

GROUP 23A

AUTOMATIC TRANSAXLE MECHANICAL

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GENERAL INFORMATION

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F6AJA and W6AJA models have been established.

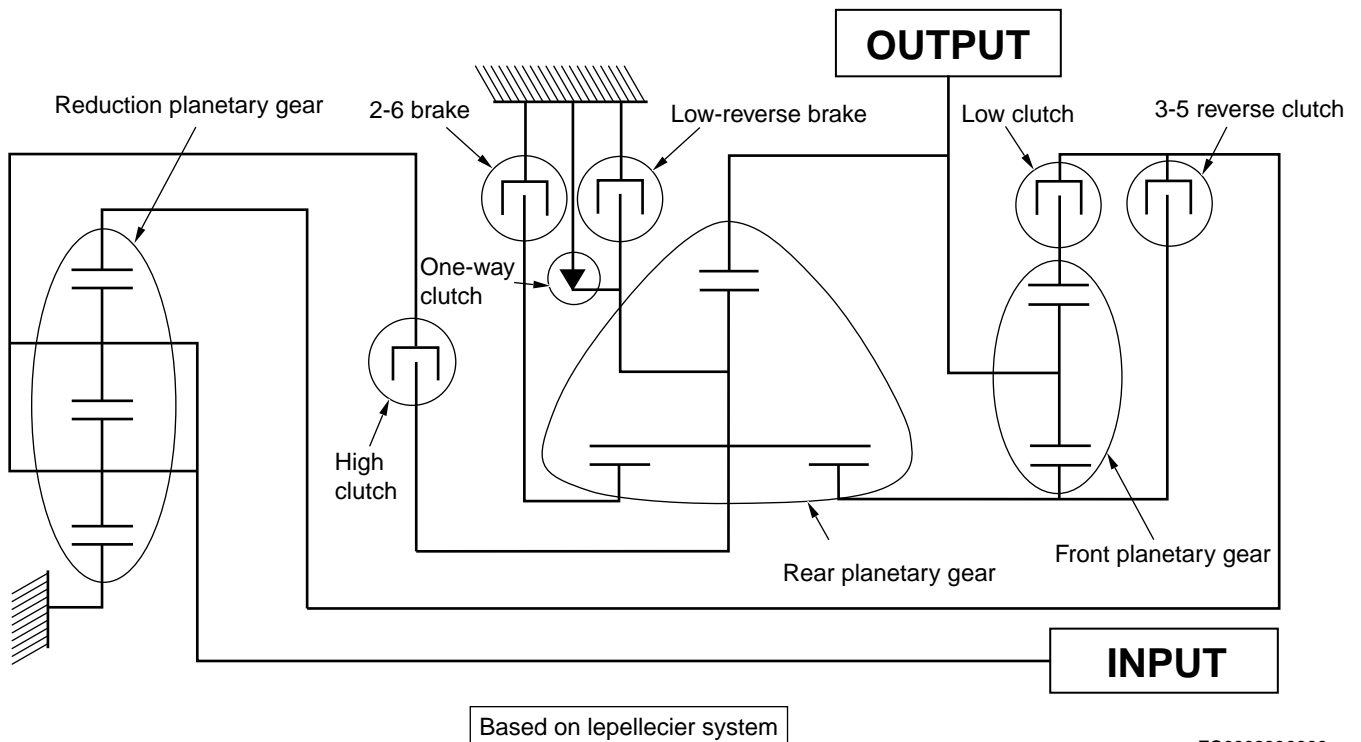
Transaxle model		F6AJA	W6AJA
Drive type		FWD	AWD
Torque converter	Model	3-element, 1-stage, 2-phase	
	Stall torque ratio	1.83	
	Lock-up	Present	
Shift position		P-R-N-D + sport mode	
Transaxle type		Forward 6-speed, reverse 1-stage	
Front and rear switching		Single pinion x 2 (front, rear) Double pinion x 1 (reduction) <Based on lepellecier system>	
Clutch and brake		Clutch x 3 (low clutch, 3-5 reverse clutch, high clutch) Brake x 2 (2-6 brake, low and reverse brake)	
Oil pump		Trochoid type	
Maximum hydraulic pressure		2.0 MPa	
Torque capacity		320 N·m	
Solenoid valve		Linear x 6 pieces ON/OFF x 2 pieces	
Transmission ratio	1st	4.199	
	2nd	2.405	
	3rd	1.583	
	4th	1.161	
	5th	0.855	
	6th	0.685	
	Reverse	3.457	
Primary reduction ratio: A		1.071	
Final reduction ratio: B		3.333	
A × B		3.571	
Weight (including transmission fluid)		FWD: Approximately 102 kg / AWD: Approximately 103 kg	
Transmission fluid		DIA QUEEN ATF-J1	

TRANSAXLE

The transaxle is made up of the torque converter and gear train. A 3-element, 1-stage, 2-phase torque converter with built-in torque converter clutch is used. The gear train of F/W6AJA transaxle consists of 3 sets

of multi-disc type clutches, 2 sets of multi-disc type brakes, and 2 sets of planetary gears which are composed of a sun gear, carrier, annulus gear, and pinion gear.

TRANSAXLE CONFIGURATION DRAWING



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COMPONENTS AND FUNCTIONS

Parts name	Function
Low clutch	Works with 1st, 2nd, 3rd, and 4th gears, and transfers the input from 3-5 reverse clutch drum to the front internal gear.
3-5 reverse clutch	Works with 3rd, 5th, and reverse gears, and transfers the reduction internal gear input to the front sun gear.
High clutch	Works with 4th, 5th, and 6th gears, and transfers the input shaft input to the rear carrier.
Low and reverse brake	Works with 4th, 5th, and 6th gears, and transfers the input shaft input to the rear carrier.
2-6 brake	Works with 2nd and 6th, and fixes the rear sun gear rotation.
One-way clutch	Works when in 1st gear under acceleration status, and fixes the rear carrier.

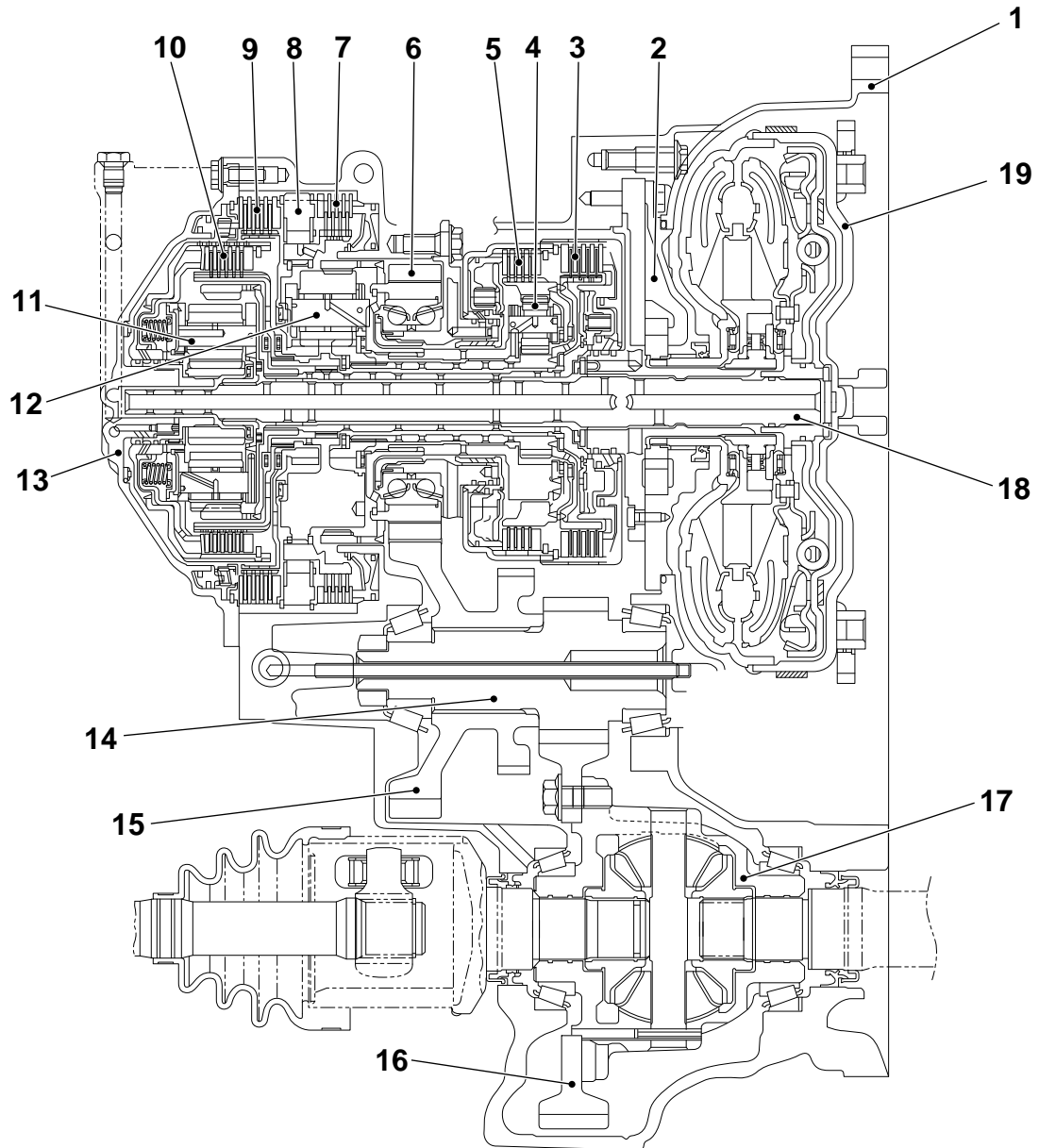
FUNCTION ELEMENT TABLE

Transmission range		Low clutch	3-5 reverse clutch	High clutch	Low and reverse brake	2-6 brake	One-way clutch
P		-	-	-	-	-	-
R		-	×	-	×	-	-
N		-	-	-	-	-	-
D	1st	×	-	-	-	-	×
	1st gear engine brake	×	-	-	×	-	-
	2nd	×	-	-	-	×	-
	3rd	×	×	-	-	-	-
	4th	×	-	×	-	-	-
	5th	-	×	×	-	-	-
	6th	-	-	×	-	×	-

×: Function element -: Not applicable

SECTIONAL VIEW

<F6AJA>



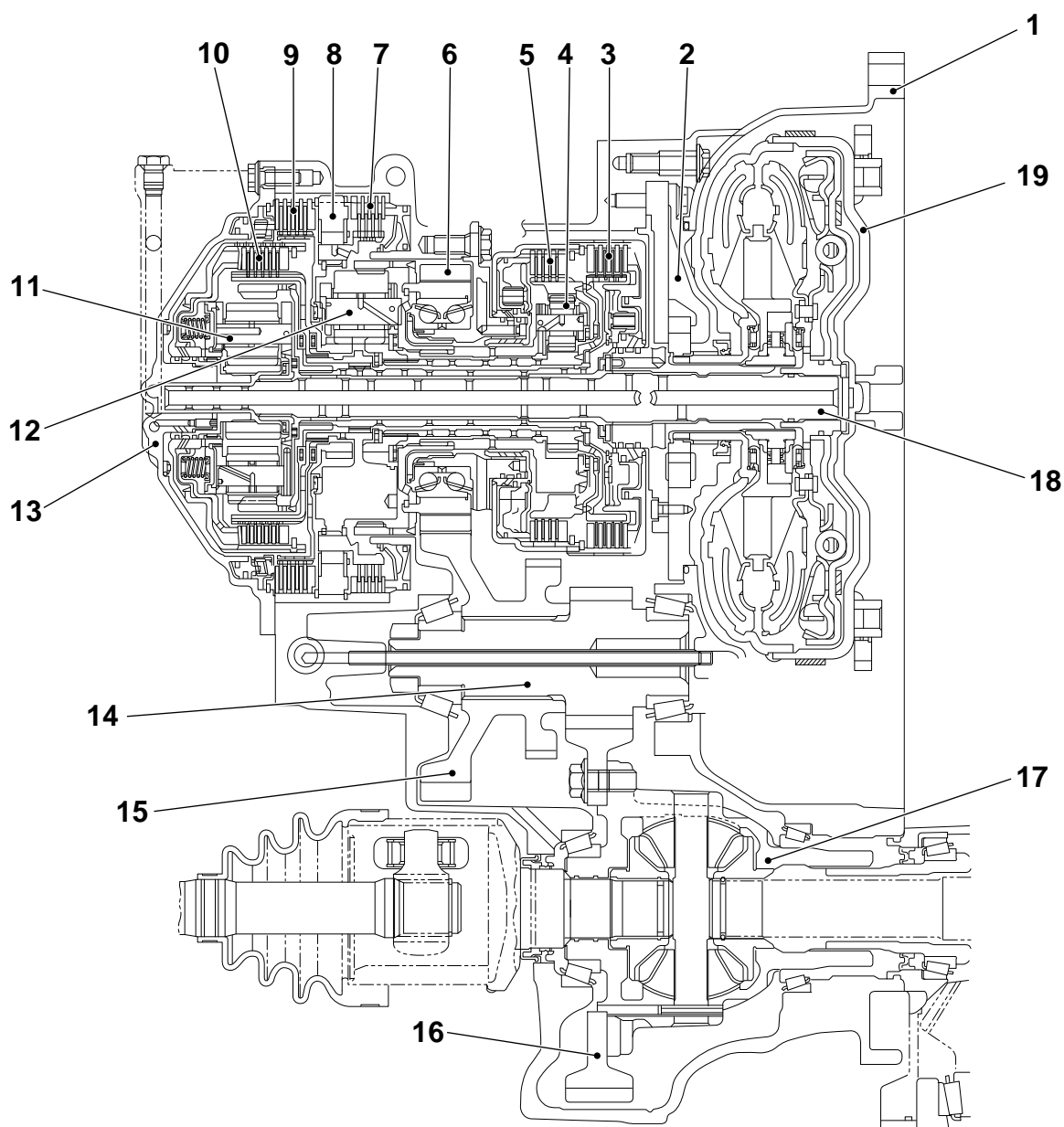
Based on lepelletier system

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- | | |
|--------------------------|------------------------------|
| 1. Converter housing | 10. High clutch |
| 2. Oil pump | 11. Reduction planetary gear |
| 3. 3-5 reverse clutch | 12. Rear planetary gear |
| 4. Front planetary gear | 13. Side cover |
| 5. Low clutch | 14. Reduction pinion gear |
| 6. Output gear | 15. Idler gear |
| 7. Low and reverse brake | 16. Final gear |
| 8. One-way clutch | 17. Differential case |
| 9. 2-6 brake | 18. Input shaft |

19. Torque converter

<W6AJA>



Based on lepelletier system

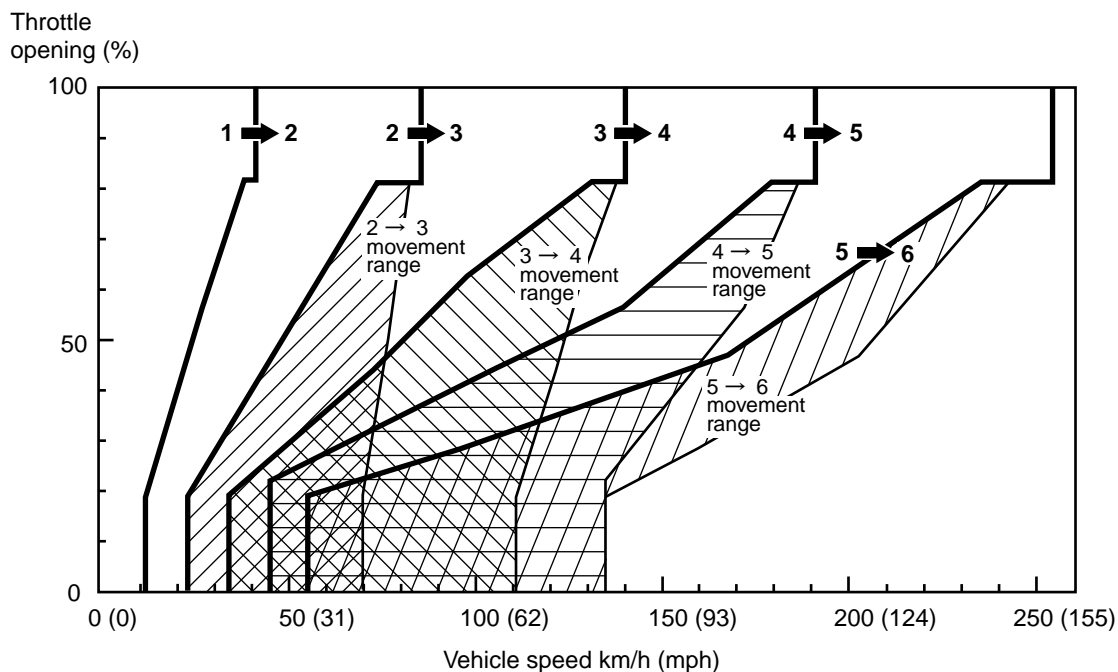
- | | |
|-------------------------|------------------------------|
| 1. Converter housing | 7. Low and reverse brake |
| 2. Oil pump | 8. One-way clutch |
| 3. 3-5 reverse clutch | 9. 2-6 brake |
| 4. Front planetary gear | 10. High clutch |
| 5. Low clutch | 11. Reduction planetary gear |
| 6. Output gear | 12. Rear planetary gear |

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- | | |
|---------------------------|-----------------------|
| 13. Side cover | 17. Differential case |
| 14. Reduction pinion gear | 18. Input shaft |
| 15. Idler gear | 19. Torque converter |
| 16. Final gear | |

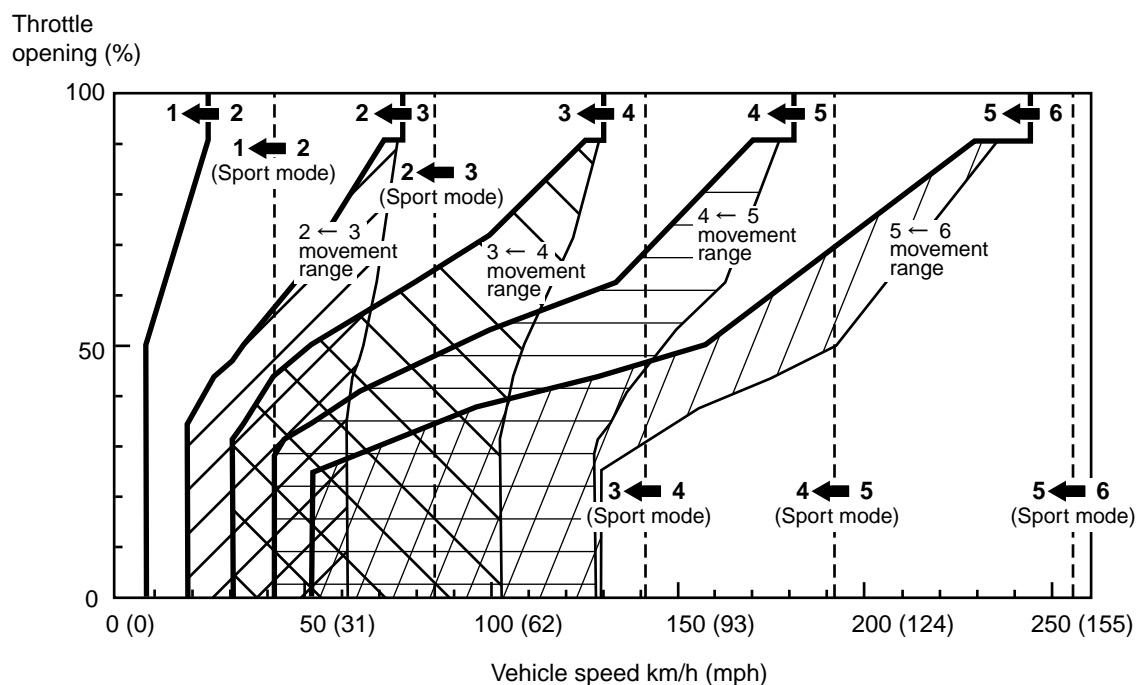
SHIFT PATTERN CONTROL

UPSHIFT PATTERN



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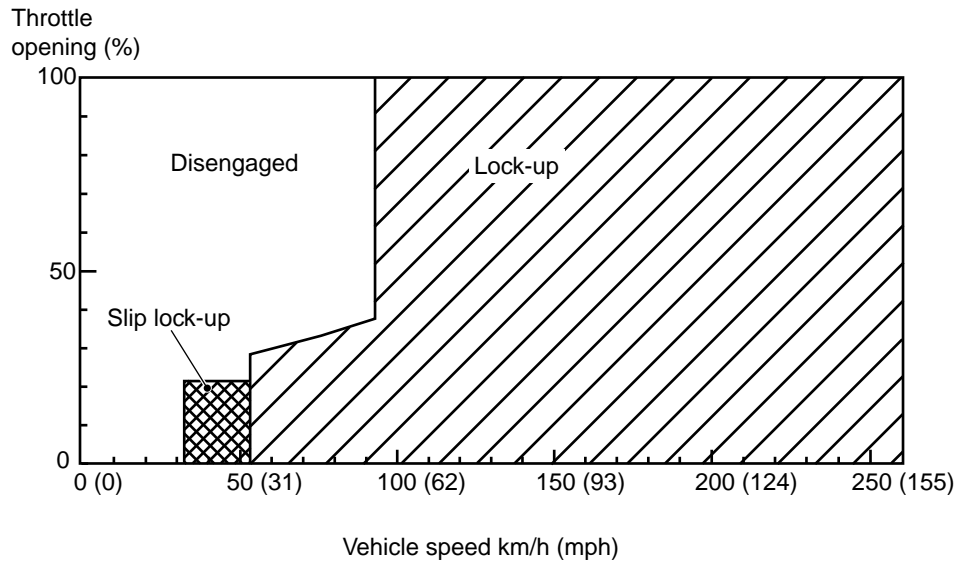
DOWNSHIFT PATTERN



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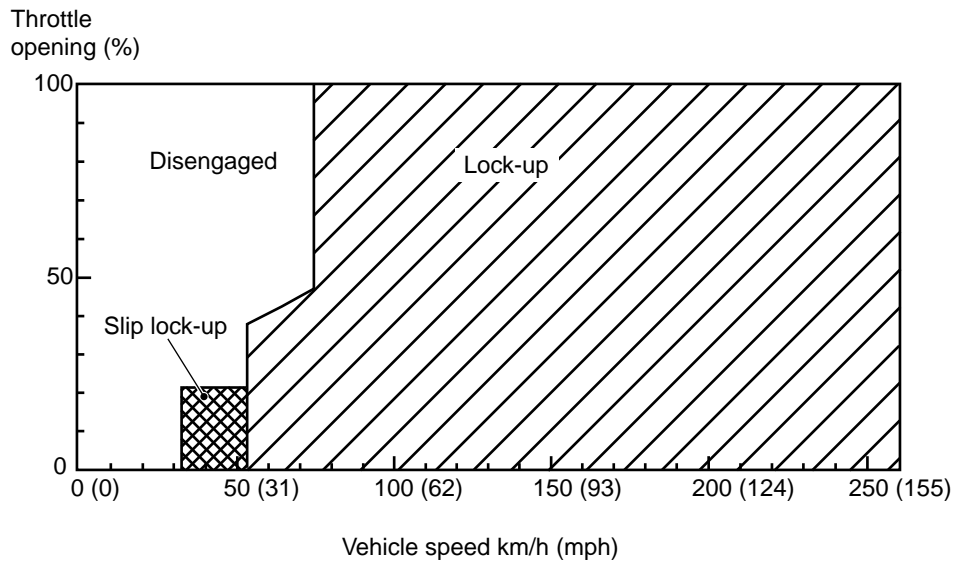
TORQUE CONVERTER CLUTCH CONTROL

6TH GEAR RANGE



ZC6045590000

5TH GEAR RANGE



ZC6045580000

SPECIFICATIONS

SERVICE SPECIFICATIONS

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Item		Standard value
Transmission fluid temperature sensor kΩ	at 10°C (50°F)	Approx. 6.62
	at 25°C (77°F)	Approx. 3.51
	at 80°C (176°F)	Approx. 0.55
	at 110°C (230°F)	Approx. 0.25
Hydraulic pressure MPa (psi)	During idling	0.385 - 0.525 (56 - 76)
	During stall	Approx. 1.53 (Approx. 222)
Resistance of low clutch linear solenoid valve [at 20°C (68°F)] Ω		Approx. 5.3
Resistance of lock-up and low-reverse brake linear solenoid valve [at 20°C (68°F)] Ω		Approx. 5.3
Resistance of 2-6 brake linear solenoid valve [at 20°C (68°F)] Ω		Approx. 5.3
Resistance of line pressure linear solenoid valve [at 20°C (68°F)] Ω		Approx. 5.3
Resistance of 3-5 reverse clutch linear solenoid valve [at 20°C (68°F)] Ω		Approx. 5.3
Resistance of high clutch linear solenoid valve [at 20°C (68°F)] Ω		Approx. 5.3
Resistance of low-reverse brake shift solenoid valve [at 20°C (68°F)] Ω		Approx. 28
Resistance of low clutch shift solenoid valve [at 20°C (68°F)] Ω		Approx. 28
Stall speed r/min		2,527

LUBRICANT

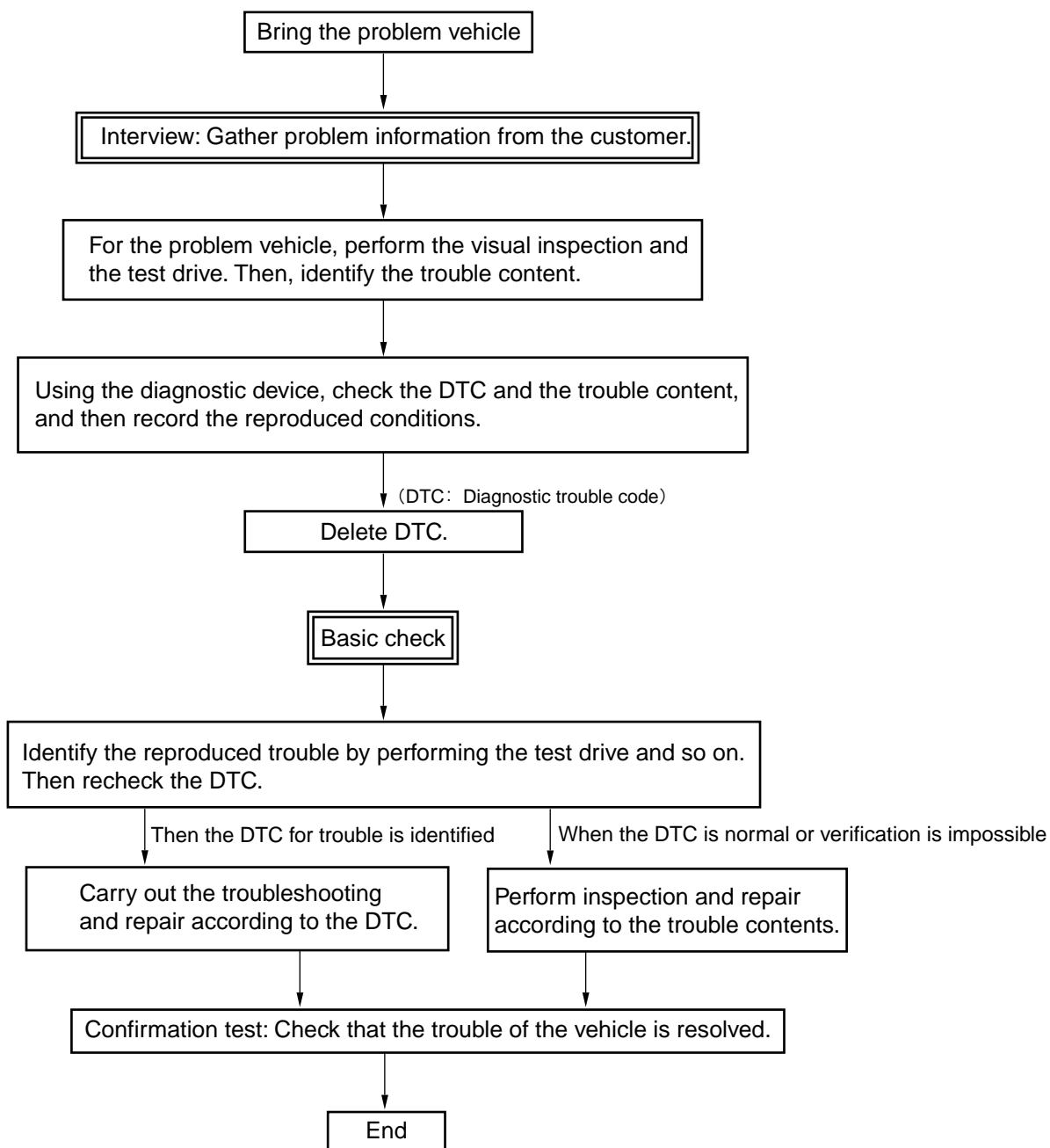
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Item	Specified lubricant	Quantity
Transmission fluid dm ³ (qt)	DIA QUEEN ATF-J1	8.0 (8.5)
Transfer oil dm ³ (qt)	Hypoid gear oil API classification GL-5 SAE 90	0.53 (0.56)

AUTOMATIC TRANSAXLE DIAGNOSIS

DIAGNOSTIC TROUBLESHOOTING FLOW

M12301000135USA0000010000



ZC6038400000

INTRODUCTION TO A/T DIAGNOSIS

When the A/T is failed, have an interview with the user to gather precise information on the failure status. After that, perform on-board test to check if the failure is reproduced, and then start repair work. If the repair work is started on the assumption that the A/T is the failure cause from the beginning, the cause would not be investigated, and moreover, the secondary failure may be caused, resulting in a waste of repair time. Failures regarding the A/T are categorized as follows.

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1. Poor adjustment, poor installation between the engine and body, and malfunction due to non-genuine device installation
2. Poor engine performance
3. Malfunction of the electronic control device
4. Malfunction of the A/T inside (hydraulic control system, etc.)
5. Others (oil leakage, damage, etc.)

A/T DIAGNOSTIC TROUBLESHOOTING STRATEGY

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Interview is the first step of the diagnosis. It requires a correct observation of the actual trouble symptom, and a proper judgment without preconceived idea. If the trouble symptom has occurred when the vehicle is brought, it is easy to check the fact. However, when the trouble has not occurred at that time, it is important to have an interview with the user to gather information about the reproduction conditions, and exert maximum effort to reproduce the trouble.

NOTE: These interviews should be listed up.

1. Does it occur when the engine is cold or after it is warmed up?
2. Does it occur on a specific road (slope, curve, long straight road, bumpy road, etc.)?
3. Does it occur with the vehicle speed in a specific range or at vehicle stop?
4. Does it occur during acceleration or deceleration?

5. Does it occur sometimes or consecutively?
6. Does it occur in the transmission range "P," "R," "N," or "D"?
7. Does it change in accordance with the vehicle speed or the engine speed?
8. Does it occur with a specific accelerator angle (e.g. half throttle)? Does it occur at the time of traffic jams?
9. Does it occur all of a sudden recently or has it been noticeable since the vehicle was delivered?
10. (Other) Does it occur after the vehicle experienced the following conditions?: Heavy load, rain, water passage or river, mountain road or rough road; Installation of car navigation, remote controlled starter, audio device, radio transmission equipment, theft prevention device, etc, Addition of battery fluid; Other vehicle troubles.

PRIMARY CHECK

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Basic adjustment and maintenance of the A/T needs to be checked.

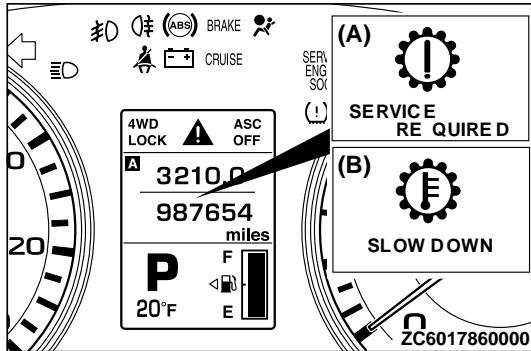
Check items

1. Check the power supply voltage, and check the voltage with the engine stopped. (If malfunction occurs, charge or replace that.)
2. Check the transmission fluid for abnormalities of level, smell, fouling, and color.
3. Check the transaxle control cable and linkage. (If dislocation occurs, adjust that.)
4. Check the connector connection, fouling, corrosion, and fixing status of the A/T-related electric wire.

5. Stall test (If the speed is below the specified value, check the engine side.)
6. Hydraulic pressure test
7. Engine idle speed, speed change occurrence (If a failure occurs, check the engine side.)
8. Check the presence of non-genuine devices (car navigation, remote controlled starter, audio device, radio transmission equipment, theft prevention device, aeroparts, etc.), the presence of power supply wiring and the additional signal wiring. Then, remove improper power supply, signal wiring, and parts to check.

DIAGNOSTIC FUNCTION

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WARNING INDICATOR

When any malfunction occurs in the items related to the A/T system, which are described below, the symbol (A) continues being displayed in the information screen in the multi information display.

Check if the diagnostic trouble code is set when the symbol (A) continues being displayed in the information screen in the multi information display.

NOTE: When the symbol (B) is displayed in the information screen in the multi information display, the transmission fluid temperature is high. (Symbol (B) is turned on when the fluid temperature is approximately 140° C (284° F) or higher and turned off automatically when the fluid temperature drops below approximately 135° C (275° F).)

NOTE: When transmission fluid becomes a high temperature, control to lower temperature of transmission fluid acts, and "D" is displayed of a run with sports mode by a shift indicator in a multi information display; and normal from sports mode; shifting is replaced automatically. In addition, there is the case that does not accept operation to sports mode. It is control to lower temperature of transmission fluid, and this phenomenon is not trouble. If temperature of transmission fluid falls, A/T returns to normal movement.

ON-BOARD DIAGNOSTICS

The transaxle control module (TCM) monitors its input/output signals (some signals all the time and others under specified conditions). When an irregular signal is initially monitored, the TCM decides that a malfunction has occurred and records the occurrence as a diagnostic trouble code. There are 45 diagnostic items. The diagnostic results can be read with scan

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

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

The 45 diagnostic items are displayed in numeric order.

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

HOW TO READ DATA LIST

Required Special Tools:

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

CAUTION

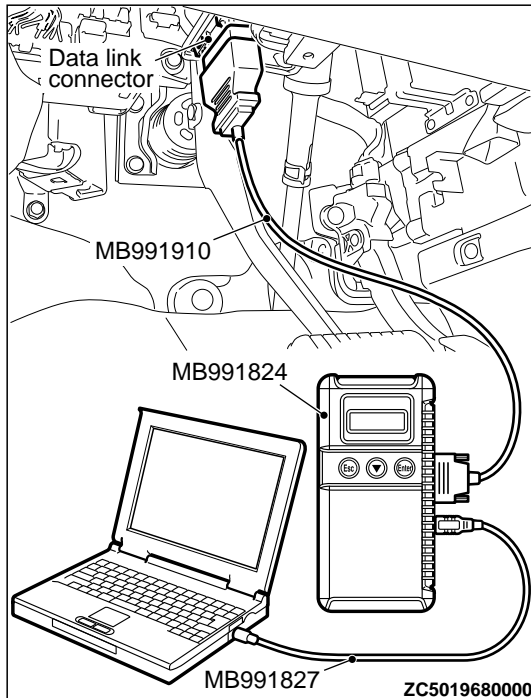
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "System select" from the start-up screen.
4. Select "From 2006 MY" of "Model Year." When the "Vehicle Information" is displayed, check the contents.
5. Select "ELC-A/T" from "System List", and press the "OK" button.

NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.

6. Select "MITSUBISHI."
7. Select "Data List."

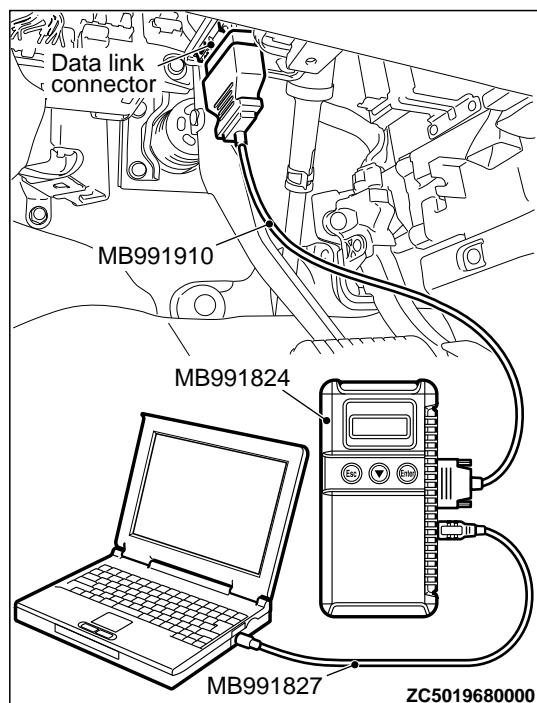
NOTE: When the "Data List Reference Table" button is selected, the service data reference table is displayed, and the normal values can be checked.



HOW TO DIAGNOSE THE CAN BUS LINES

Required Special Tools:

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

**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. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN Bus Diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle whose CAN bus lines will be diagnosed.
 - If they match, go to step 8.
 - If not, go to step 5.
5. Select the "view vehicle information" button.
6. Enter the vehicle information and select the "OK" button.
7. When the vehicle information is displayed, confirm again that it matches the vehicle whose CAN bus lines will be diagnosed.
 - If they match, go to step 8.
 - If not, go to step 5.
8. Select the "OK" button.
9. When the optional equipment screen is displayed, choose the one which the vehicle is fitted with, and then select the "OK" button.

HOW TO INITIALIZE A/T LEARNED VALUE**AIM**

A/T learned value must be reset whenever the automatic transaxle, engine assembly, A/T valve body, or A/T solenoid valve is replaced. It cannot be reset by disconnecting the battery. Use the M.U.T.-III as follows:

INITIALIZATION PROCEDURE

1. Move the selector lever to the P range and turn the ignition switch to the LOCK (OFF) position. Then, connect M.U.T.-III to the diagnosis connector.
2. Turn the ignition switch to the ON position, and then move the selector lever to the R range.

3. Depress the accelerator pedal while depressing the brake pedal. (Engine stops.) Erase the diagnosis code at this point.

NOTE: This reset procedure will also automatically initialize the INVECS-II Learned Value. A/T DTCs and A/T freeze-frame data will be erased. (Engine DTCs, engine-related freeze-frame data, and Readiness status will remain even after A/T Learned Value is reset.)

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FAIL-SAFE/BACKUP FUNCTION

When a malfunction of a main sensor or actuator is detected by the PCM, the transaxle is controlled by pre-set control logic to maintain safe conditions for driving.

The following table shows how the fail-safe/backup function affects vehicle driveability and operation.

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DTC code No.	Detection items	Fail-safe
P0705	Transmission range switch system	<ul style="list-style-type: none"> ▪ Fixed at the D range. ▪ Manual mode is prohibited. ▪ Lock-up is prohibited.
P0712	Transmission fluid temperature sensor system (Short circuit)	Not present.

DTC code No.	Detection items	Fail-safe
P0713	Transmission fluid temperature sensor system (Open circuit)	Fixed to 5th gear during driving, and to 3rd gear after a vehicle stop.
P0715	Input shaft speed sensor system	▪Fixed to the driving gear position during driving, and to 3rd gear after a vehicle stop.
P0720	Output shaft speed sensor system	
P0729	6th gear incorrect ratio	The current shift position is continued, and gear is fixed to 3rd gear after a vehicle stop.
P0731	1st gear incorrect ratio	▪At engine runup detection: Fixed to 5th gear after a vehicle stop. ▪At gear ratio abnormality detection: Fixed to 2nd, 3rd, 4th gear.
P0732	2nd gear incorrect ratio	The current shift position is continued, and gear is fixed to 5th gear after a vehicle stop.
P0733	3rd gear ratio	The current shift position is continued, and gear is fixed to 6th gear after a vehicle stop.
P0734	4th gear incorrect ratio	The current shift position is continued, and gear is fixed to 3rd or 5th gear after a vehicle stop.
P0735	5th gear incorrect ratio	The current shift position is continued, and gear is fixed to 2nd gear after a vehicle stop.
P0736	Reverse gear incorrect ratio	Controlled by making the line pressure to maximum.
P0741	Torque converter clutch system (Stuck off)	Lock-up is prohibited.
P0742	Torque converter clutch system (Stuck on)	Lock-up is prohibited.
P0743	Lock-up and Low-reverse brake linear solenoid valve system	Fixed to 5th gear during driving and to 3rd gear after a vehicle stop.
P0748	Line pressure linear solenoid valve system	Controlled by making the line pressure to maximum.
P0753	Low clutch linear solenoid valve system	Fixed to 5th gear.
P0758	2-6 brake linear solenoid valve system	Fixed to 5th gear during driving, and to 3rd gear after a vehicle stop.
P0763	3-5 reverse clutch linear solenoid valve system	Fixed to 5th gear during driving, and to 3rd gear after a vehicle stop.
P0768	High clutch linear solenoid valve system	Fixed to 5th gear.
P0815	Paddle shift switch (up) system	The manual mode operation during the driving cycle ^{*1} in question is prohibited.
P0816	Paddle shift switch (down) system	The manual mode operation during the driving cycle ^{*1} in question is prohibited.
P0826	Shift switch assembly system	The manual mode during the driving cycle ^{*1} in question is prohibited.
P0841	Low clutch pressure switch system	Control is continued with always switch on.
P0846	2-6 brake pressure switch system	Control is continued with always switch on.
P0871	3-5 reverse clutch pressure switch system	Control is continued with always switch on.

DTC code No.	Detection items	Fail-safe
P0876	High clutch pressure switch system	Control is continued with always switch on.
P0893	Interlock detection	Fixed to a feasible shift position.
P0988	Low-reverse brake pressure switch system	Control is continued with always switch on.
P1705	Throttle position sensor information (engine)	<ul style="list-style-type: none"> ▪ Controlled with the throttle position fixed to 2/8 position. ▪ Lock-up is prohibited.
P1706	Accelerator pedal position information	<ul style="list-style-type: none"> ▪ Controlled with the throttle position fixed to 2/8 position. ▪ Lock-up is prohibited.
P1731	1st engine brake detection	The low-reverse brake is released.
P1753	Low clutch shift solenoid valve system	Not present.
P1758	Low-reverse brake shift solenoid valve system	Fixed to 5th gear during driving, and to 3rd gear after a vehicle stop.
P1773	ABS Information (ASC)	The lock-up during the deceleration and when vehicle speed is 40 km/h (25 mph) or less is prohibited.
P1794	Ground return	Fixed to 5th gear.
U0001	CAN bus off	Fixed to 5th gear during driving, and to 3rd gear after a vehicle stop.
U0100	ECM time out	Fixed to 5th gear during driving, and to 3rd gear after a vehicle stop.
U0121	ASC-ECU time out	No action
U0141	ETACS-ECU time out	Judges as brake ON, and continues control.

*1: Indicates the series of driving cycle "ignition key OFF → ON → drive → OFF."

ROAD TEST

M12301000078USA0000010000

This test is performed to make a proper judgment on the trouble symptom and check after completion of service work.

1. With the actual driving, check if there is any abnormality in transmission.
2. Check if there is any shift shock or abnormal sound.
3. Check the driving status with all the shift ranges including "R."
4. Perform the driving test with the reproduction condition which is investigated in the interview to check the failure occurrence.

P-range test

1. Stop the vehicle completely on an upslope at the gradient of 5 to 10°, and then shift the selector lever to the "P" range. After that, release the foot brake gradually to check that the vehicle does not move.

2. With the status of the above Step 1, shift the selector lever from the "P" range to other ranges, and check that the vehicle moves.
3. Check the operation also on the downslope with the same manner.

Select time lag



- Perform the test with the engine fully warmed up and the idling speed being stable.
- On completion of the first test, when one minute or more has elapsed after the selector lever is returned from another position to the "N" range, perform the following tests.

1. Check the transmission fluid level and properties.

2. Check the transaxle control cable and linkage.
3. Chock the front and rear wheels on a level surface, and depress the foot brake to stop the vehicle.
4. Start the engine, and shift the selector lever from the "N" range to the "D" range. At this time, measure the time from the lever selection to shock occurrence using a stop watch.

Standard value: - select time lag: 0.8 seconds

5. With the same manner, measure the select time from the "N" range to the "R" range.

Standard value: - select time lag: 0.8 seconds

If the measured value is abnormally large exceeding one second, the operating hydraulic pressure reduction and the A/T internal clutch slippage are assumed to have occurred.

TORQUE CONVERTER STALL TEST

This test measures the maximum engine speed when the selector lever is in the "D" position and the torque converter stalls. This tests the operation of the torque converter, stator and one-way clutch operation, as well as the holding performance of the clutches and brakes in the transaxle.

M12301000054USA0000010000

*Engine coolant temperature: 80 - 100°C (176 - 212°F)

NOTE: Measure transmission fluid temperature with scan tool MB991958 (M. U. T. -III sub assembly).

WARNING

Do not let anyone stand in front of or behind the vehicle while this test is performed.

1. Check the transmission fluid level and temperature.
Check the engine coolant temperature.
 - *Transmission fluid level: At the "HOT" mark on the dipstick
 - *Transmission fluid temperature: 70 - 80°C (158 - 176°F)

2. Chock both rear wheels.
3. Connect a tachometer.
4. Apply the parking and service brakes fully.
5. Start the engine.

CAUTION

*The throttle should not be fully open for more than five seconds.

*If you repeat the stall test when the transmission fluid temperature is greater than 80°C (176°F), move the selector lever to the "N" position and let the engine run at approximately 1,000 r/min for at least one minute. Wait until the transmission fluid temperature returns to 80°C (176°F) or less.

6. Move the selector lever to the "D" position. Fully depress the accelerator pedal and read the maximum engine speed.

Standard value: Stall speed: Approx. 2,527 r/min

HYDRAULIC PRESSURE TESTS

M12301000055USA0000010000

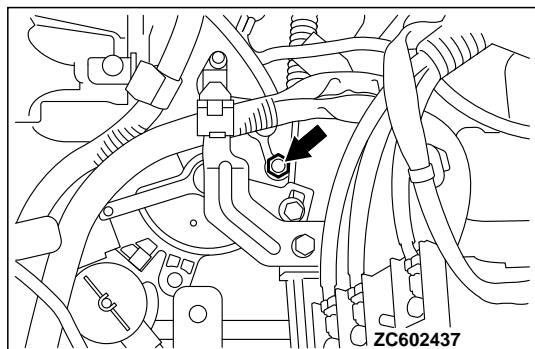
WARNING

Do not let anyone stand in front of or behind the vehicle while this test is performed.

CAUTION

The transmission fluid temperature should be between 70 - 90°C (158 - 194°F) during the test.

1. Check the transmission fluid level and temperature. Check engine coolant temperature.
 - *Transmission fluid level: "H" mark on the dipstick



•Transmission fluid temperature: 70 - 90°C (158 - 194°F)

•Engine coolant temperature: 80 - 100°C (176 - 212°F)

2. Raise the vehicle so that the wheels are free to turn.
3. Connect the special tools (3.0 MPa (427 psi) oil pressure gauge [MD998330] and adapters [MB992127]) to each pressure discharge port.
4. Apply the parking brakes fully.
5. Restart the engine.
6. Check that there are no leaks around the special tool port adapters.
7. At the "D" position, measure the hydraulic pressure during idling (engine speed: 650 ± 50 r/min).

Standard value: Approx. 0.385 - 0.525 MPa (56 - 76 psi)

⚠ CAUTION

The throttle should not be fully open for more than five seconds.

8. At the "D" position, fully depress the foot brake pedal. Then fully depress the accelerator pedal while checking the hydraulic pressure indicator, and quickly read the maximum hydraulic pressure.

Standard value: Approx. 1.53 MPa (222 psi)

9. Stop the engine.
10. Remove the O-ring from the port plug and replace it.
11. Remove the special tool, and install the plugs to the hydraulic pressure ports.
12. Start the engine and check that there are no leaks around the plugs.

DIAGNOSTIC TROUBLE CODE CHART

M12301000079USA0000010000

⚠ CAUTION

During diagnosis, a DTC code associated with other system may be set when the ignition switch

is turned on with connector(s) disconnected. On completion, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.

DTC No.	Diagnosis item		Reference page
P0705	Transmission range switch system		P.23A-25
P0712	Transmission fluid temperature sensor system	Short circuit	P.23A-30
P0713		Open circuit	P.23A-34
P0715	Input shaft speed sensor system		P.23A-37
P0720	Output shaft speed sensor system		P.23A-42
P0729	6th gear incorrect ratio		P.23A-47
P0731	1st gear incorrect ratio		P.23A-52
P0732	2nd gear incorrect ratio		P.23A-47
P0733	3rd gear incorrect ratio		P.23A-47
P0734	4th gear incorrect ratio		P.23A-47
P0735	5th gear incorrect ratio		P.23A-47

DTC No.	Diagnosis item		Reference page
P0736	Reverse gear incorrect ratio		P.23A-55
P0741	Torque converter clutch system	Stuck off	P.23A-58
P0742		Stuck on	
P0743	Lock-up and Low-reverse brake linear solenoid valve system		P.23A-64
P0748	Line pressure linear solenoid valve system		P.23A-68
P0753	Low clutch linear solenoid valve system		P.23A-71
P0758	2-6 brake linear solenoid valve system		P.23A-74
P0763	3-5 reverse clutch linear solenoid valve system		P.23A-77
P0768	High clutch linear solenoid valve system		P.23A-80
P0815	Puddle shift switch (up) system		P.23A-83
P0816	Puddle shift switch (down) system		P.23A-85
P0826	Shift switch assembly system		P.23A-87
P0841	Low clutch pressure switch system		P.23A-91
P0846	2-6 brake pressure switch system		P.23A-94
P0871	3-5 reverse clutch pressure switch system		P.23A-96
P0876	High clutch pressure switch system		P.23A-98
P0893	Interlock detection		P.23A-100
P0988	Low-reverse brake pressure switch system		P.23A-103
P1705	Throttle position sensor information (engine)		P.23A-105
P1706	Accelerator pedal position information		P.23A-107
P1731	1st engine brake detection		P.23A-109
P1753	Low clutch shift solenoid valve system		P.23A-110
P1758	Low-reverse brake shift solenoid valve system		P.23A-114
P1773	ABS information (ASC)		P.23A-117
P1794	Ground return		P.23A-119
U0001	CAN bus off		P.23A-122
U0100	ECM time-out		P.23A-123
U0121	ASC-ECU time out		P.23A-124
U0141	ETACS-ECU time out		P.23A-125

SYMPTOM CHART

M12301000080USA0000010000

CAUTION

During diagnosis, a DTC code associated with other system may be set when the ignition switch

is turned on with connector(s) disconnected. On completion, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.

Symptom	Inspection procedure No.	Reference page
The vehicle does not run at any range (including low power).	1	P.23A-126
The vehicle does not run at the "D" or the "R" range.	2	P.23A-127

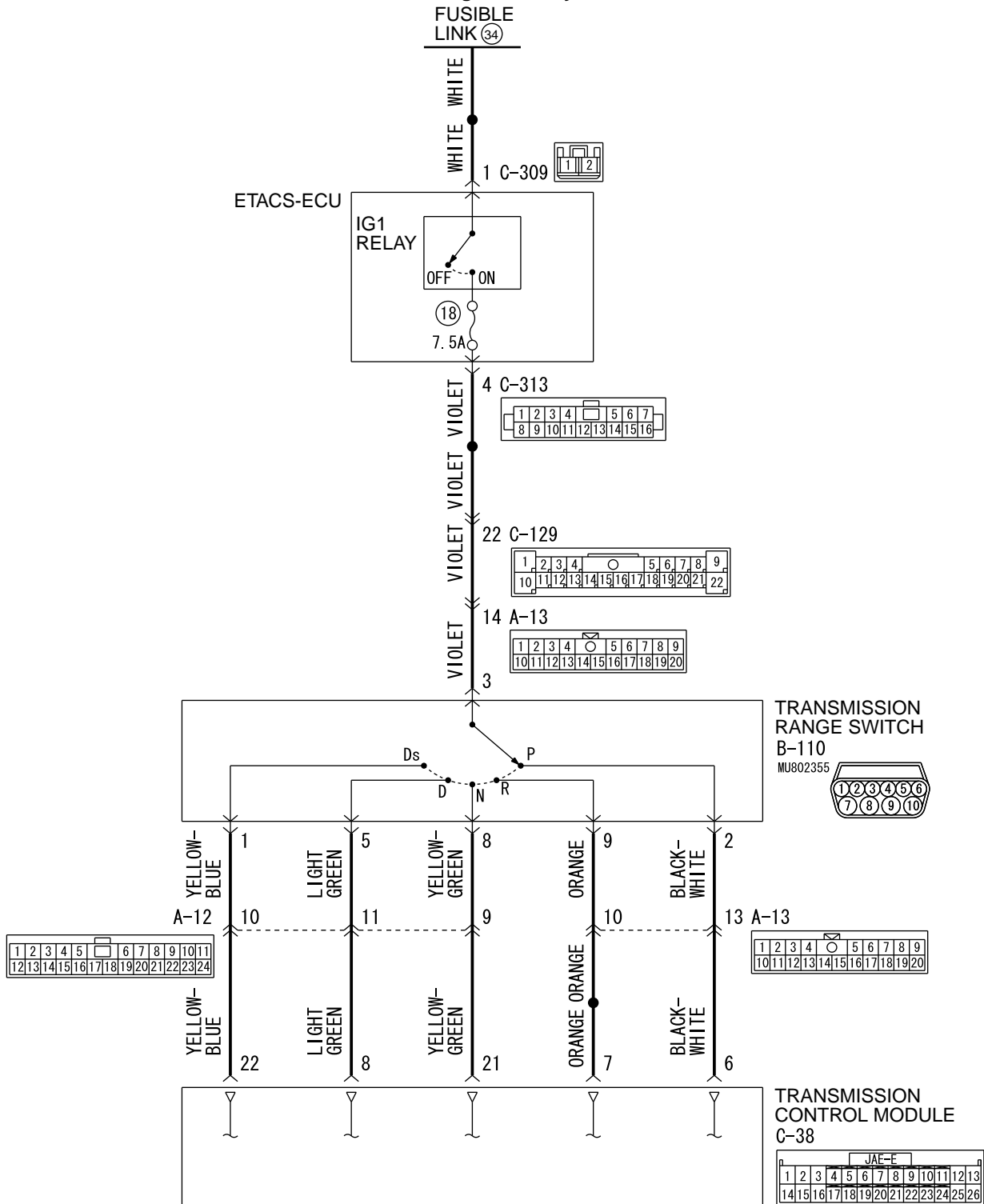
Symptom	Inspection procedure No.	Reference page
The acceleration is poor.	3	P.23A-127
The vehicle moves at the "N" range.	4	P.23A-129
Gears cannot be shifted at all, or a certain gear shift (1st to 2nd, 2nd to 3rd, etc.) is not made.	5	P.23A-129
The torque converter is not locked up.	6	P.23A-131
The clutch slips when the vehicle starts or during gear shift.	7	P.23A-131
The engine brake is not applied.	8	P.23A-132
The shift shock is large at a certain gear shift. (1st to 2nd, 2nd to 3rd, etc.)	9	P.23A-134
The select shock is large when the transmission range is shifted from "N" to "D", and "N" to "R."	10	P.23A-135
Abnormal sound occurs during idling.	11	P.23A-136
Abnormal sound occurs during driving.	12	P.23A-137
Abnormal sound occurs during gear shift.	13	P.23A-138
Engine stall	14	P.23A-139
Oil leaks from the air breather.	15	P.23A-140
The starter does not rotate at the "P" or "N" range. (The engine does not start.)	16	P.23A-141

DIAGNOSTIC TROUBLE CODE PROCEDURES

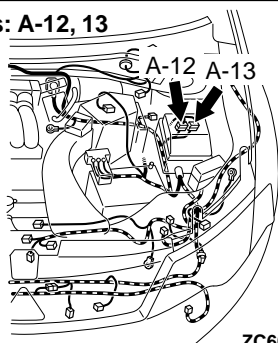
DTC P0705: Transmission Range Switch System

M12301000394USA0000010001

Transmission range switch system circuit

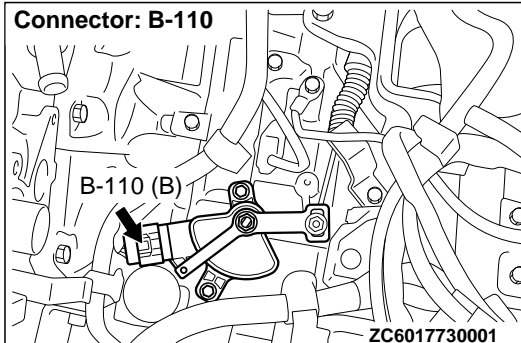


Connectors: A-12, 13



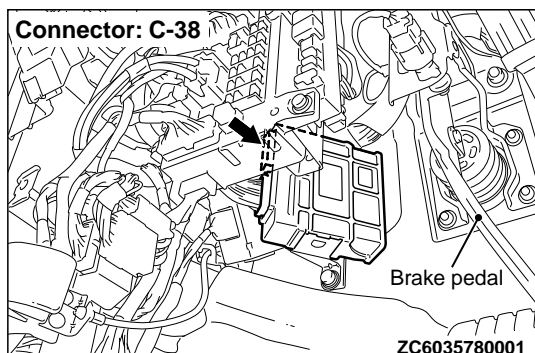
ZC6008720001

Connector: B-110



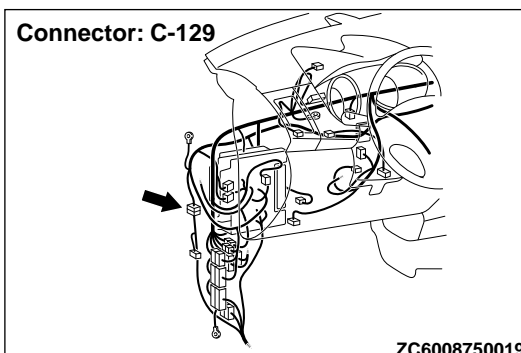
ZC6017730001

Connector: C-38



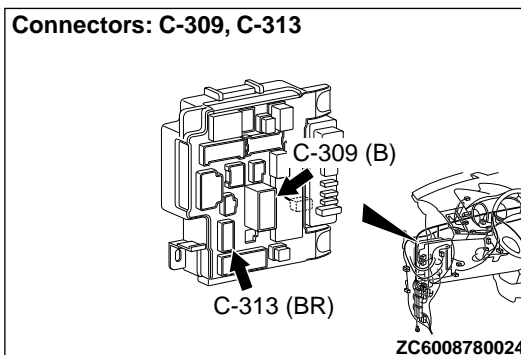
ZC6035780001

Connector: C-129



ZC6008750019

Connectors: C-309, C-313



ZC6008780024

DESCRIPTIONS OF MONITOR METHODS

- The TCM receives no input signal from the transmission range switch.
- The TCM receives multiple input signals simultaneously from the transmission range switch.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

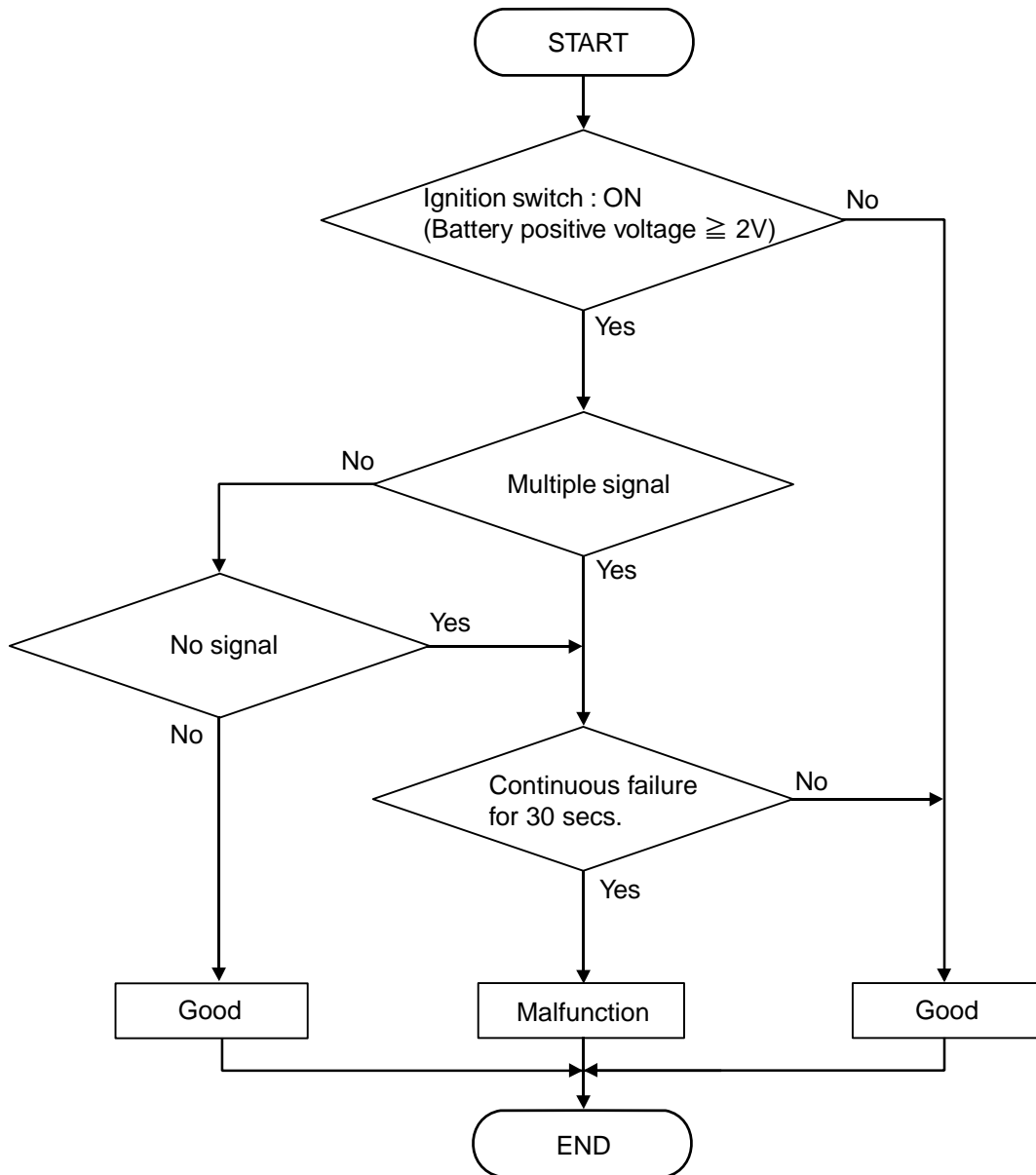
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040630000

DTC SET CONDITIONS

Check Conditions

- Voltage of battery: 2 volts or more.

Judgement Criteria

- Transmission range switch: no signal detected. (30 seconds)
- Transmission range switch: multiple signal. (30 seconds)

OBD-II DRIVE CYCLE PATTERN

Start the engine, keep the vehicle stopped in "P," "R," "N," "D" ranges respectively for more than one minute, and turn "LOCK" (OFF) the ignition switch. Then restart the engine, and stop the vehicle in "P," "R," "N," "D" ranges respectively for more than one minute.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the transmission range switch system circuit

- Damaged harness or connector
- Improper installation angle of transmission range switch
- Malfunction of the transmission range switch
- Malfunction of the TCM

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-38 TCM connector (vehicle side, connected)]

Turn ON the ignition switch, and check by shifting to each range.

- "P" range: Terminal No. 6 to body ground → Battery positive voltage
- "R" range: Terminal No. 7 to body ground → Battery positive voltage
- "N" range: Terminal No. 21 to body ground → Battery positive voltage
- "D" range: Terminal No. 8 to body ground → Battery positive voltage

Q: Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 2.

STEP 2. Check the path between the ignition switch and the transmission range switch.

Turn OFF the ignition switch, and check the following items.

- Open/short circuit of wiring harness between the ignition switch and B-110 transmission range switch connector terminal No. 3.
- Blown fuse

Q: Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the wiring harness between the transmission range switch and TCM.

Check for continuity between B-110 transmission range switch terminals and C-38 TCM terminals.

- Between B-110 terminal No. 2 and C-38 terminal No. 6: At the "P" range, continuity exists.
- Between B-110 terminal No. 9 and C-38 terminal No. 7: At the "R" range, continuity exists.
- Between B-110 terminal No. 8 and C-38 terminal No. 21: At the "P" range, continuity exists.
- Between B-110 terminal No. 5 and C-38 terminal No. 8: At the "P" range, continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check the transmission range switch as a single unit.

Refer to P.23A-157.

Q:Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 7.

STEP 5. Check the TCM connector pin terminal and the connection status.

Q:Is there a failure point?

YES: Repair or replace the failure section.

NO: Replace the TCM.

STEP 6. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Replace the TCM.

STEP 7. Adjust the transmission range switch.

Refer to P.23A-157.

After adjustment, check the continuity between the terminals again.

Q:Is the check result normal?

YES: Go to Step 8.

NO: Replace the transmission range switch.

STEP 8. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

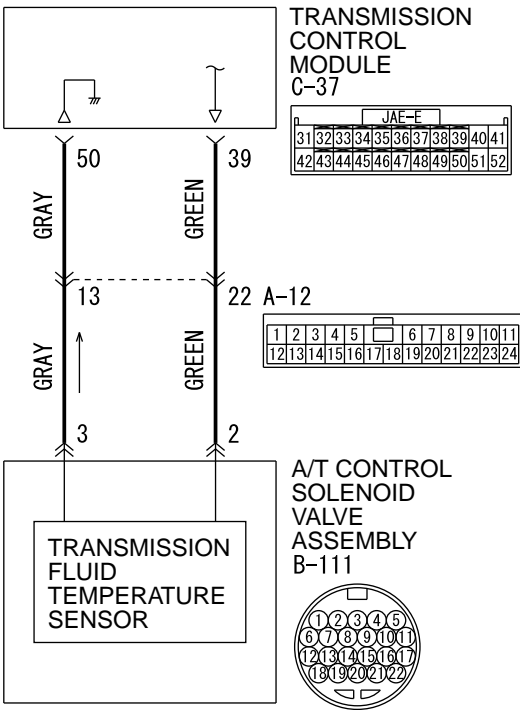
YES: The procedure is complete.

NO: Return to START.

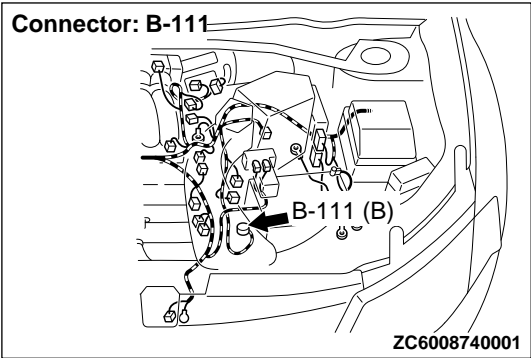
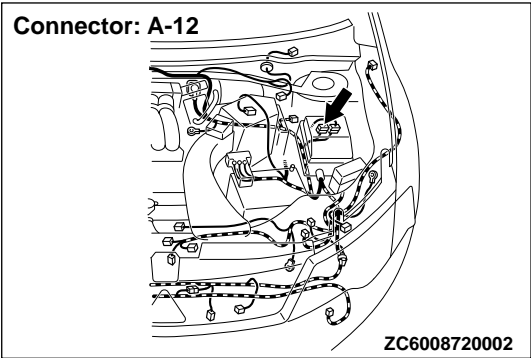
DTC P0712: Transmission Fluid Temperature Sensor System (Short Circuit)

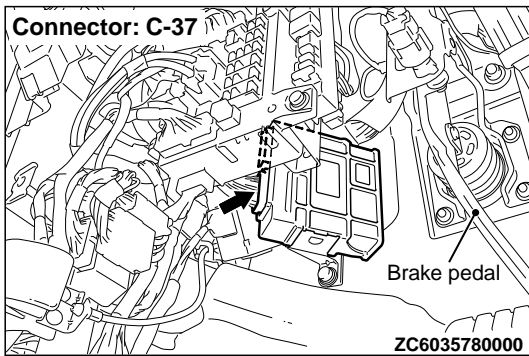
M12301000395USA0000010000

Transmission fluid temperature sensor circuit



D7G23M001A00
ZC6023730000





DESCRIPTIONS OF MONITOR METHODS

- All the following conditions are detected for 10 minutes continuously: Vehicle speed > 10 km/h (6.2 mph), "D" range and accelerator angle > 1/8, oil temperature > 180°C (356°F).

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

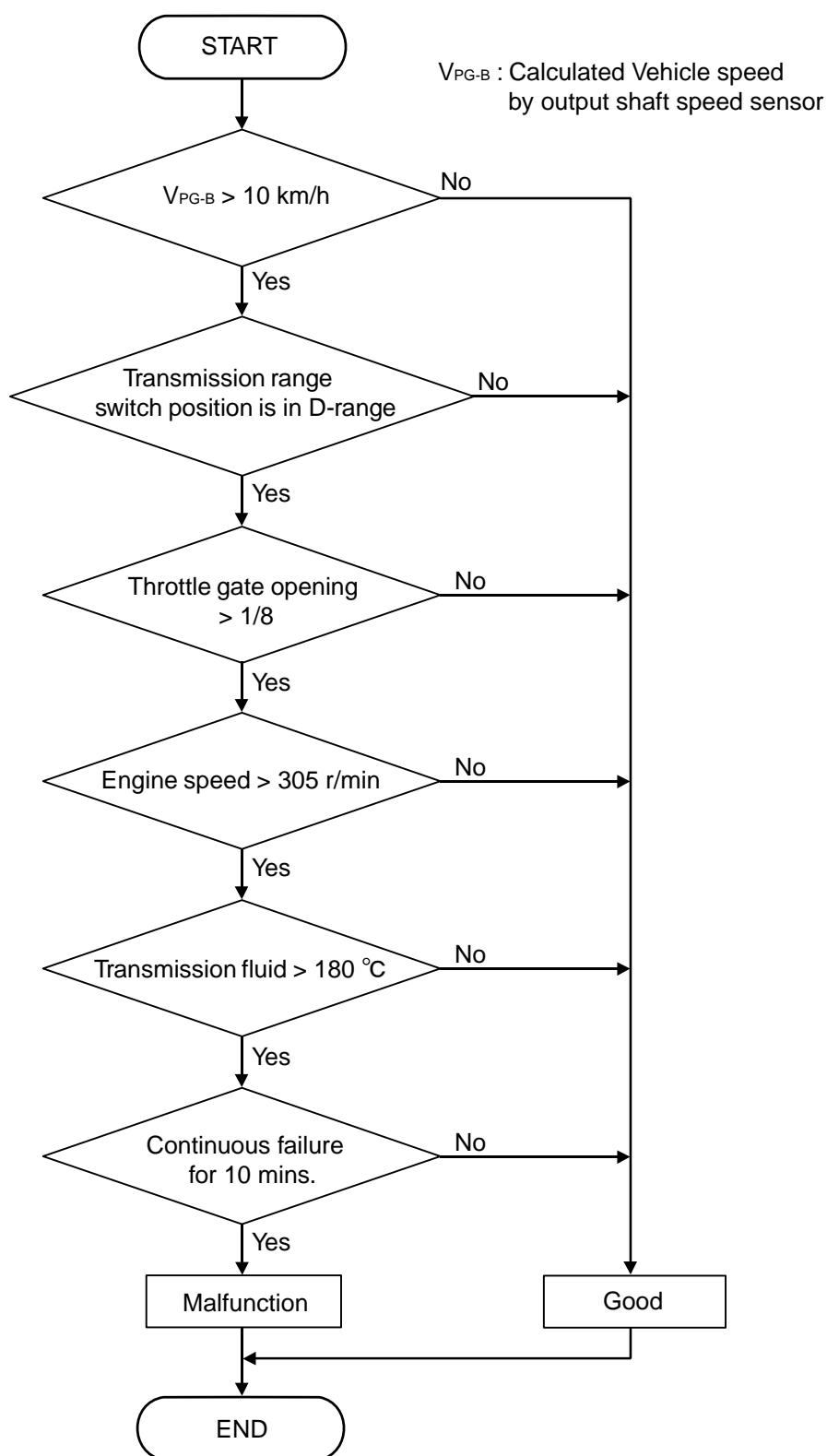
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040640000

DTC SET CONDITIONS

Check Conditions

- *Vehicle speed: more than 10 km/h (6.2 mph).
- *Transmission range switch position: D.
- *Throttle opening: more than 1/8.

•Engine speed: more than 305 r/min.

Judgement Criteria

•Value of temperature of transmission fluid: more than 180°C (356°F). (10 minutes)

OBD-II DRIVE CYCLE PATTERN

Start the engine, keep the vehicle stopped in "P" range for 5 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the transmission fluid temperature sensor system (Short circuit) circuit
- Malfunction of the transmission fluid temperature sensor
- Malfunction of the TCM

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-38 TCM connector (vehicle side, connected)]

Turn ON the ignition switch, and check the voltage between terminal No. 39 and No. 50.

- Transmission fluid 20°C (68°F): Approx. 2.52 V
- Transmission fluid 80°C (176°F): Approx. 0.69 V

Q: Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 2.

STEP 2. Check the transmission fluid temperature sensor.

Refer to P.23A-161.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Replace the valve body assembly.

STEP 3. Check the wiring harness between the transmission fluid temperature sensor and TCM.

Check that the wiring harness between the A/T control solenoid valve assembly connector and TCM is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check the TCM power supply and ground.

Q: Is the check result normal?

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check the TCM connector pin terminal and the connection status.

Q: Is there a failure point?

YES: Repair or replace the failure section.

NO: Replace the TCM.

STEP 6. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Replace the TCM.

P0713: Transmission Fluid Temperature Sensor System (Open Circuit)

M12301000396USA0000010000

TRANSMISSION FLUID TEMPERATURE SENSOR SYSTEM CIRCUIT

Refer to P.23A-30.

DESCRIPTIONS OF MONITOR METHODS

▪The following conditions are detected: Vehicle speed > 10 km/h (6.2 mph), oil temperature > -40° C (-104°F).

▪Not applicable

Sensor (The sensor below is determined to be normal)

▪Not applicable

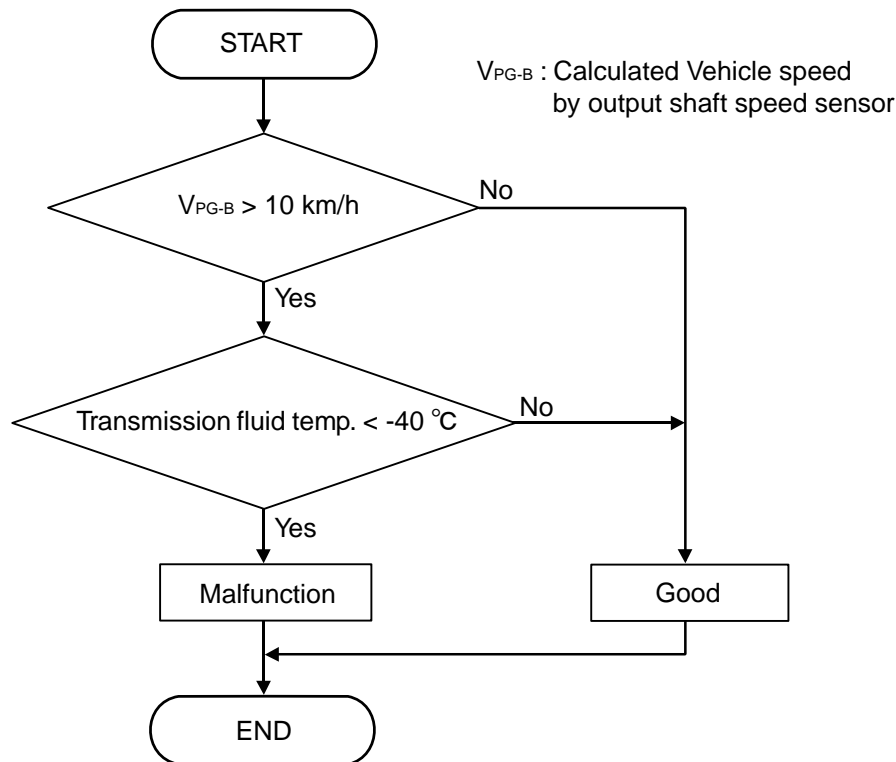
MONITOR EXECUTION

▪Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

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

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040650000

DTC SET CONDITIONS

Check Conditions

- Vehicle speed: more than 10 km/h (6.2 mph).

Judgement Criteria

- Value of temperature of transmission fluid: less than -40°C (-104°F). (At once)

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the transmission fluid temperature sensor system (open circuit) circuit
- Damaged harness or connector
- Malfunction of the transmission fluid temperature sensor system (open circuit)
- Malfunction of the TCM

OBD-II DRIVE CYCLE PATTERN

Start the engine, drive at more than 60 km/h (37 mph) for 15 minutes in total.

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-37 connector (vehicle side, connected)]

Turn ON the ignition switch, and check the voltage between terminal No. 39 and No. 50.

- Transmission fluid 20°C (68°F): Approx. 2.52 V
- Transmission fluid 80°C (176°F): Approx. 0.69 V

Q: Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 2.

STEP 2. Check the transmission fluid temperature sensor as a single unit.

Refer to P.23A-161.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Replace the valve body assembly.

STEP 3. Check the wiring harness between the transmission fluid temperature sensor and TCM.

Check for continuity between B-111 A/T control solenoid valve assembly connector terminals and C-37 TCM terminals.

• Between B-111 terminal No. 2 and C-37 terminal No. 39:
Continuity exists.

• Between B-111 terminal No. 3 and C-37 terminal No. 50:
Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check the TCM power supply and ground.**Q:Is the check result normal?**

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check the TCM connector pin terminal and the connection status.**Q:Is there a failure point?**

YES: Repair or replace the failure section.

NO: Replace the TCM.

STEP 6. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

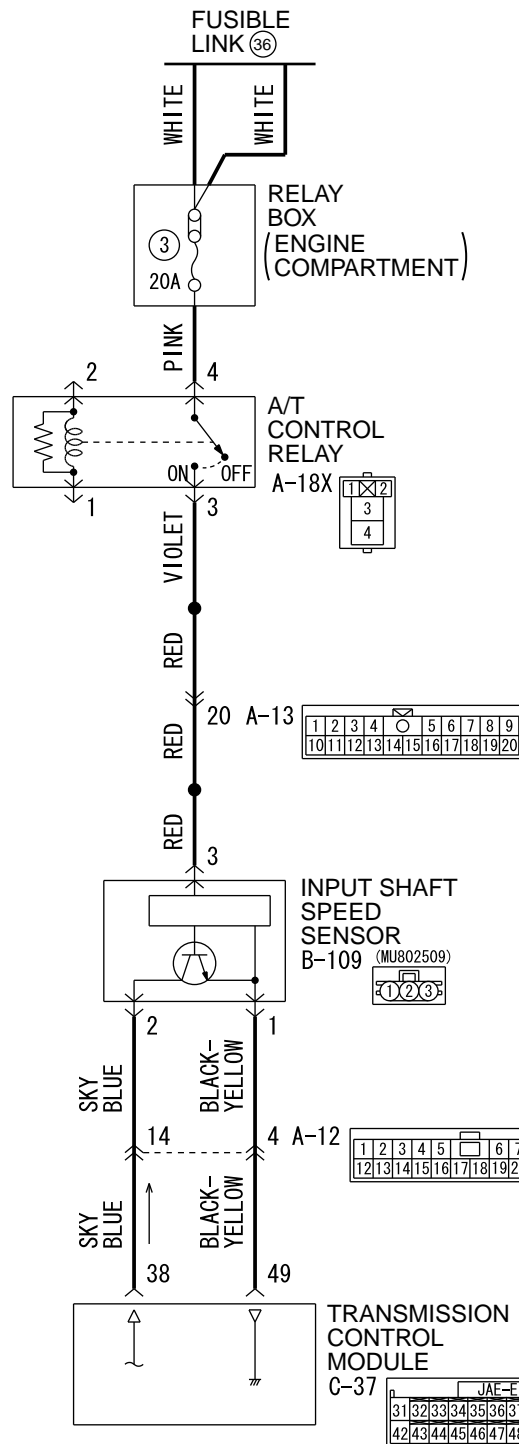
YES: The procedure is complete.

NO: Return to START.

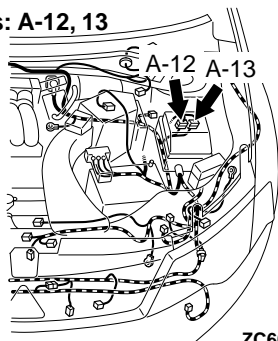
DTC P0715: Input Shaft Speed Sensor System

M12301000397USA0000010000

Input shaft speed sensor system circuit

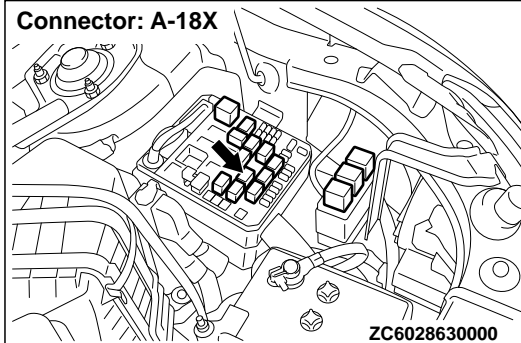


Connectors: A-12, 13



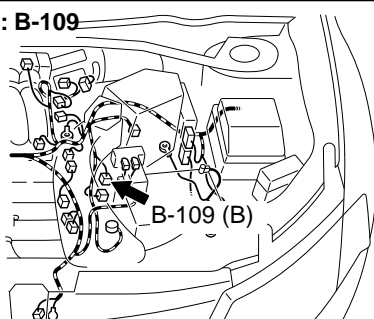
ZC6008720001

Connector: A-18X

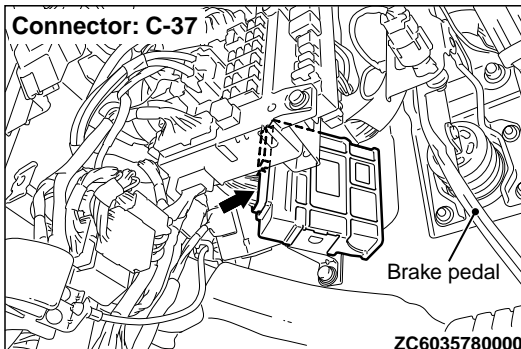


ZC6028630000

Connector: B-109



ZC6008740003



ZC6035780000

DESCRIPTIONS OF MONITOR METHODS

- All the following conditions are detected: Idle switch OFF, vehicle speed > 40 km/h (25 mph), engine speed > 1600 r/min, input shaft speed < 600 r/min.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

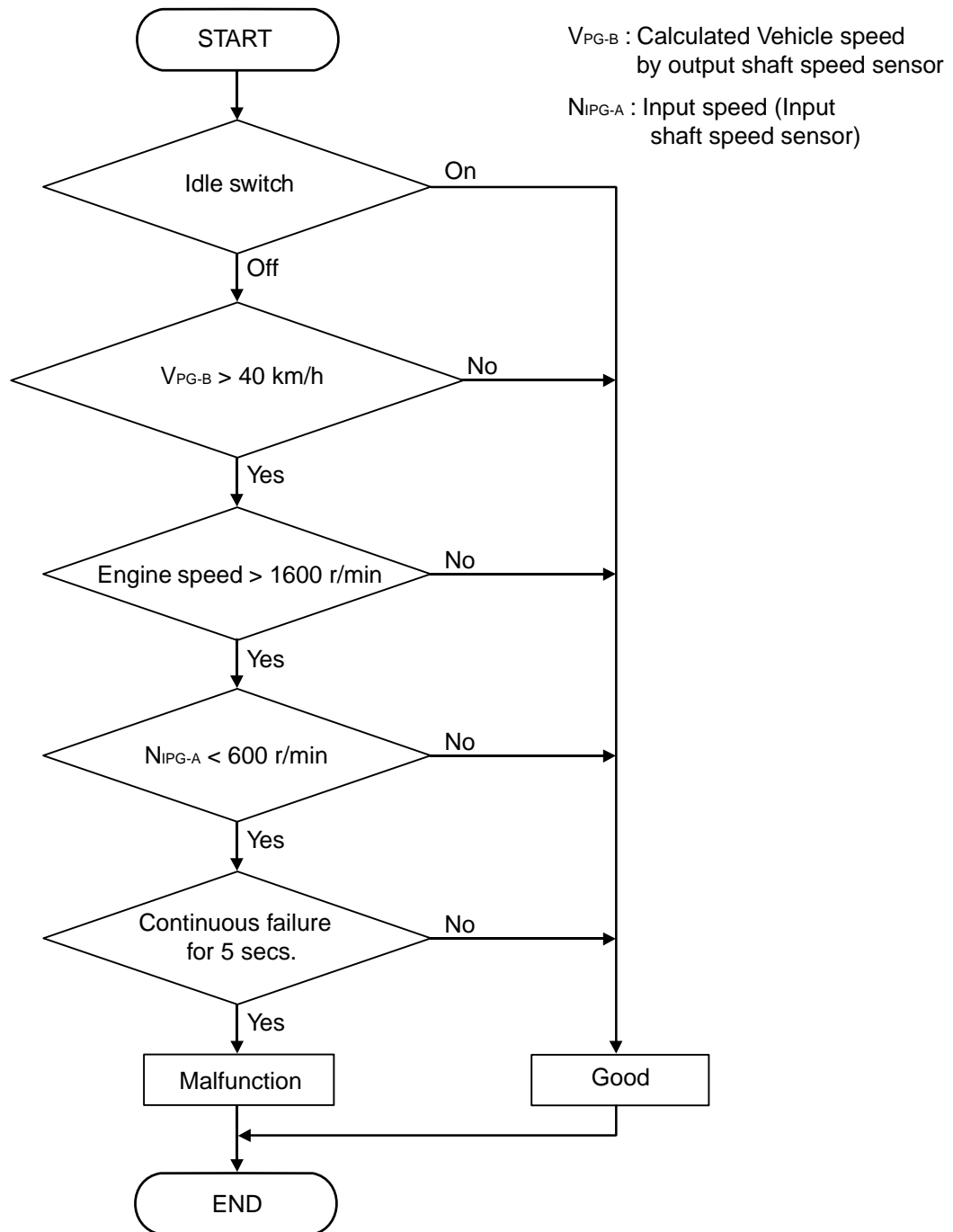
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040660000

DTC SET CONDITIONS

Check Conditions

- Idle switch: OFF.
- Vehicle speed: more than 40 km/h (25 mph).
- Engine speed: more than 1,600 r/min.

Judgement Criteria

- Input shaft speed sensor signal: less than 600 r/min.
(5 seconds)

OBD-II DRIVE CYCLE PATTERN

Start the engine, shift to 3rd gear or higher, and drive at more than 40 km/h (25 mph) for 10 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the Input shaft speed sensor system circuit

-
- Damaged harness or connector
 - Malfunction of the Input shaft speed sensor
 - Malfunction of the TCM
 - Malfunction of the input shaft speed sensor rotor (A/T assembly)
-

DIAGNOSIS

STEP 1. Check the TCM terminal voltage and frequency.

[C-37 TCM connector (vehicle side, connected)]

Check that the voltage between C-37 terminal No. 49 and C-38 terminal No. 13 or C-38 terminal No. 26 is 0 V, and then check the frequency of C-37 terminal No. 38.

- At D range, and the engine speed is 700 r/min: Approx. 353 Hz

Q:Is the check result normal?

YES: Go to Step 8.

NO: Go to Step 2.

STEP 2. Check the power supply and sensor ground.

[B-109 input shaft speed sensor connector (vehicle side, disconnected)]

- With the ignition switch ON: Terminal No. 3 to terminal No. 1
→ Battery positive voltage

Q:Is the check result normal?

YES: Go to Step 3.

NO: Go to Step 4.

STEP 3. Check the wiring harness between the input shaft speed sensor and TCM.

Check for continuity between B-109 input shaft speed sensor connector terminals and C-37 TCM terminals.

- Between B-109 terminal No. 2 and C-37 terminal No. 38: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Replace the input shaft speed sensor with the one of the same transaxle of the same model. Then go to Step 5.

NO: Repair or replace the failure section, and then go to Step 8.

STEP 4. Check the path between the ignition switch and the input shaft speed sensor.

- Check the wiring harness for an open/short circuit between the ignition switch and B-109 input shaft speed sensor connector terminal No. 3.
- Check for a blown fuse.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Repair or replace the failure section.

STEP 5. After replacing the input shaft speed sensor, drive the vehicle for a while, and then check the DTC again.

Q: Is the check result normal?

YES: Replace the input shaft speed sensor.

NO: Replace the TCM.

STEP 6. Check the wiring harness between the input shaft speed sensor and TCM.

Check for continuity between B-109 input shaft speed sensor terminals and C-37 TCM terminals.

• Between B-109 terminal No. 1 and C-37 terminal No. 49:
Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 7.

NO: Repair or replace the failure section.

STEP 7. Check the TCM connector pin terminal and the connection status.

Q: Is there a failure point?

YES: Repair or replace the failure section.

NO: Replace the TCM.

STEP 8. Drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

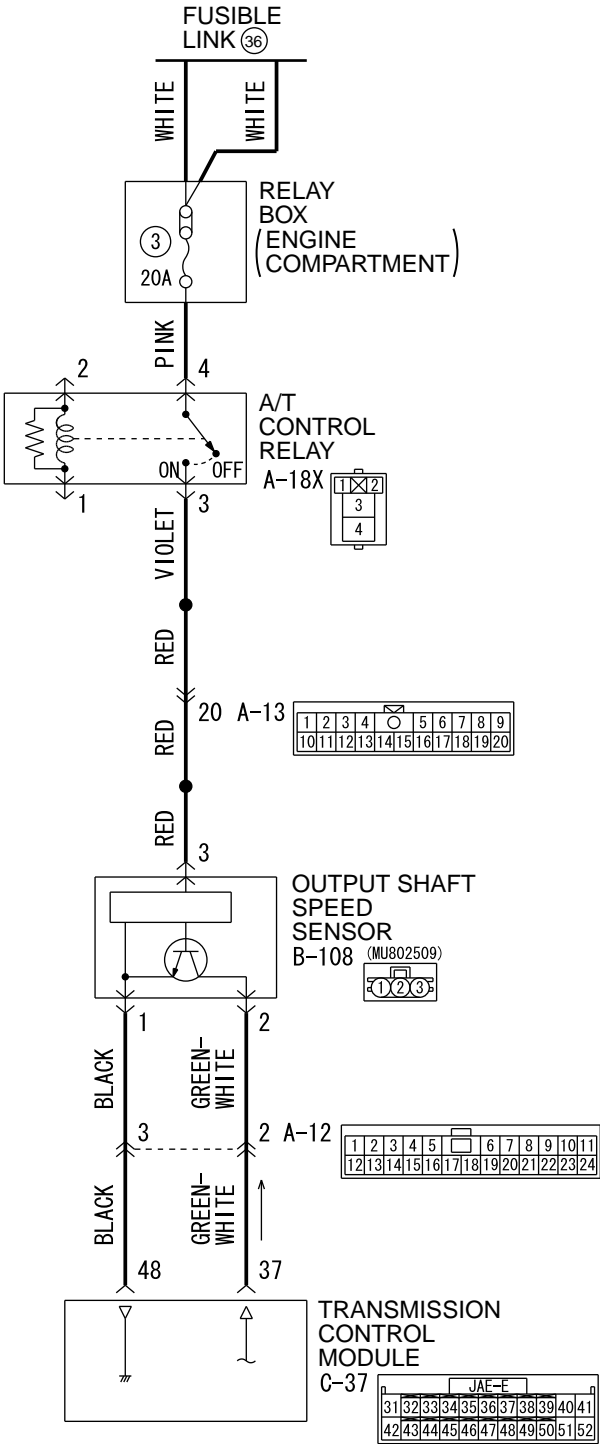
YES: The procedure is complete.

NO: Replace the TCM.

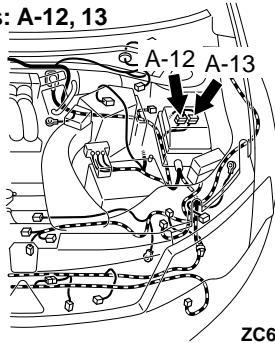
DTC P0720: Output Shaft Speed Sensor System

M12301000398USA0000010000

Output shaft speed sensor system circuit

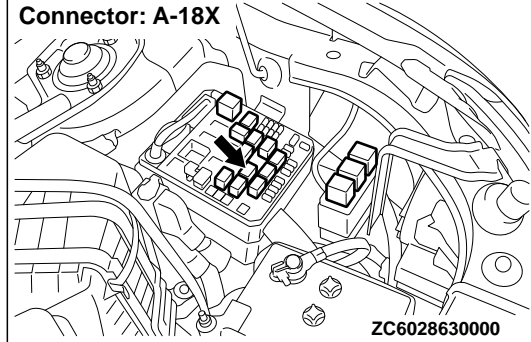


Connectors: A-12, 13



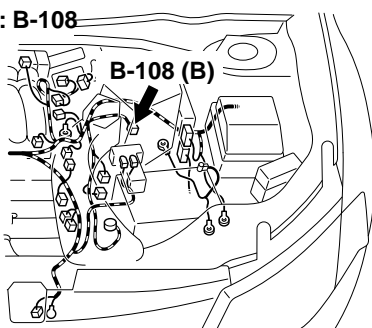
ZC6008720001

Connector: A-18X



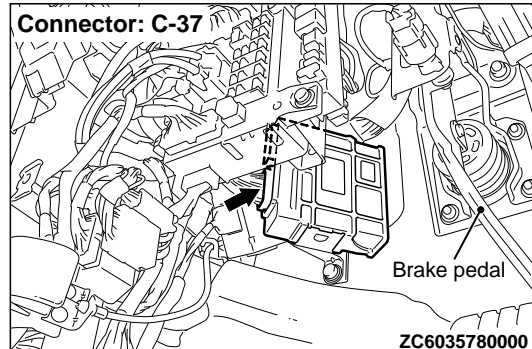
ZC6028630000

Connector: B-108



ZC6008740002

Connector: C-37



ZC6035780000

DESCRIPTIONS OF MONITOR METHODS

- With the vehicle speed more than 20 km/h (12 mph), the TCM receives no input signal from the output shaft speed sensor.

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

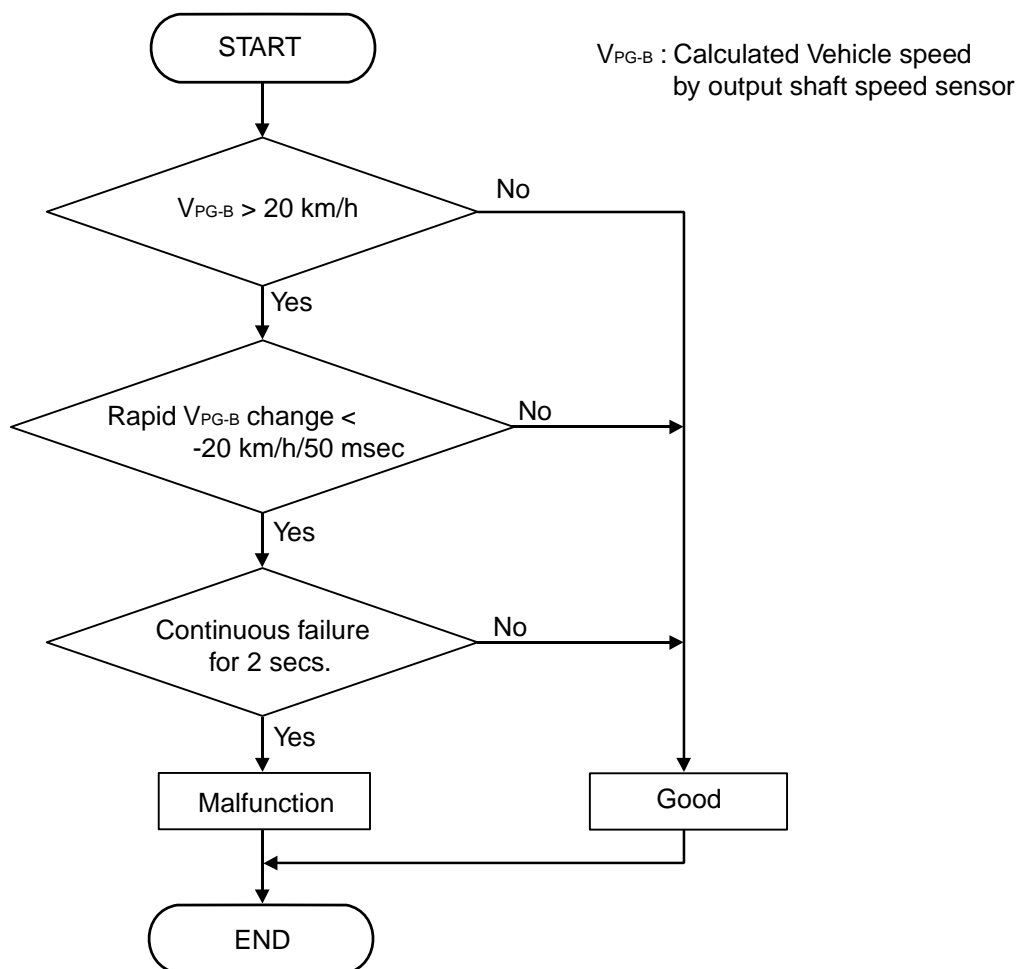
MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

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

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040670000

DTC SET CONDITIONS

Check Conditions

- Vehicle speed: more than 20 km/h (12 mph).

Judgement Criteria

- Rapid vehicle speed change: less than -20 km/h/0.05 second. (2 seconds)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and drive for 5 seconds, with 1st gear fixed (1st gear in sport mode), at more than 20 km/h (12 mph) with more than 50% of throttle valve opening. Then stop the vehicle, and drive again for 5

seconds, with 1st gear fixed (1st gear in sport mode), at more than 20 km/h (12 mph) with more than 50% of throttle valve opening.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the output shaft speed sensor system circuit
- Damaged harness or connector
- Malfunction of the output shaft speed sensor
- Malfunction of the TCM
- Malfunction of the output shaft speed sensor rotor (A/T assembly)

DIAGNOSIS

STEP 1. Check the TCM terminal voltage and frequency.
[C-37 TCM connector (vehicle side, connected)]

Check that the voltage between C-37 terminal No. 48 and C-38 terminal No. 13 or C-38 terminal No. 26 is 0 V, and then check the frequency of C-37 terminal No. 37.

•At D range, vehicle speed is 30 km/h (19 mph): Approx. 588 Hz

Q: Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 2.

STEP 2. Check the power supply and sensor ground.

[B-108 output shaft speed sensor connector (vehicle side, disconnected)]

•With the ignition switch ON: Terminal No. 1 to No. 3 → Battery positive voltage

Q: Is the check result normal?

YES: Go to Step 3.

NO: Go to Step 4.

STEP 3. Check the wiring harness between the output shaft speed sensor and TCM.

Check for continuity between B-108 output shaft speed sensor terminals and C-37 TCM terminals.

•Between B-108 terminal No. 2 and C-37 terminal No. 37: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Replace the output shaft speed sensor with the one of the same transaxle of the same model. Then go to Step 7.

NO: Repair or replace the failure section, and then go to Step 6.

STEP 4. Check the path between the ignition switch and the output shaft speed sensor.

•Check the wiring harness for an open/short circuit between the ignition switch and B-108 output shaft speed sensor connector terminal No. 1.

•Check for a blown fuse.

Q: Is the check result normal?

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check the wiring harness between the output shaft speed sensor and TCM.

Check for continuity between B-108 output shaft speed sensor terminals and C-38 TCM terminals.

•Between B-108 terminal No. 3 and C-37 terminal No. 48: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 8.

NO: Repair or replace the failure section.

STEP 6. Drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Replace the TCM.

STEP 7. After replacing the output shaft speed sensor, drive the vehicle for a while, and then check the DTC again.

Q: Is the check result normal?

YES: Replace the output shaft speed sensor.

NO: Replace the TCM.

STEP 8. Check the TCM connector pin terminal and the connection status.

Q: Is there a failure point?

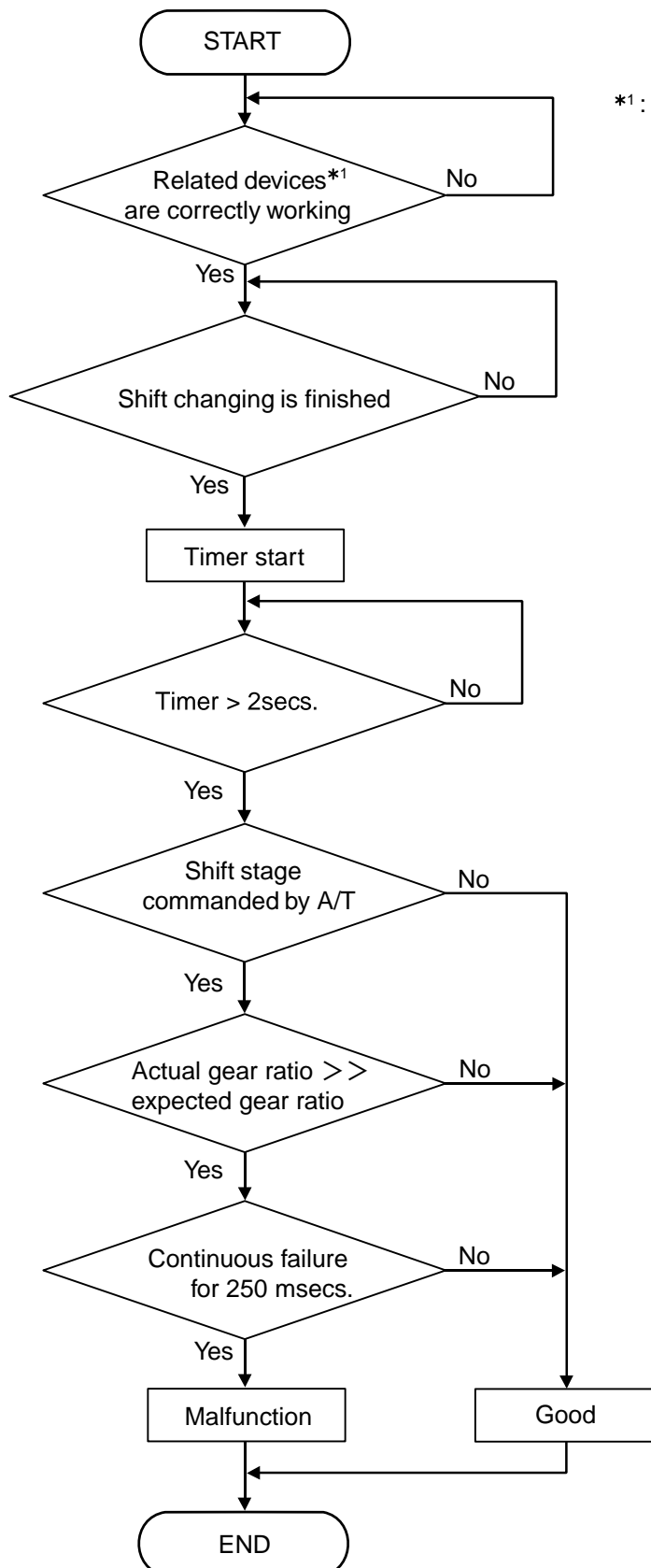
YES: Repair or replace the failure section.

NO: Replace the TCM.

DTC P0729, P0732, P0733, P0734, P0735: 6th, 2nd, 3rd, 4th, 5th Gear Ratio

M12301000455USA0000010000

LOGIC FLOW CHARTS (Monitor Sequence)



*1 : Engine revolution signal
Input shaft speed sensor
Output shaft speed sensor
CAN communication
Transmission range switch
Low clutch linear solenoid
2-6 brake linear solenoid
3-5 reverse clutch linear solenoid
High clutch linear solenoid
Low clutch shift solenoid
Low-reverse brake shift solenoid
Lock-up & low-reverse brake linear solenoid

DESCRIPTIONS OF MONITOR METHODS <DTC P0729>

▪ After 6th gear is achieved for 2 seconds, the engine runup^{*1} is detected for 250 milliseconds.

^{*1}: The actual gear ratio deviates from the target gear ratio to the high engine (turbine) speed.

MONITOR EXECUTION <DTC P0729>

▪ Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR) <DTC P0729>

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

- DTC P0705: Transmission range switch malfunction
- DTC P0715: Input shaft speed sensor malfunction
- DTC P0720: Output shaft speed sensor malfunction
- DTC P0743: Lock-up and low-reverse brake linear solenoid malfunction
- DTC P0753: Low clutch linear solenoid malfunction
- DTC P0758: 2-6 brake linear solenoid malfunction
- DTC P0763: 3-5 reverse clutch linear solenoid malfunction
- DTC P0768: High clutch linear solenoid malfunction
- DTC P1753: Low clutch shift solenoid malfunction
- DTC P1758: Low-reverse brake shift solenoid malfunction

DESCRIPTIONS OF MONITOR METHODS <DTC P0732>

▪ After 2th gear is achieved for 2 seconds, the engine runup^{*1} is detected for 250 milliseconds.

^{*1}: The actual gear ratio deviates from the target gear ratio to the high engine (turbine) speed.

MONITOR EXECUTION <DTC P0732>

▪ Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR) <DTC P0732>

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

- DTC P0705: Transmission range switch malfunction
- DTC P0715: Input shaft speed sensor malfunction
- DTC P0720: Output shaft speed sensor malfunction

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Transmission range switch
- Lock-up and low-reverse brake linear solenoid
- Low clutch linear solenoid
- 2-6 brake linear solenoid
- 3-5 reverse clutch linear solenoid
- High clutch linear solenoid
- Low clutch shift solenoid
- Low-reverse brake shift solenoid
- Engine revolution signal
- CAN communication

DTC SET CONDITIONS <DTC P0729>**Check Conditions**

- Shift stage: 6th gear.
- Time after shift changing finish: more than 2 seconds.

Judgement Criteria

- Gear ratio: more than 0.753. (0.25 second)

OBD-II DRIVE CYCLE PATTERN <DTC P0729>

Start the engine, and drive at more than 60 km/h (37 mph) for 10 seconds, with 6th gear fixed (6th gear in sport mode).

- DTC P0743: Lock-up and low-reverse brake linear solenoid malfunction
- DTC P0753: Low clutch linear solenoid malfunction
- DTC P0758: 2-6 brake linear solenoid malfunction
- DTC P0763: 3-5 reverse clutch linear solenoid malfunction
- DTC P0768: High clutch linear solenoid malfunction
- DTC P1753: Low clutch shift solenoid malfunction
- DTC P1758: Low-reverse brake shift solenoid malfunction

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Transmission range switch
- Lock-up and low-reverse brake linear solenoid
- Low clutch linear solenoid
- 2-6 brake linear solenoid
- 3-5 reverse clutch linear solenoid

- High clutch linear solenoid
- Low clutch shift solenoid
- Low-reverse brake shift solenoid
- Engine revolution signal
- CAN communication

DTC SET CONDITIONS <DTC P0732>

Check Conditions

- Shift stage: 2nd gear.

DESCRIPTIONS OF MONITOR METHODS <DTC P0733>

- After 3th gear is achieved for 2 seconds, the engine runup^{*1} is detected for 250 milliseconds.
- ^{*1}: The actual gear ratio deviates from the target gear ratio to the high engine (turbine) speed.

MONITOR EXECUTION <DTC P0733>

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR) <DTC P0733>

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

- DTC P0705: Transmission range switch malfunction
- DTC P0715: Input shaft speed sensor malfunction
- DTC P0720: Output shaft speed sensor malfunction
- DTC P0743: Lock-up and low-reverse brake linear solenoid malfunction
- DTC P0753: Low clutch linear solenoid malfunction
- DTC P0758: 2-6 brake linear solenoid malfunction
- DTC P0763: 3-5 reverse clutch linear solenoid malfunction
- DTC P0768: High clutch linear solenoid malfunction
- DTC P1753: Low clutch shift solenoid malfunction
- DTC P1758: Low-reverse brake shift solenoid malfunction

DESCRIPTIONS OF MONITOR METHODS <DTC P0734>

- After 4th gear is achieved for 2 seconds, the engine runup^{*1} is detected for 250 milliseconds.
- ^{*1}: The actual gear ratio deviates from the target gear ratio to the high engine (turbine) speed.

- Time after shift changing finish: more than 2 seconds.

Judgement Criteria

- Gear ratio: more than 3.225. (0.25 second)

OBD-II DRIVE CYCLE PATTERN <DTC P0732>

Start the engine, and drive at more than 30 km/h (19 mph) for 10 seconds, with 2nd gear fixed (2nd gear in sport mode).

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Transmission range switch
- Lock-up and low-reverse brake linear solenoid
- Low clutch linear solenoid
- 2-6 brake linear solenoid
- 3-5 reverse clutch linear solenoid
- High clutch linear solenoid
- Low clutch shift solenoid
- Low-reverse brake shift solenoid
- Engine revolution signal
- CAN communication

DTC SET CONDITIONS <DTC P0733>

Check Conditions

- Shift stage: 3rd gear.
- Time after shift changing finish: more than 2 seconds.

Judgement Criteria

- Gear ratio: more than 1.947. (0.25 second)

OBD-II DRIVE CYCLE PATTERN <DTC P0733>

Start the engine, and drive at more than 40 km/h (25 mph) for 10 seconds, with 3rd gear fixed (3rd gear in sport mode).

MONITOR EXECUTION <DTC P0734>

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR) <DTC P0734>

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

- DTC P0705: Transmission range switch malfunction
- DTC P0715: Input shaft speed sensor malfunction
- DTC P0720: Output shaft speed sensor malfunction
- DTC P0743: Lock-up and low-reverse brake linear solenoid malfunction
- DTC P0753: Low clutch linear solenoid malfunction
- DTC P0758: 2-6 brake linear solenoid malfunction
- DTC P0763: 3-5 reverse clutch linear solenoid malfunction
- DTC P0768: High clutch linear solenoid malfunction
- DTC P1753: Low clutch shift solenoid malfunction
- DTC P1758: Low-reverse brake shift solenoid malfunction

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Transmission range switch

DESCRIPTIONS OF MONITOR METHODS <DTC P0735>

- After 5th gear is achieved for 2 seconds, the engine runup^{*1} is detected for 250 milliseconds.

^{*1}: The actual gear ratio deviates from the target gear ratio to the high engine (turbine) speed.

MONITOR EXECUTION <DTC P0735>

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR) <DTC P0735>

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

- DTC P0705: Transmission range switch malfunction
- DTC P0715: Input shaft speed sensor malfunction
- DTC P0720: Output shaft speed sensor malfunction
- DTC P0743: Lock-up and low-reverse brake linear solenoid malfunction
- DTC P0753: Low clutch linear solenoid malfunction
- DTC P0758: 2-6 brake linear solenoid malfunction
- DTC P0763: 3-5 reverse clutch linear solenoid malfunction

- Lock-up and low-reverse brake linear solenoid
- Low clutch linear solenoid
- 2-6 brake linear solenoid
- 3-5 reverse clutch linear solenoid
- High clutch linear solenoid
- Low clutch shift solenoid
- Low-reverse brake shift solenoid
- Engine revolution signal
- CAN communication

DTC SET CONDITIONS <DTC P0734>**Check Conditions**

- Shift stage: 4th gear.
- Time after shift changing finish: more than 2 seconds.

Judgement Criteria

- Gear ratio: more than 1.340. (0.25 second)

OBD-II DRIVE CYCLE PATTERN <DTC P0734>

Start the engine, and drive at more than 40 km/h (25 mph) for 10 seconds, with 4th gear fixed (4th gear in sport mode).

- DTC P0768: High clutch linear solenoid malfunction
- DTC P1753: Low clutch shift solenoid malfunction
- DTC P1758: Low-reverse brake shift solenoid malfunction

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Transmission range switch
- Lock-up and low-reverse brake linear solenoid
- Low clutch linear solenoid
- 2-6 brake linear solenoid
- 3-5 reverse clutch linear solenoid
- High clutch linear solenoid
- Low clutch shift solenoid
- Low-reverse brake shift solenoid
- Engine revolution signal
- CAN communication

DTC SET CONDITIONS <DTC P0735>**Check Conditions**

- Shift stage: 5th gear.
- Time after shift changing finish: more than 2 seconds.

Judgement Criteria

- Gear ratio: more than 0.984. (0.25 second)

OBD-II DRIVE CYCLE PATTERN <DTC P0735>

Start the engine, and drive at more than 50 km/h (31 mph) for 10 seconds, with 5th gear fixed (5th gear in sport mode).

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Transaxle assembly powertrain parts failure
- Malfunction of the P0715: input shaft speed sensor system
- Malfunction of the P0720: output shaft speed sensor system
- Malfunction of the P0748: line pressure linear solenoid valve system circuit
- Malfunction of the P0753: low clutch linear solenoid valve system circuit
- Malfunction of the P0758: 2-6 brake linear solenoid valve system circuit
- Malfunction of the P0763: 3-5 reverse clutch linear solenoid valve system circuit
- Malfunction of the P0768: high clutch linear solenoid valve system circuit
- Malfunction of the P1753: low clutch shift solenoid valve system circuit
- Malfunction of the low clutch, 2-6 brake, 3-5 reverse clutch, high clutch
- Malfunction of the valve body assembly

DIAGNOSIS

STEP 1. Check the DTC.

Check that P0715 (input shaft speed sensor) and P0720 (output shaft speed sensor) are set.

Q:Is the DTC set?

YES: Check and repair the relevant DTC system.

NO: Go to Step 2.

STEP 2. Check the DTC.

Check that the DTC other than P0729, P0732, P0733, P0734, P0735 (6th, 2nd, 3rd, 4th, 5th gear ratio) is set.

Q:Is the DTC set?

YES: Check and repair the relevant DTC system.

NO: Go to Step 3.

STEP 3. Check the transmission fluid properties.

Check the status of the transmission fluid properties (smell, color, fouling).

▪ Black: A/T inside damage, seizure

▪ Milky: Water intrusion

Q:Is the check result normal?

YES: Go to Step 4.

NO: Remove the A/T from the vehicle, then check and repair the inside.

STEP 4. Check the transmission fluid level.

Q:Is the check result normal?

YES: Adjust the transmission fluid level, and then go to Step 5.

NO: Go to Step 5.

STEP 5. Check the signals of input shaft speed sensor and output shaft speed sensor.

Check the signals of C-37 TCM connector terminal No. 37 and No. 38.

Refer to P.23A-145.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Repair or replace the failure section.

STEP 6. Hydraulic pressure test

Refer to P.23A-145.

Q:Is the check result normal?

YES: Go to Step 7.

NO: Remove the A/T from the vehicle, then check and repair the inside.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0731: 1st Gear Incorrect Ratio

M12301000401USA0000010000

DESCRIPTIONS OF MONITOR METHODS

▪After 1st gear is achieved for 2 seconds, the abnormal gear ratio^{*1}is detected for 2 seconds continuously, or the engine runup^{*2}is detected for 250 milliseconds.

^{*1}: The actual gear ratio deviates from the target gear ratio to the low engine (turbine) speed.

^{*2}: The actual gear ratio deviates from the target gear ratio to the high engine (turbine) speed.

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)

- DTC P0705: Transmission range switch malfunction
- DTC P0715: Input shaft speed sensor malfunction
- DTC P0720: Output shaft speed sensor malfunction

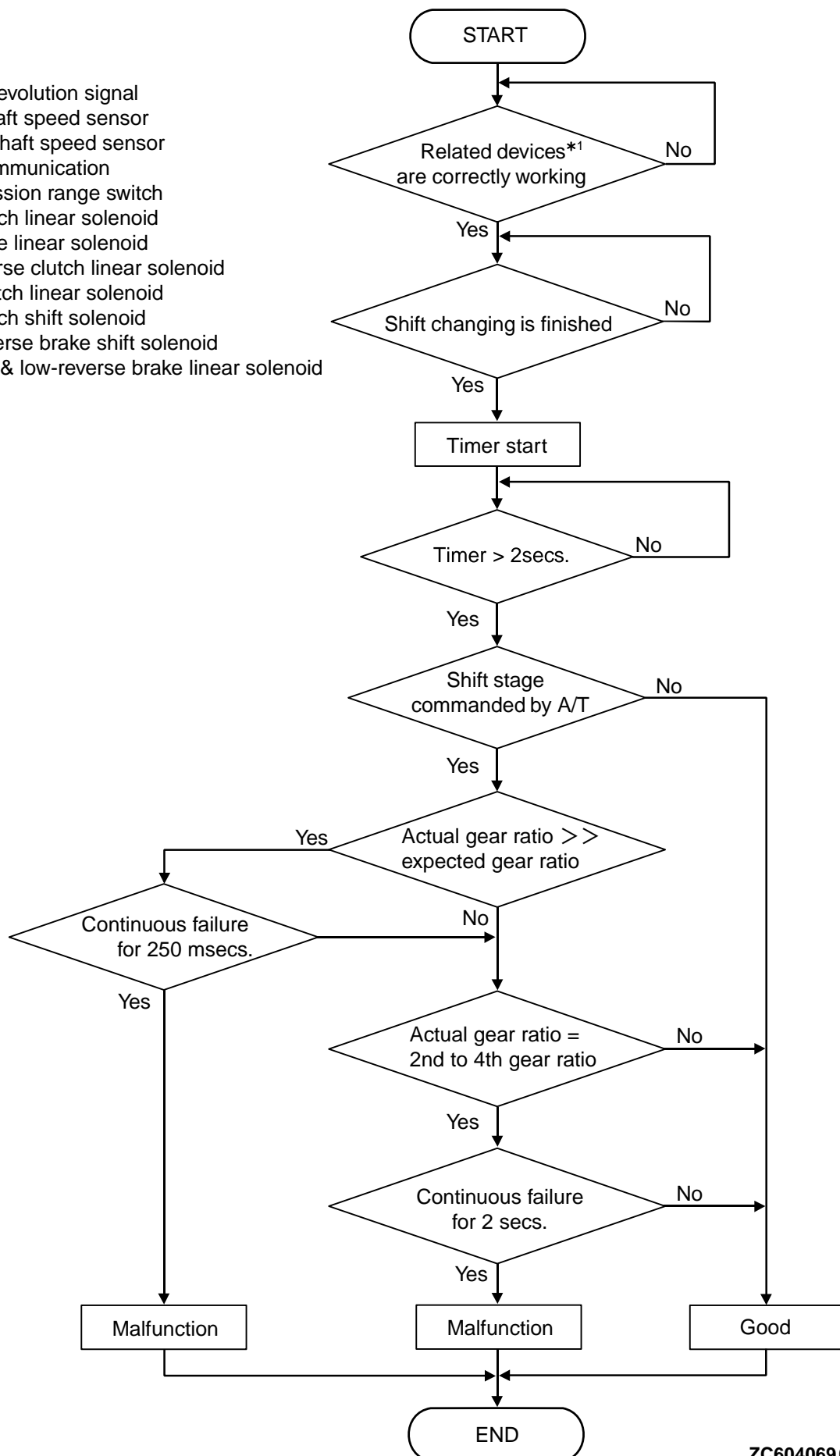
- DTC P0743: Lock-up and low-reverse brake linear solenoid malfunction
- DTC P0753: Low clutch linear solenoid malfunction
- DTC P0758: 2-6 brake linear solenoid malfunction
- DTC P0763: 3-5 reverse clutch linear solenoid malfunction
- DTC P0768: High clutch linear solenoid malfunction
- DTC P1753: Low clutch shift solenoid malfunction
- DTC P1758: Low-reverse brake shift solenoid malfunction

Sensor (The sensor below is determined to be normal)

- Input shaft speed sensor
- Output shaft speed sensor
- Transmission range switch
- Lock-up and low-reverse brake linear solenoid
- Low clutch linear solenoid
- 2-6 brake linear solenoid
- 3-5 reverse clutch linear solenoid
- High clutch linear solenoid
- Low clutch shift solenoid
- Low-reverse brake shift solenoid
- Engine revolution signal
- CAN communication

LOGIC FLOW CHARTS (Monitor Sequence)

*1 : Engine revolution signal
Input shaft speed sensor
Output shaft speed sensor
CAN communication
Transmission range switch
Low clutch linear solenoid
2-6 brake linear solenoid
3-5 reverse clutch linear solenoid
High clutch linear solenoid
Low clutch shift solenoid
Low-reverse brake shift solenoid
Lock-up & low-reverse brake linear solenoid



DTC SET CONDITIONS**Check Conditions**

- Shift stage: 1st gear.
- Time after shift changing finish: more than 2 seconds.

Judgement Criteria

- Gear ratio: more than 4.978. (0.25 second)
- Gear ratio: more than 2.114 and less than 2.584. (2 seconds)
- Gear ratio: more than 1.392 and less than 1.701. (2 seconds)
- Gear ratio: more than 1.021 and less than 1.247. (2 seconds)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and drive at more than 20 km/h (12 mph) for 10 seconds, with 1st gear fixed (1st gear in sport mode).

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Transaxle assembly powertrain parts failure
- Malfunction of the P0715: input shaft speed sensor system
- Malfunction of the P0720: output shaft speed sensor system
- Malfunction of the P0748: line pressure linear solenoid valve system circuit
- Malfunction of the P0753: low clutch linear solenoid valve system circuit
- Malfunction of the P1758: low-reverse brake shift solenoid valve system circuit
- Malfunction of the low clutch
- Malfunction of the low one-way clutch
- Malfunction of the valve body assembly

DIAGNOSIS**STEP 1. Check the DTC.**

Check that P0715 (input shaft speed sensor) and P0720 (output shaft speed sensor) are set.

Q:Is the DTC set?

YES: Check and repair the relevant DTC system.

NO: Go to Step 2.

STEP 2. Check the DTC.

Check if the DTC other than P0731 (1st gear ratio) is set.

Q:Is the DTC set?

YES: Check and repair the relevant DTC system.

NO: Go to Step 3.

STEP 3. Check the transmission fluid properties.

Check the status of the transmission fluid properties (smell, color, fouling).

- Black: A/T inside damage, seizure
- Milky: Water intrusion

Q:Is the check result normal?

YES: Go to Step 4.

NO: Remove the A/T from the vehicle, then check and repair the inside.

STEP 4. Check the transmission fluid level.**Q:Is the check result normal?**

YES: Go to Step 5.

NO: Adjust the transmission fluid level, and then go to Step 5.

STEP 5. Check the signals of input shaft speed sensor and output shaft speed sensor.

Check the signals of C-37 TCM connector terminal No. 37 and No. 38.

Refer to P.23A-145.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Repair or replace the failure section.

STEP 6. Hydraulic pressure test

Refer to P.23A-145.

Q:Is the check result normal?

YES: Go to Step 7.

NO: Remove the A/T from the vehicle, then check and repair the inside.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0736: Reverse Gear Incorrect Ratio

M12301000406USA0000010000

DESCRIPTIONS OF MONITOR METHODS

Check Conditions, Judgement Criteria

*During reverse driving, engine runup^{*1} is detected for 250 milliseconds or more.

*1: The actual gear ratio deviates from the target gear ratio to the high engine (turbine) speed.

MONITOR EXECUTION

*Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

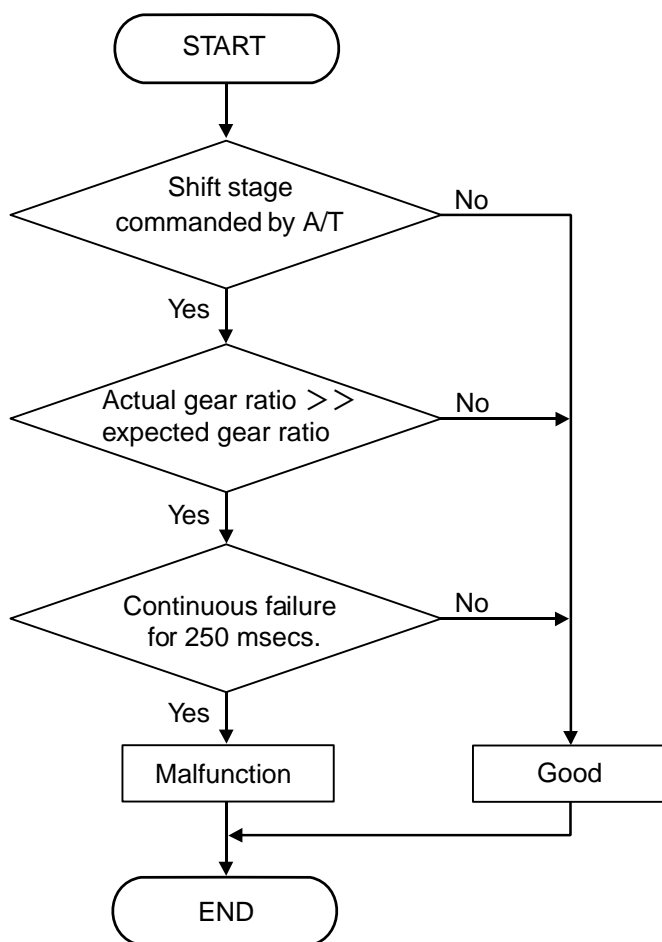
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

*Not applicable

Sensor (The sensor below is determined to be normal)

*Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040720000

DTC SET CONDITIONS**Check Conditions**

- Shift stage: reverse gear.

Judgement Criteria

- Gear ratio: more than -3.457. (0.25 second)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and drive in "R" range at 15 km/h (9 mph) or more for 10 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Transaxle assembly powertrain parts failure

- Malfunction of the P0715: input shaft speed sensor system
- Malfunction of the P0720: output shaft speed sensor system
- Malfunction of the P0748: line pressure linear solenoid valve system circuit
- Malfunction of the P0763: 3-5 reverse clutch linear solenoid valve system circuit
- Malfunction of the P0743: lock-up and low-reverse brake linear solenoid valve system circuit
- Malfunction of the P1758: low-reverse brake shift solenoid valve system circuit
- Malfunction of the 3-5 reverse clutch
- Malfunction of the low-reverse brake
- Malfunction of the valve body assembly

DIAGNOSIS

STEP 1. Check the DTC.

Check that P0715 (input shaft speed sensor) and P0720 (output shaft speed sensor) are set.

Q:Is the DTC set?

YES: Check and repair the relevant DTC system.

NO: Go to Step 2.

STEP 2. Check the DTC.

Check if the DTC other than P0736 (Reverse gear ratio) is set.

Q:Is the DTC set?

YES: Check and repair the relevant DTC system.

NO: Go to Step 3.

STEP 3. Check the transmission fluid properties.

Check the status of the transmission fluid properties (smell, color, fouling).

▪Black: A/T inside damage, seizure

▪Milky: Water intrusion

Q:Is the check result normal?

YES: Go to Step 4.

NO: Remove the A/T from the vehicle, then check and repair the inside.

STEP 4. Check the transmission fluid level.

Q:Is the check result normal?

YES: Adjust the transmission fluid level, and then go to Step 5.

NO: Go to Step 5.

STEP 5. Check the signals of input shaft speed sensor and output shaft speed sensor.

Check the signals of C-37 TCM connector terminal No. 37 and No. 38.

Refer to P.23A-145.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Repair or replace the failure section.

STEP 6. Hydraulic pressure test

Refer to P.23A-145.

Q:Is the check result normal?

YES: Go to Step 7.

NO: Remove the A/T from the vehicle, then check and repair the inside.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0741: Torque Converter Clutch System (Stuck Off), P0742 Torque Converter Clutch System (Stuck ON)

M12301000456USA0000010000

DESCRIPTIONS OF MONITOR METHODS

- When the input shaft speed sensor is normal, the engine speed signal is normal, and within the lock-up operation range, the slip speed of the torque converter exceeds the specified value. (P0741)

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

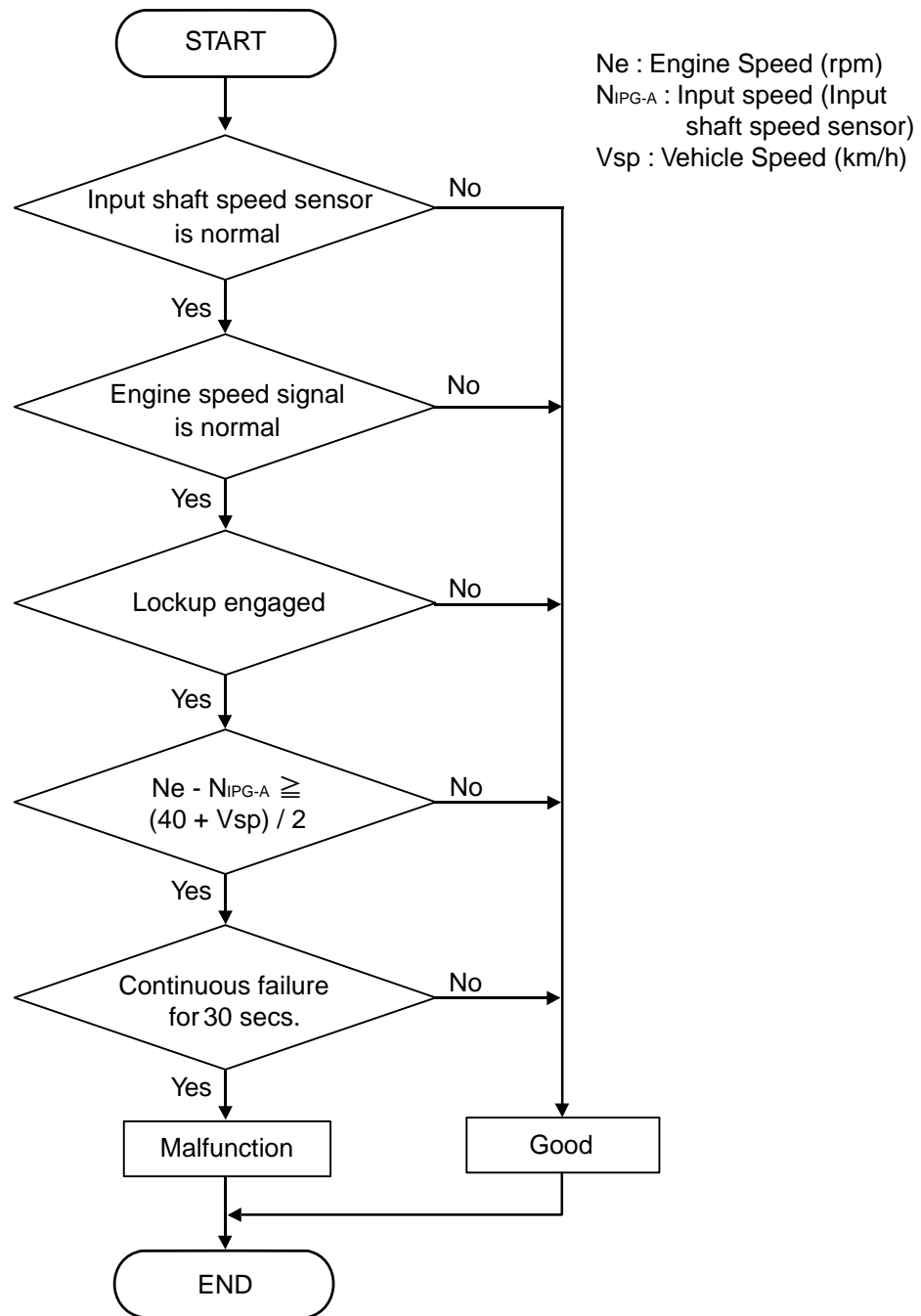
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040730000

DTC SET CONDITIONS

Check Conditions

- Solenoid status: plunging into connecting condition.
- Crankshaft position sensor: normality.
- Input shaft speed sensor: normality.

Judgement Criteria

- Calculated slip (engine speed - input shaft speed):
(40 + <vehicle speed/2>). (30 seconds)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and drive at 100 km/h (62 mph) for 10 seconds. Then stop the vehicle, and turn OFF the ignition switch. After that, restart the engine, and drive again at 100 km/h (62 mph) for 10 seconds.

DESCRIPTIONS OF MONITOR METHODS

- When the input shaft speed sensor and the output shaft speed sensor are normal at the "D" range, the engine speed signal is normal, and within the non-lock-up operation range, the extremely low slip speed of the torque converter is detected continuously for a specified time. (P0742)

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

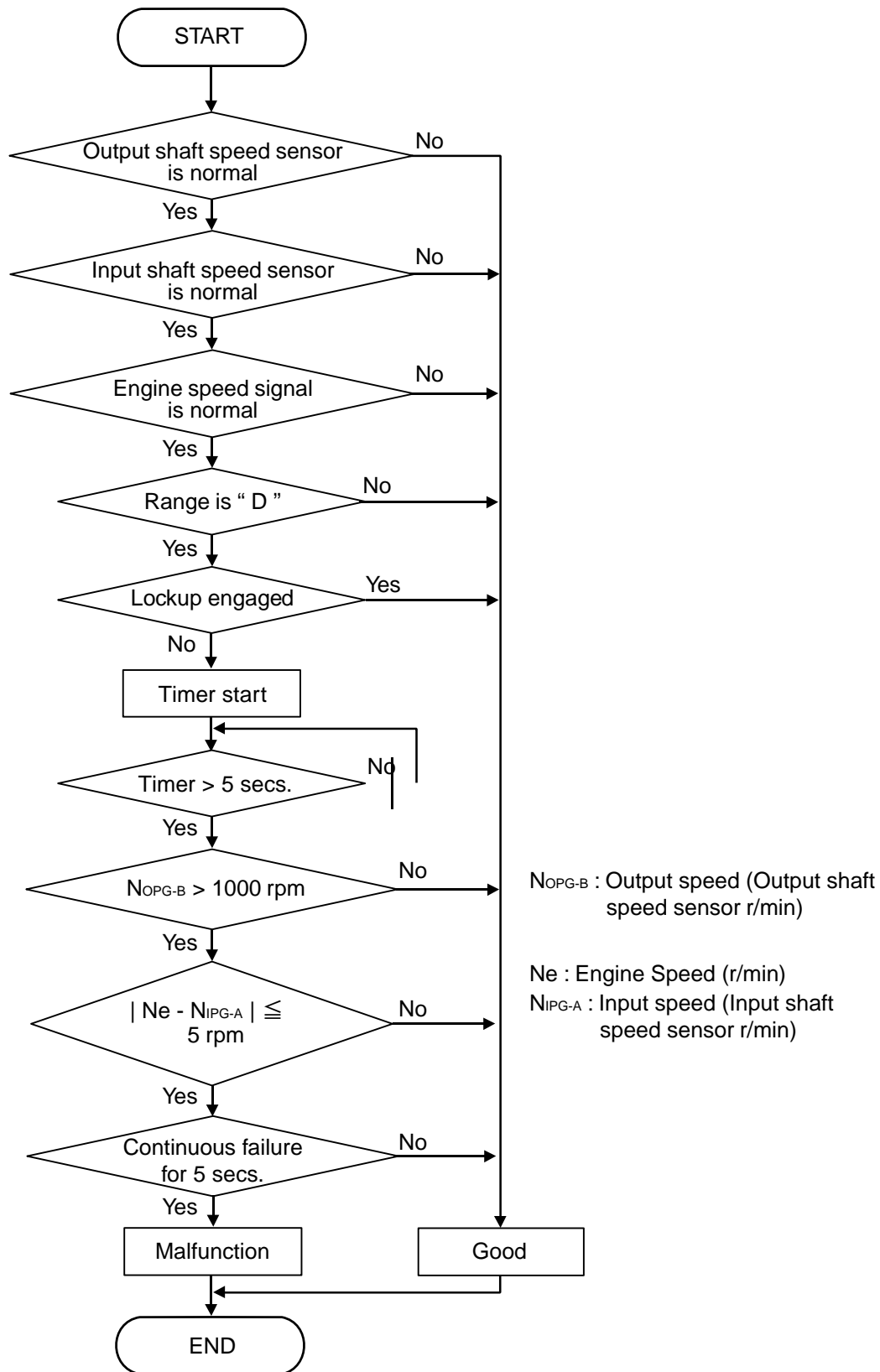
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



DTC SET CONDITIONS**Check Conditions**

- Output speed: more than 1,000 r/min.
- Solenoid status: 5 seconds after not plunging into connecting condition.
- Transmission range switch position: D.
- Input shaft speed sensor: normality.
- Output shaft speed sensor: normality.

Judgement Criteria

- Calculated slip (engine speed - input shaft speed): 5 r/min or less. (5 seconds)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and drive at 30 km/h (19 mph) for 30 seconds. Then stop the vehicle, and turn

"LOCK" (OFF) the ignition switch. After that, restart the engine, and drive again at 30 km/h (19 mph) for 30 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the P0743: lock-up and low-reverse brake linear solenoid valve system circuit
- Malfunction of the P0712: transmission fluid temperature sensor system (short circuit)
- Malfunction of the P0713: transmission fluid temperature sensor system (open circuit)
- Poor installation of the engine and A/T (deviation to the axial direction)
- Malfunction of the torque converter
- Malfunction of the valve body assembly

DIAGNOSIS**STEP 1. Hydraulic pressure test**

Refer to P.23A-21.

Q:Is the check result normal?

YES: Go to Step 2.

NO: Repair or replace the failure section.

STEP 2. Check the lock-up and low-reverse brake linear solenoid.

Check for P0743 (lock-up and low-reverse brake linear solenoid). Refer to P.23A-64.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the transmission fluid temperature sensor, input shaft speed sensor, and output shaft speed sensor.

Check the following DTCs: P0712 (transmission fluid temperature sensor (short circuit)), P0713 (transmission fluid temperature sensor (open circuit)), P0715 (input shaft speed sensor) and P0720 (output shaft speed sensor).

Refer to P.23A-30(P0712), P.23A-34(P0713), P.23A-37 (P0715), P.23A-42(P0720).

Q:Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check the malfunction of CAN communication system.**Q:Are the DTC for CAN communication system malfunction (U0001, U0100, U0141, P1705, P1706) set?**

YES: Repair or replace the failure section.

NO: Go to Step 5.

STEP 5. Check the TCM connector pin terminal and the connection status.

Q: Is the check result normal?

YES: Replace the TCM, and then go to Step 6.

NO: Repair or replace the failure section.

STEP 6. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Go to Step 7.

STEP 7. Check the installation position of the engine and A/T.

Q: Is the check result normal?

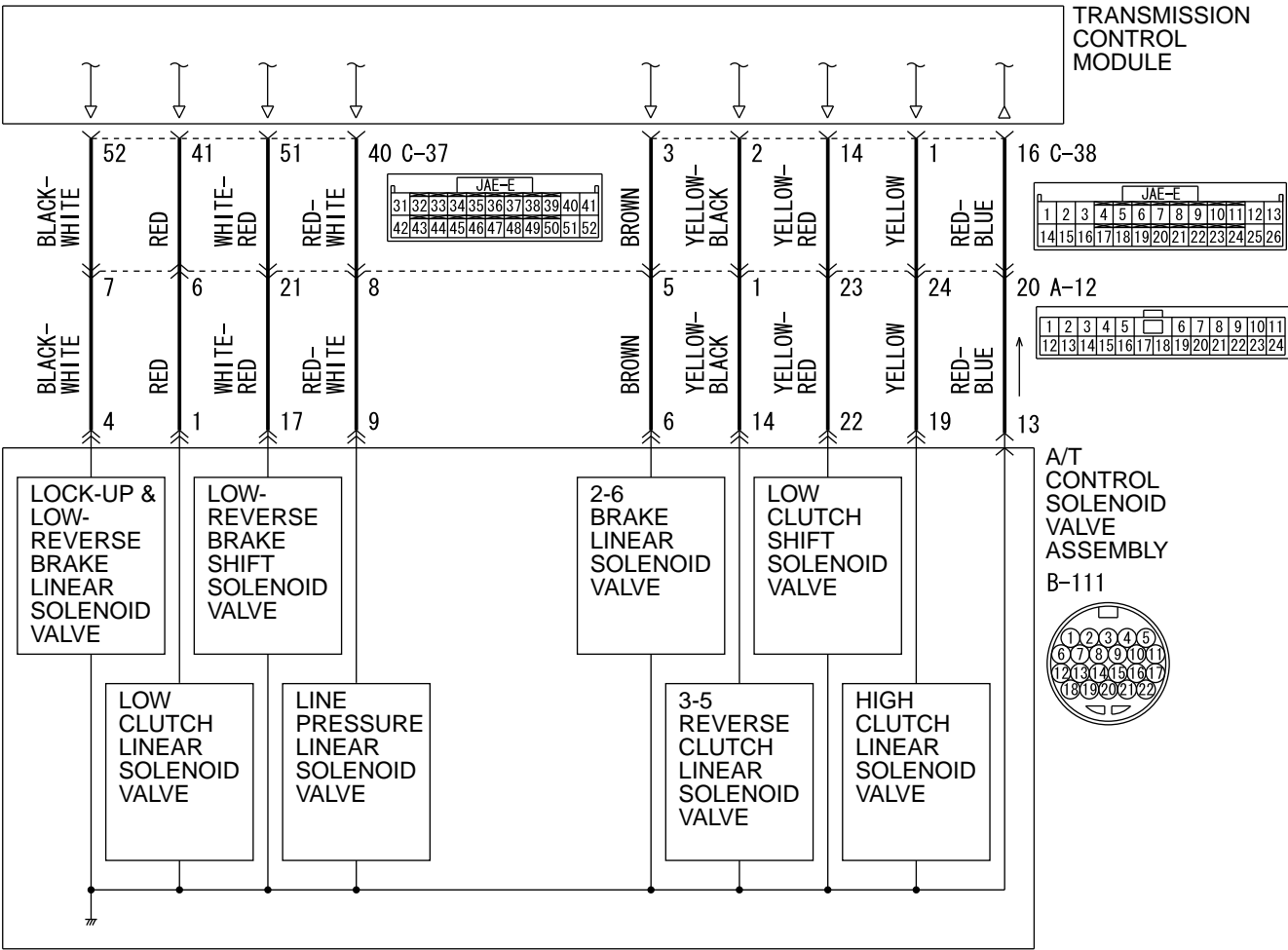
YES: Replace the transaxle assembly.

NO: Repair or replace the failure section.

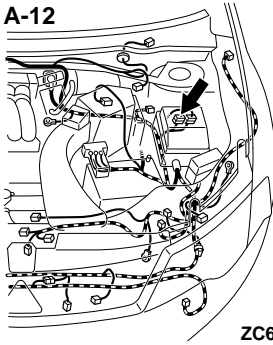
DTC P0743: Lock-up and Low-reverse Brake Linear Solenoid Valve System

M12301000409USA0000010000

Solenoid valve system circuit

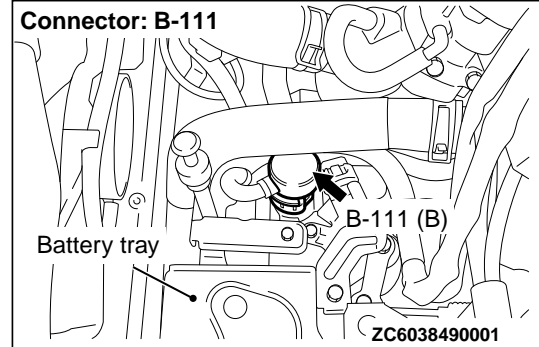


Connector: A-12



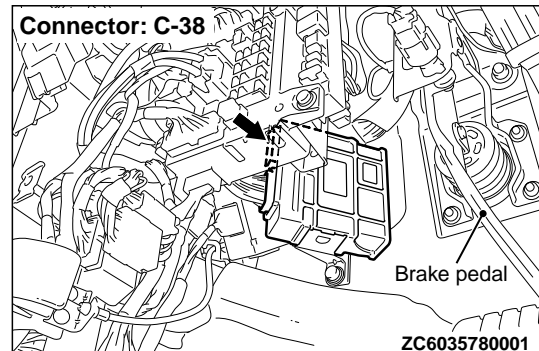
ZC6008720002

Connector: B-111



ZC6038490001

Connector: C-38



ZC6035780001

DESCRIPTIONS OF MONITOR METHODS

- During 1st driving or 2-6th lock-up operation, an abnormal value equivalent to open or short circuit is detected in the solenoid control current for 5 seconds.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

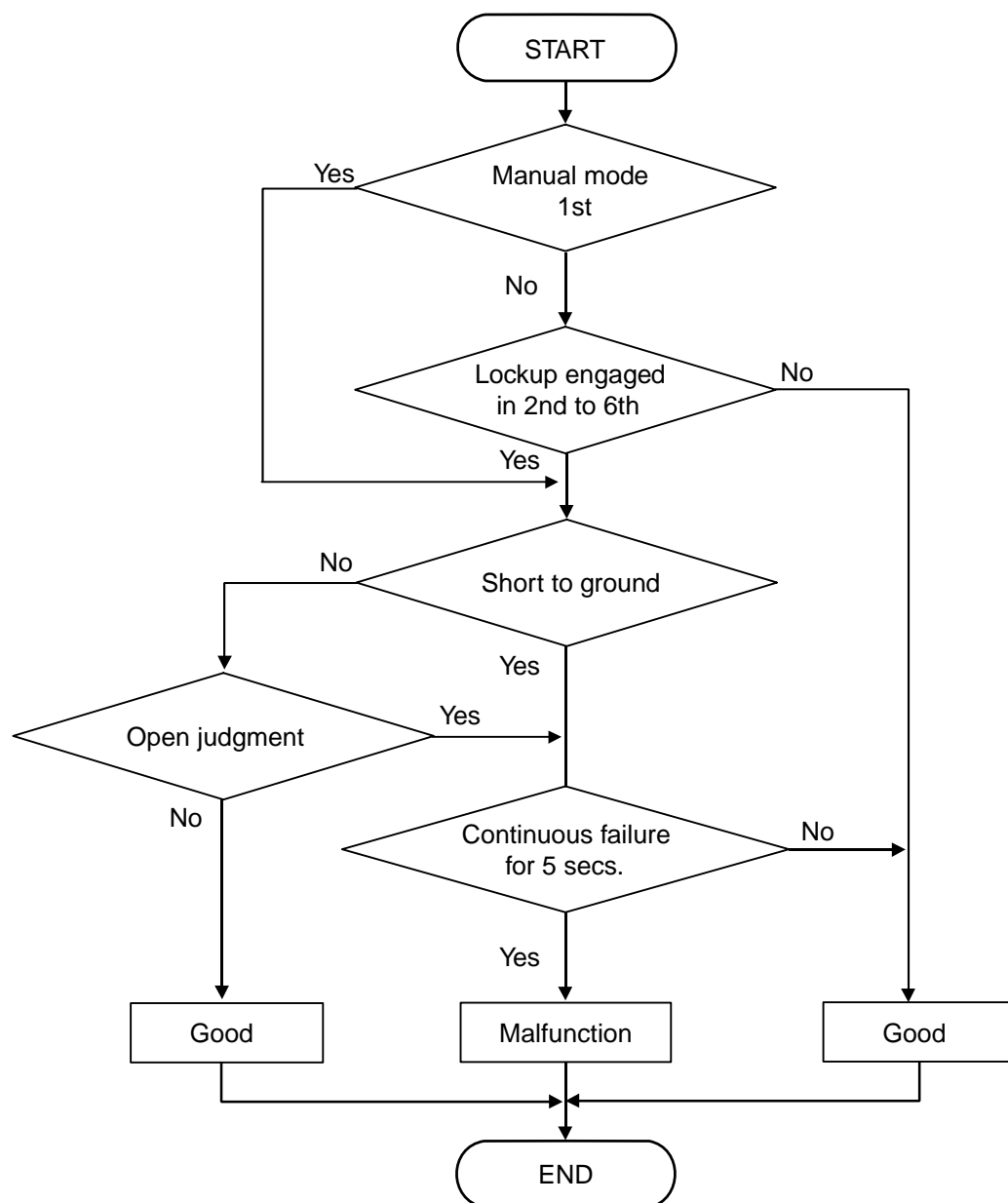
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040750000

DTC SET CONDITIONS**Check Conditions <Circuit continuity ground>**

- Manual mode: 1st.
- Shift stage: 2nd to 6th.
- Lock-up: engaged.

Judgement Criteria <Circuit continuity ground>

- Ground short judgment: abnormal. (5 seconds)

Check Conditions <Circuit continuity open>

- Manual mode: 1st.
- Shift stage: 2nd to 6th.
- Lock-up: engaged.

- Ground short judgment: normal.

Judgement Criteria <Circuit continuity open>

- Open short judgment: abnormal. (5 seconds)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the lock-up and low-reverse brake linear solenoid valve system circuit
- Damaged harness or connector
- Malfunction of the TCM
- Malfunction of the lock-up and low-reverse brake linear solenoid valve (valve body assembly)

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-37 TCM connector (vehicle side, connected)]

Measure the voltage between the terminal No. 52 and body ground.

- Lock-up released: 0 V
- Lock-up engaged: 300 Hz

Q: Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 2.

STEP 2. Check between the TCM connector and A/T control solenoid valve assembly connector.

Check for continuity between C-37 TCM connector and B-111 A/T control solenoid valve assembly connector.

- Between C-37 terminal No. 52 and B-111 terminal No. 4: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the lock-up and low-reverse brake linear solenoid.

Refer to P.23A-160.

Q: Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 4.

STEP 4. Check between the A/T control solenoid valve assembly connector and the lock-up and low-reverse brake linear solenoid valve connector.

Check for continuity between the A/T control solenoid valve assembly connector and the lock-up and low-reverse brake linear solenoid valve connector terminals.

- Between C-111 terminal No. 4 and the lock-up and low-reverse brake linear solenoid valve: Continuity exists.

Q: Is the check result satisfactory?

YES: Replace the valve body assembly.

NO: Repair or replace the failure section.

STEP 5. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q: Is the check result normal?

YES: Go to Step 7.

NO: Repair or replace the failure section.

STEP 6. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0748: Line Pressure Linear Solenoid Valve System

M12301000410USA0000010000

SOLENOID VALVE SYSTEM CIRCUIT

Refer to P.23A-64.

DESCRIPTIONS OF MONITOR METHODS

- With the ignition switch ON, an abnormal value equivalent to open or short circuit is detected in the solenoid control current for 5 seconds.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

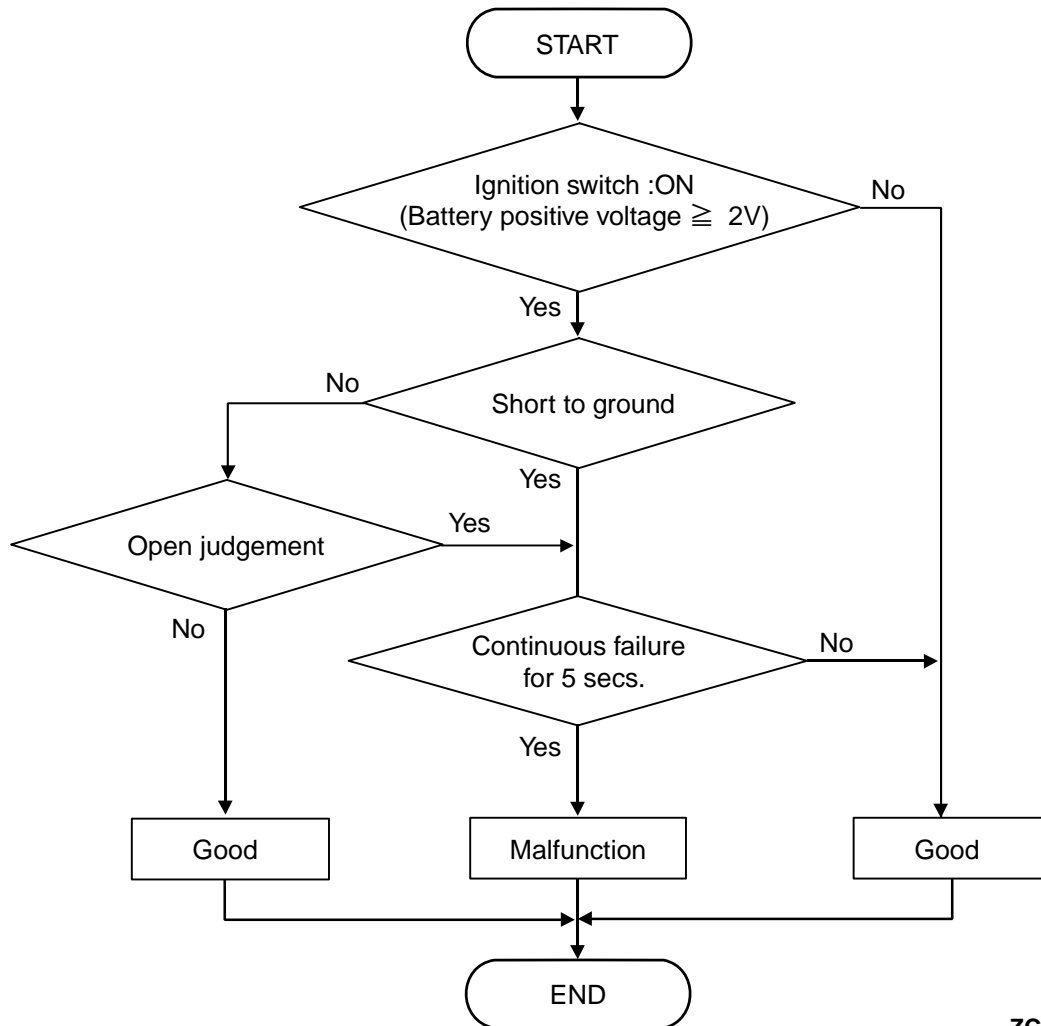
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC604076 0000

DTC SET CONDITIONS

Check Conditions <Circuit continuity ground>

- Voltage of battery: 2 volts or more.

Judgement Criteria <Circuit continuity ground>

- Ground short judgement: abnormal. (5 seconds)

Check Conditions <Circuit continuity open>

- Voltage of battery: 2 volts or more.
- Ground short judgement: normal.

Judgement Criteria <Circuit continuity open>

- Open short judgement: abnormal. (5 seconds)

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the line pressure linear solenoid valve system circuit
- Damaged harness or connector
- Malfunction of the TCM
- Malfunction of the line pressure linear solenoid valve (valve body assembly)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-37 TCM connector (vehicle side, connected)]

Measure the voltage between the terminal No. 40 and body ground.

- While driving: 300 Hz
- Other than above: 0 V

Q: Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 2.

STEP 2. Check between the TCM connector and A/T control solenoid valve assembly connector.

Check for continuity between C-37 TCM connector and B-111 A/T control solenoid valve assembly connector.

- Between C-37 terminal No. 40 and B-111 terminal No. 9:
Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the line pressure linear solenoid.

Refer to P.23A-160.

Q: Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 4.

STEP 4. Check between the A/T control solenoid valve assembly connector and the line pressure linear solenoid valve connector.

Check for continuity between the A/T control solenoid valve assembly connector terminals and the line pressure linear solenoid valve connector terminals.

- Between C-111 terminal No. 9 and line pressure linear solenoid valve: Continuity exists.

Q: Is the check result satisfactory?

YES: Replace the valve body assembly.

NO: Repair or replace the failure section.

STEP 5. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.**Q: Is the check result normal?**

YES: Go to Step 7.

NO: Repair or replace the failure section.

STEP 6. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0753: Low Clutch Linear Solenoid Valve System

M12301000411USA0000010000

SOLENOID VALVE SYSTEM CIRCUIT

Refer to P.23A-64.

DESCRIPTIONS OF MONITOR METHODS

- During 1st gear driving or 4th gear driving, an abnormal value equivalent to open or short circuit is detected in the solenoid control current for 5 seconds.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

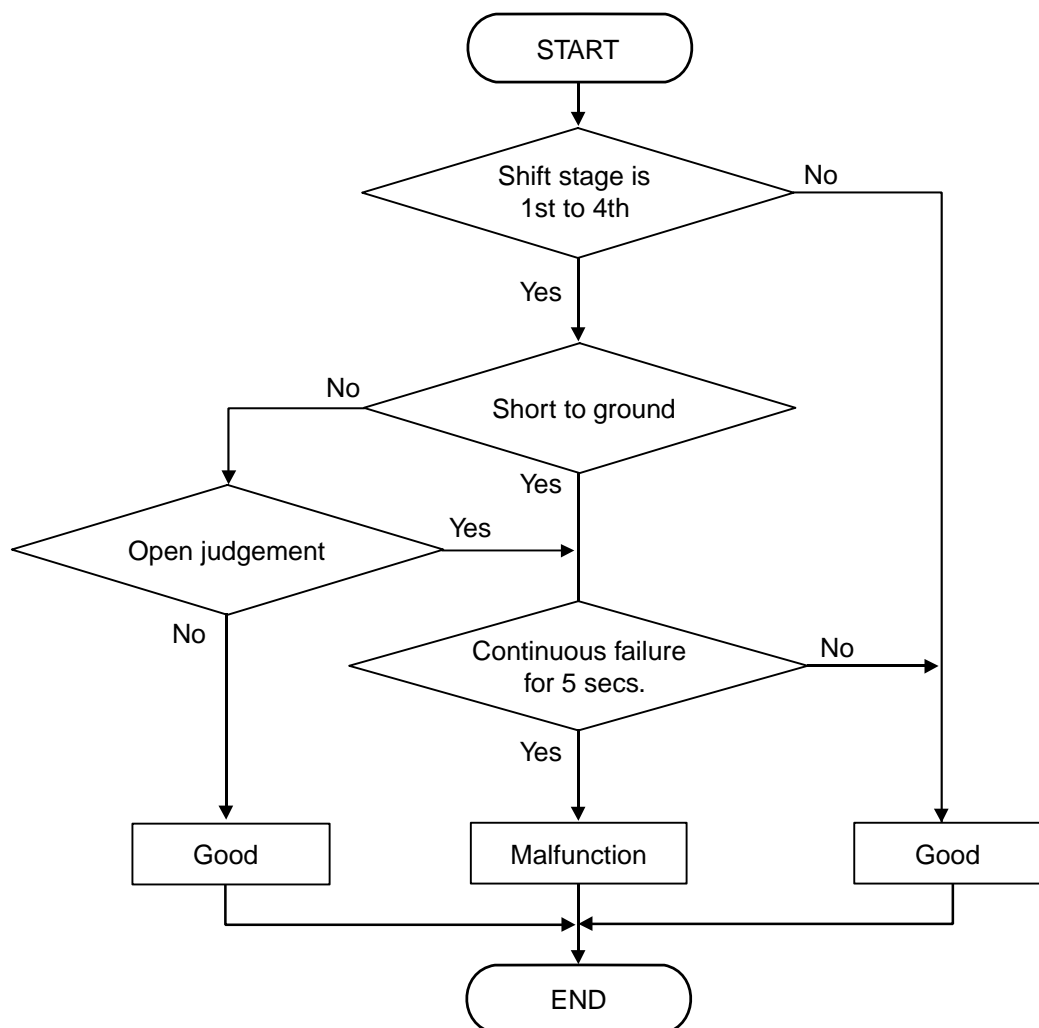
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040770000

DTC SET CONDITIONS**Check Conditions <Circuit continuity ground>**

- Shift stage: 1st to 4th.

Judgement Criteria <Circuit continuity ground>

- Ground short judgement: abnormal. (5 seconds)

Check Conditions <Circuit continuity open>

- Shift stage: 1st to 4th.
- Ground short judgement: normal.

Judgement Criteria <Circuit continuity open>

- Open short judgement: abnormal. (5 seconds)

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the low clutch linear solenoid valve system circuit
- Damaged harness or connector
- Malfunction of the TCM
- Malfunction of the low clutch linear solenoid valve (valve body assembly)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-37 TCM connector (vehicle side, connected)]

Measure the voltage between the terminal No. 41 and body ground.

- Low clutch engaged: 300 Hz
- Other than above: 0 V

Q:Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 2.

STEP 2. Check between the TCM connector and A/T control solenoid valve assembly connector.

Check for continuity between C-37 TCM connector and B-111 A/T control solenoid valve assembly connector.

- Between C-37 terminal No. 41 and B-111 terminal No. 1: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the low clutch linear solenoid.

Refer to P.23A-160.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 4.

STEP 4. Check between the A/T control solenoid valve assembly connector and the low clutch linear solenoid valve connector.

Check for continuity between the A/T control solenoid valve assembly connector terminals and the low clutch linear solenoid valve connector terminals.

- Between C-111 terminal No. 1 and low clutch linear solenoid valve: Continuity exists.

Q:Is the check result satisfactory?

YES: Replace the valve body assembly.

NO: Repair or replace the failure section.

STEP 5. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q:Is the check result normal?

YES: Go to Step 7.

NO: Repair or replace the failure section.

STEP 6. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0758 2-6: Brake Linear Solenoid Valve System

M12301000412USA0000010000

SOLENOID VALVE SYSTEM CIRCUIT

Refer to P.23A-64.

DESCRIPTIONS OF MONITOR METHODS

- During 2nd or 6th gear driving, an abnormal value equivalent to open or short circuit is detected in the solenoid control current for 5 seconds.

• Not applicable

Sensor (The sensor below is determined to be normal)

• Not applicable

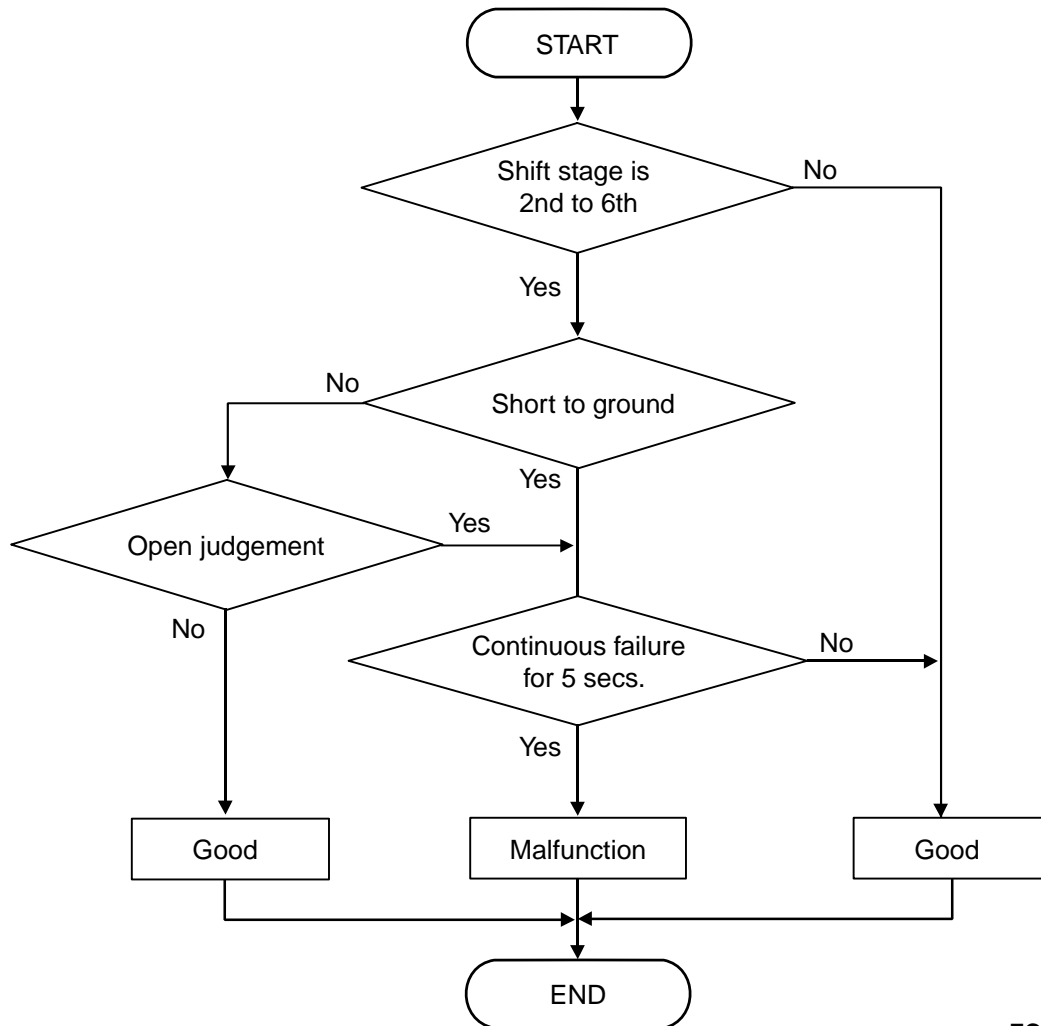
MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

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

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040780000

DTC SET CONDITIONS

Check Conditions <Circuit continuity ground>

• Shift stage: 2nd to 6th.

Judgement Criteria <Circuit continuity ground>

• Ground short judgement: abnormal. (5 seconds)

Check Conditions <Circuit continuity open>

• Ground short judgement: normal.

Judgement Criteria <Circuit continuity open>

• Open short judgement: abnormal. (5 seconds)

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the 2-6 brake linear solenoid valve system circuit
- Damaged harness or connector
- Malfunction of the TCM
- Malfunction of the 2-6 brake linear solenoid valve (valve body assembly)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-38 TCM connector (vehicle side, connected)]

Measure the voltage between the terminal No. 3 and body ground.

- 2-6 brake engaged (2nd and 6th gear): 300 Hz
- Other than above: 0 V

Q:Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 2.

STEP 2. Check between the TCM connector and A/T control solenoid valve assembly connector.

Check for continuity between C-38 TCM connector and B-111 A/T control solenoid valve assembly connector.

- Between C-38 terminal No. 3 and B-111 terminal No. 6: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the 2-6 brake linear solenoid.

Refer to P.23A-160.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 4.

STEP 4. Check between the A/T control solenoid valve assembly connector and the 2-6 brake linear solenoid valve connector.

Check for continuity between the A/T control solenoid valve assembly connector terminals and the 2-6 brake linear solenoid valve connector terminals.

- Between C-111 terminal No. 6 and the 2-6 brake linear solenoid valve: Continuity exists.

Q:Is the check result satisfactory?

YES: Replace the valve body assembly.

NO: Repair or replace the failure section.

STEP 5. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.**Q:Is the check result normal?**

YES: Go to Step 7.

NO: Repair or replace the failure section.

STEP 6. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0763: 3-5 Reverse Clutch Linear Solenoid Valve System

M12301000413USA0000010000

LINE PRESSURE LINEAR SOLENOID VALVE SYSTEM CIRCUIT

Refer to P.23A-64.

DESCRIPTIONS OF MONITOR METHODS

- During the 1st, 2nd, 4th, and 6th gear driving, an abnormal value equivalent to open or short circuit is detected in the solenoid control current for 5 seconds.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

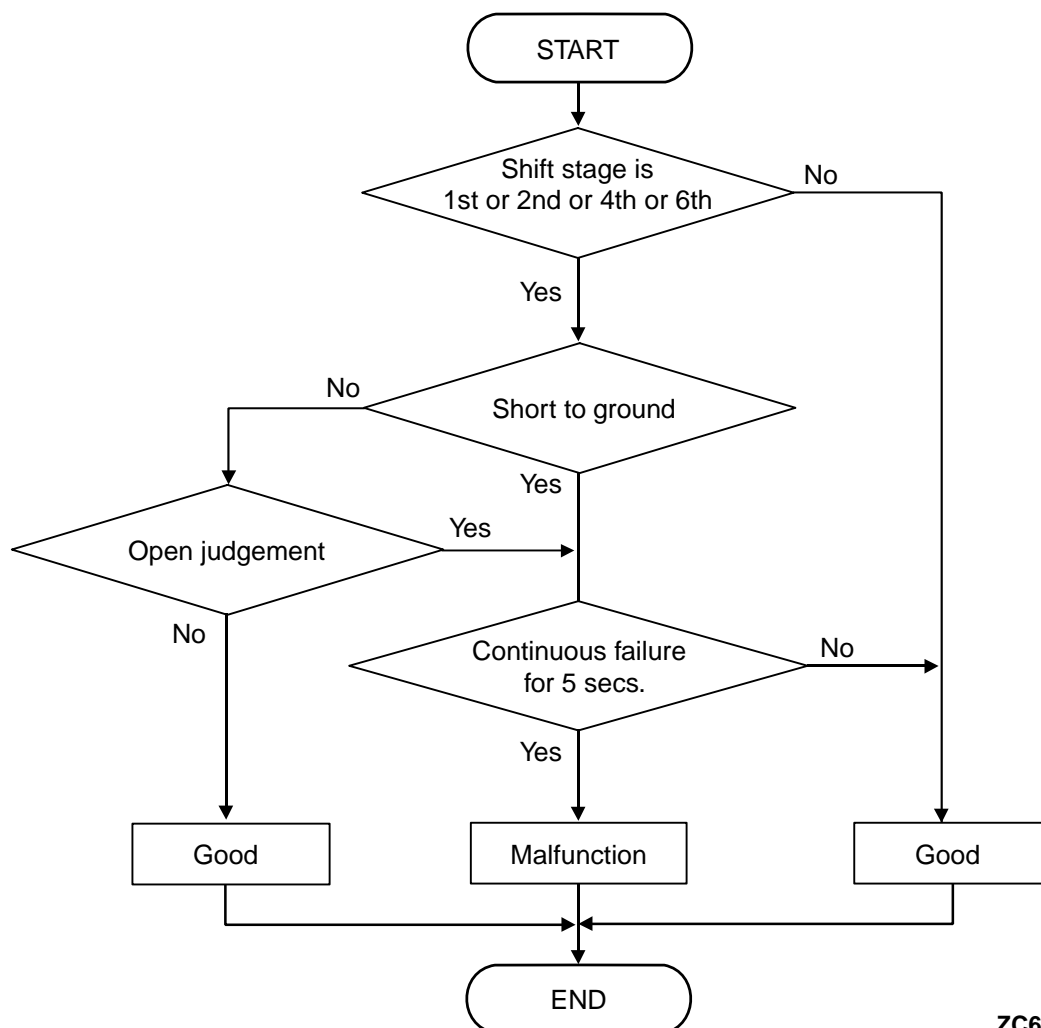
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040790000

DTC SET CONDITIONS

Check Conditions <Circuit continuity ground>

- *Shift stage: 1st or 2nd or 4th or 6th.

Judgement Criteria <Circuit continuity ground>

- *Ground short judgement: abnormal. (5 seconds)

Check Conditions <Circuit continuity open>

- *Shift stage: 1st or 2nd or 4th or 6th.

- *Ground short judgement: normal.

Judgement Criteria <Circuit continuity open>

- *Open short judgement: abnormal. (5 seconds)

TROUBLESHOOTING HINTS (THE MOST LIKELY
CAUSES FOR THIS CODE TO BE SET ARE:)

- *Malfunction of the 3-5 reverse clutch linear solenoid valve system circuit
- *Damaged harness or connector
- *Malfunction of the TCM
- *Malfunction of the 3-5 reverse clutch linear solenoid valve (valve body assembly)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-38 TCM connector (vehicle side, connected)]

Measure the voltage between terminal No. 2 and body ground.

- When 3-5 reverse clutch engaged. (3rd, 5th, and reverse): 0 V
- Other than above: 300 Hz

Q:Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 2.

STEP 2. Check between the TCM connector and A/T control solenoid valve assembly connector.

Check for continuity between C-38 TCM connector and B-111 A/T control solenoid valve assembly connector.

- Between C-38 terminal No. 2 and B-111 terminal No. 14: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the 3-5 reverse clutch linear solenoid.

Refer to P.23A-160.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 4.

STEP 4. Check between the A/T control solenoid valve assembly connector and 3-5 reverse clutch linear solenoid valve connector.

Check for continuity between the A/T control solenoid valve assembly connector terminals and 3-5 reverse clutch linear solenoid valve connector terminals.

- Between C-111 terminal No. 14 and the 3-5 reverse clutch linear solenoid valve: Continuity exists.

Q:Is the check result satisfactory?

YES: Replace the valve body assembly.

NO: Repair or replace the failure section.

STEP 5. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q:Is the check result normal?

YES: Go to Step 7.

NO: Repair or replace the failure section.

STEP 6. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0768: High Clutch Linear Solenoid Valve System

M12301000414USA0000010000

LINE PRESSURE LINEAR SOLENOID VALVE SYSTEM CIRCUIT

Refer to P.23A-64.

DESCRIPTIONS OF MONITOR METHODS

- During 1st to 3rd gear driving, an abnormal value equivalent to open or short circuit is detected in the solenoid control current for 5 seconds.

▪ Not applicable

Sensor (The sensor below is determined to be normal)

▪ Not applicable

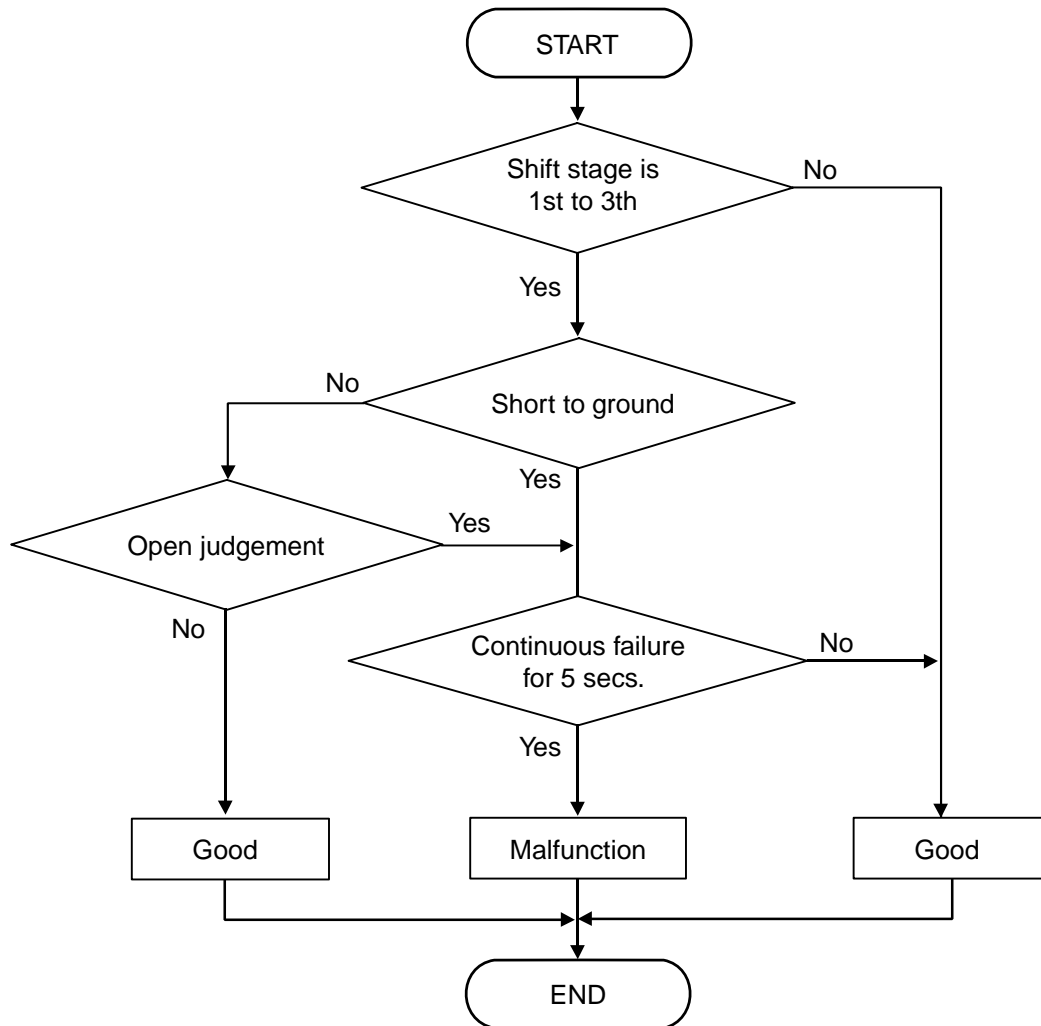
MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

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

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040800000

DTC SET CONDITIONS

Check Conditions <Circuit continuity ground>

• Shift stage: 1st or 3rd.

Judgement Criteria <Circuit continuity ground>

• Ground short judgement: abnormal. (5 seconds)

Check Conditions <Circuit continuity open>

• Shift stage: 1st or 3rd.

• Ground short judgement: normal.

Judgement Criteria <Circuit continuity open>

• Open short judgement: abnormal. (5 seconds)

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the high clutch linear solenoid valve system circuit
- Damaged harness or connector
- Malfunction of the TCM
- Malfunction of the high clutch linear solenoid valve (valve body assembly)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-38 TCM connector (vehicle side, connected)]

Measure the voltage between the terminal No. 1 and body ground.

- High clutch engaged: 0 V
- Other than above: 300 Hz

Q:Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 2.

STEP 2. Check between the TCM connector and A/T control solenoid valve assembly connector.

Check for continuity between C-38 TCM connector and B-111 A/T control solenoid valve assembly connector.

- Between C-38 terminal No. 1 and B-111 terminal No. 19: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the high clutch linear solenoid.

Refer to P.23A-160.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 4.

STEP 4. Check between the A/T control solenoid valve assembly connector and the high clutch linear solenoid valve connector.

Check for continuity between the A/T control solenoid valve assembly connector terminals and the high clutch linear solenoid valve connector terminals.

- Between C-111 terminal No. 19 and high clutch linear solenoid valve: Continuity exists.

Q:Is the check result satisfactory?

YES: Replace the valve body assembly.

NO: Repair or replace the failure section.

STEP 5. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.**Q:Is the check result normal?**

YES: Go to Step 7.

NO: Repair or replace the failure section.

STEP 6. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

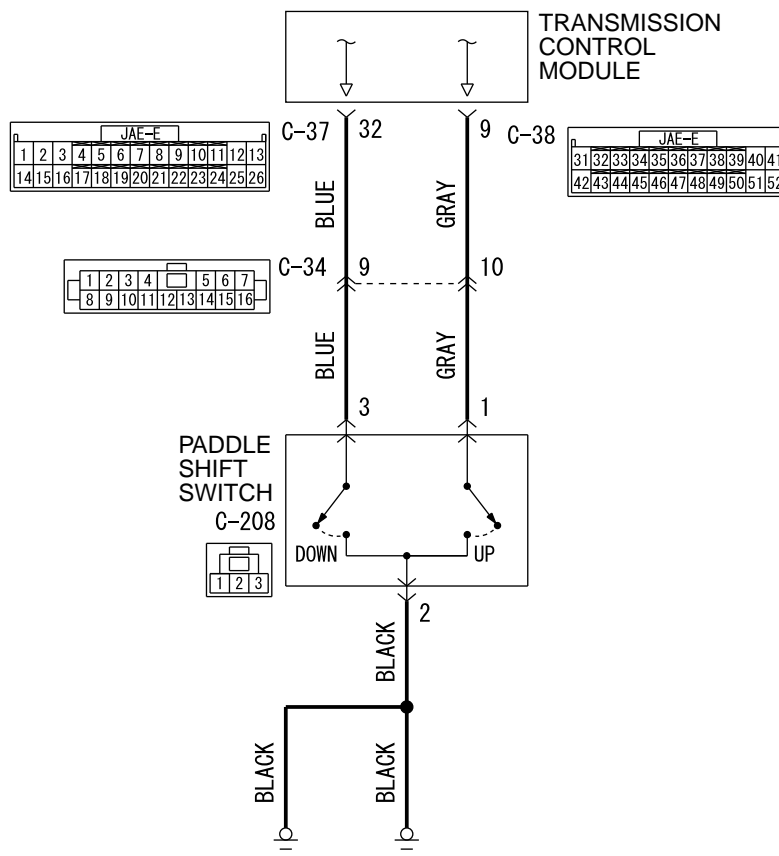
YES: The procedure is complete.

NO: Return to START.

DTC P0815: Paddle Shift Switch (Up) System

M12301000415USA0000010000

Paddle shift switch system circuit



Connector: C-34

C-34 (BR)

ZC6008750023

Connectors: C-37, 38

C-38

C-37

Brake pedal

ZC6035780002

Connector: C-208

ZC6008770008

DESCRIPTIONS OF MONITOR METHODS

- With the ignition switch ON, the paddle shift switch (up) status continues for 60 seconds.

- Damaged harness or connector
- Malfunction of the TCM
- Malfunction of the paddle shift switch

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the Paddle shift switch (up) system circuit

DIAGNOSIS**STEP 1. Check the TCM terminal voltage.**

[C-38 TCM connector (vehicle side, connected)]

Measure the voltage between C-38 No. 9 and body ground.

- Ignition switch: ON
- Paddle (ON) operated: 1V or less
- Other than above: battery positive voltage

Q:Is the check result normal?**YES:** Go to Step 2.**NO:** Go to Step 3.**STEP 2. Check the TCM connector, vehicle-side wiring harness connector pin terminal, and the connection status.****Q:Is the check result normal?****YES:** Go to Step 6.

NO: Repair or replace the failure section.

STEP 3. Check between the TCM connector and the paddle shift switch (up).

Check for continuity between C-38 TCM connector terminal No. 9 and C-208 paddle shift switch (up).

▪Between C-38 terminal No. 9 and C-208 terminal No. 1:
Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check the paddle shift switch (up).

Refer to P.23A-161.

Q: Is the check result normal?

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check the TCM connector, vehicle-side wiring harness connector pin terminal, and the connection status.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 6. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0816: Paddle Shift Switch (Down) System

M12301000416USA0000010000

PADDLE SHIFT SWITCH (DOWN) SYSTEM CIRCUIT

Refer to P.23A-83.

DESCRIPTIONS OF MONITOR METHODS

▪With the ignition switch ON, the paddle shift switch (down) status continues for 60 seconds.

▪Damaged harness or connector

▪Malfunction of the TCM

▪Malfunction of the paddle shift switch

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

▪Malfunction of the Paddle shift switch (down) system circuit

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-38 TCM connector (vehicle side, connected)]

Measure the voltage between C-38 terminal No. 32 and body ground.

- Ignition switch: ON
- Paddle (ON) operated: 1V or less
- Other than above: battery positive voltage

Q:Is the check result normal?

YES: Go to Step 2.

NO: Go to Step 3.

STEP 2. Check the TCM connector, vehicle-side wiring harness connector pin terminal, and the connection status.**Q:Is the check result normal?**

YES: Go to Step 6.

NO: Repair or replace the failure section.

STEP 3. Check between the TCM connector and the paddle shift switch (down).

Check for continuity between C-38 TCM connector and C-208 paddle shift switch (down).

- Between C-38 terminal No. 32 and C-208 terminal No. 3:
Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check the paddle shift switch (down).

Refer to P.23A-161.

Q:Is the check result normal?

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check the TCM connector, vehicle-side wiring harness connector pin terminal, and the connection status.**Q:Is the check result normal?**

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 6. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

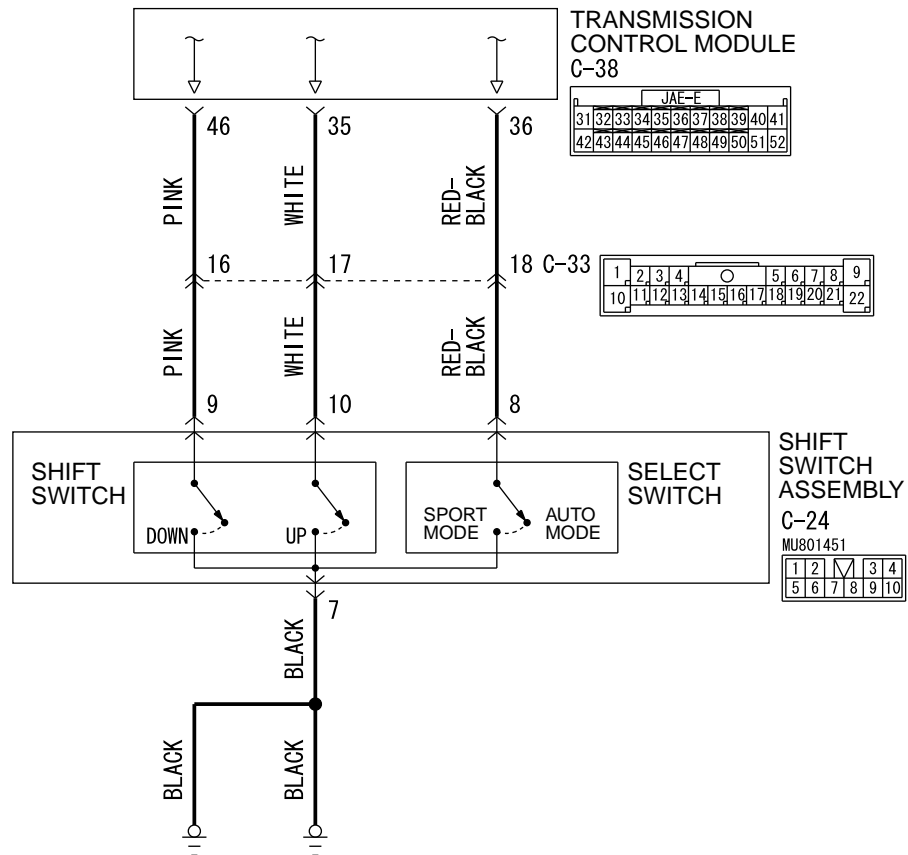
YES: The procedure is complete.

NO: Return to START.

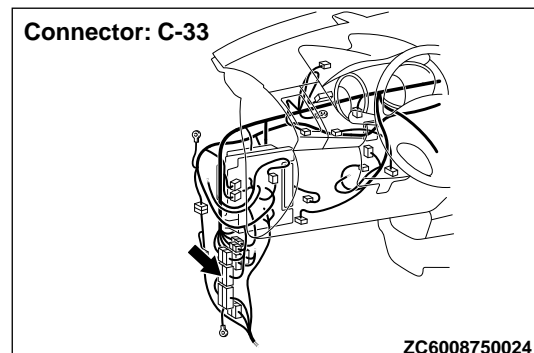
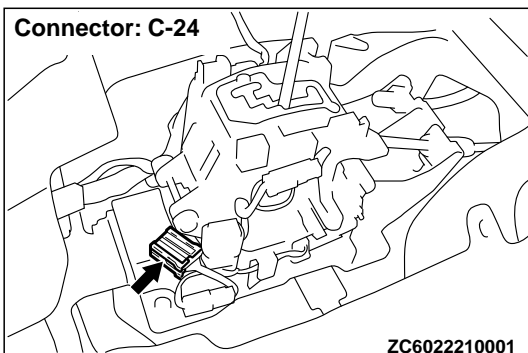
DTC P0826: Shift Switch Assembly System

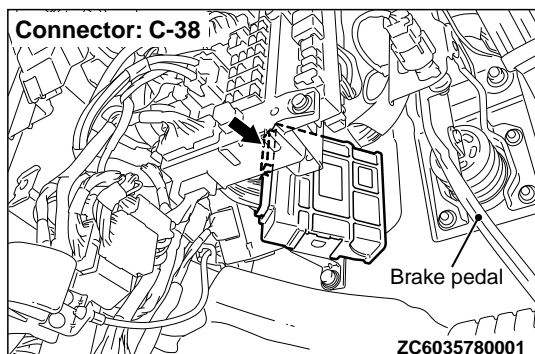
M12301000417USA0000010000

Shift switch assembly system circuit



D7G23M007A00
ZC6023780000



**DESCRIPTIONS OF MONITOR METHODS**

- With the ignition switch ON, an abnormal signal combination is detected for 2 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the shift switch assembly system circuit

- Damaged harness or connector
- Malfunction of the TCM
- Malfunction of the select switch
- Malfunction of the Shift switch (up)
- Malfunction of the Shift switch (down)

DIAGNOSIS**STEP 1. Check the TCM terminal voltage.**

[C-38 TCM connector (vehicle side, connected)]

Measure the voltage between the TCM connector terminals and body ground.

- Ignition switch: ON
- Between C-38 terminal No. 36 and body ground
Sport mode selected: 1 V or less
Other than above: battery positive voltage
- Between C-38 terminal No. 35 and body ground
Shift switch (up) operated: 1V or less
Other than above: battery positive voltage
- Between C-38 terminal No. 46 and body ground
Shift switch (down) operated: 1 V or less
Other than above: battery positive voltage

Q: Is the check result normal?

YES: Go to Step 2.

NO: Go to Step 3.

STEP 2. Check the TCM connector, vehicle-side wiring harness connector pin terminal, and the connection status.

Q: Is the check result normal?

YES: Go to Step 9.

NO: Repair or replace the failure section.

STEP 3. Check between the TCM connector and the select switch.

Check for continuity between the C-38 TCM connector and the C-24 select switch.

- Between C-38 terminal No. 36 and C-24 terminal No. 8: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check between the shift switch assembly and body ground.

Check for continuity between the C-24 shift switch assembly (ground) and body ground.

- Between C-24 terminal No. 7 and body ground: Continuity exists.

Q:Is the check result normal?

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check between the TCM connector and the shift switch (up).

Check for continuity between the C-38 TCM connector and the shift switch (up).

- Between C-38 terminal No. 35 and C-24 terminal No. 10: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Repair or replace the failure section.

STEP 6. Check between the TCM connector and the shift switch (down).

Check for continuity between the C-38 TCM connector and the shift switch (down).

- Between C-38 terminal No. 46 and C-24 terminal No. 9: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 7.

NO: Repair or replace the failure section.

STEP 7. Check the shift switch assembly as a single unit.

Refer to P.23A-168.

Q:Is the check result normal?

YES: Go to Step 8.

NO: Repair or replace the failure section.

STEP 8. Check the TCM, vehicle-side wiring harness connector pin terminal, and the connection status.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 9. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

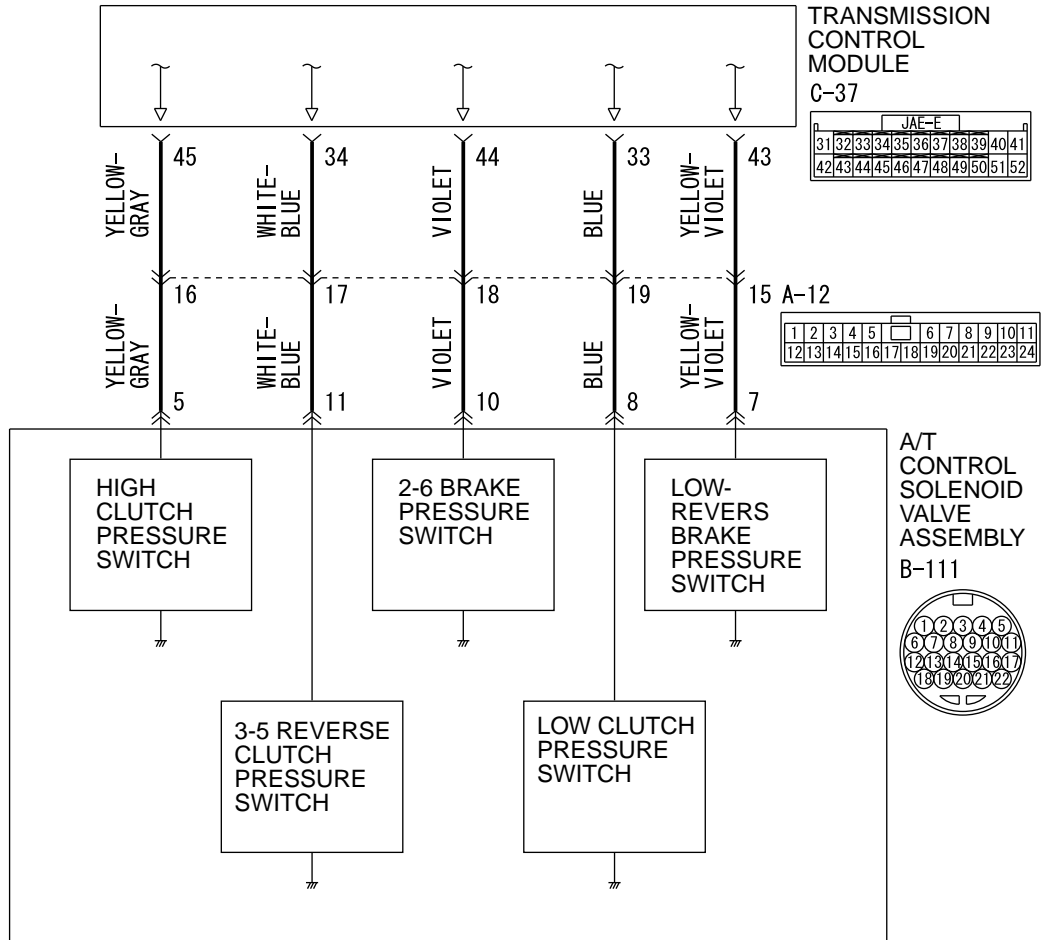
YES: The procedure is complete.

NO: Return to START.

DTC P0841: Low Clutch Pressure Switch System

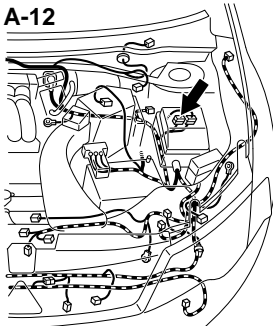
M12301000418USA0000010000

Pressure switch system circuit



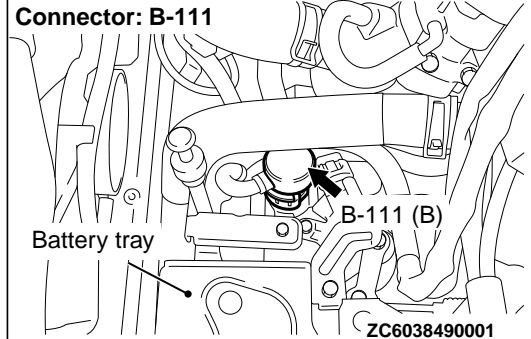
D7G23M008A00
ZC6023790000

Connector: A-12

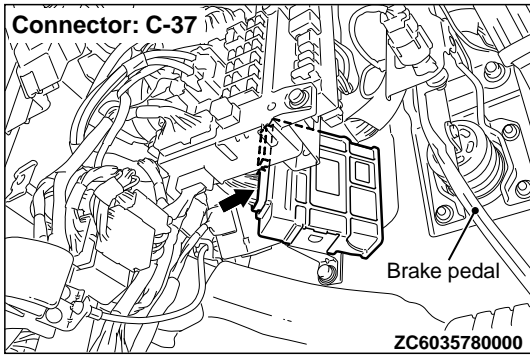


ZC6008720002

Connector: B-111



ZC6038490001



DESCRIPTIONS OF MONITOR METHODS

▪ With the solenoid failure not detected and during 1st to 4th gear driving, the switch OFF status continues for 2 seconds. (The detection is achieved twice during 1 driving cycle*¹, and it continues for 2 driving cycles.)

*¹: Indicates the series of driving cycle "ignition key OFF → ON → drive → OFF." The "1 driving cycle," "2 driving cycle," and so on indicates how many cycles are required to detect a failure.

- Damaged harness or connector
- Malfunction of the TCM
- Malfunction of the low clutch pressure switch (valve body assembly)
- Malfunction of the valve body assembly, abnormal hydraulic circuit valve.

CAUTION

For the incomplete gear shifting and slippage, first refer to the SYMPTOM CHART P.23A-23.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the low clutch pressure switch system circuit

DIAGNOSIS

STEP 1. Check the DTC.

Q: Is the DTC other than the pressure switch set? (Is the code other than P0841, P0846, P0871, P0876, and P0988 set?)

YES: Check and repair the relevant DTC system.

NO: Go to Step 2.

STEP 2. Check the TCM terminal voltage.

[C-37 TCM connector (vehicle side, connected)]

Measure the voltage between C-37 terminal No. 33 and body ground.

▪ Low-clutch engaged: 0 V

▪ Other than above: Battery positive voltage

Q: Is the check result normal?

YES: Go to Step 7.

NO: Go to Step 3.

STEP 3. Check between the TCM connector and A/T control solenoid valve assembly.

Check for continuity between C-37 TCM connector and B-111 A/T control solenoid valve assembly connector.

•Between C-37 terminal No. 33 and B-111 terminal No. 8:
Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q:Is the check result normal?

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check between the A/T control solenoid valve assembly connector and low clutch pressure switch connector.

Check for continuity between the B-111 A/T control solenoid valve assembly connector terminals and the low clutch pressure switch connector terminals.

•Between B-111 terminal No. 8 and low clutch pressure switch:
Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Repair or replace the failure section.

STEP 6. Check the low clutch pressure switch body ground.

Check for continuity between the low clutch pressure switch body and ground.

•Between the low clutch pressure switch body and body ground: Continuity exists.

Q:Is the check result normal?

YES: Replace the valve body assembly, and then go to Step 8.

NO: Repair or replace the failure section.

STEP 7. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q:Is the check result normal?

YES: Go to Step 9.

NO: Repair or replace the failure section.

STEP 8. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Replace the TCM.

STEP 9. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0846: 2-6 Brake Pressure Switch System

M12301000419USA0000010000

PRESSURE SWITCH SYSTEM CIRCUIT

Refer to P.23A-91.

DESCRIPTIONS OF MONITOR METHODS

*With the solenoid failure not detected and during 2nd or 6th gear driving, the switch OFF status continues for 2 seconds. (The detection is achieved twice during 1 driving cycle^{*1}, and it continues for 2 driving cycles.)

*1: Indicates the series of driving cycle "ignition key OFF → ON → drive → OFF." The "1 driving cycle," "2 driving cycle," and so on indicates how many cycles are required to detect a failure.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- *Malfunction of the 2-6 brake pressure switch system circuit
- *Damaged harness or connector
- *Malfunction of the TCM
- *Malfunction of the 2-6 brake pressure switch (valve body assembly)
- *Malfunction of the valve body assembly, abnormal hydraulic circuit valve.

⚠ CAUTION

For the incomplete gear shifting and slippage, first refer to the SYMPTOM CHART P.23A-23.

DIAGNOSIS**STEP 1. Check the DTC.**

Q:Is the DTC other than the pressure switch set? (Is the code other than P0841, P0846, P0871, P0876, and P0988 set?)

YES: Check and repair the relevant DTC system.

NO: Go to Step 2.

STEP 2. Check the TCM terminal voltage.

[C-37 TCM connector (vehicle side, connected)]

Measure the voltage between C-37 terminal No. 44 and body ground.

- *2-6 brake engaged: 0 V
- *Other than above: Battery positive voltage

Q:Is the check result normal?

YES: Go to Step 3.

NO: Go to Step 7.

STEP 3. Check between the TCM connector and A/T control solenoid valve assembly.

Check for continuity between C-37 TCM connector and B-111 A/T control solenoid valve assembly connector.

•Between C-37 terminal No. 44 and B-111 terminal No. 10:
Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q:Is the check result normal?

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check between the A/T control solenoid valve assembly connector and 2-6 brake pressure switch connector.

Check for continuity between the B-111 A/T control solenoid valve assembly connector terminals and 2-6 brake pressure switch connector terminals.

•Between B-111 terminal No. 10 and 2-6 brake pressure switch: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Repair or replace the failure section.

STEP 6. Check the 2-6 brake pressure switch body ground.

Check for continuity between the 2-6 brake pressure switch body and ground.

•Between the 2-6 brake pressure switch body and body ground: Continuity exists.

Q:Is the check result normal?

YES: Replace the valve body assembly, and then go to Step 8.

NO: Repair or replace the failure section.

STEP 7. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q:Is the check result normal?

YES: Go to Step 9.

NO: Repair or replace the failure section.

STEP 8. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Replace the TCM.

STEP 9. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0871: 3-5 Reverse Clutch Pressure Switch System

M12301000420USA0000010000

PRESSURE SWITCH SYSTEM CIRCUIT

Refer to P.23A-91.

DESCRIPTIONS OF MONITOR METHODS

*With the solenoid failure not detected and during 3rd/5th gear or reverse driving, the switch OFF status continues for 2 seconds. (The detection is achieved twice during 1 driving cycle^{*1}, and it continues for 2 driving cycles.)

^{*1}: Indicates the series of driving cycle "ignition key OFF → ON → drive → OFF." The "1 driving cycle," "2 driving cycle," and so on indicates how many cycles are required to detect a failure.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- *Malfunction of the 3-5 reverse clutch pressure switch system circuit
- *Damaged harness or connector
- *Malfunction of the TCM
- *Malfunction of the 3-5 reverse clutch pressure switch system (valve body assembly)
- *Malfunction of the valve body assembly, abnormal hydraulic circuit valve.

⚠ CAUTION

For the incomplete gear shifting and slippage, first refer to the SYMPTOM CHART P.23A-23.

DIAGNOSIS**STEP 1. Check the DTC.**

Q:Is the DTC other than the pressure switch set? (Is the code other than P0841, P0846, P0871, P0876, and P0988 set?)

YES: Check and repair the relevant DTC system.

NO: Go to Step 2.

STEP 2. Check the TCM terminal voltage.

[C-37 TCM connector (vehicle side, connected)]

Measure the voltage between C-37 terminal No. 34 and body ground.

- *3-5 reverse clutch engaged: 0 V
- *Other than above: Battery positive voltage

Q:Is the check result normal?

YES: Go to Step 3.

NO: Go to Step 7.

STEP 3. Check between the TCM connector and A/T control solenoid valve assembly.

Check for continuity between C-37 TCM connector and B-111 A/T control solenoid valve assembly connector.

•Between C-37 terminal No. 34 and B-111 terminal No. 11:
Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q:Is the check result normal?

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check between the A/T control solenoid valve assembly connector and 3-5 reverse clutch pressure switch.

Check for continuity between the B-111 A/T control solenoid valve assembly connector terminals and 3-5 reverse clutch pressure switch connector terminals.

•Between B-111 terminal No. 11 and 3-5 reverse clutch pressure switch: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Repair or replace the failure section.

STEP 6. Check the 3-5 reverse clutch pressure switch body ground.

Check for continuity between the 3-5 reverse clutch pressure switch body and ground.

•Between the 3-5 reverse clutch pressure switch body and body ground: Continuity exists.

Q:Is the check result normal?

YES: Replace the valve body assembly, and then go to Step 8.

NO: Repair or replace the failure section.

STEP 7. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q:Is the check result normal?

YES: Go to Step 9.

NO: Repair or replace the failure section.

STEP 8. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Replace the TCM.

STEP 9. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0876: High Clutch Pressure Switch System

M12301000421USA0000010000

PRESSURE SWITCH SYSTEM CIRCUIT

Refer to P.23A-91.

DESCRIPTIONS OF MONITOR METHODS

*With the solenoid failure not detected and with 4th to 6th gear driving, the switch OFF status continues for 2 seconds. (The detection is achieved twice during 1 driving cycle*¹, and it continues for 2 driving cycles.)

*¹: Indicates the series of driving cycle "ignition key OFF → ON → drive → OFF." The "1 driving cycle," "2 driving cycle," and so on indicates how many cycles are required to detect a failure.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- *Malfunction of the high clutch pressure switch system circuit
- *Damaged harness or connector
- *Malfunction of the TCM
- *Malfunction of the high clutch pressure switch system (valve body assembly)
- *Malfunction of the valve body assembly, abnormal hydraulic circuit valve.

⚠ CAUTION

For the incomplete gear shifting and slippage, first refer to the SYMPTOM CHART P.23A-23.

DIAGNOSIS**STEP 1. Check the DTC.**

Q:Is the DTC other than the pressure switch set? (Is the code other than P0841, P0846, P0871, P0876, and P0988 set?)

YES: Check and repair the relevant DTC system.

NO: Go to Step 2.

STEP 2. Check the TCM terminal voltage.

[C-37 TCM connector (vehicle side, connected)]

Measure the voltage between C-37 terminal No. 45 and body ground.

- *High clutch engaged: 0 V
- *Other than above: Battery positive voltage

Q:Is the check result normal?

YES: Go to Step 3.

NO: Go to Step 7.

STEP 3. Check between the TCM connector and A/T control solenoid valve assembly.

Check for continuity between C-37 TCM connector and B-111 A/T control solenoid valve assembly connector.

•Between C-37 terminal No. 45 and B-111 terminal No. 5:
Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q: Is the check result normal?

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check between the A/T control solenoid valve assembly connector and high clutch pressure switch.

Check for continuity between the B-111 A/T control solenoid valve assembly connector terminals and the high clutch pressure switch connector terminals.

•Between B-111 terminal No. 5 and high clutch pressure switch: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 6.

NO: Repair or replace the failure section.

STEP 6. Check the high clutch pressure switch body ground.

Check for continuity between the high clutch pressure switch body and ground.

•Between the high clutch pressure switch body and body ground: Continuity exists.

Q: Is the check result normal?

YES: Replace the valve body assembly, and then go to Step 8.

NO: Repair or replace the failure section.

STEP 7. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q: Is the check result normal?

YES: Go to Step 9.

NO: Repair or replace the failure section.

STEP 8. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Replace the TCM.

STEP 9. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P0893: Interlock Detection

M12301000422USA0000010000

DESCRIPTIONS OF MONITOR METHODS

- With the stoplight switch signal and output shaft speed sensor being normal, the fast deceleration exceeding the set time is detected.
- Output failure to the solenoid, open or short circuit
- Hydraulic switch pattern, hydraulic switch open or short circuit
- Open circuit of the output shaft speed sensor or poor connection of the connector

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

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

- Not applicable

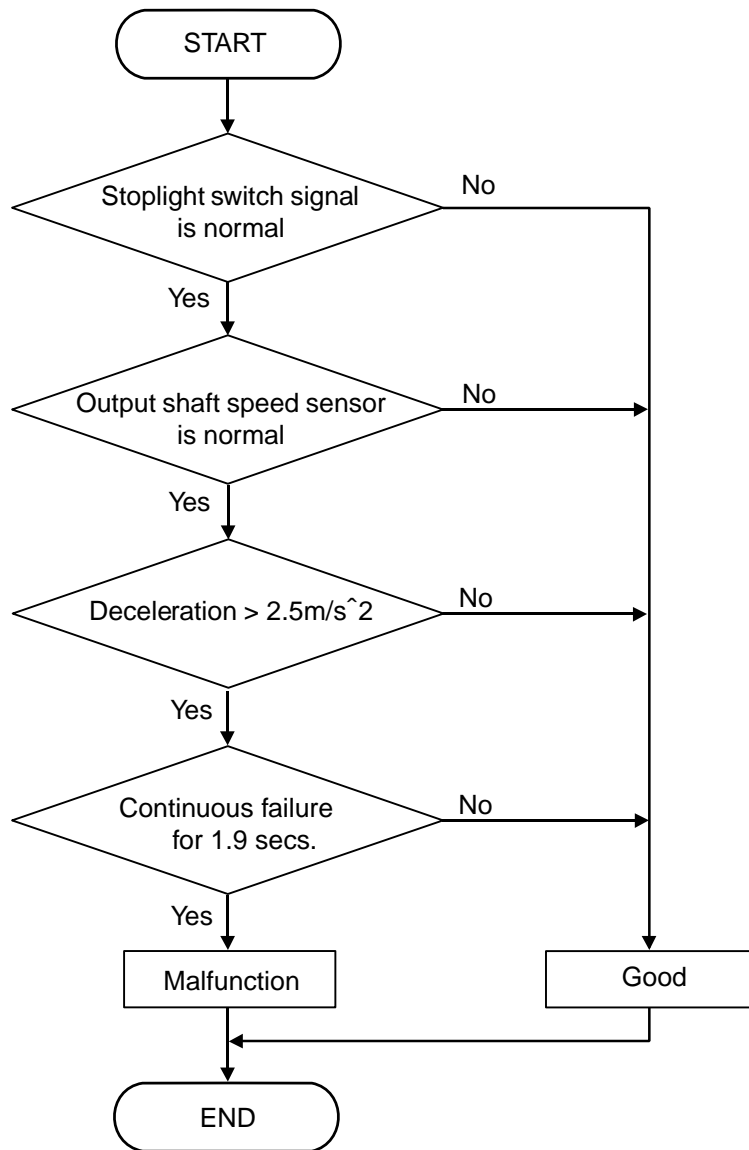
Sensor (The sensor below is determined to be normal)

- Not applicable

MONITOR EXECUTION

- Continuous

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040810000

DTC SET CONDITIONS

Check Conditions

- Pattern of hydraulic pressure switch: incorrect combination.
- Output shaft speed sensor: normal.
- Stoplight switch signal: normal.

Judgement Criteria

- Deceleration: more than 2.5 m/s². (0.3 second)

OBD-II DRIVE CYCLE PATTERN

Start the engine, drive at 60 km/h (37 mph) or more for 15 minutes in total.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the P0720: output shaft speed sensor system circuit
- Damaged harness or connector
- Malfunction of the P0743: lock-up and low-reverse brake linear solenoid valve system circuit
- Malfunction of the P0753: low clutch linear solenoid valve system circuit
- Malfunction of the P0758: 2-6 brake linear solenoid valve system circuit
- Malfunction of the P0763: 3-5 reverse clutch linear solenoid valve system circuit
- Malfunction of the P0768: high clutch linear solenoid valve system circuit

- Malfunction of the P1753: low clutch shift solenoid valve system circuit
- Malfunction of the P1758: low-reverse brake shift solenoid valve system circuit
- Malfunction of the P0841: low clutch pressure switch system circuit
- Malfunction of the P0846: 2-6 brake pressure switch system circuit
- Malfunction of the P0871: 3-5 reverse clutch pressure switch system circuit
- Malfunction of the P0876: high clutch pressure switch system circuit
- Malfunction of the P0988: low-reverse brake pressure switch system circuit

DIAGNOSIS

STEP 1. Check the DTC.

Check if the following DTCs are set.

- P0720 output shaft speed sensor
- P0743 lock-up and low-reverse brake linear solenoid valve
- P0753 low clutch linear solenoid valve
- P0758 2-6 brake linear solenoid valve
- P0763 3-5 reverse clutch linear solenoid valve
- P0768 high clutch linear solenoid valve
- P1753 low clutch shift solenoid valve
- P1758 low-reverse brake shift solenoid valve
- P0841 low clutch pressure switch
- P0846 2-6 brake pressure switch
- P0871 3-5 reverse clutch pressure switch
- P0876 high clutch pressure switch
- P0988 low-reverse brake pressure switch

Q:Is the check result normal?

YES: Go to Step 2.

NO: Repair or replace the failure section.

STEP 2. Check TCM related to the solenoid, pressure switch and output shaft speed sensor, the A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q:Is the check result normal?

YES: Replace the TCM, and then go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Replace the transaxle assembly.

DTC P0988: Low-Reverse Brake Pressure Switch System

M12301000423USA0000010000

PRESSURE SWITCH SYSTEM CIRCUIT

Refer to P.23A-91.

DESCRIPTIONS OF MONITOR METHODS

•During reverse driving, the switch OFF status continues for 2 seconds. (The detection is achieved twice during 1 driving cycle^{*1}, and it continues for 2 driving cycles.)

^{*1}: Indicates the series of driving cycle "ignition key OFF → ON → drive → OFF." The "1 driving cycle," "2 driving cycle," and so on indicates how many cycles are required to detect a failure.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the low-reverse brake pressure switch system circuit
- Damaged harness or connector
- Malfunction of the TCM
- Malfunction of the low-reverse brake pressure switch system (valve body assembly)
- Malfunction of the valve body assembly, abnormal hydraulic circuit valve.

CAUTION

For the incomplete gear shifting and slippage, first refer to the SYMPTOM CHART P.23A-23.

DIAGNOSIS

STEP 1. Check the DTC.

Q: Is the DTC other than the pressure switch set? (Is the code other than P0841, P0846, P0871, P0876, and P0988 set?)

YES: Check and repair the relevant DTC system.

NO: Go to Step 2.

STEP 2. Check the TCM terminal voltage.

[C-37 TCM connector (vehicle side, connected)]

Measure the voltage between C-37 terminal No. 43 and body ground.

•Low-reverse brake engaged: 0 V

•Other than above: Battery positive voltage

Q: Is the check result normal?

YES: Go to Step 3.

NO: Go to Step 7.

STEP 3. Check between the TCM connector and A/T control solenoid valve assembly.

Check for continuity between C-37 TCM connector and B-111 A/T control solenoid valve assembly connector.

•Between C-37 terminal No. 43 and B-111 terminal No. 7: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 4.

NO: Repair or replace the failure section.

STEP 4. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q: Is the check result normal?

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check between the A/T control solenoid valve assembly connector and low-reverse brake pressure switch.

Check for continuity between the B-111 A/T control solenoid valve assembly connector terminals and the low-reverse brake pressure switch connector terminals.

• Between B-111 terminal No. 7 and low-reverse brake pressure switch: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 6.

NO: Repair or replace the failure section.

STEP 6. Check the low-reverse brake pressure switch body ground.

Check for continuity between the low-reverse brake pressure switch body and ground.

• Between the low-reverse brake pressure switch body and body ground: Continuity exists.

Q: Is the check result normal?

YES: Replace the valve body assembly, and then go to Step 8.

NO: Repair or replace the failure section.

STEP 7. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q: Is the check result normal?

YES: Go to Step 9.

NO: Repair or replace the failure section.

STEP 8. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Replace the TCM.

STEP 9. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P1705: Throttle Position Sensor Information (Engine)

M12301000424USA0000010000

DESCRIPTIONS OF MONITOR METHODS

- With the vehicle speed more than 5 km/h (3 mph), and with the output shaft speed sensor detected normal or abnormal, the TPS fail signal is received from ECM for 5.5 seconds.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

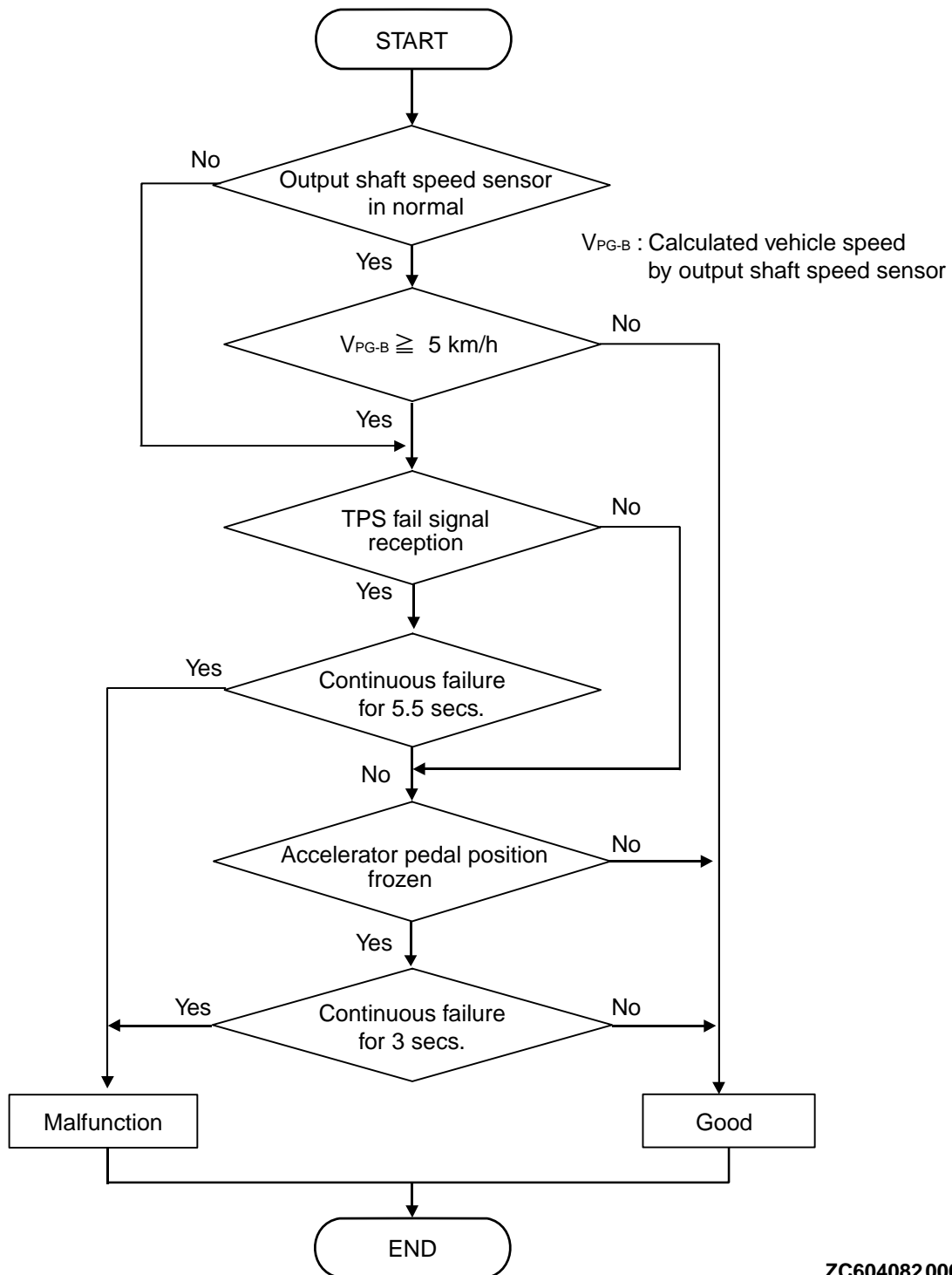
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040820000

DTC SET CONDITIONS

Check Conditions <Throttle position sensor>

- *Vehicle speed: 5 km/h(3 mph) or more.

Judgement Criteria <Throttle position sensor>

- *Communication status: fail. (5.5 seconds)

Check Conditions <Accelerator pedal position sensor>

- *Vehicle speed: 5 km/h or more throttle position sensor communication status: fail. (Less than 5.5 seconds)

Judgement Criteria <Accelerator pedal position sensor>

- Communication status: fail. (3 seconds)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the CAN
- Malfunction of the ECM
- Damaged harness or connector
- Malfunction of the throttle position sensor
- Malfunction of the TCM

DIAGNOSIS

STEP 1. Check for CAN communication system malfunction.

Q:Are the DTC U0001, U0100, U0141, P1705, P1706 set?

YES: Check and repair the CAN communication system.

NO: Go to Step 2.

STEP 2. Check the throttle position sensor and ECM-side main unit and connector wiring.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Replace the TCM.

DTC 1706: Accelerator Pedal Position Information

M12301000425USA0000010000

DESCRIPTIONS OF MONITOR METHODS

- When approx. 1 second has elapsed after TCM started, the throttle pedal position signal seizure is detected for 3 seconds.

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

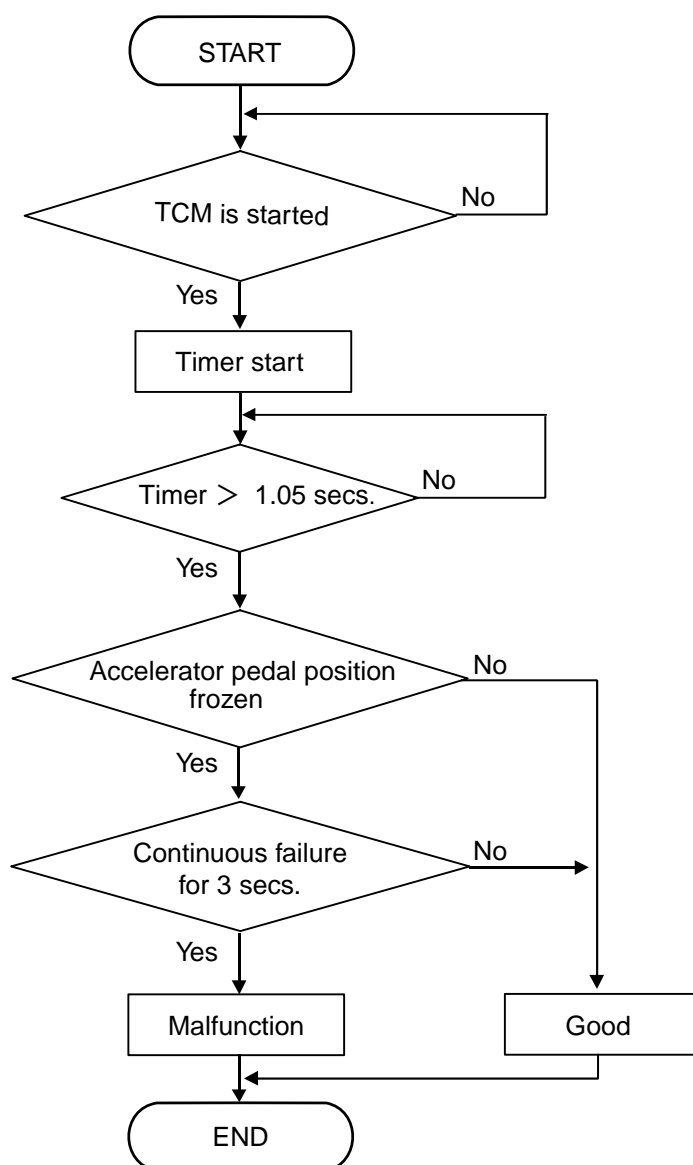
MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

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

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040830000

DTC SET CONDITIONS

Check Conditions

- TCM is started: more than 1.05 seconds.

Judgement Criteria

- Communication status: fail. (3 seconds)

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the CAN
- Malfunction of the ECM
- Damaged harness or connector
- Malfunction of the throttle position sensor

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

DIAGNOSIS

STEP 1. Is the DTC code for ECM displayed?

Check that the failure related to the engine does not occur.

Q:Is the check result normal?

YES: Go to Step 2.

NO: Repair or replace the failure section.

STEP 2. Check the throttle position sensor and ECM-side main unit and connector wiring.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P1731: 1st Engine Brake Detection

M12301000426USA0000010000

DESCRIPTIONS OF MONITOR METHODS

- With the mode other than SPORT MODE and with the accelerator angle is smaller than 6/8, the correlation between the lock-up and low-reverse brake linear solenoid valve control current and the low-reverse brake pressure switch ON/OFF is abnormal.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Transaxle assembly powertrain parts failure
- Malfunction of the valve assembly (Malfunction of hydraulic valve and hydraulic switch)

- Malfunction of the TCM
- Malfunction of the lock-up and low-reverse brake linear solenoid valve (valve assembly)
- Malfunction of the low-reverse brake pressure switch (valve assembly)
- Malfunction of the low clutch pressure switch (valve assembly)
- Malfunction of the low clutch linear solenoid valve (valve assembly)
- Malfunction of the low-reverse brake shift solenoid valve (valve assembly)
- Malfunction of the low clutch, low-reverse brake

DIAGNOSIS

STEP 1. Check the DTC.

Check that P0841 (Low-clutch pressure switch) and P0988 (Low-reverse brake pressure switch) are set.

Q:Is the DTC set?

YES: Check and repair the relevant DTC system.

NO: Go to Step 2.

STEP 2. Check the DTC.

Check that the DTC other than P1731 (1st engine brake detection) is set.

Q:Is the DTC set?**YES:** Check and repair the relevant DTC system.**NO:** Go to Step 3.

STEP 3. Check the transmission fluid properties.

Check the status of the transmission fluid properties (smell, color, fouling).

- Black: A/T inside damage, seizure

- Milky: Water intrusion

Q:Is the check result normal?**YES:** Go to Step 4.**NO:** Remove the A/T from the vehicle, then check and repair the inside.

STEP 4. Check the transmission fluid level.**Q:Is the check result normal?****YES:** Go to Step 5.**NO:** Adjust the transmission fluid level, and then go to Step 5.

STEP 5. Check the wiring harness, connector, and sensor signal.

- Check the wiring harness and connectors of the low-clutch pressure switch and low-reverse brake pressure switch.

- Check the signals of C-37 TCM connector terminal No. 37 (output shaft speed sensor) and the terminal No. 38 (input shaft speed sensor).

Refer to P.23A-145.

Q:Is the check result normal?**YES:** Go to Step 6.**NO:** Repair or replace the failure section.

STEP 6. Hydraulic pressure test

Refer to P.23A-145.

Q:Is the check result normal?**YES:** Go to Step 7.**NO:** Remove the A/T from the vehicle, then check and repair the inside.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q:Is the check result normal?**YES:** The procedure is complete.**NO:** Return to START.

DTC P1753: Low Clutch Shift Solenoid Valve System

M12301000427USA0000010000

SOLENOID VALVE SYSTEM CIRCUIT

Refer to P.23A-64.

DESCRIPTIONS OF MONITOR METHODS

- During 1st to 4th driving, and with the lock-up function deactivated, an open circuit is detected for 200 milliseconds.
- During the 5th to 6th driving, and with the lock-up function deactivated, a short circuit is detected for 200 milliseconds.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

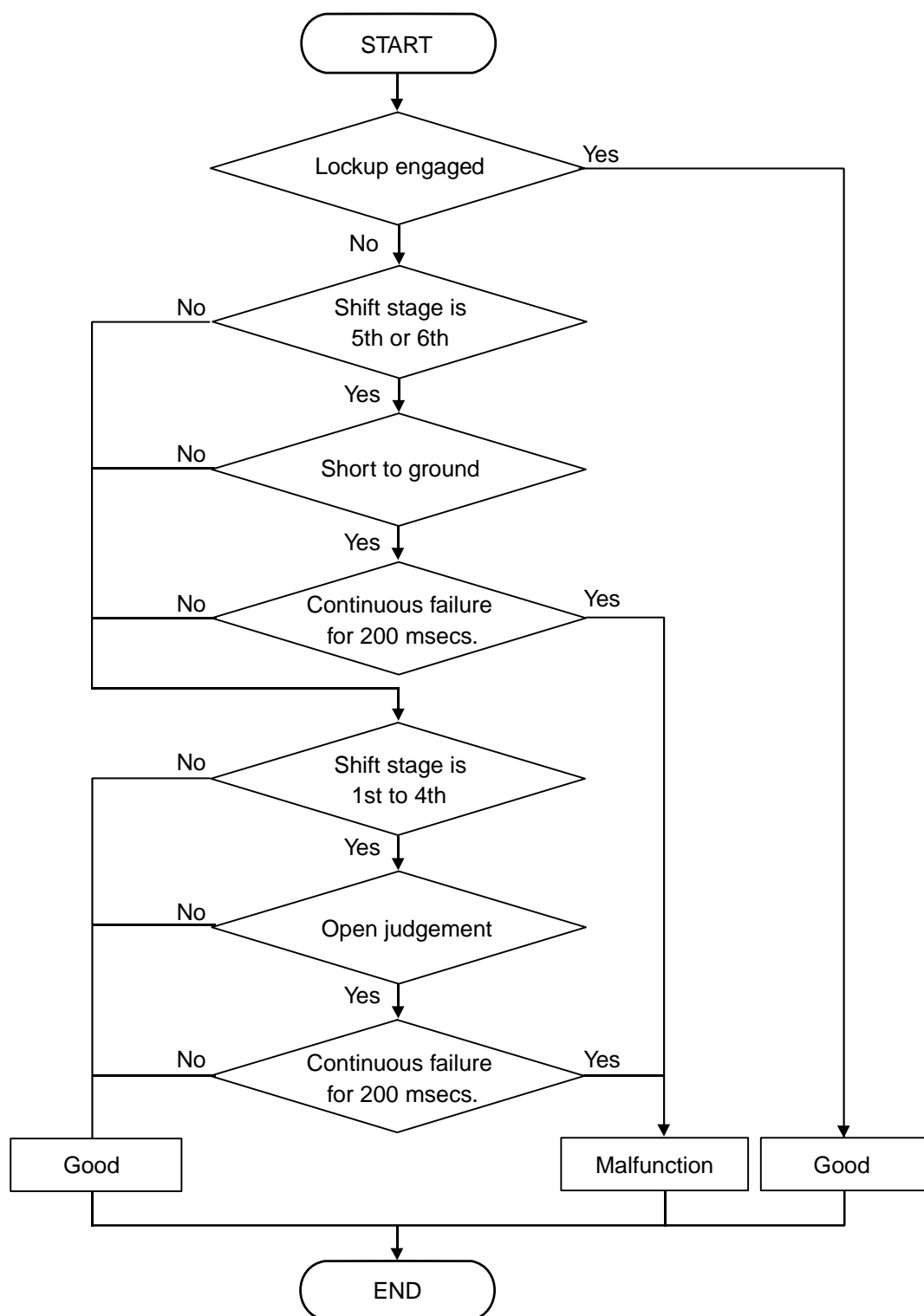
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC604084 0000

DTC SET CONDITIONS

Check Conditions <Circuit continuity ground>

*Lock-up: engaged.

*Shift stage: 5th or 6th.

Judgement Criteria <Circuit continuity ground>

*Ground short judgement: abnormal. (0.2 second)

Check Conditions <Circuit continuity open>

- Lock-up: engaged.
- Shift stage: 1st to 4th.
- Ground short judgement: normal.

Judgement Criteria <Circuit continuity open>

- Open judgement: abnormal. (0.2 second)

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the low clutch shift solenoid valve system circuit
- Damaged harness or connector
- Malfunction of the TCM
- Malfunction of the low clutch shift solenoid valve (valve body Assembly)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-38 TCM connector (vehicle side, connected)]

Measure the voltage between terminal No. 14 and body ground.

- 5th and 6th: Battery positive voltage
- Other than above: 0 V

Q:Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 2.

STEP 2. Check between the TCM connector and A/T control solenoid valve assembly connector.

Check for continuity between C-38 TCM connector and B-111 A/T control solenoid valve assembly connector.

- Between C-38 terminal No. 14 and B-111 terminal No. 22: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the low clutch shift solenoid.

Refer to P.23A-160.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 4.

STEP 4. Check between the A/T control solenoid valve assembly connector and the low clutch shift solenoid valve connector.

Check for continuity between the B-111 A/T control solenoid valve assembly connector terminals and the low clutch shift solenoid valve connector terminals.

- Between B-111 terminal No. 22 and low clutch shift solenoid valve: Continuity exists.

Q:Is the check result satisfactory?

YES: Replace the valve body assembly.

NO: Repair or replace the failure section.

STEP 5. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q: Is the check result normal?

YES: Go to Step 7.

NO: Repair or replace the failure section.

STEP 6. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P1758: Low-Reverse Brake Shift Solenoid Valve System

M12301000428USA0000010000

SOLENOID VALVE SYSTEM CIRCUIT

Refer to P.23A-64.

DESCRIPTIONS OF MONITOR METHODS

- With the ignition switch ON, the open or short circuit is detected for 200 milliseconds.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

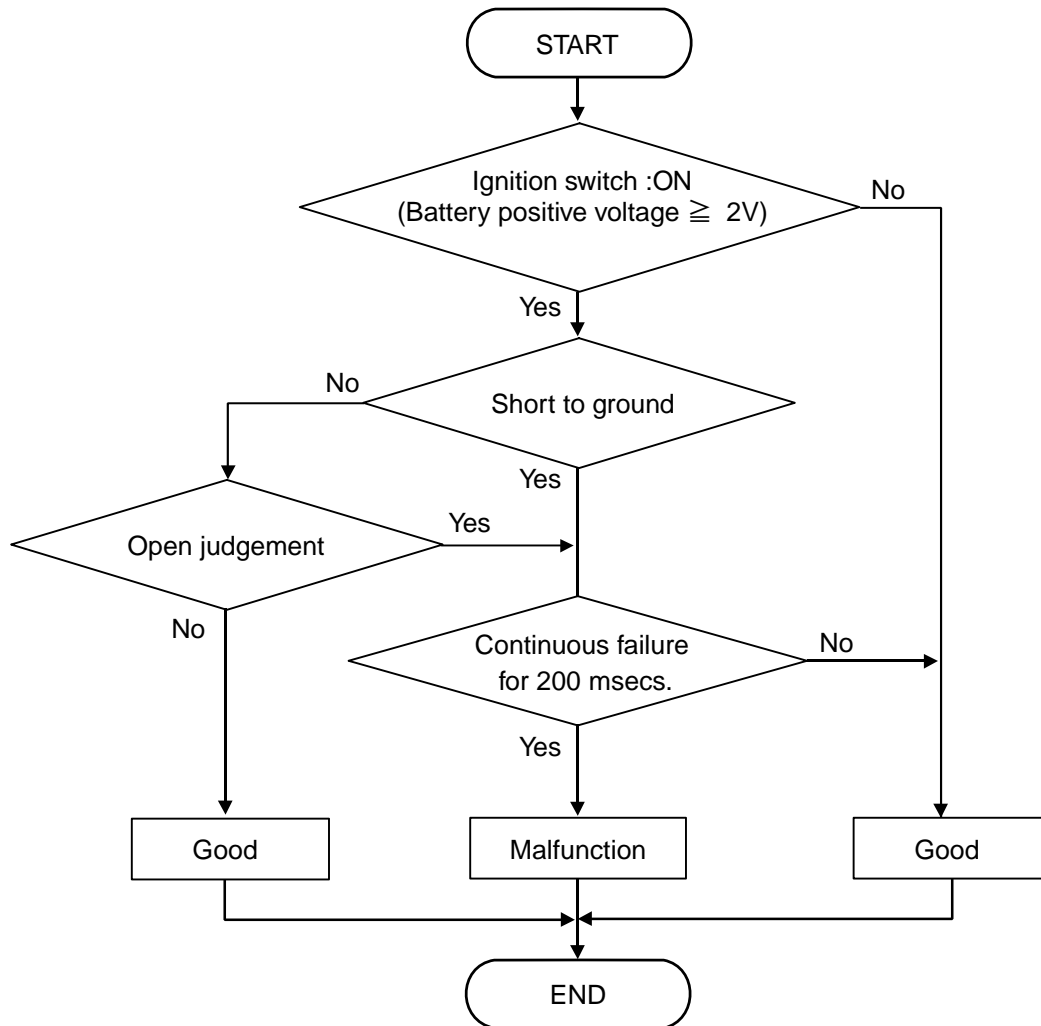
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040850000

DTC SET CONDITIONS

Check Conditions <Circuit continuity ground>

- Voltage of battery: 2 volts or more.

Judgement Criteria <Circuit continuity ground>

- Ground short judgement: abnormal. (0.2 second)

Check Conditions <Circuit continuity open>

- Voltage of battery: 2 volts or more.
- Ground short judgement: normal.

Judgement Criteria <Circuit continuity open>

- Open judgement: abnormal. (0.2 second)

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the low-reverse brake shift solenoid valve system circuit
- Damaged harness or connector
- Malfunction of the TCM
- Malfunction of the low-reverse brake shift solenoid valve (valve body assembly)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

DIAGNOSIS

STEP 1. Check the TCM terminal voltage.

[C-37 TCM connector (vehicle side, connected)]

Measure the voltage between the terminal No. 51 and body ground.

- Reverse and 1st coast: Battery positive voltage
- Other than above: 0 V

Q:Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 2.

STEP 2. Check between the TCM connector and A/T control solenoid valve assembly connector.

Check for continuity between C-37 TCM connector and B-111 A/T control solenoid valve assembly connector.

- Between C-37 terminal No. 51 and B-111 terminal No. 17: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the low-reverse brake shift solenoid.

Refer to P.23A-160.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 4.

STEP 4. Check between the A/T control solenoid valve assembly connector and the low-reverse brake shift solenoid valve connector.

Check for continuity between the B-111 A/T control solenoid valve assembly connector terminals and the low-reverse brake shift solenoid valve connector terminals.

- Between B-111 terminal No. 17 and low-reverse brake shift solenoid valve: Continuity exists.

Q:Is the check result satisfactory?

YES: Replace the valve body assembly.

NO: Repair or replace the failure section.

STEP 5. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.**Q:Is the check result normal?**

YES: Go to Step 7.

NO: Repair or replace the failure section.

STEP 6. Check the TCM and A/T control solenoid valve assembly connector pin terminals and the connection status.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P1773: ABS Information (ABS/ASC)

M12301000431USA0000010000

DESCRIPTIONS OF MONITOR METHODS

- When approx. 1 second has elapsed after TCM started, the ABS/ASC abnormality signal is received via the CAN communication with vehicle speed at 55 km/h or more.

MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

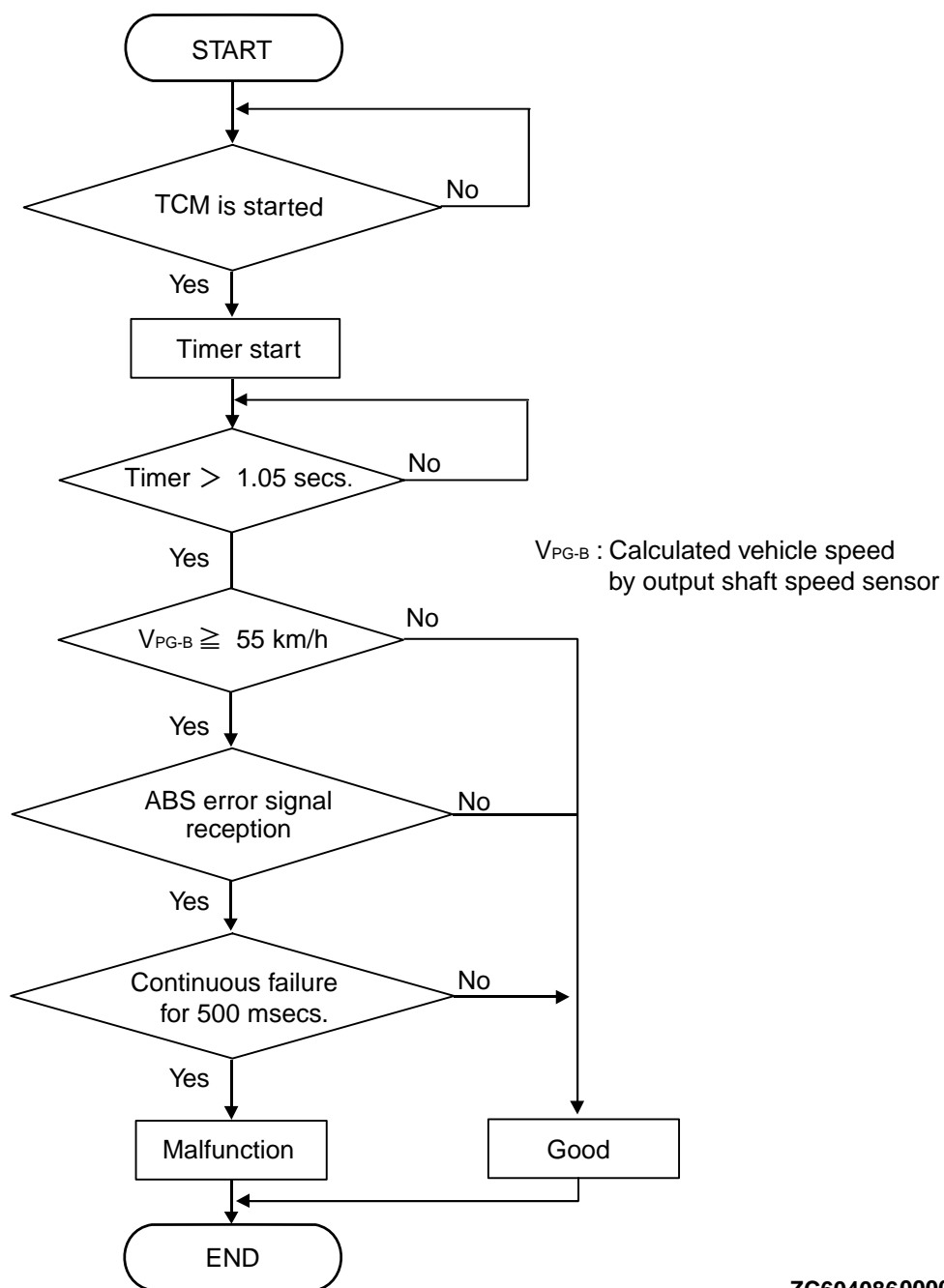
Other Monitor (There is no temporary DTC stored in memory for the item monitored below)

- Not applicable

Sensor (The sensor below is determined to be normal)

- Not applicable

LOGIC FLOW CHARTS (Monitor Sequence)



ZC6040860000

DTC SET CONDITIONS

Check Conditions

- TCM is started: more than 1.05 seconds.
- Vehicle speed: more than 55 km/h(34.4 mph).

Judgement Criteria

- Communication status: fail. (0.5 second)

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the CAN
- Malfunction of the ABS/ASC-ECU

DIAGNOSIS

STEP 1. Check the ABS/ASC-ECU.

Check if a failure related to ABS/ASC-ECU occurs.

Q: Is the check result satisfactory?

YES: Go to Step 2.

NO: Repair or replace the failure section.

STEP 2. Check the ABS/ASC-ECU connector pin terminal and the connection status.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC P1794: Ground Return

M12301000434USA0000010000

DESCRIPTIONS OF MONITOR METHODS

- With the ignition switch ON, an open circuit is detected for 0.2 seconds.

• Not applicable

Sensor (The sensor below is determined to be normal)

• Not applicable

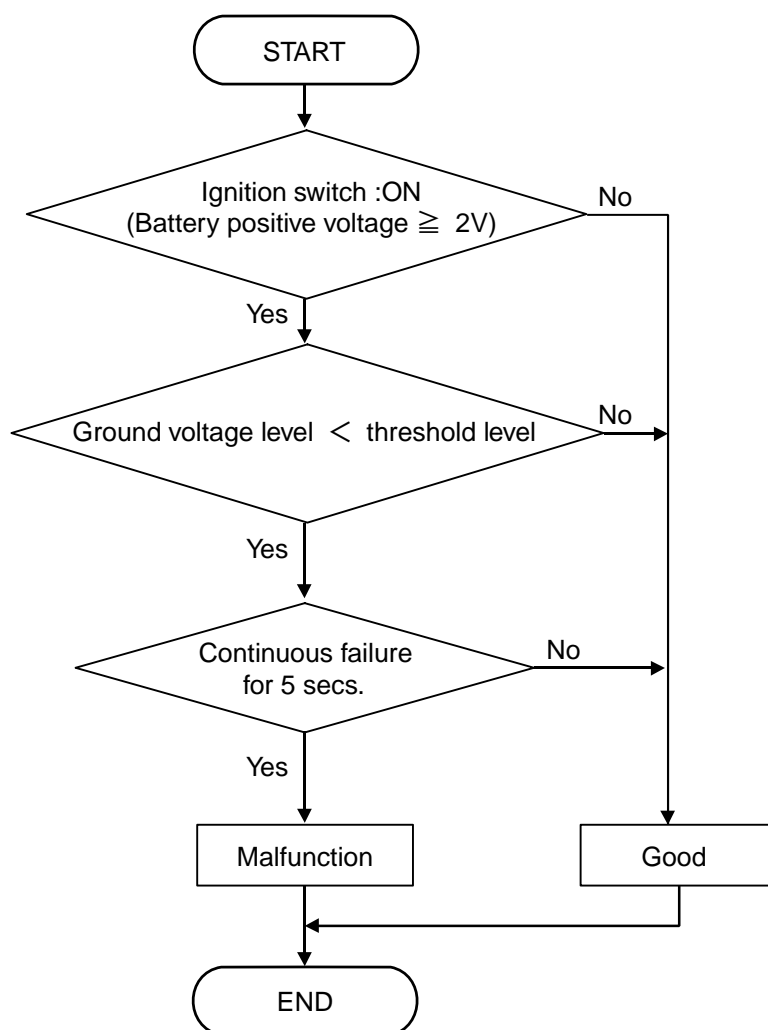
MONITOR EXECUTION

- Continuous

MONITOR EXECUTION CONDITIONS (OTHER MONITOR AND SENSOR)

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

LOGIC FLOW CHARTS (Monitor Sequence)



ZC604087 0000

DTC SET CONDITIONS**Check Conditions**

- *Voltage of battery: 2 volts or more.

Judgement Criteria

- *Ground voltage level: less than threshold level. (5 seconds)

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- *Breakage of ground return wire
- *Damaged harness or connector
- *Malfunction of the TCM

OBD-II DRIVE CYCLE PATTERN

Start the engine, and keep the vehicle stopped in "P" range for 5 seconds.

DIAGNOSIS

STEP 1. Check between the TCM connector and body ground.

Check for continuity between C-38 TCM connector terminal No. 16 and body ground.

•Between C-38 terminal No. 16 and body ground: Continuity exists.

Check for continuity between the C-38 TCM connector terminal No. 16 and the C-38 TCM connector terminal No. 13 and No. 26.

•Between C-38 terminal No. 16 and C-38 terminal No. 13 and No. 26: Continuity exists.

Q: Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 2.

STEP 2. Check the wiring harness between TCM and the A/T control solenoid valve assembly.

Check for continuity between C-38 TCM connector and B-111 A/T control solenoid valve assembly connector.

•Between C-38 terminal No. 16 and B-111 terminal No. 13: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the wiring harness between the A/T control solenoid valve assembly and body ground.

Check for continuity between B-111 A/T control solenoid valve assembly and body ground.

•Between B-111 terminal No. 13 and body ground: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 4.

STEP 4. Check the wiring harness between the A/T control solenoid valve assembly terminals and ground terminals.

Check for continuity between B-111 A/T control solenoid valve assembly terminals and ground terminals.

•Between B-111 terminal No. 13 and ground: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness.

Q: Is the check result normal?

YES: Go to Step 5.

NO: Repair or replace the failure section.

STEP 5. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair or replace the failure section.

STEP 6. Check the TCM, A/T control solenoid valve assembly connector pin terminals, and the connection status.

Q: Is the check result normal?

YES: Go to Step 7.

NO: Repair or replace the failure section.

STEP 7. Erase the DTC code, and drive the vehicle for a while.

Check that the normal code is displayed.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Return to START.

DTC U0001: Can Bus Off

M12301000435USA0000010000

DESCRIPTIONS OF MONITOR METHODS

- Open circuit or short circuit occurs in the CAN communication line (CAN_H, CAN_L).
- The communication becomes impossible with all the control modules for a specified time.

- Malfunction of the TCM
- Damaged harness or connector
- Malfunction of the CAN system module

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Malfunction of the CAN circuit

DIAGNOSIS

STEP 1. Check the CAN communication system malfunction.

- Check that the CAN system-related DTC code other than U0001 is set.
- Check that the CAN-related DTC is set with other relevant modules.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Repair or replace the failure section.

STEP 2. Check the CAN communication lines.

[C-38 TCM connector (vehicle side, disconnected)]

Between C-38 terminal No. 10, 11 and the CAN communication lines of other ECU: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness. Also, check for a short circuit between the twisted pair cables.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the relevant ECUs and the TCM connector pin terminal, and the connection status.

Q: Is the check result normal?

YES: Repair or replace the failure section.

NO: Replace the TCM.

DTC U0100: ECM Time-out

M12301000436USA0000010000

DESCRIPTIONS OF MONITOR METHODS

- Open circuit or short circuit occurs in the CAN communication line (CAN_H, CAN_L).
- Reception from ECM becomes impossible for a specified time or more.

- Malfunction of the CAN communication
- Malfunction of the ECM
- Malfunction of the TCM

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Damaged harness or connector

DIAGNOSIS

STEP 1. Check the CAN communication system malfunction.

- Check that the CAN system-related DTC code other than U0100 is set.
- Check if the CAN-related DTC is set with ECM.
- Check if the failure related to the engine occurs.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Repair or replace the failure section.

STEP 2. Check the CAN communication lines.

[C-38 TCM connector (vehicle side, disconnected)]

Between C-38 terminal No. 10, 11 and the CAN communication lines of ECM: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness. Also, check for a short circuit between the twisted pair cables.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check ECM, the TCM connector pin terminal, and the connection status.

Q: Is the check result normal?

YES: Repair or replace the failure section.

NO: Replace the TCM.

DTC U0121: ABS/ASC-ECU Time Out

M12301000437USA0000010000

DESCRIPTIONS OF MONITOR METHODS

- Open circuit or short circuit occurs in the CAN communication line (CAN_H, CAN_L).
- Reception from ABS/ASC-ECU becomes impossible for a specified time or more.

- Malfunction of the CAN communication
- Malfunction of the ABS/ASC-ECU
- Malfunction of the TCM

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Damaged harness or connector

DIAGNOSIS

STEP 1. Check the CAN communication system malfunction.

- Check that the CAN system-related DTC code other than U0121 is set.
- Check if the CAN-related DTC is set with ABS/ASC-ECU.
- Check if the failure related to the ABS/ASC occurs.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Repair or replace the failure section.

STEP 2. Check the CAN communication lines.

[C-38 TCM connector (vehicle side, disconnected)]

Between C-38 terminal No. 10, 11 and the CAN communication lines of ABS/ASC-ECU: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness. Also, check for a short circuit between the twisted pair cables.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the ABS/ASC-ECU, the TCM connector pin terminal, and the connection status.

Q: Is the check result normal?

YES: Repair or replace the failure section.

NO: Replace the TCM.

DTC U0141: ETACS-ECU Time Out

M12301000438USA0000010000

DESCRIPTIONS OF MONITOR METHODS

- Open circuit or short circuit occurs in the CAN communication line (CAN_H, CAN_L).
- Reception from ETACS-ECU becomes impossible for a specified time or more.

- Malfunction of the CAN communication
- Malfunction of the ETACS-ECU
- Malfunction of the TCM

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CODE TO BE SET ARE:)

- Damaged harness or connector

DIAGNOSIS

STEP 1. Check the CAN communication system malfunction.

- Check that the CAN system-related DTC code other than U0141 is set.
- Check if the CAN-related DTC is set with ETACS-ECU.
- Check if the failure related to the ETACS occurs.

Q:Is the check result normal?

YES: Go to Step 2.

NO: Repair or replace the failure section.

STEP 2. Check the CAN communication lines.

[C-38 TCM connector (vehicle side, disconnected)]

Between C-38 terminal No. 10, 11 and the CAN communication lines of ETACS-ECU: Continuity exists.

When the continuity check result is OK, check that the wiring harness is not shorted to the body and other wiring harness. Also, check for a short circuit between the twisted pair cables.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Repair or replace the failure section.

STEP 3. Check the ETACS-ECU, the TCM connector pin terminal, and the connection status.

Q:Is the check result normal?

YES: Repair or replace the failure section.

NO: Replace the TCM.

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: The vehicle does not run at any range.

M12301000439USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Malfunction of the engine
- Insufficient transmission fluid level
- Poor adjustment of transaxle control cable
- Malfunction of the torque converter
- Malfunction of the valve body assembly
- A/T failure: Hydraulic system (valve body assembly, oil pump), driving force transmission system (parking mechanism, clutch/brake, gears)

DIAGNOSIS

STEP 1. Check the engine performance.**Q:Is the check result normal?****YES:** Go to Step 2.**NO:** Repair the failure, and perform adjustment.**STEP 2. Check the transaxle control cable.**

Check the installation status of transaxle control cable and transmission range switch.

Q:Is the check result normal?**YES:** Go to Step 3.**NO:** Adjust the installation status of transaxle control cable and transmission range switch. P.23A-157.**STEP 3. Check the transmission fluid.**

Check the transmission fluid for seizure, fouling, and foreign material.

Q:Is the check result normal?**YES:** Go to Step 4.**NO:** Go to Step 7.**STEP 4. Check the transmission fluid level.**

Check if the transmission fluid level is adequate.

Q:Is the check result normal?**YES:** Go to Step 5.**NO:** Check and repair the leakage point of the transmission fluid, add the transmission fluid, and then go to Step 5.**STEP 5. Perform a hydraulic test.**

Refer to P.23A-21.

Q:Is the check result normal?**YES:** Go to Step 6.**NO:** Go to Step 7.

STEP 6. Replace the torque converter.

Q:Is the failure resolved?

YES: The procedure is complete.

NO: Go to Step 7.

STEP 7. Remove the transaxle assembly from the vehicle.
Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q:Is the check result satisfactory?

YES: Replace the transaxle assembly.

NO: Replace the failure part.

INSPECTION PROCEDURE 2: The vehicle does not run at the "D" or the "R" range.

M12301000440USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

•Poor adjustment of transaxle control cable

•A/T failure: Hydraulic system (valve body assembly), driving force transmission system (clutch/brake)

DIAGNOSIS

STEP 1. Check the transaxle control cable.

Check the installation status of transaxle control cable and transmission range switch.

Q:Is the check result normal?

YES: Go to Step 2.

NO: Adjust the installation status of transaxle control cable and transmission range switch. P.23A-157.

STEP 2. Check the transmission fluid.

Check the transmission fluid for seizure, fouling, and level.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Go to Step 3.

STEP 3. Remove the transaxle assembly from the vehicle.
Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q:Is the check result satisfactory?

YES: Replace the transaxle assembly.

NO: Replace the failure part.

INSPECTION PROCEDURE 3: The acceleration is poor.

M12301000441USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

•Malfunction of the engine

•Malfunction of the TCM
•TCM power supply or ground failure
•Malfunction of the torque converter

- A/T failure: Hydraulic system (valve body assembly), driving force transmission system (clutch/brake)

DIAGNOSIS**STEP 1. Check the engine performance.****Q: Is the check result normal?****YES:** Go to Step 2.**NO:** Repair the failure, and perform adjustment.

STEP 2. Compare with another same model vehicle.**Q: Is there a difference from the same model vehicle?****YES:** Go to Step 3.**NO:** The procedure is complete.

STEP 3. Check the TCM power supply and ground.**Q: Is the check result satisfactory?****YES:** Go to Step 4.**NO:** Repair the wiring.

STEP 4. Replace the TCM.**Q: Is the failure resolved?****YES:** The procedure is complete.**NO:** Go to Step 5.

STEP 5. Check the transmission fluid.

Check the transmission fluid for seizure, fouling, and foreign material. Also, check that the fluid level is adequate.

Q: Is the check result normal?**YES:** Go to Step 6.**NO:** Go to Step 7.

STEP 6. Replace the torque converter.**Q: Is the failure resolved?****YES:** The procedure is complete.**NO:** Go to Step 7.

STEP 7. Remove the transaxle assembly from the vehicle.

Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q: Is the check result satisfactory?**YES:** Replace the transaxle assembly.**NO:** Replace the failure part.

INSPECTION PROCEDURE 4: The vehicle moves at the "N" range.

M12301000442USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Poor adjustment of transaxle control cable
- A/T failure: Hydraulic system (valve body assembly), driving force transmission system (clutch/brake)

DIAGNOSIS

STEP 1. Check the engine performance.

Q:Is the check result normal?

YES: Go to Step 2.

NO: Repair the failure, and perform adjustment.

STEP 2. Compare with another same model vehicle.

Q:Is there a difference from the same model vehicle?

YES: Go to Step 3.

NO: The procedure is complete.

STEP 3. Check the transaxle control cable.

Check the installation status of transaxle control cable and transmission range switch.

Q:Is the check result normal?

YES: Go to Step 4.

NO: Adjust the installation status of transaxle control cable and transmission range switch. P.23A-157.

STEP 4. Check the transmission fluid.

Check the transmission fluid for seizure, fouling, and foreign material.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Go to Step 5.

STEP 5. Remove the transaxle assembly from the vehicle.

Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q:Is the check result satisfactory?

YES: Replace the transaxle assembly.

NO: Replace the failure part.

INSPECTION PROCEDURE 5: Gears cannot be shifted at all, or a certain gear shift (1st to 2nd, 2nd to 3rd, etc.) is not made.

M12301000443USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Non-genuine device installation: TCM voltage drop
- Improper fixing of the electric wiring, poor insertion of the connector, poor contact of the inside PIN
- Poor adjustment of transmission range switch

- Failure of the transmission range switch main unit
- Malfunction of the TCM
- TCM power supply or ground failure
- A/T failure: Hydraulic system (valve body assembly), driving force transmission system (clutch/brake)

DIAGNOSIS**STEP 1. Check the electrical equipment.**

Q: Is the non-genuine electrical equipment (car navigator, audio devices, etc.) installed?

YES: Remove the power supply wiring and signal lines of the equipment.

NO: Go to Step 2

STEP 2. Check the electric system.

Check if there is an improper fixing of the electric wiring, poor insertion of the connector, and poor contact.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Adjust and repair.

STEP 3. Check and adjust the transmission range switch.

Refer to P.23A-157, P.23A-157.

If the transmission range switch has a failure, replace it, and then check the trouble symptom again.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Go to Step 4.

STEP 4. Check the TCM power supply and ground.

Q: Is the check result normal?

YES: Go to Step 5.

NO: Repair the wiring.

STEP 5. Replace the TCM.

Q: Is the failure resolved?

YES: The procedure is complete.

NO: Go to Step 6.

STEP 6. Remove the transaxle assembly from the vehicle.

Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q: Is the check result satisfactory?

YES: Replace the transaxle assembly.

NO: Replace the failure part.

INSPECTION PROCEDURE 6: The torque converter is not locked up.

M12301000444USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Poor adjustment of transmission range switch
- Failure of the transmission range switch main unit
- Malfunction of the TCM
- Poor installation of A/T and engine
- Malfunction of the torque converter

DIAGNOSIS

STEP 1. Check and adjust the transmission range switch.

Refer to P.23A-157, P.23A-157.

If the transmission range switch has a failure, replace it, and then check the trouble symptom again.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Go to Step 2.

STEP 2. Replace the TCM.

Q:Is the failure resolved?

YES: The procedure is complete.

NO: Go to Step 3.

STEP 3. Check the installation position of the transaxle assembly and the engine.

Is the installation of transaxle assembly and the engine normal?
Compare and check the axial direction position with the same model vehicle.

Q:Is the check result normal?

YES: Go to Step 4.

NO: Repair the installation.

STEP 4. Check the transmission fluid.

Check the transmission fluid for burning, fouling, and foreign material.

Q:Is the check result normal?

YES: Replace the torque converter.

NO: Replace the transaxle assembly..

INSPECTION PROCEDURE 7: The clutch slips when the vehicle starts or during gear shift.

M12301000445USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Poor adjustment of transaxle control cable
- Inadequate transmission fluid level
- A/T failure: Hydraulic system (valve body assembly), driving force transmission system (clutch/brake)

DIAGNOSIS**STEP 1. Check the transaxle control cable. <When the clutch slips at vehicle start>**

Check the installation status of transaxle control cable and transmission range switch.

Q:Is the check result normal?

YES: Go to Step 2.

NO: Adjust the installation status of transaxle control cable and transmission range switch. P.23A-157.

STEP 2. Check the transmission fluid.

Check the transmission fluid for seizure, fouling, and foreign material.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Go to Step 5.

STEP 3. Check the transmission fluid level.

Check if the transmission fluid level is adequate.

Q:Is the check result normal?

YES: Go to Step 4.

NO: Check and repair the leakage point of the transmission fluid, add the transmission fluid, and then go to Step 4.

STEP 4. Perform a hydraulic test.

Refer to P.23A-21.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Go to Step 5.

STEP 5. Remove the transaxle assembly from the vehicle.

Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q:Is the check result satisfactory?

YES: Replace the transaxle assembly.

NO: Replace the failure part.

INSPECTION PROCEDURE 8: The engine brake is not applied.

M12301000446USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Poor adjustment of transaxle control cable
- Inadequate transmission fluid level

- Malfunction of the TCM
- A/T failure: Hydraulic system (valve body assembly), driving force transmission system (clutch/brake)

DIAGNOSIS

STEP 1. Check the transaxle control cable.

Check the installation status of transaxle control cable and transmission range switch.

Q:Is the check result normal?

YES: Go to Step 2.

NO: Adjust the installation status of transaxle control cable and transmission range switch. P.23A-157.

STEP 2. Check the transmission fluid.

Check the transmission fluid for burning, fouling, and foreign material.

Q:Is the check result normal?

YES: Go to Step 3.

NO: Go to Step 7.

STEP 3. Check the transmission fluid level.

Check if the transmission fluid level is adequate.

Q:Is the check result normal?

YES: Go to Step 4.

NO: Check and repair the leakage point of the transmission fluid, add the transmission fluid, and then go to Step 4.

STEP 4. Perform a hydraulic test.

Refer to P.23A-21.

Q:Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 7.

STEP 5. Replace the TCM.

Q:Is the failure resolved?

YES: Go to Step 6.

NO: Go to Step 7.

STEP 6. Compare with another same model vehicle.

Q:Is there a difference from the same model vehicle?

YES: Go to Step 7.

NO: The procedure is complete.

STEP 7. Remove the transaxle assembly from the vehicle.

Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q:Is the check result satisfactory?

YES: Replace the transaxle assembly.

NO: Replace the failure part.

INSPECTION PROCEDURE 9: The shift shock is large at a certain gear shift. (1st to 2nd, 2nd to 3rd, etc.)

M12301000447USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)*warm up, and temperature, humidity, and air pressure differences.*

- Malfunction of the engine: Engine output change
- Malfunction of the TCM
- A/T failure: Hydraulic system (valve body assembly), driving force transmission system (clutch/brake)

NOTE: When the engine output is low, shock occurs. Care must also be taken during cold, after

DIAGNOSIS**STEP 1. Check the engine performance.**

- Check the ECM side especially for throttle signal-related abnormality.
- Check the stall speed (refer to P.23A-21). If the speed is low, check the engine side.

Q:Is the check result normal?**YES:** Go to Step 2.**NO:** Repair the failure, and perform adjustment.

STEP 2. Replace the TCM.**Q:Is the failure resolved?****YES:** The procedure is complete.**NO:** Go to Step 3.

STEP 3. Perform a hydraulic test.

Refer to P.23A-21.

Q:Is the check result normal?**YES:** The procedure is complete.**NO:** Go to Step 4.

STEP 4. Compare with another same model vehicle.**Q:Is there a difference from the same model vehicle?****YES:** Go to Step 5.**NO:** The procedure is complete.

STEP 5. Remove the transaxle assembly from the vehicle.

Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q:Is the check result satisfactory?**YES:** Replace the transaxle assembly.**NO:** Replace the failure part.

INSPECTION PROCEDURE 10: The select shock is large when the transmission range is shifted from "N" to "D", and "N" to "R."

M12301000448USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Malfunction of the engine: Idle speed
- Poor adjustment of transmission range switch
- Malfunction of the TCM
- A/T failure: Hydraulic system (valve body assembly), driving force transmission system (clutch/brake)

DIAGNOSIS

STEP 1. Check the engine performance.

Especially check that the idle speed does not exceed the specified value.

Q:Is the check result normal?

YES: Go to Step 2.

NO: Repair the failure, and perform adjustment.

STEP 2. Check and adjust the transmission range switch.

Refer to P.23A-157, P.23A-157.

If the transmission range switch has a failure, replace it, and then check the trouble symptom again.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Go to Step 3.

STEP 3. Replace the TCM.

Q:Is the failure resolved?

YES: The procedure is complete.

NO: Go to Step 4.

STEP 4. Compare with another same model vehicle.

Q:Is there a difference from the same model vehicle?

YES: Go to Step 5.

NO: The procedure is complete.

STEP 5. Remove the transaxle assembly from the vehicle.

Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q:Is the check result satisfactory?

YES: Replace the transaxle assembly.

NO: Replace the failure part.

INSPECTION PROCEDURE 11: Abnormal sound occurs during idling.

M12301000449USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Malfunction of the engine: Abnormal sound of auxiliary parts
- Transmission fluid level
- Installation of torque converter
- A/T failure: Hydraulic system (valve body assembly, hydraulic circuit)

NOTE:*Inspection items for abnormal sound*

1. Check of sound source and incoming route (radiated sound, propagation sound, resonance, etc.), and measurement at driver's seat, front passenger's seat, and rear passenger's seat
2. Change of sound during cold and after warm up (Change of fluid, and hydraulic pressure)
3. Change of sound with the engine speed
4. Check of tone, and continuous/discontinuous sound

DIAGNOSIS

STEP 1. Check the engine performance.

Check the sound of engine, auxiliary parts, and resonance/nonresonance.

Q:Is the check result normal?

YES: Go to Step 2.

NO: Repair the failure, and perform adjustment.

STEP 2. Check the transmission fluid level.

Check if the transmission fluid level is adequate.

Q:Is the check result normal?

YES: Go to Step 4.

NO: Go to Step 3.

STEP 3. Check and repair the leakage point of the transmission fluid.

Check and repair the leakage point of the transmission fluid, and adjust the transmission fluid level. Then check if the abnormal sound is generated.

Q:Is the check result normal?

YES: The procedure is complete.

NO: Go to Step 4.

STEP 4. Check the transmission fluid.

Check the transmission fluid for burning, fouling, and foreign material.

Q:Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 8.

STEP 5. Retest the system.

Check if the abnormal sound during idling occurs with vibration.

Q:Is the check result normal?

YES: Go to Step 6.

NO: Go to Step 7.

STEP 6. Check the torque converter.

Check the torque converter installation, change the installation phase, and then check the trouble symptom.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Go to Step 7.

STEP 7. Compare with another same model vehicle.

Q: Is there a difference from the same model vehicle?

YES: Go to Step 8.

NO: The procedure is complete.

STEP 8. Remove the transaxle assembly from the vehicle.

Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q: Is the check result satisfactory?

YES: Replace the transaxle assembly.

NO: Replace the failure part.

INSPECTION PROCEDURE 12: Abnormal sound occurs during driving.

M12301000450USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Engine- and body-related failures: Abnormal sound of auxiliary parts, drive shaft, wheel bearing
- Installation of non-genuine aeroparts to the body
- Abnormal incoming route of sound: Installation of transaxle control cable, damping device, sound isolation device
- Malfunction of the torque converter
- A/T failure: Driving force transmission system (gear), hydraulic system (valve body assembly, hydraulic circuit)

NOTE:

Inspection items for abnormal sound

1. *Check of sound source and incoming route (radiated sound, propagation sound, resonance, etc.), and measurement at driver's seat, front passenger's seat, and rear passenger's seat*
2. *Change of sound during cold and after warm up (Change of fluid, and hydraulic pressure)*
3. *Change of sound with the engine speed (r/min order change)*
4. *Change of sound with the vehicle speed (r/min order change, wind noise)*
5. *Change of sound with the throttle valve opening (engine output change, hydraulic pressure change)*

DIAGNOSIS

STEP 1. Check the body and engine performance.

- Check if a non-genuine aeropart is installed to the body.
- Check the engine auxiliary parts, drive shaft, and wheel bearing.
- Check if the abnormal sound changes in accordance with the engine speed, or the vehicle speed.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Repair the failure, and perform adjustment.

STEP 2. Check the installation of the transaxle control cable, damping device, and sound isolation device.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Repair the failure, and perform adjustment.

STEP 3. Check the abnormal sound.

Q: Does the abnormal sound change in accordance with the vehicle speed?

YES: Go to Step 5.

NO: Go to Step 4.

STEP 4. Check the abnormal sound.

Q: Does the abnormal sound change in accordance with the throttle valve opening? Or is it the transmission fluid sound especially caused at start-up?

YES: Replace the torque converter.

NO: Go to Step 5.

STEP 5. Compare with another same model vehicle.

Q: Is there a difference from the same model vehicle?

YES: Go to Step 6.

NO: The procedure is complete.

STEP 6. Remove the transaxle assembly from the vehicle.

Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q: Is the check result satisfactory?

YES: Replace the transaxle assembly.

NO: Replace the failure part.

INSPECTION PROCEDURE 13: Abnormal sound occurs during gear shift.

M12301000451USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Abnormal incoming route of sound: Installation of transaxle control cable, damping device, sound isolation device
- A/T failure: Driving force transmission system (gear), hydraulic system (valve body assembly, hydraulic circuit)

NOTE:

Inspection items for abnormal sound

1. Check of sound source and incoming route (radiated sound, propagation sound, resonance,

etc.), and measurement at driver's seat, front passenger's seat, and rear passenger's seat

2. *Change of sound during cold and after warm up (Change of fluid, and hydraulic pressure)*
3. *Change of sound with the throttle valve opening (engine output change, hydraulic pressure change)*
4. *Change of sound on a flat road, upslope, and downslope*
5. *Check of tone*

DIAGNOSIS

STEP 1. Check the installation of the transaxle control cable, damping device, and sound isolation device.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Repair the failure, and perform adjustment.

STEP 2. Compare with another same model vehicle.

Q: Is there a difference from the same model vehicle?

YES: Go to Step 3.

NO: The procedure is complete.

STEP 3. Remove the transaxle assembly from the vehicle.
Disassemble and check the transaxle assembly to check if there is a foreign material inside.

Q: Is the check result satisfactory?

YES: Replace the transaxle assembly.

NO: Replace the failure part.

INSPECTION PROCEDURE 14: Engine stall

M12301000452USA0000010000

TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Engine system failure
- Malfunction of the transmission fluid

- Malfunction of the torque converter
- A/T failure: Hydraulic system (valve body assembly), driving force transmission system (clutch/brake)

DIAGNOSIS

STEP 1. Check the engine performance.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Repair the failure, and perform adjustment.

STEP 2. Check the transmission fluid.

Check the transmission fluid for burning, fouling, and foreign material.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Go to Step 6.

STEP 3. Check the transmission fluid level.

Check if the transmission fluid level is adequate.

Q: Is the check result normal?

YES: Go to Step 4.

NO: Check and repair the leakage point of the transmission fluid, add the transmission fluid, and then go to Step 4.

STEP 4. Perform a hydraulic test.

Refer to P.23A-21.

Q: Is the check result normal?

YES: Go to Step 5.

NO: Go to Step 6.

STEP 5. Compare with another same model vehicle.

Q: Is there a difference from the same model vehicle?

YES: Go to Step 6.

NO: The procedure is complete.

STEP 6. Retest the system.

Does the engine stall occur again?

Q: Is the check result normal?

YES: Replace the transaxle assembly.

NO: The procedure is complete.

INSPECTION PROCEDURE 15: Oil leaks from the air breather.

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TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

*A/T failure: Driving force transmission system

*Poor adjustment of the transmission fluid level

DIAGNOSIS

STEP 1. Check the transmission fluid.

Check the transmission fluid for burning, fouling, and foreign material.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Replace the transaxle assembly.

STEP 2. Check the transmission fluid level.

Check if the transmission fluid level is adequate.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Check and repair the leakage point of the transmission fluid, add the transmission fluid, and then go to Step 3.

STEP 3. Perform a hydraulic test.

Refer to P.23A-21.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Replace the transaxle assembly.

INSPECTION PROCEDURE 16: The starter does not rotate at the "P" or "N" range. (The engine does not start.)

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TROUBLESHOOTING HINTS (THE MOST LIKELY CAUSES FOR THIS CONDITION:)

- Engine system failure
- Poor adjustment of transaxle control cable
- Poor adjustment of transmission range switch
- Failure of the transmission range switch main unit
- The starter electric wiring
- Damaged harness or connector
- Malfunction of the TCM

DIAGNOSIS

STEP 1. Check the engine performance.

Q: Is the check result normal?

YES: Go to Step 2.

NO: Repair the failure, and perform adjustment.

STEP 2. Check the transaxle control cable.

Check the installation of the transaxle control cable.

Q: Is the check result normal?

YES: Go to Step 3.

NO: Adjust the transaxle control cable. P.23A-157.

STEP 3. Check and adjust the transmission range switch.

Refer to P.23A-157, P.23A-157.

If the transmission range switch has a failure, replace it, and then check the trouble symptom again.

Q: Is the check result normal?

YES: The procedure is complete.

NO: Go to Step 4.

STEP 4. Check the electric system.

Check the starter-related wiring for poor insertion of connector or open circuit.

Q: Is the check result normal?

YES: Replace the TCM.

NO: Repair the failure, and perform adjustment.

DATA LIST REFERENCE TABLE

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Item No.	Inspection item	Inspection requirement		Normal condition
1	Power supply voltage	Ignition switch: ON		Battery positive voltage
2	Transmission fluid temperature sensor signal	Ignition switch: ON	Transmission fluid: 20°C (68°F)	Approximately 0.69 V
			Transmission fluid: 80°C (176°F)	Approximately 2.52 V

Item No.	Inspection item	Inspection requirement		Normal condition
3	Input shaft speed sensor signal	Gear range: 4th gear	Driving at constant speed of 60 km/h (37mph)	1,400 - 1,700 r/min
4	Output shaft speed sensor signal	Transmission range: D	Driving at constant speed of 30km/h (19mph)	Approximately 588 Hz
5	Transmission fluid temperature sensor	Ignition switch: ON	Transmission fluid: 20°C (68°F)	Approximately 0.69 V
			Transmission fluid: 80°C (176°F)	Approximately 2.52 V
6	Accelerator pedal position	▪ Ignition switch: ON ▪ Engine: Stopped ▪ Transmission range: P	Accelerator pedal: Release	0 %
			Accelerator pedal: Depressed	Gradually rises from the above value
			Accelerator pedal: Fully depressed	100 %
9	Engine revolution	▪ Engine: Idling (after the warming up) ▪ Transmission range: P	Accelerator pedal: Release	600 - 900 r/min
			Accelerator pedal: Depressed	Gradually rises from the above value
11	Slip revolution	Lock-up engaged	Driving at constant speed of 60 km/h (37mph)	Max 70 r/min
13	Input shaft speed sensor	Gear range: 4th gear	Driving at constant speed of 60 km/h (37mph)	1,400 - 1,700 r/min
14	Real vehicle speed	Driving		Speed meter value
15	Output shaft speed sensor (inference)	Transmission range: D	Driving at constant speed of 30km/h (19mph)	Approximately 588 Hz
16	Current gear	D-Range, Idle		1st gear
17	High clutch pressure switch	Transmission range :D	Gear range: 3rd	OFF
			Gear range: 4th	ON
18	3-5 reverse clutch pressure switch	Transmission range :D	Gear range: 2nd	OFF
			Gear range: 3rd	ON
19	2-6 brake pressure switch	Transmission range :D	Gear range: 1st	OFF
			Gear range: 2nd	ON
20	Low clutch pressure switch	Transmission range :D	Gear range: 1st	ON
			Gear range: 4th	OFF
21	Low reverse brake pressure switch	Ignition switch: ON	Transmission range: N	OFF
			Transmission range: R	ON
24	Target gear	D-Range, Idle		1st gear
25	Low clutch linear solenoid monitor current	Ignition switch: OFF, brake: OFF		5.3 ± 0.3 Ω (at 20°C)
27	2-6 brake linear solenoid monitor current	Ignition switch: OFF, brake: OFF		5.3 ± 0.3 Ω (at 20°C)

Item No.	Inspection item	Inspection requirement		Normal condition
31	High clutch linear solenoid monitor current	Ignition switch: OFF, brake: OFF		$5.3 \pm 0.3 \Omega$ (at 20°C)
33	Lock-up and low-reverse brake linear solenoid monitor current	Ignition switch: OFF, brake: OFF		$5.3 \pm 0.3 \Omega$ (at 20°C)
35	Line pressure linear solenoid monitor current	Ignition switch: OFF, brake: OFF		$5.3 \pm 0.3 \Omega$ (at 20°C)
37	Shift lock solenoid monitor	Ignition switch: ON	Transmission range switch: P Brake pedal: Depressed	ON
			Transmission range switch and brake pedal position: Other than above	OFF
38	Shift lock solenoid output	Ignition switch: ON	Transmission range switch: P Brake pedal: Depressed	ON
			Transmission range switch and brake pedal position: Other than above	OFF
39	Low clutch shift solenoid monitor	Ignition switch: OFF, brake: OFF		$12.9 \pm 2.5 \Omega$ (at 20°C)
41	Low-reverse brake shift solenoid monitor	Ignition switch: OFF, brake: OFF		$12.9 \pm 2.5 \Omega$ (at 20°C)
43	Indicator D output	▪ Ignition switch: ON ▪ Transmission range: D		ON
		▪ Ignition switch: ON ▪ Transmission range: Other than D		OFF
45	Indicator sport mode output	▪ Ignition switch: ON ▪ Transmission range: sport mode		ON
		▪ Ignition switch: ON ▪ Transmission range: Other than sport mode		OFF
46	Indicator N output	▪ Ignition switch: ON ▪ Transmission range: N		ON
		▪ Ignition switch: ON ▪ Transmission range: Other than N		OFF
47	Indicator P output	▪ Ignition switch: ON ▪ Transmission range: P		ON
		▪ Ignition switch: ON ▪ Transmission range: Other than P		OFF
48	Indicator R output	▪ Ignition switch: ON ▪ Transmission range: R		ON
		▪ Ignition switch: ON		OFF

Item No.	Inspection item	Inspection requirement		Normal condition
		•Transmission range: Other than R		
49	ABS actuation signal	ABS is operating		ON
		ABS is not operating		OFF
50	Shift switch (down)	Ignition switch: ON	Transmission range: D	OFF
			Selector lever operation: Select sport mode	OFF
			Selector lever operation: Upshift and hold the selector lever	OFF
			Selector lever operation: Downshift and hold the selector lever	OFF
51	Paddle shift switch (Down)	Ignition switch: ON	Paddle shift lever: Downshift and hold the lever.	ON
			Selector lever operation: Other than above	OFF
52	Select switch	Ignition switch: ON	Transmission range: D	OFF
			Selector lever operation: Select sport mode	ON
			Selector lever operation: Upshift and hold the selector lever	ON
			Selector lever operation: Downshift and hold the selector lever	ON
53	Shift position	Ignition switch: ON	Transmission range: P	P
			Transmission range: R	R
			Transmission range: N	N
			Transmission range: D	D
54	Transmission range switch	Ignition switch: ON	Transmission range: P	P
			Transmission range: R	R
			Transmission range: N	N
			Transmission range: D	D
55	Idle switch signal	Engine: idling		ON
		Other than above		OFF
56	Idle switch signal (soft)	Engine: idling		ON
		Other than above		OFF
57	TCL actuation signal	When TCL is operating		ON
		When TCL is not operating		OFF
58	Shift switch (up)	Ignition switch: ON	Transmission range: D	OFF

Item No.	Inspection item	Inspection requirement		Normal condition
			Selector lever operation: Select sport mode	OFF
			Selector lever operation: Upshift and hold the selector lever	ON
			Selector lever operation: Downshift and hold the selector lever	OFF
59	Paddle shift switch (Up)	Ignition switch: ON	Paddle shift lever: Upshift and hold the lever.	ON
			Selector lever operation: Other than above	OFF
60	Stoplight switch	▪ Ignition switch: ON ▪ Engin: Stopped	Brake pedal: Depressed	ON
			Brake pedal: Released	OFF

TCM TERMINAL VOLTAGE REFERENCE CHART FOR TRANSAXLE OPERATION

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C-38

C-37

JAE-E													JAE-E											
1	2	3	4	5	6	7	8	9	10	11	12	13	31	32	33	34	35	36	37	38	39	40	41	
14	15	16	17	18	19	20	21	22	23	24	25	26	42	43	44	45	46	47	48	49	50	51	52	

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Terminal No.	Inspection item	Inspection requirement		Normal condition
1	High clutch linear solenoid valve	While driving	At high clutch engaged	1 V or less
			Other than above	300 Hz*
2	3-5 reverse clutch linear solenoid valve	While driving	At 3-5 reverse clutch engaged	1 V or less
			Other than above	300 Hz*
3	2-6 brake linear solenoid valve	While driving	At 2-6 brake engaged	300 Hz*
			Other than above	1 V or less
6	Transmission range switch: P	Ignition switch: ON	Transmission range: P	Battery positive voltage
			Other than above	1 V or less
7	Transmission range switch: R	Ignition switch: ON	Transmission range: R	Battery positive voltage
			Other than above	1 V or less
8	Transmission range switch: D	Ignition switch: ON	Transmission range: D	Battery positive voltage
			Other than above	1 V or less
9	Paddle shift switch (up)	Ignition switch: ON	Paddle shift lever position: Upshift and hold	1 V or less

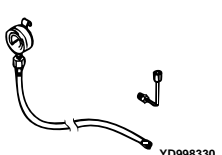
Terminal No.	Inspection item	Inspection requirement		Normal condition
			Paddle shift lever position: Other than above	Battery positive voltage
10	CAN_H	-		-
11	CAN_L	-		-
12	Power supply	Ignition switch: ON		Battery positive voltage
		Ignition switch: OFF		1 V or less
13	Ground	Always		1 V or less
14	Low clutch linear solenoid valve	While driving	Gear range: 5th or 6th	Battery positive voltage
			Other than above	1 V or less
16	Ground	Always		1 V or less
21	Transmission range switch: N	Ignition switch: ON	Transmission range: N	Battery positive voltage
			Transmission range: Other than above	1V or less
25	Power supply	Ignition switch: ON		Battery positive voltage
		Ignition switch: OFF		1 V or less
26	Ground	Always		1 V or less
31	Battery back up	Always		Battery positive voltage
32	Paddle shift switch (down)	Ignition switch: ON	Paddle shift lever position: Downshift and hold	1 V or less
			Paddle shift lever position: Other than above	Battery positive voltage
33	Low clutch pressure switch	While driving	At low clutch engaged	1 V or less
			Other than above	Battery positive voltage
34	3-5 reverse clutch pressure switch	While driving	At 3-5 reverse clutch engaged	1 V or less
			Other than above	Battery positive voltage
35	Shift switch (up)	Ignition switch: ON Transmission range: sport mode	Transmission range: Upshift and hold the lever.	1 V or less
			Transmission range: Other than above	Battery positive voltage
36	Select switch	Ignition switch: ON	Transmission range: sport mode	1 V or less
			Transmission range: Other than above	Battery positive voltage
37	Output shaft speed sensor	Vehicle speed: 30 km/h		Approx. 588 Hz
38	Input shaft speed sensor	Engine speed: 700 r/min		Approx. 353 Hz
39	Transmission fluid temperature sensor	Ignition switch: ON	Transmission fluid temperature: 20°C (68°F)	Approx. 2.53 V

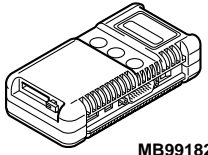
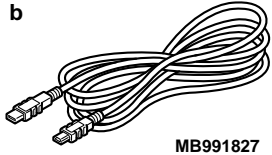
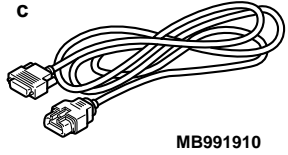
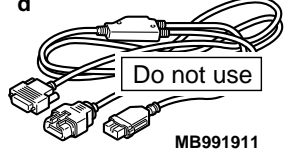
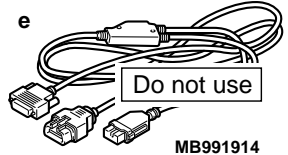
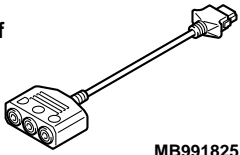
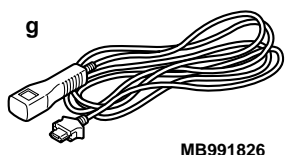
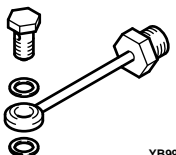
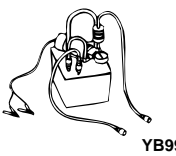
Terminal No.	Inspection item	Inspection requirement		Normal condition
			Transmission fluid temperature: 80°C (176°F)	Approx. 0.69 V
40	Line pressure linear solenoid valve	Ignition switch: ON	While driving	Approx. 300 Hz*
			Other than above	1 V or less
41	Low clutch linear solenoid valve	While driving	At low clutch engaged	Approx. 300 Hz*
			Other than above	1 V or less
43	Low-reverse brake pressure switch	While driving	At low-reverse brake engaged	1 V or less
			Other than above	Battery positive voltage
44	2-6 brake pressure switch	While driving	At 2-6 brake engaged	1 V or less
			Other than above	Battery positive voltage
45	High clutch pressure switch	While driving	At high clutch engaged	1 V or less
			Other than above	Battery positive voltage
46	Shift switch (down)	Ignition switch: ON Transmission range: sport mode	Transmission range: Downshift and hold the lever.	1 V or less
			Transmission range: Other than above	Battery positive voltage
48	Output shaft speed sensor ground	Always		1 V or less
49	Input shaft speed sensor ground	Always		1 V or less
50	Transmission fluid temperature sensor ground	Ignition switch: ON		1 V or less
51	Low-reverse brake shift solenoid valve	While driving		Battery positive voltage
		Other than above		1 V or less
52	Lock-up and Low-reverse brake liner solenoid	Ignition switch: ON	At lock-up engaged	Approx. 300 Hz*
			Other than above	1 V or less

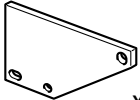

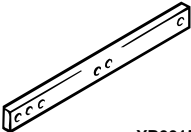
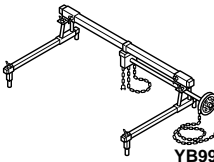
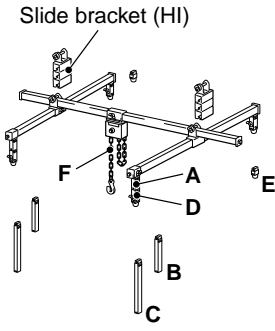
NOTE: *The operation is performed at 300 Hz in a voltage range of 0 to 12 V when measured by an oscilloscope.

SPECIAL TOOLS

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Tool	Tool number and name	Supersession	Application
	MD998330 (Includes MD998331) Oil pressure gauge (3.0 MPa, 427 psi)	MD998330-01	Measurement of hydraulic pressure

Tool	Tool number and name	Supersession	Application
 <p>MB991824</p>  <p>MB991827</p>  <p>MB991910</p>  <p>MB991911</p>  <p>MB991914</p>  <p>MB991825</p>  <p>MB991826</p> <p>YB9919580000</p>	<p>MB991958</p> <p>a. MB991824</p> <p>b. MB991827</p> <p>c. MB991910</p> <p>d. MB991911</p> <p>e. MB991914</p> <p>f. MB991825</p> <p>g. MB991826</p> <p>M.U.T.-III sub assembly</p> <p>a. Vehicle communication interface (V.C.I.)</p> <p>b. M.U.T.-III USB cable</p> <p>c. M.U.T.-III main harness A (Vehicles with CAN communication system)</p> <p>d. M.U.T.-III main harness B (Vehicles without CAN communication system)</p> <p>e. M.U.T.-III main harness C (for Daimler Chrysler models only)</p> <p>f. M.U.T.-III measurement adapter</p> <p>g. M.U.T.-III trigger harness</p>	<p>MB991824-KIT</p> <p><i>NOTE: G: MB991826 M. U. T. - III Trigger Harness is not necessary when pushing V. C. I. ENTER key.</i></p>	<p>⚠ CAUTION</p> <p>M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.</p> <p>Combination meter check (Diagnostic trouble code, service data)</p>
 <p>YB992127AA01</p>	<p>MB992127 Adapter</p>	-	Connection for oil pressure gauge
 <p>YB995062AA00</p>	<p>MB995062 Flushing tool</p>	MLR-6906B or Equivalent	Flushing cooler and tube

Tool	Tool number and name	Supersession	Application
 YB992208	MB992208 Engine hanger plate A	General Service Tool	Supporting the engine assembly during removal and installation of the transaxle assembly
 YB991454AA01	MB991454 Engine hanger balancer	MZ203827-01	When the engine hanger is used: Supporting the engine assembly during removal and installation of the transaxle assembly
 YB991527AA01	MB991527 Hanger	Tool not available	<i>NOTE: Special tool MB991454 is a part of engine hanger attachment set MB991453.</i>
 YB991895	MB991895 Engine hanger	Tool not available	
 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	

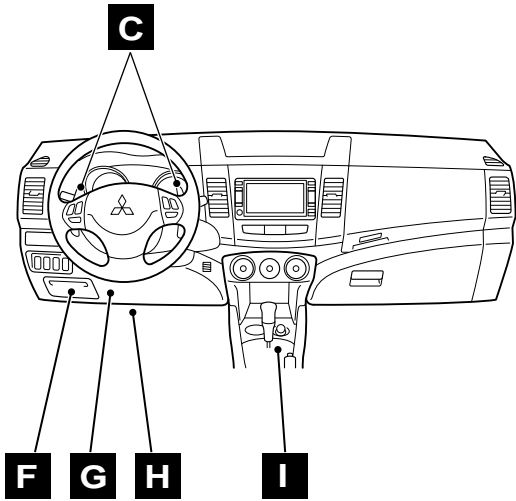
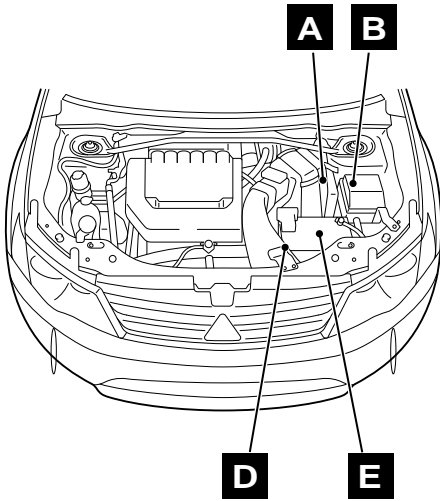
ON-VEHICLE SERVICE

A/T CONTROL COMPONENT LAYOUT

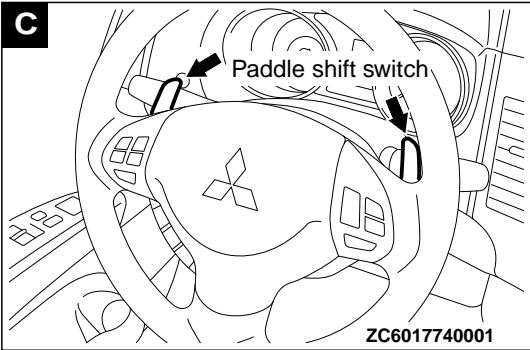
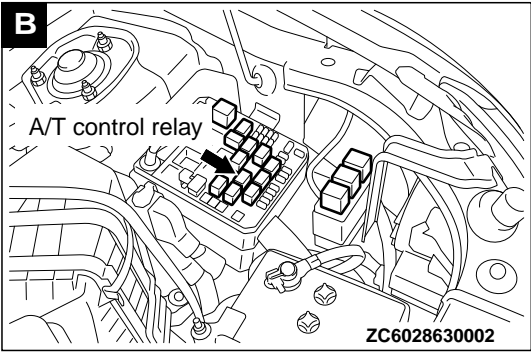
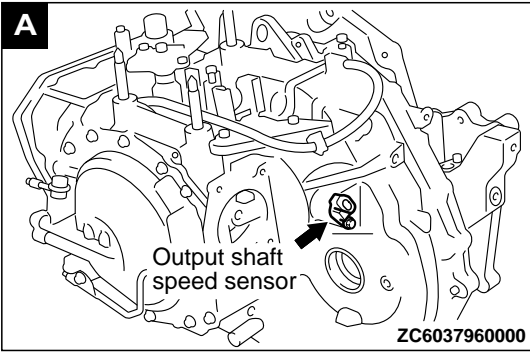
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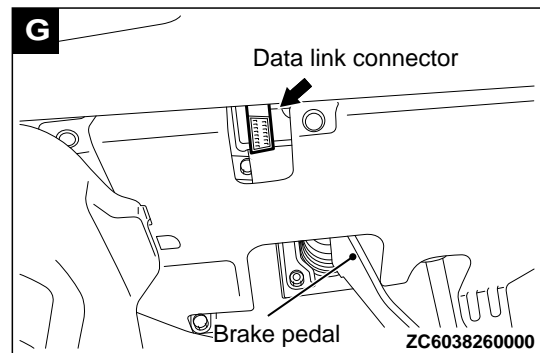
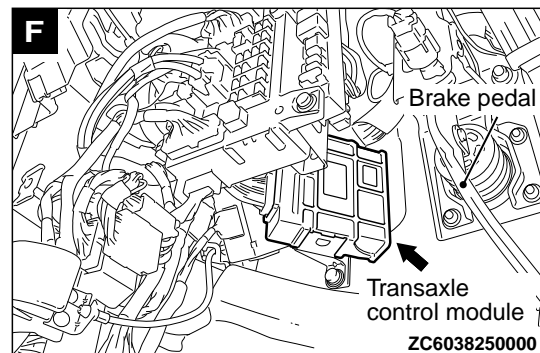
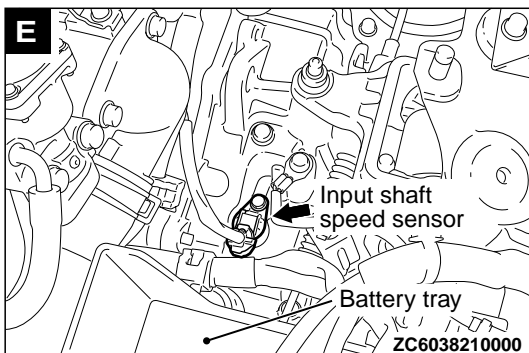
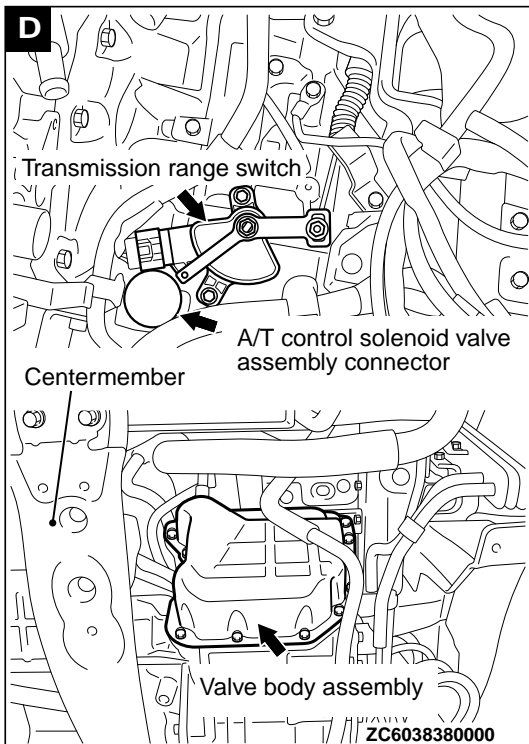
Name	Symbol	Name	Symbol
A/T control relay	B	Shift lock solenoid	I
A/T control solenoid valve assembly	D	Stoplight switch	H
Data link connector	G	Shift switch assembly	I
Input shaft speed sensor	E	Transaxle control module (TCM)	F
Output shaft speed sensor	A	Transmission fluid temperature sensor	D

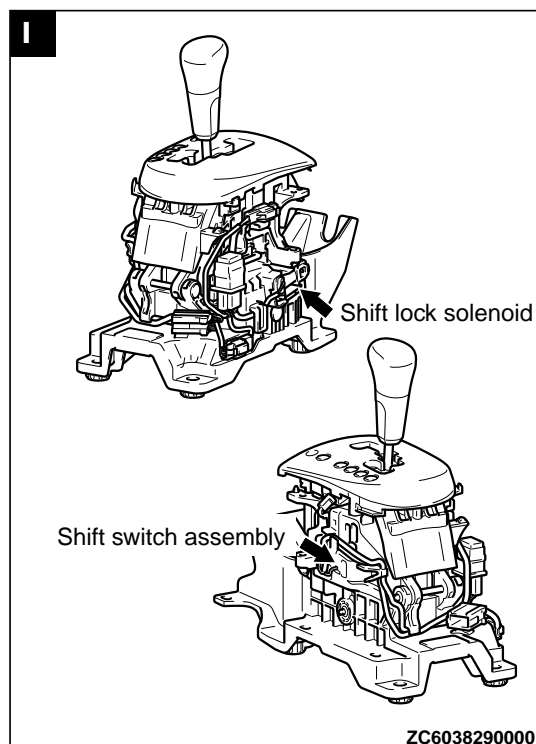
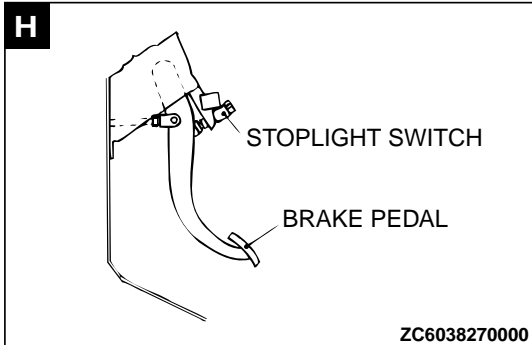
Name	Symbol	Name	Symbol
Paddle shift switch	C	Transmission range switch	D



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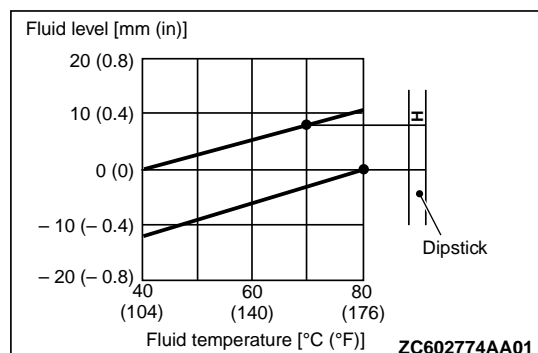




ESSENTIAL SERVICE

TRANSMISSION FLUID CHECK

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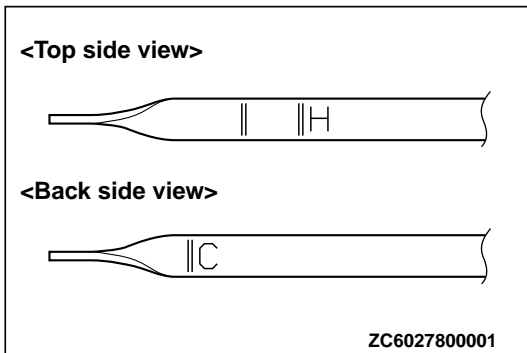
1. Drive the vehicle until the transmission fluid temperature rises to the normal operating temperature [70 - 80°C (158 - 176°F)].

NOTE: The transmission fluid temperature is measured with scan tool MB991958 (M. U. T.-III sub assembly).

NOTE: If it takes some amount of time until the transmission fluid reaches its normal operating temperature [70 - 80° C (158 - 176° F)], check the transmission fluid level by referring to the left diagram.

2. Park the vehicle on a level surface.
3. Move the selector lever through all positions to fill the torque converter and the hydraulic circuits with fluid, and then move the selector lever to the "N" position.
4. After wiping off any dirt around the dipstick, remove the dipstick and check the condition of the transmission fluid.

NOTE: If the transmission fluid smells as if it is burnt, it means that the transmission fluid has been contaminated by fine particles from the bushings and friction materials. Transaxle overhaul and cooler line flushing may be necessary.



5. Check transmission fluid level is at the "H" mark on the dipstick. If the transmission fluid level is less than this, add DIA QUEEN ATF J-1 until the level reaches the "H" mark.

NOTE: If the transmission fluid level is too low, the oil pump will draw in air along with the transmission fluid, which will cause to form bubbles. If the transmission fluid level is too high, rotating components inside the transaxle will churn the fluid and air into a foamy liquid. Both conditions (level too low or too high) will cause the hydraulic pressure to drop, which will result in late shifting and slipping of the clutches and brakes.

NOTE: In either case, air bubbles can interfere with normal valve, clutch, and brake operation. Also, foaming can cause transmission fluid to escape from the transaxle vent where it may be mistaken for a leak.

6. Securely insert the dipstick.

NOTE: The transmission fluid should always be replaced under the following conditions:

- *When troubleshooting the transaxle.
- *When overhauling the transaxle.
- *When the transmission fluid is noticeably dirty or burnt (driving under severe conditions).

TRANSMISSION FLUID CHANGE

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If you have a transmission fluid changer, use this changer to replace the transmission fluid. If you do not have a transmission fluid changer, replace the transmission fluid by the following procedure.

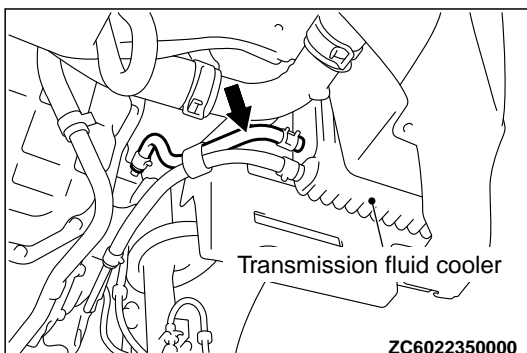
1. Disconnect the hose shown in the illustration which connects the transaxle and the oil cooler (inside the radiator). Place a container under the hose to collect the discharge.

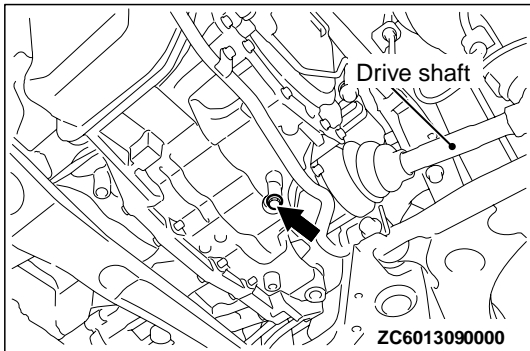
CAUTION

The engine should be stopped within one minute after it is started. If all the transmission fluid has drained out before then, the engine should be stopped at that point.

2. Start the engine and let the transmission fluid drain out.
(Running conditions: "N" range with engine idling)

Approximately 3.5 dm³(3.7 quarts) of transmission fluid should be removed.





3. Remove the drain plug from the bottom of the transaxle case to drain the transmission fluid.

Approximately 2.0 dm³(2.1 quarts) of transmission fluid should be removed.

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

Tightening torque: 32 ± 2 N·m (23 ± 2 ft-lb)

⚠ CAUTION

Stop pouring if the full volume of transmission fluid can not be added.

5. Add new transmission fluid (DIA QUEEN ATF J-1) through the oil filter tube.

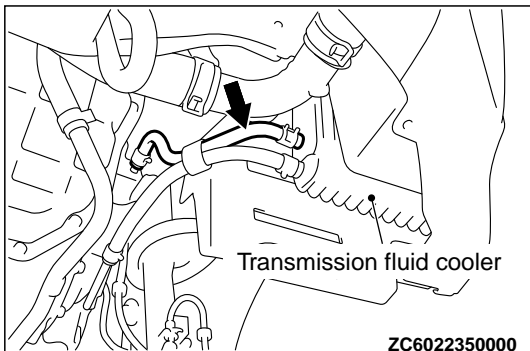
Approximately 5.5 dm³(5.8 quarts) of transmission fluid should be added.

6. Repeat the procedure in Step 2. (to pump out the rest of the contaminated transmission fluid)
7. Add new transmission fluid (DIA QUEEN ATF J-1) through the oil filter tube.

Approximately 3.5 dm³(3.7 quarts) of transmission fluid should be added.

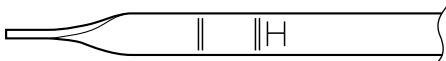
NOTE: Check for contamination or a burnt odor. If the transmission fluid is still contaminated or burnt, repeat Steps 6 and 7 before proceeding to Step 8.

8. Reconnect the hose which was disconnected in step 1 above, and firmly insert the dipstick.
9. Start the engine and run it at idle for one to two minutes.
10. Move the selector lever through all positions, and then move it to the "N" position.

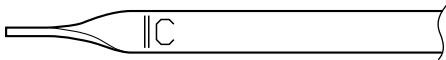


11. Check that the transmission fluid level is at the "C" mark on the dipstick. If the level is less than this, add transmission fluid.

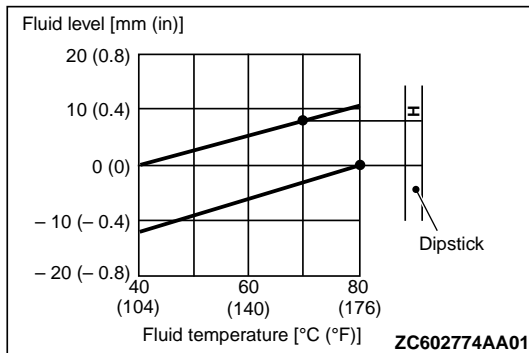
<Top side view>



<Back side view>



ZC6027800001



12. Drive the vehicle until the transmission fluid temperature rises to the normal operating temperature [70 - 80°C (158 - 176°F)], and then check the transmission fluid level again. The transmission fluid level must be at the "H" mark.

NOTE: The transmission fluid temperature is measured with scan tool MB991958 (M. U. T.-III sub assembly).

NOTE: The "C" level is for reference only; the "H" level should be regarded as the standard level.

NOTE: If it takes some amount of time until the transmission fluid reaches its normal operating temperature [70 - 80° C (158 - 176° F)], check the transmission fluid level by referring to the left diagram.

13. When the transmission fluid is less than the specified level, add transmission fluid.
When the transmission fluid is greater than the specified level, drain the excess fluid through the drain plug to adjust the transmission fluid to the specified level.
14. Firmly insert the dipstick into the oil filler tube.

FLUSHING COOLERS AND TUBES

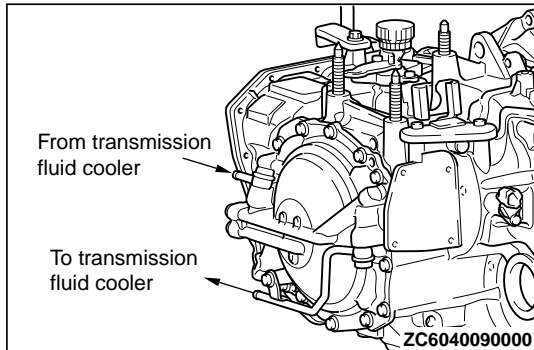
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Required Special Tool:
MB995062: Flushing Tool

⚠ WARNING

- **Wear protective eyewear that meets the requirements of ANSI Z87.1 - 1968 and OSHA. Wear standard industrial rubber gloves.**
- **Keep lighted cigarettes, sparks, flames, and other ignition sources away from the area to prevent the ignition of combustible liquids and gases. Keep a class B fire extinguisher in the area where the flushing tool will be used. Keep the area well ventilated. Do not let flushing solvent come in contact with eyes or skin. If it does, flush with water for 15 to 20 seconds. Remove contaminated clothing and wash affected skin with soap and water. Seek medical attention.**

When a transaxle failure has contaminated the transmission fluid, the oil cooler(s) must be flushed. The cooler by-pass valve in the transaxle must also be replaced. The torque converter must also be replaced with an exchange unit. This will ensure that metal particles or sludged transmission fluid are not later transferred back into the reconditioned (or replaced) transaxle. There are two different procedures for flushing coolers and lines. The recommended procedure is to use special tool MB995062 Flushing Tool. The other procedure is to use a hand suction gun and mineral spirits.



1. Remove the cover plate filler plug on special tool MB995062. Fill the reservoir 1/2 to 3/4 full with fresh flushing solution. Flushing solvents are petroleum based solutions generally used to clean transaxle components. Do not use solvents containing acids, water, gasoline, or any other corrosive liquids.
2. Reinstall the filler plug on special tool MB995062.
3. Verify that the pump power switch is turned "OFF." Connect the red alligator clip to the positive battery terminal. Connect the black alligator clip to a good ground.
4. Disconnect the cooler lines at the transaxle.

NOTE: When flushing the transaxle cooler and lines, always reverse flush.

5. Connect the pressure line to the OUTLET line (from cooler).
6. Connect the return line to the INLET line (to cooler).
7. Turn the pump "ON" for two to three minutes to flush the cooler(s) and lines. Monitor the pressure readings. Clear the return lines. Pressure readings should stabilize below 138 kPa (20 psi) for vehicles equipped with a single cooler and 208 kPa (30 psi) for vehicles equipped with dual coolers. If flow is intermittent or exceeds these pressures, replace the cooler(s).
8. Turn the pump "OFF."
9. Disconnect the suction line from the reservoir at the cover plate. Disconnect the return line at the cover plate and place it in a drain pan.
10. Turn the pump "ON" for 30 seconds to purge flushing solution from the cooler(s) and lines. Turn the pump "OFF."
11. Place the suction line into a one quart container of DIA QUEEN ATF- J1 transmission fluid.
12. Turn the pump "ON" until all transmission fluid is removed from the one quart container and lines. This purges any residual cleaning solvent from the transaxle cooler(s) and lines. Turn the pump "OFF."
13. Disconnect the alligator clips from the battery. Reconnect the flusher lines to the cover plate, and remove the flushing adapters from the cooler lines. Reconnect the cooler lines.

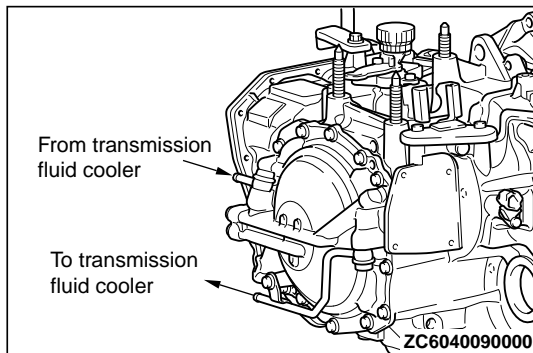
OIL COOLER FLOW CHECK

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After the new or repaired transaxle has been installed, fill to the proper level with DIA QUEEN ATF J-1. The flow should be checked using the following procedure:

CAUTION

With the fluid set at the proper level, transmission fluid collection should not exceed one quart or internal damage to the transaxle may occur.

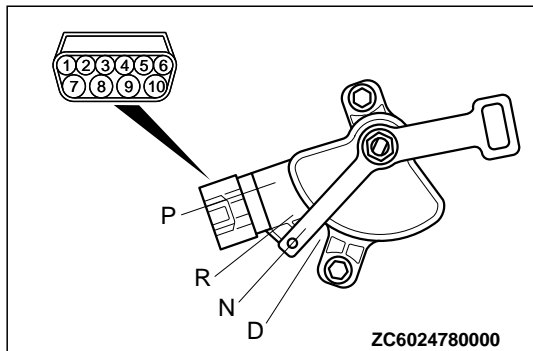
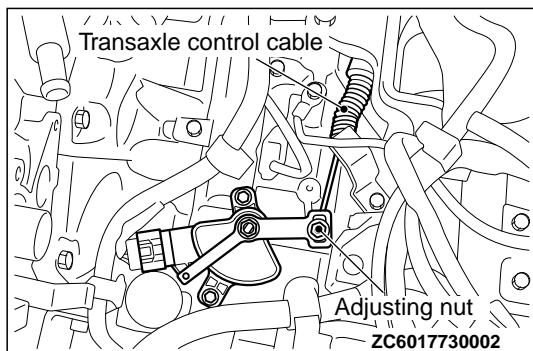


1. Disconnect the OUTLET line (from cooler) at the transaxle and place a collecting container under the disconnected line.
2. Run the engine at curb idle speed with the shift selector in neutral.
3. If transmission fluid flow is intermittent or it takes more than 20 seconds to collect one quart of transmission fluid, replace the cooler.
4. If flow is within acceptable limits, reconnect the cooler line. Then fill the transaxle to the proper level, using DIA QUEEN ATF- J1

TRANSMISSION RANGE SWITCH CHECK

M12301000014USA0000010000

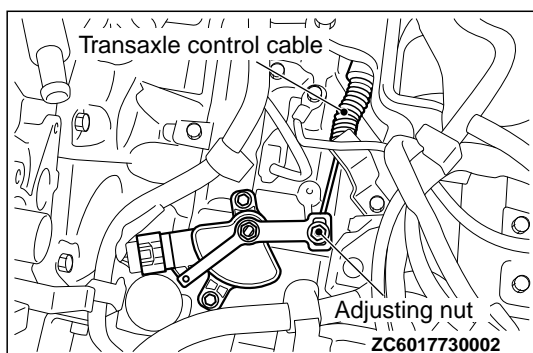
Transmissi on range	Terminal connection of tester	Specified condition
P	3 - 2, 7 - 10	Less than 2 ohms.
R	3 - 9	
N	3 - 8, 7 - 10	
D	3 - 5	

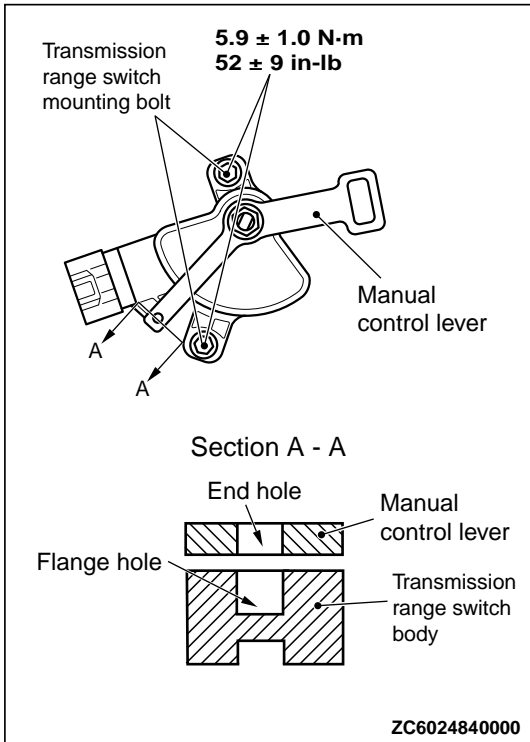


TRANSMISSION RANGE SWITCH AND CONTROL CABLE ADJUSTMENT

M12301000103USA0000010000

1. Set the selector lever to the "N" position.
2. Loosen the control cable to the manual control lever adjusting nut to free the cable and lever.
3. Set the manual control lever to the neutral position.



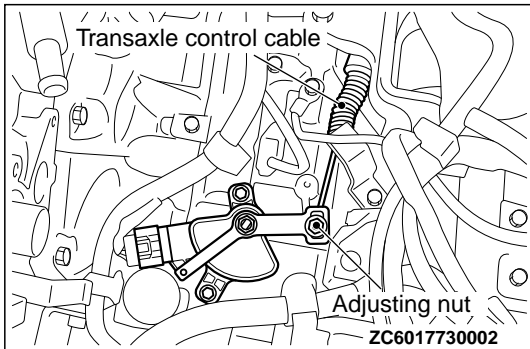


4. Loosen the transmission range switch body mounting bolts and turn the park/neutral position switch body so the hole in the end of the manual control lever and the hole (section A - A in the figure on the left) in the flange of the transmission range switch body flange are aligned.

NOTE: The transmission range switch body can be aligned by inserting a 5-mm diameter steel bar into the end hole of the manual control lever and the flange hole of the transmission range switch body.

5. Tighten the transmission range switch body mounting bolts to the specified torque. Be careful at this time that the switch body does not move.

Tightening torque: $5.9 \pm 1.0 \text{ N}\cdot\text{m}$ ($52 \pm 9 \text{ in}\cdot\text{lb}$)



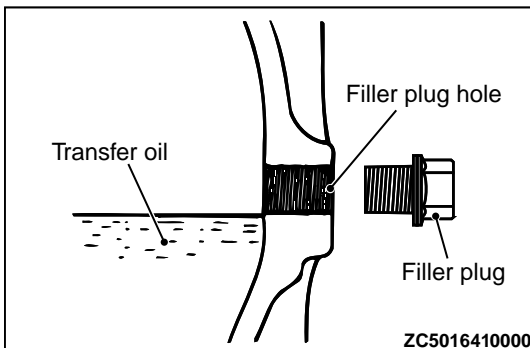
6. Tighten the transaxle control cable using the adjusting nut with the specified torque.

Tightening torque: $9.5 \pm 3.5 \text{ N}\cdot\text{m}$ ($84 \pm 31 \text{ in}\cdot\text{lb}$)

7. Check that the selector lever is in the N position.
8. Check that each position of the manual control lever matches each position of the selector lever using scan tool MB991958 (M.U.T.-III sub assembly).

TRANSFER OIL CHECK

M12301000011USA0000010000

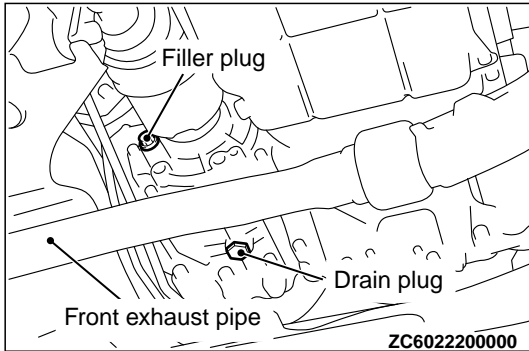


1. Remove the oil filler plug.
2. Check that the oil level is just below the lower edge of the oil filler plug hole.
3. Check that the oil is not excessively foul and has moderate viscosity.
4. Install the oil filler plug and tighten to the specified torque.

Tightening torque: $32 \pm 2 \text{ N}\cdot\text{m}$ ($23 \pm 2 \text{ ft}\cdot\text{lb}$)

TRANSFER OIL REPLACEMENT

M12301000012USA0000010000



1. Remove the oil drain plug to drain the transfer oil.
2. Install the oil drain plug and tighten to the specified torque.
Tightening torque: 32 ± 2 N·m (23 ± 2 ft-lb)
3. Remove the oil filler plug and fill the transfer oil up to the lower edge of the oil filler plug hole.
Brand name: Hypoid gear oil API classification GL-5 SAE 90
Filling amount: 0.53 dm^3 (0.56 quarts)
4. Install the oil filler plug and tighten to the specified torque.
Tightening torque: 32 ± 2 N·m (23 ± 2 ft-lb)

AUTOMATIC TRANSAXLE CONTROL COMPONENT CHECK

TRANSMISSION RANGE SWITCH CHECK

M12301000014USA0000010001

Refer to P.23A-157.

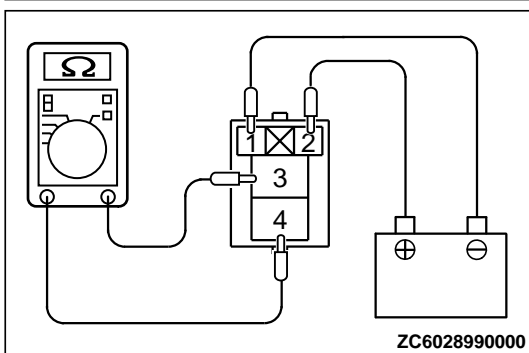
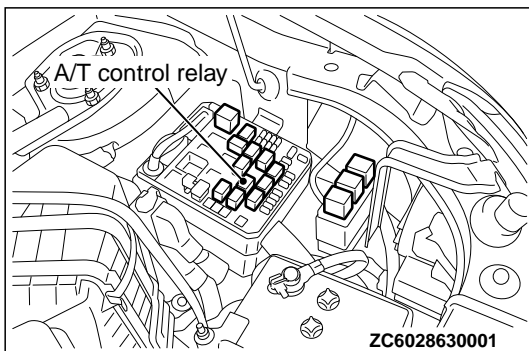
STOPLIGHT SWITCH CHECK

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Refer to GROUP 35A, Brake Pedal - Brake Pedal Inspection P. 35A-24.

A/T CONTROL RELAY CHECK

M12301000093USA0000010000



1. Remove the A/T control relay.
2. Use jumper wires to connect A/T control relay terminal No.1 to the negative battery terminal and terminal No.2 to the positive battery terminal.
3. Check for continuity between A/T control relay terminals No.3 and No.4 when the jumper wires are connected to and disconnected from the battery.

Jumper wire	Continuity between terminals No.3 and No.4
Connected	Continuity exists (2Ω or less)

Jumper wire	Continuity between terminals No.3 and No.4
Disconnected	No continuity

4. If there is any problem with the A/T control relay, replace it.

SOLENOID VALVE CHECK

M12301000094USA0000010000

1. Disconnect the A/T control solenoid valve assembly connector.
2. Measure the resistance between the terminals of the applicable solenoid valves and the ground.

Standard value:

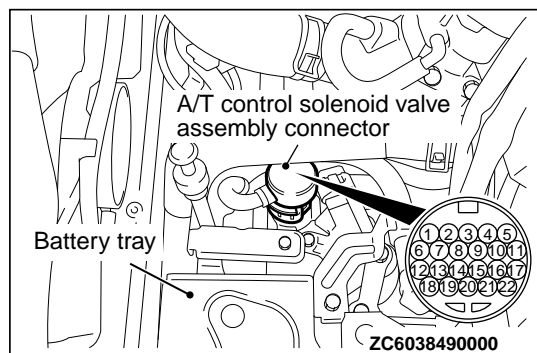
Terminal No.	Applicable solenoid valve	Resistance value Ω
1	Low clutch linear solenoid valve	Approximately 5.3 {Transmission fluid temperature: 20°C (68°F)}
4	Lock-up and low reverse brake linear solenoid valve	
6	2-6 brake linear solenoid valve	
9	Line pressure linear solenoid valve	
14	3-5 reverse clutch linear solenoid valve	
19	High clutch linear solenoid valve	Approximately 28 {Transmission fluid temperature: 20°C (68°F)}
17	Low-reverse brake shift solenoid valve	
22	Low clutch shift solenoid valve	

3. When the resistance is within the standard value, check the power supply and the ground circuits.

CAUTION

Each solenoid valve cannot be removed or replaced as a single unit. When replacement of any one of the solenoid valves is necessary, replace the valve body assembly.

4. When the resistance is outside the standard value, replace the valve body assembly and the harness.



TRANSMISSION FLUID TEMPERATURE SENSOR CHECK

M12301000384USA0000010000

1. Disconnect the A/T control solenoid valve assembly connector.
2. Measure the resistance between the sensor-side connector terminal No. 2 of the A/T control solenoid valve assembly connector and the ground.

Standard value:

Fluid temperature °C (°F)	Resistance kΩ
10 (50)	Approx. 6.62
25 (77)	Approx. 3.51
80 (176)	Approx. 0.55
110 (230)	Approx. 0.25

NOTE: In the information screen on the multi-information display, the fluid temperature warning comes on when the transmission fluid temperature is approximately 140° C (284° F) or higher, and automatically goes out when the A/T fluid temperature dropped below approximately 135° C (275° F).

CAUTION

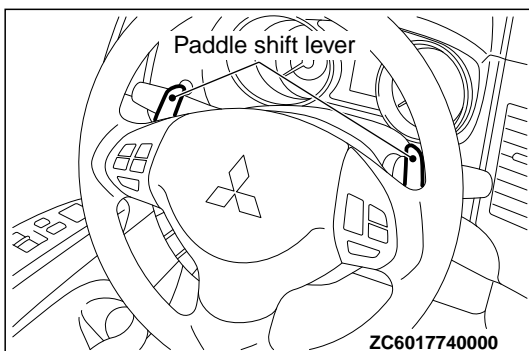
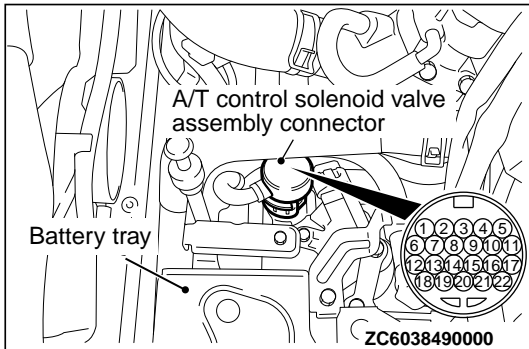
The A/T fluid temperature sensor cannot be removed or replaced as a single unit. When the A/T fluid temperature sensor needs to be replaced, replace the valve body assembly.

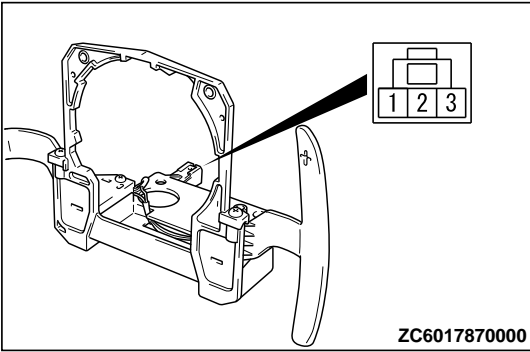
3. When the resistance of the transmission fluid temperature sensor is outside the standard value, and the fluid temperature warning comes on/goes out at other than the specified temperatures, replace the valve body assembly and the harness.

PADDLE SHIFT SWITCH CHECK

M12301000385USA0000010000

1. After operating the paddle shift levers (+ side, - side) by pulling them to the rearward of the vehicle, check that the levers are returned to the original positions quickly when released. Also, check that no looseness, friction or abnormal sound occurs.
2. Remove the paddle shift assembly. (Refer to GROUP 37 - Steering shaft P.37-23.)





3. Check for 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	

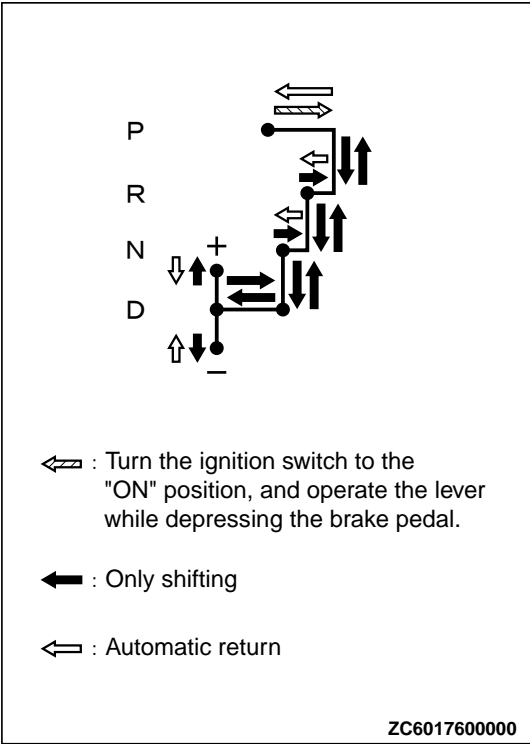
4. In the cases other than the above, replace the paddle shift assembly.

SELECTOR LEVER OPERATION CHECK

M12301000013USA0000010001

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

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

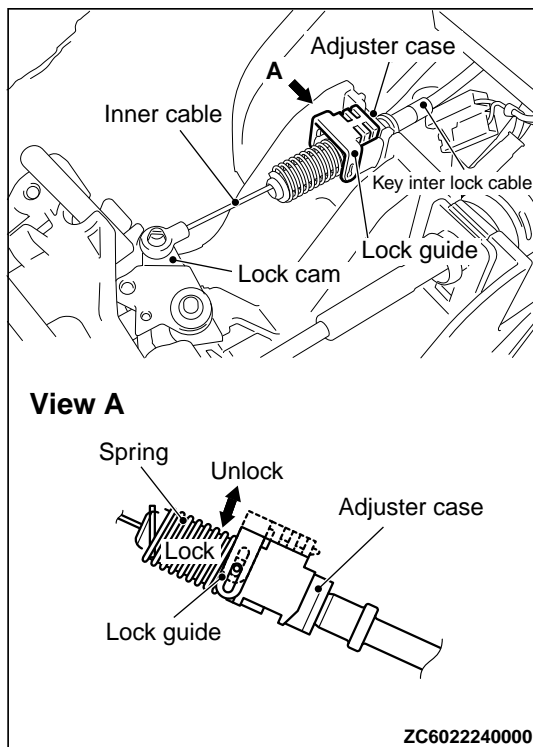


KEY INTERLOCK MECHANISM CHECK/
ADJUSTMENT

M12301000313USA0000010000

1. Carry out the following check.

Inspection procedure	Check conditions	Items to be checked (Normal conditions)
1	Brake pedal: Depress	Ignition switch position: "LOCK" (OFF) or removed
2		Ignition switch position: "ON"
3	Transmission range: Other than P	The selector lever cannot be moved out of "P" position.
4	Transmission range: P	The selector lever can be moved from "P" position to other positions smoothly.
		The ignition switch cannot be turned to the "LOCK" (OFF) position.
		The ignition switch can be turned to the "LOCK" (OFF) position smoothly.



2. If the normal conditions are not obtained after performing the above operations, install the key interlock cable in the following procedures. (Automatic adjustment)

- (1) Disconnect the key interlock cable connection (selector lever side). (Refer to P.23A-168.)

CAUTION

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

- (2) Move the selector lever to the "P" position and turn the ignition switch to the "LOCK" (OFF) position.
 (3) Install the tip of the key interlock cable to the lock cam of the selector lever assembly, taking care not to twist the inner cable.
 (4) Install the adjuster case with its lock guide pulled up (unlocked).
 (5) Securely push down the lock guide to lock it.

NOTE: The lock position of the key interlock cable is automatically adjusted by a spring.

SHIFT LOCK MECHANISM CHECK

M12301000314USA0000010000

SYSTEM CHECK

Inspection procedure	Check conditions	Items to be checked (Normal conditions)	Possible cause of abnormality
1	Brake pedal not depressed	Ignition switch: "LOCK", "ACC" or removed	The selector lever cannot be moved out of the "P" position
			<ul style="list-style-type: none"> Abnormality in the shift lock link (stuck, disengaged, broken, etc.) Abnormality in the electrical circuit (short circuit in the switches or harnesses)

AUTOMATIC TRANSAXLE MECHANICAL
ON-VEHICLE SERVICE

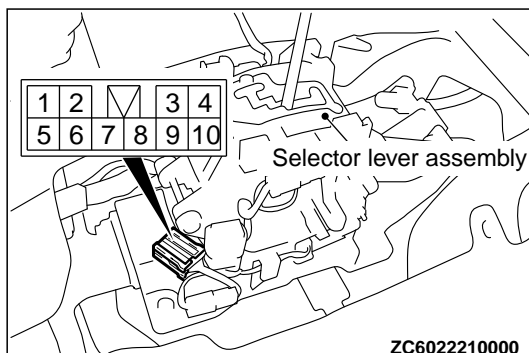
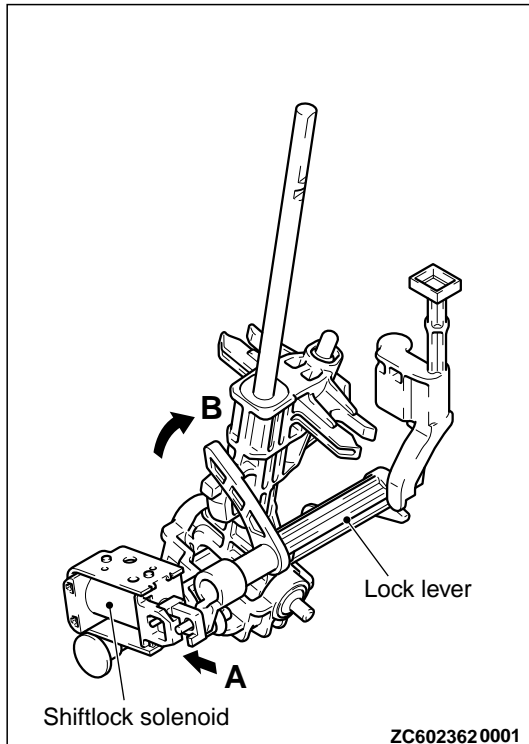
Inspection procedure	Check conditions		Items to be checked (Normal conditions)	Possible cause of abnormality
				▪ Abnormality in the key interlock mechanism
2	Brake pedal depressed			▪ Abnormality in the electrical circuit (short circuit in the switches or harnesses) ▪ Abnormality in the key interlock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

COMPONENT PARTS CHECK

SHIFT LOCK LINK

Check each part for damage and disengagement.

Check that the lock lever smoothly moves in the direction of arrow B in the figure when the shift lock solenoid plunger is pressed in the direction of arrow A, and smoothly moves back to the original position when the plunger is released.



ELECTRICAL CIRCUIT

Check for the following operations.

- With the selector lever in "P" position, apply voltage (equivalent to the battery voltage) between the selector lever assembly connector terminals No. 3 and No. 6, and between terminals No. 4 and No. 6. Check that the shift lock solenoid operates normally while the voltage is applied, and moves back to the original position when the voltage is removed.
- With the selector lever moved to the position other than "P", apply voltage (equivalent to the battery voltage) between the selector lever assembly connector terminals No. 3 and No. 6, and between terminals No. 4 and No. 6. Check that the shift lock solenoid does not operate at this time.

TRANSAXLE CONTROL

REMOVAL AND INSTALLATION

M12301000066USA0000010001

WARNING

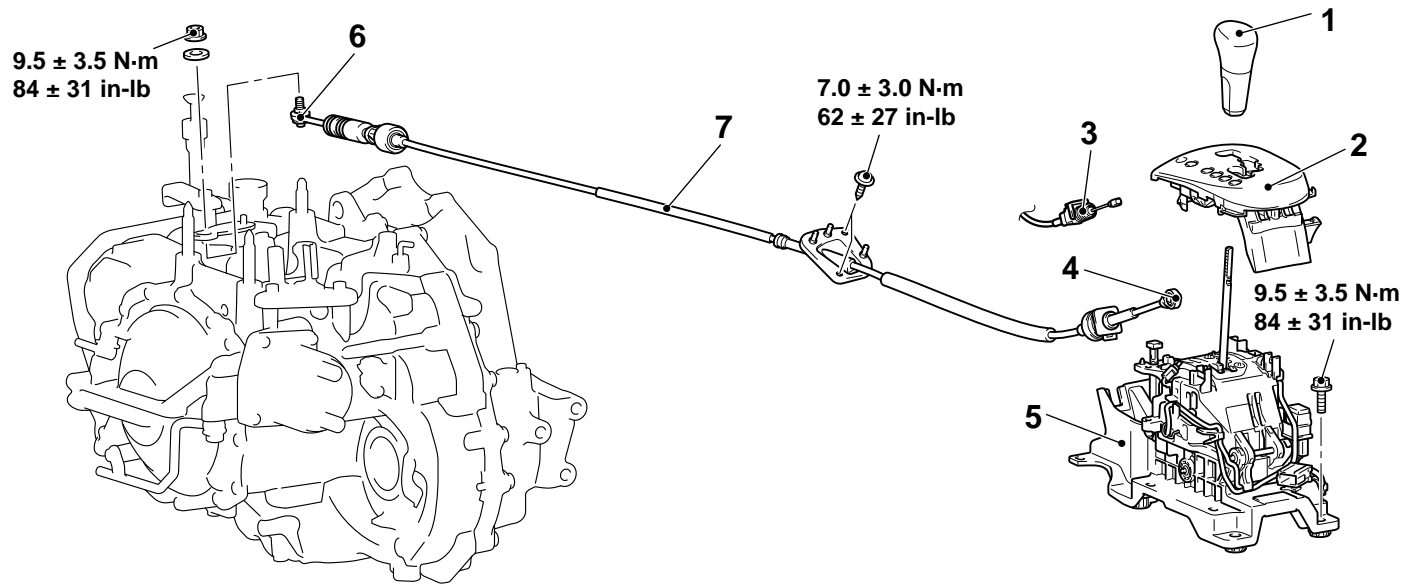
When removing and installing the transaxle control cable and shift lock cable unit, be careful not to hit the SRS-ECU.

Pre-removal operation

- Front floor console assembly removal (Refer to GROUP 52A - Floor Console Assembly P.52A-8.)

Post-installation operation

- Front floor console assembly installation (Refer to GROUP 52A - Floor Console Assembly P.52A-8.)
- Key interlock mechanism check (Refer to P.23A-162.)
- Shift lock mechanism check (Refer to P.23A-163.)
- Selector lever operation check (Refer to P.23A-162.)



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Selector lever assembly and transaxle control cable assembly removal steps

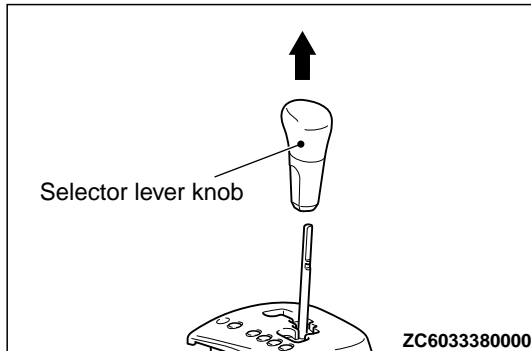
- Move the selector lever to the "N" position.

- | | | |
|-------|---|--|
| <<A>> | 1. Selector lever knob | |
| <> | 2. Shift indicator panel | >>A<< |
| >>B<< | 3. Key interlock cable connection (selector lever side) | 6. Transaxle control cable connection (transaxle side) |
| | 4. Transaxle control cable connection (selector lever side) | · Heater unit assembly (Refer to GROUP 55 - heater unit and front deck crossmember assembly removal and installation P.55A-111.) |
| | · Connectors and harnesses connections | 7. Transaxle control cable |
| | 5. Selector lever assembly | |

REMOVAL SERVICE POINTS

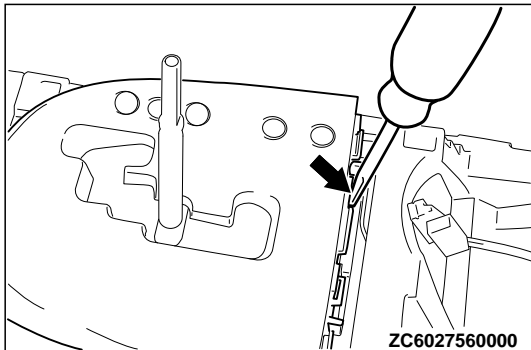
<<A>> SELECTOR LEVER KNOB REMOVAL

Pull out the selector lever knob to the direction of arrow shown in the figure.



<> SHIFT INDICATOR PANEL REMOVAL

Insert the slotted head screwdriver into the arrow-indicated point as shown in the figure to pry the claw, and then remove the shift indicator panel.

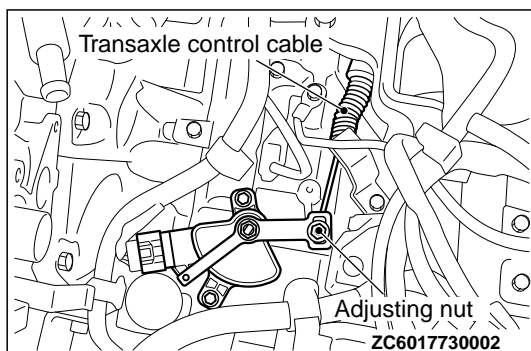


INSTALLATION SERVICE POINTS

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

1. Move the selector lever and manual control lever to the N position.
2. Use the adjusting nut to tighten the transaxle control cable to the specified torque.

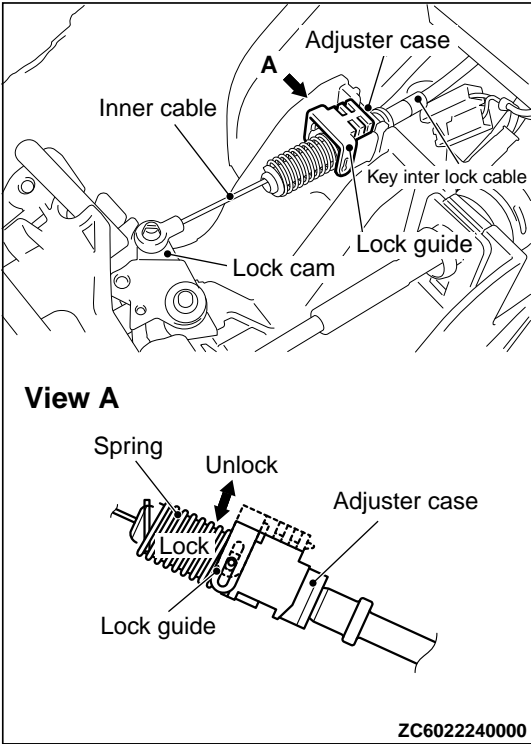
Tightening torque: 9.5 ± 3.5 N·m (84 ± 31 in-lb)



>>B<< KEY INTERLOCK CABLE INSTALLATION

⚠ CAUTION

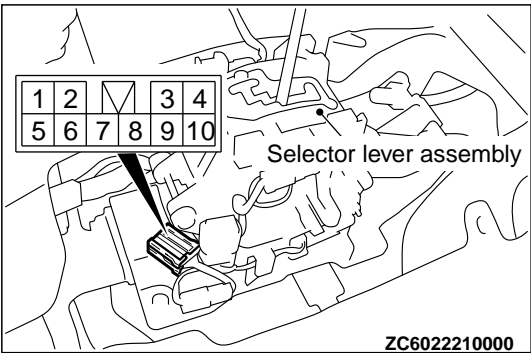
Leave the ignition switch in the "LOCK" (OFF) position until the key interlock cable installation is completed.



1. Move the selector lever to the "P" position and turn the ignition switch to the "LOCK" (OFF) position.
2. Install the tip of the key interlock cable to the lock cam of the selector lever assembly, taking care not to twist the inner cable.
3. Install the adjuster case with its lock guide pulled up (unlocked).
4. Securely push down the lock guide to lock it.

NOTE: The lock position of the key interlock cable is automatically adjusted by a spring.

SHIFT SWITCH ASSEMBLY CONTINUITY CHECK



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Shift switch assembly	Selector lever position	Terminal number
Select switch	Sport mode	7 - 8
Shift switch (UP)	Upshift and hold	7 - 10
Shift switch (DOWN)	Downshift and hold	7 - 9

A/T KEY INTERLOCK AND SHIFT LOCK MECHANISMS

REMOVAL AND INSTALLATION

WARNING

When removing and installing the transaxle control cable and shift lock cable unit, be careful not to hit the SRS-ECU.

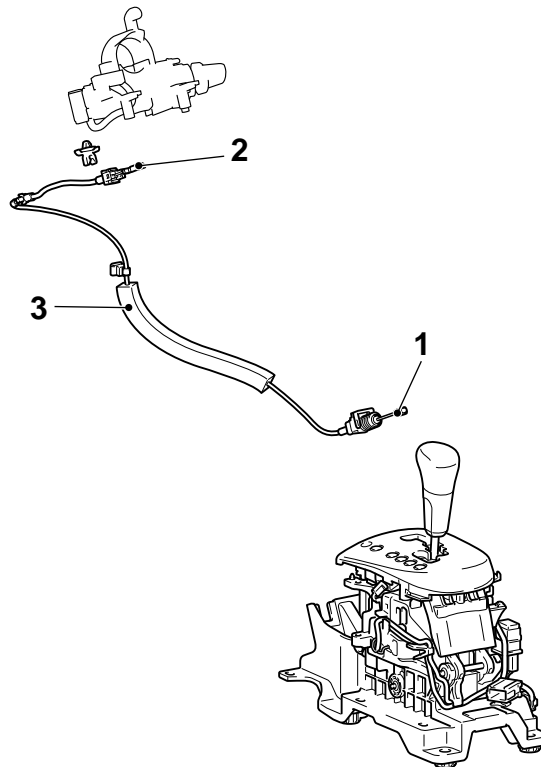
Pre-removal operation

- Steering column lower cover and side lower panel assembly removal (Refer to GROUP 52A - Instrument Panel Assembly P.52A-2.)

Post-installation operation

- Steering column lower cover and side lower panel assembly installation (Refer to GROUP 52A - Instrument Panel Assembly P.52A-2.)

- Front floor console assembly removal (Refer to GROUP 52A - Floor Console Assembly P.52A-8.)
- Front floor console assembly installation (Refer to GROUP 52A - Floor Console Assembly P.52A-8.)
- Key interlock mechanism check (Refer to P.23A-162.)
- Shift lock mechanism check (Refer to P.23A-163.)
- Selector lever operation check (Refer to P.23A-162.)



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Removal steps

- >>B<<
1. Key interlock cable connection (selector lever side)
- <<A>> >>A<<
2. Key interlock cable connection (steering side)

Removal steps

3. Key interlock cable

REMOVAL SERVICE POINTS

<<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 LOCK CYLINDER SIDE) INSTALLATION

Turn the ignition switch to the "ACC" position and then install the key interlock cable to the ignition key cylinder.

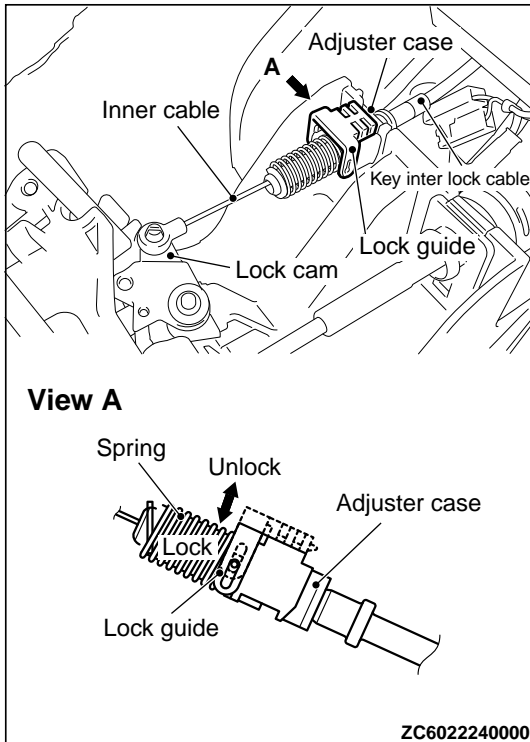
>>B<< KEY INTERLOCK CABLE INSTALLATION

CAUTION

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

1. Move the selector lever to the P position and turn the ignition switch to the "LOCK" (OFF) position.
2. Install the tip of the key interlock cable to the lock cam of the selector lever assembly, taking care not to twist the inner cable.
3. Install the adjuster case with its lock guide pulled up (unlocked).
4. Securely push down the lock guide to lock it.

NOTE: The lock position of the key interlock cable is automatically adjusted by a spring.



TRANSAXLE ASSEMBLY

REMOVAL AND INSTALLATION

CAUTION

- *The fasteners marked with *¹ should be temporarily tightened first and then fully tightened with the engine weight applied on the vehicle body.
- *The bolts marked with *² are coated with the friction coefficient stabilizer. After removing

these bolts, make sure that they are free of damage, remove any dust and dirt on the bearing surfaces and the threads, and then securely tighten to the specified torque.

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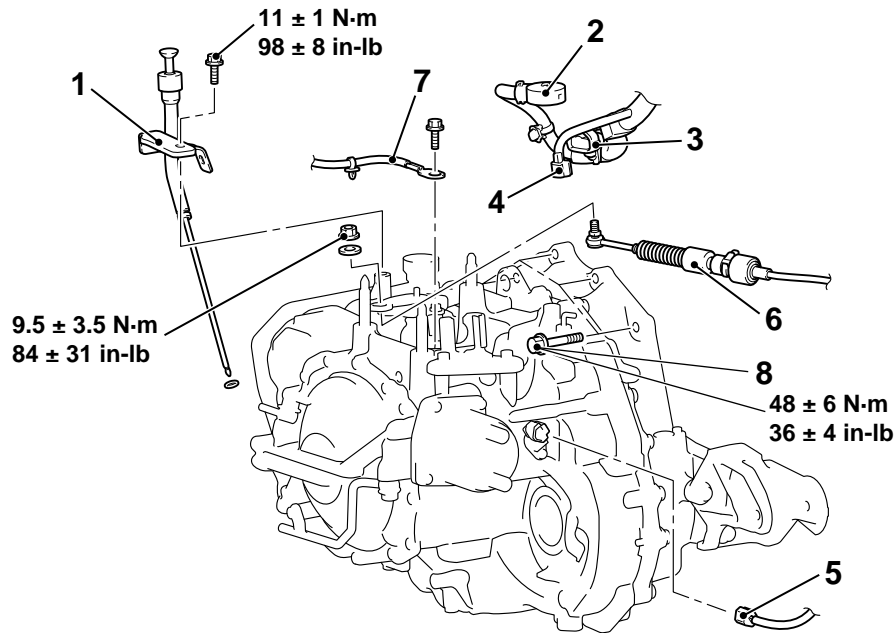
Pre-removal operation

- Engine compartment under cover and side cover removal (Refer to GROUP 51A - Under Cover P.51A-18.)
- Transmission fluid draining (Refer to P.23A-153.)
- Air cleaner bracket removal (Refer to GROUP 15 - Air Cleaner P.15-6.)
- Battery and Battery Tray Removal
- ECM removal (Refer to GROUP 13Aa - ECM P.13Aa-37.)
- Wiper arm · blade assembly and front deck garnish removal (Refer to GROUP 51B - Windshield Wiper P.51B-49.)

Post-installation operation

- Drive shaft installation (Refer to GROUP 26 P.26-17.)
- Strut Tower Bar Installation (Refer to GROUP 42Aa - Strut Tower Bar P.42Aa-11.)
- Wiper arm and blade assembly and front deck garnish installation (Refer to GROUP 51B - Windshield Wiper P.51B-49.)
- Battery and battery tray installation
- ECM installation (Refer to GROUP 13Aa - ECM P.13Aa-37.)
- Air cleaner assembly installation (Refer to GROUP 15 - Air Cleaner P.15-6.)

- Strut Tower Bar Removal (Refer to GROUP 42Aa - Strut Tower Bar P.42Aa-11.)
- Drive shaft removal (Refer to GROUP 26 P.26-17.)
- Engine compartment under cover and side cover installation (Refer to GROUP 51A - Under cover P.51A-18.)
- Transmission fluid refilling (Refer to P.23A-153.)



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Removal steps

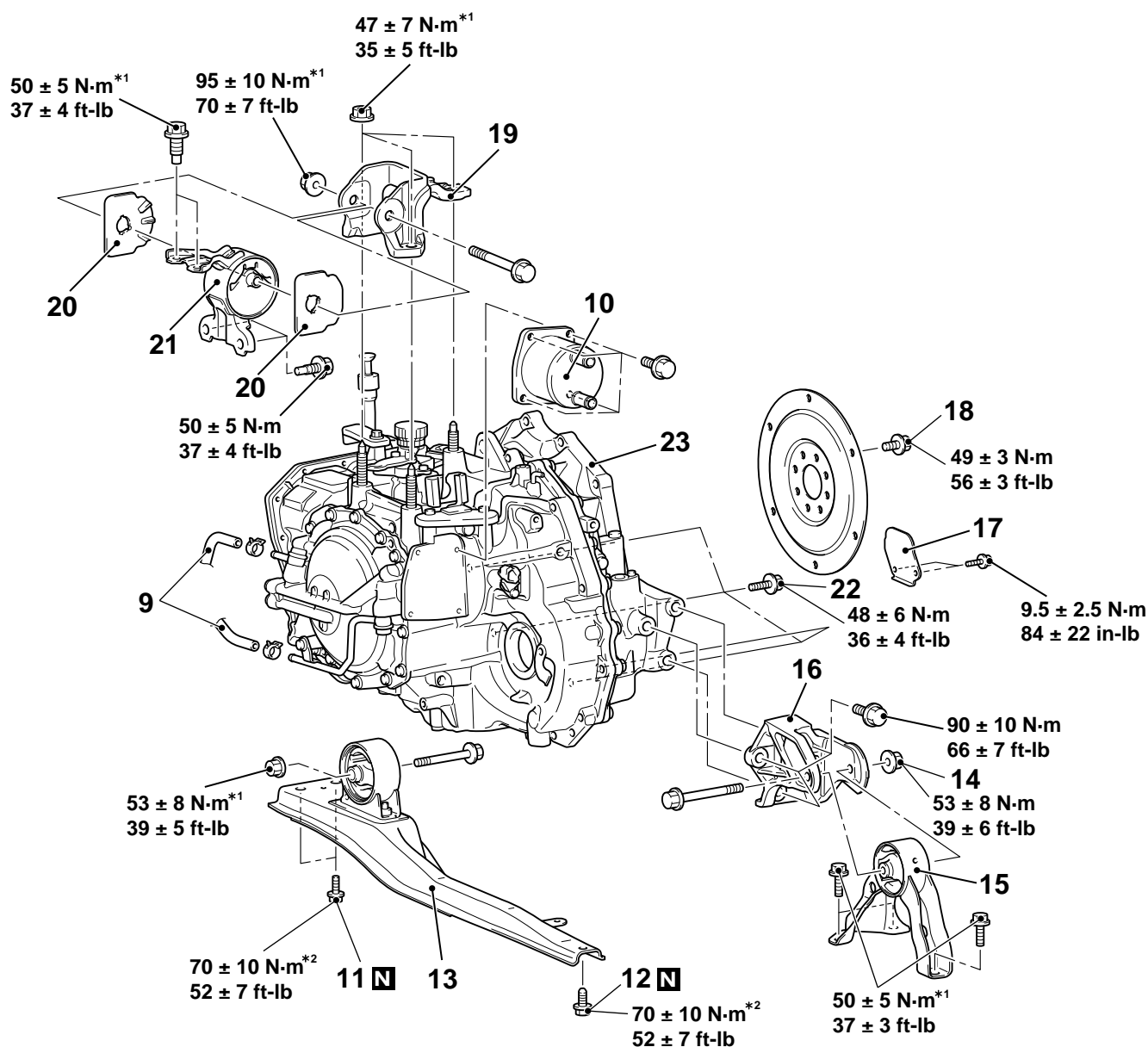
1. Transmission fluid filler tube assembly
2. A/T control solenoid valve assembly connector
3. Input shaft speed sensor connector
4. Transmission range switch connector
5. Output shaft speed sensor connector

>>C<<

Removal steps

6. Transaxle control cable connection
7. Battery ground
- Harness clamp
8. Transaxle assembly upper part coupling bolt

<<A>>



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Removal steps

- Starter assembly (Refer to GROUP15, starter assembly P.16b-5)
- Transfer assembly <AWD> (Refer to P.23A-176)
- 9. Transmission fluid cooler hose assembly connection
- Water return hose A, Water return tube, Water return hose B (Refer to P.23A-178)
- 10. ATF warmer
- 11. Centermember and body connection
- 12. Centermember and crossmember connection

<>

Removal steps

- 13. Front roll stopper and centermember assembly
- 14. Flange nut
- 15. Rear roll stopper
- 16. Transaxle case rear roll stopper bracket
- 17. Oil pan cover
- 18. Torque converter and drive plate coupling bolt
- Intake manifold plenum (Refer to GROUP15, Intake manifold plenum P.16b-5)

Removal steps		Removal steps	
	· Raise the engine and transaxle assembly to the position where the engine weight is not applied to the transaxle mounting insulator.	<<C>>	21. Transaxle mounting insulator
			· Engine assembly holding
	19. Transaxle mounting bracket	>>A<<	22. Transaxle assembly lower part coupling bolt
>>B<<	20. Transaxle mounting insulator stopper		23. Transaxle assembly

REMOVAL SERVICE POINTS

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

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

<> TORQUE CONVERTER AND DRIVE PLATE COUPLING BOLT REMOVAL

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

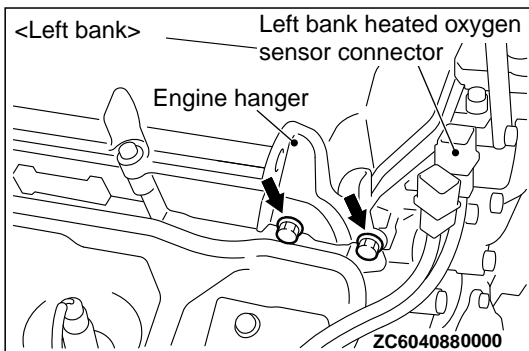
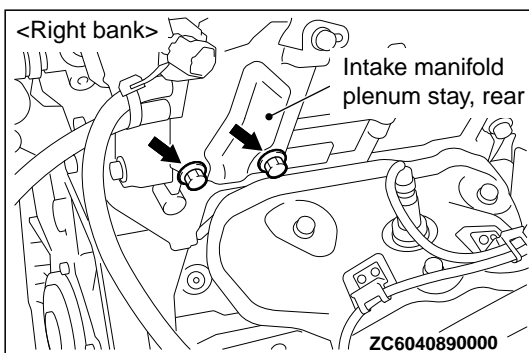
<<C>> ENGINE ASSEMBLY HOLDING

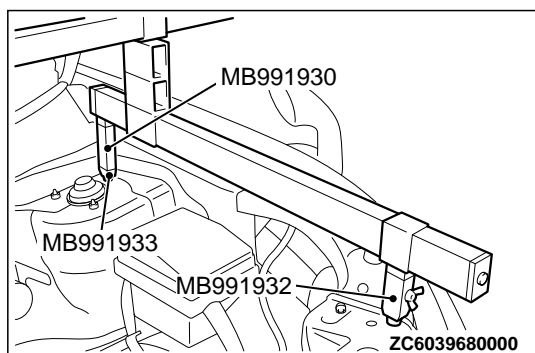
⚠ CAUTION

The engine hanger plate (special tool: MB992208) should be secured by tightening bolts with the engine hanger plate to the specified torque (If the other bolts are used, the engine assembly may fall down when it is raised.)

Tightening torque: 22 ± 4 N·m (16 ± 3 in-lb)

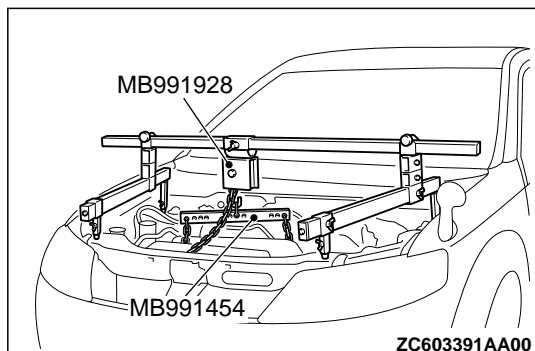
1. Remove the intake manifold plenum stay, rear on the right bank and the engine hanger on the left bank, and then install the engine hanger plate (Special tool: MB992208) to the place.



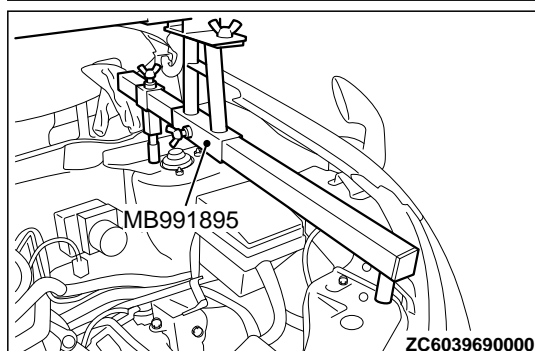


2. When engine hanger (Special tool: MB991928) is used
- (1) Assemble the engine hanger (Special tool: MB991928).
(Set the components below to the base hanger.)
 - Slide bracket (HI)
 - Foot x 2 (standard) (MB991932)
 - Foot x 2 (short) (MB991933)
 - Joint x 2 (90) (MB991930)
 - (2) Set the feet of the special tool as shown in the figure.

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



- (3) Set the chains of the engine hanger (Special tool: MB991527) and the engine hanger balancer (Special tool: MB991454) 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.



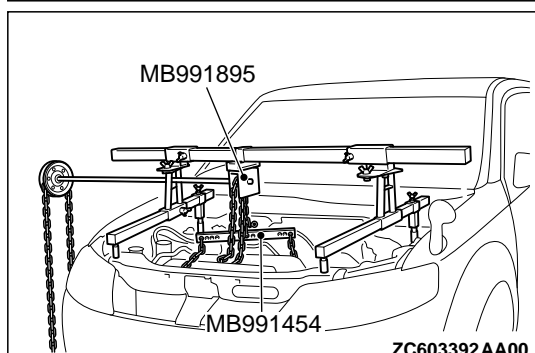
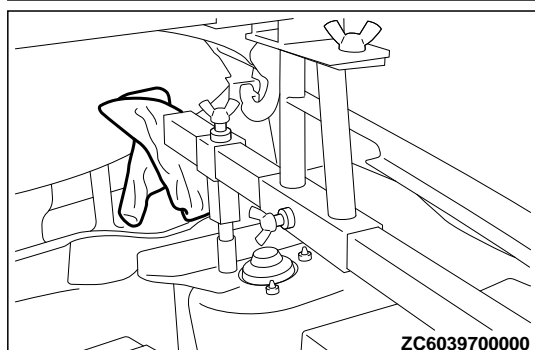
3. When using engine mechanical hanger (Special tool: MZ203830 or MZ203831)

- (1) Set the foot of the engine mechanical hanger (Special tool: MZ203830 or MZ203831) as shown in the figure.

NOTE: Slide the front foot of the engine mechanical hanger (Special tool: MZ203830 or MZ203831) to balance the engine hanger.

CAUTION

Place rag between the engine mechanical hanger (Special tool: MZ203830 or MZ203831) and the windshield to prevent the special tool from interfering with the windshield.

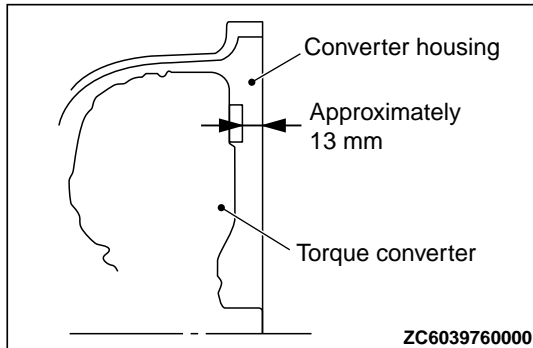


- (2) Set the chains of the engine hanger (Special tool: MB991527) and the engine hanger balancer (Special tool: MB991454) to support the engine and transaxle assembly. Remove the garage jack and then remove the transaxle assembly upper part coupling bolts that have been loosened previously.

INSTALLATION SERVICE POINTS

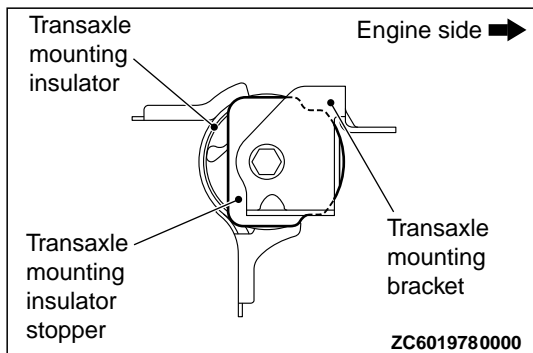
>>A<< TRANSAXLE ASSEMBLY INSTALLATION

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



>>B<< TRANSAXLE MOUNTING INSULATOR STOPPER INSTALLATION

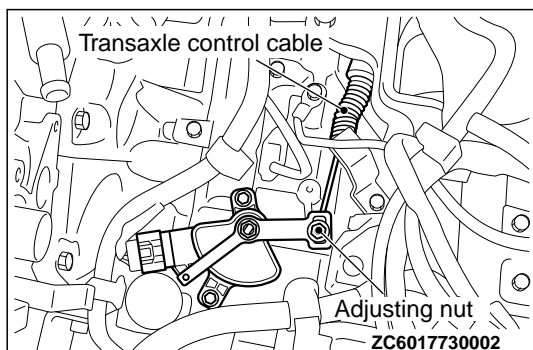
Install the transaxle mounting insulator stopper as shown in the figure.



>>C<< TRANSAXLE CONTROL CABLE (TRANSAXLE SIDE) INSTALLATION

1. Move the selector lever and manual control lever to the "N" position.
2. Use the adjusting nut to tighten the transaxle control cable to the specified torque.

Tightening torque: 9.5 ± 3.5 N·m (84 ± 31 in-lb)



TRANSFER ASSEMBLY

REMOVAL AND INSTALLATION

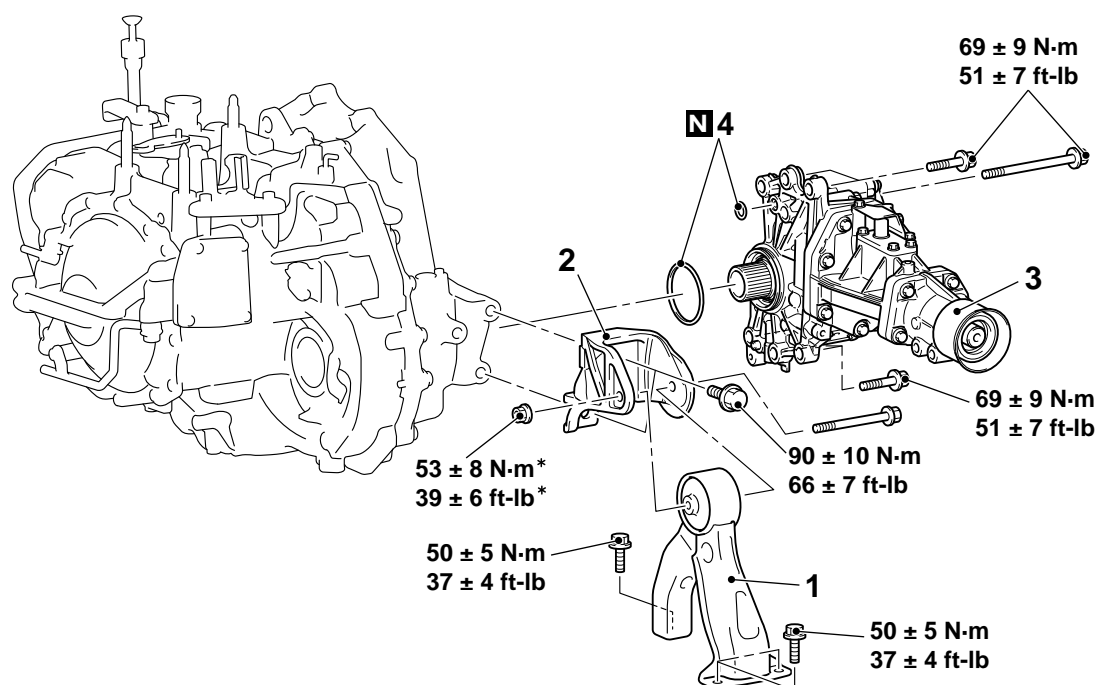
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CAUTION

The fastener marked with* should be temporarily tightened first and then fully tightened with the engine weight applied on the vehicle body.

Pre-removal and post-installation operation

- Under cover removal and installation
- Transmission fluid draining and refilling (Refer to P.23A-153.)
- Transfer oil draining and refilling (Refer to P.23A-159.)
- Front exhaust pipe removal and installation (Refer to GROUP 15 P.15-16.)
- Propeller shaft removal and installation (Refer to GROUP 25 P.25-5.)
- Center member removal and installation (Refer to GROUP 32 P.32-6.)



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Removal steps

- Pressure hose assembly, return tube B, Hose bracket (Refer to GROUP 37 P.37-39.)
- 1. Rear roll stopper
- 2. Transaxle case rear roll stopper bracket

>>A<<

Removal steps

- Drive shaft RH and output shaft (Refer to GROUP 26 P.26-29.)
- 3. Transfer assembly
- 4. O-ring

REMOVAL SERVICE POINTS

>>A<< TRANSFER ASSEMBLY REMOVAL

Move the engine and transaxle assembly toward the front of the vehicle to make a gap between the engine/transaxle assembly and the crossmember. Pull out the transfer assembly through this gap.

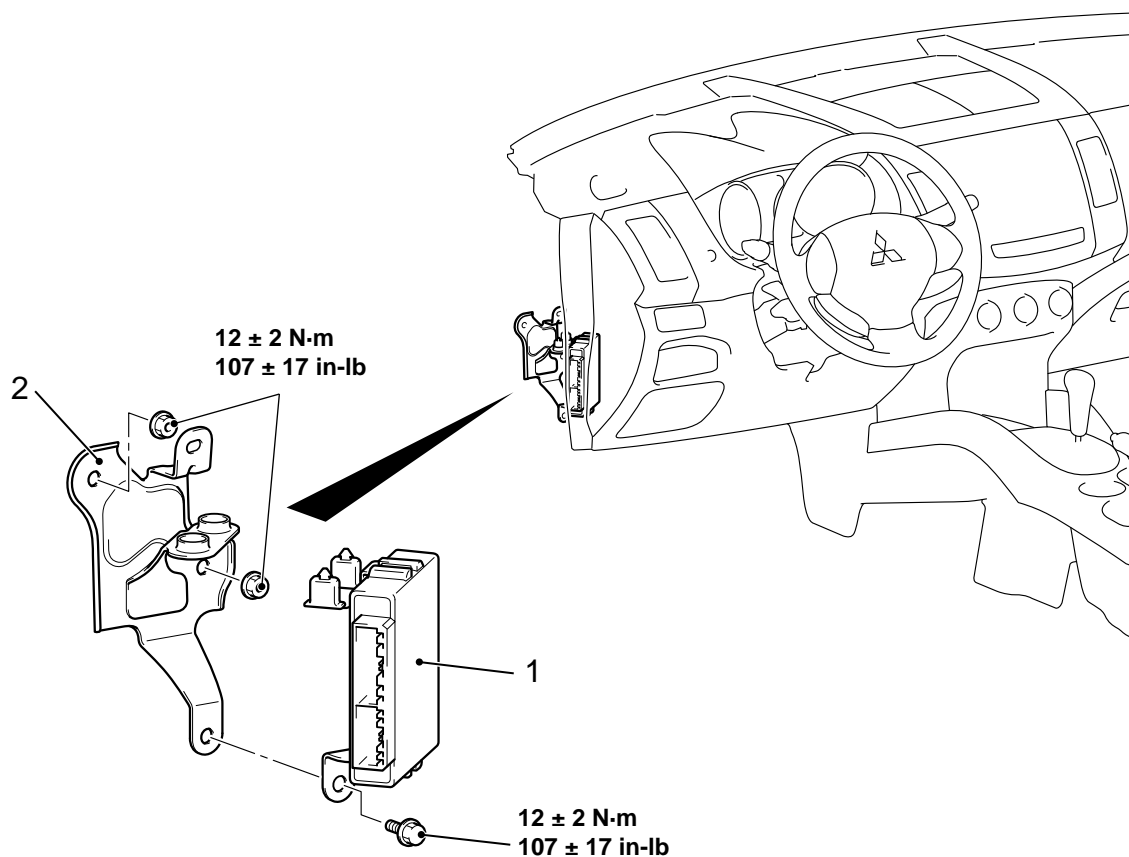
TRANSAXLE CONTROL MODULE (TCM)

REMOVAL AND INSTALLATION

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Pre-removal and post-installation operation

- Bottom cover assembly (passenger side) removal and installation (Refer to GROUP 52A - Instrument Panel Assembly P. 52A-2.)
- Glove box assembly removal and installation (Refer to GROUP 52A - Instrument Panel Assembly P.52A-2.)



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Removal steps

1. Transaxle control module (TCM)

Removal steps

2. Transaxle control module (TCM) bracket

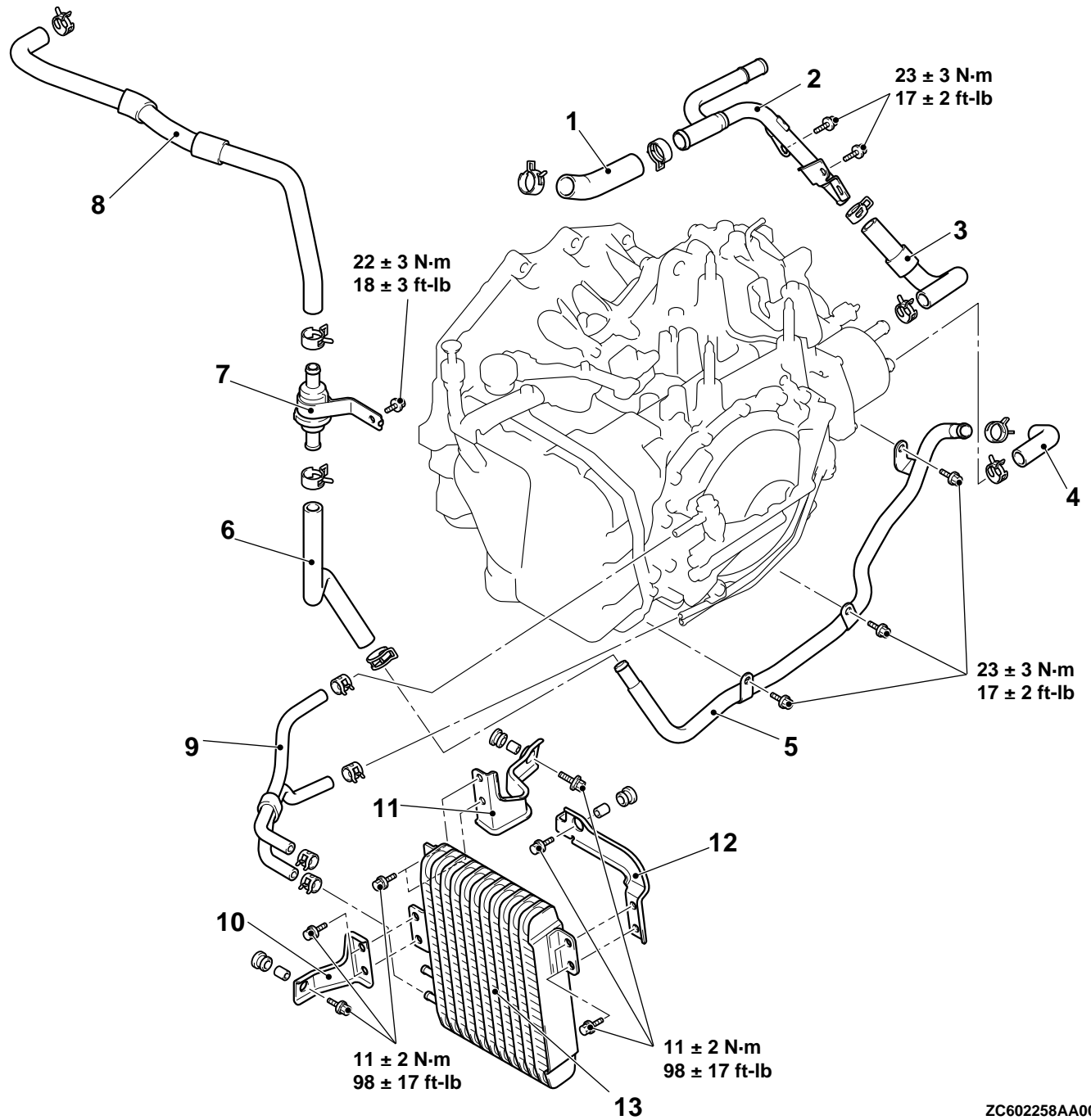
A/T FLUID COOLER LINE

REMOVAL AND INSTALLATION

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Pre-removal and post-installation operation

- Engine room under cover front, engine room side cover (Refer to GROUP 51 - Under Cover P.51A-18.)
- Front bumper extension A, B, transmission fluid cooler duct (Refer to GROUP 51 - Front bumper assembly P.51A-4.)
- Engine coolant draining and refilling (Refer to GROUP 14 - On-vehicle Service - Engine Coolant Replacement P.14-15.)
- Transmission fluid draining and refilling (Refer to P.23A-153.)



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Removal steps

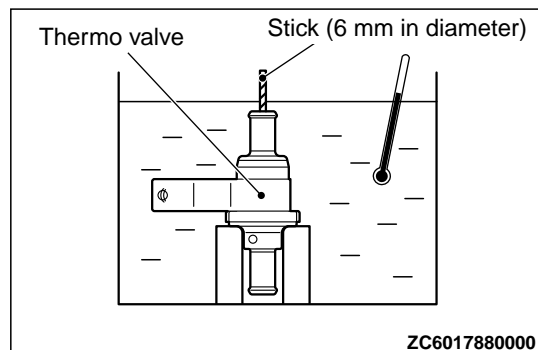
1. Water return hose A
2. Water return tube
3. Water return hose B
4. Water feed hose A
5. Water feed tube
6. Water feed hose B
7. Thermo valve assembly

Removal steps

8. Water feed hose C
9. Transmission fluid cooler hose assembly
10. Transmission fluid cooler bracket A
11. Transmission fluid cooler bracket B
12. Transmission fluid cooler bracket C
13. Transmission fluid cooler assembly

THERMO VALVE CHECK

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1. Obtain a container filled with water and place the thermo valve in it with a stick (approximately 6 mm in diameter) inserted. Gradually warm up the water while stirring, and check that the thermo valve opening temperature is within the standard value. The stick rises when the thermo valve opens.

Standard value: $75 \pm 1.5^{\circ}\text{C}$ ($167 \pm 34.7^{\circ}\text{F}$)

2. Warm up the water to the full-open temperature of the thermo valve, and check that the valve lift amount is within the standard value.

Standard value: Full-open temperature 88°C (190°F)

Valve lift amount when it is fully opened: 3 mm or higher

NOTE: Measure the height of the fully closed valve in advance, and then measure the valve height at fully open temperature to calculate the lift amount.