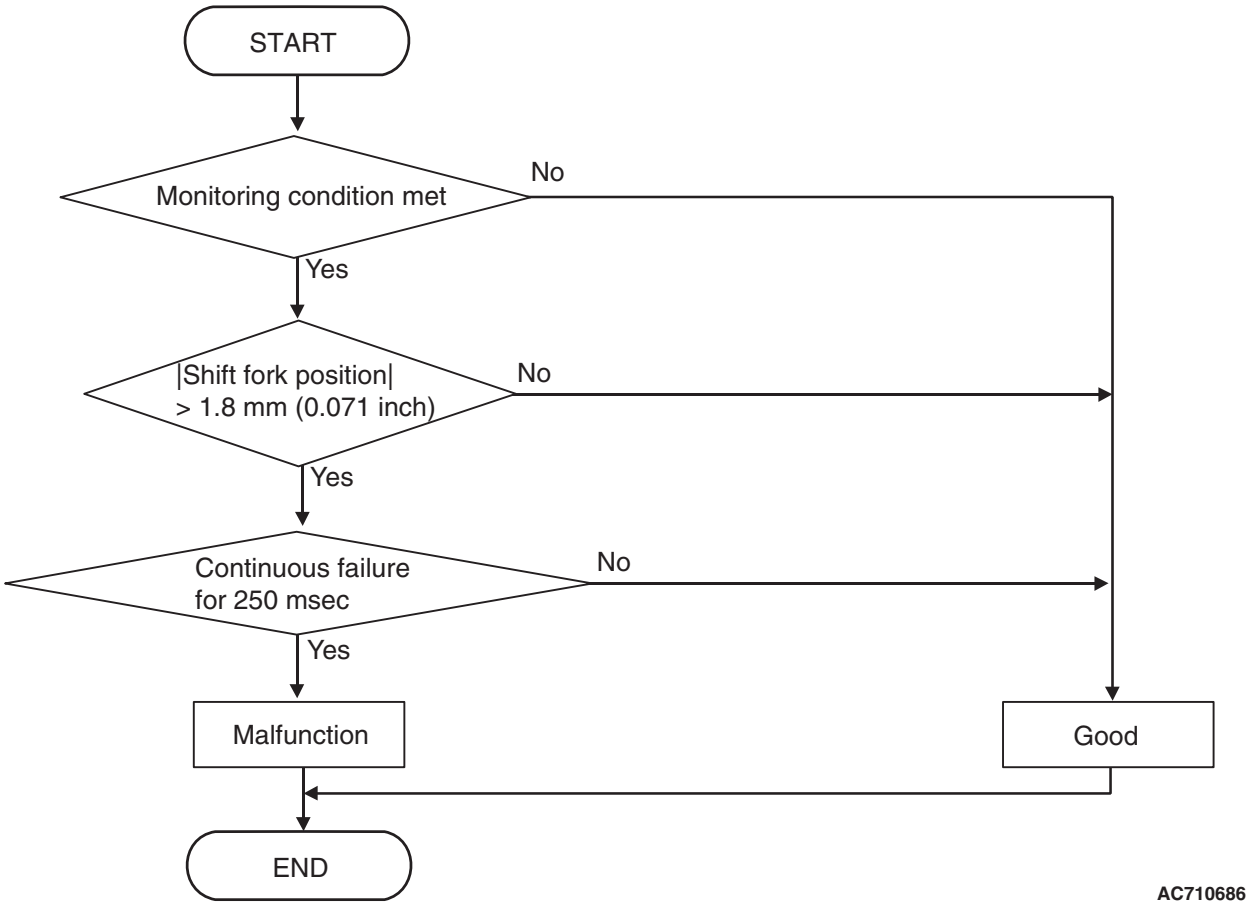


- Shift fork operation time: Shift fork operation time (threshold value) or more. (immediately)
- Shift fork operation time (threshold value): Equal the maximum allowed time x Coefficient. (immediately)

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.

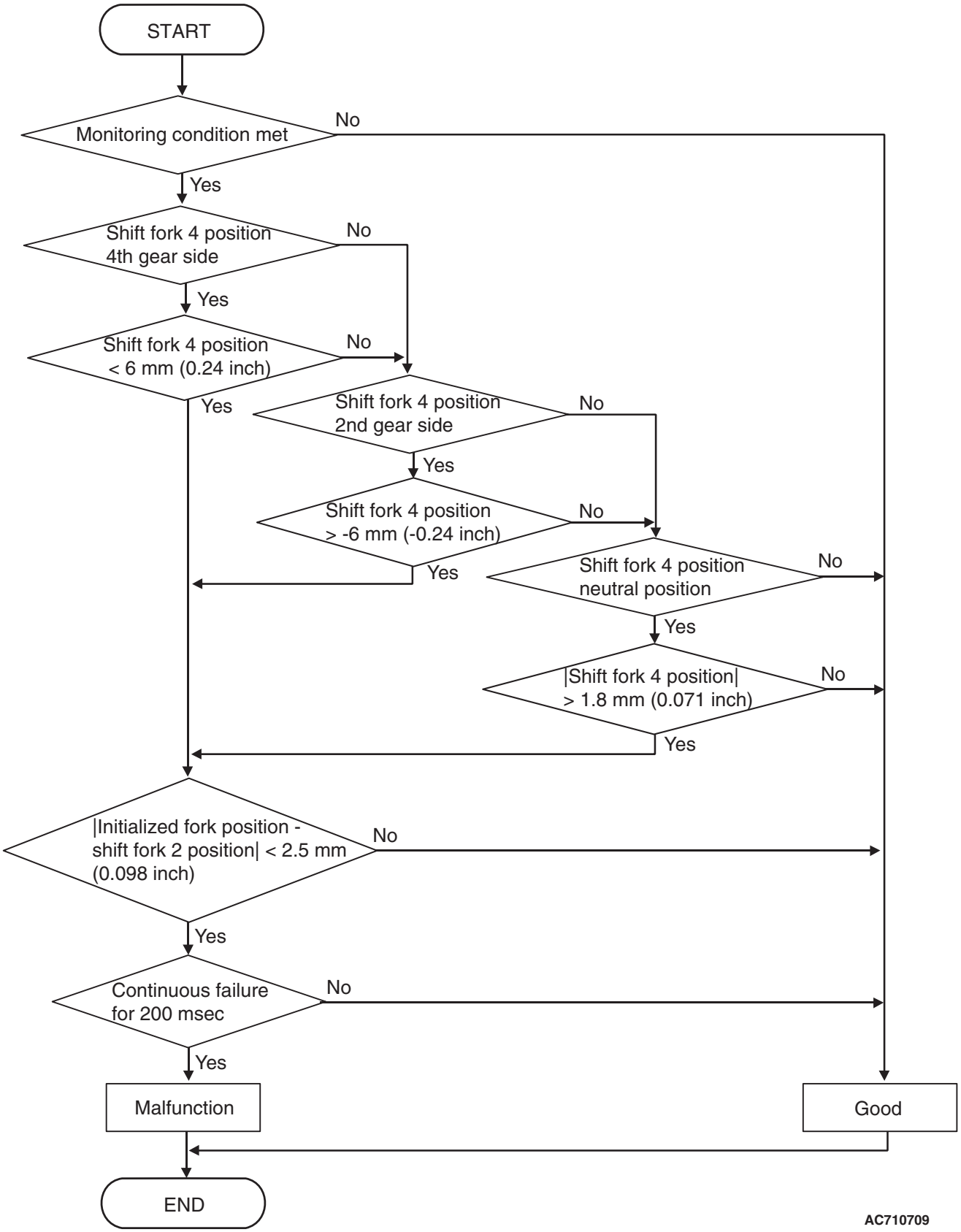
Judgment Criteria

- 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>



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.

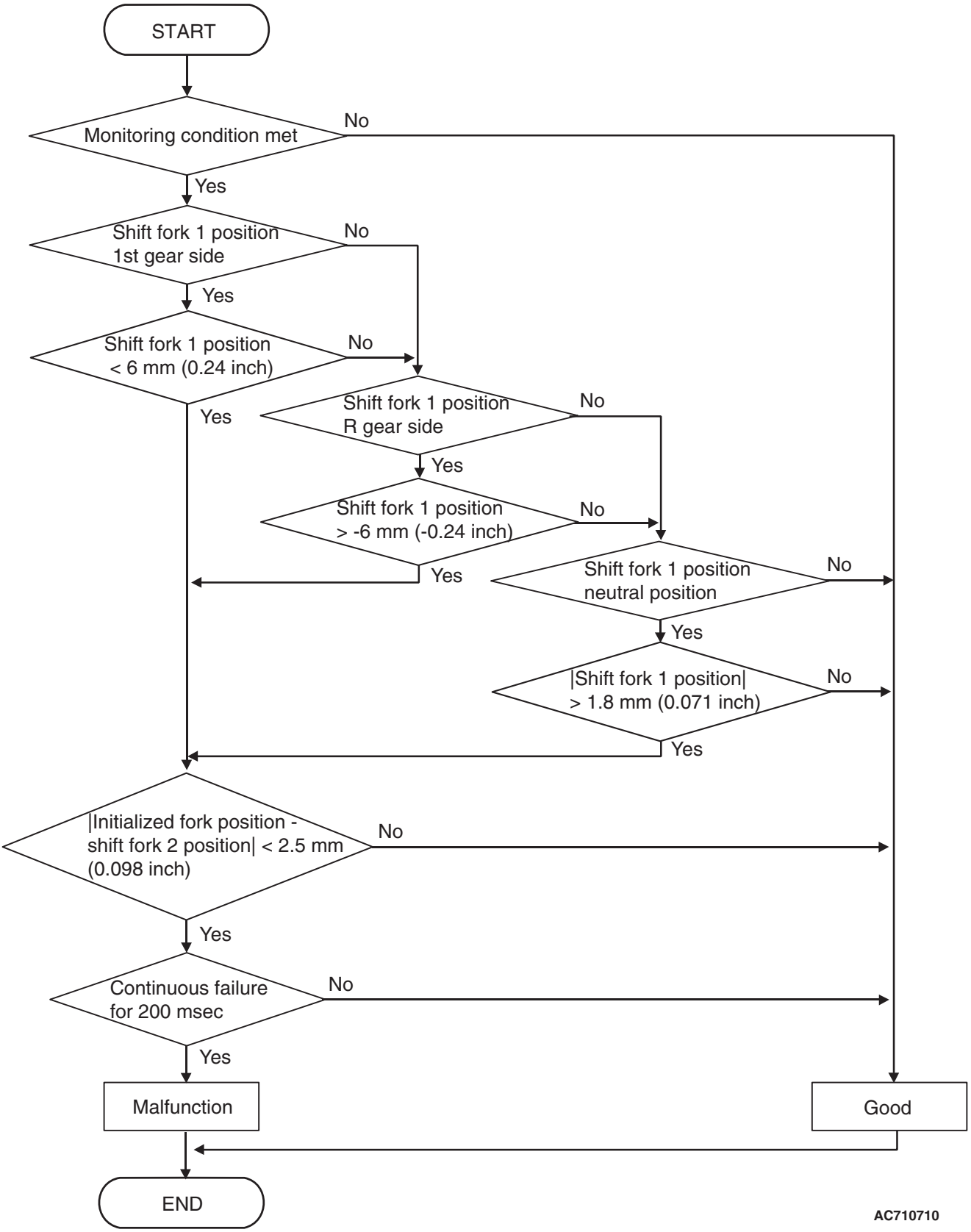
Judgment Criteria

- 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>



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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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.00-15.)

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-365).)
(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-365).)

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-109.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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.

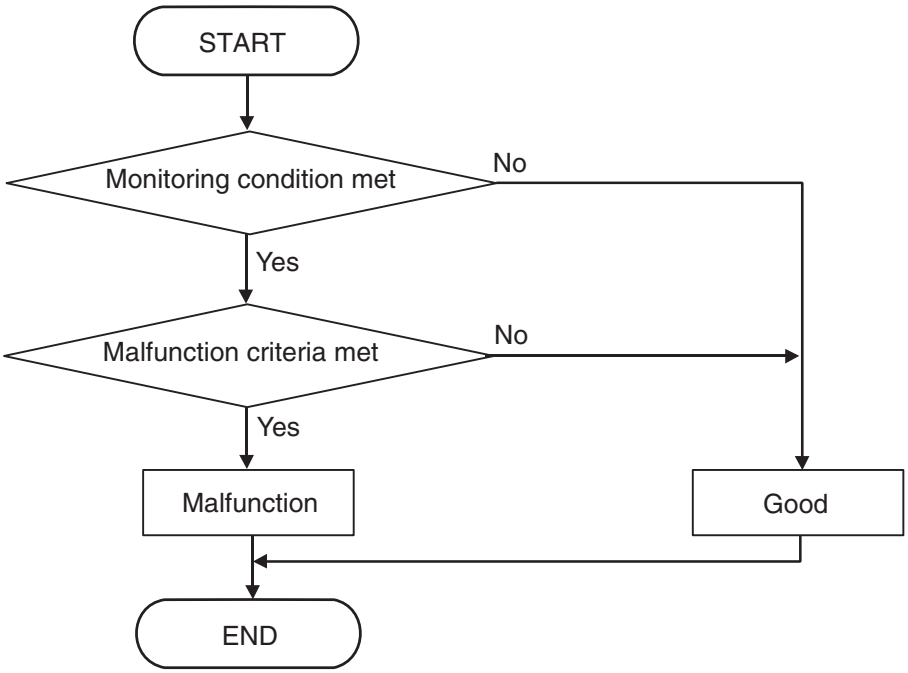
DESCRIPTIONS OF MONITOR METHODS
The movement of the shift fork 3 is determined to be abnormal.

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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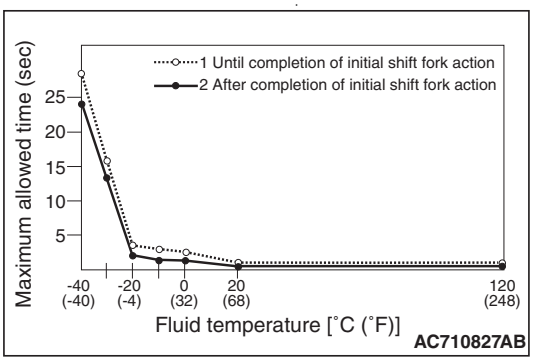
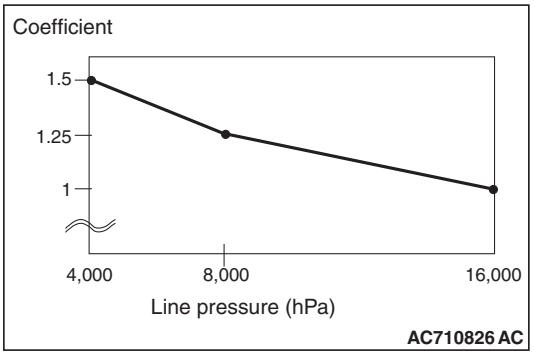
DTC SET CONDITIONS <FUNCTIONAL CHECK - BLOCKED>

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



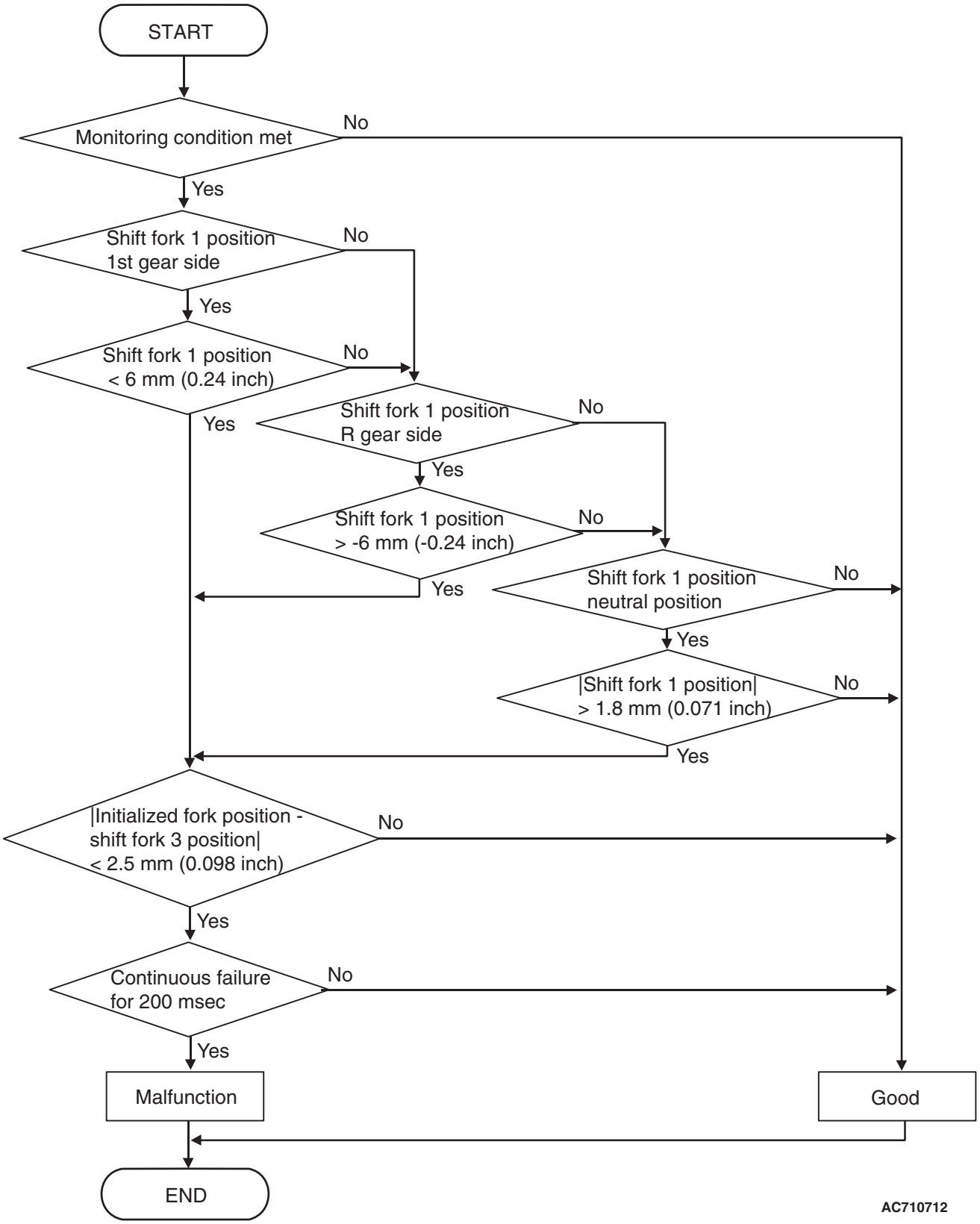


- Shift fork operation time: Shift fork operation time (threshold value) or more. (immediately)
- Shift fork operation time (threshold value): Equal the maximum allowed time x Coefficient. (immediately)

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>



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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.

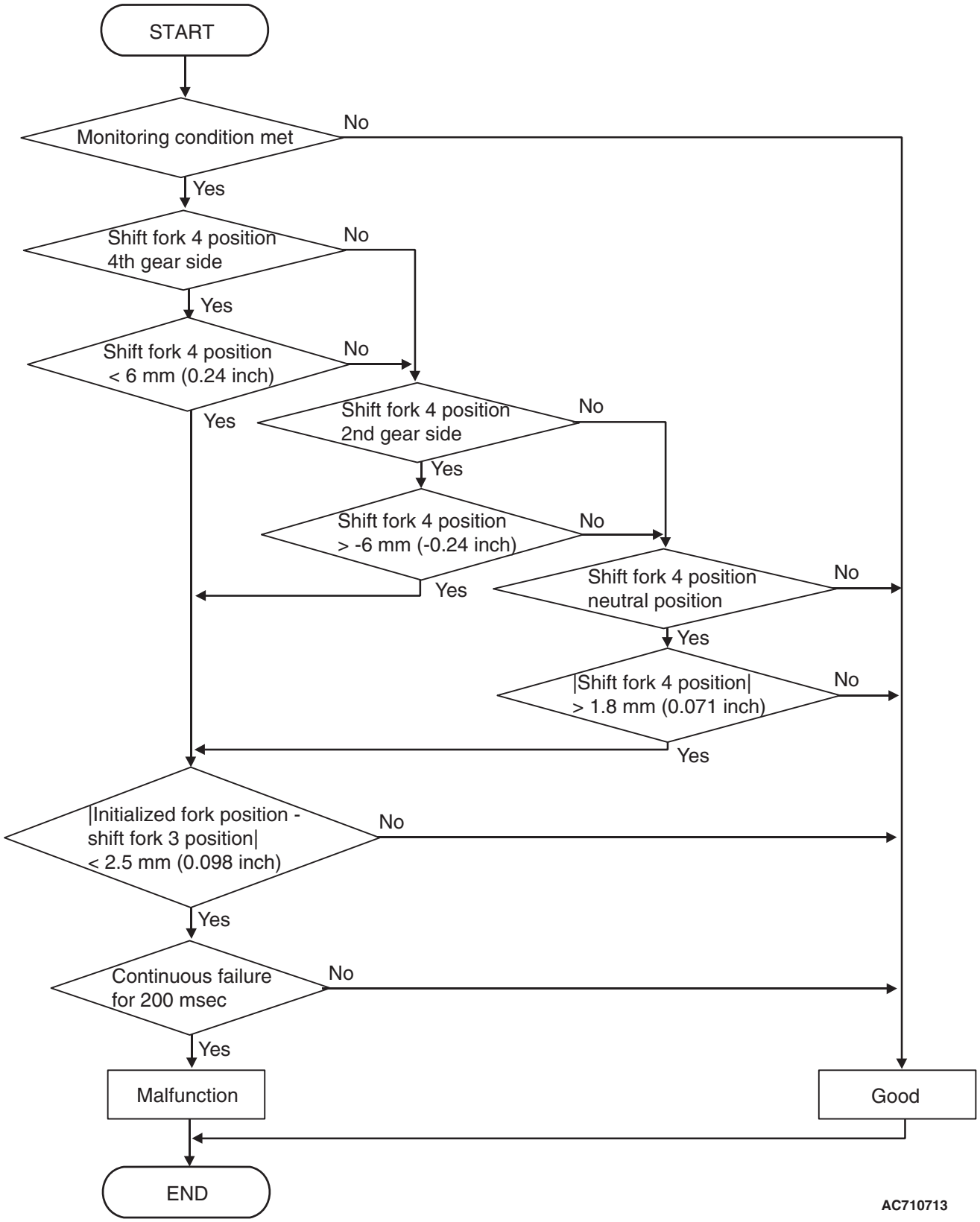
JUDGMENT CRITERIA

- 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>



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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 millisecond)

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.00-15.)

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-365).)
(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-365).)

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-109.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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.

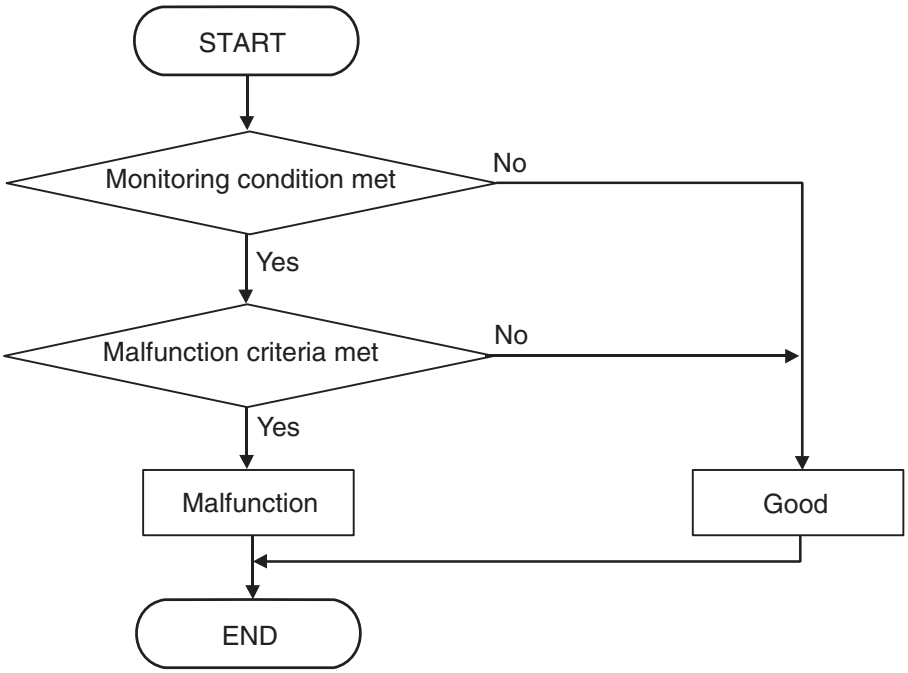
DESCRIPTIONS OF MONITOR METHODS
The movement of the shift fork 4 is determined to be abnormal.

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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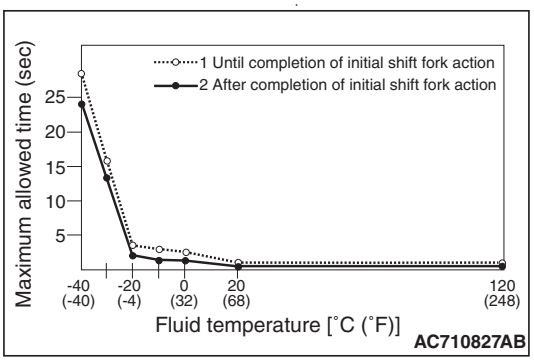
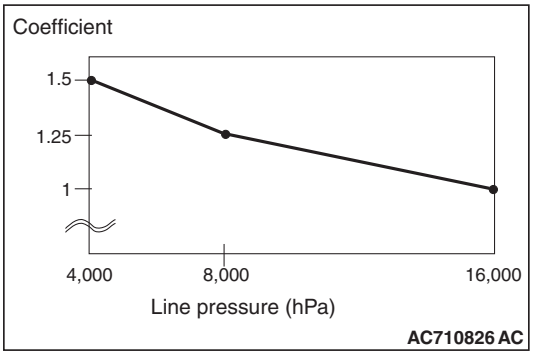
DTC SET CONDITIONS <FUNCTIONAL CHECK - BLOCKED>

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



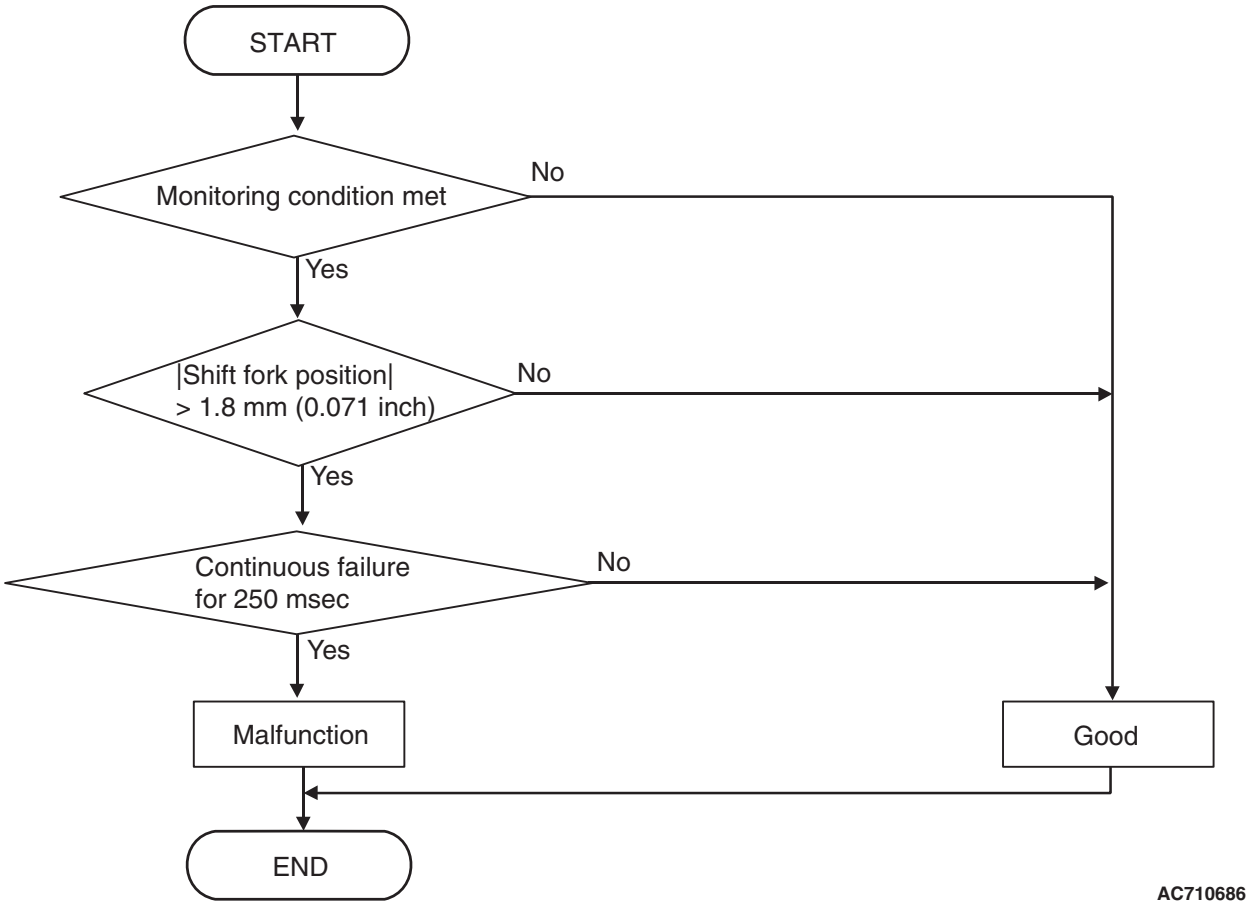


- Shift fork operation time: Shift fork operation time (threshold value) or more. (immediately)
- Shift fork operation time (threshold value): Equal the maximum allowed time x Coefficient. (immediately)

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>



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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.

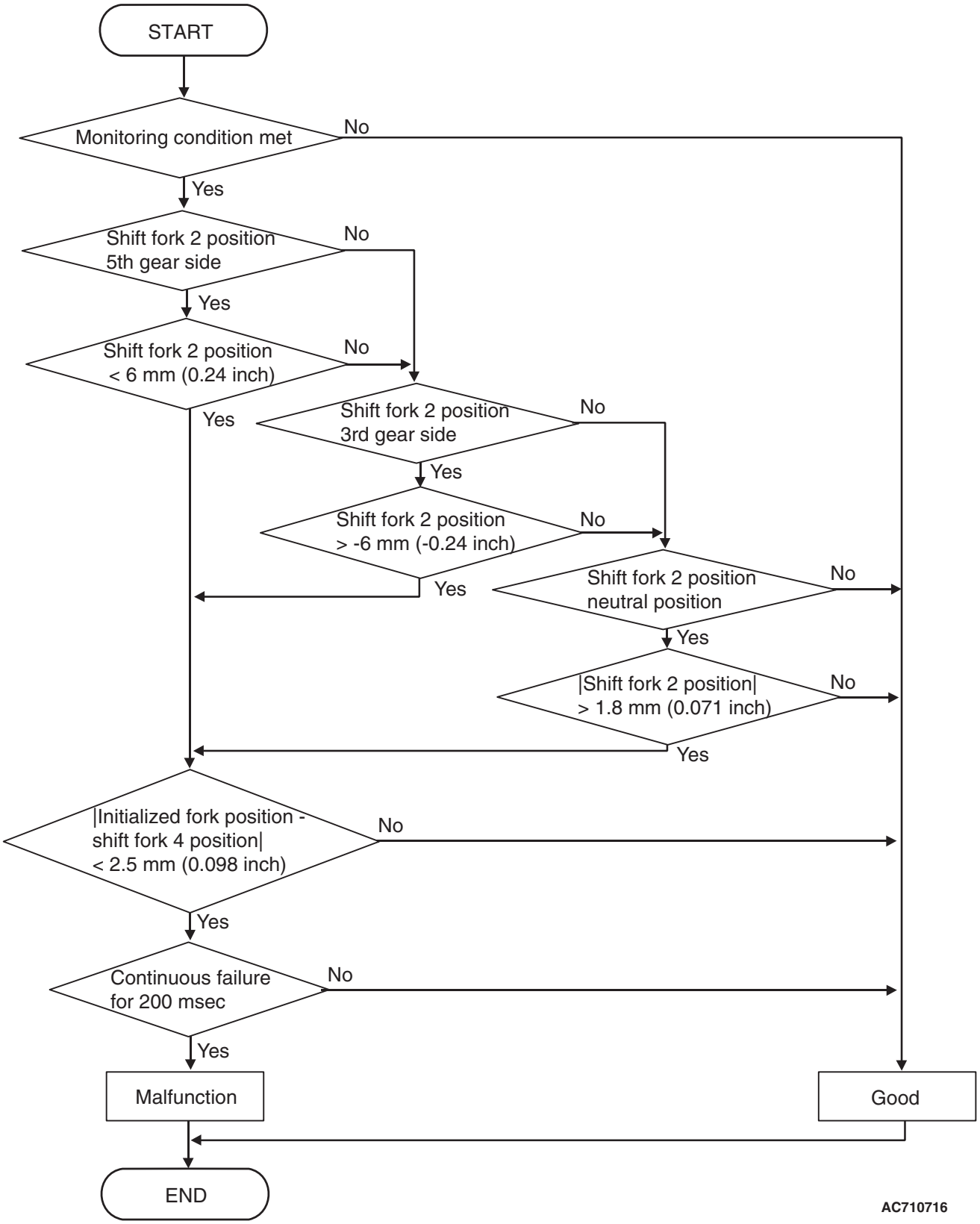
JUDGMENT CRITERIA

- 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.

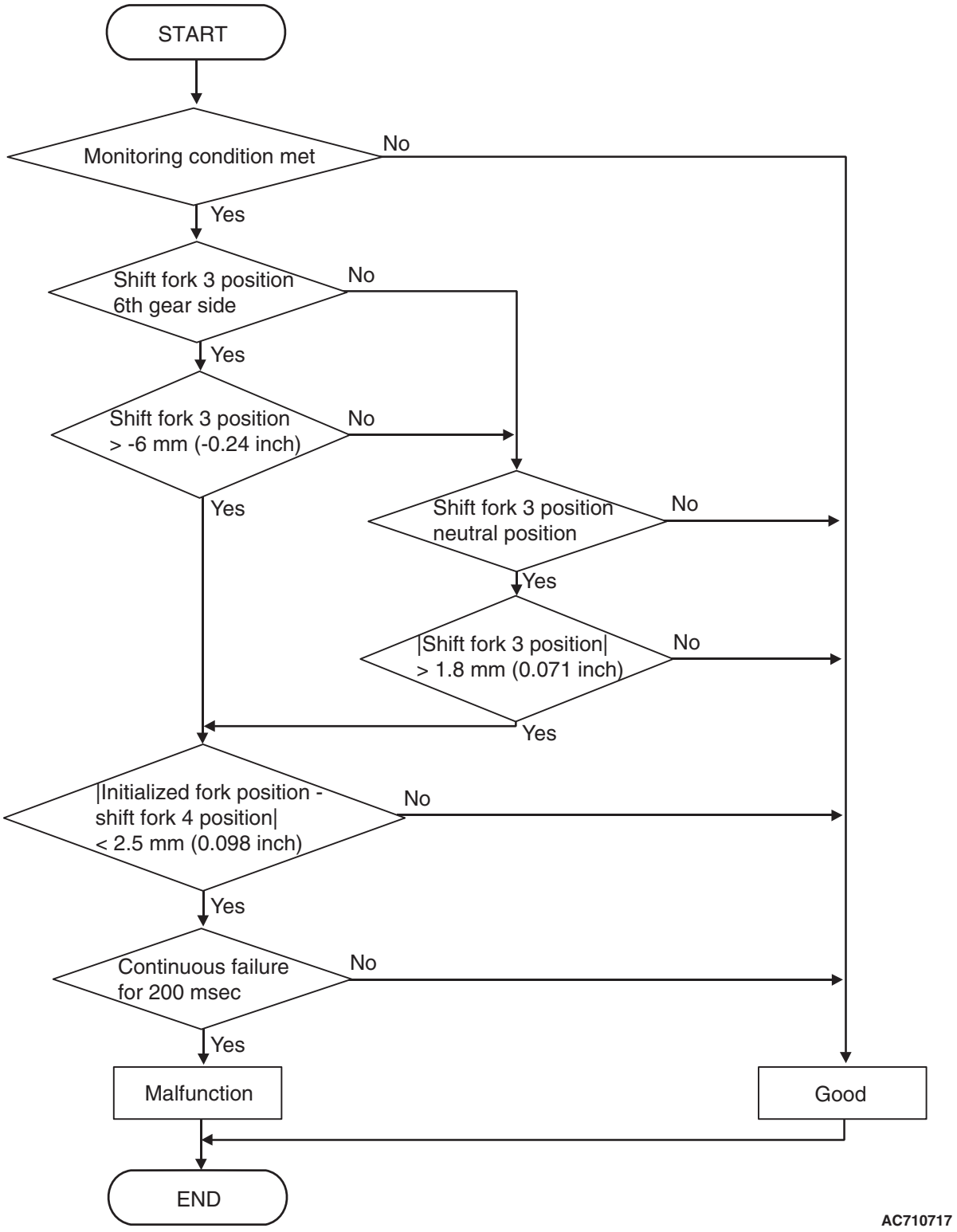
JUDGMENT CRITERIA

- 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 millisecond)

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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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.00-15.)

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-365).)
(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-365).)

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-109.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"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-421.)
(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-412.)
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)

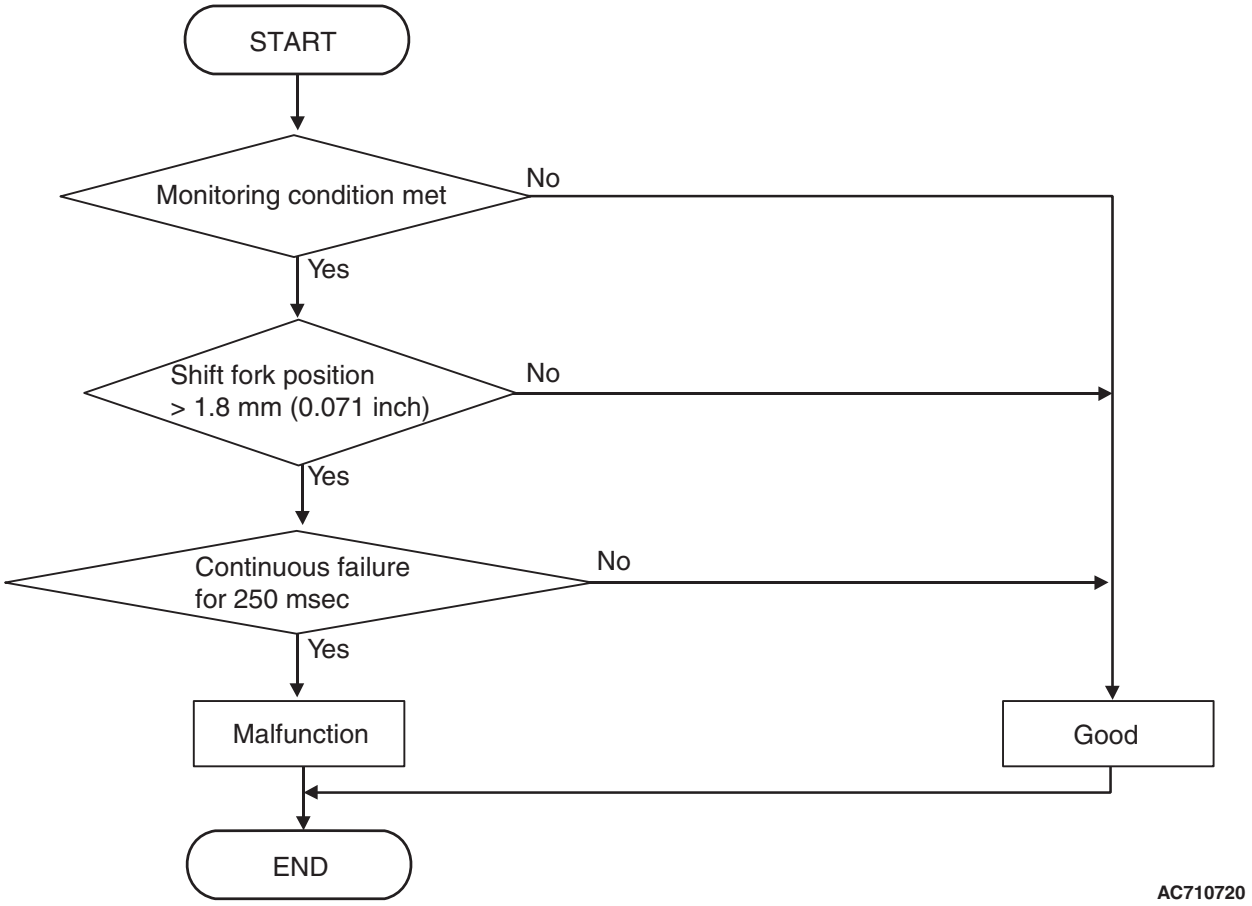
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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.

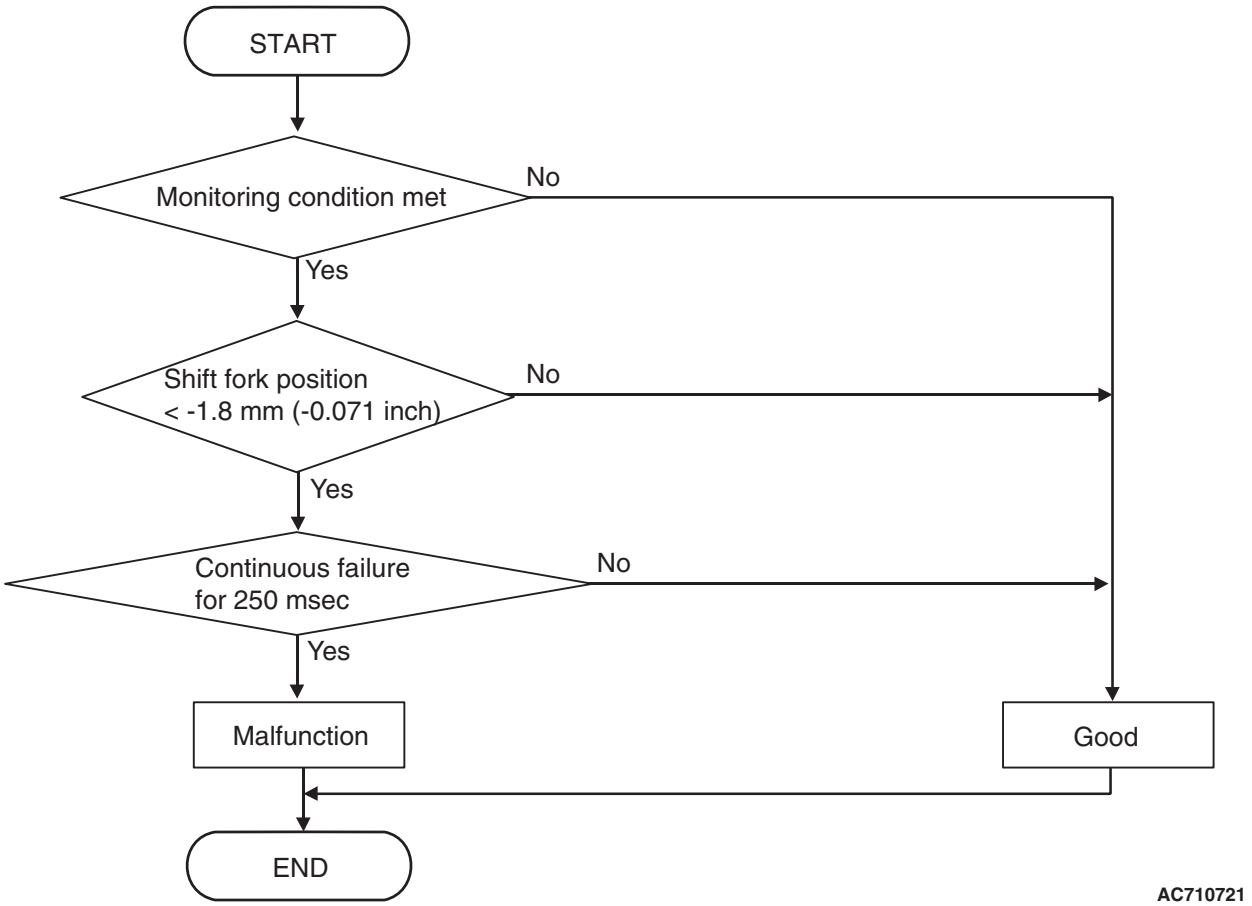
JUDGMENT CRITERIA

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

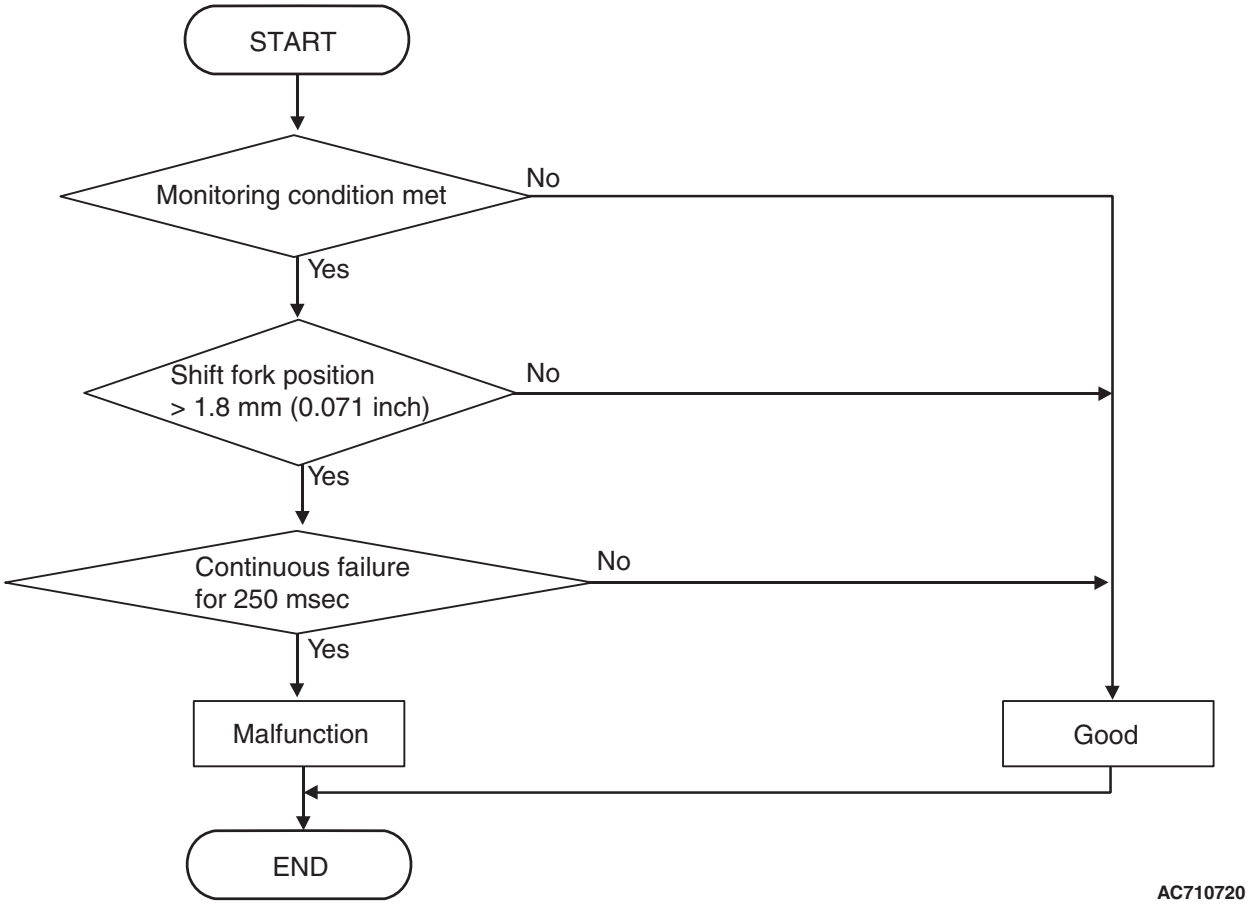
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- P1836: Shift fork 1 malfunction
- P183D: Shift fork 2 malfunction
- P1844: Shift fork 3 malfunction
- P184B: Shift fork 4 malfunction

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.

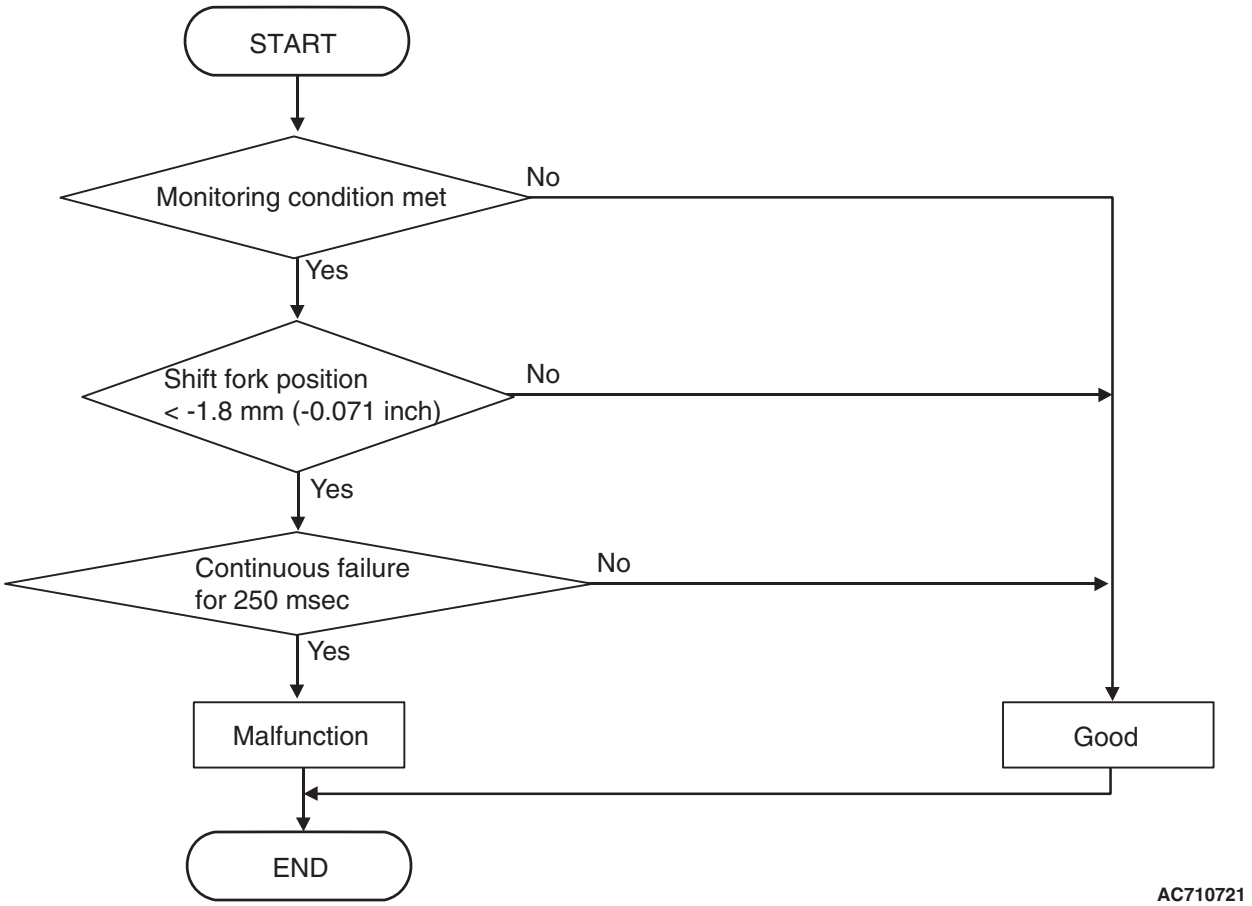
JUDGMENT CRITERIA

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

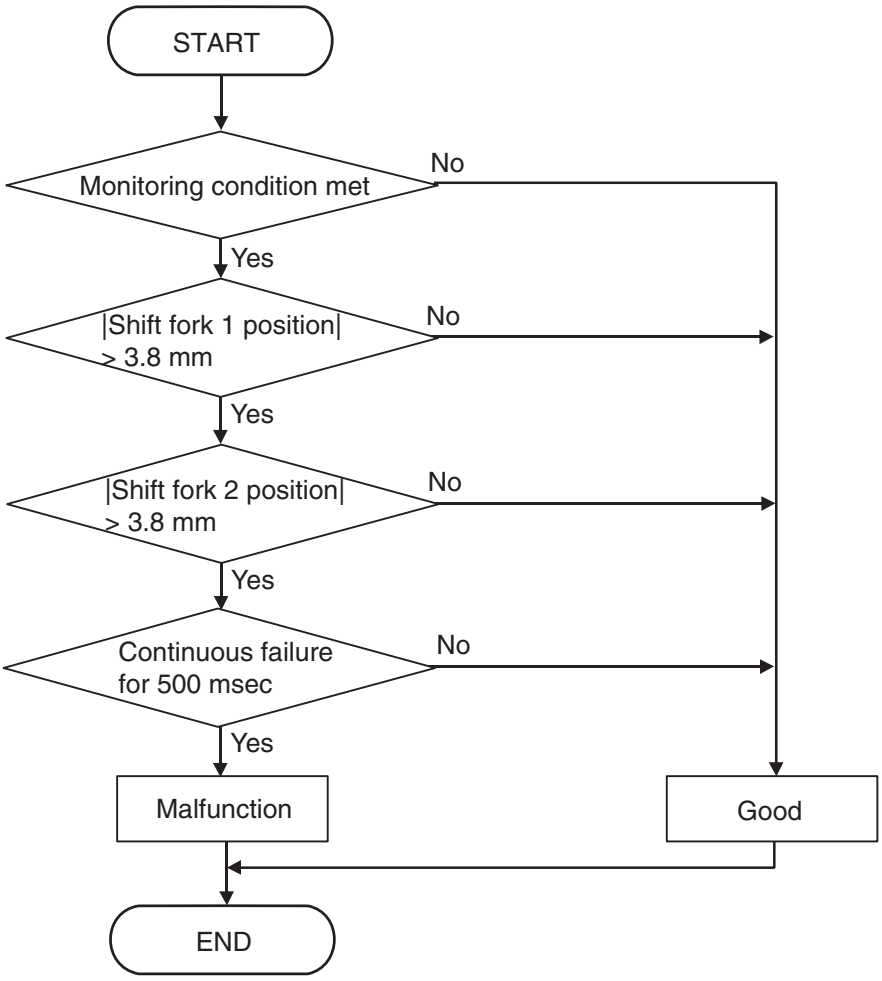
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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.00-15.)

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-421.)
NO : Replace the transaxle assembly. (Refer to P.22C-412.)

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)

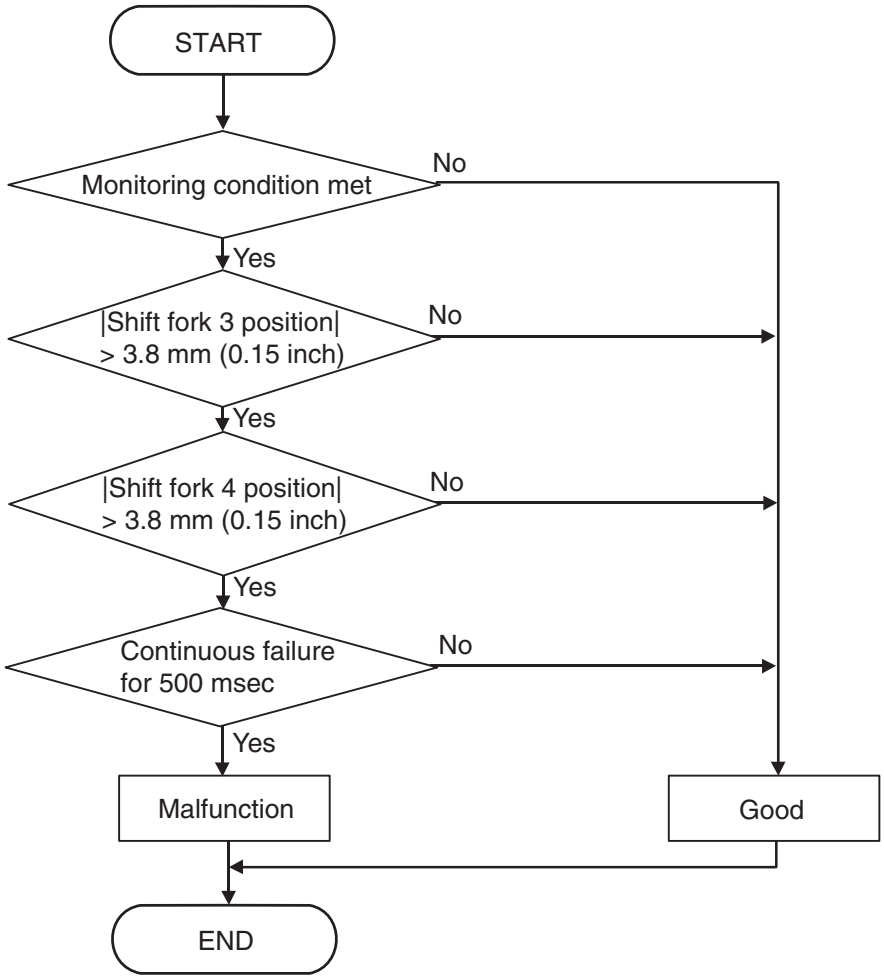
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



TSB Revision

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 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-15.) 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.00-15.)

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-421.)

NO : Replace the transaxle assembly. (Refer to P.22C-412.)

TSB Revision

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-15.) 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-6.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

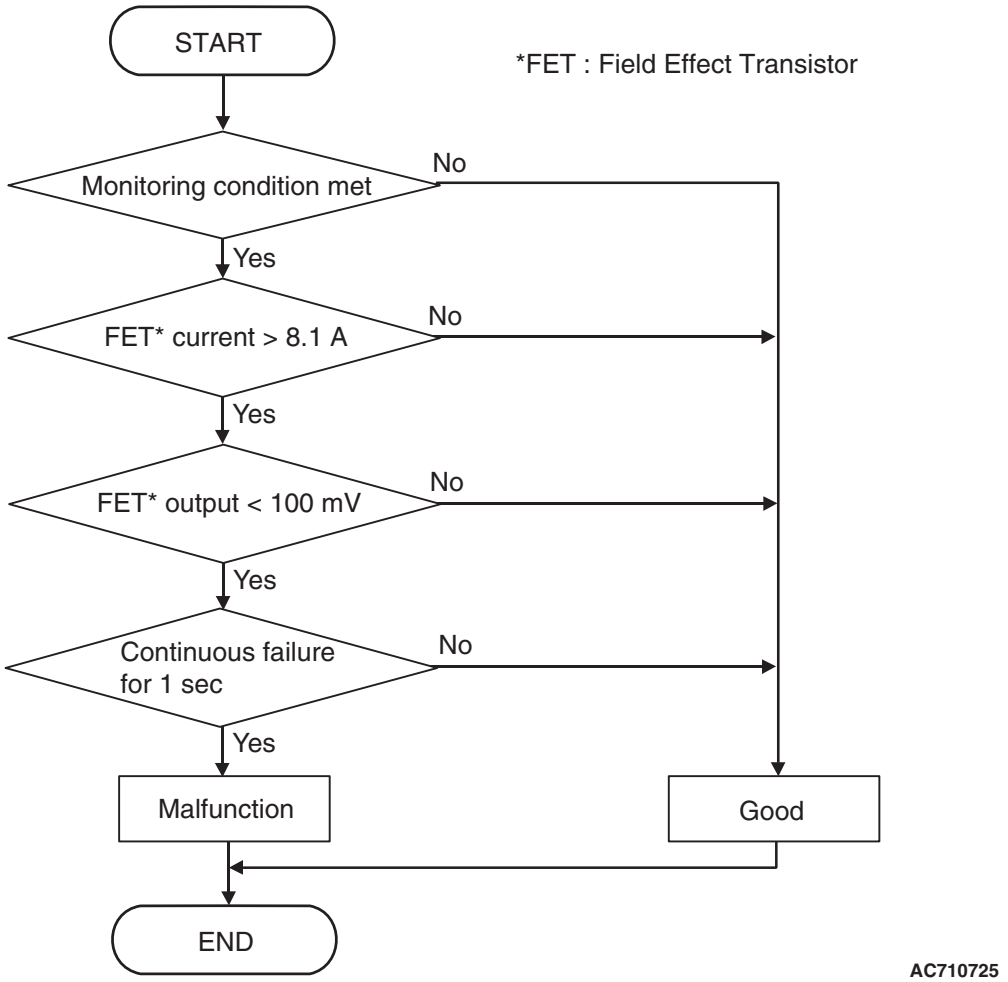
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

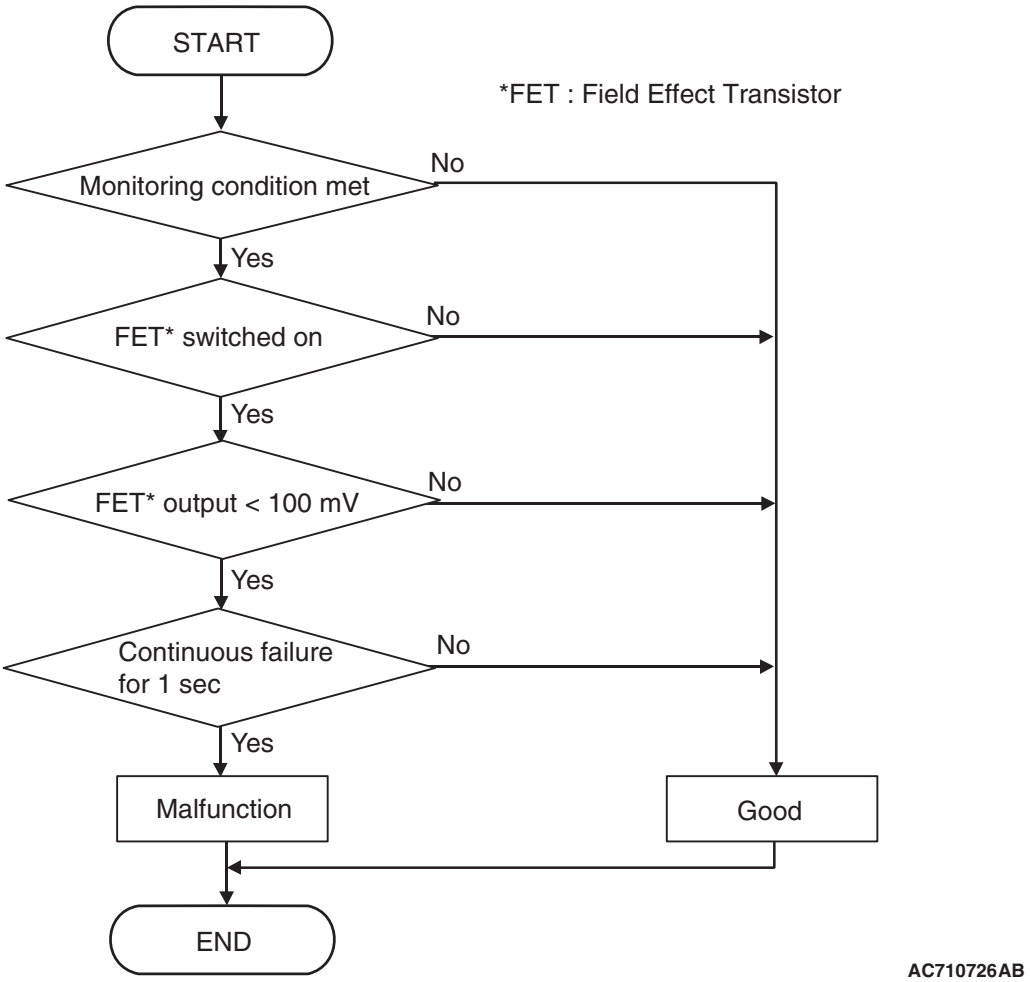
MONITOR EXECUTION
- Continuous

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

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

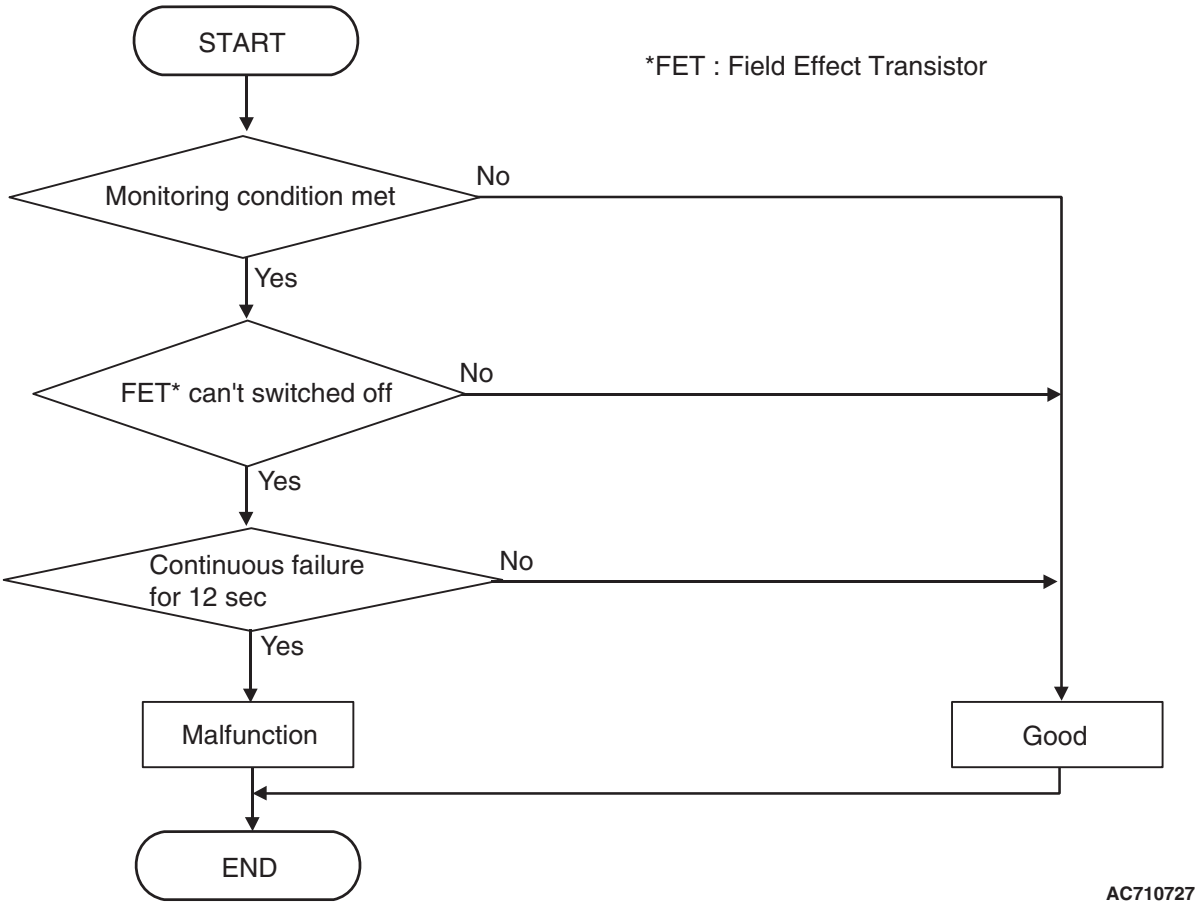
MONITOR EXECUTION
- Continuous

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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

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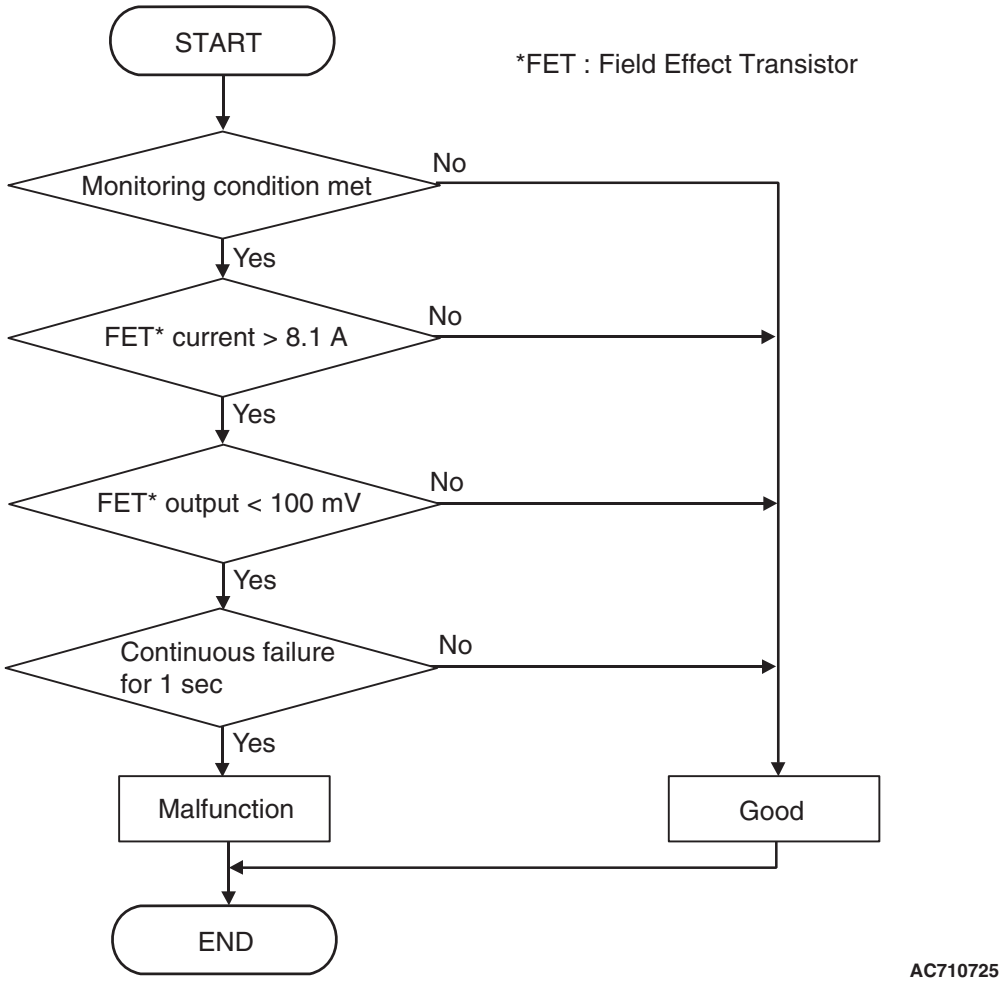
LOGIC FLOW CHARTS (Monitor Sequence)



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

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

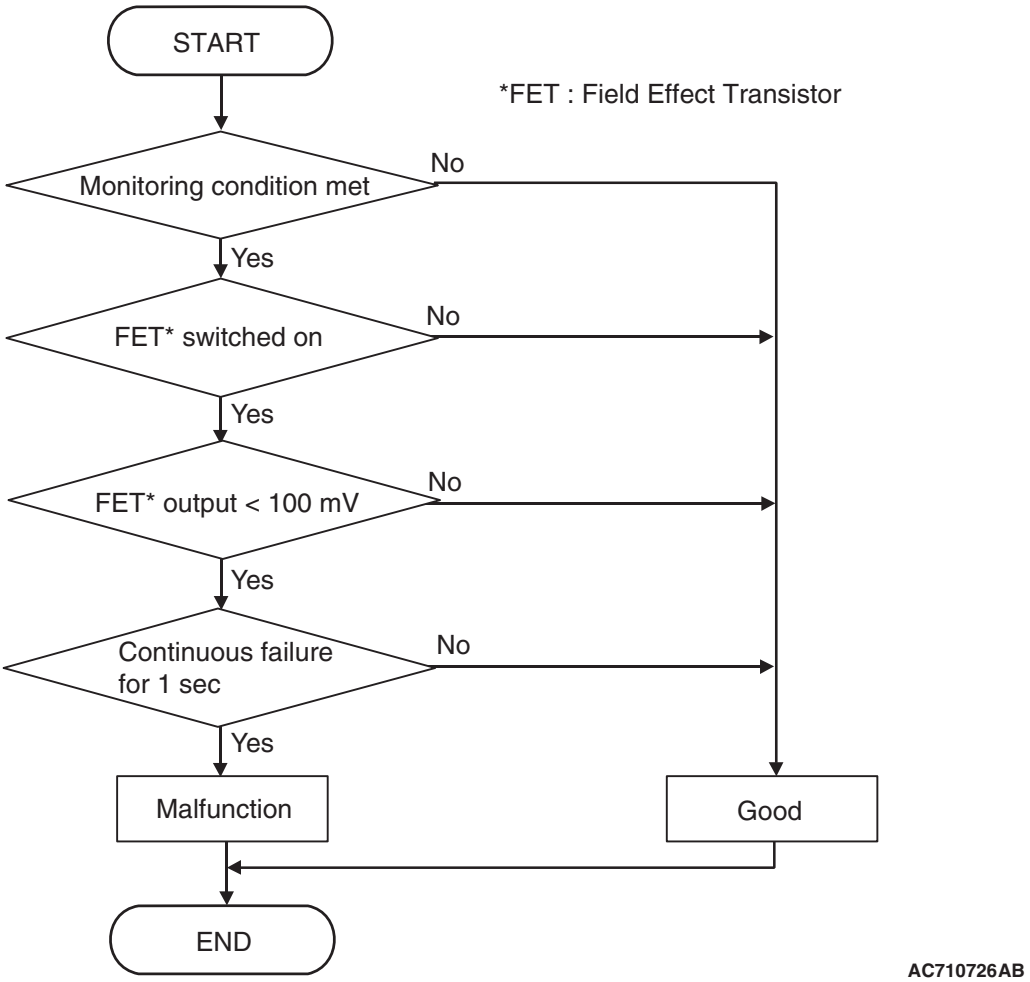
MONITOR EXECUTION
- Continuous

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

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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

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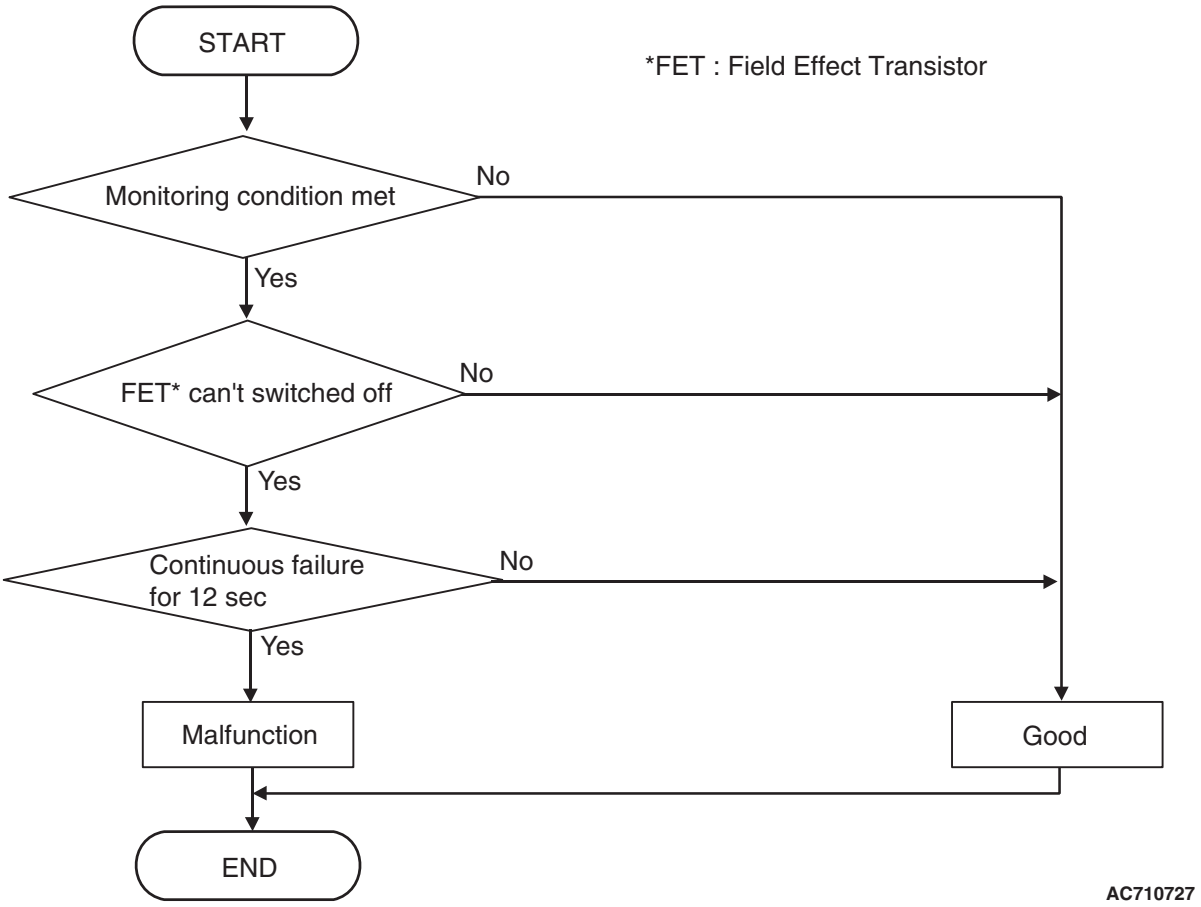
LOGIC FLOW CHARTS (Monitor Sequence)



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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

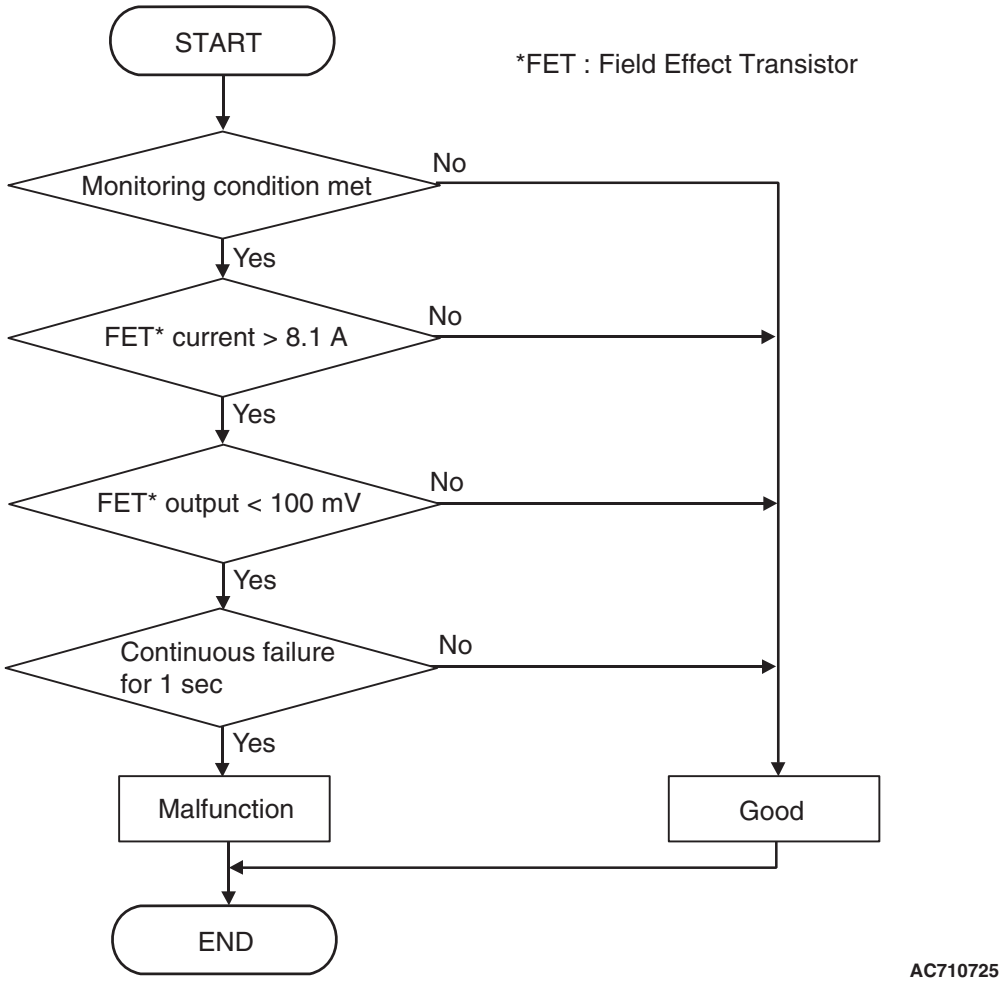
MONITOR EXECUTION
- Continuous

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

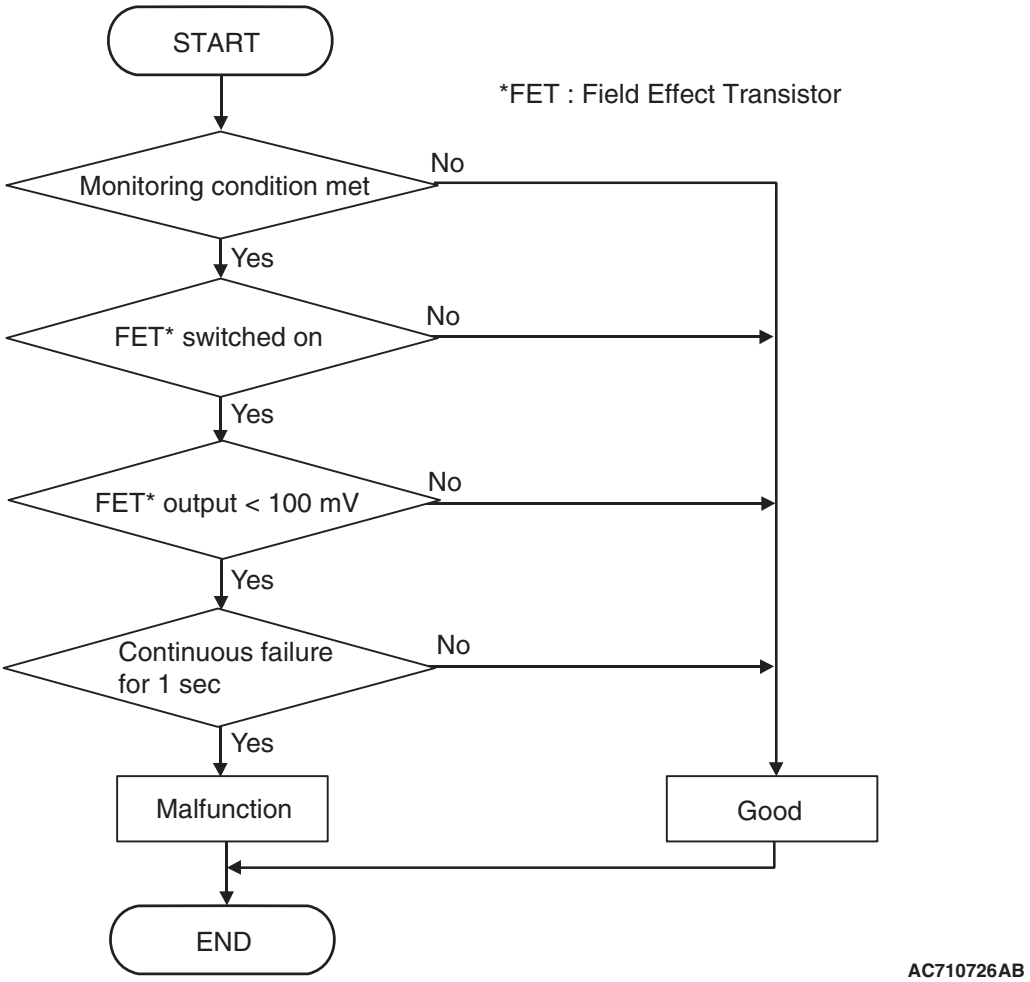
MONITOR EXECUTION
- Continuous

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

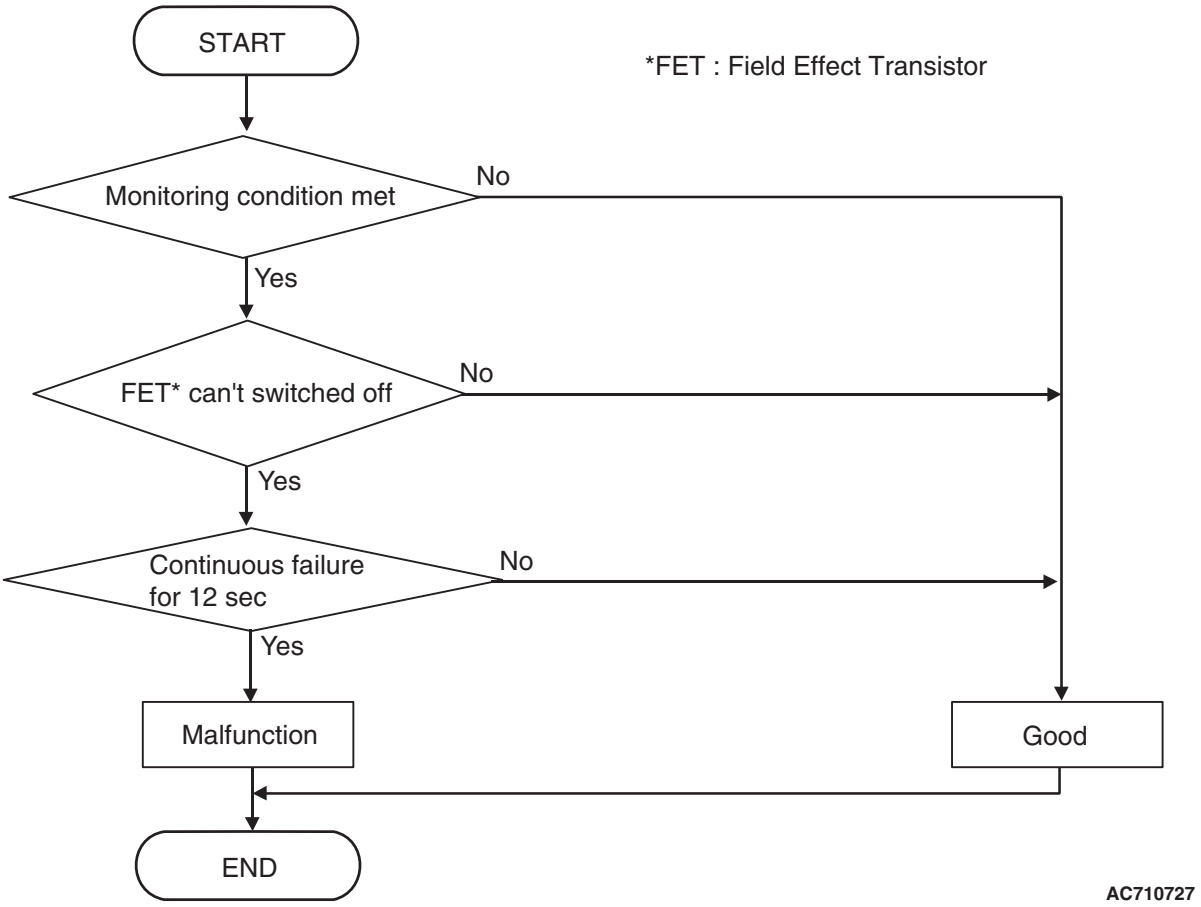
MONITOR EXECUTION
- Continuous

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

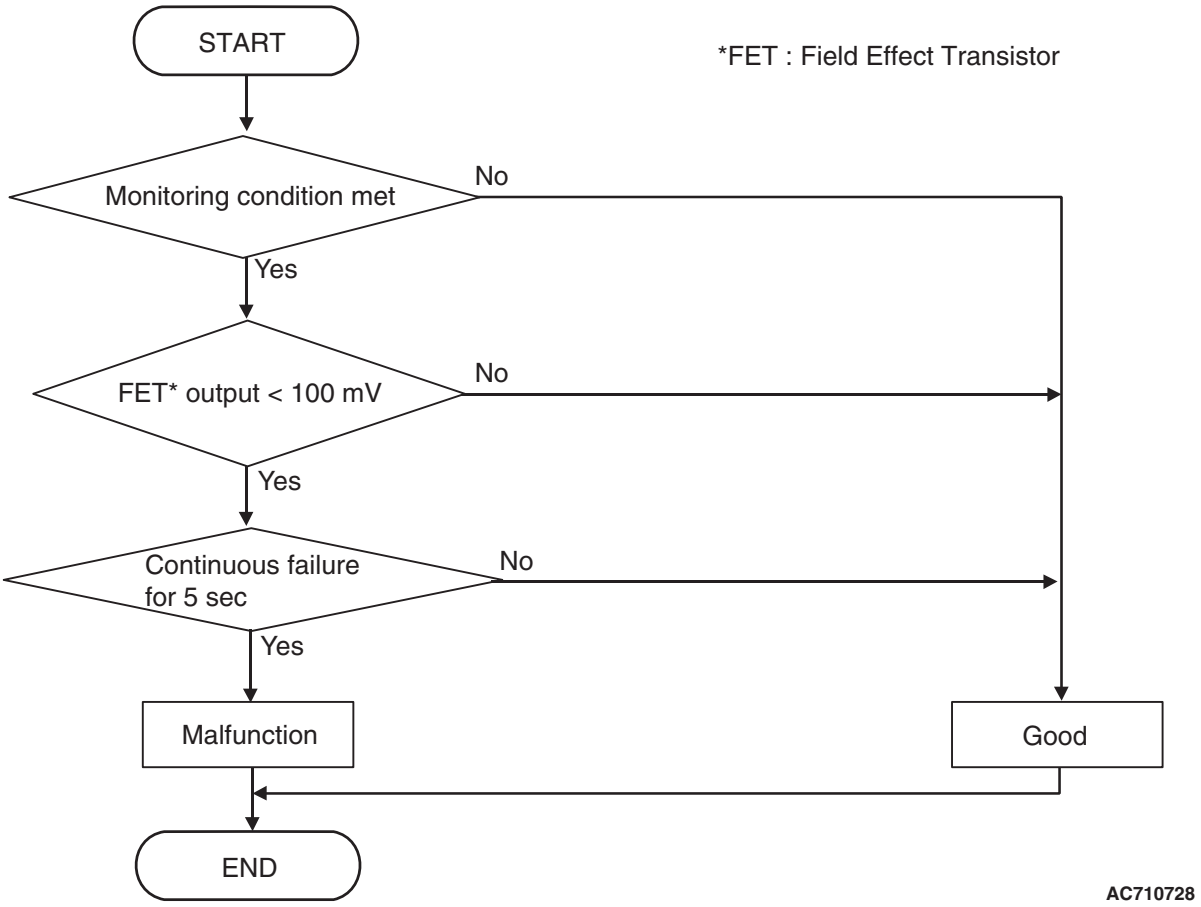
MONITOR EXECUTION
- Continuous

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-15.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check the TC-SST-ECU power supply circuit
Refer to P.22C-341.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-341.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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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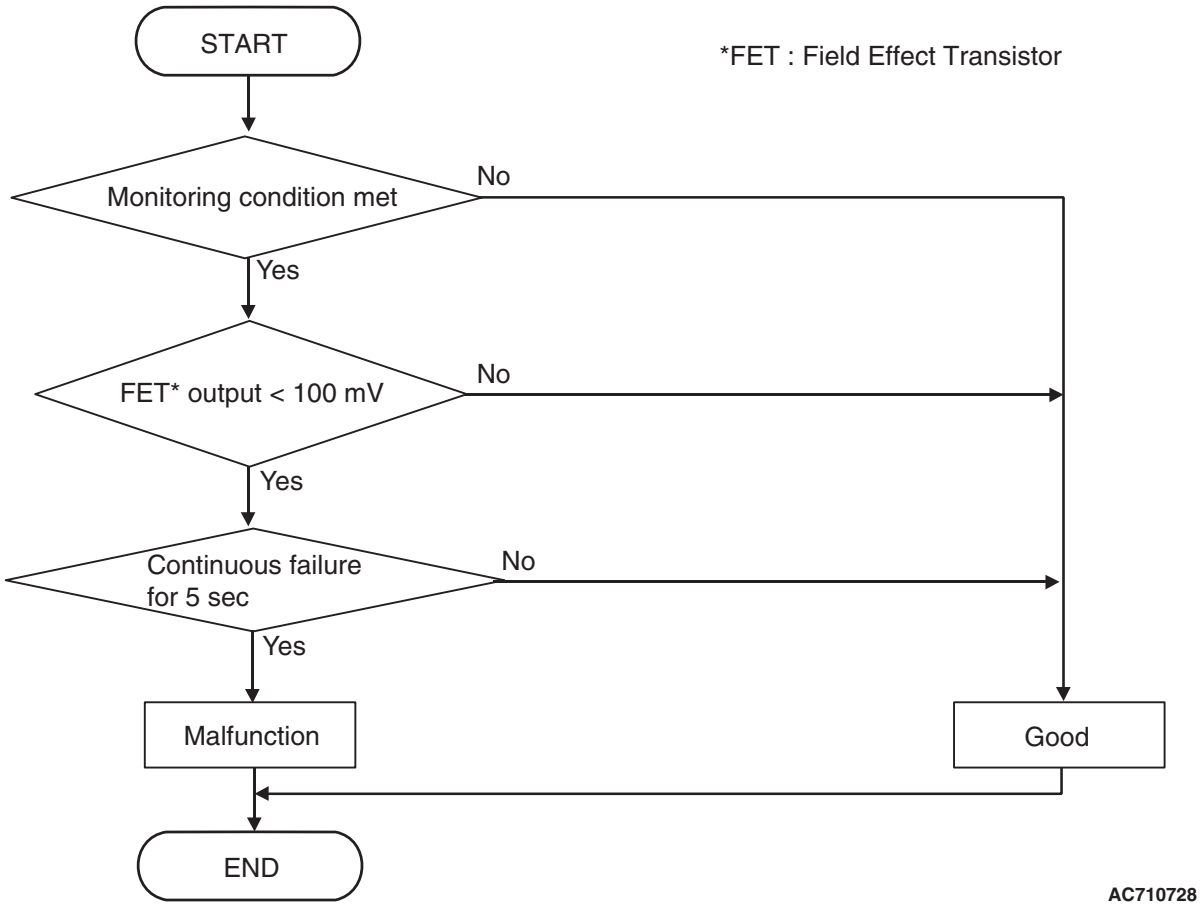
- P2721: Clutch/shift pressure solenoid 1 system (Short to power supply)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 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-15.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check the TC-SST-ECU power supply circuit
Refer to P.22C-341.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-341.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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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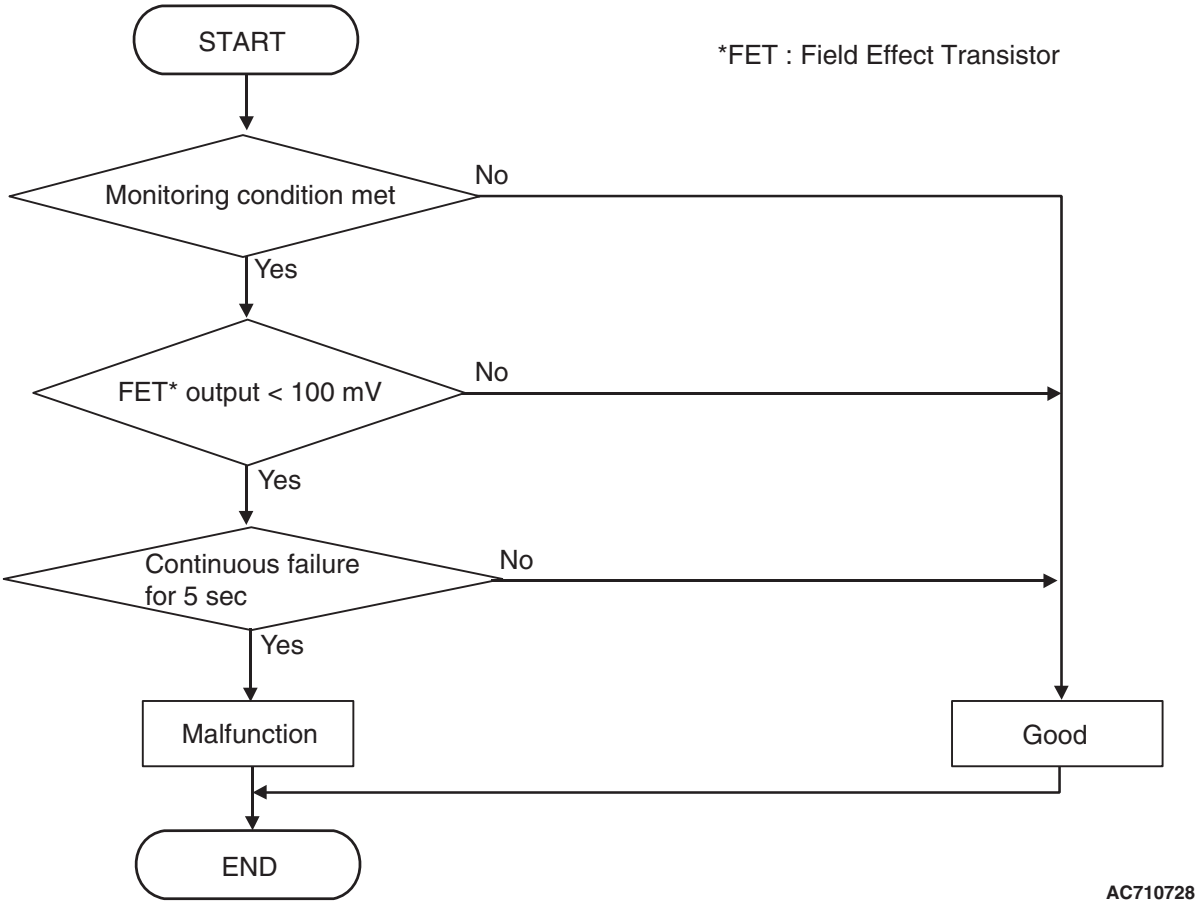
- P2728: Clutch/shift pressure solenoid 2 system (Overcurrent)
- P2729: Clutch/shift pressure solenoid 2 system (Short to ground)
- P2730: Clutch/shift pressure solenoid 2 system (Short to power supply)
- P2809: Clutch/shift switching solenoid 2, spool stuck
- P2812: Clutch/shift switching solenoid 2 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)

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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 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-15.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check the TC-SST-ECU power supply circuit
Refer to P.22C-341.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-341.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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

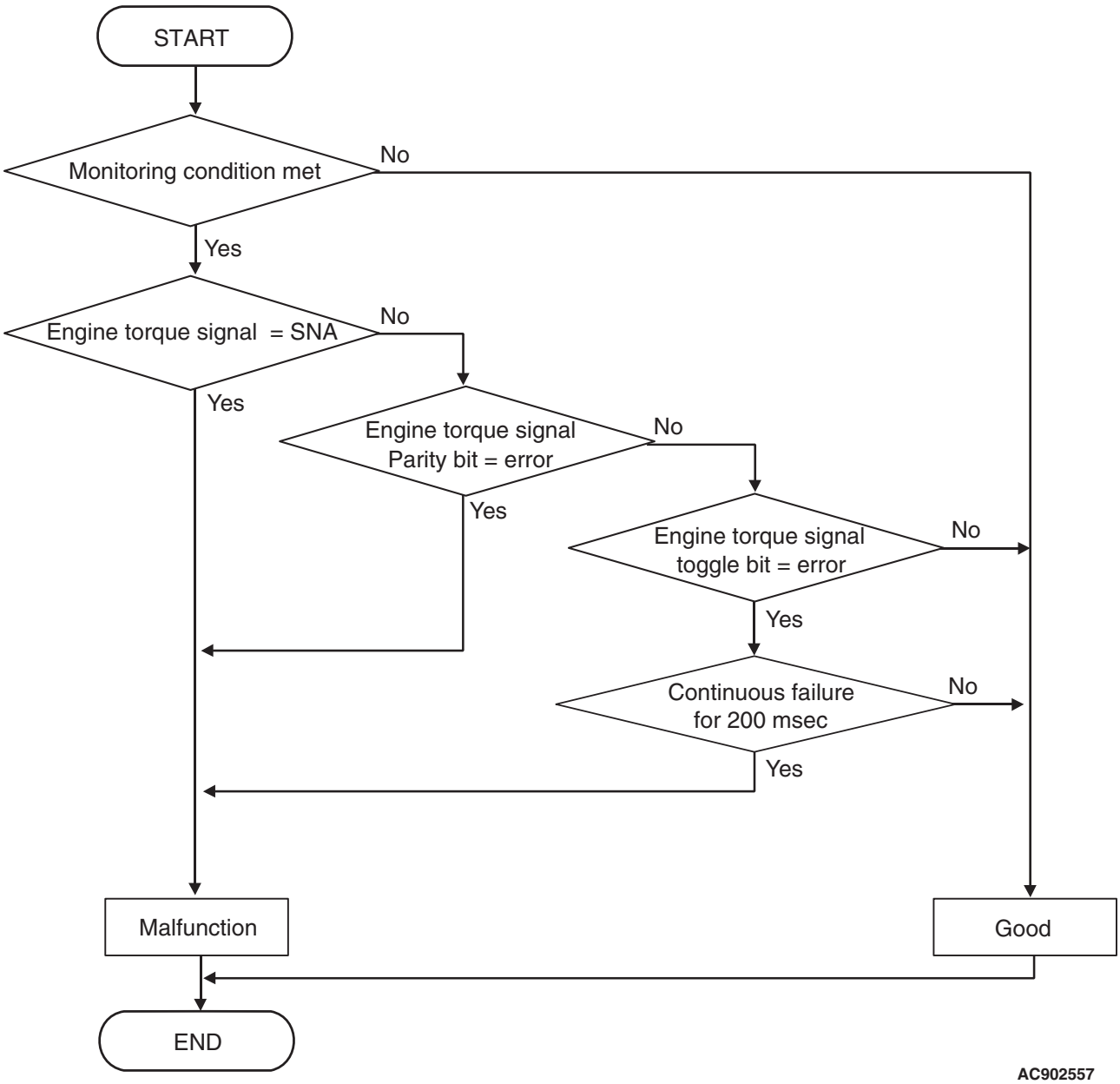
MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

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.

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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

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-15.) 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 13A –Troubleshooting P.13A-48.)

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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

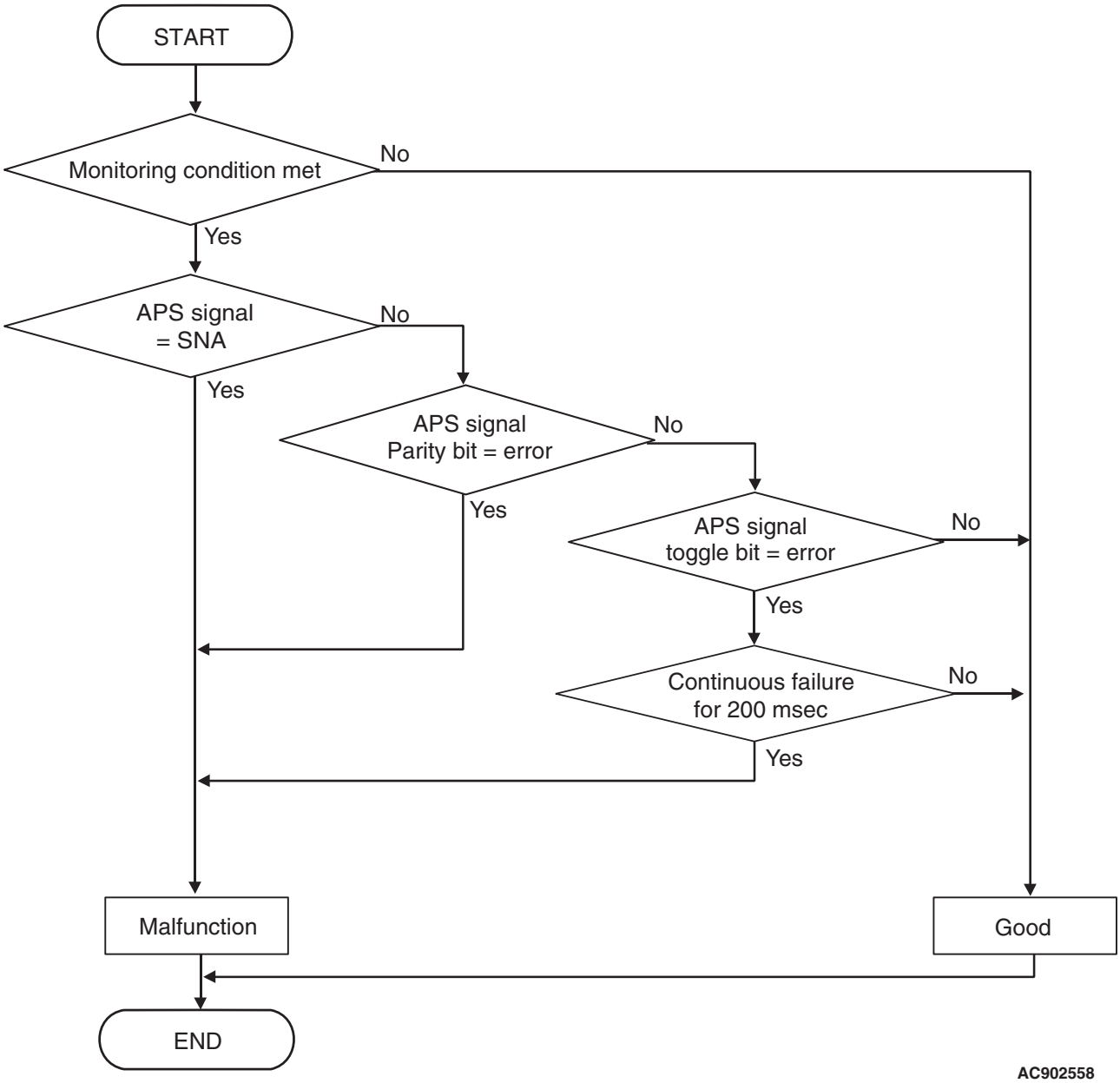
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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

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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-15.) 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 13A –Troubleshooting P.13A-48.)

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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-370.)

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-404.)
(2) Check the DTC.

Q: Is DTC No. P1872 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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 13A –Troubleshooting P.13A-48.)

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-6.) After replacing the clutch assembly, go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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 13A –Troubleshooting P.13A-48.)

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-6.) After replacing the clutch assembly, go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

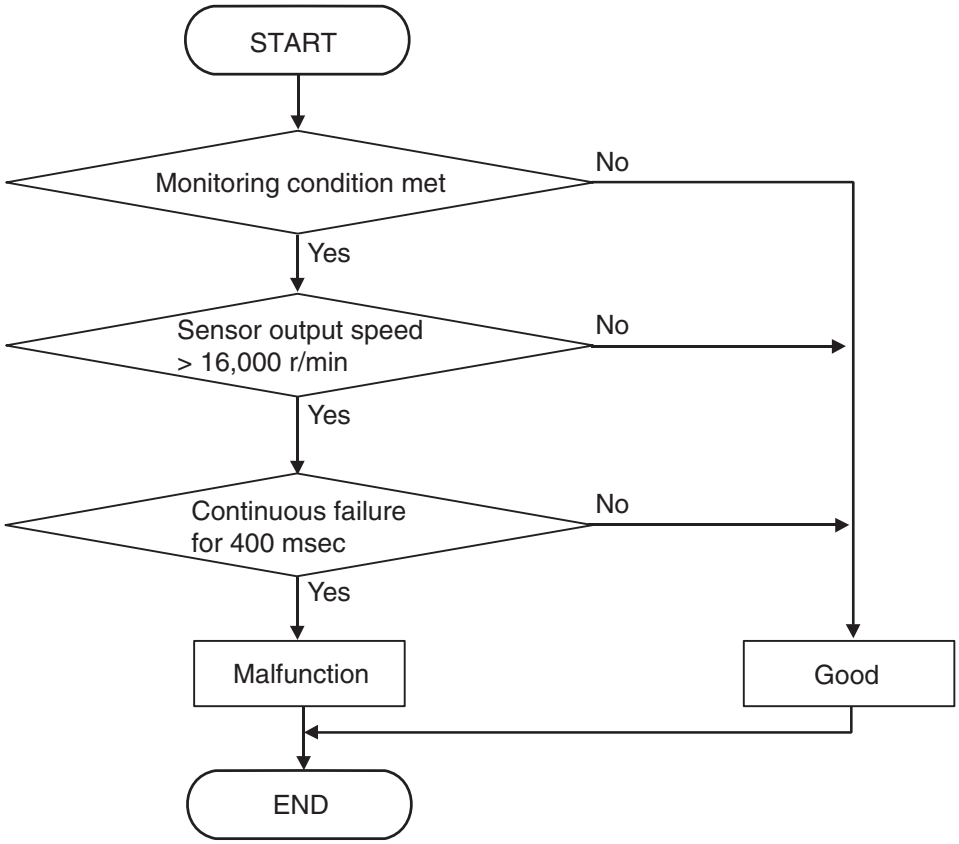
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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)



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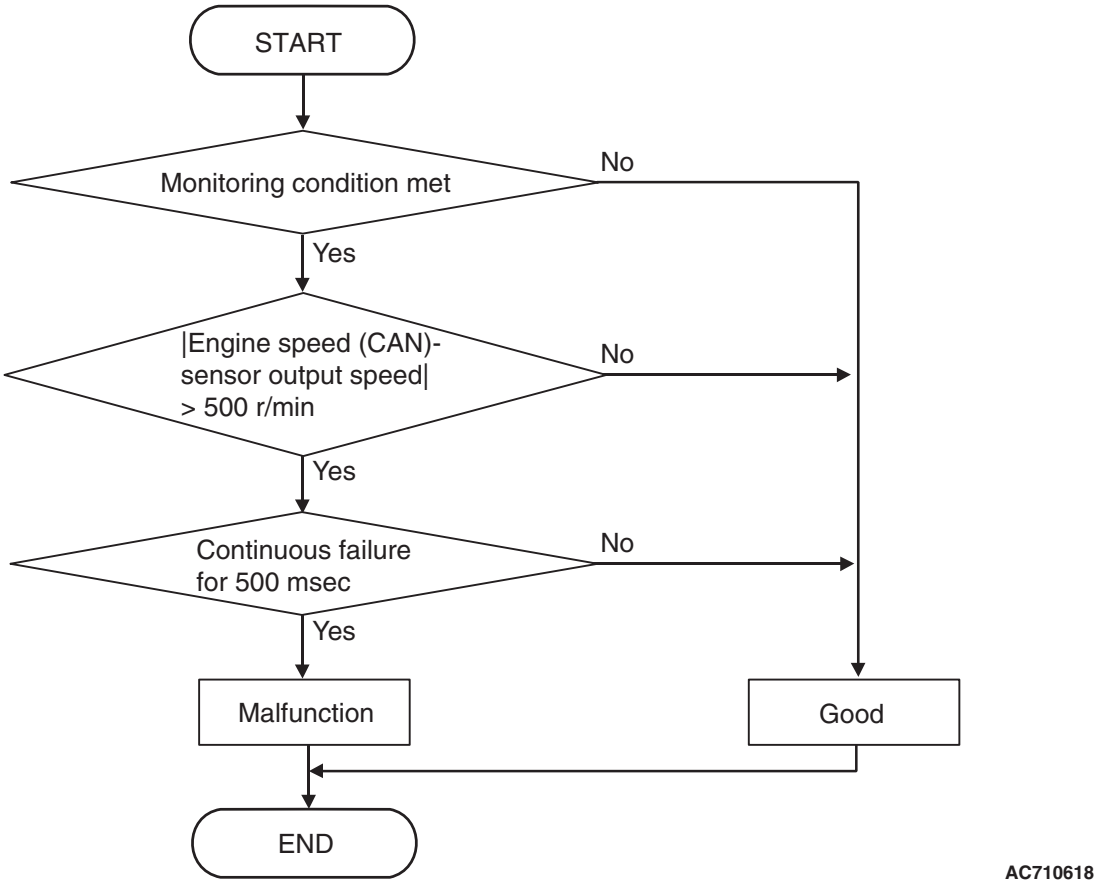
LOGIC FLOW CHARTS (Monitor Sequence)



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

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-15.) 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-412.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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.00-15.)

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-365).)
(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-365).)

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-109.)

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-6.)
(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-412.)
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.

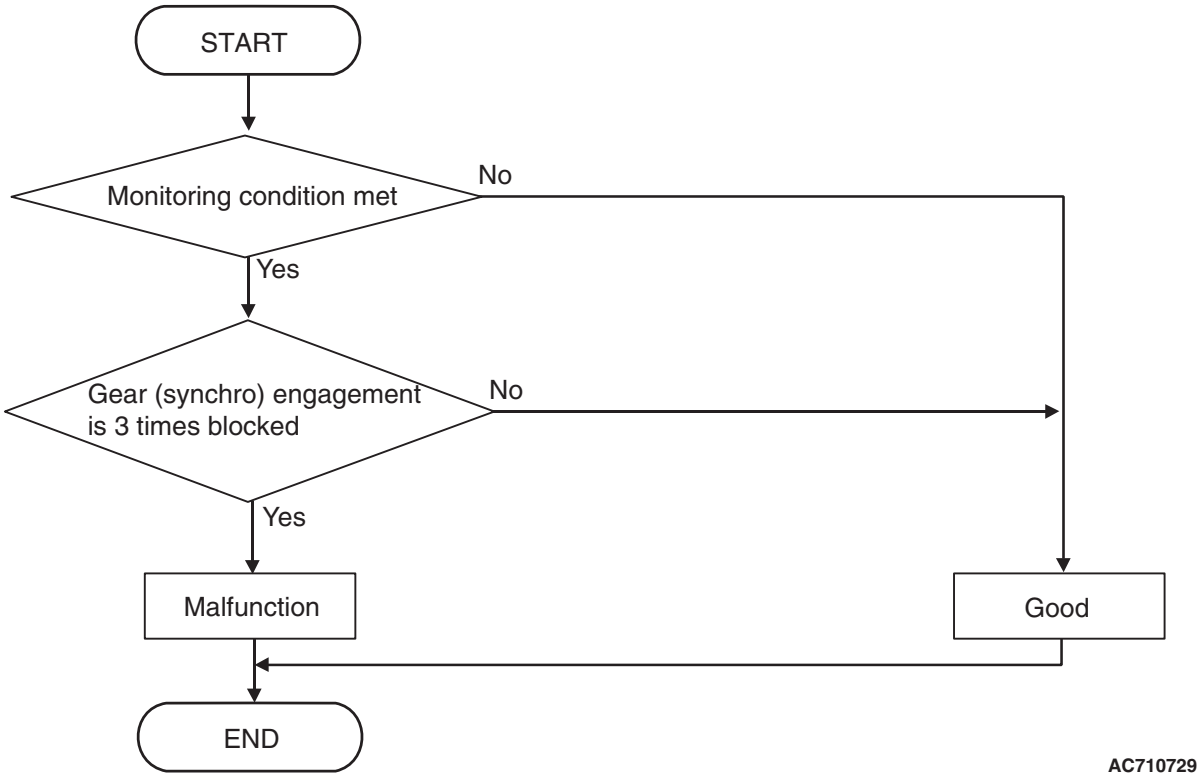
DESCRIPTIONS OF MONITOR METHODS
The engagement of the 2nd gear is determined to be impossible.

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-15.) 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.00-15.)

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-365).)
(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-365).)

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-109.)

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-6.)
(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-412.)

NO : This diagnosis is complete.

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.

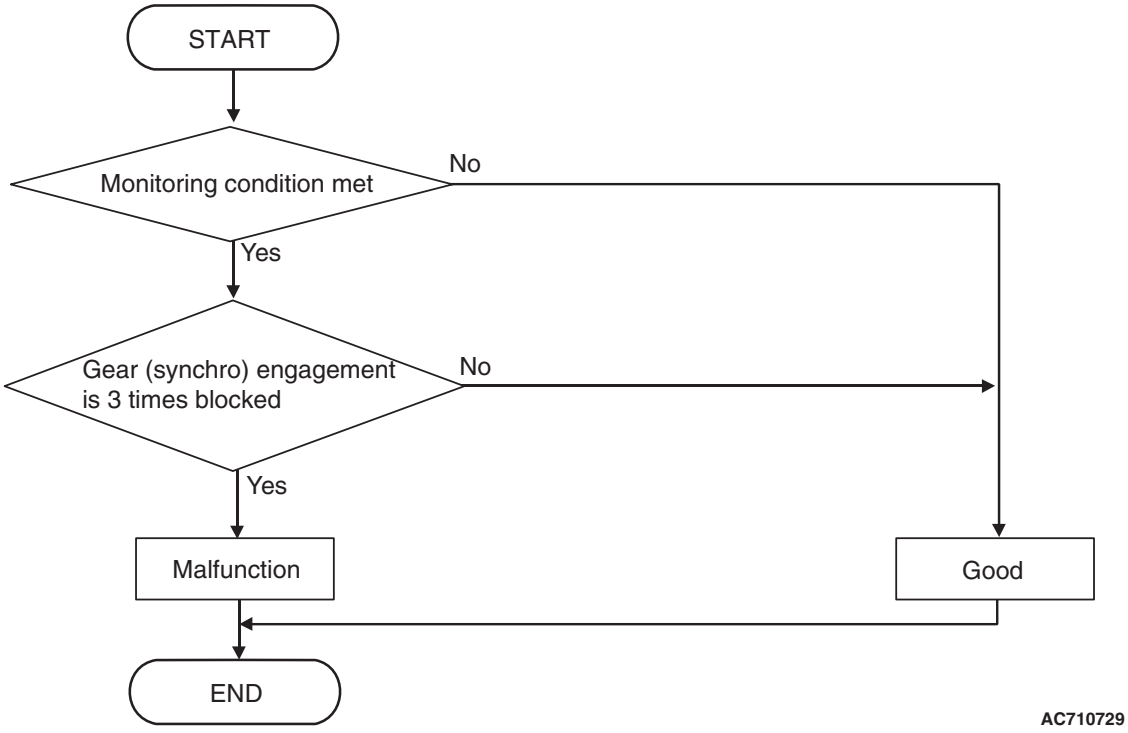
DESCRIPTIONS OF MONITOR METHODS
The engagement of the 3rd gear is determined to be impossible.

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-15.) 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.00-15.)

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-365).)
(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-365).)

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-109.)

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-6.)
(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-412.)

NO : This diagnosis is complete.

TSB Revision

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.

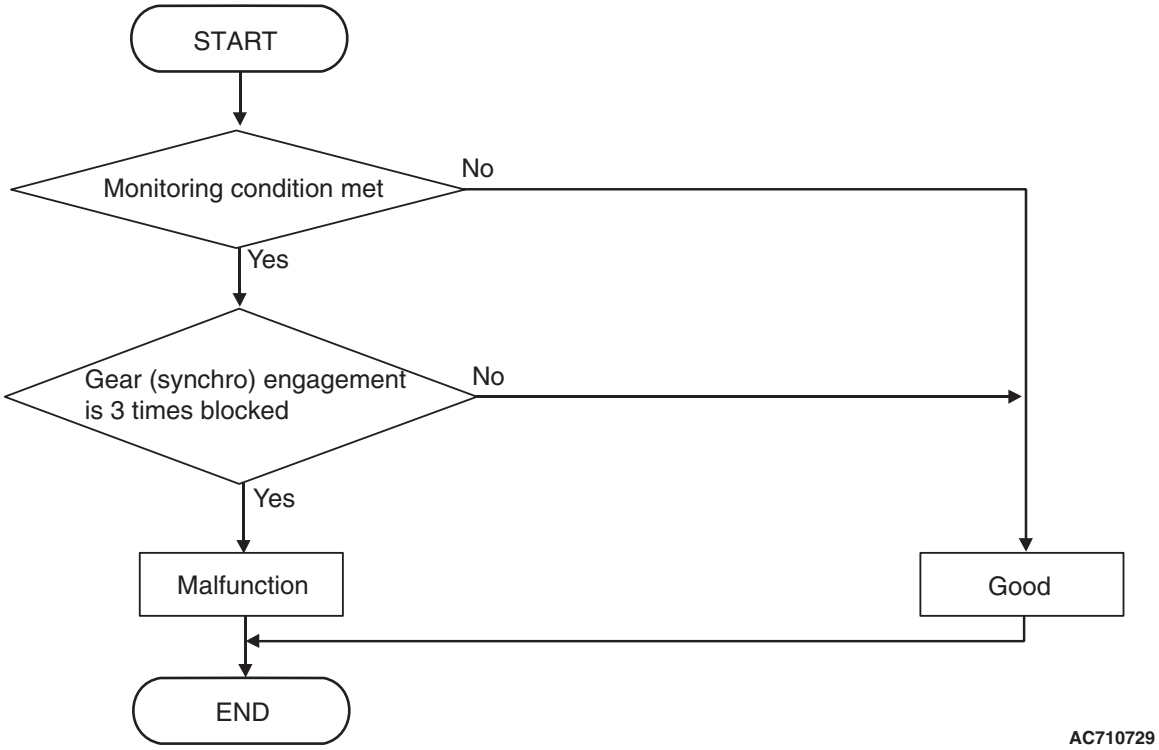
DESCRIPTIONS OF MONITOR METHODS
The engagement of the 4th gear is determined to be impossible.

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-15.) 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.00-15.)

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-365).)
(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-365).)

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-109.)

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-6.)
(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-412.)

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.

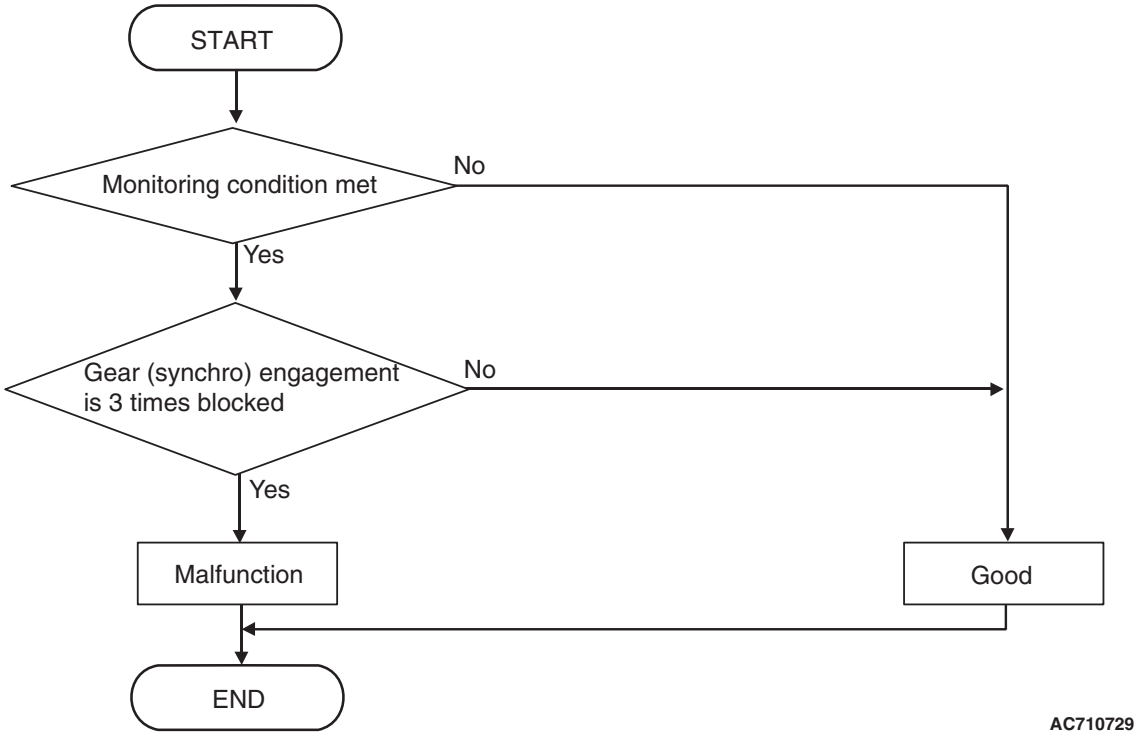
DESCRIPTIONS OF MONITOR METHODS
The engagement of the 5th gear is determined to be impossible.

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-15.) 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.00-15.)

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-365).)
(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-365).)

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-109.)

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-6.)
(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-412.)

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.

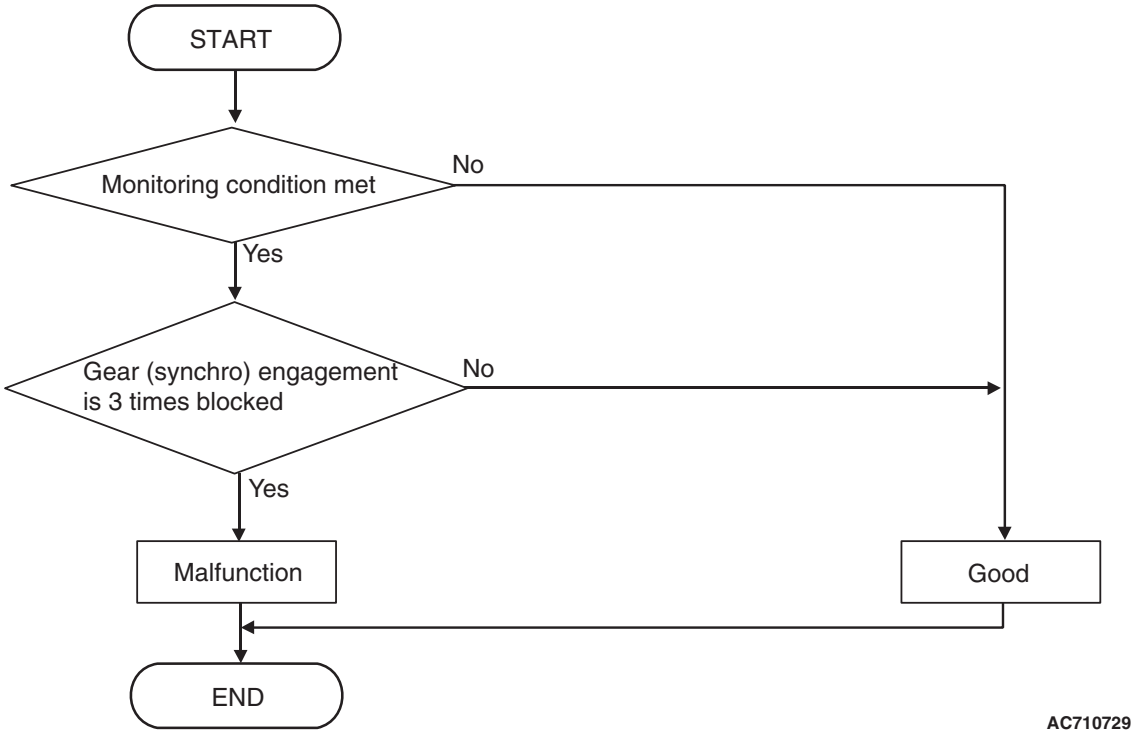
DESCRIPTIONS OF MONITOR METHODS
The engagement of the 6th gear is determined to be impossible.

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-15.) 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.00-15.)

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-365).)
(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-365).)

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-109.)

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-6.)
(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-412.)

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-15.) 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.00-15.)

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-365).)
(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-365).)

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-109.)

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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-6.)
(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-412.)
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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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.00-15.)

STEP 3. Twin clutch SST control mode switch check
Refer to P.22C-434.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the twin clutch SST control mode switch.(Refer to P.22C-434.)

STEP 4. Shift lever assembly replacement
(1) Replace the shift lever assembly. (Refer to P.22C-404.)
(2) Check if the DTC is set.

Q: Is DTC No. P1881 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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.00-15.)

STEP 3. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-421.)
(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-412.)
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-15.) 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.00-15.)

STEP 3. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-421.)
(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-412.)
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-15.) 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.00-15.)

STEP 3. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-421.)
(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-412.)
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-15.) 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.00-15.)

STEP 3. Replace the mechatronic assembly, and check if the DTC is reset.
(1) Replace the mechatronic assembly. (Refer to P.22C-421.)
(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-412.)
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-15.) 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.00-15.)

STEP 3. Scan tool Teach-In

(1) Perform Teach-In (the same item as the mechatronic assembly replacement).(Refer to P.22C-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 : 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-421.)
(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-6.)
(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-412.)
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)

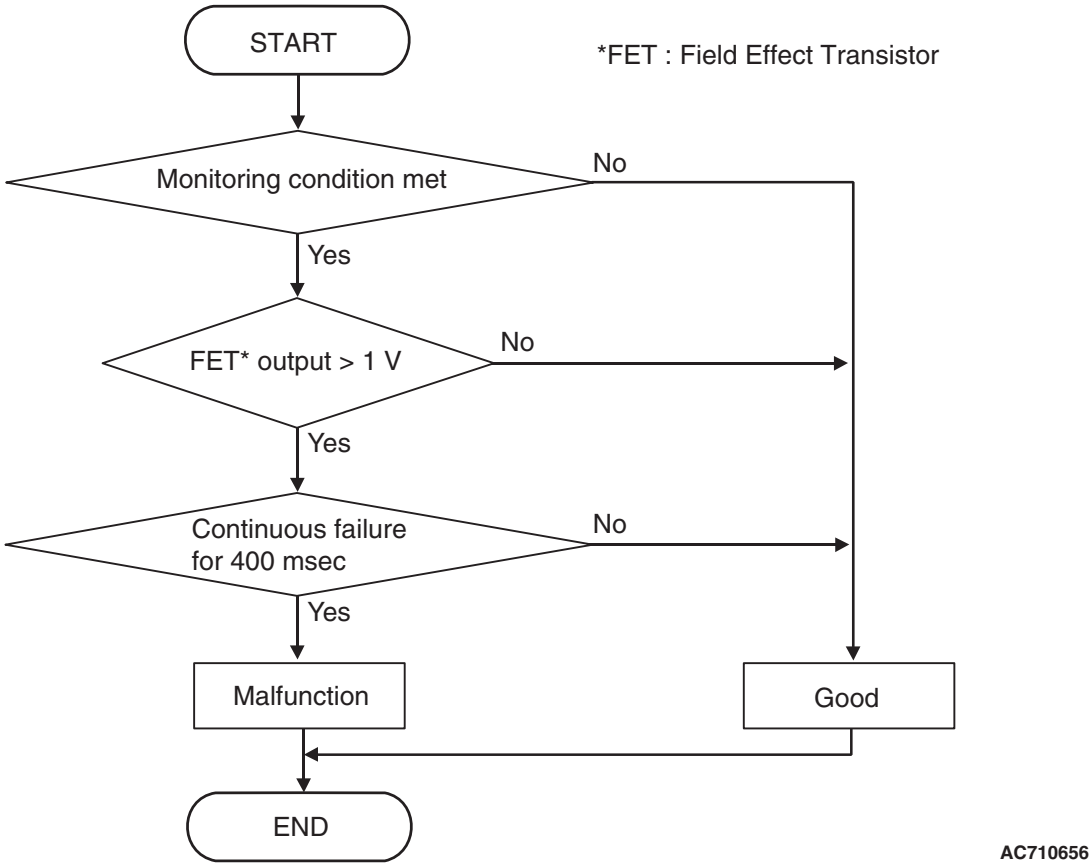
- P0841: Clutch 1 pressure sensor system (Poor performance)
- P0842: Clutch 1 pressure sensor system (Output low range out)
- P0843: Clutch 1 pressure sensor system (Output high range out)
- P2733: Clutch/shift switching solenoid 1, spool stuck
- P2736: Clutch/shift switching solenoid 1 system (Open circuit)
- P2738: Clutch/shift switching solenoid 1 system (Short to ground)
- P2739: Clutch/shift switching solenoid 1 system (Short to power supply)

TSB Revision

- 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-15.) After repairing the CAN bus line, go to Step 2.

STEP 2. Check whether the DTC is reset.

Q: Is DTC No. P2718 set?

YES : Replace the mechatronic assembly. (Refer to P.22C-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

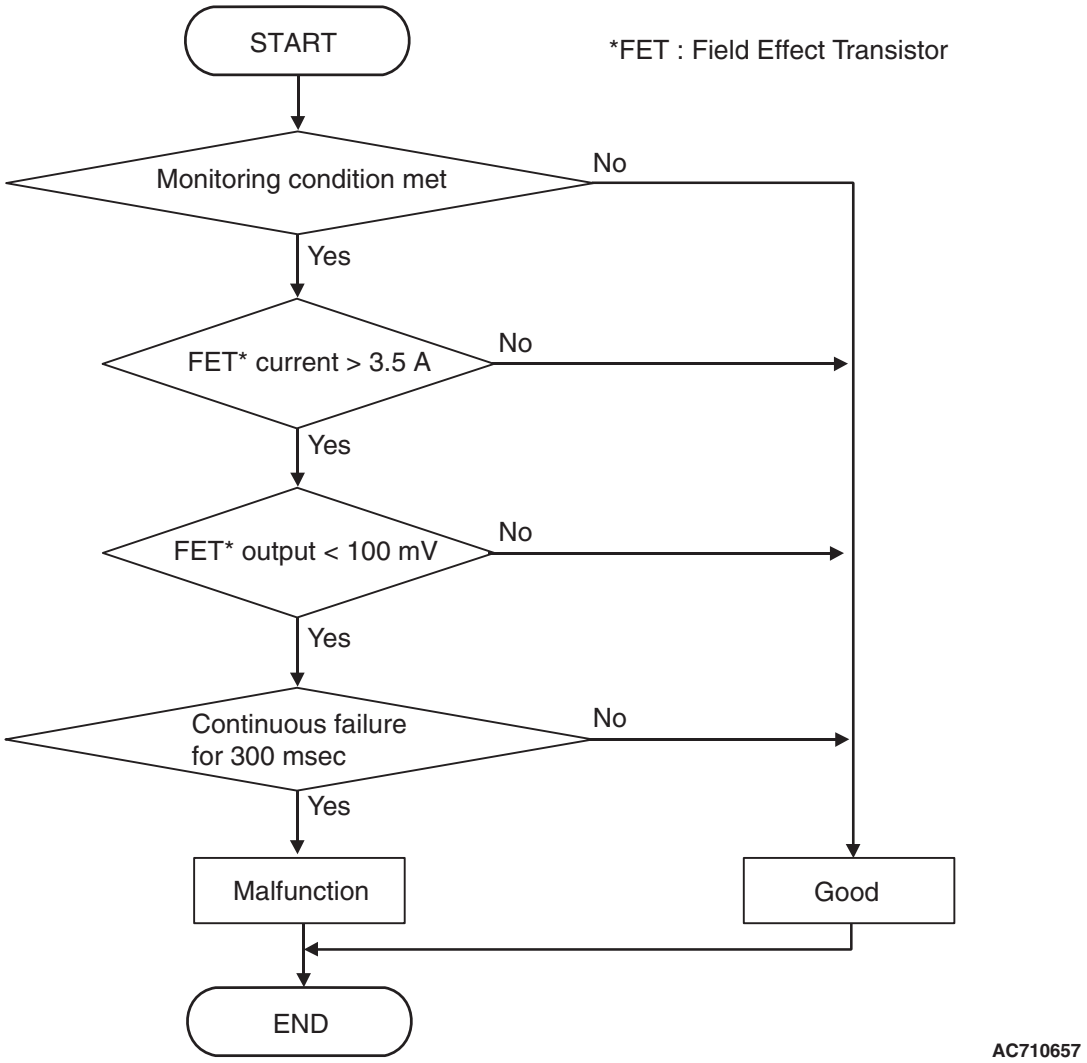
MONITOR EXECUTION
- Continuous

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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

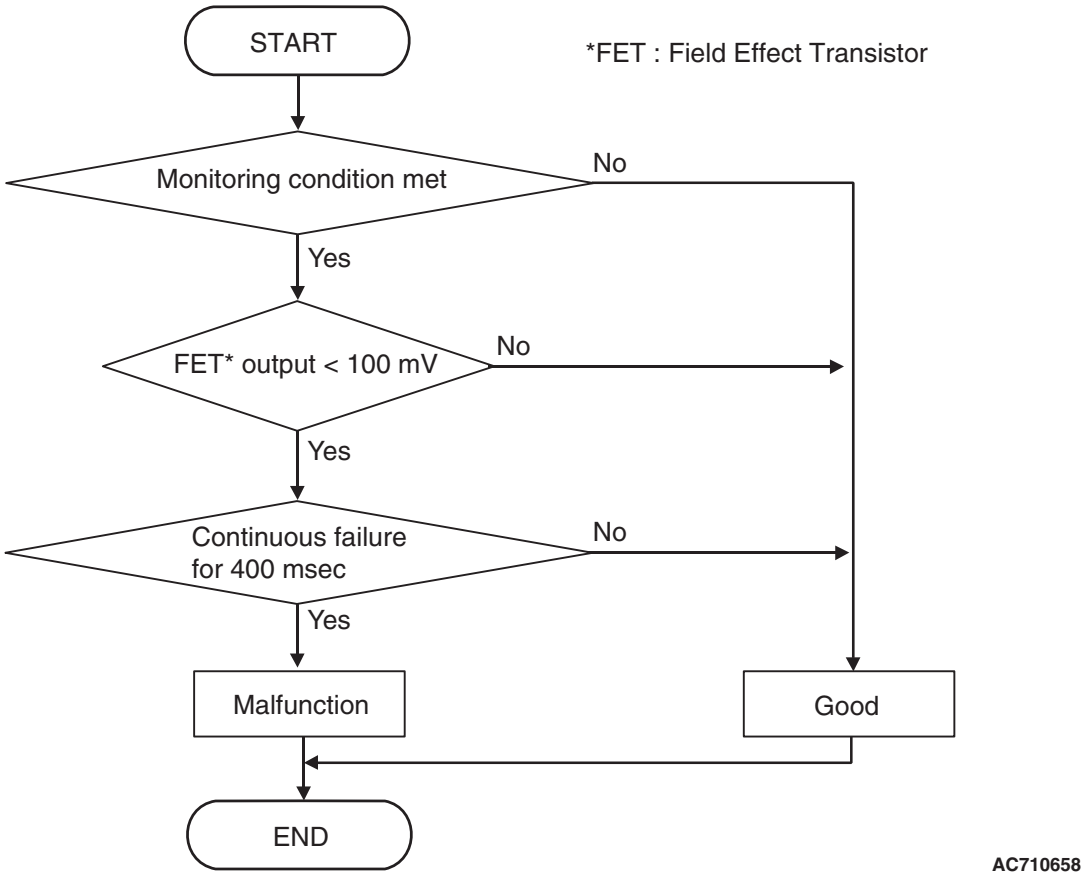
MONITOR EXECUTION
- Continuous

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

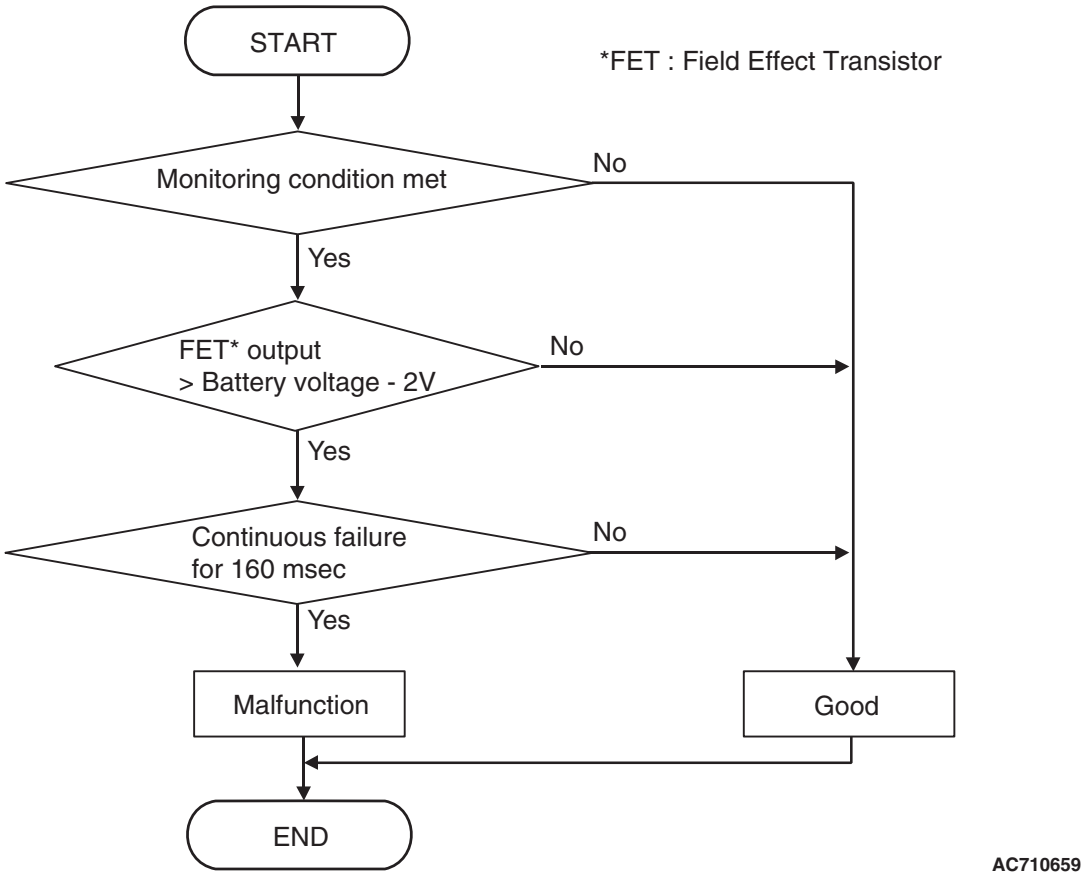
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

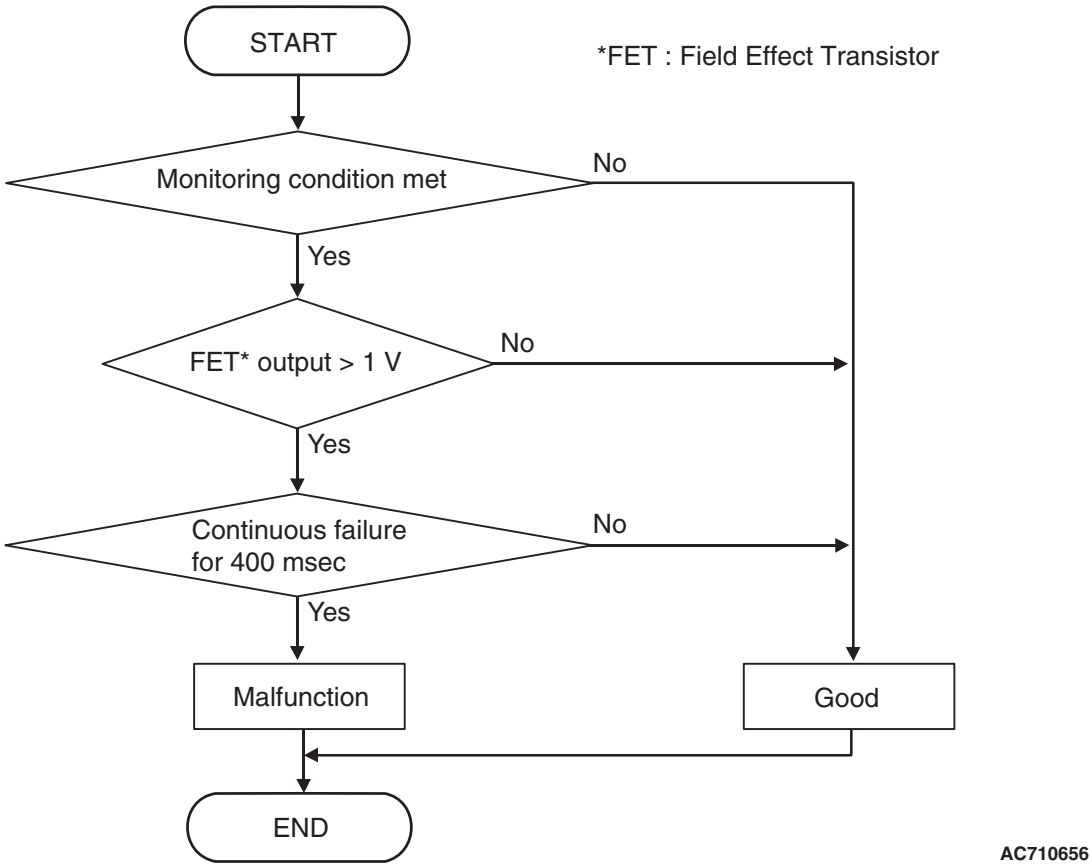
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

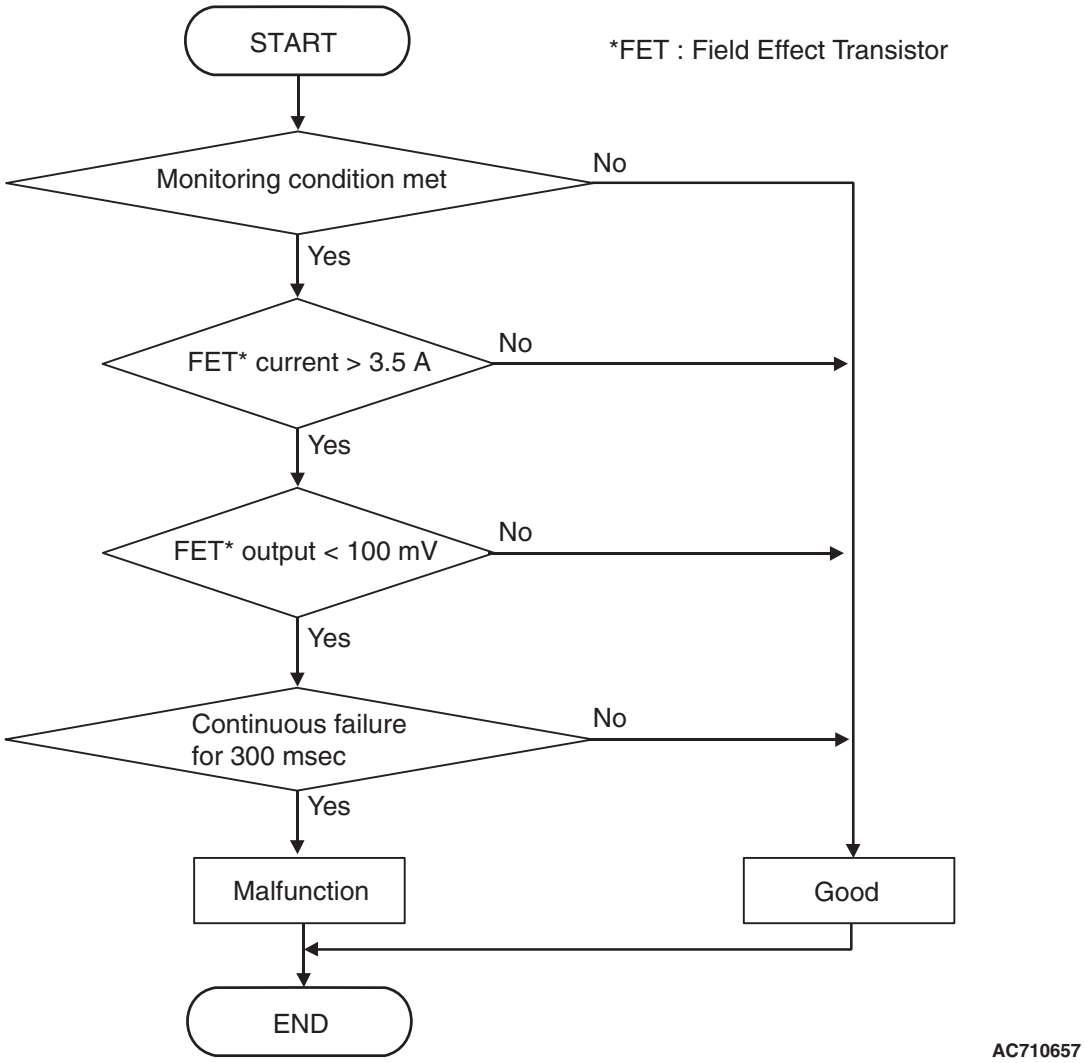
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

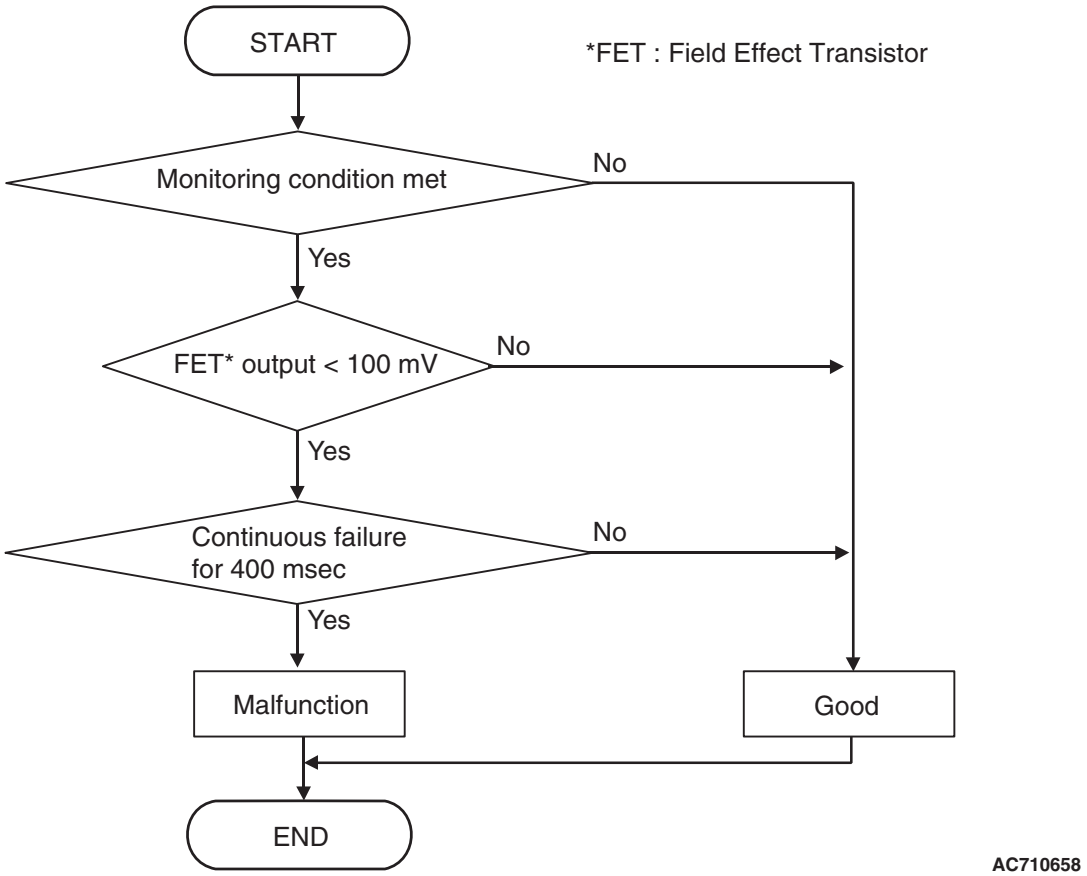
MONITOR EXECUTION
- Continuous

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

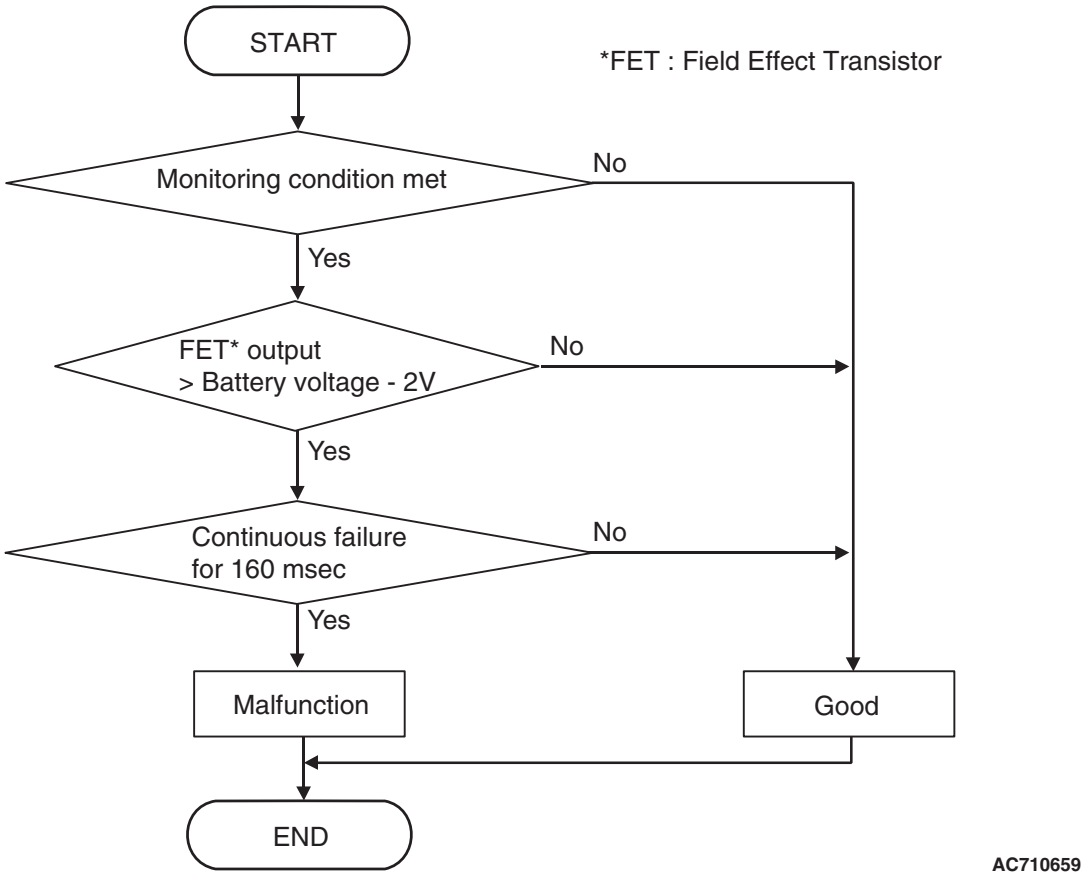
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

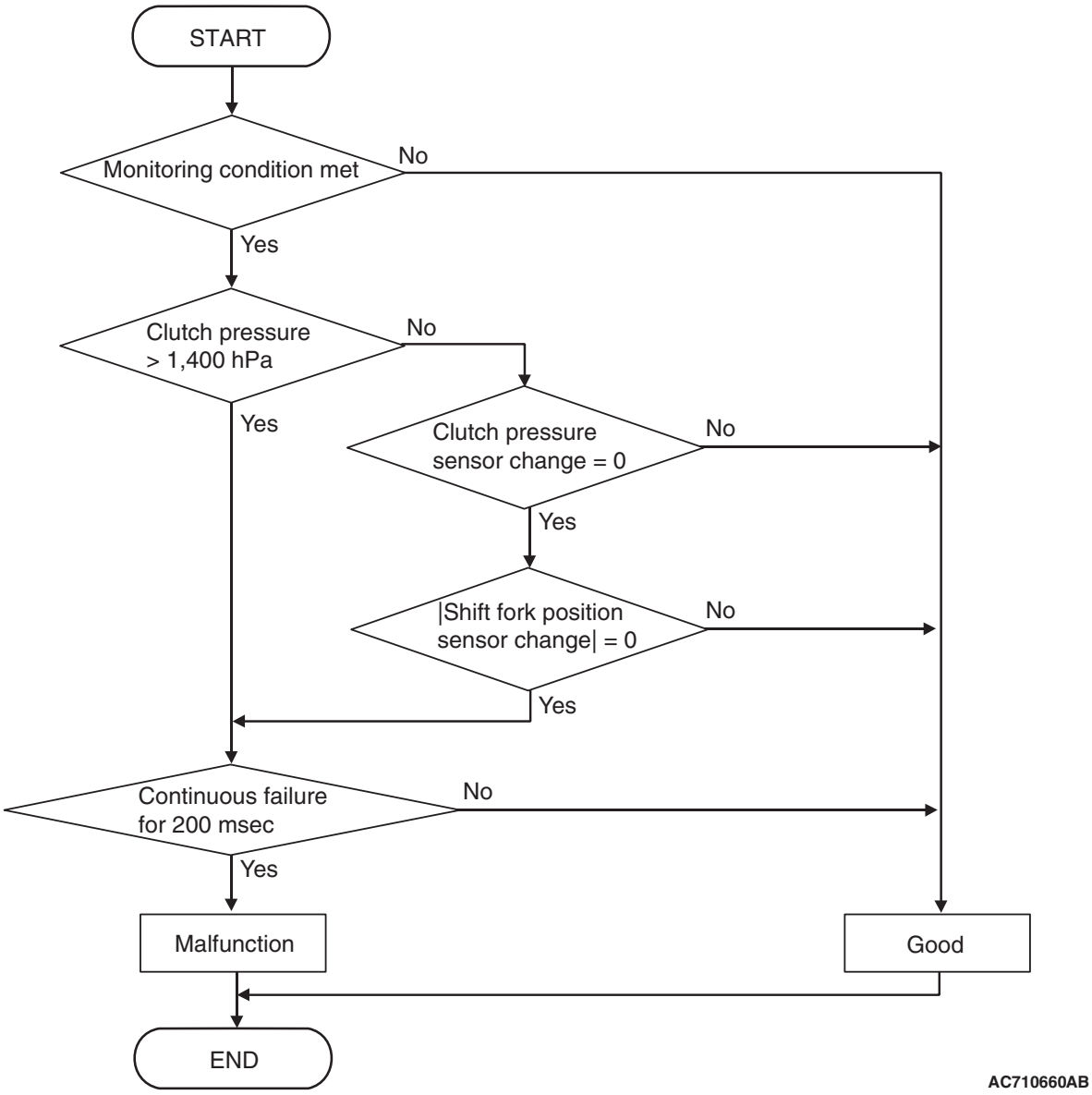
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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.00-15.)

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-421.)

NO : Install the mechatronic assembly correctly. (Refer to P.22C-421.)

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.

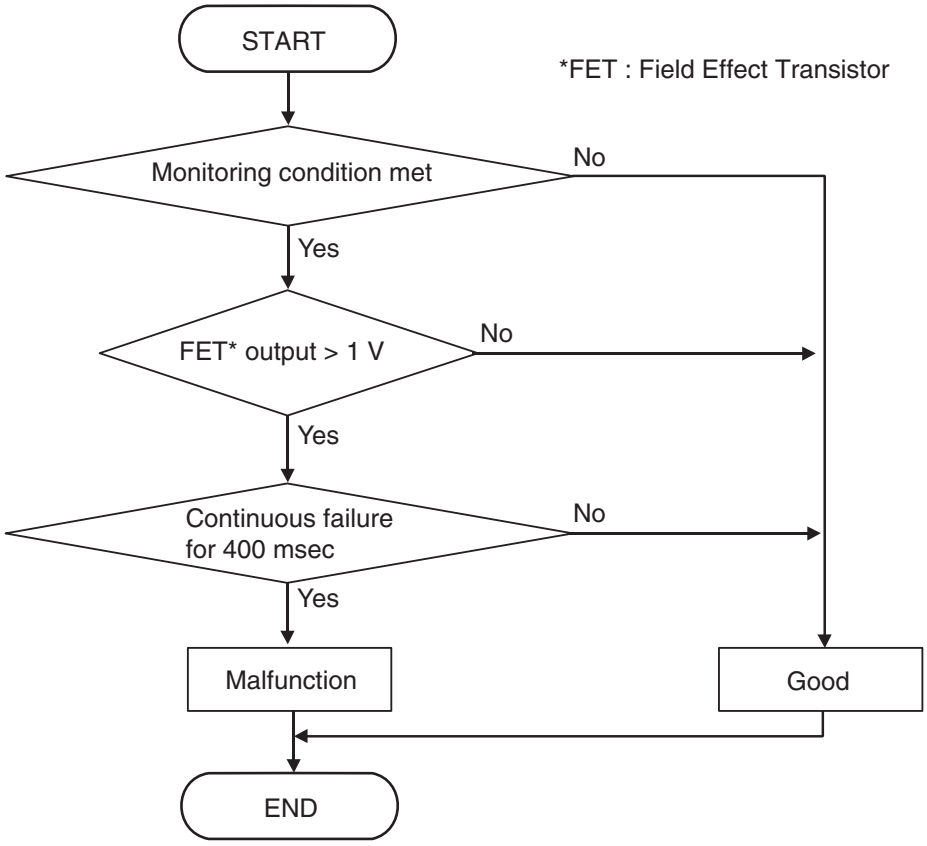
DESCRIPTIONS OF MONITOR METHODS
The clutch/shift switching solenoid 1 circuit is determined to be open.

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

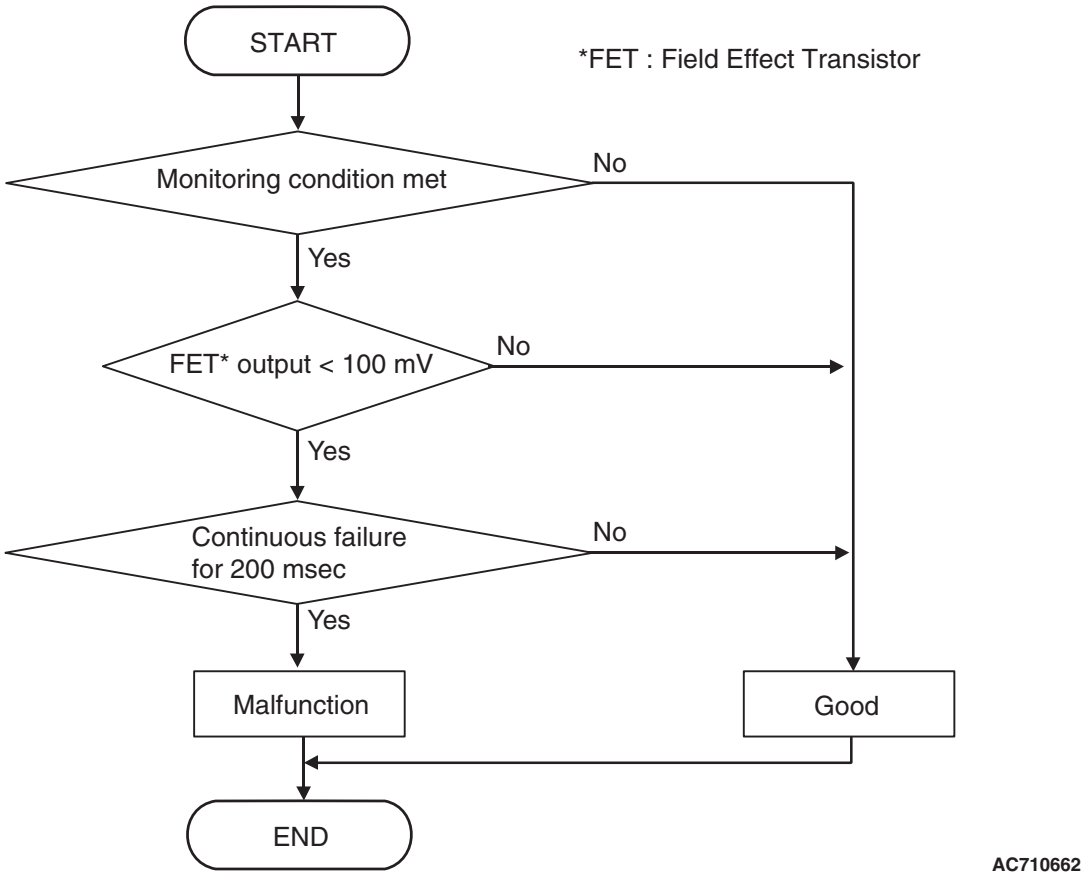
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

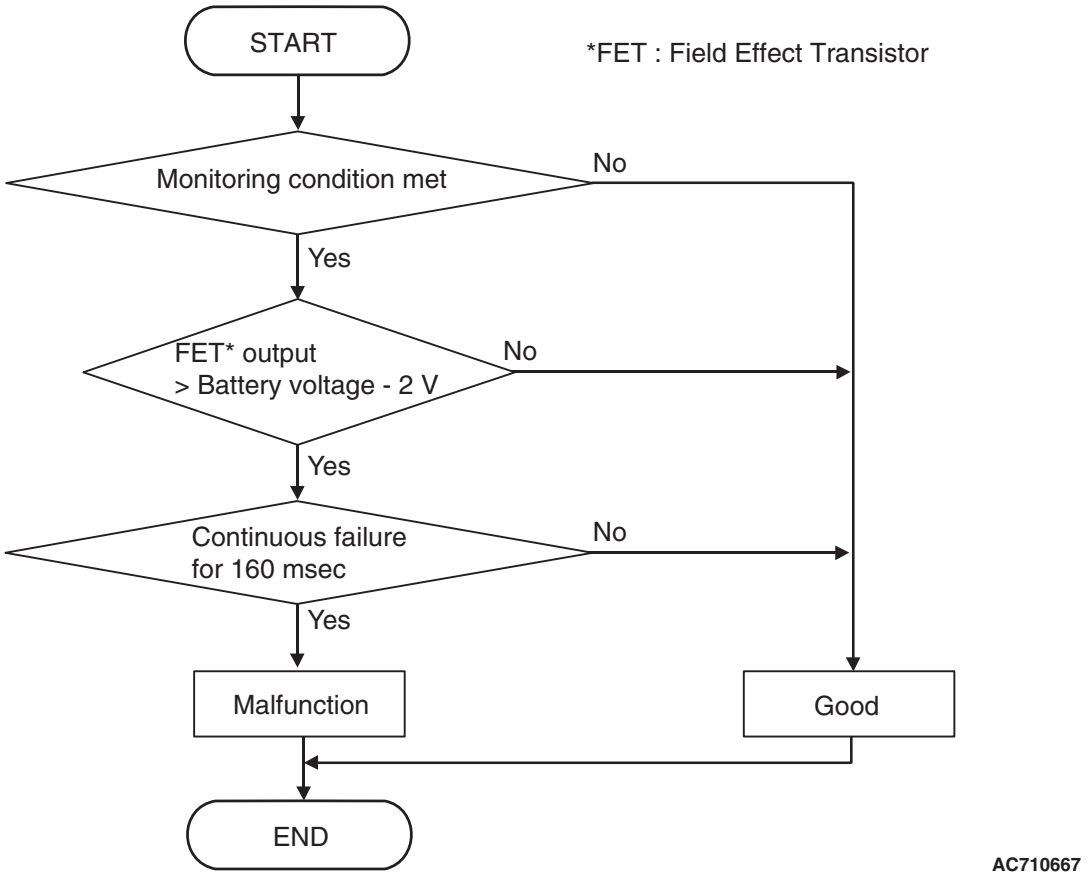
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

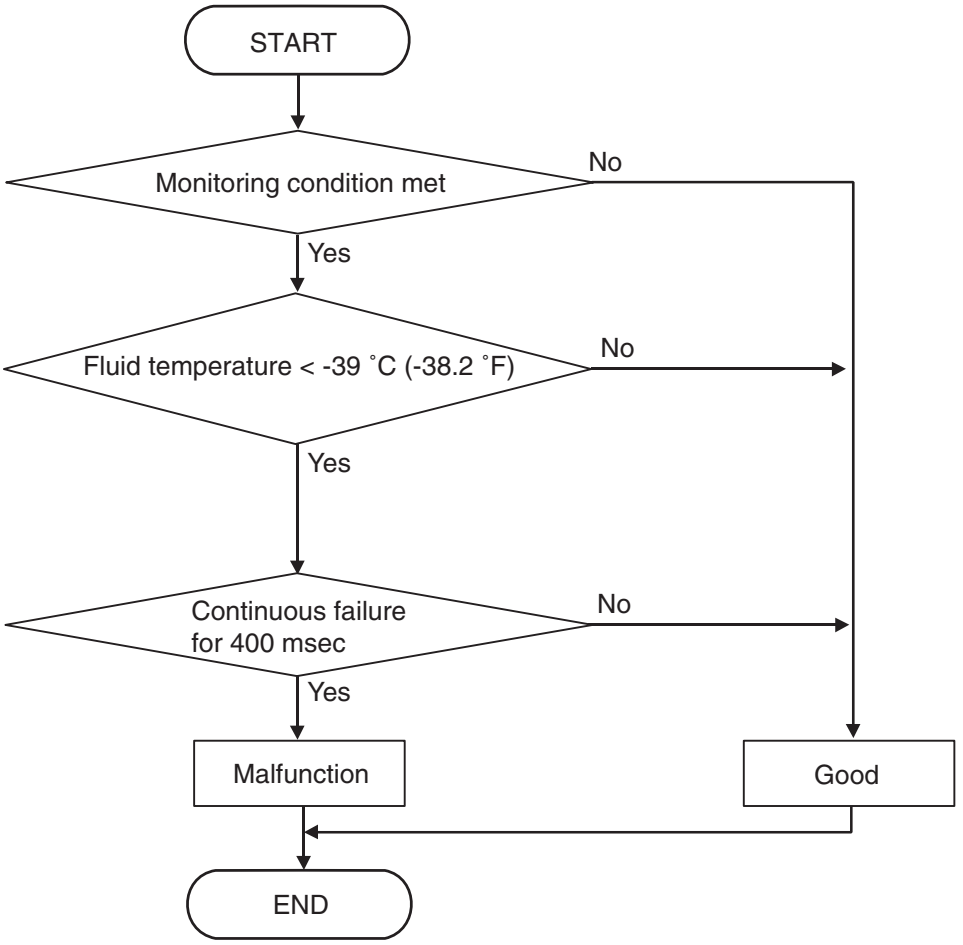
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

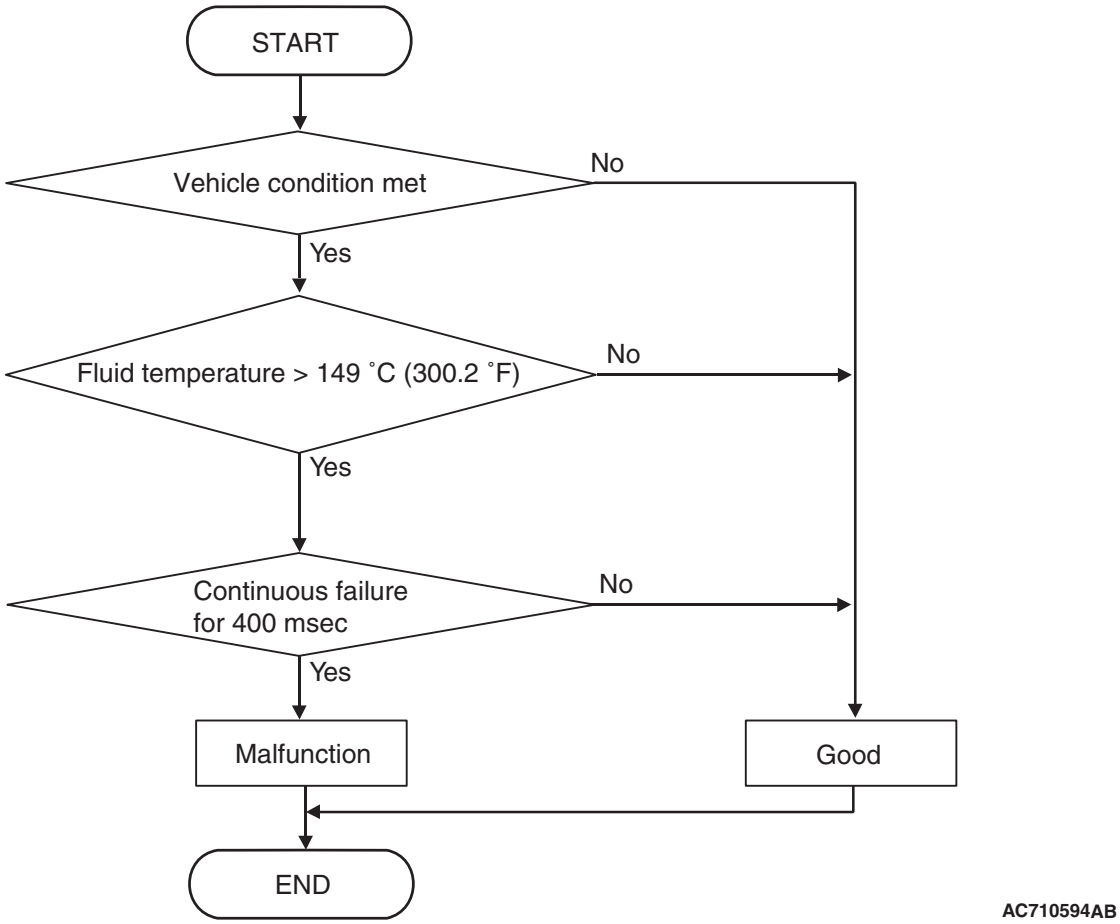
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

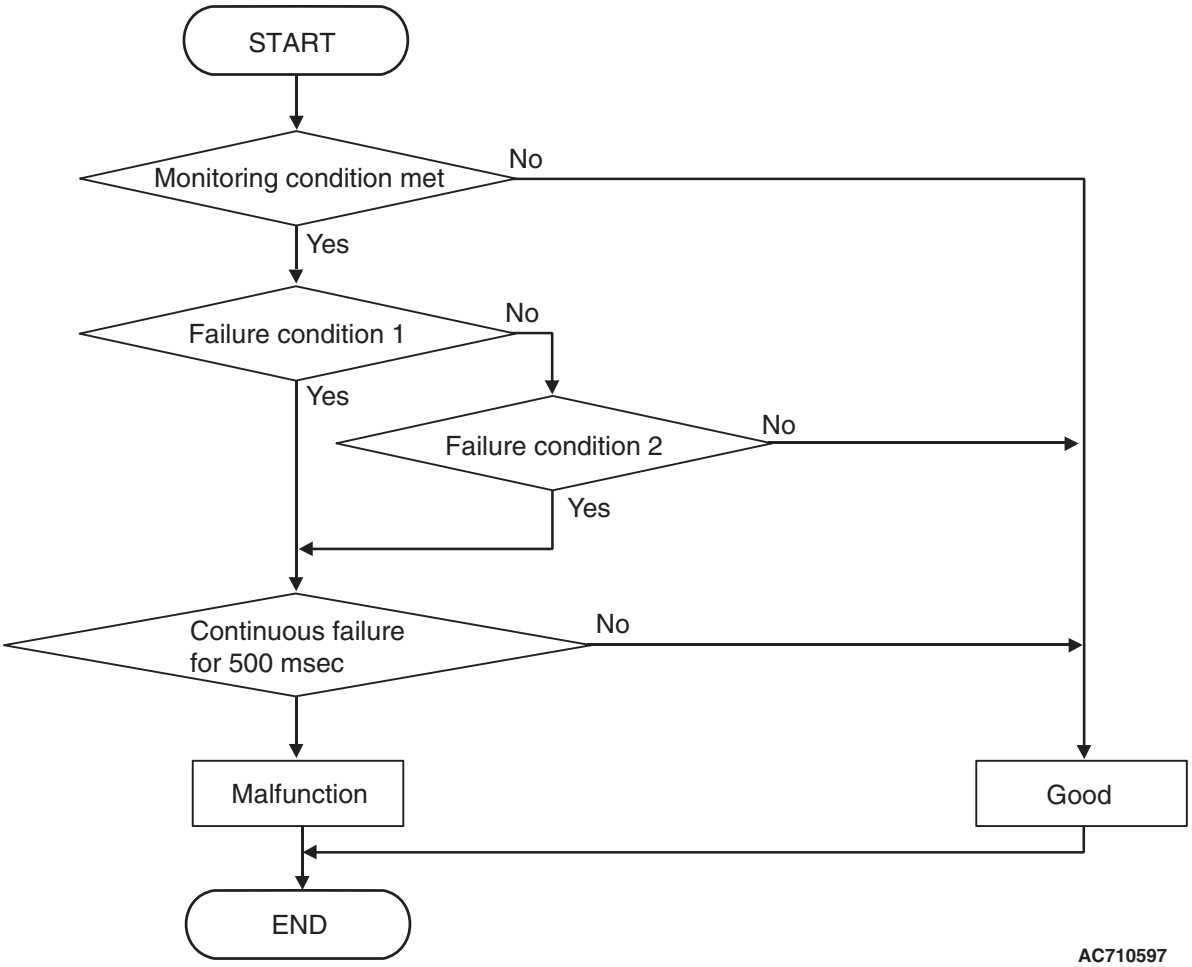
DESCRIPTIONS OF MONITOR METHODS
The even number gear side input shaft speed (revolution) is determined to be abnormal.

MONITOR EXECUTION
- Continuous

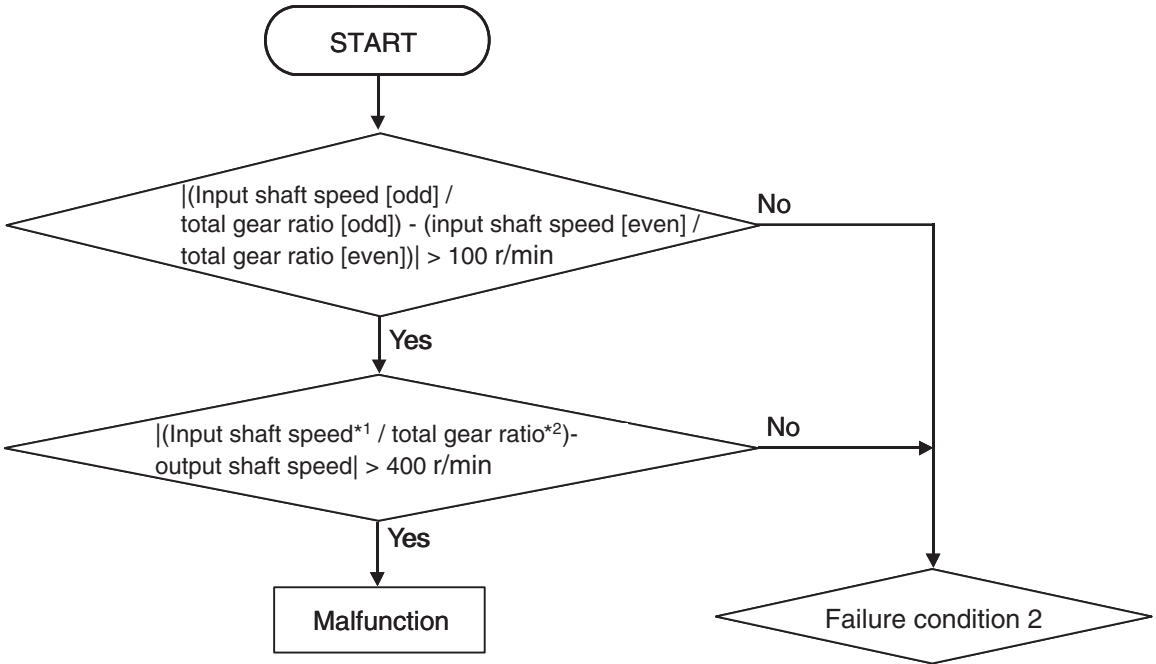
MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)
- P0715: Input shaft 1 (odd number gear axle) speed sensor system (Output high range out)
- P0716: Input shaft 1 (odd number gear axle) speed sensor system (Poor 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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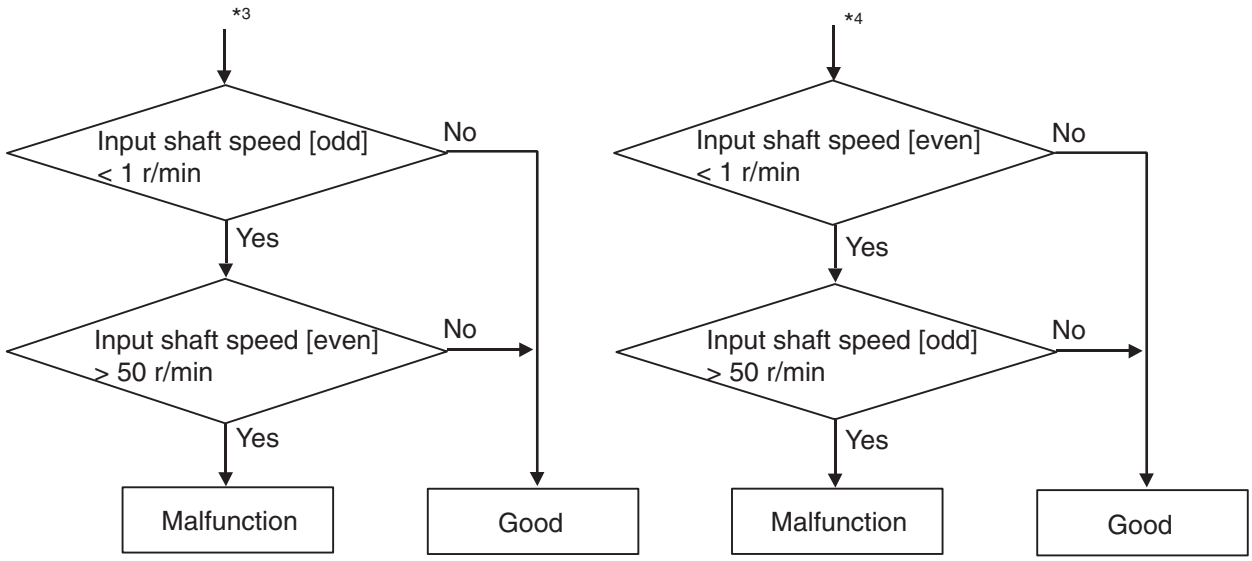
LOGIC FLOW CHARTS (Monitor Sequence) <Rationality (Failure condition 2)>



*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>

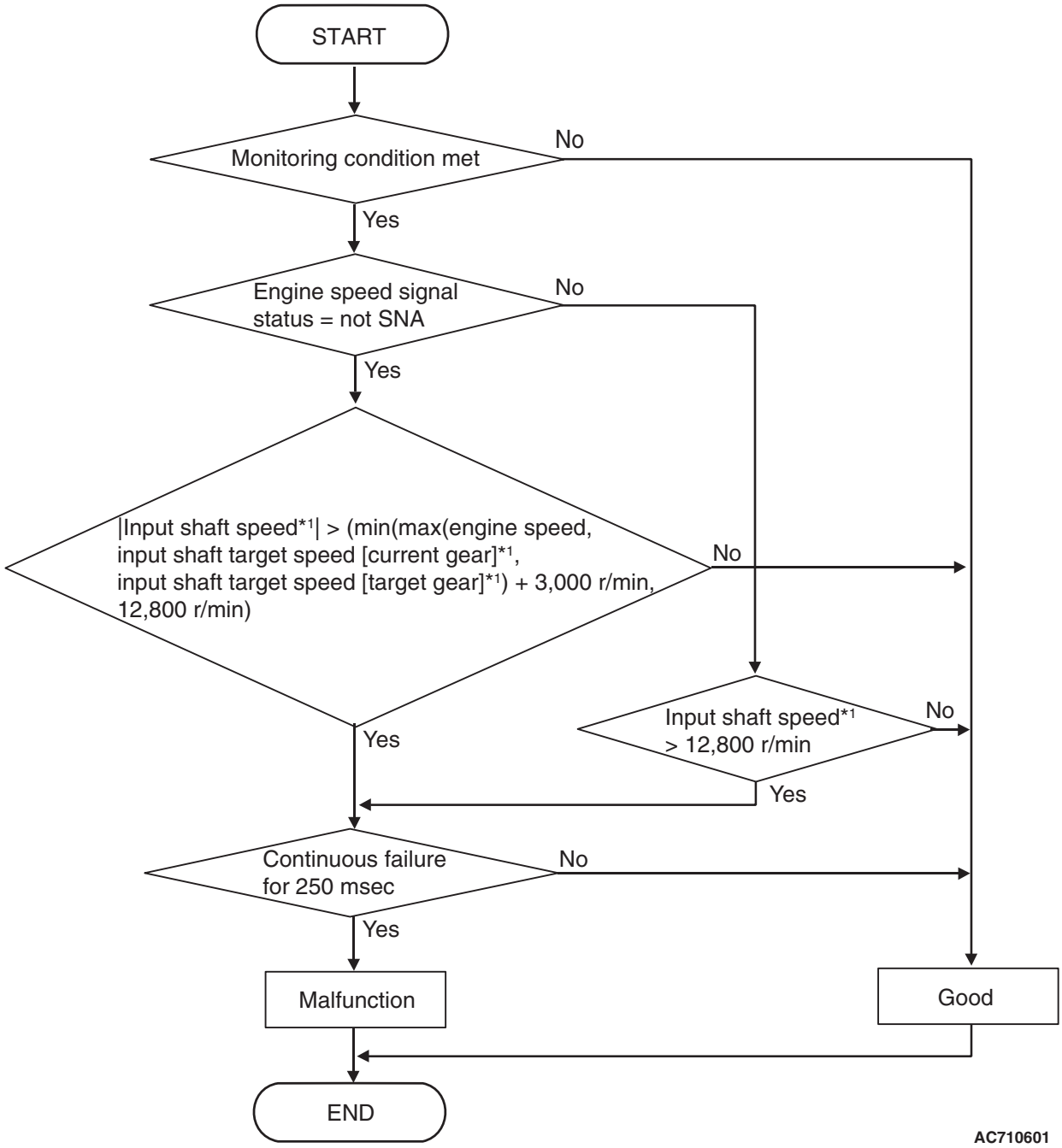
- Failure condition 1 or failure condition 2 (Refer to Logic Flow Charts (Monitor Sequence) <Rationality>). (500 millisecond)

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.00-15.)

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-365).)
(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-365).)

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

"Yes" : Replace the transaxle assembly. (Refer to P.22C-412.)
"No" : Replace the mechatronic assembly. (Refer to P.22C-421.)

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.

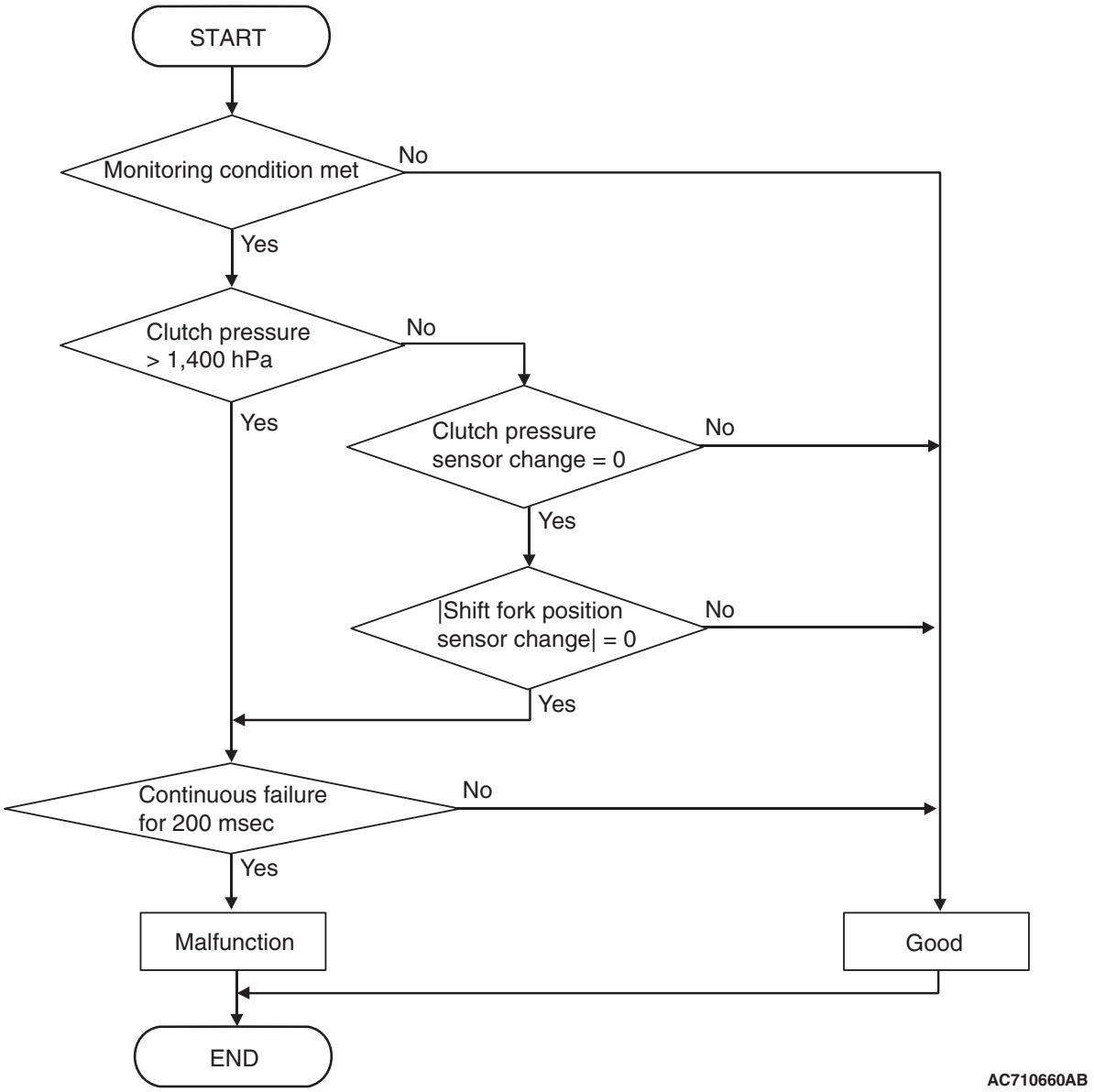
MONITOR EXECUTION
- Continuous

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-15.) 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.00-15.)

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-421.)

NO : Install the mechatronic assembly correctly. (Refer to P.22C-421.)

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)

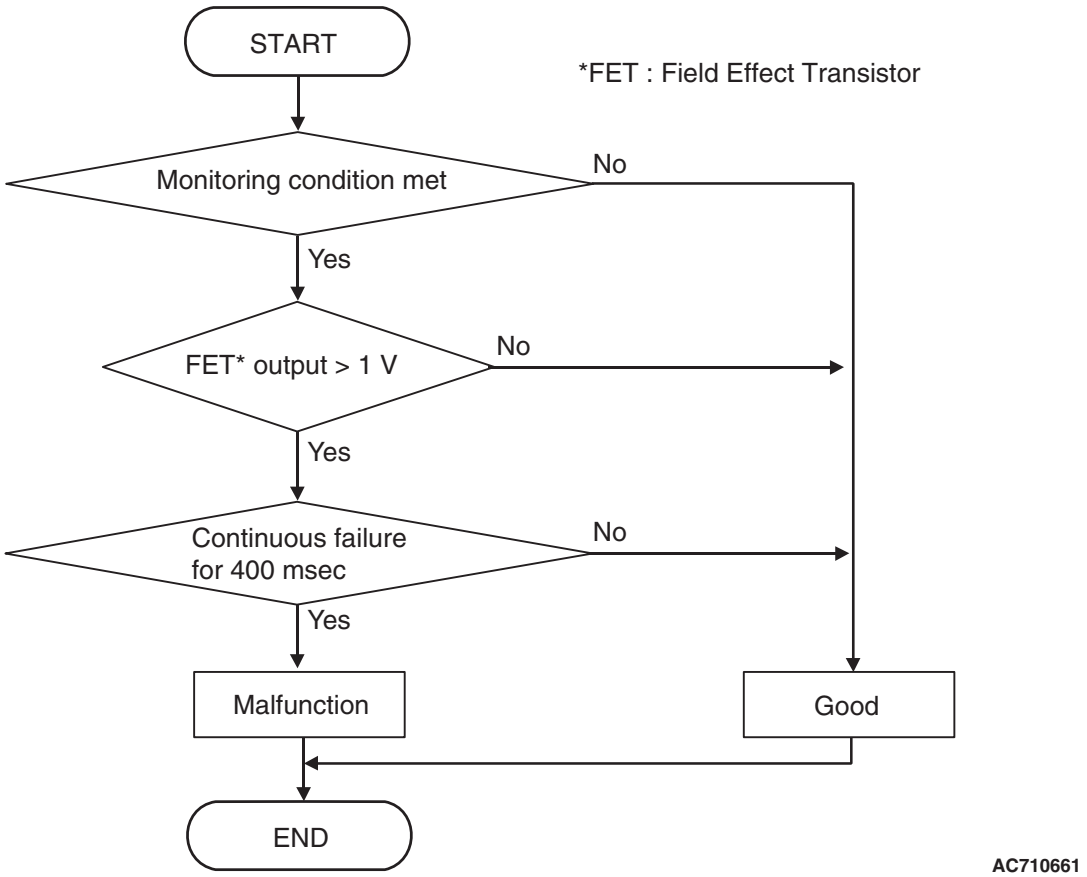
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

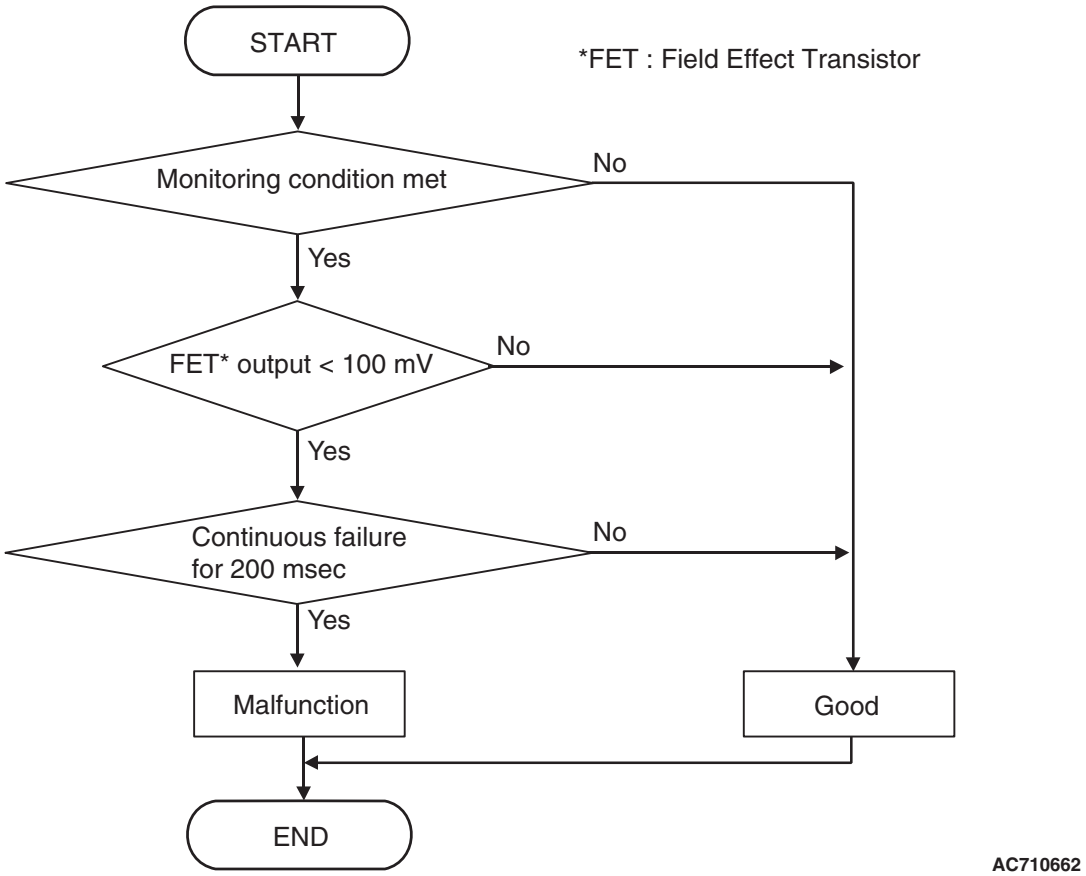
MONITOR EXECUTION
- Continuous

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

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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

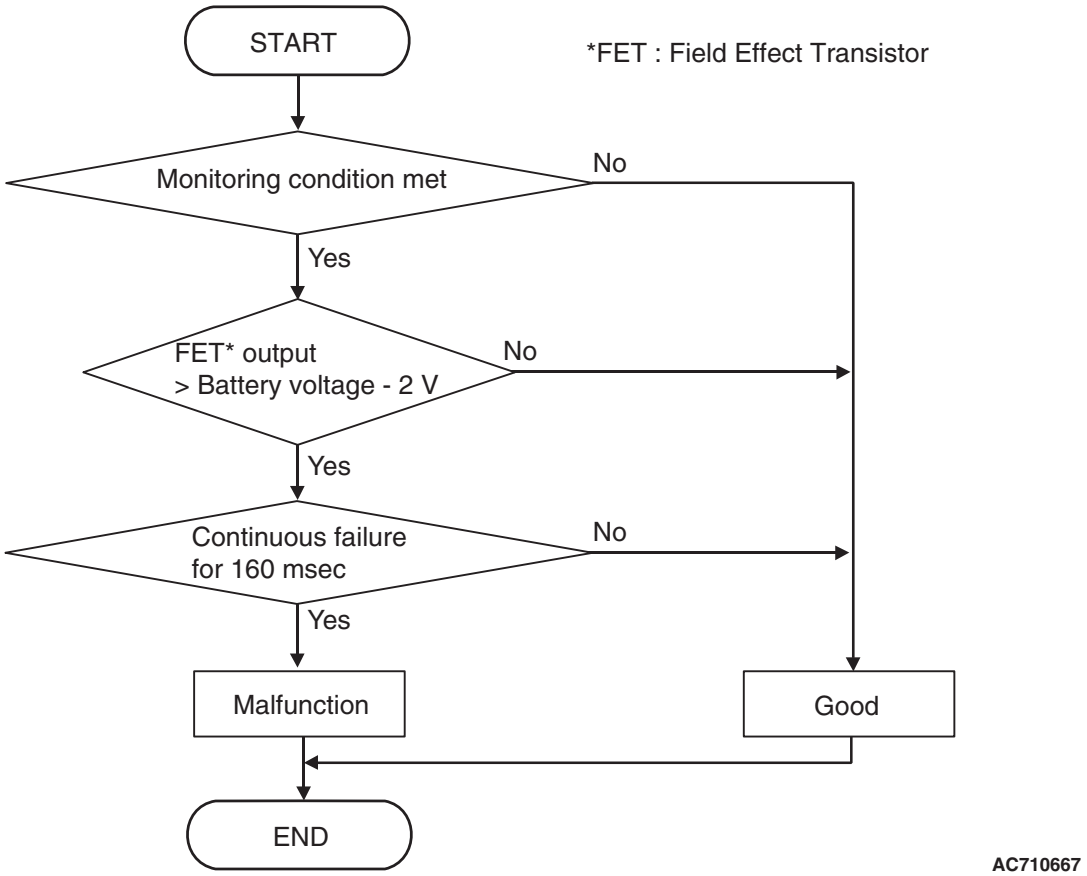
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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)

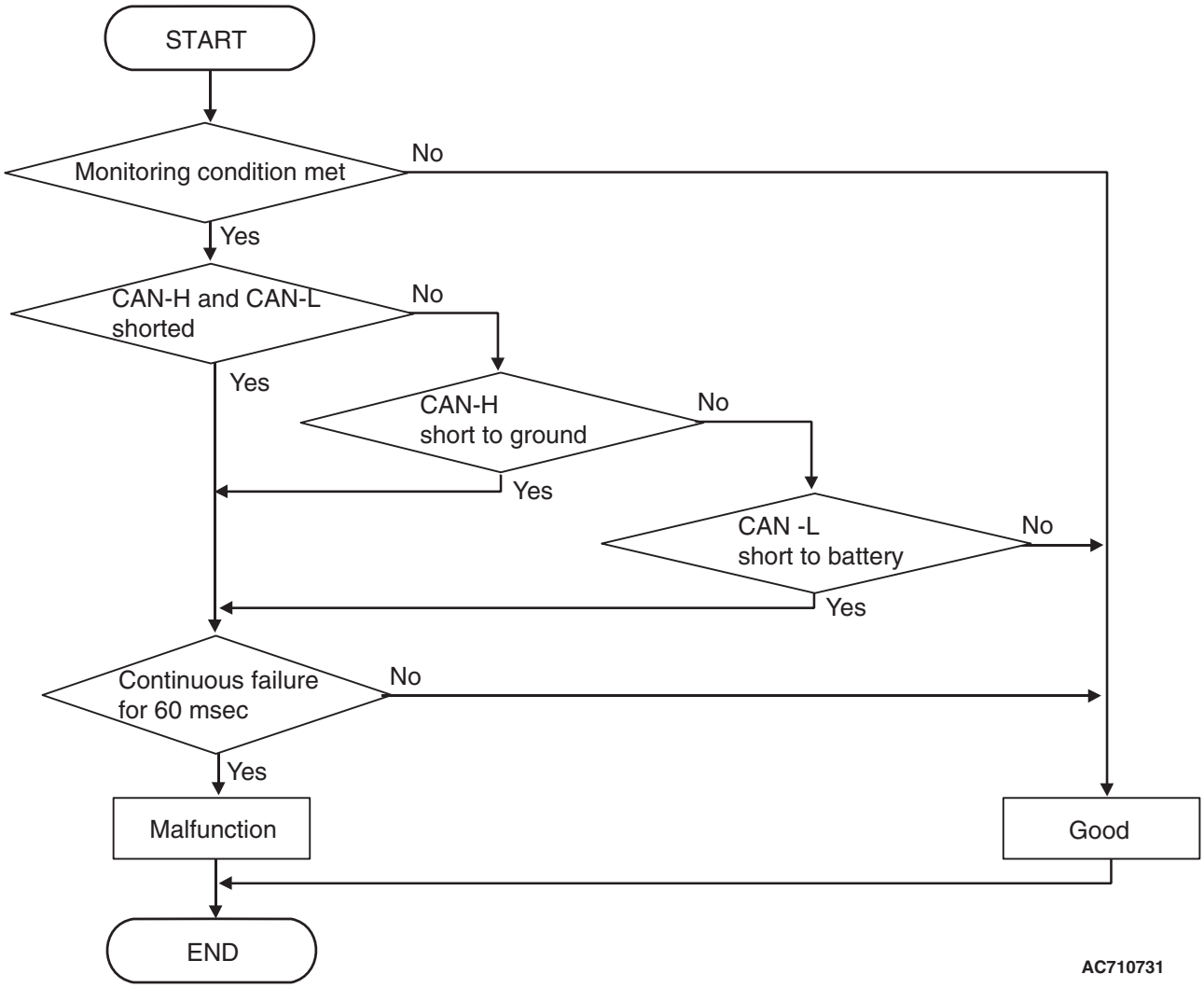
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- 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-15.) 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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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.

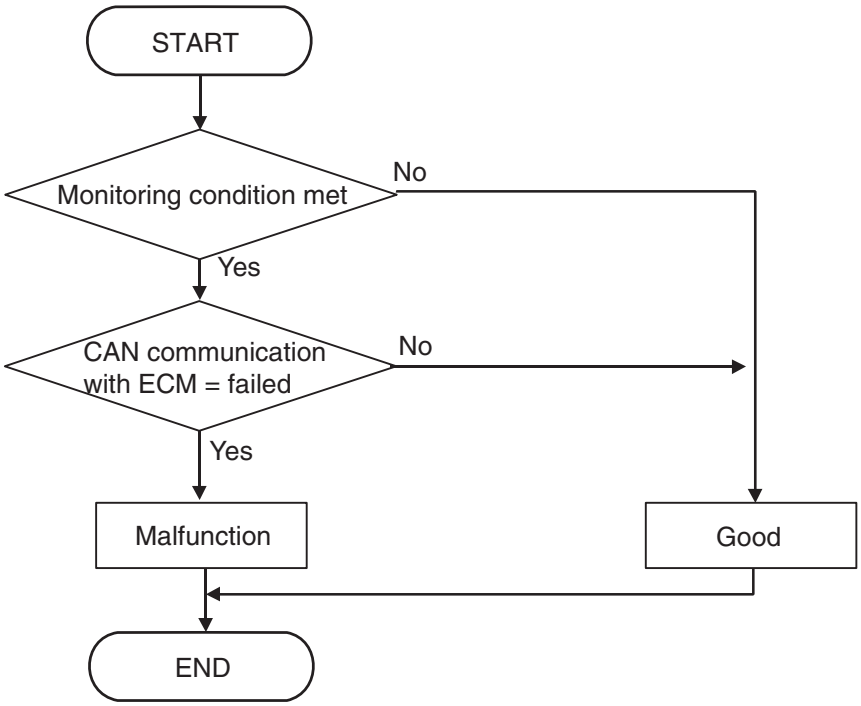
MONITOR EXECUTION
- Continuous

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-15.) 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 13A –Troubleshooting P.13A-48.)

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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-370.)

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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-22.)

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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.)

STEP 2. Scan tool diagnostic trouble code
Check the AWC diagnostic trouble code. (Refer to GROUP 22A –Troubleshooting P.22A-12.)

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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-646.)

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-421.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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 M.U.T.-III 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.

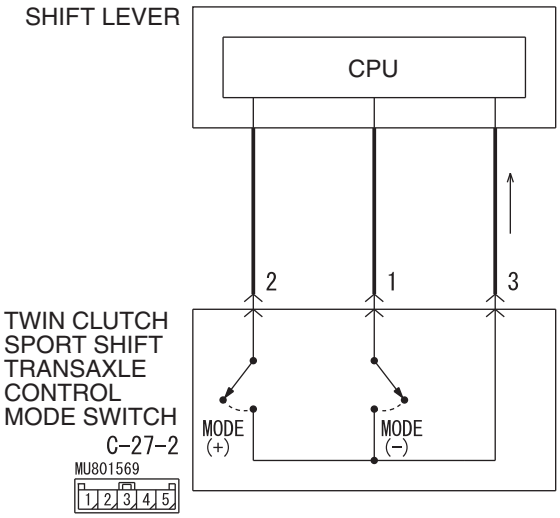
Q: Is the check result normal?

YES : Check and repair the TC-SST-ECU power supply circuit. (Refer to P.22C-341.)

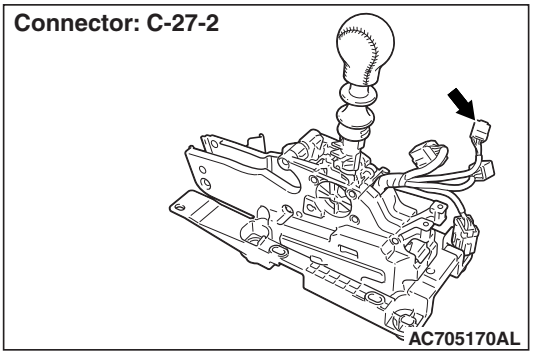
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-15.)

INSPECTION PROCEDURE 2: The driving mode cannot be changed.

Twin clutch sport shift transaxle control mode switch circuit



W8H22M010A



⚠ 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

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-15.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool service data
Item No. 32: Drive mode switch (Refer to Service Data Reference Table P.22C-359.)

Q: Is the check result normal?
YES : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)
NO : Go to Step 3.

STEP 3. Twin clutch SST control mode switch check
Refer to P.22C-434.

Q: Is the check result normal?
YES : Go to Step 4.
NO : Replace the twin clutch SST control mode switch. (Refer to P.22C-434.)

STEP 4. Twin clutch SST control mode switch connector check: C-27-2
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

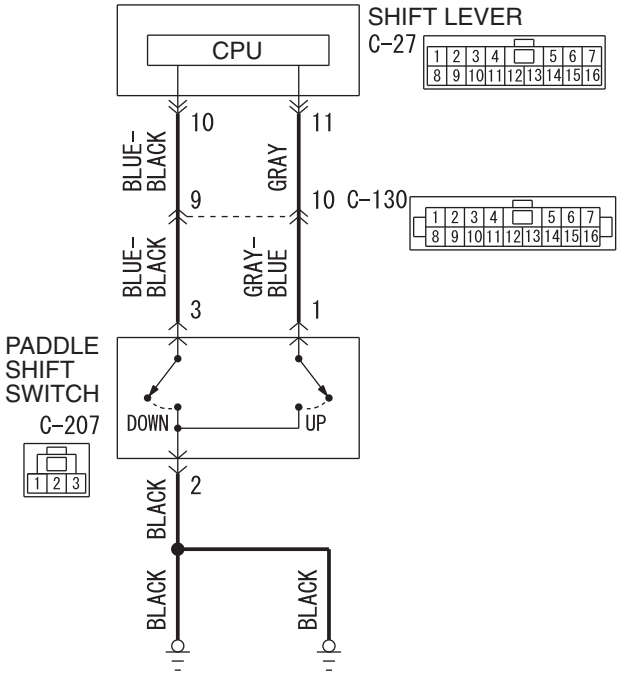
Q: Does a malfunction take place again?
YES : Go to Step 6
NO : The inspection is complete.

STEP 6. Trouble symptom recheck after replacing the shift lever assembly
(1) Replace the shift lever assembly. (Refer to P.22C-404.)
(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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

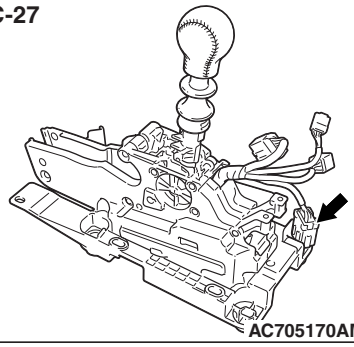
INSPECTION PROCEDURE 3: Speed change with the paddle shift is impossible.

Paddle shift switch system circuit



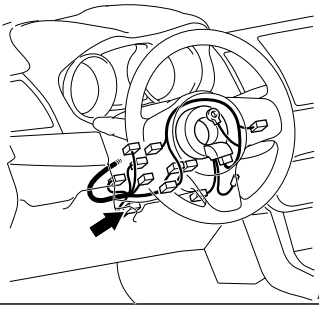
W8H22M011A

Connector: C-27



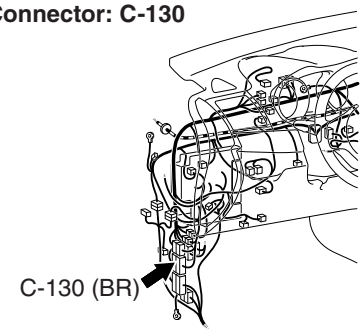
AC705170AM

Connector: C-207



AC708953AK

Connector: C-130



AC708950CM

⚠ 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-15.) After repairing the CAN bus line, go to Step 2.

STEP 2. Paddle shift switch check

Refer to P.22C-433.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the paddle shift assembly. (Refer to P.22C-433.)

STEP 3. Measure the resistance at C-207 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-207

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-207 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-27, C-130, C-207

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-207 paddle shift switch connector terminal No. 1 and C-27 shift lever assembly connector terminal No. 11, and between C-207 paddle shift switch connector terminal No. 3 and C-27 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

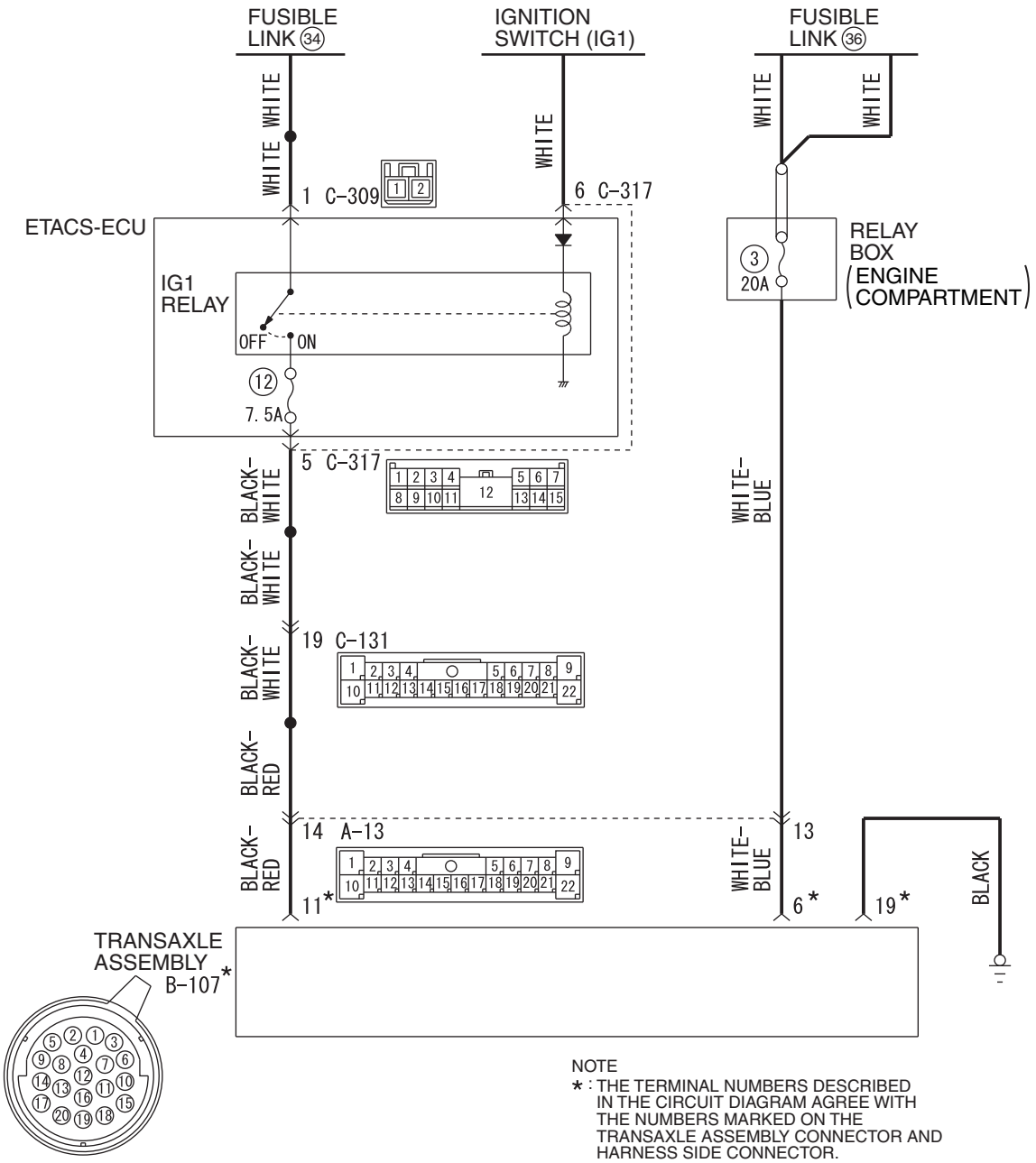
(1) Replace the shift lever assembly. (Refer to P.22C-404.)
(2) Verify that the condition described by the customer exists.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

INSPECTION PROCEDURE 4: TC-SST-ECU power supply circuit malfunction

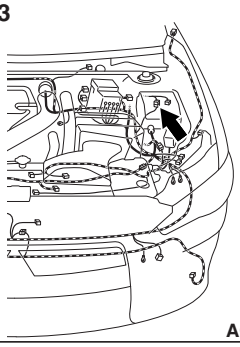
Power supply system circuit



NOTE
* : THE TERMINAL NUMBERS DESCRIBED IN THE CIRCUIT DIAGRAM AGREE WITH THE NUMBERS MARKED ON THE TRANSAXLE ASSEMBLY CONNECTOR AND HARNESS SIDE CONNECTOR.

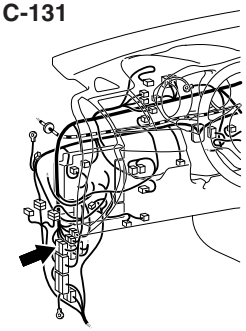
AC902075AB

Connector: A-13



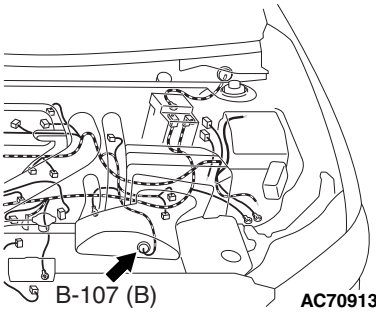
AC708949AO

Connector: C-131



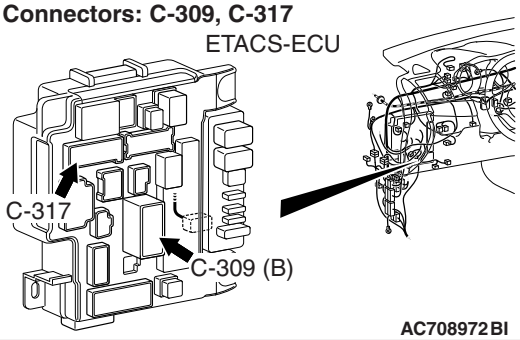
AC708950CN

Connector: B-107



AC709137AD

Connectors: C-309, C-317



AC708972BI

⚠ 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-9.

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-107 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-107
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. 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-107 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-13, B-107
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-107 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-646.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 9.

STEP 9. Measure the voltage at B-107 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-13, C-131, B-107, 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-107 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.

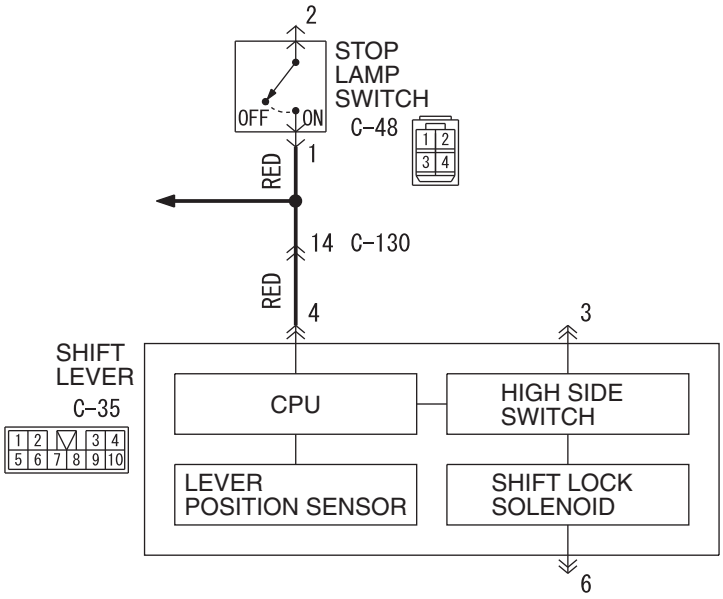
STEP 12. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

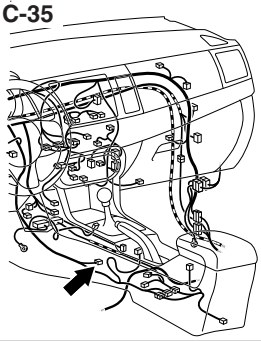
INSPECTION PROCEDURE 5: The shift lever does not operate.

Shift lock system circuit



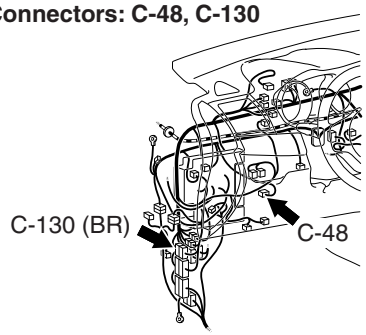
AC901771AB

Connector: C-35



AC708951CX

Connectors: C-48, C-130



AC708950CX

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

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 data list.

Item No.5: Brake SW (Refer to data list reference table P.22C-359.)

Q: Is the check result normal?

YES : Go to Step 7.
NO : Go to Step 2.

STEP 2. Shift lever-ECU connector check: C-35

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-35 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 stop light switch connector, intermediate connector: C-48, C-130

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-48 stop light switch connector terminal No.1 and C-35 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-404.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 7. Key interlock mechanism check

Refer to P.22C-401.

Q: Is the check result normal?

YES : Go to Step 8.

NO : Adjust the key interlock mechanism. (Refer to P.22C-401.)

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-404.)

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-421.)

NO : Check the transaxle control cable for installation condition, and repair or replace if necessary.(Refer to P.22C-404.)

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-15.) 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-359).
(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-404.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?
YES : Replace the mechatronic assembly. (Refer to P.22C-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-404.)

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-404.) Then, go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the shift lever assembly. (Refer to P.22C-404.)

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-412.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-431.)

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-421.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-6.) Then go to Step 5.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 5. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-412.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-421.) Then go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-6.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-412.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-421.) Then go to Step 2.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-6.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-421.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-6.) Then go to Step 5.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 5. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-412.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-421.) Then go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-6.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-412.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-421.) Then go to Step 2.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-6.) Then go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-412.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-341.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the TC-SST-ECU power supply circuit. (Refer to P.22C-341.)

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-421.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-6.) Then go to Step 5.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 5. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-412.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-421.) Then go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-6.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-421.) Then go to Step 2.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 2. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-6.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-421.) Then go to Step 3.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 3. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the clutch assembly. (Refer to GROUP 22D –Transaxle P.22D-6.) Then go to Step 4.

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

STEP 4. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the transaxle assembly. (Refer to P.22C-412.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

DATA LIST REFERENCE TABLE

M1225006700011

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

TSB Revision

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
36	AYC gear hold request	AYC gear hold request	Ignition switch: ON	Normal state	OFF
				Gear hold requested	ON
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

TSB Revision

Item No.	Display on scan tool	Item name	Check conditions		Normal conditions
47	Torque limit by spark retard	Torque limit by spark retard	Torque limit by spark retard requested		ON
			Not requested		OFF
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

TSB Revision

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
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

M1225006800018

B-107

AC707707AC

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>

INTRODUCTION

M1225024900022

The shift lever can exhibit any of the following symptoms: Impossible to move, or does not work.

The causes of these symptoms could come from: incorrect mounting or a component of the shift lever may be faulty.

TROUBLESHOOTING STRATEGY

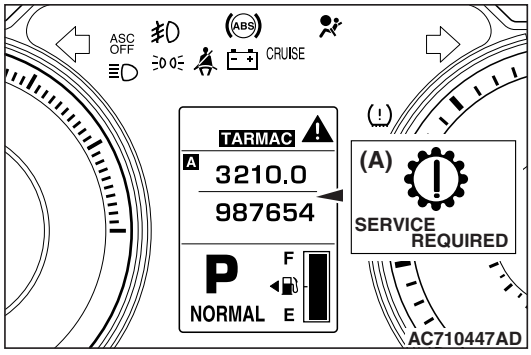
M1225007900029

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will find most shift lever 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 shift lever 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.00-15.
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-370.
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.00-15.
10. Verify malfunction is eliminated. After repairs are completed, the complaint conditions to confirm the malfunction has been eliminated.

DIAGNOSIS FUNCTION

M1225000500020



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.

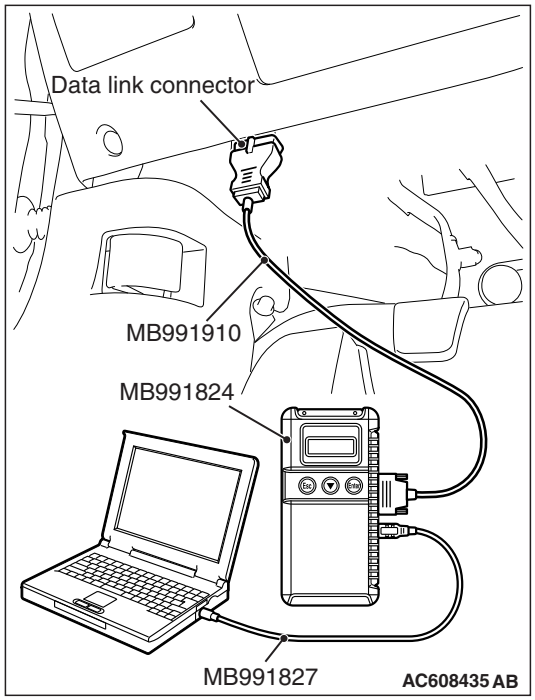
FAIL-SAFE REFERENCE TABLE

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

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	Display contents
4	Current trouble accumulative time	min
5	Shift lever position	• P • R-P • R • N-R • N • D-N • D • Manual • + • –
6	Battery positive voltage	V

DIAGNOSTIC TROUBLE CODE CHART

M1225000600027

⚠ 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-370
P198D	EEPROM system	P.22C-371
P198E	Lever position sensor system	P.22C-372
P198F		
U0001	Bus off	P.22C-373
U0100	Engine time-out error	P.22C-373
U0101	TC-SST time-out error	P.22C-374
U0121	ASC time-out error	P.22C-375
U0141	ETACS time-out error	P.22C-375

SYMPTOM CHART

M1225005200024

⚠ 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-376
Shift indicator light does not illuminate.	2	P.22C-377
Back-up light does not illuminate.	3	P.22C-379
The driving mode cannot be changed.	4	P.22C-383
Speed change with the paddle shift is impossible.	5	P.22C-384
Shift lever-ECU power supply circuit abnormality	6	P.22C-387

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

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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-15.) 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.16-7.

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-404.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-404.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

DTC P198E, P198F: 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-15.) 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-404.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-404.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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 13A –Troubleshooting P.13A-48.)

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-404.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-15.)

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-404.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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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-15.) 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-22.)

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-404.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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-15.) 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-646.)

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-404.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

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 M.U.T.-III 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

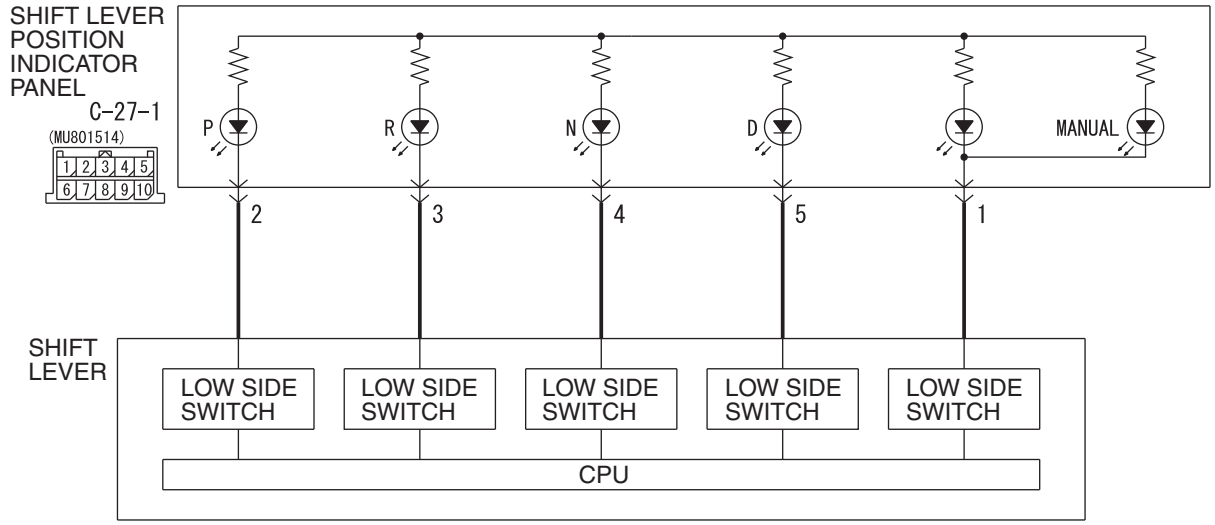
STEP 1. Scan tool CAN bus diagnostics
Using scan tool MB991958, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Check and repair the shift lever-ECU power supply circuit. (Refer to P.22C-387.)
NO : Repair the CAN bus lines. (Refer to GROUP 54C – Troubleshooting P.54C-15.)

INSPECTION PROCEDURE 2: Shift indicator light does not illuminate.

Shift lever position indicator panel circuit



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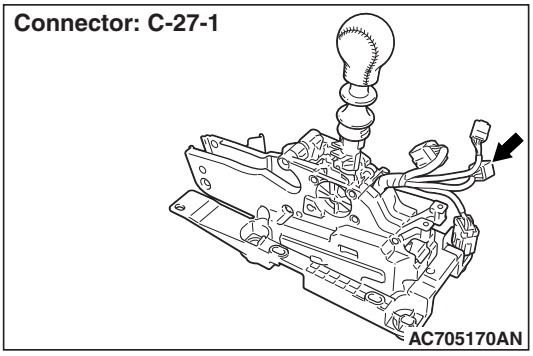


⚠ CAUTION
Whenever the ECU is replaced, ensure that the CAN bus lines are normal.

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

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-15.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool service data

Item No. 1: Shift lever position (Refer to Service Data Reference Table P.22C-391.)

Q: Is the check result normal?

YES : Go to Step 3.

NO : Replace the shift lever assembly. (Refer to P.22C-404.)

STEP 3. Scan tool actuator test

Item No. 1: Shift indicator (Refer to Special Function (Actuator Test Reference Table P.22C-393.)

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

NO : Go to Step 4.

STEP 4. Inspection of the floor console panel assembly connector: C-27-1

Check for the contact with terminals.

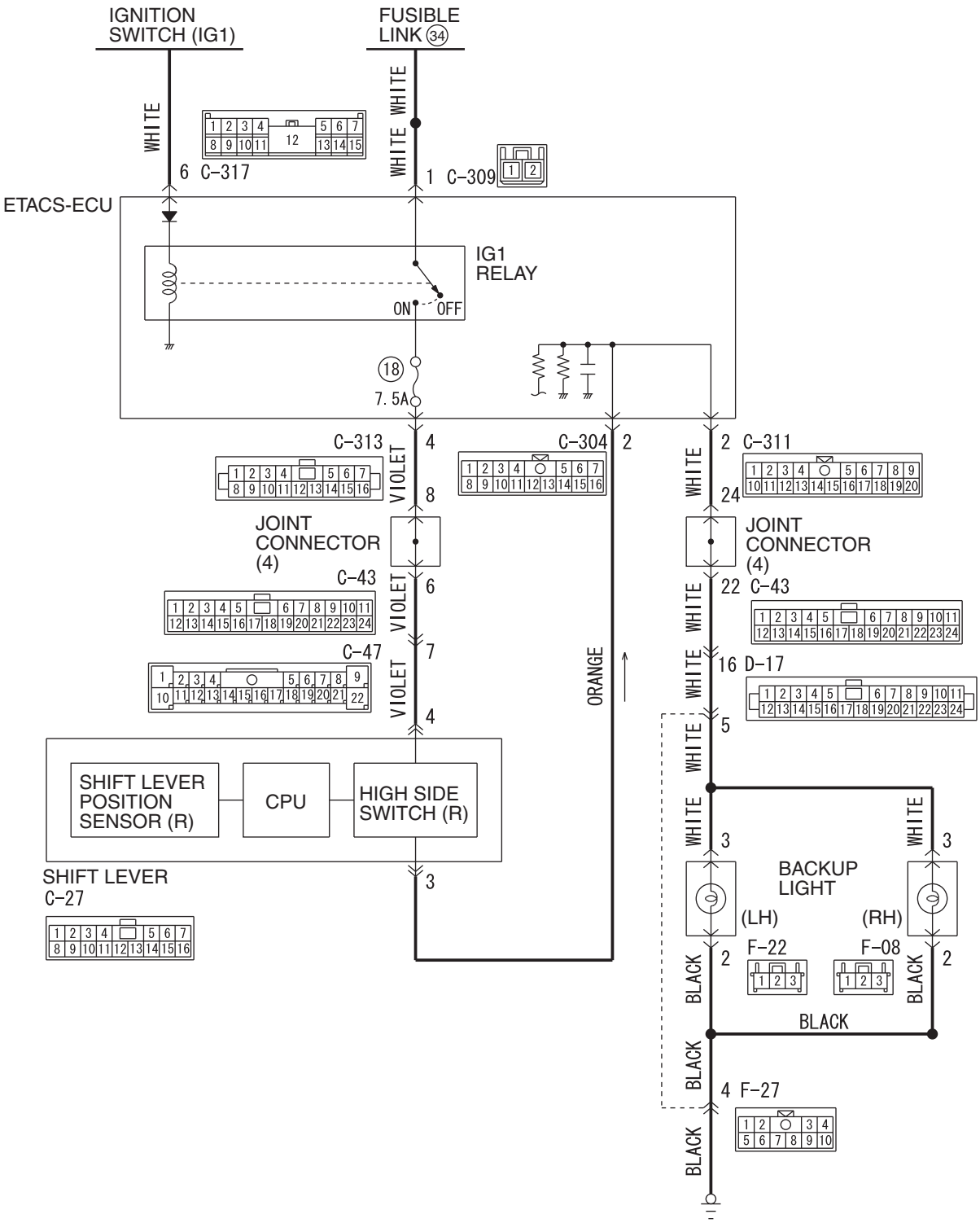
Q: Is the check result normal?

YES : Replace the floor console panel assembly. (Refer to GROUP 52A –Floor Console Assembly P.52A-10.)

NO : Repair the defective connector.

INSPECTION PROCEDURE 3: Back-up light does not illuminate.

Backup lamp switch system circuit



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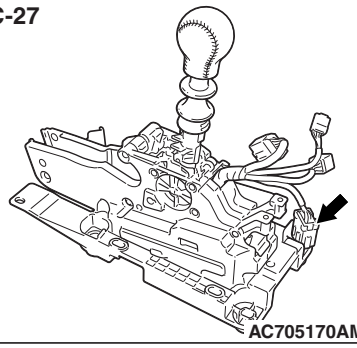
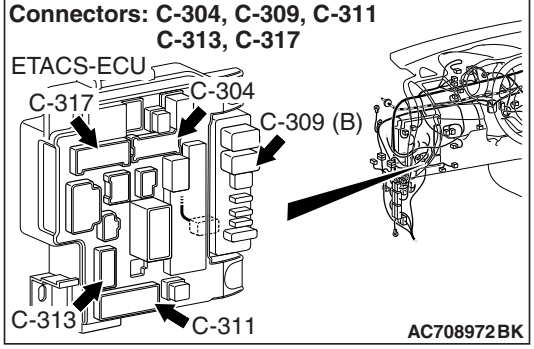
Connector: C-27



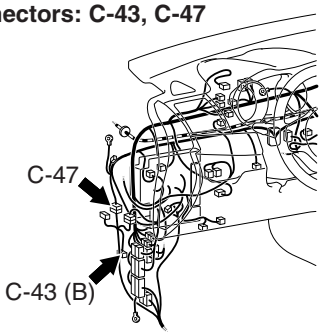
AC705170AM

Connectors: C-304, C-309, C-311
C-313, C-317



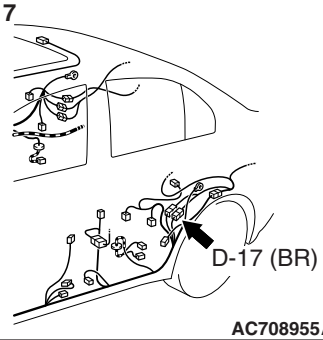
AC708972BK

Connectors: C-43, C-47



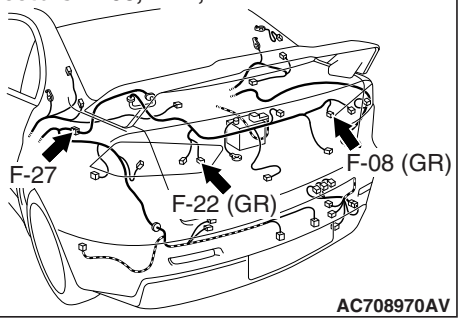
AC708950CO

Connector: D-17



AC708955AL

Connectors: F-08, F-22, F-27



AC708970AV

⚠ 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

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-15.) 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-393.)

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)
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-646.)

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 which does not illuminate.

STEP 5. Measure the resistance at F-08 back-up light (RH) connector and F-22 back-up light (LH) connector.
Disconnect the connector of the light which does not illuminate, 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 the back-up light (RH) connector, back-up light (LH) connector, and intermediate connector: F-08, F-22, F-27
Check for the contact with the connector terminals of the light which does not illuminate.

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-22 back-up light (RH) connector terminal No. 2 and body ground.

Check the ground harness of the light which does not illuminate for open circuit.

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

NO : Repair the wiring harness.

STEP 8. Measure the voltage at F-08 back-up light (RH) connector and F-22 back-up light (LH) connector.

(1) Disconnect the connector of the light which does not illuminate, 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.00-15.)

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-43, C-47, C-27, C-304, C-311, C-313, D-17, F-08, F-22, F-27

Check for the contact with the connector terminals of the light which does not illuminate.

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-313 ETACS-ECU connector terminal No. 4, and between F-22 back-up light (RH) connector terminal No. 3 and C-313 ETACS-ECU connector terminal No. 4.

Check the power supply line of the light which does not illuminate for open or short circuit.

Q: Is the check result normal?

YES : Go to Step 11.

NO : Repair the wiring harness.

STEP 11. Retest the system.

Q: Does a malfunction take place again?

YES : Replace the shift lever assembly. (Refer to P.22C-404.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

INSPECTION PROCEDURE 4: The driving mode cannot be changed.

TWIN CLUTCH SPORT SHIFT TRANSAXLE CONTROL MODE SWITCH CIRCUIT

Refer to P.22C-336.

⚠ 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

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-15.) After repairing the CAN bus line, go to Step 2.

STEP 2. Scan tool service data

Item No. 30: Drive mode switch (Refer to Service Data Reference Table P.22C-391.)

Q: Is the check result normal?

YES : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

NO : Go to Step 3.

STEP 3. Twin clutch SST control mode switch check
Refer to P.22C-434.

Q: Is the check result normal?

YES : Go to Step 4.
NO : Replace the twin clutch SST control mode switch. (Refer to P.22C-434.)

STEP 4. Twin clutch SST control mode switch connector check: C-27-2
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-404.)
(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-421.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

INSPECTION PROCEDURE 5: Speed change with the paddle shift is impossible.

PADDLE SHIFT SWITCH SYSTEM CIRCUIT
Refer to P.22C-338.

⚠ 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

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-15.) After repairing the CAN bus line, go to Step 2.

STEP 2. Paddle shift switch check
Refer to P.22C-433.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Replace the paddle shift assembly. (Refer to P.22C-433.)

STEP 3. Measure the resistance at C-207 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-207
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-207 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-27, C-130, C-207
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-207 paddle shift switch connector terminal No. 1 and C-27 shift lever assembly connector terminal No. 11, and between C-207 paddle shift switch connector terminal No. 3 and C-27 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-404.)

(2) Verify that the condition described by the customer exists.

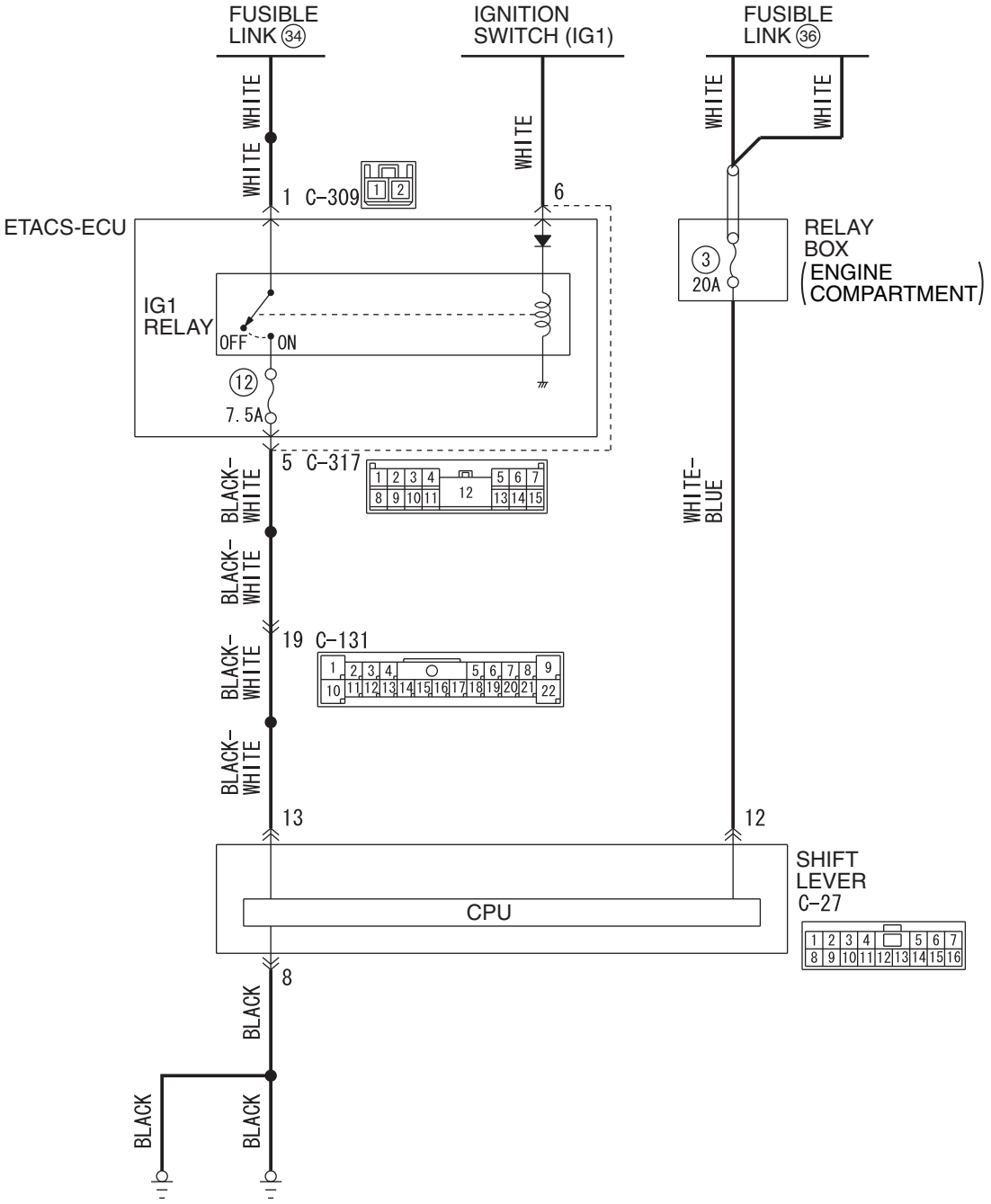
Q: Does a malfunction take place again?

YES : Replace the mechatronic assembly. (Refer to P.22C-412.)

NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

INSPECTION PROCEDURE 6: Shift lever-ECU power supply circuit abnormality

Power supply system circuit



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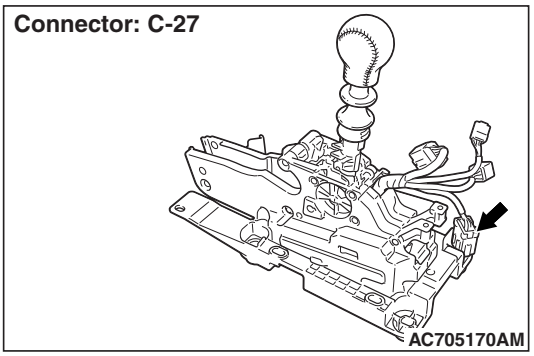
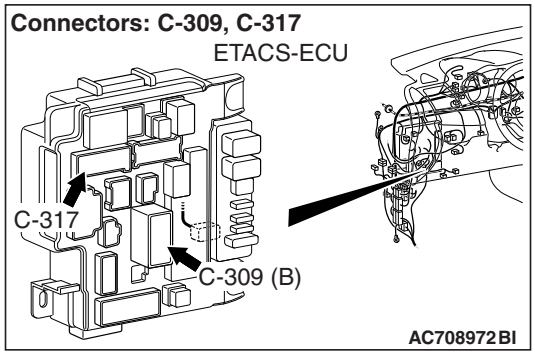
Connector: C-27



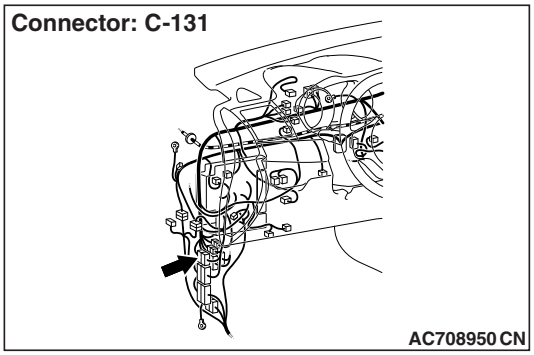
AC705170AM

Connectors: C-309, C-317



AC708972BI

Connector: C-131



AC708950CN

⚠ 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-9.

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-27 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-27
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-27 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-27 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-27
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-27 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-646.)

Q: Is the DTC set?

YES : Perform the relevant troubleshooting.
NO : Go to Step 9.

STEP 9. Measure the voltage at C-27 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-27, C-131, 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-27 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-404.)
NO : Intermittent malfunction. (Refer to GROUP 00 –How to Cope with Intermittent Malfunction P.00-15.)

DATA LIST REFERENCE TABLE

M1225006700022

Item No.	Display on scan tool	Item name	Check conditions		Normal conditions
1	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	–
3	Battery voltage (CAN data)	Battery voltage (CAN data)	Ignition switch: ON		Battery voltage (12 V)
4	Back light voltage	Back-up 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	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	Battery positive voltage	Ignition switch: ON		520 –920 digits
7	Shift indicator voltage(D range)	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)	Shift indicator voltage (M range)	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)	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)	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)	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

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Item No.	Display on scan tool	Item name	Check conditions		Normal conditions
16	Shift indicator PWM (Day)	Shift indicator PWM* value (daytime)	Ignition switch: ON		100%
17	Shift indicator PWM (Night)	Shift indicator PWM* value (nighttime)	Ignition switch: ON		20%
20	ILL+	ILL+	Ignition switch: ON	Headlight (taillight): ON	ON
				Headlight (taillight): OFF	OFF
23	Ignition SW	Ignition switch	Ignition switch: ON		ON
			Ignition switch: START		START
24	Shift position	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	Vehicle speed	Driving at a constant speed of 20 km/h		20 mph

Item No.	Display on scan tool	Item name	Check conditions		Normal conditions
30	Drive mode SW (output data)	Drive mode switch (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
32	Lever position (output data)	Shift 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).*

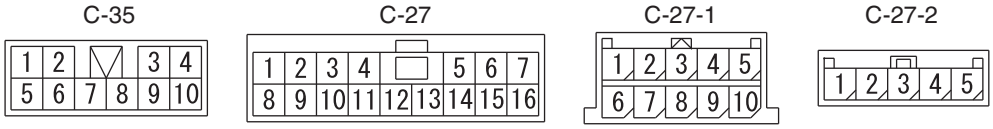
SPECIAL FUNCTION (ACTUATOR TEST REFERENCE TABLE)

M1225027200011

Item No.	Display on scan tool	Check items	Test content	Check conditions	Normal conditions
1	Shift indicator	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	Back-up light	Illuminate the back-up light for 3 seconds.		The back-up light illuminates.

SHIFT LEVER -ECU TERMINALVOLTAGE REFERENCE CHART

M1225007800129



AC707982AC

Connector number	Terminal No.	Check items	Check conditions	Standard value
C-35	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

Connector number	Terminal No.	Check items	Check conditions		Standard value
C-27	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
	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

Connector number	Terminal No.	Check items	Check conditions		Standard value
C-27	16	LIN	–		–
C-27-1	1	Manual mode light	Ignition switch: ON	Shift lever position: Manual mode	1 V or less
				Shift lever position: Other than above	Battery positive voltage
	2	P range light	Ignition switch: ON	Shift lever position: P	1 V or less
				Shift lever position: Other than above	Battery positive voltage
	3	R range light	Ignition switch: ON	Shift lever position: R	1 V or less
				Shift lever position: Other than above	Battery positive voltage
	4	N range light	Ignition switch: ON	Shift lever position: N	1 V or less
				Shift lever position: Other than above	Battery positive voltage
	5	D range light	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
	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

Connector number	Terminal No.	Check items	Check conditions		Standard value
C-27-2	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 <S-AWC(SUPER ALL WHEEL CONTROL)>

INTRODUCTION

M1225024900033

For the troubleshooting of S-AWC, refer to GROUP 22A, Manual Transaxle P.22A-5.

ON-VEHICLE SERVICE

TRANSMISSION FLUID LEAKAGE CHECK

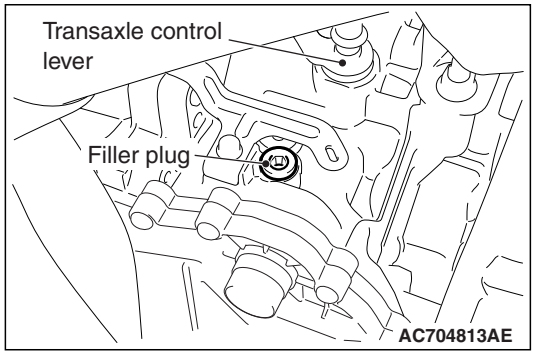
M1225029700034

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.51-15.)
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.15-11.)
6. Remove the filler plug.



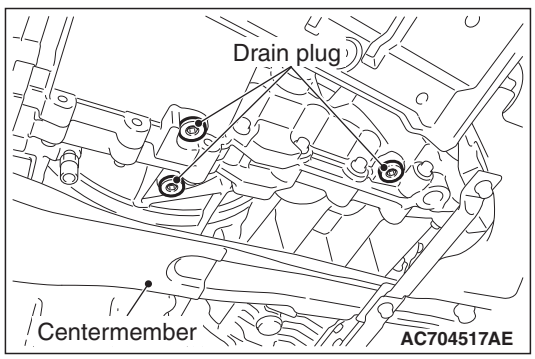
⚠ CAUTION

- **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)

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⚠ 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.

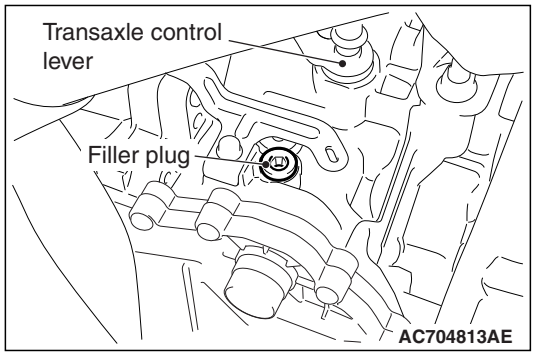
    Tightening torque: 35 ± 5 N· m (26 ± 4 ft-lb)

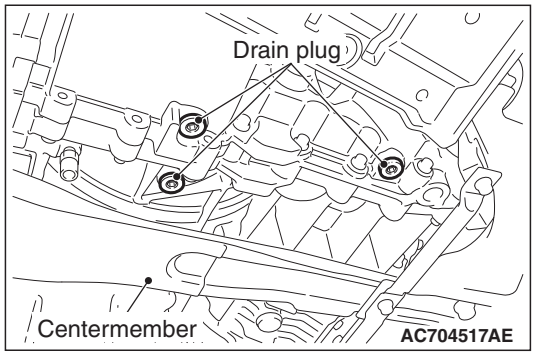
11. Install the air cleaner element and air cleaner intake duct. (Refer to GROUP 15 –Air Cleaner P.15-11.)
12. Install the engine room under cover front B assembly. (Refer to GROUP 51 –Under Cover P.51-15.)

TRANSMISSION FLUID CHANGE

M1225008100220

1. Remove the engine room under cover front B assembly. (Refer to GROUP 51 –Under Cover P.51-15.)
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.15-11.)
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)

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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.15-11.)
12. Install the engine room under cover front B assembly. (Refer to GROUP 51 –Under Cover P.51-15.)

TRANSFER OIL CHECK

M1225008200012

Refer to GROUP 22A –On-vehicle Service P.22A-118.

TRANSFER OIL CHANGE

M1225008300019

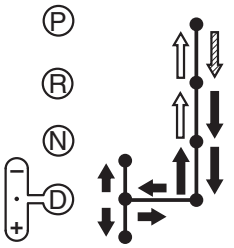
Refer to GROUP 22A –On-vehicle Service P.22A-119.

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.



⇦ : The shift lever moves when the brake pedal is depressed and the pull-ring is pulled in with the ignition key in ON position.

⬅ : The shift lever moves without pulling the pull-ring.

⇦ : The shift lever moves when the pull-ring is pulled.

AC803151AD

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.

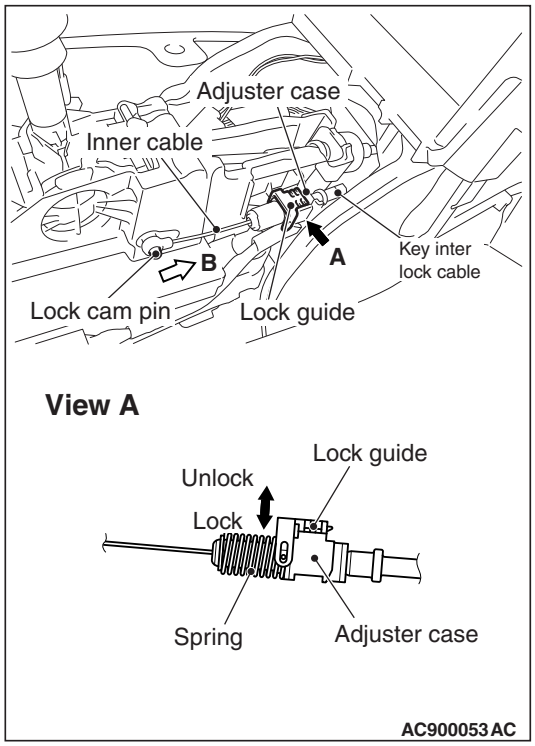
2. If there is a problem with above operations, install the key interlock cable according to the procedure below. (Automatic adjustment)
   (1) Disconnect the key interlock cable connection (shift lever side).(Refer to P.22C-408.)

⚠ 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-404.)
3. After performing the check above, if an abnormality is found, replace the shift lever assembly.

FLUID CHECK

M1225008700017

Refer to GROUP 27 –On-vehicle Service P.27-28.

BLEEDING

M1225008800014

Refer to GROUP 22A –On-vehicle Service P.22A-119.

ACD OPERATION CHECK

M1225008900011

Refer to GROUP 22A –On-vehicle Service P.22A-120.

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HYDRAULIC PRESSURE CHECK

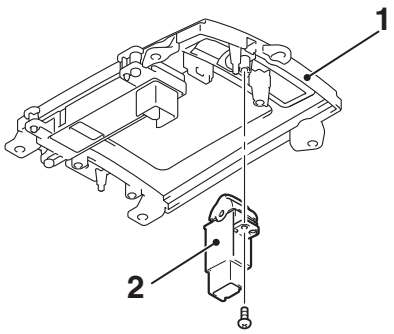
M1225009000011

Refer to GROUP 22A –On-vehicle Service P.22A-121.

TWIN CLUTCH SST CONTROL MODE SWITCH

REMOVAL AND INSTALLATION

M1225009200015



AC710482AB

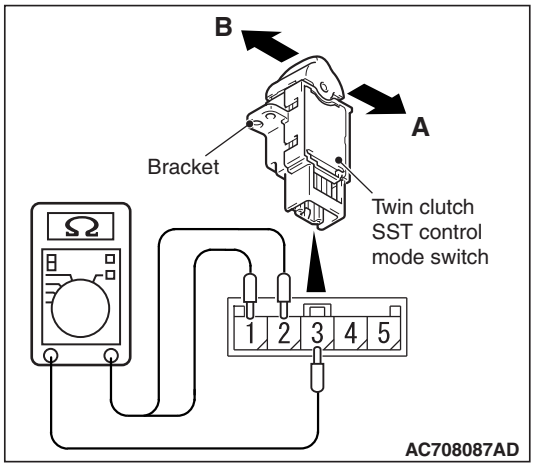
Removal steps

1. Floor console panel assembly (Refer to GROUP 52A –Floor Console Assembly P.52A-10).
2. Twin clutch SST control mode switch

INSPECTION

TWIN CLUTCH SST CONTROL MODE SWITCH CHECK

M1225009100018



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.

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TRANSMISSION CONTROL

REMOVAL AND INSTALLATION

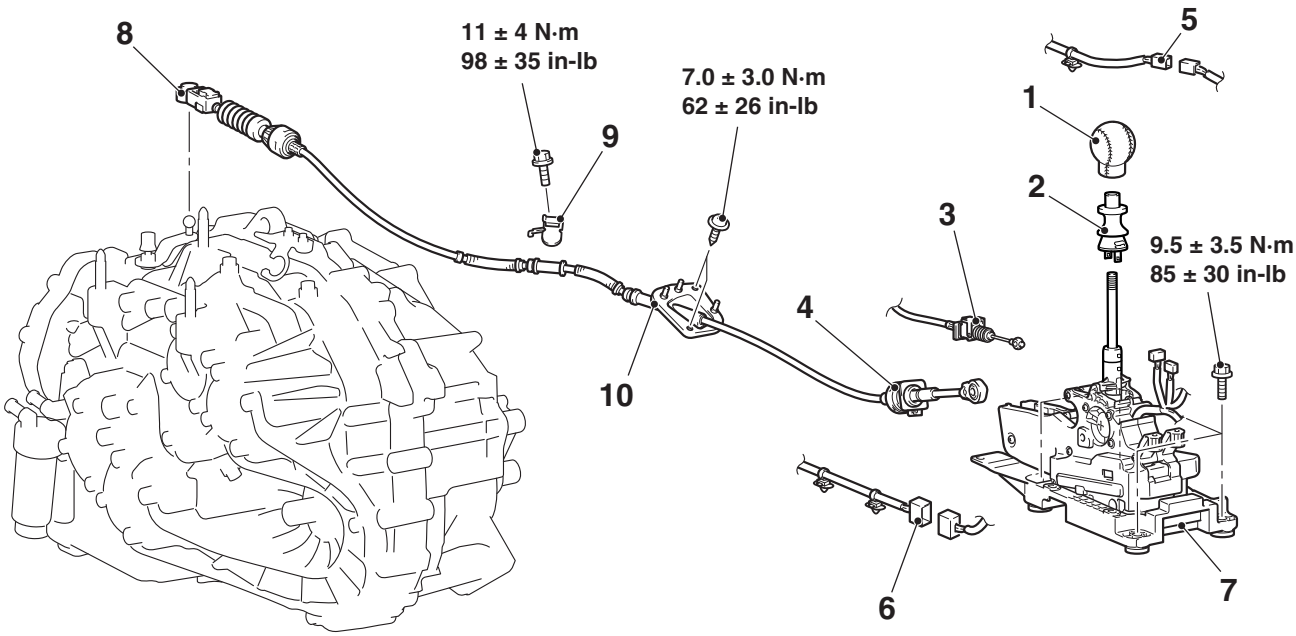
M1225009600198

⚠ 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-401.)
- Shift lock mechanism check (Refer to P.22C-402.)
- Shift lever operation check (Refer to P.22C-400.)



AC902576AB

Shift lever assembly removal steps

1. Shift knob
- Floor console bracket (A) (Refer to GROUP 52A –Floor Console Assembly P.52A-10.)

<<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-410.)
- G and yaw rate sensor and G and yaw rate sensor bracket (Refer to GROUP 35C –G and Yaw Rate Sensor P.35C-304.)

>>A<<
4. Transaxle control cable connection (shift lever side)
- Air cleaner assembly (Refer to GROUP 15 –Air Cleaner P.15-11.)
- Engine control harness connector bracket (Refer to GROUP 54A –Battery P.54A-10.)

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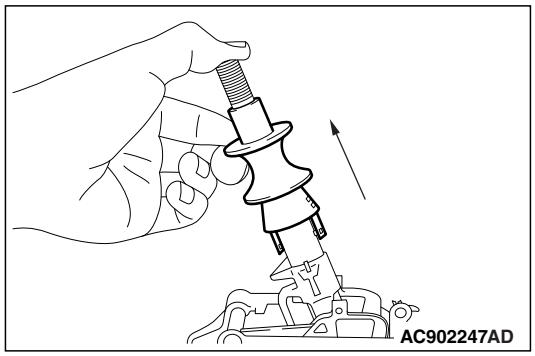
Transaxle control cable removal steps (Continued)

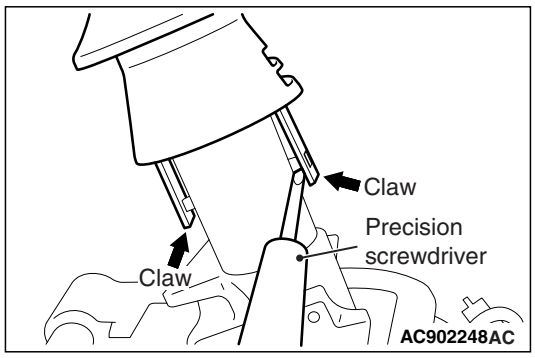
>>**A**<< 8. Transaxle control cable connection (transaxle side)
9. Transaxle control cable bracket
10. Transaxle control cable

REMOVAL SERVICE POINT

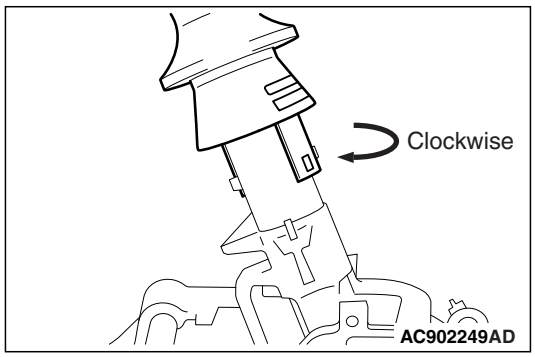
<<A>> PULL RING REMOVAL



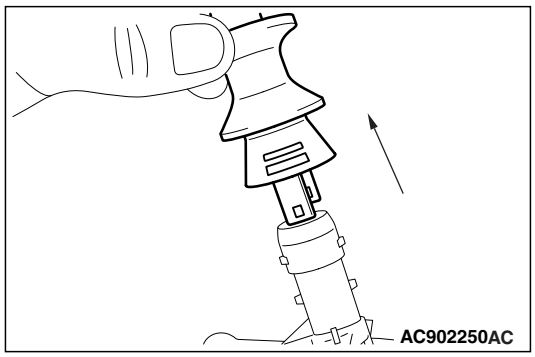
1. Pull the pull ring upward as shown in the figure. (Carry out the following operation with the pull ring pulled upward.)



2. Raise the claw using a precision screwdriver.



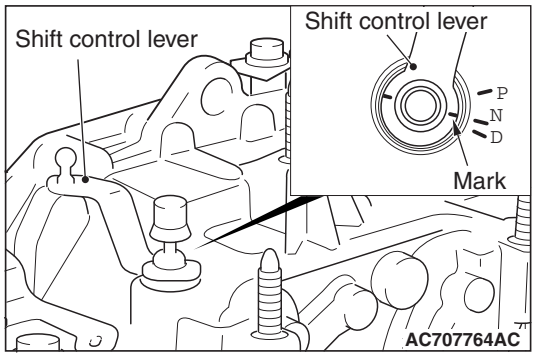
3. Remove the pull ring by turning it clockwise, and pull it out upward.

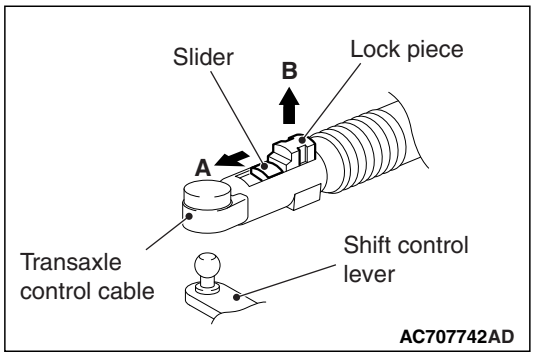


INSTALLATION SERVICE POINTS

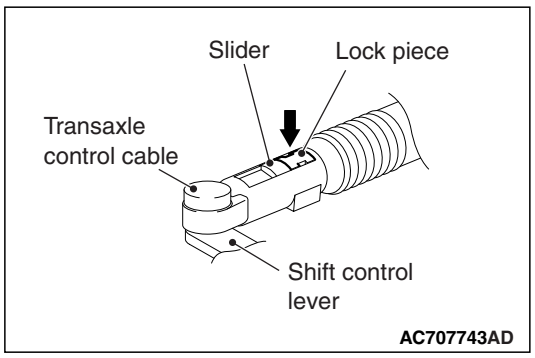
>>A<< TRANSAXLE CONTROL CABLE (TRANSAXLE SIDE/SHIFT LEVER SIDE) INSTALLATION

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.*

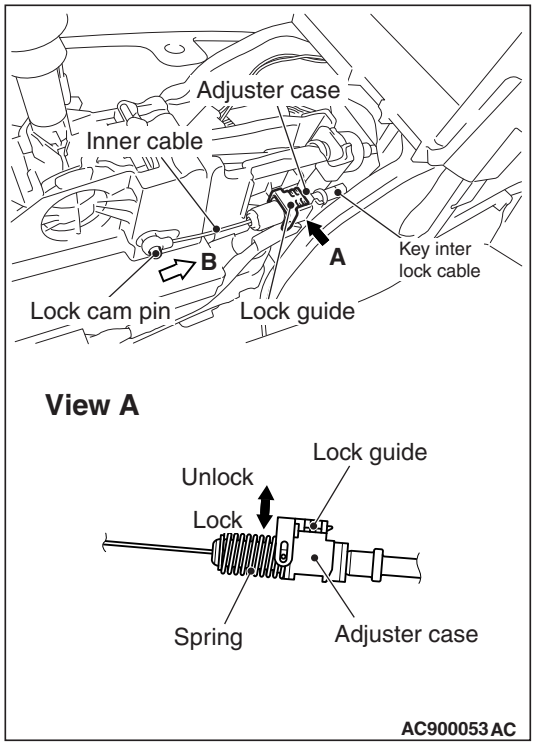
>>B<< KEY INTERLOCK CABLE INSTALLATION

⚠ CAUTION

Leave the ignition switch in the LOCK (OFF) position until the key interlock cable installation is completed.

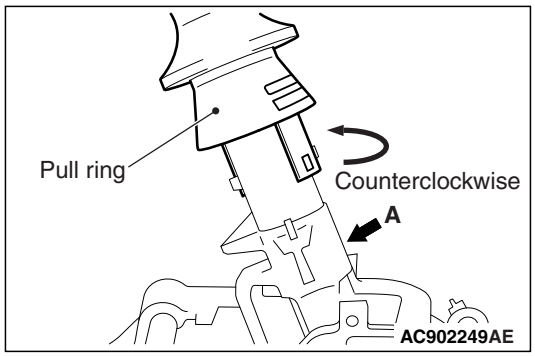
1. Move the shift lever to the P position, and turn the ignition switch to the LOCK (OFF) position.
2. Install the tip of key interlock cable to the lock cam pin of shift lever assembly, using a caution not to twist the inner cable.
3. Install the adjuster case with its lock guide pulled up (unlocked).
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.

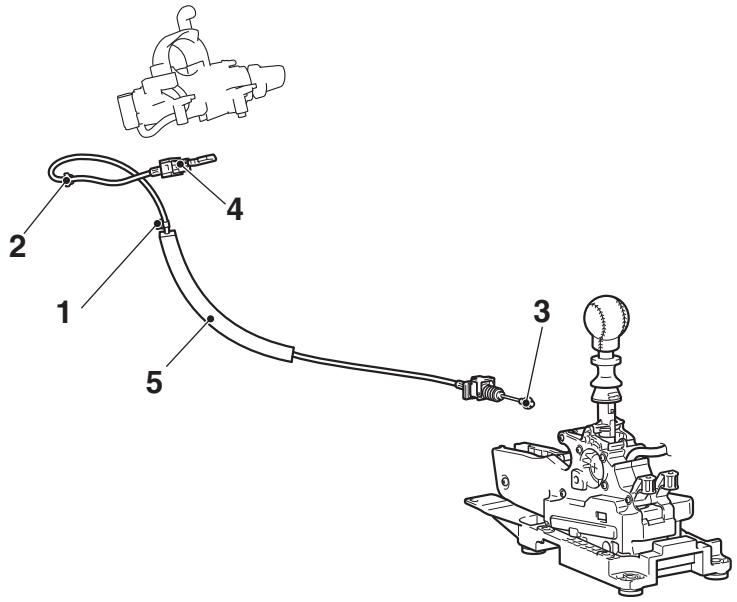


KEY INTERLOCK AND SHIFT LOCK MECHANISMS

REMOVAL AND INSTALLATION

M1225009800170

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-10.) • Instrument panel cover lower removal <Leather combination interior package (Vehicles without side air bag)> (Refer to GROUP 52A –Instrument Lower Panel P.52A-9.) • Steering column lower cover removal (Refer to GROUP 37 –Steering Shaft P.37-33.) • Foot duct (driver's side) removal (Refer to GROUP 55 – Duct P.55-189.)	• Foot duct (driver's side) installation (Refer to GROUP 55 – Duct P.55-189.) • Steering column lower cover installation (Refer to GROUP 37 –Steering Shaft P.37-33.) • Instrument panel cover lower installation <Leather combination interior package (Vehicles without side air bag)> (Refer to GROUP 52A –Instrument Lower Panel P.52A-9.) • Floor console bracket (A) and floor console side cover installation (Refer to GROUP 52A –Floor Console Assembly P.52A-10.) • Key interlock mechanism check (Refer to P.22C-401.) • Shift lock mechanism check (Refer to P.22C-402.) • Shift lever operation check (Refer to P.22C-400.)



AC709660AB

Removal steps
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

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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.

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.

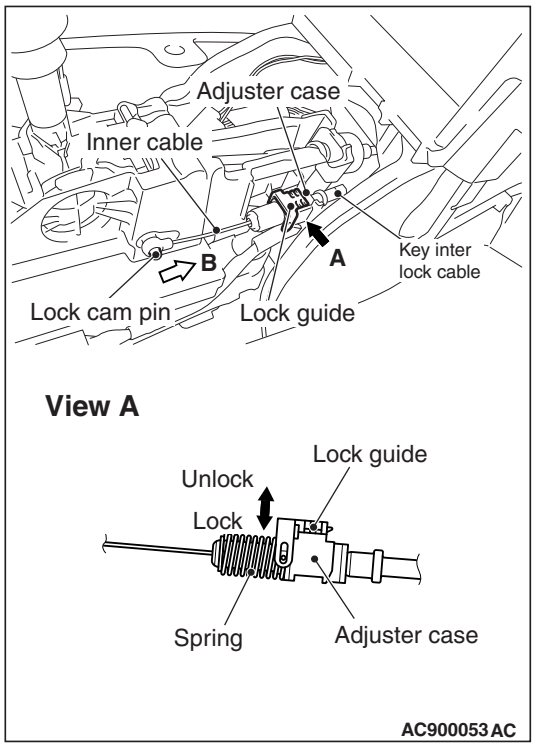
>>B<< KEY INTERLOCK CABLE (SHIFT LEVER SIDE) INSTALLATION

⚠ 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.

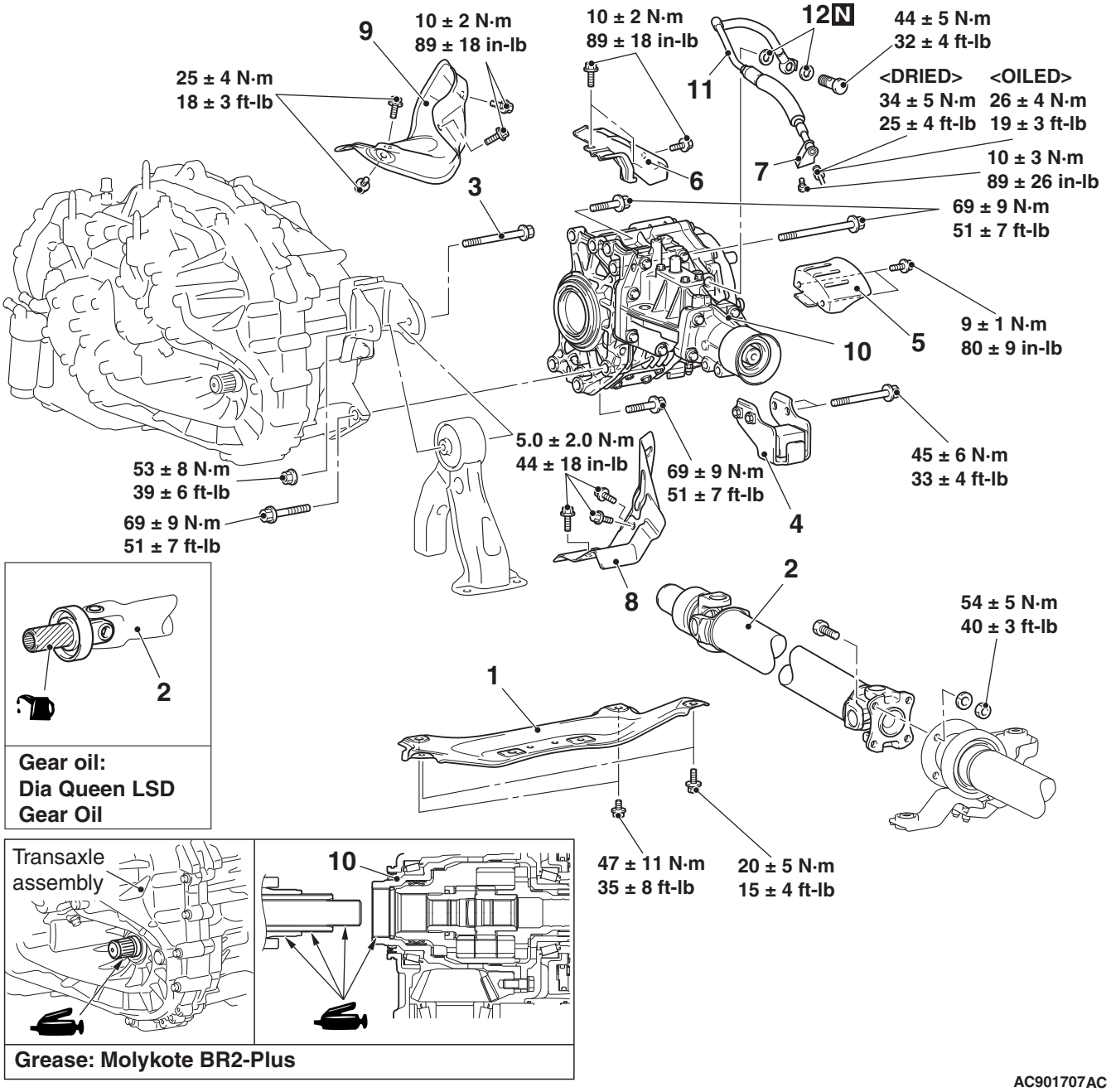


TRANSFER ASSEMBLY

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.51-15.) • Transfer Oil Draining (Refer to P.22C-400.)	• ACD Bleeding (Refer to P.22C-402.) • Transfer Oil Filling (Refer to P.22C-400.) • Engine Room Under Cover Front B Assembly Installation (Refer to GROUP 51 –Under Cover P.51-15.)



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Removal steps

<<A>>
1. Front floor backbone brace
2. Front propeller shaft assembly
- Front driveshaft assembly (Refer to GROUP 26 – Driveshaft Assembly P.26-15.)
- Center member and front roll stopper assembly (Refer to GROUP 32 –Engine Roll Stopper and Center Member P.32-8.)
- Front exhaust pipe removal (Refer to GROUP 15 – Exhaust Pipe and Main Muffler P.15-26.)

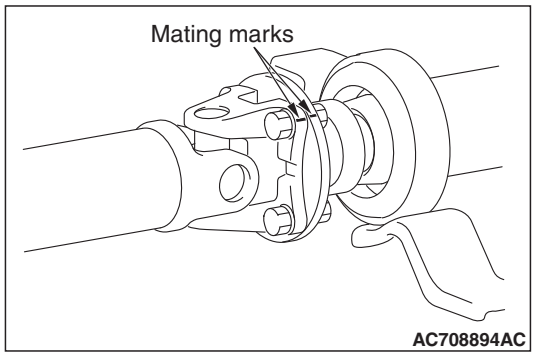
<<B>>

>>A<<
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
10. Transfer assembly
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

M1225010200309

⚠ 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-7).**
- **When the clutch assembly is replaced, the following Teach-In must be carried out (Refer to P.22C-7).**
- **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	Post-installation Operation
• Engine Room Under Cover Front B and Engine Room Side Cover Removal (Refer to GROUP 51 –Under Cover P.51-15.) • Engine Upper Cover Removal (Refer to GROUP 16 –Ignition Coil P.16-40.) • Air Cleaner Assembly and Air Cleaner Bracket Removal (Refer to GROUP 15 –Air Cleaner P.15-11.) • Headlight Support Panel Cover Removal (Refer to GROUP 51 –Front Bumper Assembly and Radiator Grille P.51-3.) • Engine Control Harness Connector Bracket 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.14-32.) • Relay Box Mounting Bolt Removal • Water Pump Pulley Removal (Refer to GROUP 14 –Water Pump P.14-26.)	• Water Pump Pulley Installation (Refer to GROUP 14 –Water Pump P.14-26.) • 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.14-32.) • Engine Control Harness Connector Bracket 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.15-11.) • Engine Upper Cover Installation (Refer to GROUP 11A –Camshaft P.11A-25.) • Engine Room Under Cover Front B and Engine Room Side Cover Installation (Refer to GROUP 51 –Under Cover P.51-15.)

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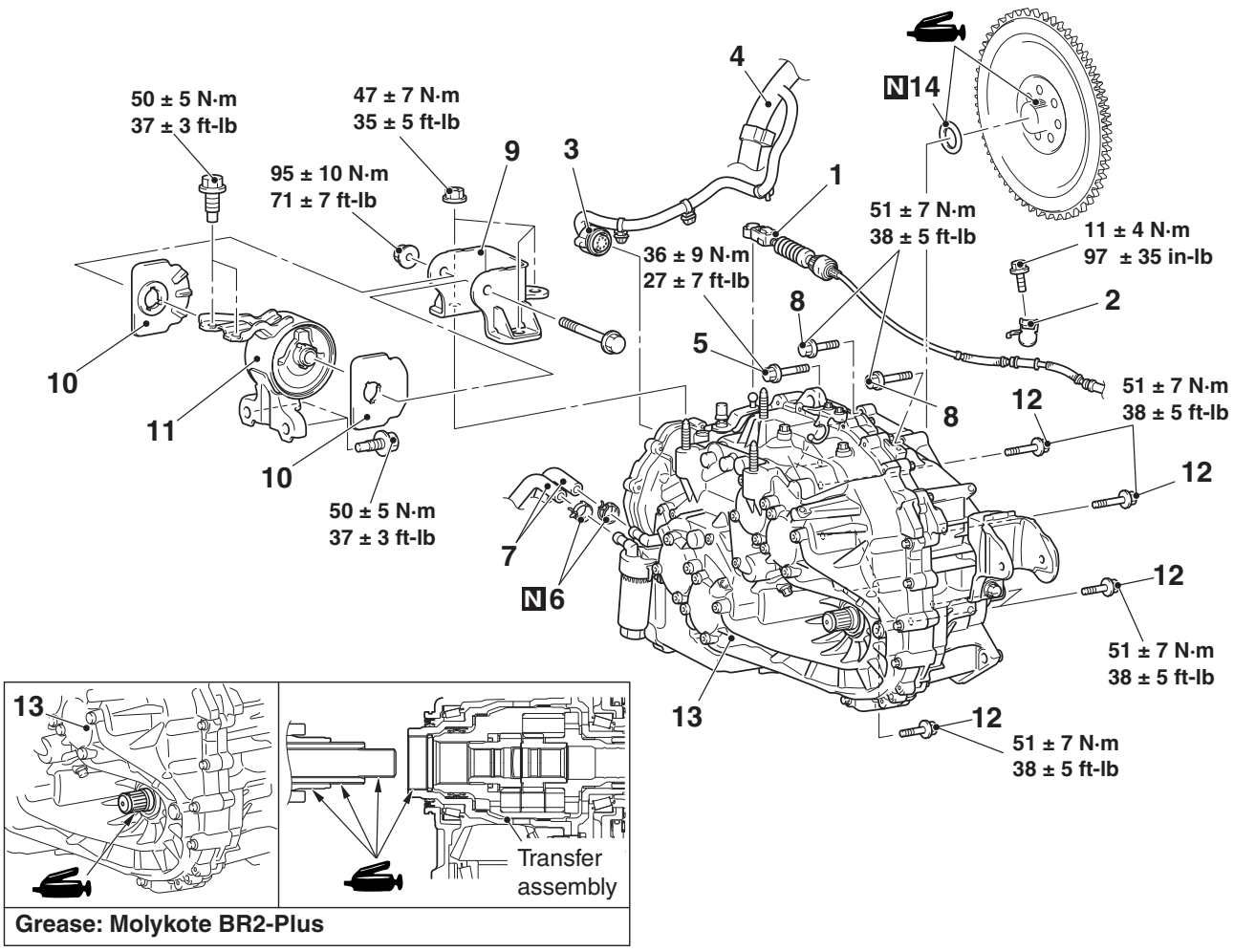

Removal steps

- >>D<< Transmission fluid draining and refilling (Refer to P.22C-399.)
- <<A>> Strut tower bar (Refer to GROUP 42A –Strut Tower Bar P.42A-14.)

>>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

- Front axle crossmember assembly (Refer to GROUP 32 –Crossmember P.32-10.)
- Transfer assembly (Refer to P.22C-410.)

<<D>>
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

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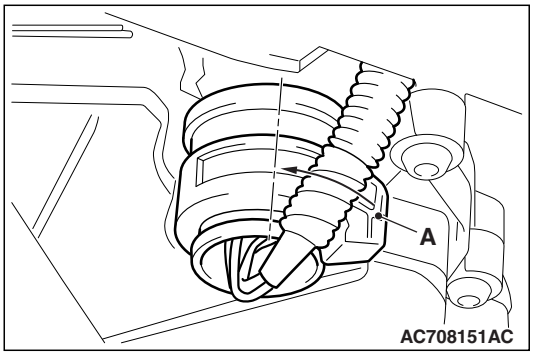
REMOVAL SERVICE POINTS

<<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.

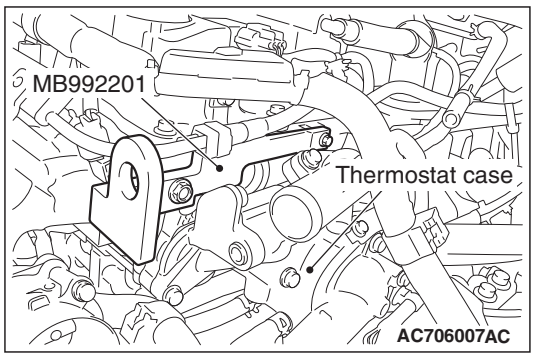
<<D>> TRANSAXLE ASSEMBLY UPPER PART COUPLING BOLT REMOVAL

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.

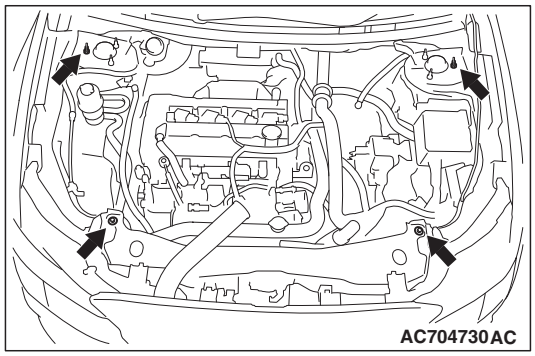
<<F>> ENGINE ASSEMBLY SUPPORTING



1. Remove the vacuum pipe assembly (refer to GROUP 14 – Water Hose and Water Pipe P.14-27), and install the engine hanger plate (Special tool: MB992201), then tighten the bolts to the specified torque.

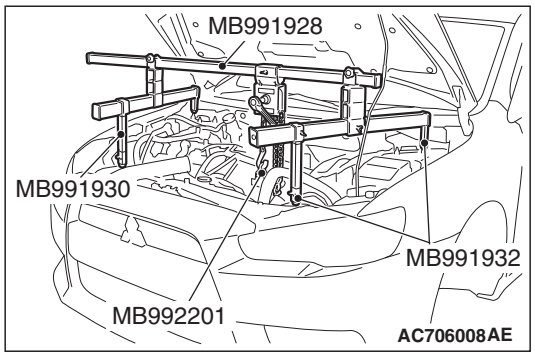
   Tightening torque: 11±1 N·m (97±9 in-lb)

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)



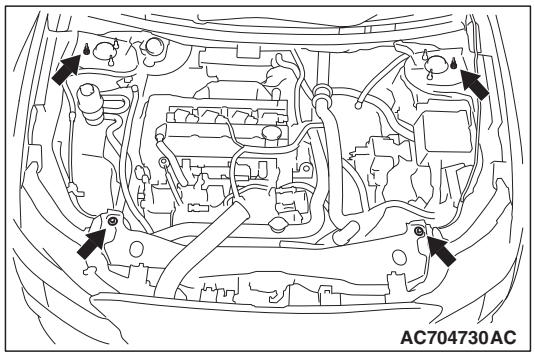
(2) Set the feet of the special tool as shown in the figure.

NOTE: Adjust the engine hanger balance by sliding the slide bracket (HI).



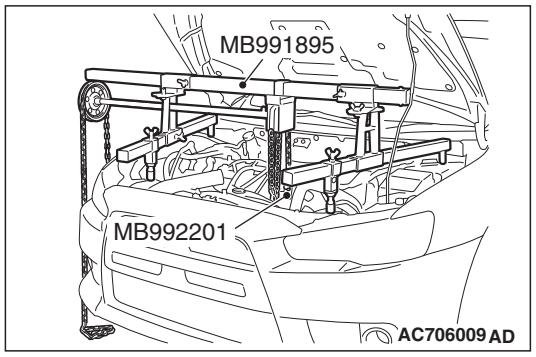
(3) Set the chain to the engine hanger plate (Special tool: MB992201) to support the engine and transaxle assembly. Remove the garage jack, and then remove the transaxle assembly upper part coupling bolts that have been loosened previously.

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.

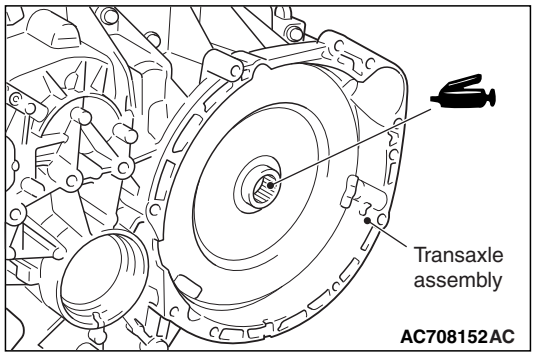
NOTE: Slide the front foot of the engine mechanical hanger (Special tool: MB991895) to balance the engine hanger.



(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

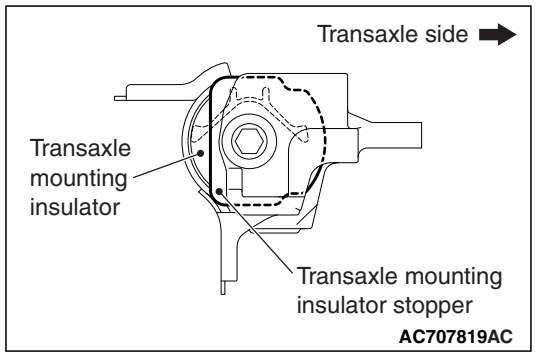
>>A<< O-RING/TRANSAXLE ASSEMBLY INSTALLATION



Apply the specified grease to the flywheel spline section, O-ring, and spline section of transaxle assembly input shaft.

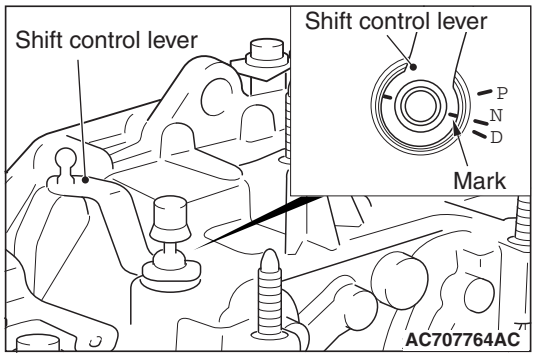
Grease
Brand name: Molykote BR2-Plus

>>B<< TRANSAXLE MOUNTING INSULATOR STOPPER INSTALLATION

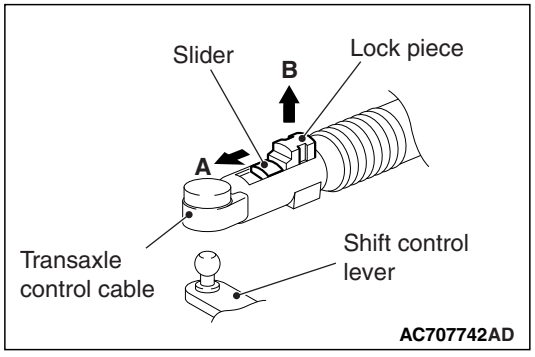


Install the transaxle mounting insulator stopper as shown in the figure.

>>C<< TRANSAXLE CONTROL CABLE INSTALLATION

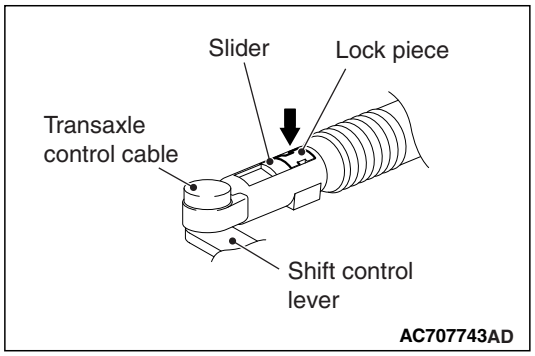


1. Operate the lever so that the shift control lever positioning mark is set to the N position.



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.

TSB Revision



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-398.)**
- **When the transaxle assembly is not repaired, the drained fluid can be reused if it is between the replacement intervals.**

OIL PAN

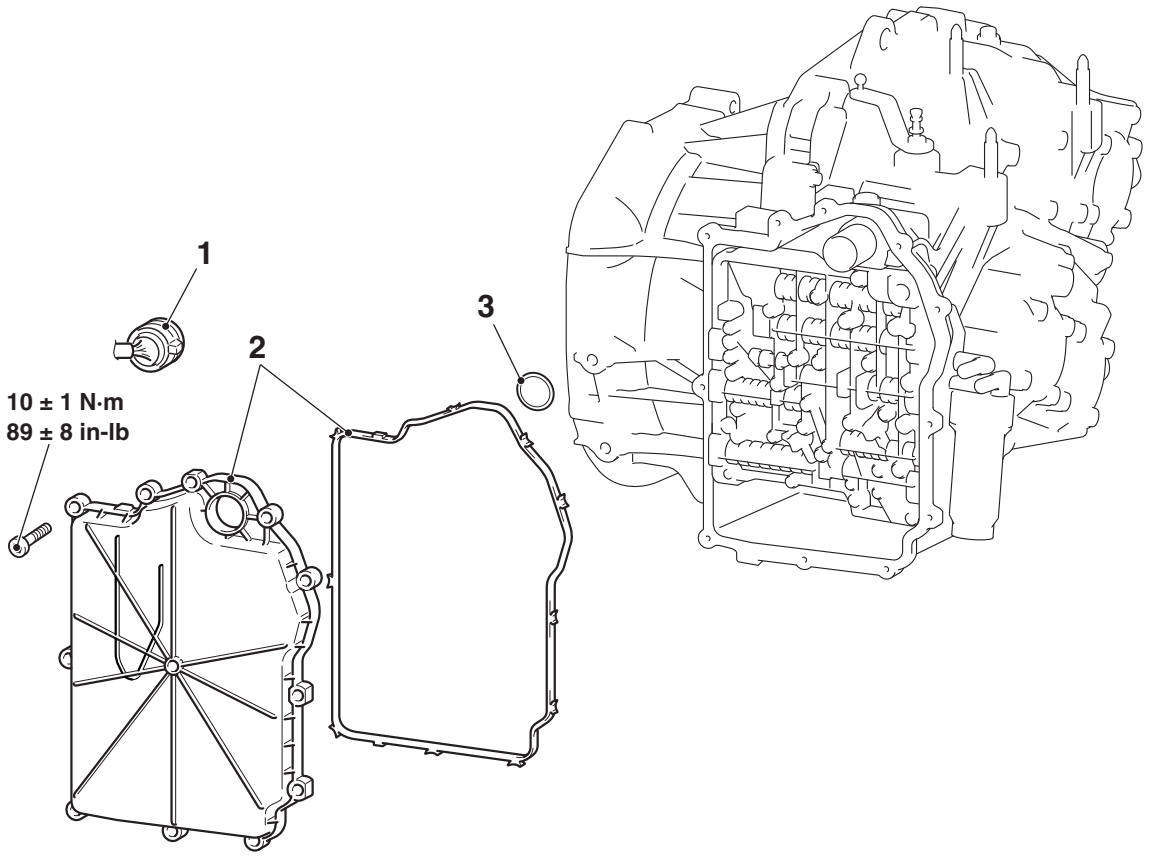
REMOVAL AND INSTALLATION

M1225028800232

⚠ 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
Turbocharger By-pass Valve Hose and Charge Air Cooler Outlet 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-399.)

<<**A**>> 1. Transaxle assembly connector connection

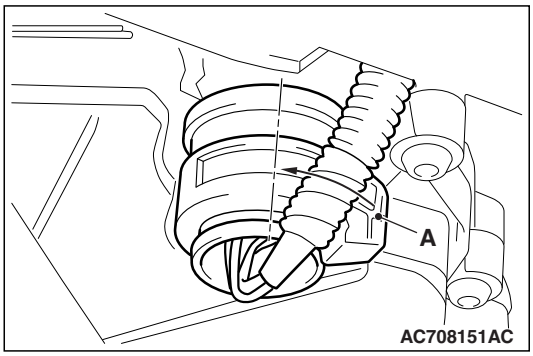
Removal steps (Continued)

<<**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

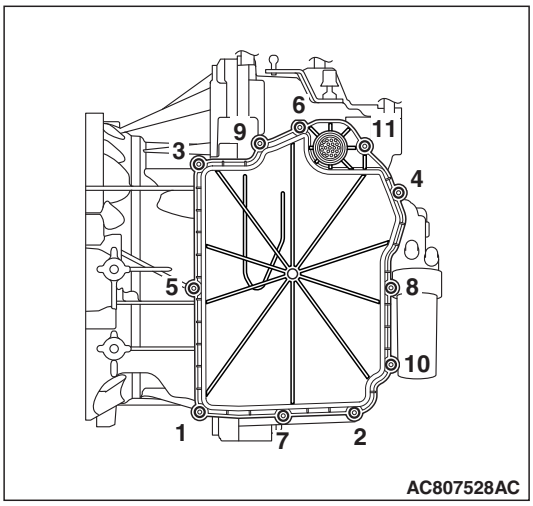
1. Completely degrease the oil pan assembly installation surface on the transaxle side.
2. Remove the gasket from the oil pan assembly, and completely degrease the groove of the oil pan assembly (gasket installation area) and the gasket. Then, install the gasket to the groove of the oil pan assembly.

⚠ 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-398.)**
- **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

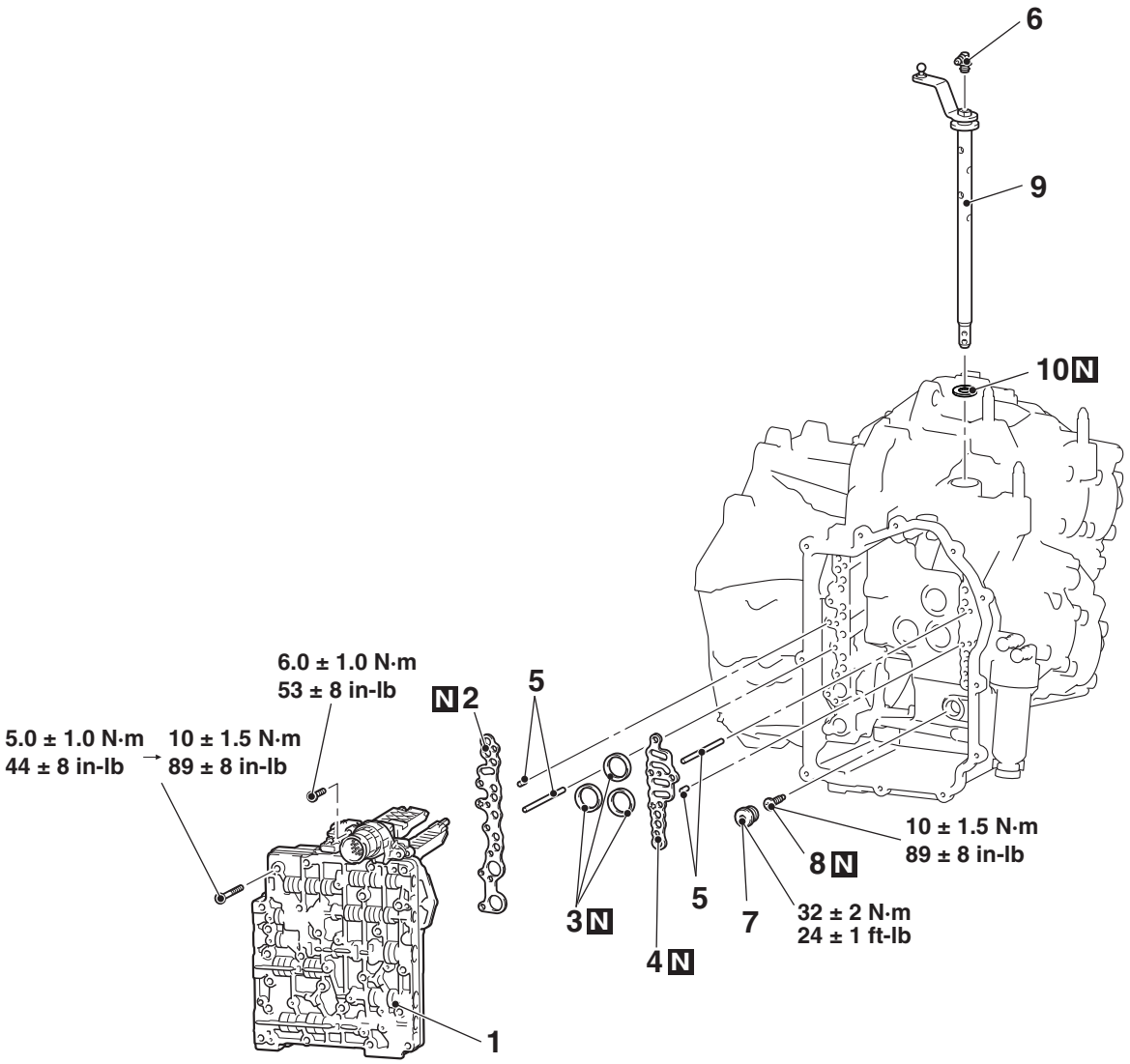
REMOVAL AND INSTALLATION

M1225029600026

⚠ CAUTION

When the mechatronic assembly is replaced, reprogram the ECU and carry out the following Teach-In (Refer to P.22C-7).

Pre-removal and Post-installation Operation
Oil Pan Removal and Installation (Refer to P.22C-418.)



AC900881AB

Removal steps

<<A>> >>B<< 1. Mechatronic assembly
>>B<< 2. Gasket A
3. Gasket B
>>B<< 4. Gasket C
5. Pin

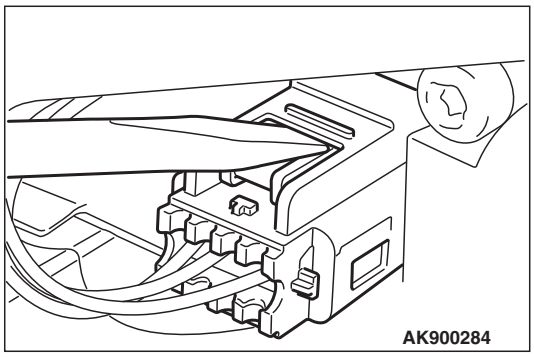
Removal steps (Continued)

6. Breather nipple
<<B>> >>A<< 7. Plug
<<B>> >>A<< 8. Bolt
<<B>> 9. Manual control shaft
10. Oil seal

TSB Revision

REMOVAL SERVICE POINTS

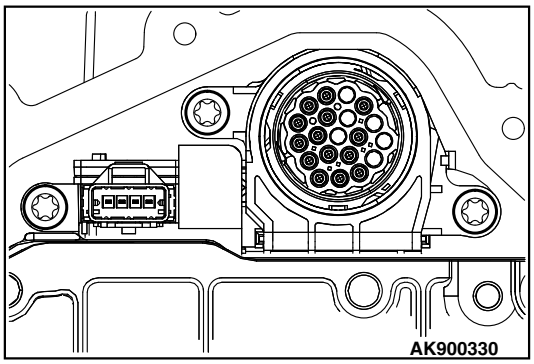
<<A>> MECHATRONIC ASSEMBLY REMOVAL



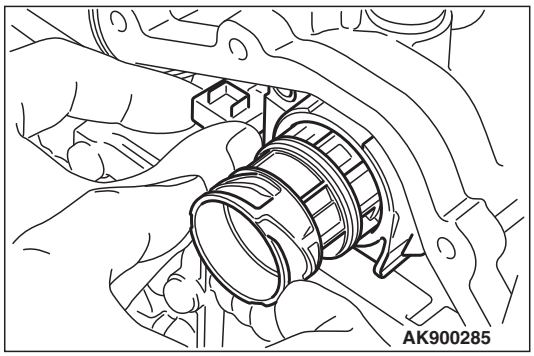
1. Remove the connector carefully.

⚠ CAUTION

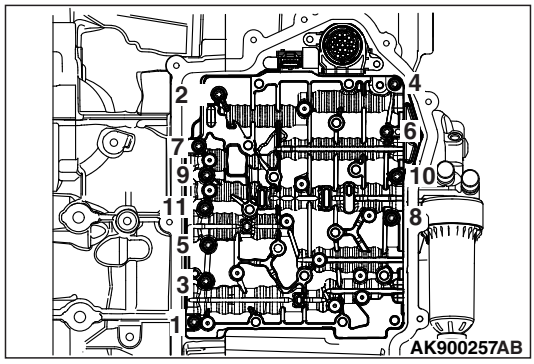
When removing bolt, use magnetic tools to prevent them from falling out.



2. Remove the three bolts.

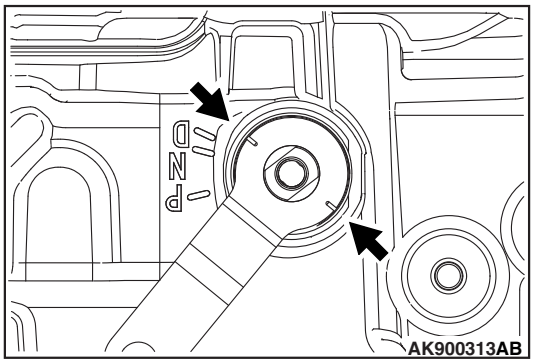


3. Pull carefully at the connector to loose by approx. 2 - 3 mm (0.08 - 0.1 inch).

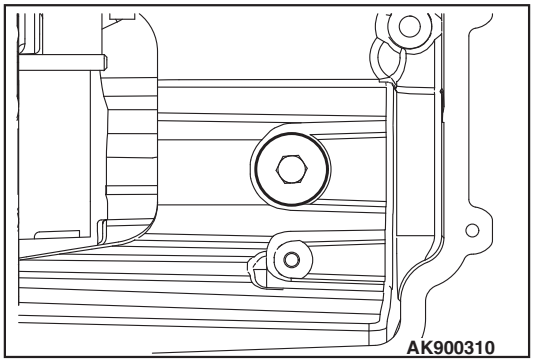


4. Remove the bolts in the order shown and remove the mechatronic assembly carefully.

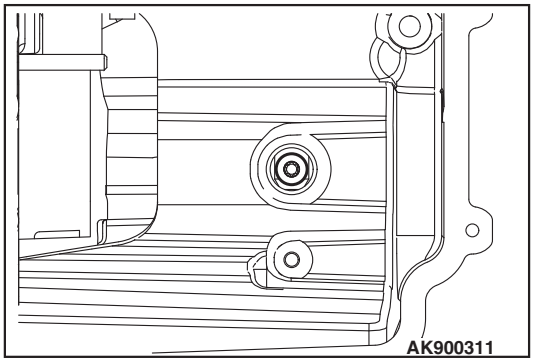
<<B>> PLUG/BOLT/MANUAL CONTROL SHAFT REMOVAL



1. Move the lever from D in clock direction to the service position as shown.



2. Remove the plug.

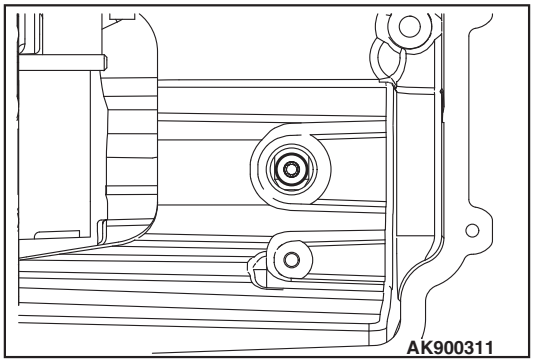


⚠ CAUTION
When removing bolt, use magnetic tools to prevent them from falling out.

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

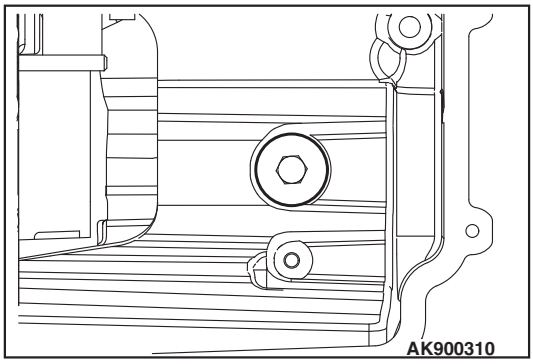
>>A<< MANUAL CONTROL SHAFT/PLUG/BOLT INSTALLATION



⚠ CAUTION
When installing bolt, use magnetic tools to prevent them from falling out.

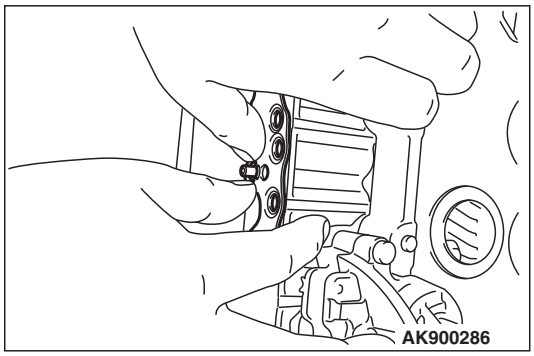
1. Install the manual control shaft carefully and tighten the bolt to the specified torque.

Tightening torque: 10 ±1.5 N· m (89 ±8 in-lb)

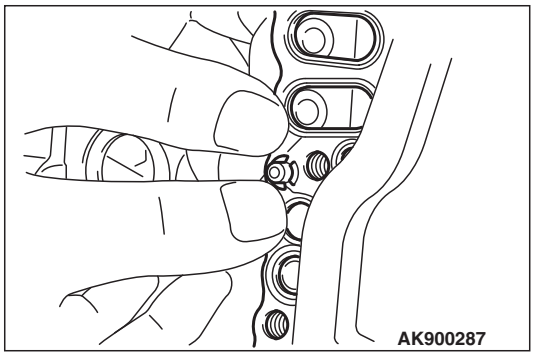


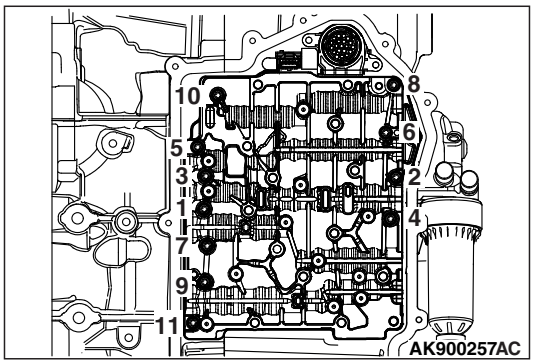
2. Tighten the plug to the specified torque.
   Tightening torque: 32 ±2 N· m (24 ±1 ft-lb)

>>B<< GASKET A/GASKET C/MECHATRONIC ASSEMBLY INSTALLATION

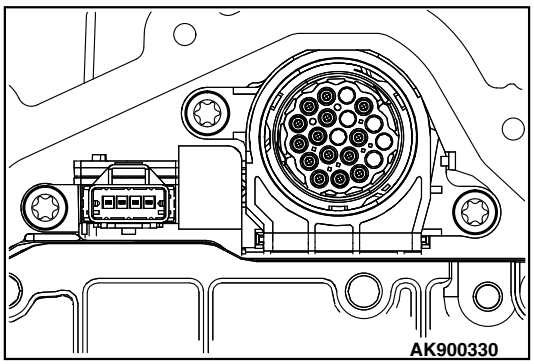


1. As shown in the illustration, fix the gasket to the transaxle case by pushing the gasket at the area to which the gasket dowel pin is inserted.





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)


AK900330

⚠ CAUTION
When installing bolt, use magnetic tools to prevent them from falling out.

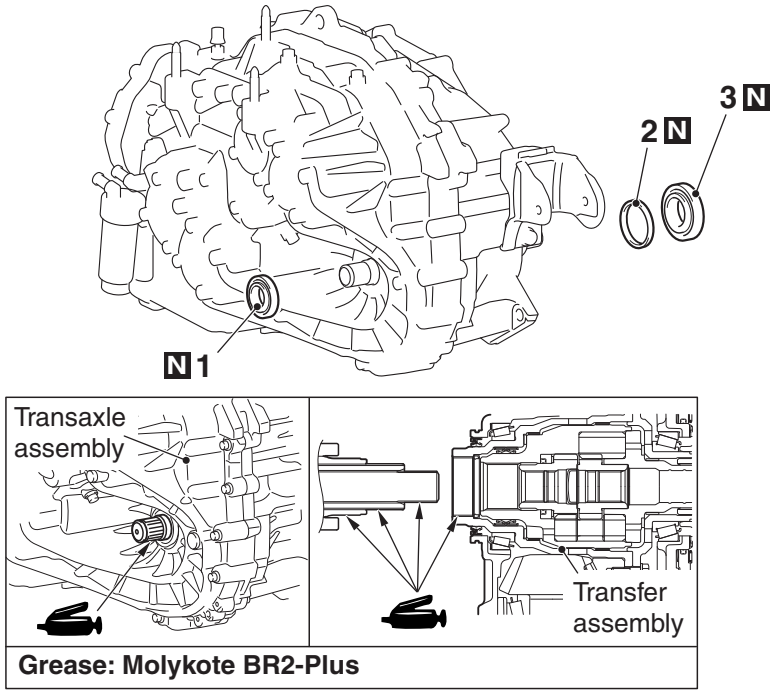
4. Tighten the bolts to the specified torque.
   Tightening torque: 6.0 ±1.0 N· m (53 ±8 in-lb)
5. Install the connector.

TRANSAXLE CASE OIL SEAL

REMOVAL AND INSTALLATION

M1225029000206

Pre-removal Operation	Post-installation Operation
• Transmission Fluid Draining (Refer to P.22C-399.)	• Transmission Fluid Refilling (Refer to P.22C-399.) • Transmission Fluid Level Check (Refer to P.22C-398.)



AC901630AC

Transaxle case oil seal (LH) removal steps
- Front driveshaft assembly (LH) (Refer to GROUP 26 – Driveshaft assembly P.26-15.)

<<A>> >>C<< 1. Transaxle case oil seal (LH)

Transaxle case oil seal (RH) removal steps
- Transfer assembly (Refer to P.22C-410.)

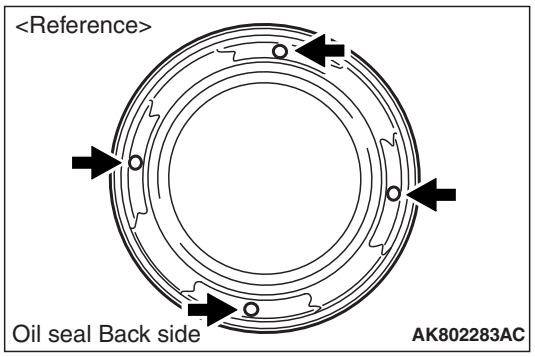
>>B<< 2. V ring
<<A>> >>A<< 3. Transaxle case oil seal (RH)

Required Special Tools:
- MB992310: Oil seal installer
- MB992311: Oil seal guide
- MB992312: Oil seal installer
- MB992313: Oil seal guide
- MB992314: V ring guide

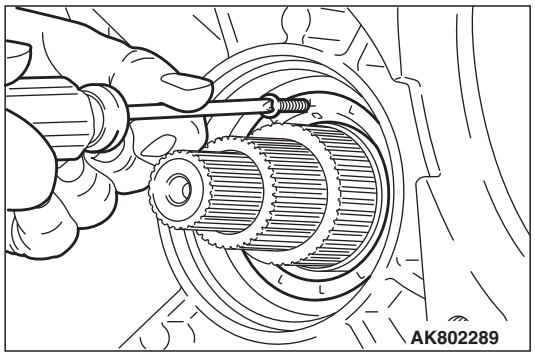
TSB Revision

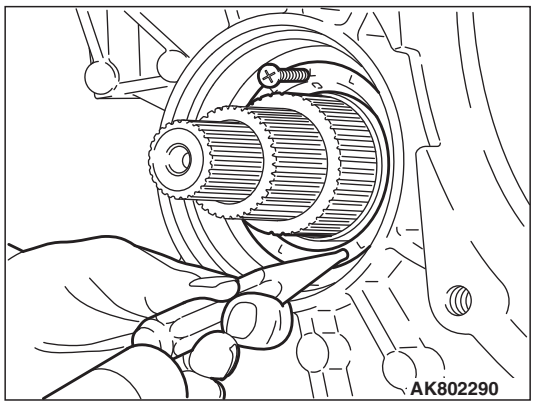
REMOVAL SERVICE POINTS

<<A>> TRANSAXLE CASE OIL SEAL (LH)/TRANSAXLE CASE OIL SEAL (RH) REMOVAL

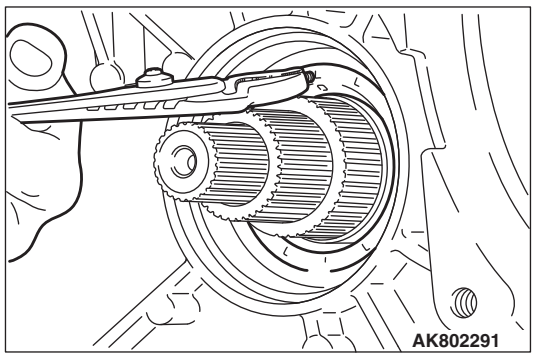


1. Insert the tapping screw (ϕ3 mm [0.1 inch]) to one of four hollows (round shape) on the oil seal by turning it 2 or 3 times.





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).

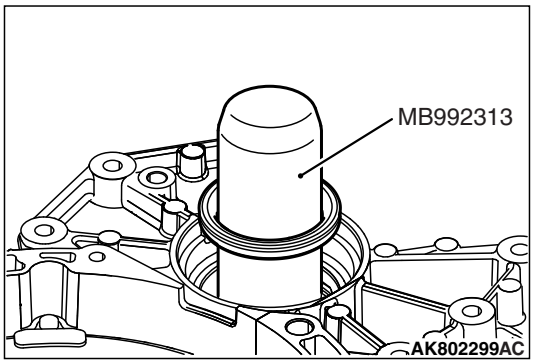


3. Hold the inserted tapping screw with pliers or similar tools, and remove the oil seal.

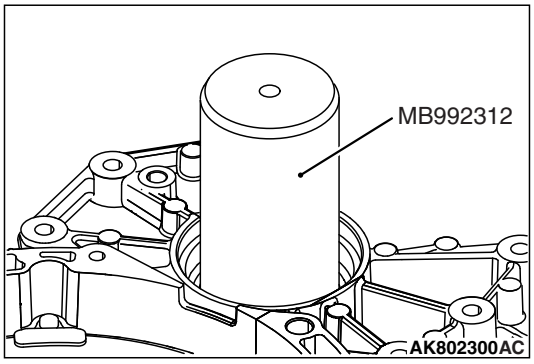
   NOTE: If the transaxle case oil seal (RH) is replaced, the V-ring must also be replaced.

INSTALLATION SERVICE POINTS

>>A<< TRANSAXLE CASE OIL SEAL (RH) INSTALLATION

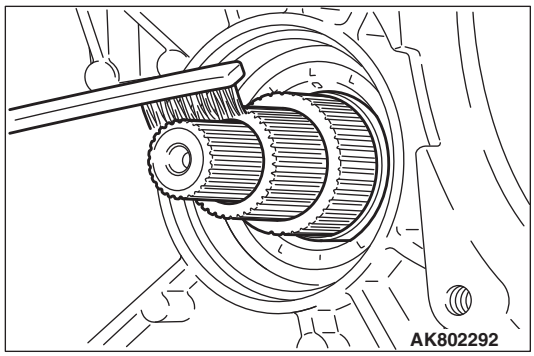


1. Apply the transaxle oil to the oil seal guide (special tool: MB992313). Insert the oil seal to oil seal guide (special tool: MB992313).

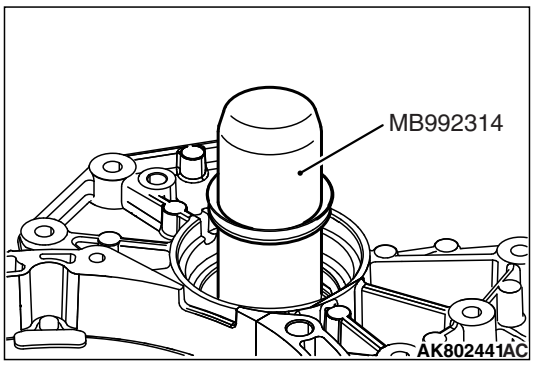


2. Use special tool oil seal installer (special tool: MB992312) to install the oil seal to the transaxle case.

>>B<< V RING INSTALLATION

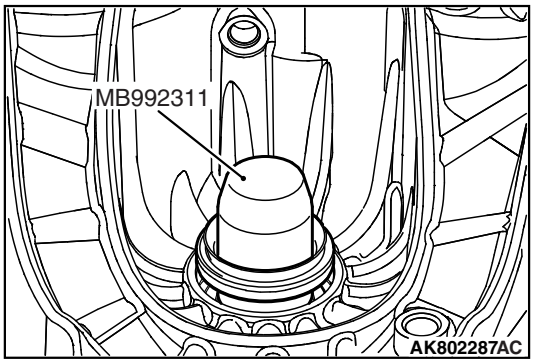


1. Clean the spline with a brush or the like.

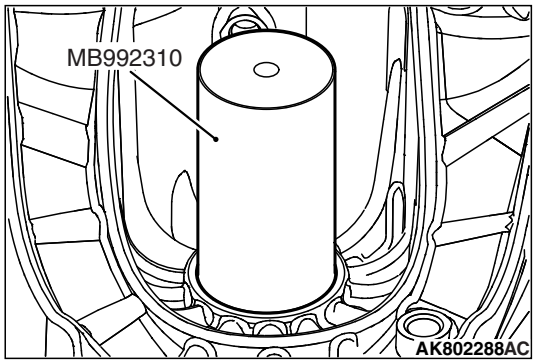


2. Apply the transaxle oil to the V ring guide (special tool: MB992314). Insert the V ring to V ring guide (special tool: MB992314), and install the V ring to the transaxle case.
3. Check that the V ring is installed securely.

>>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

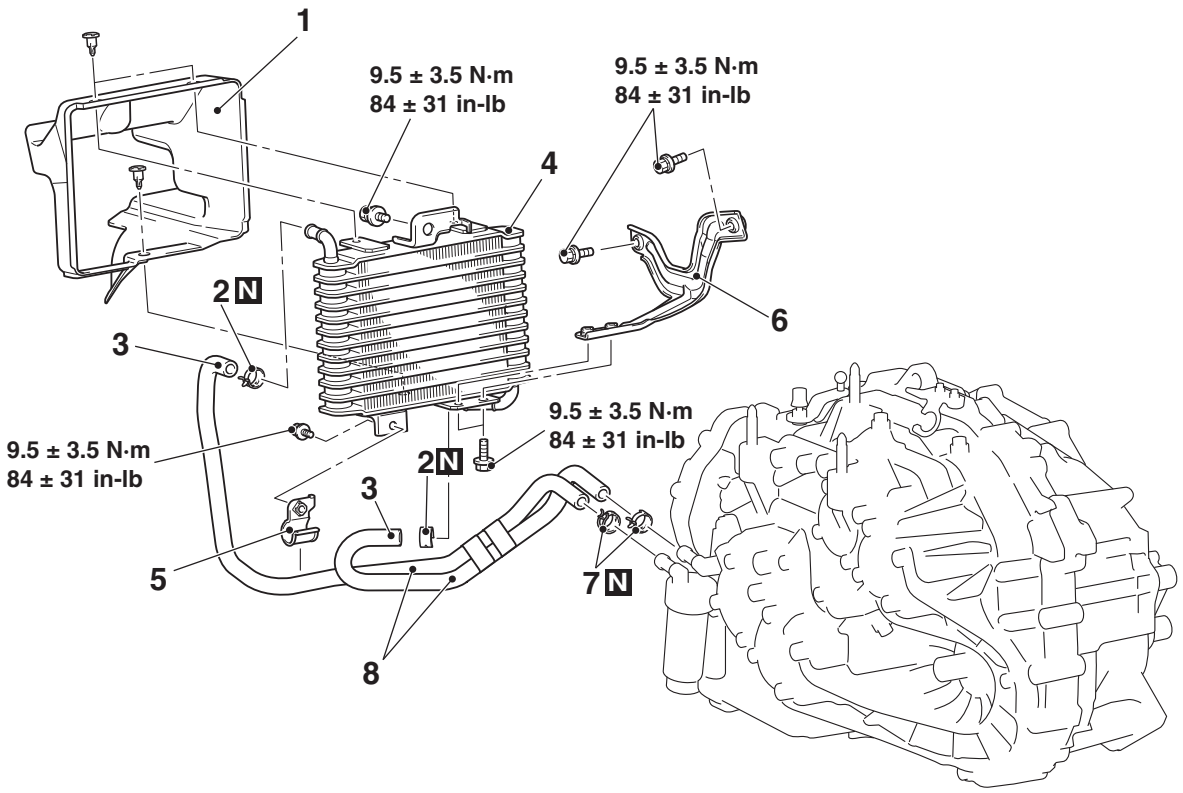
⚠ CAUTION

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.)



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Removal steps

>>A<< • Transmission fluid draining and refilling (Refer to P.22C-399.)
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

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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-398.)**
- **When the oil cooler is not repaired, the drained fluid can be reused if it is between the replacement intervals.**

OIL FILTER

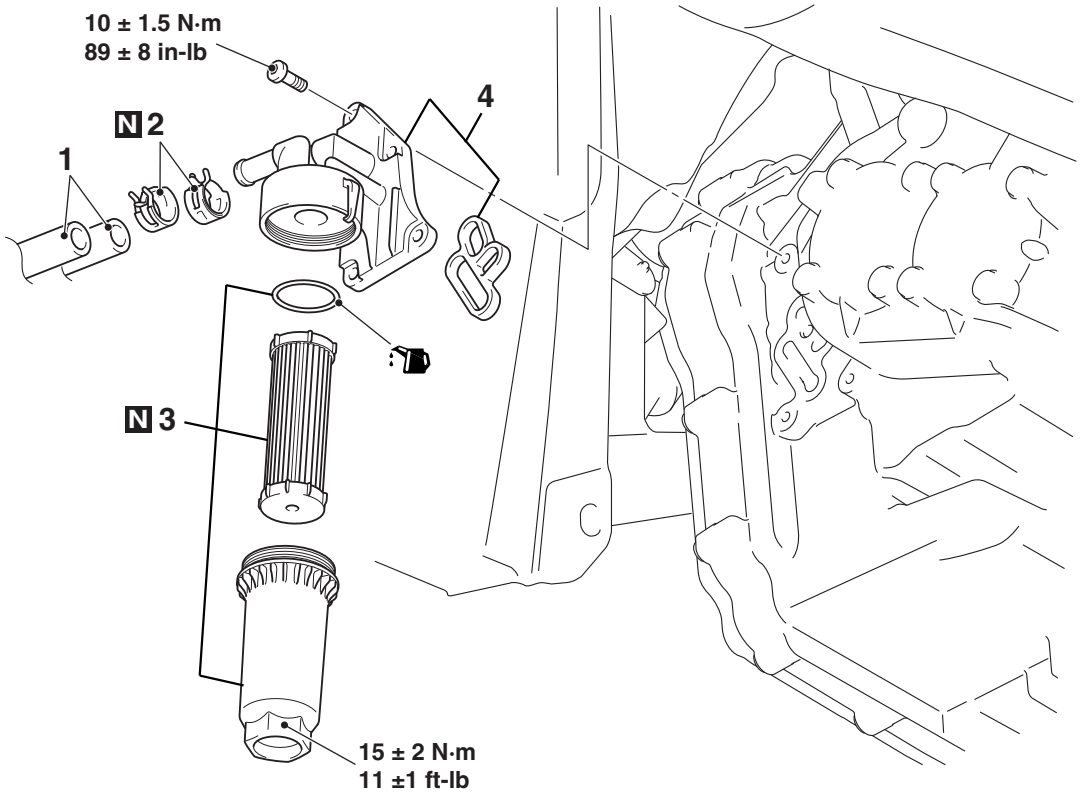
REMOVAL AND INSTALLATION

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.51-15).



AC807228AK

Removal steps

<<A>> >>B<<
- Transmission fluid draining and refilling (Refer to P.22C-399.)

1. Oil cooler hose assembly connection

Removal steps (Continued)

2. Hose clip
3. Oil filter case assembly

>>A<<
4. Oil filter bracket assembly

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REMOVAL SERVICE POINT

<<A>> TRANSMISSION FLUID DRAINING

Drain the fluid in the transaxle assembly and the oil cooler.

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

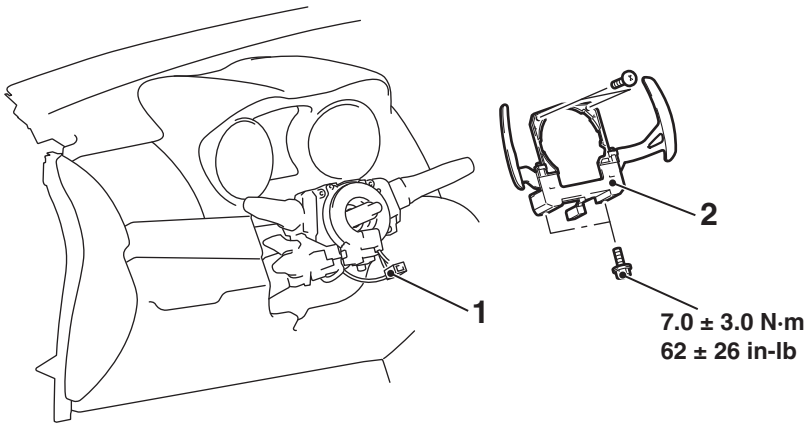
- **If the fluid leakage from the oil filter is repaired, fill new fluid and check the transmission fluid level. (Refer to P.22C-398.)**
- **When the oil filter is replaced, the drained fluid can be reused if it is between the replacement intervals.**

PADDLE SHIFT ASSEMBLY

REMOVAL AND INSTALLATION

M1225010600017

Pre-removal Operation	Post-installation Operation
• Steering wheel assembly and driver's air bag module removal (Refer to GROUP 37 –Steering Wheel P.37-29.) • Steering column lower cover and steering column upper cover removal (Refer to GROUP 37 –Steering Shaft P.37-33.)	• Steering column lower cover and steering column upper cover installation (Refer to GROUP 37 –Steering Shaft P.37-33.) • Steering wheel assembly and driver's air bag module installation (Refer to GROUP 37 –Steering Wheel P.37-29.) • Steering wheel at straight-ahead position check



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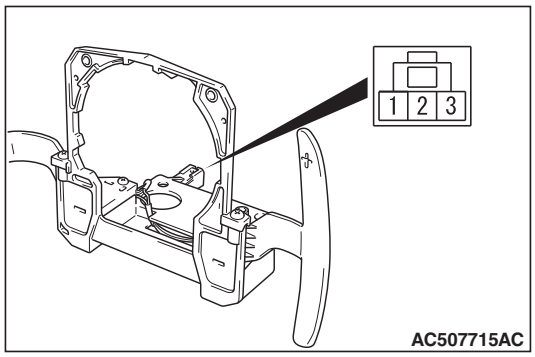
Removal steps

1. Paddle shift switch connector connection
2. Paddle shift assembly

INSPECTION

PADDLE SHIFT SWITCH CHECK

M1225011300019



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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.

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AWC-ECU

REMOVAL AND INSTALLATION

M1225010800011

Refer to GROUP 22A P.22A-133.

SENSOR, SWITCH AND RELAY

REMOVAL AND INSTALLATION

M1225011200012

Refer to GROUP 22A P.22A-133.

HYDRAULIC UNIT

REMOVAL AND INSTALLATION

M1225011000018

Refer to GROUP 27, Hydraulic unit P.27-57.