GROUP 27

REAR AXLE

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GENERAL INFORMATION

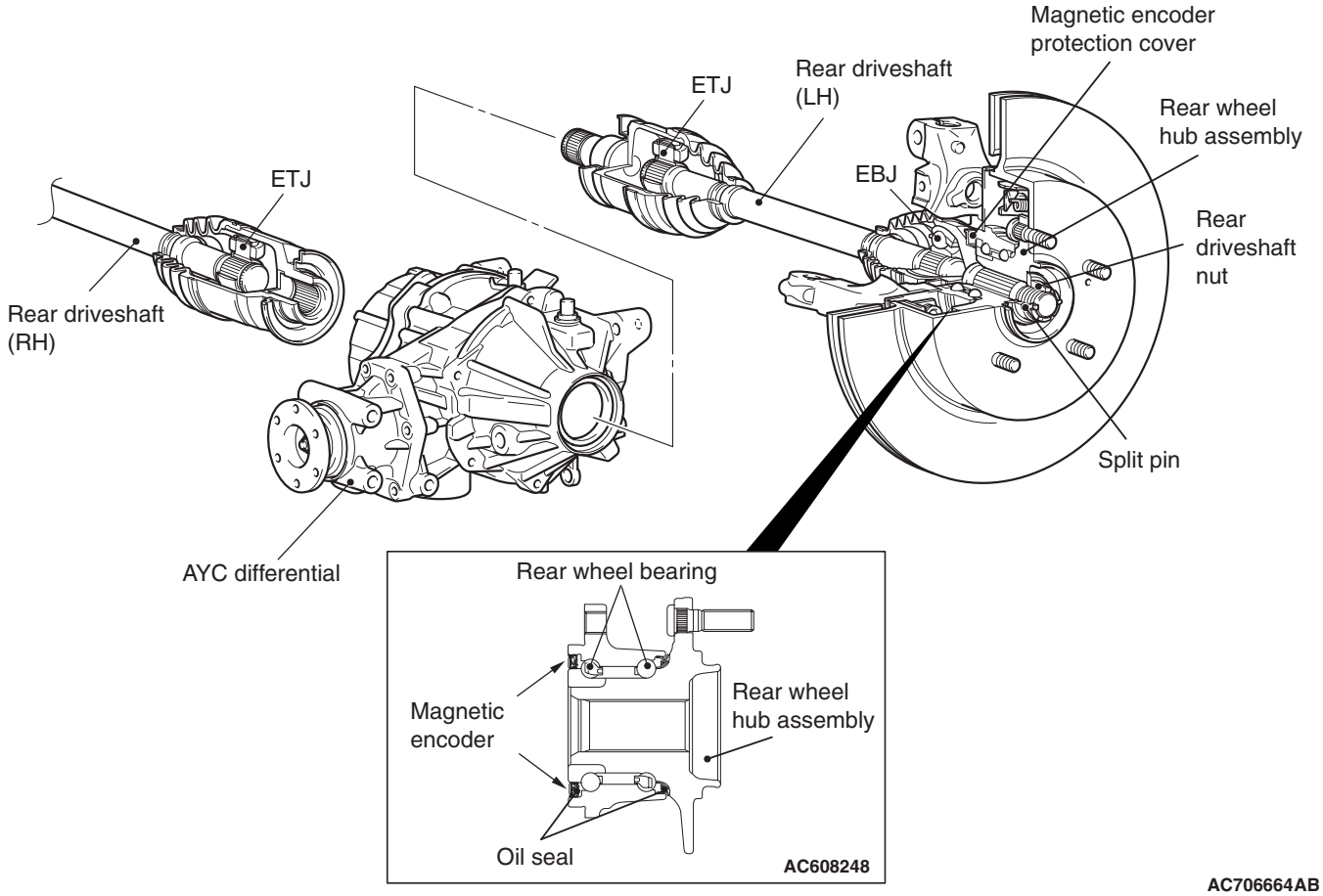
M1271000100887

For the rear axle, the unit bearing (double row angular contact ball bearing) in which the hub and ball bearing are incorporated has been adopted for the rear wheel bearing, and the EBJ-ETJ type constant velocity joint for the rear driveshaft.
There are the following features.

- The lightweight rear driveshaft and compact EBJ-ETJ type constant velocity joint have been equipped.
- The rear driveshaft spline diameter on the wheel-side and differential-side (LH) has been increased, improving torsional strength.
- The ABS magnetic encoder for wheel speed detection has been integrated into the rear wheel bearing, and the protector cover of magnetic encoder for wheel speed detection has been equipped to the driveshaft.
- The lead-free grease has been adopted for the constant velocity joint.
- Hexavalent chromium has been eliminated from the dust cover material and protector cover of magnetic encoder for wheel speed detection.
- The AYC differential has been equipped.

NOTE:
EBJ (High Efficiency Compact Birfield Joint): the lighter and smaller constant velocity joint compared with the conventional BJ has been achieved by adopting the eight small balls.
ETJ (High Efficiency Compact Tripod Joint): The lighter and smaller constant velocity joint compared with the conventional TJ has been installed.

CONSTRUCTION DIAGRAM



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GENERAL SPECIFICATIONS

M1271000200204

Item			Specification
Rear axle			
Rear wheel bearing	Type		Unit bearing (double-row angular contact ball bearing)
Rear driveshaft	Type	Outer	EBJ
		Inner	ETJ
	Shaft length* x Shaft diameter mm (in)	LH	434 × 25 (17.1 × 0.98)
		RH	456 × 25 (18.0 × 0.98)
Differential			
Reduction gear type			Hypoid gear
Reduction ratio			3.307
Number of teeth	Drive gear		43
	Drive pinion		13
Bearings (Outside diameter × Inside diameter) mm (in)		Side	72 × 37 (2.8 × 1.5) <LH>, 92 × 67 (3.6 × 2.6) <RH>
		Front	62 × 25 (2.4 × 1.0)
		Rear	72 × 35 (2.8 × 1.4)

*NOTE: *: Indicates the distance between the center of each joint.*

SERVICE SPECIFICATIONS

M1271000300999

Item	Standard value	Limit
Rear axle total backlash mm (in)	–	6 (0.2)
Wheel bearing end play mm (in)	–	0.05 (0.002)
Wheel bearing rotation starting torque N· m(in-lb)	–	1.4 (12.39)
ETJ boot assembly dimension mm (in)	80 ±3 (3.14 ± 0.12)	–
Hydraulic pressure of hydraulic unit (under forced activation) MPa (psi)	0.9 –1.1 (130 – 159)	–

LUBRICANTS

M1271000400617

Item	Specified lubricant		Quantity
AYC differential	Differential mechanism part	MITSUBISHI Genuine DIA QUEEN LSD gear oil	0.55 ±0.02 dm^3(0.58 ±0.02 qt)
	Torque transfer mechanism part	DIAMOND ATF SP III	0.55 –0.60 dm^3(0.58 –0.63 qt)
	Torque transfer mechanism part oil seal lip	Vaseline	As required
EBJ joint		Repair kit grease	110 ±10 g (3.9 ±0.3 oz)
ETJ joint		Repair kit grease	125 ±10 g (4.4 ±0.3 oz)

SEALANT AND ADHESIVE

M1271000500540

Item	Specified sealant and adhesive
Vent plug	3M™ AAD Part No.8672, 8679, 8678, 8661, 8663 or equivalent
Cover (AYC differential)	

REAR AXLE DIAGNOSIS <EXCEPT AYC>

INTRODUCTION

M1271004100287

Noise from the driveshaft or differential may be caused by defects in the components.

TROUBLESHOOTING STRATEGY

M1271004200314

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a rear axle fault.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify malfunction is eliminated.

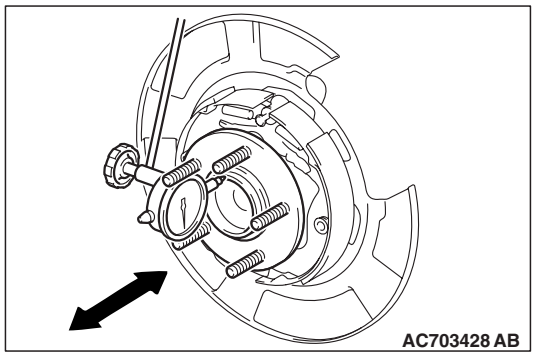
SYMPTOM CHART

M1271004300377

Symptom		Inspection procedure	Reference page
Driveshaft	Noise during wheel rotation	1	P.27-5
Differential	Oil leakage	8	P.27-5

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

INSPECTION PROCEDURE 1: Noise during Wheel Rotation <DRIVESHAFT>



DIAGNOSIS

STEP 1. Check the wheel bearing end play.

(1) Remove the caliper assembly, and suspend the caliper assembly with a wire and remove the brake disc.
(2) Fit the dial gauge as shown in the diagram and move the hub in the axial direction to measure the play.

Limit: 0.05 mm (0.002 inch)

Q: Is the wheel bearing end play within the limit?

YES : Go to step 2.
NO : Replace the part, then go to Step 4.

STEP 2. Check if the driveshaft is bent.

Q: Is the driveshaft bent?

YES : Replace the part. Then go to Step 3.
NO : Go to Step 4.

STEP3. Check the driveshaft assembly for wear or damage.

Q: Is the driveshaft assembly worn or damaged?

YES : Replace the driveshaft assembly. Then go to Step 4.
NO : There is no action to be taken.

STEP 4. Retest the system.

Q: Is the abnormal noise eliminated?

YES : The procedure is complete.
NO : Start over at Step 1.

INSPECTION PROCEDURE 8: Oil Leakage <DIFFERENTIAL>

DIAGNOSIS

STEP 1. Check the cover installation.

Q: Is the cover installed correctly?

YES : Go to Step 2.
NO : Repair. Then go to Step 4.

STEP 2. Check the oil seal for wear or damage.

Q: Is the oil seal worn or damaged?

YES : Replace the seal. Then go to Step 4.
NO : Go to Step 3.

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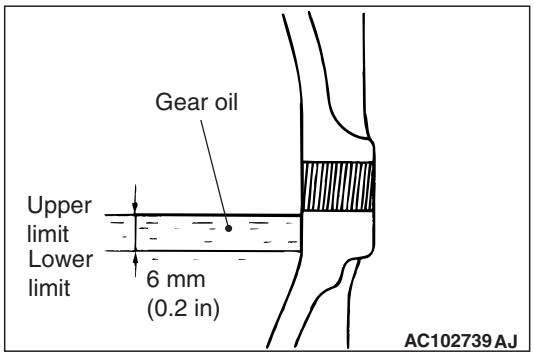


STEP 3. Check the oil level.

Remove the filler plug and check the gear oil level.

Q: Is the gear oil level more than 6 mm (0.2 inch) below the bottom of the filler plug hole?

YES : Refill the specified lubricant.
Differential mechanism part: MITSUBISHI Genuine DIA QUEEN LSD gear oil
Torque transfer mechanism part: DIAMOND ATF SP III
Then go to Step 4 .

NO : Go to Step 4.

STEP 4. Retest the system.

Q: Is there oil leakage?

YES : Start over at Step 1.

NO : The procedure is complete.

REAR AXLE DIAGNOSIS <AYC>

STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

M1271004200325

Refer to GROUP 00 –Troubleshooting Contents
P.00-7.

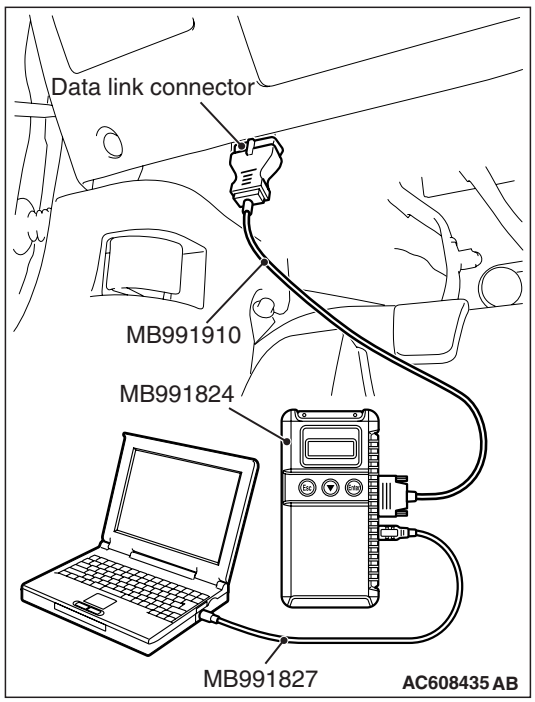
DIAGNOSTIC FUNCTION

M1271006600017

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

Required Special Tools:

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



⚠ CAUTION

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

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

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

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

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

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

⚠ CAUTION

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

NOTE: If the battery voltage is low, diagnostic trouble codes will not be set. Check the battery if scan tool MB991958 does not display.

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 "ETACS" from "System List", and press the "OK" button.

   NOTE: When the "Loading Option Setup" list is displayed, check the applicable item.
6. Select "Diagnostic Trouble Code."
7. If a DTC is set, it is shown.
8. Choose "Erase DTCs" to erase the DTC.

DIAGNOSTIC TROUBLE CODE CHART

M1271006700014

⚠ CAUTION

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

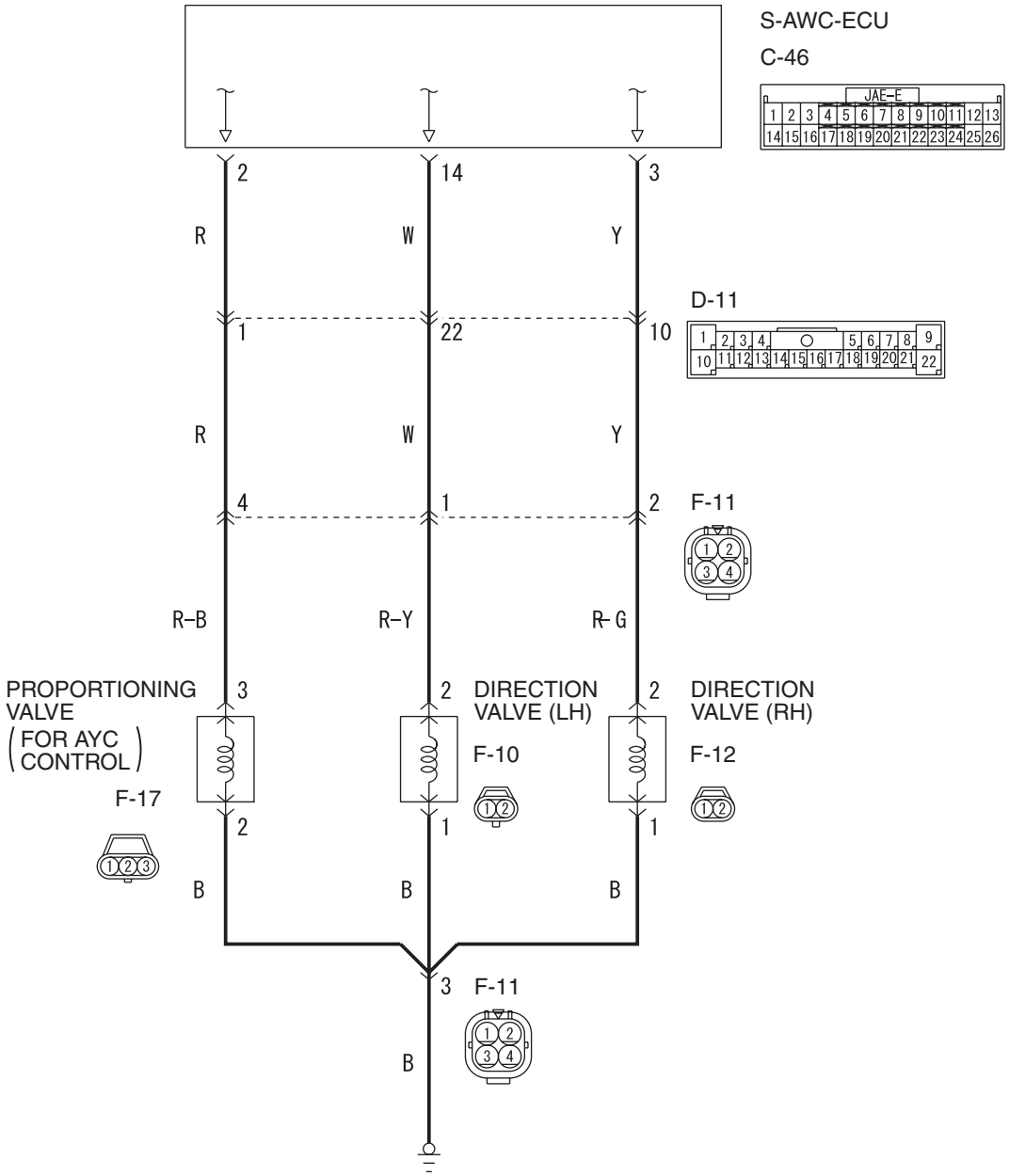
NOTE: Refer to GROUP 22A-Diagnostic Trouble Code Chart P.22A-11 for Others Diagnostic Trouble Code.

DTC No.	Inspection item	Reference page
C1619	AYC current value	P.27-9
C161A	AYC direction valve(RH) output	P.27-13
C161B	AYC direction valve(LH) output	P.27-17
C1620	AYC control abnormality	P.27-22

INSPECTION PROCEDURE FOR DIAGNOSIS CODE

Code No. C1619 AYC current value abnormality

Proportioning valve system/direction valve system circuit



Wire colour code
B: Black LG: Light green G: Green L: Blue W: White Y: Yellow SB: Sky blue BR: Brown O: Orange GR: Gray
R: Red P: Pink V: Violet PU: Purple SI: Silver

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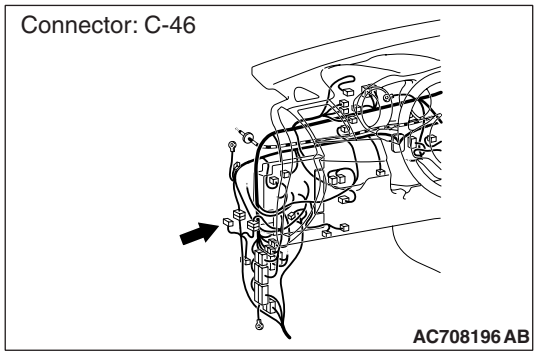
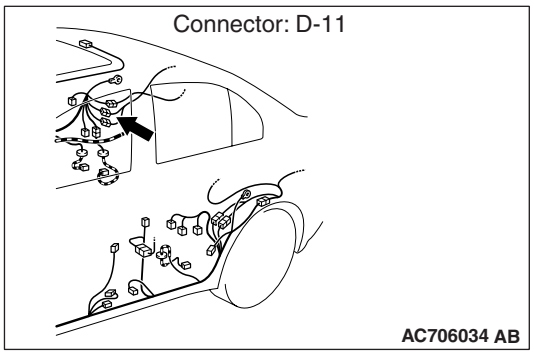
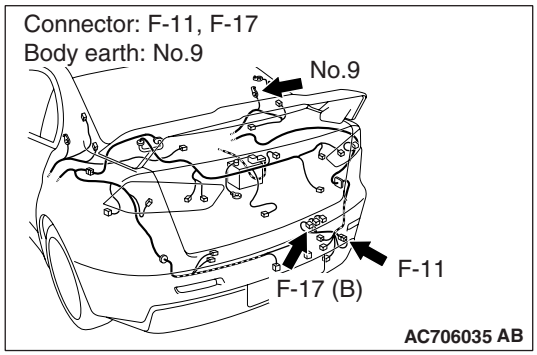






⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.

OPERATION

- The power from AWC-ECU is supplied to and energizes the hydraulic unit AYC proportioning valve solenoid.

FUNCTION

- The AWC-ECU controls the specified current of the coil for the hydraulic unit AYC proportioning valve solenoid.
- The hydraulic unit AYC proportioning valve solenoid controls the hydraulic pressure to the AYC differential right/left clutch.

TROUBLE JUDGMENT

Range of check

- The output to the AYC proportioning valve solenoid is 0.05 A or more.
- The DTC related to the power supply circuit is not set.

JUDGMENT CRITERIA

- The current monitor value of the AYC proportioning valve solenoid is abnormal.

Fail-safe, backup function

- AWC-ECU suspends the AYC control and illuminates the multi-information display. Then DTC No. C1619 is set.

PROBABLE CAUSES

- Malfunction inside the AYC proportioning valve solenoid
- Damaged harness wires and connectors
  - Open circuit, short to ground, and connector continuity failure between the AWC-ECU and the AYC proportioning valve solenoid
  - Open circuit and connector continuity failure between the AYC proportioning valve solenoid and the body ground
- Malfunction inside the AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C – Troubleshooting P.54C-14). After repairing the CAN bus line, go to Step 2.

STEP 2. DTC recheck after repairing the CAN bus line

(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position, and then wait for 4 seconds.
(3) Check if the DTC is set.

Q: Is DTC No. C1619 set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Connector check:

Check the connectors below for improper engagement, terminal damage or terminal drawn in the connector case.

- C-46 AWC-ECU connector
- F-17 AYC proportioning valve connector
- D-11 intermediate connector, F-11 intermediate connector
- No. 9 body ground

Q: Are the connectors and terminals in good condition?

YES : Go to Step 4.
NO : Repair the faulty connector(s) or terminal(s). Then go to Step 8.

STEP 4. Harness check

(1) Check the wiring harness among C-46 AWC-ECU connector (terminal No. 2), D-11 intermediate connector (terminal No. 1), F-11 intermediate connector (terminal No. 4), and F-17 AYC proportioning valve connector (terminal No. 3) for any problems.
(2) Check the wiring harness among F-17 AYC proportioning valve connector (terminal No. 2), F-11 intermediate connector (terminal No. 3), and No. 9 body ground for any problems.

Q: Is the harness in good condition?

YES : Go to Step 5.
NO : Repair the problem in the wiring harness. Then go to Step 8.

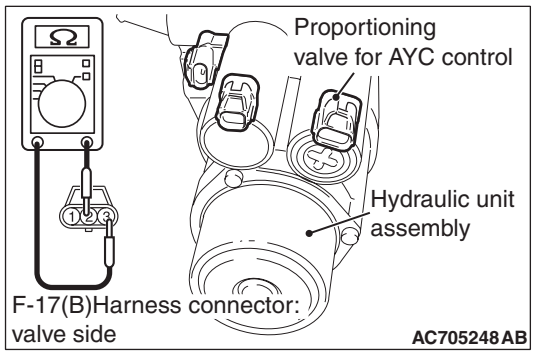
STEP 5. Resistance measurement between AYC proportioning valve solenoid connector (equipment side) terminals

Disconnect the F-17 AYC proportioning valve connector and measure the resistance between connector terminals on the equipment side.

Standard value: 3.7 ±0.3 Ω

Q: Is the measured resistance value within the standard value range?

YES : Go to Step 6.
NO : Replace the hydraulic unit. (Refer to P.27-58.) Then go to Step 8.



STEP 6. Scan tool service data

Check the following service data. (Refer to P.27-22.)

- Item 93: Specified current for AYC proportioning valve

Q: Is the check result normal?

YES : Go to Step 7.

NO : Replace the AWC-ECU (Refer to P.22A-132). Then, go to Step 8.

STEP 7. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position, and then wait for 4 seconds.
(3) Check if the DTC is set.

Q: Is DTC No. C1619 set?

YES : Replace the AWC-ECU (Refer to P.22A-132). Then go to Step 8.

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

STEP 8. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position, and then wait for 4 seconds.
(3) Check if the DTC is set.

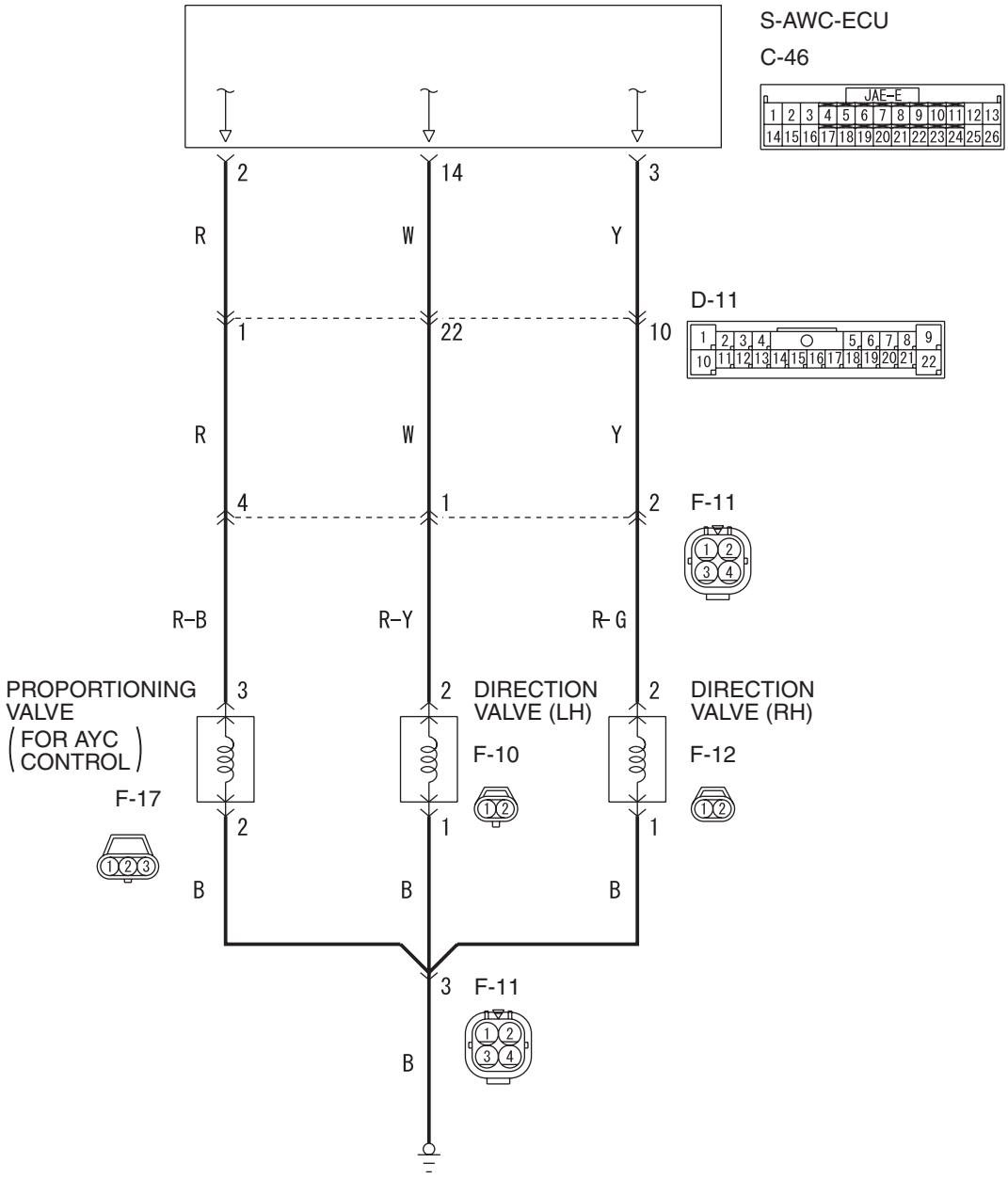
Q: Is DTC No. C1619 set?

YES : Diagnose again from Step 1.

NO : This diagnosis is complete.

Code No. C161A AYC direction valve (RH) output error

Proportioning valve system/direction valve system circuit



Wire colour code
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R: Red P: Pink V: Violet PU: Purple SI: Silver

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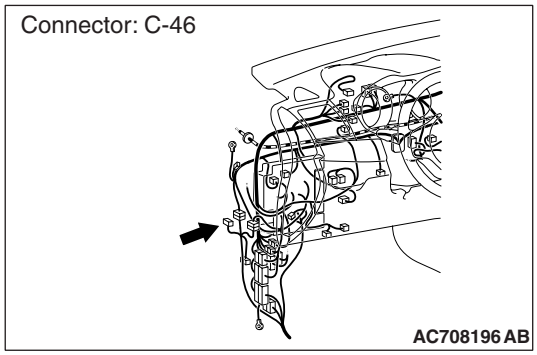
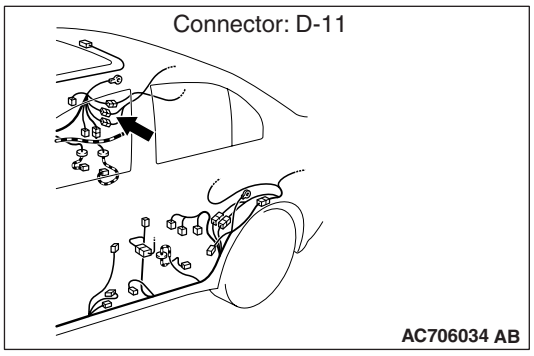
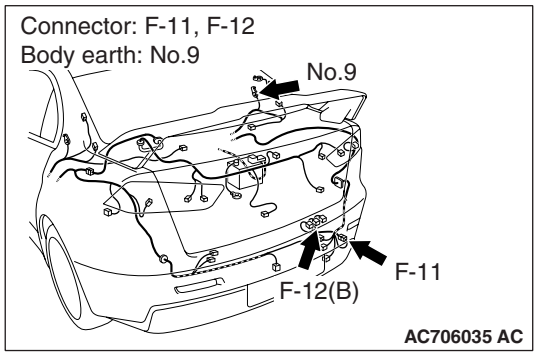






⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.

OPERATION

- The power from AWC-ECU is supplied to and energizes the hydraulic unit AYC direction valve (RH) solenoid.

FUNCTION

- The AWC-ECU controls the activation command of the coil for the hydraulic unit AYC direction valve (RH) solenoid.
- The hydraulic unit AYC direction valve (RH) solenoid controls the hydraulic pressure to the AYC differential right clutch.

TROUBLE JUDGMENT

Range of check

- The DTC related to the power supply circuit is not set.

JUDGMENT CRITERIA

- The activation command of the AYC direction valve (RH) solenoid is different from that shown on the monitor.

Fail-safe, backup function

- The AWC-ECU suspends the AYC control and illuminates the multi-information display. Then DTC No. C161A is set.

PROBABLE CAUSES

- Malfunction inside the AYC direction valve (RH) solenoid
- Damaged harness wires and connectors
  - Open circuit, short to ground, and connector continuity failure between AWC-ECU and AYC direction valve (RH) solenoid
  - Open circuit and connector continuity failure between the AYC direction valve (RH) solenoid and the body ground
- Malfunction inside the AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C – Troubleshooting P.54C-14). After repairing the CAN bus line, go to Step 2.

STEP 2. DTC recheck after repairing the CAN bus line

(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position, and then wait for 4 seconds.
(3) Using the scan tool, apply the specified current to the AYC proportioning valve, and forcibly activate the AYC direction valve (RH). (Refer to Actuator Test Table P.27-22.)
(4) Check if the DTC is set.

Q: Is DTC No. C161A set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Connector check:

Check the connectors below for improper engagement, terminal damage or terminal drawn in the connector case.

- C-46 AWC-ECU connector
- F-12 AYC direction valve (RH) connector
- D-11 intermediate connector, F-11 intermediate connector
- No. 9 body ground

Q: Are the connectors and terminals in good condition?

YES : Go to Step 4.
NO : Repair the faulty connector(s) or terminal(s). Then go to Step 8.

STEP 4. Harness check

(1) Check the wiring harness among C-46 AWC-ECU connector (terminal No. 3), D-11 intermediate connector (terminal No. 10), F-11 intermediate connector (terminal No. 2), and F-12 AYC direction valve (RH) connector (terminal No. 2) for any problems.
(2) Check the wiring harness among F-12 AYC direction valve (RH) connector (terminal No. 1), F-11 intermediate connector (terminal No. 3), and No. 9 body ground for any problems.

Q: Is the harness in good condition?

YES : Go to Step 5.
NO : Repair the problem in the wiring harness. Then go to Step 8.

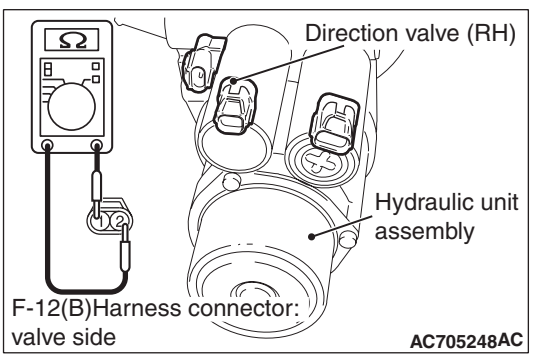
STEP 5. Resistance measurement between AYC direction valve solenoid (RH) connector (equipment side) terminals

Disconnect the F-12 AYC direction valve (RH) connector and measure the resistance between connector terminals on the equipment side.

Standard value: 15.9 ±0.5 Ω

Q: Is the measured resistance value within the standard value range?

YES : Go to Step 6.
NO : Replace the hydraulic unit. (Refer to P.27-58.) Then go to Step 8.



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STEP 6. Scan tool service data

Check the following service data. (Refer to P.27-22.)

- Item 95: AYC direction valve (RH) activation command

Q: Is the check result normal?

YES : Go to Step 7.

NO : Replace the AWC-ECU (Refer to P.22A-132). Then go to Step 8.

STEP 7. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position, and then wait for 4 seconds.
(3) Using the scan tool, apply the specified current to the AYC proportioning valve, and forcibly activate the AYC direction valve (RH). (Refer to Actuator Test Table P.27-22.)
(4) Check if the DTC is set.

Q: Is DTC No. C161A set?

YES : Replace the AWC-ECU (Refer to P.22A-132). Then go to Step 8.

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

STEP 8. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position, and then wait for 4 seconds.
(3) Using the scan tool, apply the specified current to the AYC proportioning valve, and forcibly activate the AYC direction valve (RH). (Refer to Actuator Test Table P.27-22.)
(4) Check if the DTC is set.

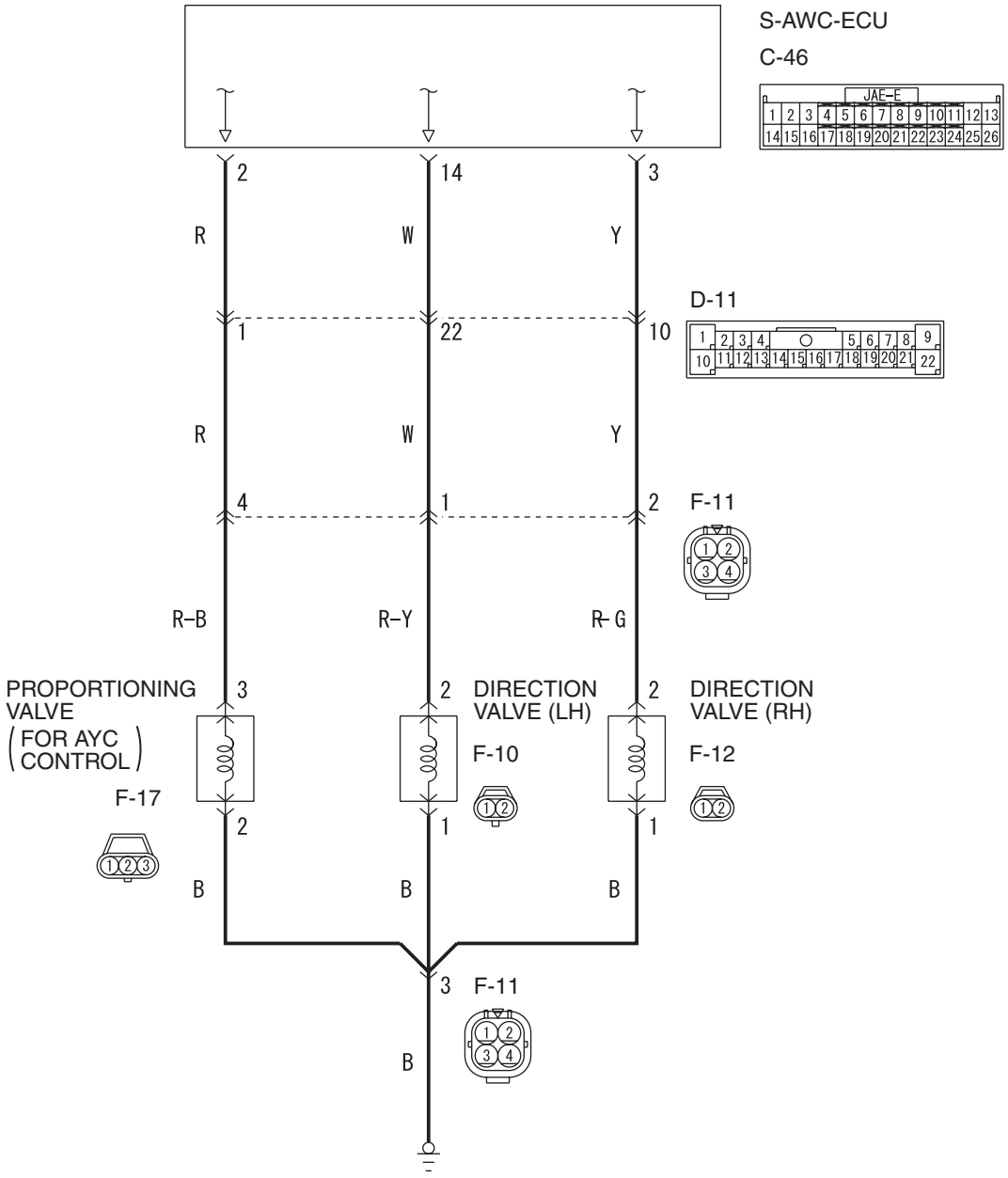
Q: Is DTC No. C161A set?

YES : Diagnose again from Step 1.

NO : This diagnosis is complete.

Code No. C161B AYC direction valve (LH) output error

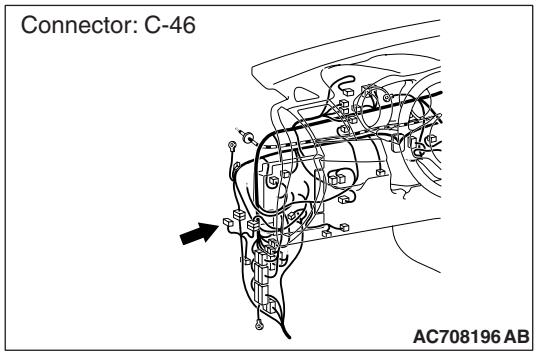
Proportioning valve system/direction valve system circuit

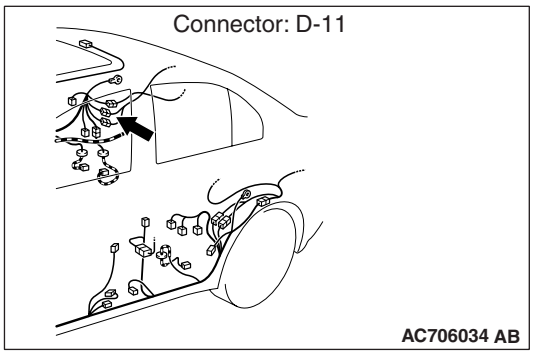


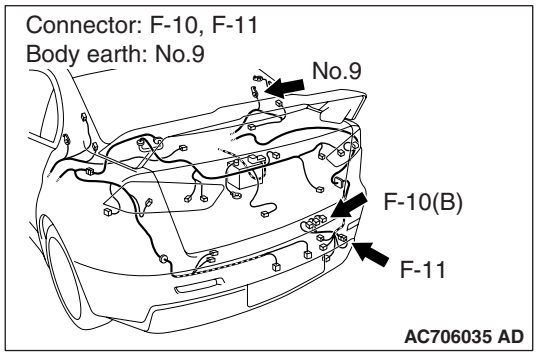
Wire colour code
B: Black LG: Light green G: Green L: Blue W: White Y: Yellow SB: Sky blue BR: Brown O: Orange GR: Gray
R: Red P: Pink V: Violet PU: Purple SI: Silver

AC708205 AB

TSB Revision







⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.

OPERATION

- The power from AWC-ECU is supplied to and energizes the hydraulic unit AYC direction valve (LH) solenoid.

FUNCTION

- The AWC-ECU controls the activation command of the coil for the hydraulic unit AYC direction valve (LH) solenoid.
- The hydraulic unit AYC direction valve (LH) solenoid controls the hydraulic pressure to the AYC differential left clutch.

TROUBLE JUDGMENT

Range of check

- The DTC related to the power supply circuit is not set.

JUDGMENT CRITERIA

- The activation command of the AYC direction valve (LH) solenoid is different from that shown on the monitor.

Fail-safe, backup function

- The AWC-ECU suspends the AYC control and illuminates the multi-information display. Then DTC No. C161B is set.

PROBABLE CAUSES

- Malfunction inside the AYC direction valve (LH) solenoid
- Damaged harness wires and connectors
  - Open circuit, short to ground, and connector continuity failure between AWC-ECU and AYC direction valve (LH) solenoid
  - Open circuit and connector continuity failure between the AYC direction valve (LH) solenoid and the body ground
- Malfunction inside the AWC-ECU

DIAGNOSTIC PROCEDURE

STEP 1. Scan tool CAN bus diagnostics

Using the scan tool, diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 3.

NO : Repair the CAN bus line (Refer to GROUP 54C – Troubleshooting P.54C-14). After repairing the CAN bus line, go to Step 2.

STEP 2. DTC recheck after repairing the CAN bus line

(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position, and then wait for 4 seconds.
(3) Using the scan tool, apply the specified current to the AYC proportioning valve, and forcibly activate the AYC direction valve (LH). (Refer to Actuator Test Table P.27-22.)
(4) Check if the DTC is set.

Q: Is DTC No. C161B set?

YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Connector check:

Check the connectors below for improper engagement, terminal damage or terminal drawn in the connector case.

- C-46 AWC-ECU connector
- F-10 AYC direction valve connector (LH)
- D-11 intermediate connector, F-11 intermediate connector
- No. 9 body ground

Q: Are the connectors and terminals in good condition?

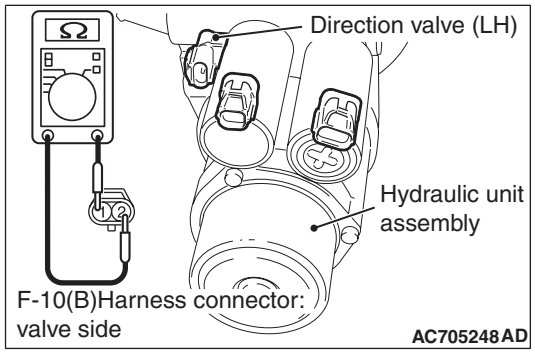
YES : Go to Step 4.
NO : Repair the faulty connector(s) or terminal(s). Then go to Step 8.

STEP 4. Harness check

(1) Check the wiring harness among C-46 AWC-ECU connector (terminal No. 14), D-11 intermediate connector (terminal No. 22), F-11 intermediate connector (terminal No. 1), and F-10 AYC direction valve (LH) connector (terminal No. 2) for any problems.
(2) Check the wiring harness among F-10 AYC direction valve (LH) connector (terminal No. 1), F-11 intermediate connector (terminal No. 3), and No. 9 body ground for any problems.

Q: Is the harness in good condition?

YES : Go to Step 5.
NO : Repair the problem in the wiring harness. Then go to Step 8.



STEP 5. Resistance measurement between the AYC direction valve (LH) solenoid connector (equipment side) terminals

Disconnect the F-10 AYC direction valve (LH) connector and measure the resistance between connector terminals on the equipment side.

Standard value: 15.9 ±0.5 Ω

Q: Is the measured resistance value within the standard value range?

YES : Go to Step 6.

NO : Replace the hydraulic unit. (Refer to P.27-58.) Then go to Step 8.

STEP 6. Scan tool service data

Check the following service data. (Refer to P.27-22.)

- Item 94: AYC direction valve (LH) activation command

Q: Is the check result normal?

YES : Go to Step 7.

NO : Replace the AWC-ECU (Refer to P.22A-132). Then go to Step 8.

STEP 7. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position, and then wait for 4 seconds.
(3) Using the scan tool, apply the specified current to the AYC proportioning valve, and forcibly activate the AYC direction valve (LH). (Refer to Actuator Test Table P.27-22.)
(4) Check if the DTC is set.

Q: Is DTC No. C161B set?

YES : Replace the AWC-ECU (Refer to P.22A-132). Then go to Step 8.

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

STEP 8. Check whether the DTC is reset.

(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position, and then wait for 4 seconds.
(3) Using the scan tool, apply the specified current to the AYC proportioning valve, and forcibly activate the AYC direction valve (LH). (Refer to Actuator Test Table P.27-22.)
(4) Check if the DTC is set.

Q: Is DTC No. C161B set?

YES : Diagnose again from Step 1.

NO : This diagnosis is complete.

TSB Revision

Code No. C1620 AYC control abnormality

⚠ CAUTION
If there is any problem in the CAN bus lines, an incorrect diagnostic trouble code may be set. Prior to this diagnosis, diagnose the CAN bus lines.

OPERATION

- The power from AWC-ECU is supplied to and energizes the hydraulic unit AYC proportioning valve and direction valve (RH/LH) solenoid.

FUNCTION

- The AWC-ECU controls the specified current of the coil for the hydraulic unit AYC proportioning valve solenoid, and activation command of the coil for the AYC direction valve (RH/LH) solenoid.
- The hydraulic unit AYC proportioning valve and direction valve (RH/LH) solenoid control the hydraulic pressure to the AYC differential right/left clutch.

TROUBLE JUDGMENT

Range of check

- The forced activation of actuator is not underway.
- The output to the AYC proportioning valve solenoid is 0.05 A or more.

JUDGMENT CRITERIA

- Due to the AYC differential clutch protection, DTC No. C161F is set.
- The AYC proportioning valve solenoid is energized longer than the specified duration.

Fail-safe, backup function

- The AWC-ECU suspends the AYC control and illuminates the multi-information display. Then DTC No. C1620 is set.

PROBABLE CAUSES

- The driving and road conditions are severe.
- Malfunction inside the AWC-ECU

DIAGNOSTIC PROCEDURE

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

Q: Is the check result normal?
YES : Go to Step 3.
NO : Repair the CAN bus line (Refer to GROUP 54C –Troubleshooting P.54C-14). After repairing the CAN bus line, go to Step 2.

STEP 2. DTC recheck after repairing the CAN bus line
(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position.
(3) Check if the DTC is set.

Q: Is DTC No. C1620 set?
YES : Go to Step 3.
NO : This diagnosis is complete.

STEP 3. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position.
(3) Check if the DTC is set.

Q: Is DTC No. C1620 set?
YES : Replace the AWC-ECU (refer to P.22A-132), and check that another DTC is not set. Then go to Step 4.
NO : This diagnosis is complete. Under the driving and road conditions where the AYC control is operated long time (e.g.: long time cornering), the clutch protection is operated.

STEP 4. Check whether the DTC is reset.
(1) Erase the DTC.
(2) Turn the ignition switch from the LOCK (OFF) position to the ON position.

Q: Is DTC No. C1620 set?
YES : Diagnose again from Step 1.
NO : This diagnosis is complete.

TROUBLE SYMPTOM CHART

M1271004300366

⚠ CAUTION

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

NOTE: For trouble symptom not mentioned, refer to the GROUP 22A –Symptom Chart P.22A-14 .

Symptom	Inspection procedure	Reference pages or actions
Noise from the AYC differential during cornering	1	P.27-22

INSPECTION PROCEDURE FOR TROUBLE SYMPTOMS

Inspection Procedure 1: Abnormal noise from AYC differential (torque transfer mechanism) during cornering

COMMENTS ON TROUBLE SYMPTOM

If the abnormal noise form AYC differential is heard during corning under the system operation, AYC differential may have a problem.

PROBABLE CAUSES

- AYC differential gear oil failure (low oil level, oil contamination)
- Malfunction of AYC differential

DIAGNOSTIC PROCEDURE

STEP 1. AYC differential gear oil level check

Check the AYC differential torque transfer mechanism for gear oil level and oil contamination. (Refer to P.27-28.)

Q: Is the check result normal?

YES : Go to Step 2.

NO : Fill the specified gear oil up to the gear oil level for the torque transfer mechanism, and replace if the contamination is severe. (Refer to P.27-29.) Then, go to Step 3.

STEP 2. Check of AYC reoperation

Using the scan tool, check the AYC operation under forced activation. (Refer to P.27-31.)

Q: Does a malfunction take place again?

YES : Replace the AYC differential. (Refer to P.27-52.) Then, go to Step 3.

NO : This diagnosis is complete.

STEP 3. Check of AYC reoperation

Using the scan tool, check the AYC operation under forced activation. (Refer to P.27-31.)

Q: Does a malfunction take place again?

YES : Diagnose again from Step 1.

NO : This diagnosis is complete.

DATA LIST REFERENCE TABLE

M1271006900018

Refer to GROUP 22A –Data List Reference Table P.22A-107 Contents.

ACTUATOR TEST REFERENCE TABLE

M1271007000018

Refer to GROUP 22A –Actuator Test Reference Table P.22A-113 Contents.

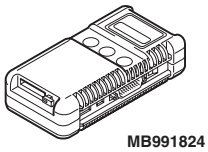
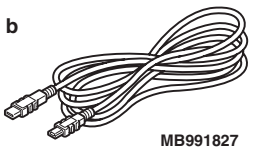
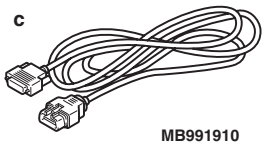
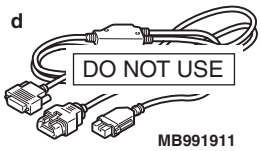
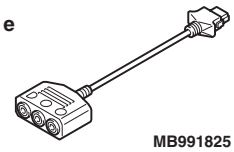
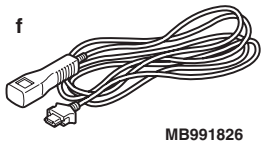
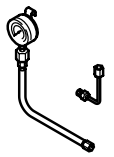
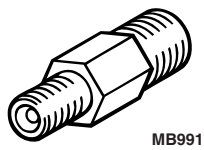
CHECK AT AWC-ECU

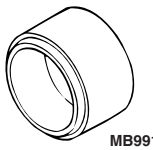
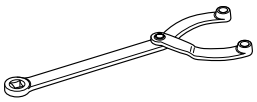
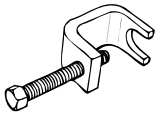
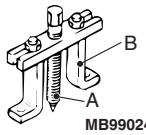
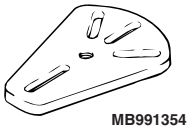
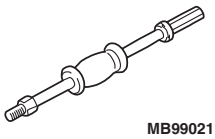
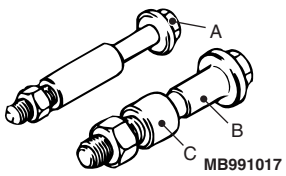
M1271007200012

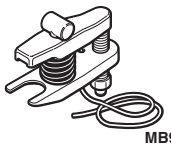
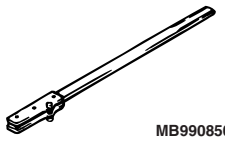
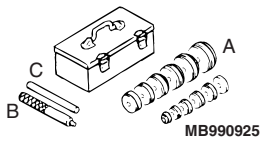
Refer to GROUP 22A –Check at AWC-ECU Terminal Voltage P.22A-114 Contents.

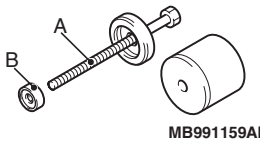
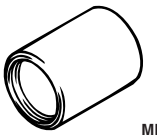
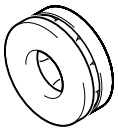
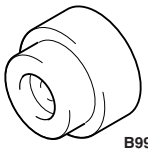
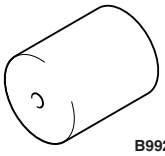
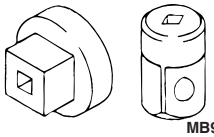
SPECIAL TOOL

M1271000600990

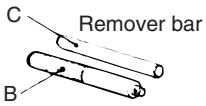
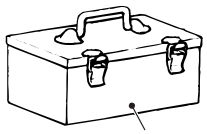
Tool	Tool number and name	Supersession	Application
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991825 f  MB991826 MB991955	MB991955 a: MB991824 b: MB991827 c: MB991910 d: MB991911 e: MB991825 f: MB991826 M.U.T.-III Sub Assembly a: Vehicle communication interface (V.C.I.) b: M.U.T.-III USB Cable c: M.U.T.-III Main Harness A (Vehicles with CAN communication system) d: M.U.T.-III Main Harness B (Vehicles without CAN communication system) e: M.U.T.-III main harness C (for Daimler Chrysler models only) f: M.U.T.-III Adapter Harness g: M.U.T.-III Trigger Harness	MB991824-KIT *NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.*	**⚠ CAUTION** **For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B instead, the CAN communication does not function correctly.** Checking the AYC (Diagnosis display, service data display and calibration by using the scan tool)
	MD998330 Oil pressure gauge	–	Hydraulic pressure measurement
 MB991705	MB991705 Hose adapter	–	

Tool	Tool number and name	Supersession	Application
 MB991551	MB991551 Bearing outer race installer	–	Press-fitting of the oil seal (AYC differential mechanism part: use together with MB990938)
 MB991245	MB991245 Lower arm bush ring	–	Press-fitting of the oil seal (AYC differential torque transfer mechanism part)
 B990767	MB990767 Front hub and flange yoke holder	MB990767-01	Hub fixing
 MB991618	MB991618 Hub bolt remover	General service tool	Removal of the hub bolt
 MB990241AD	MB990241 A:MB990242 B:MB990244 Axle shaft puller A: Puller shaft B: Puller bar	MB990241-01 or General service tool	• Removal of the drive shaft • Removal of the rear hub assembly
 MB991354	MB991354 Puller body	General service tool	
 MB990211	MB990211 Slide hammer	General service tool	Rear hub assembly removal
 MB991017	A:MB991017 B:MB990998 C:MB991000 A, B: Front hub remover and installer C: Spacer	MB990998-01	• Provisional holding of the wheel bearing • Hub rotation starting torque measurement • Measurement of wheel bearing end play *NOTE: MB991000, which belongs to MB990998, should be used as a spacer.*

Tool	Tool number and name	Supersession	Application
 MB991897	MB991897 or MB992011 Ball joint remover	MB991113-01, MB990635-01 or General service tool	Self locking nut removal *NOTE: Steering linkage puller (MB990635 or MB991113)is also used to disconnect knuckle and tie rod end ball joint.*
 MB990850	MB990850 End yoke holder	–	Companion flange fixing
 MB990925	MB990925 A: MB990926 – MB990937 B: MB990938 C: MB990939 Bearing and oil seal installer set A: Installer adapter B: Bar C: Brass bar	MB990925-01 or General service tool	Press-fitting of differential carrier oil seal (Use together with MB991115)

Tool	Tool number and name	Supersession	Application
 MB991159AB	MB991159 Bushing remover and installer A: MB991162 Bolt B: MB991218 Bearing	–	Removal of the rear suspension crossmember bushing *NOTE: When press-fitting the bushing, use the bearing included in MB992107.*
 MB990847	MB990847 Base	–	
 B992234	MB992234 Bearing	–	
 B992235	MB992235 Adapter	–	
 B992253	MB992253 Remover and installer	–	
 B992254	MB992254 Base	–	
 MB990326	MB990326 Preload socket	General service tool	Measurement of the wheel bearing rotation starting torque
	MB990685 Torque wrench	General service tool	

MB990925 BEARING AND OIL SEAL INSTALLER SET

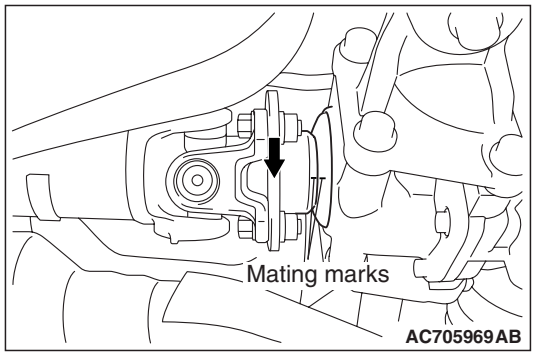
Tool	Type	Tool number	O D mm (in)
 A Installer adapter  C Remover bar B Installer bar (Snap-in type)  Toolbox ACX02372AE	A	MB990926	39.0 (1.54)
		MB990927	45.0 (1.77)
		MB990928	49.5 (1.95)
		MB990929	51.0 (2.00)
		MB990930	54.0 (2.13)
		MB990931	57.0 (2.24)
		MB990932	61.0 (2.40)
		MB990933	63.5 (2.50)
		MB990934	67.5 (2.66)
		MB990935	71.5 (2.81)
		MB990936	75.5 (2.97)
		MB990937	79.0 (3.11)
	B	MB990938	–
	C	MB990939	–

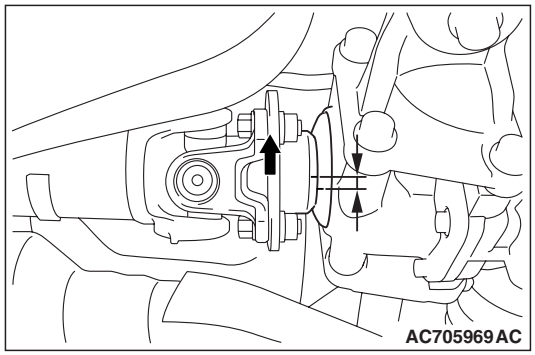
ON-VEHICLE SERVICE

REAR AXLE TOTAL BACKLASH CHECK

M1271001200456

1. Shift the shift lever to the Neutral position, pull the parking brake lever, and then raise the vehicle using a jack.
2. Fully turn the propeller shaft clockwise, and place the mating marks on the companion flange dust cover and differential carrier.





3. Fully turn the propeller shaft counterclockwise, and measure the travel distance of mating marks.

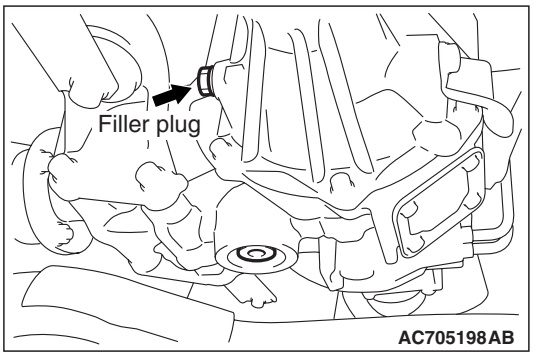
   Limit: 6 mm(0.2 inch)

4. If the backlash exceeds the limit, replace the differential carrier assembly.

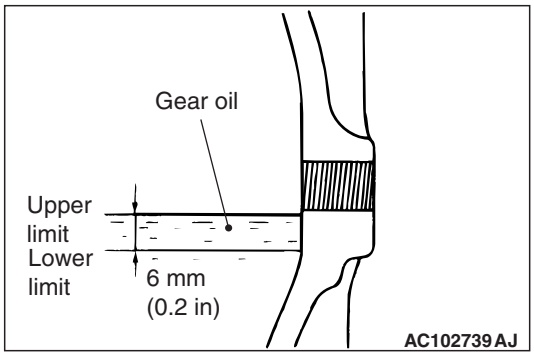
GEAR OIL LEVEL CHECK

M1271004900090

DIFFERENTIAL MECHANISM PART



1. Remove the filler plug.

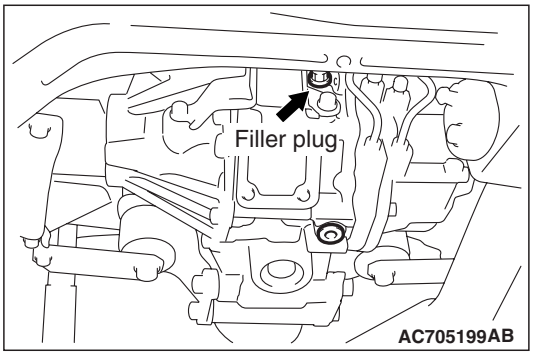


2. Check that the gear oil level is in between the upper limit (bottom of the oil filler plug hole) and the lower limit.
3. If the gear oil level is not in between the upper limit and the lower limit, fill the specified gear oil to the bottom of the filler plug hole.

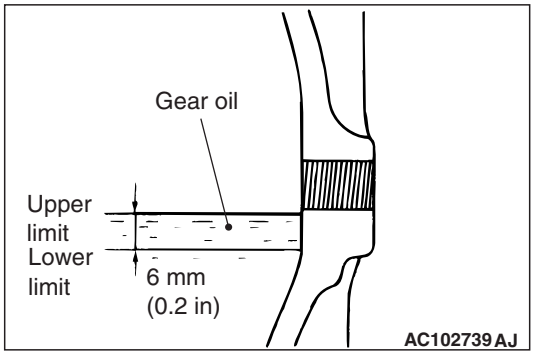
   Specified gear oil: MITSUBISHI Genuine DIA QUEEN LSD gear oil
4. Install the filler plug, and tighten it to the specified torque.

   Tightening torque: 49 ±10 N· m (37 ±7 ft-lb)

TORQUE TRANSFER MECHANISM PART



1. Remove the filler plug.



2. Check that the gear oil level is in between the upper limit (bottom of the oil filler plug hole) and the lower limit.
3. If the gear oil level is not in between the upper limit and the lower limit, fill the specified gear oil to the bottom of the filler plug hole.

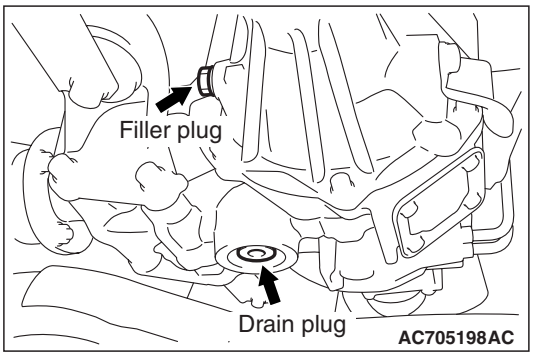
   Specified gear oil: DIAMOND ATF-SP III
4. Install the filler plug, and tighten it to the specified torque.

   Tightening torque: 49 ±10 N· m (37 ±7 ft-lb)

GEAR OIL REPLACEMENT

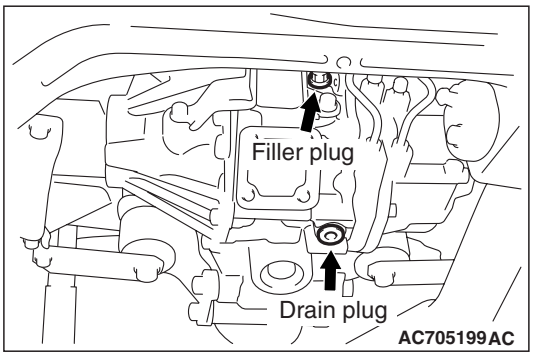
M1272004600263

DIFFERENTIAL MECHANISM PART



1. Remove the filler plug.
2. Remove the drain plug and drain oil.
3. Install the drain plug, and tighten it to the specified torque.
   Tightening torque: 32 ±2 N· m (23 ±2 ft-lb)
4. Fill the specified gear oil up to the bottom of the filler plug hole.
   Specified gear oil: MITSUBISHI Genuine DIA QUEEN LSD gear oil
   Amount to use: 0.55 ±0.02 dm^3(0.58 ±0.02 qt)
5. Install the filler plug, and tighten it to the specified torque.
   Tightening torque: 49 ±10 N· m (37 ±7 ft-lb)

TORQUE TRANSFER MECHANISM PART

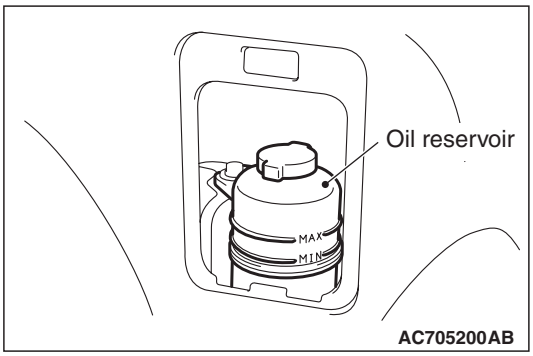


1. Remove the filler plug.
2. Remove the drain plug and drain oil.
3. Install the drain plug, and tighten it to the specified torque.
   Tightening torque: 32 ±2 N· m (23 ±2 ft-lb)
4. Fill the specified gear oil up to the bottom of the filler plug hole.
   Specified gear oil: DIAMOND ATF-SP III
   Amount to use: 0.55 –0.60 dm^3(0.58 –0.63 qt)
5. Install the filler plug, and tighten it to the specified torque.
   Tightening torque: 49 ±10 N· m (37 ±7 ft-lb)

FLUID LEVEL CHECK

M1272004700022

<WHEN THE SCAN TOOL IS NOT USED>



1. Remove the trunk room side trim lid on the right of the trunk room.
2. If the vehicle has been run, leave it for 90 min. or more in an ordinary temperature {10 –30° C (50 –86° F)} to allow the accumulator internal pressure to drop.
   NOTE: If the ambient temperature is 10°C (50°F) or less, allow more time to leave the vehicle to stand idle.
3. Check that the oil reservoir fluid level is in between MAX and MIN.
4. If the fluid level is not in between MAX and MIN, fill the specified fluid.
   Specified fluid: DIAMOND ATF-SP III
5. Install the trunk room side trim lid.

<WHEN THE SCAN TOOL IS USED>

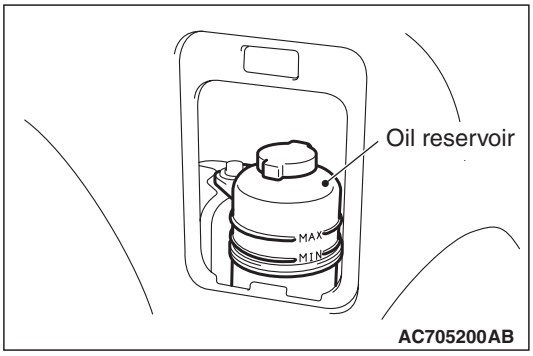
1. Remove the trunk room side trim lid on the right of the trunk room.

⚠ CAUTION
Turn the ignition switch to the "LOCK (OFF)" position before connecting or disconnecting the scan tool.

2. Set the scan tool to the 16-pin data link connector. (Refer to P.27-6.)
3. Turn the ignition switch to the ON position.
4. Using the scan tool, forcibly activate the hydraulic unit (item No. 03) to reduce the pressure inside the accumulator. (Refer to GROUP 22A –Actuator Test TableP.22A-113.)

   NOTE:
   - *With the forced activation (oil level check mode), the hydraulic unit direction valve is operated 20 times to right and left, and then the operation is canceled automatically. Also, using the clear key on the scan tool, the activation can be forcibly canceled.*
   - *When the functions are suspended by the fail-safe function, the hydraulic unit cannot be forcibly activated.*
5. Check that the oil reservoir fluid level is in between MAX and MIN.
6. If the fluid level is not in between MAX and MIN, fill the specified fluid.

   Specified fluid: DIAMOND ATF-SP III
7. Install the trunk room side trim lid.



AYC BLEEDING

M1272004800029

⚠ CAUTION
At low temperature the fluid viscosity is so high that air bleeding becomes degenerated. Air bleeding should be done at normal temperatures {10 to 30°C (50 to 86°F)}.

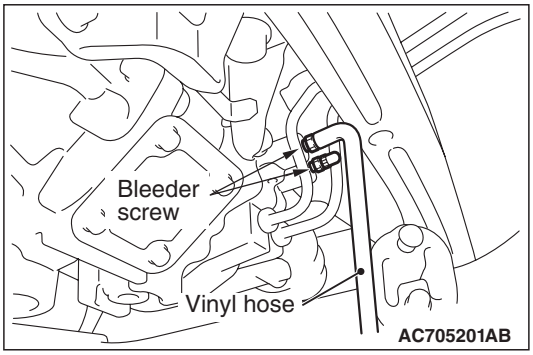
1. Lift up the vehicle.

⚠ CAUTION
Turn the ignition switch to the "LOCK (OFF)" position before connecting or disconnecting the scan tool.

2. Set the scan tool to the 16-pin data link connector. (Refer to P.27-6.)
3. Turn the ignition switch to the "ON" position.
4. Set the steering wheel in the straight-ahead position.
5. Using the scan tool, forcibly activate the hydraulic unit (item No. 02). (Refer to GROUP 22A –Actuator Test TableP.22A-113.)

   NOTE:

- *Forced activation (air bleeding mode) is continued for 5 minutes, and then the operation is canceled automatically. Also, using the clear key on the scan tool, the forced activation can be canceled.*
- *When the functions are suspended by the fail-safe function, the hydraulic unit cannot be forcibly activated.*



6. Remove the cap on the left of bleeder screw on the torque transfer mechanism, and connect the vinyl hose.
7. Gradually rotate the steering wheel at the straight-ahead position clockwise. Loosen the left side bleeder screw, and check that the air is bled with fluid.

⚠ CAUTION

- **During the air bleeding, fill the fluid so that the fluid constantly remains in the oil reservoir.**
- **When the oil is filled into the empty oil reservoir, check that the oil is filled up under the filter inside the oil reservoir.**

8. After the air bleeding, tighten the bleeder screw and set the steering wheel at the straight-ahead position.
9. Repeat Steps 6 and 7 for 2 or 3 times. After no air mixture is confirmed, tighten the bleeder screw to the specified torque.

Tightening torque: 9.0 ±1.0 N· m (80 ±9 in-lb)

10. Perform Steps 5 to 8 for the right bleeder screw. Note to turn the steering wheel counterclockwise.
11. When the hydraulic unit is removed, perform air bleeding on the ACD side. (Refer to GROUP 22A –On-vehicle Service P.22A-118.)

⚠ CAUTION

If the air bleeding is insufficient, the noise from the hydraulic unit occurs, which may deteriorate the pump durability.

12. After the air bleeding, check the fluid level. (Refer to P.27-29.)

AYC OPERATION CHECK

M1272004900026

1. Lift up the vehicles.

⚠ CAUTION

Turn the ignition switch to the "LOCK (OFF)" position before connecting or disconnecting the scan tool.

2. Set the scan tool to the 16-pin data link connector. (Refer to P.27-6).
3. Start the engine.
4. Set the gear to the 2nd gear or above, operate the scan tool, and check from the data list (Item No. 24 and 25) that the wheel speed is within 10 –20 km/h (6 –12miles). (Refer to GROUP 22A –Service Data TableP.22A-107.)

NOTE:

- *Set the steering wheel to the neutral position.*

- *When turning the steering wheel, AYC operates continually (operation sound from the torque transfer mechanical part), but it is not system fault. In this case, set the steering wheel to the neutral position, and perform the following operations in order to stop the operation.*
  - *Release the clutch.*
  - *Set the gear to "Neutral".*
  - *Stop the engine.*

5. Operate the scan tool to drive the torque transfer mechanism part by the actuator test (item No. 06 and 07) forcibly. (Refer to GROUP 22A –Actuator Test TableP.22A-113.)

   NOTE:
   - *Drive the clutch operating mode forcibly for 1 minute, release the operation automatically. Drive can also be cleared forcibly using the Clear key of the scan tool.*
   - *If the hydraulic unit function has been stopped by fail-safe, the torque transfer differential cannot be forcibly driven.*

6. Using the scan tool, check that each wheel speed is under the following conditions by the service data (item No. 24 and 25). (Refer to GROUP 22A –Service Data TableP.22A-107.)

<Driving actuator test item No.06 forcibly (Refer toP.22A-113.>
The left rear wheel is faster 2 km/h (1 mile/h) than right rear wheel.
<Driving actuator test item No.07 forcibly (Refer toP.22A-113.>
The right rear wheel is faster 2 km/h (1 mile/h) than right rear wheel.

NOTE: If the above are not satisfied, check the oil pressure as the system may be faulty.

OIL PRESSURE CHECK

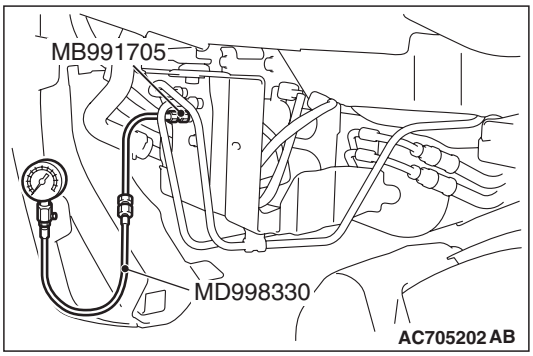
M1272005000037

Required Special Tools:
- MB991705: Hose adaptor
- MD998330: Oil pressure gauge Remover

1. Remove the rear wheel (RH) and then rear wheel house splash shield. (Refer to GROUP 42 –Splash Shield P.42A-13.)
2. Lift up the vehicles.

⚠ CAUTION
Turn the ignition switch to the "LOCK (OFF)" position before connecting or disconnecting the scan tool.

3. Set the scan tool to the 16-pin data link connector. (Refer to P.27-6).
4. Turn the ignition switch to "ON" position.



5. Disconnect the hydraulic unit and the AYC pressure tube assembly, connect the special tools MB991705, MD998330 to LH side port, put the lid to RH side port or connect the AYC pressure tube disconnected.
6. Using the scan tool, forcibly activate the hydraulic unit (item No. 06). (Refer to GROUP 22A –Actuator Test TableP.22A-113.)

   NOTE:
   - *Forced activation (left clutch operation mode) is continued for 1 minutes, and then the operation is canceled automatically. Also, using the clear key on the scan tool, the activation can be forcibly canceled.*
   - *When the functions are suspended by the fail-safe function, the hydraulic unit cannot be forcibly activated.*

⚠ CAUTION

While the oil pressure is checked, add fluid as necessary to ensure that it is left in the oil reservoir during the entire procedure.

7. Check that the generated oil pressure of the hydraulic unit satisfies the standard value.

   Standard value: 0.9 –1.1 MPa (130 –159 psi)

8. Check the oil pressure of the clutch right side following step 4 through 6. Connect the special tool to RH side port, put the lid to LH side port or connect AYC pressure tube assembly disconnected.
9. Using the scan tool, forcibly activate the hydraulic unit (item No. 07). (Refer to GROUP 22A –Actuator Test TableP.22A-113.)
10. If the measured value exceeds the standard value, replace the hydraulic unit.
11. Connect the hydraulic unit and AYC pressure tube assembly, and tighten them to the specified torque.

    Tightening torque: 26 ±4 N· m (19 ±3 ft-lb)

12. Connect the AYC differential torque transfer mechanism and AYC pressure tube assembly, and tighten them to the specified torque.

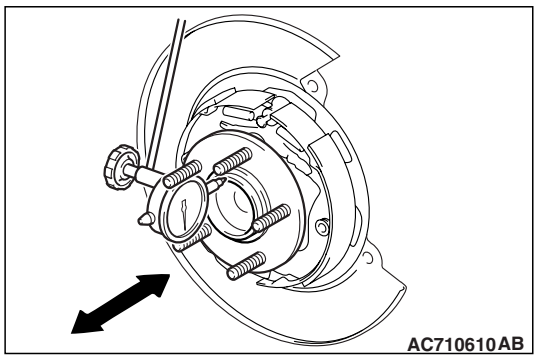
    Tightening torque: 21 ±3 N· m (16 ±2 ft-lb)

13. Perform the AYC air bleeding. (Refer to P.27-30.)

WHEEL BEARING END PLAY CHECK

M1271000900894

1. Remove the rear brake disk. (Refer to GROUP36, Parking Brake Lining and Drum P.36-17.)


AC710610AB

2. Set a dial gauge as shown in the figure. Move the rear wheel hub assembly in the axial direction and measure the looseness.

   Limit: 0.05 mm (0.002 inch)

3. When the looseness exceeds the limit value, replace the rear wheel hub assembly. (Refer to P.27-36.)
4. After checking, install the rear brake disk. (Refer to GROUP36, Parking Brake Lining and Drum P.36-17.)

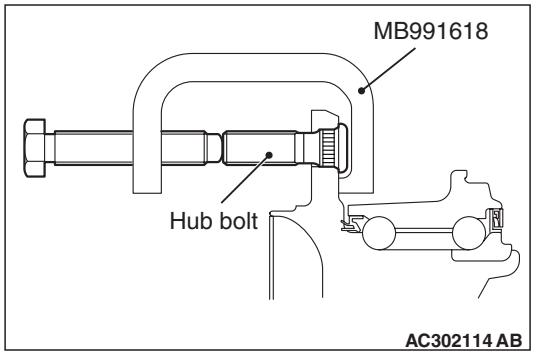
HUB BOLT REPLACEMENT

M1271001000548

Required Special Tools:

- MB990767: Front Hub and Flange Yoke Holder
- MB991618: Hub Bolt Remover

1. Remove the rear brake disk. (Refer to GROUP 36, Parking Brake Lining and Drum P.36-17.)
2. Use special tool MB991618 to remove the hub bolts.



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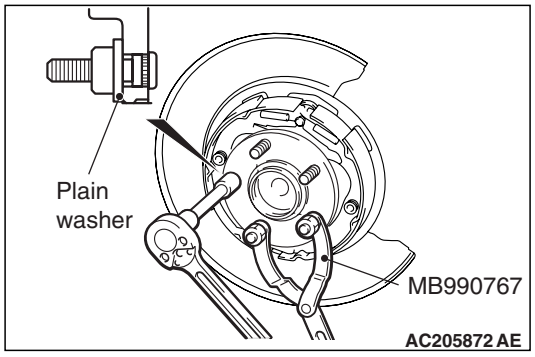


AC205872AE

3. Install the plain washer to the new hub bolt, and install the bolt with a nut while holding the hub with special tool MB990767.
4. Install the rear brake disk. (Refer to GROUP 36, Parking Brake Lining and Drum P.36-17.)

AYC DIFFERENTIAL CARRIER OIL SEAL REPLACEMENT

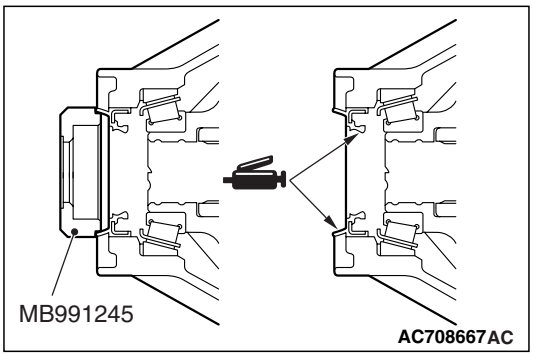
M1272001300133

DIFFERENTIAL MECHANISM PART

Required Special Tools:

- MB991245: Lower arm bush ring

1. Remove the driveshaft. (Refer to P.27-43.)
2. Remove the AYC differential carrier oil seal.



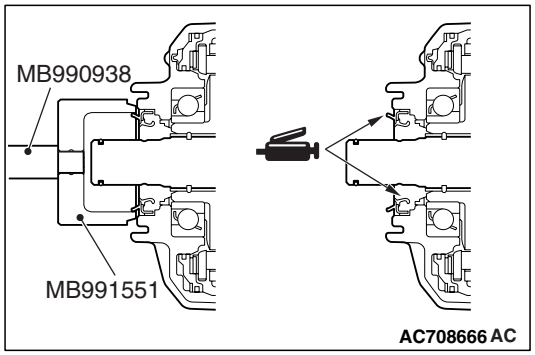
3. Use special tool MB991245 to press-fit a new oil seal.
4. Apply multi-purpose grease to the oil seal lip and driveshaft oil seal seating area.
5. Replace the driveshaft circlip with a new one, and install the driveshaft to the differential carrier. (Refer to P.27-43.)

TORQUE TRANSFER MECHANISM PART

Required Special Tools:

- MB990938: Installer bar
- MB991551: Bearing outer race installer

1. Remove the driveshaft. (Refer to P.27-43.)
2. Remove the AYC differential carrier oil seal.



3. Use the special tools MB990938 and MB991551 to press-fit a new oil seal.
4. Apply specified grease to the oil seal lip and driveshaft oil seal seating area.

   Specified grease: Vaseline

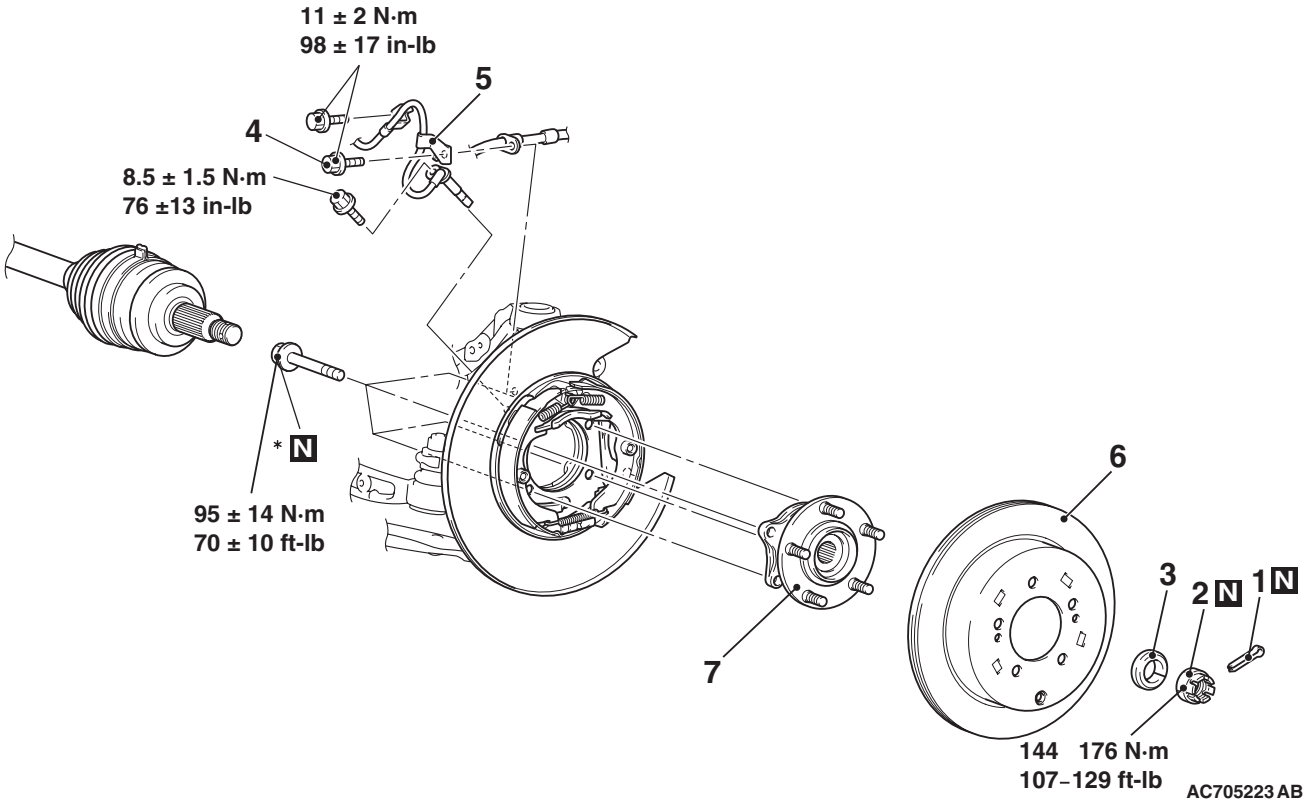
REAR AXLE HUB ASSEMBLY

REMOVAL AND INSTALLATION

M1271002000972

⚠ CAUTION

- **Do not disassemble the rear wheel hub assembly.**
- **The magnetic encoder collects metallic particles easily, because it is magnetized. Make sure that the magnetic encoder should not collect metallic particles. Check that there is not any trouble prior to reassembling it.**
- **When the rear wheel hub assembly is removed/installed, make sure that the magnetic encoder (integrated with inner oil seal) does not contact with surrounding parts to avoid damage.**
- **When removing and installing the rear wheel speed sensor, make sure that its sensor head at the end does not contact with surrounding parts to avoid damage.**
- **During maintenance, take care not to contact the parts or tools to the caliper because the paint of caliper will be scratched. And if there is brake fluid on the caliper, wipe off quickly.**
- **The part indicated with * is the bolt with friction coefficient stabilizer. In removal, replace it with a new one.**



Removal steps

1. Cotter pin

<<A>> >>A<< 2. Rear driveshaft nut

>>A<< 3. Washer

4. Rear wheel speed sensor and brake hose fixing bolt
5. Rear wheel speed sensor

<<B>>

Removal steps (Continued)

6. Rear brake disk (Refer to GROUP 36, Parking Brake Lining and Drum P.36-17.)
7. Rear wheel hub assembly

TSB Revision

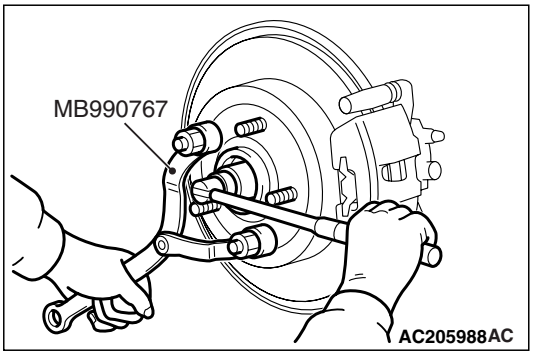
Required Special Tools:
- MB990211: Slide Hammer
- MB990241: Rear Axle Shaft Puller
- MB990242: Puller Shaft
- MB990244: Puller Bar
- MB990767: Front Hub and Flange Yoke Holder
- MB991354: Puller Body

REMOVAL SERVICE POINTS

<<A>> REAR DRIVESHAFT NUT REMOVAL

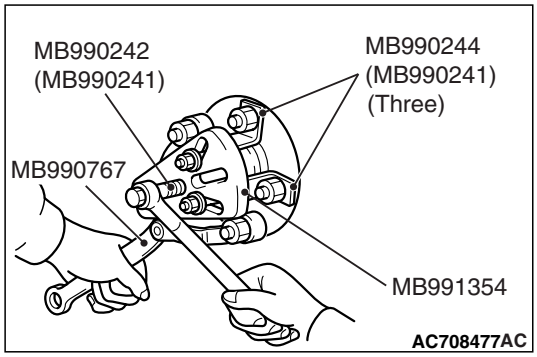
⚠ CAUTION
Do not apply the vehicle weight on the rear wheel hub assembly with the driveshaft nut loosened. Otherwise, the wheel bearing will be broken.

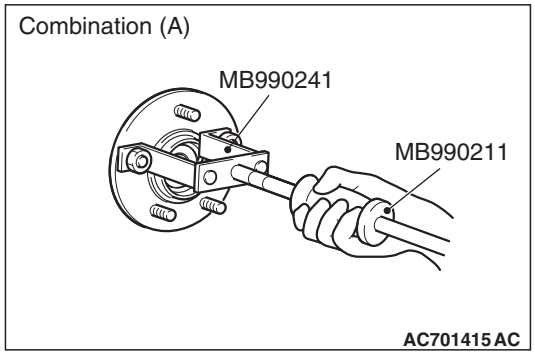
Use special tool MB990767 to fix the hub and remove the rear driveshaft nut.

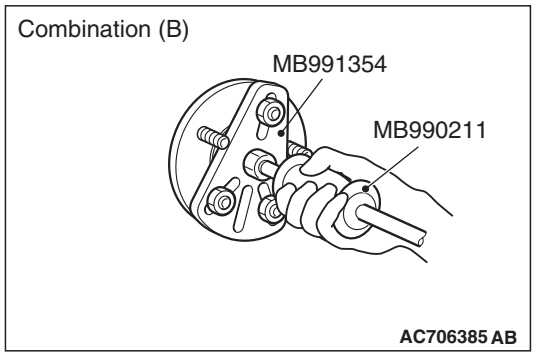


<<B>> REAR WHEEL HUB ASSEMBLY REMOVAL

1. If the rear wheel hub assembly is seized with the rear driveshaft assembly, use special tools MB990242 and MB990244, MB991354 and MB990767 to push the rear driveshaft assembly out from the hub and then remove the rear wheel hub assembly.







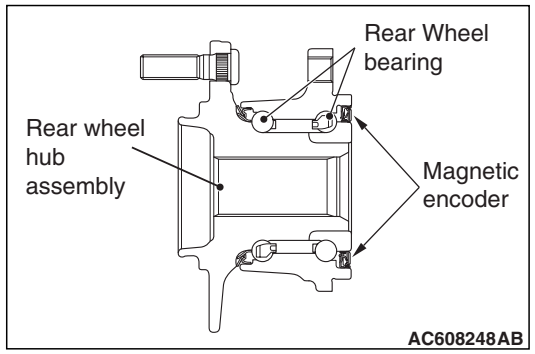
2. If the rear wheel hub assembly is seized with the knuckle, use special tools MB990211 and MB990241 {combination (A)}, or MB990211 and MB991354 {combination (B)} to remove the rear wheel hub assembly.

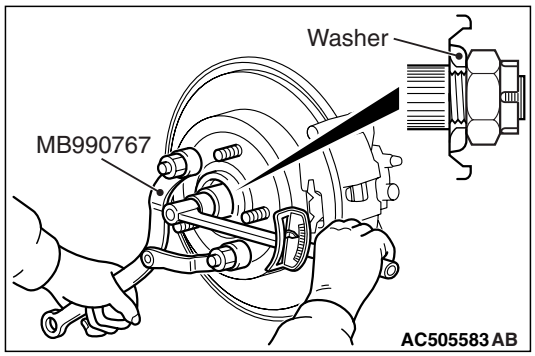
INSTALLATION SERVICE POINT

>>A<< WASHER/REAR DRIVESHAFT NUT INSTALLATION

⚠ CAUTION

- **The magnetic encoder collects metallic particles easily, because it is magnetized. Make sure that the magnetic encoder should not collect metallic particles. Check that there is not any trouble prior to reassembling it.**
- **When installing the rear driveshaft, make sure that it does not contact with the magnetic encoder (integrated with the inner oil seal) to avoid damage.**
- **Do not apply the vehicle weight on the rear wheel bearing before fully tightening the rear driveshaft nut. Otherwise, the rear wheel bearing may be broken.**





1. Be sure to install the rear driveshaft washer in the illustrated direction.
2. Using special tool MB990767, tighten the rear driveshaft nut. At this time, tighten the nut to the specified lower limit torque so that the pin hole may align with cotter pin.

   Tightening torque: 144 –176 N· m (107 –129 ft-lb)
3. If the pin hole does not align with the pin, tighten the driveshaft nut [less than 176 N· m (129 ft-lb)] and find the nearest hole, then fit the cotter pin.

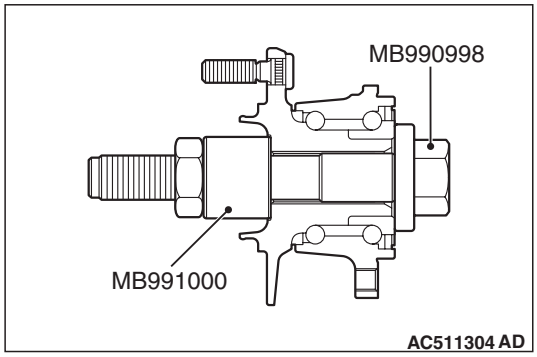
INSPECTION

M1271002100407

WHEEL BEARING ROTATION STARTING TORQUE AND END PLAY CHECK

Required Special Tools:

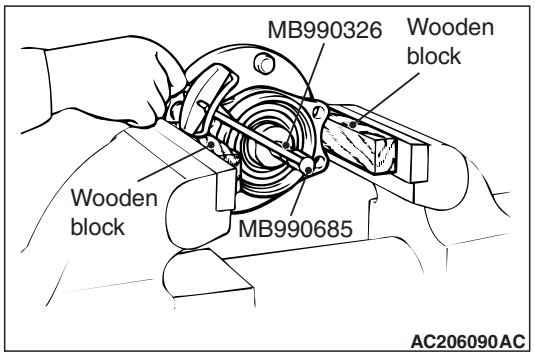
- MB990998: Front Hub Remover and Installer
- MB991000: Spacer
- MB990326: Preload Socket
- MB990685: Torque Wrench



1. Tighten special tools MB990998 and MB991000 to the specified torque.

   Tightening torque: 144 –176 N· m (107 –129 ft-lb)

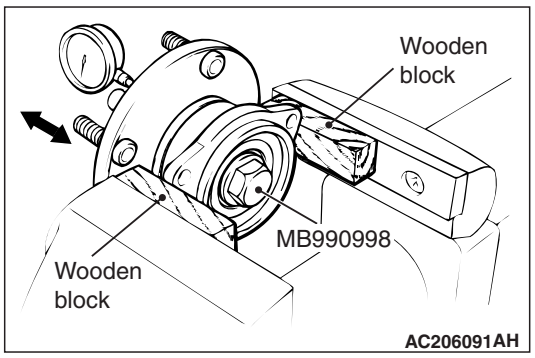
2. Hold the rear wheel hub assembly in a vice with a wooden block.
3. Rotate the hub in order to seat the bearing.



4. Measure the wheel bearing rotation starting torque by using special tools MB990326 and MB990685.

   Limit: 1.4 N· m (12.39 in-lb)

5. If the rotation starting torque is not within the limit range, replace the rear wheel hub assembly. If there is any signs of binding or tight spots when the wheel bearing turns, also replace it.



6. Measure to determine whether the wheel bearing end play is within the specified limit or not.

   Limit: 0.05 mm (0.002 inch)

7. If the play is not within the limit range while the nut is tightened to 144 –176 N· m (107 –129 ft-lb), replace the rear wheel hub assembly.

KNUCKLE

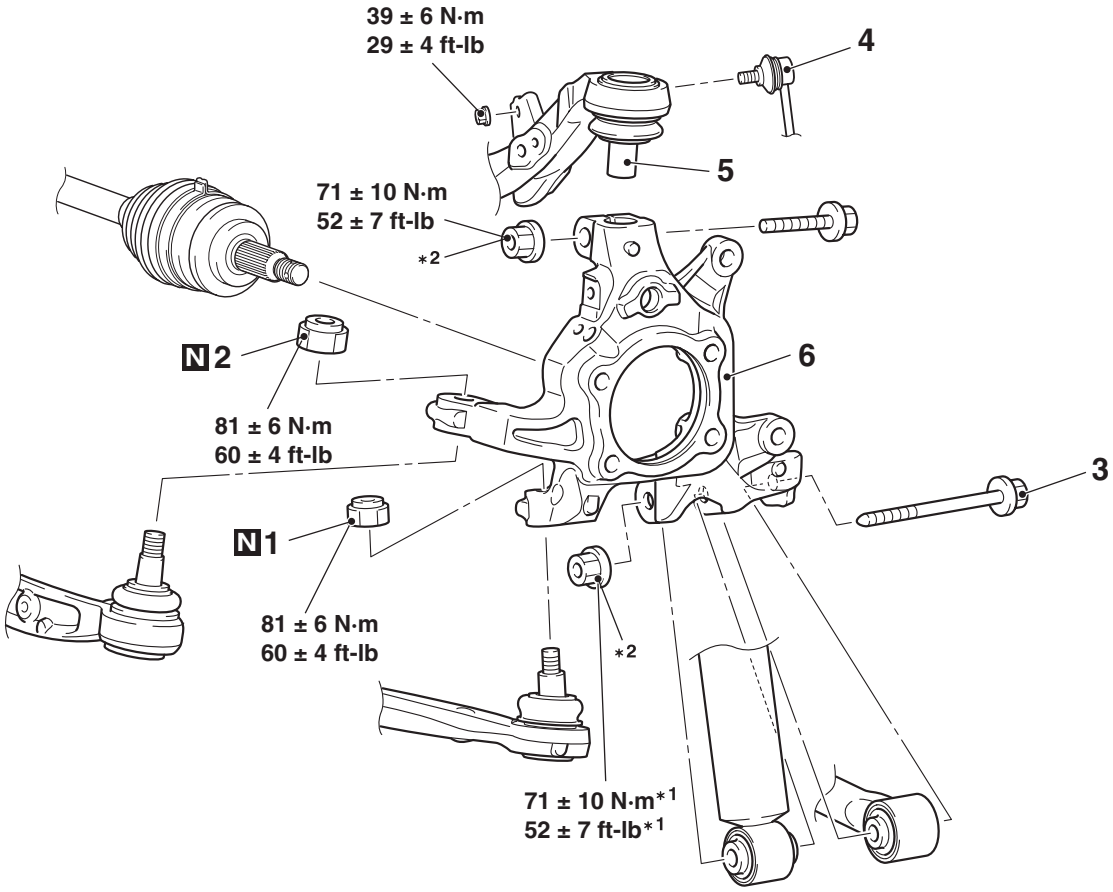
REMOVAL AND INSTALLATION

M1271003000298

⚠ CAUTION

- **The parts indicated by *1 should be temporarily tightened, and then fully tightened with the vehicle standing on the ground and the curb weight condition.**
- **The parts indicated by *2 are the nuts with friction coefficient stabilizer. In removal, ensure there is no damage, clean dust and soiling from the bearing and thread surfaces, and tighten them to the specified torque.**

Pre-removal operation	Post-installation operation
• Rear Wheel Hub Assembly Removal (Refer to P.27-36.) • Backing Plate Removal (Refer to GROUP 36, Parking Brake Lining and Drum P.36-17.)	• Check the ball joint dust cover for cracks or damage by pushing it with your finger. • Backing Plate Installation (Refer to GROUP 36, Parking Brake Lining and Drum P.36-17.) • Rear Wheel Hub Assembly Installation (Refer to P.27-36.)



AC705232AB

Removal steps

<<A>> >>A<< 1. Self-locking nut (trailing arm ball joint and knuckle connection)
<<A>> >>A<< 2. Self-locking nut (control link ball joint and knuckle connection)
3. Knuckle, lower arm and shock absorber connection bolt
4. Stabilizer link and upper arm connection

Removal steps (Continued)

5. Knuckle and upper arm connection
6. Knuckle assembly

Required Special Tools:

- MB991897 or MB992011: Ball Joint Remover

TSB Revision

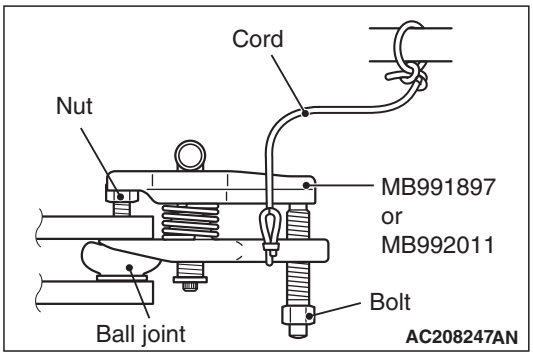
REMOVAL SERVICE POINT

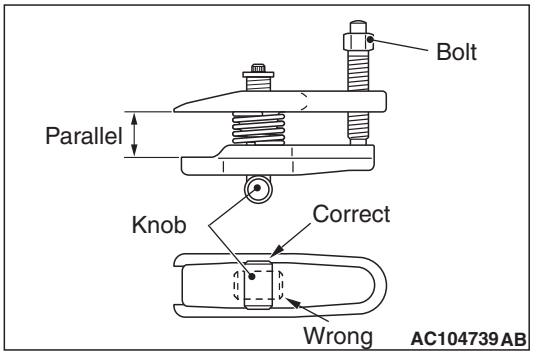
<<A>>SELF-LOCKING NUT REMOVAL

⚠ CAUTION

- **Loosen the self-locking nut (trailing arm ball joint, control link ball joint, and knuckle connection) from the ball joint, but do not remove here. Use the special tool.**
- **To prevent the special tool from dropping off, suspend it with a rope.**
- **If the dust cover is damaged during operation, replace the dust cover. (Refer to GROUP 34 –Control Link Ball Joint Dust Cover Replacement P.34-16, Trailing Arm Ball Joint Dust Cover Replacement P.34-20.)**

1. Install special tool MB991897 or MB992011 as shown in the figure.





2. Turn the bolt and knob to make the special tool jaws parallel, then hand-tighten the bolt. After tightening, check that the jaws are still parallel.

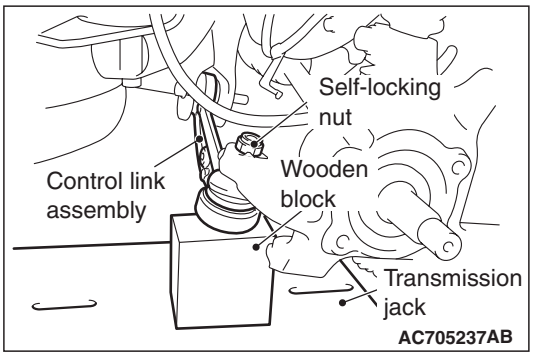
   NOTE: To adjust the special tool jaws to be parallel, set the orientation of the knob as shown in the figure.

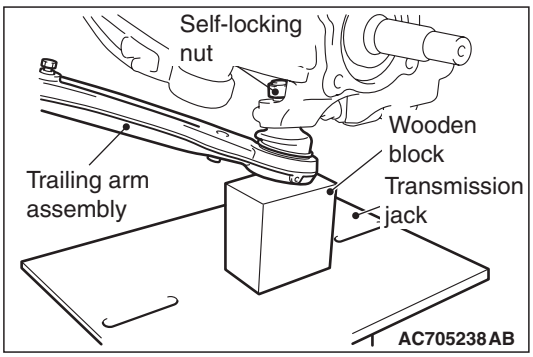
3. Tighten the bolt with a wrench to disconnect the ball joint connection.

INSTALLATION SERVICE POINT

>>A<< SELF-LOCKING NUT INSTALLATION

Support the transaxle jack with a wooden block, raise the control link or trailing arm using a jack, and then tighten the self-locking nut.





DRIVESHAFT ASSEMBLY

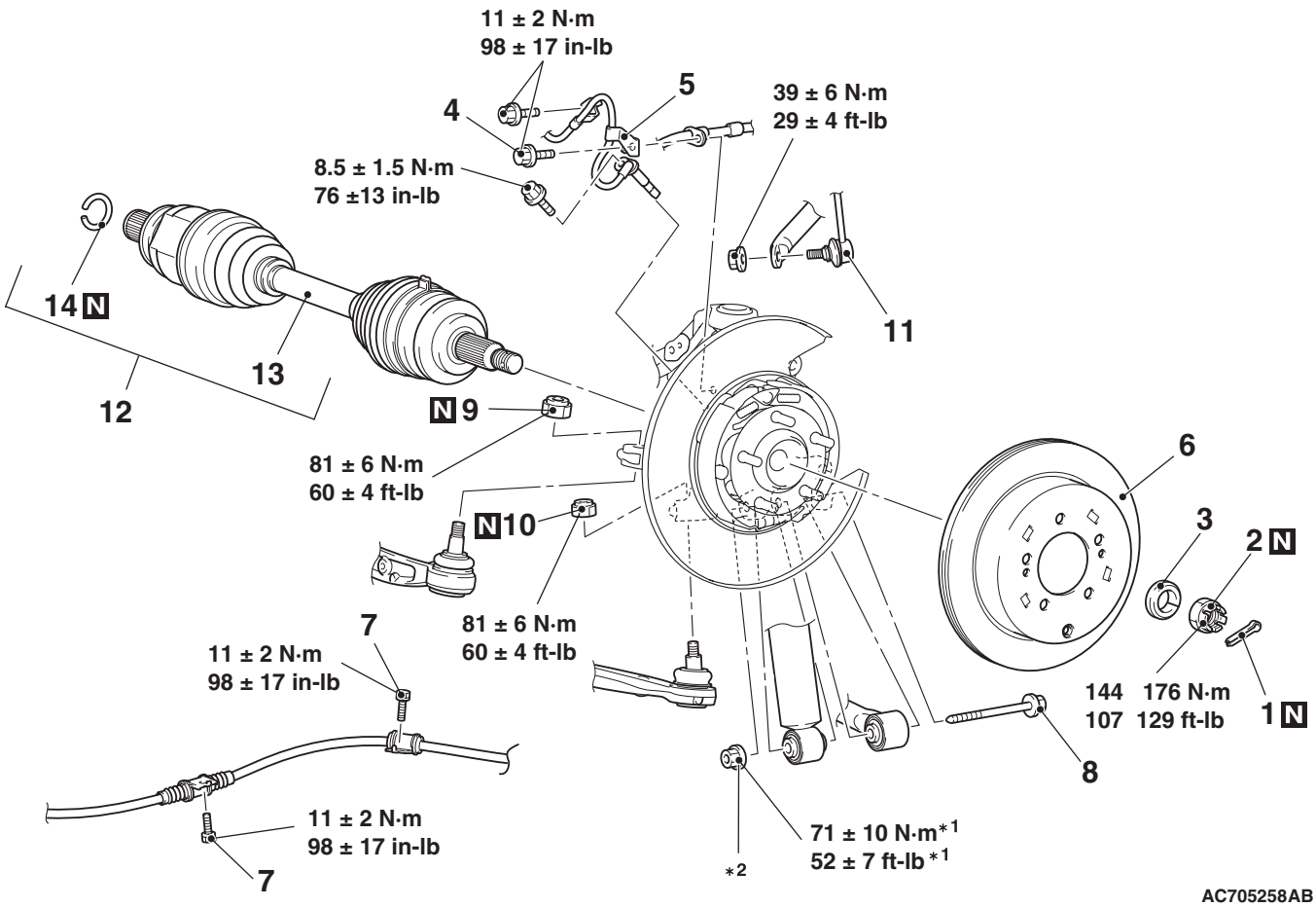
REMOVAL AND INSTALLATION

M1271003300460

⚠ CAUTION

- **When removing and installing the rear wheel speed sensor, make sure that the sensor head at the end does not contact with surrounding parts to avoid damage.**
- **During maintenance, take care not to contact the parts or tools to the caliper because the paint of caliper will be scratched. And if there is brake fluid on the caliper, wipe off quickly.**
- **The parts indicated by *1 should be temporarily tightened, and then fully tightened with the vehicle standing on the ground and the curb weight condition.**
- **The part indicated by *2 is the nut with friction coefficient stabilizer. In removal, ensure there is no damage, clean dust and soiling from the bearing and thread surfaces, and tighten them to the specified torque.**

Pre-removal operation	Post-installation operation
• Gear Oil Draining (Refer to P.27-29, P.27-29.) • Center Exhaust Pipe Removal (Refer to GROUP 15, Exhaust Pipe Removal and Installation P.15-24.)	• Check the ball joint dust cover for cracks or damage by pushing it with your finger. • Center Exhaust Pipe Installation (Refer to GROUP 15, Exhaust Pipe Removal and Installation P.15-24.) • Gear Oil Filling (Refer to P.27-29, P.27-29.) • Wheel Alignment Check and Adjustment (Refer to GROUP 34, On-vehicle service –Rear Wheel Alignment Check and Adjustment P.34-9 .)



Removal steps

1. Cotter pin

<<A>> >>C<< 2. Rear driveshaft nut

>>C<< 3. Washer

4. Rear wheel speed sensor and brake hose fixing bolt
5. Rear wheel speed sensor
6. Rear brake disk (Refer to GROUP 36, Parking Brake Lining and Drum P.36-17.)
7. Parking brake cable mounting bolt

Removal steps (Continued)

8. Knuckle, lower arm and shock absorber connection bolt

<<B>> >>B<< 9. Self-locking nut (control link ball joint and knuckle connection)

<<B>> >>B<< 10. Self-locking nut (trailing arm ball joint and knuckle connection)

11. Stabilizer link and stabilizer connection

<<C>> >>A<< 12. Rear driveshaft assembly

13. Rear driveshaft
14. Circlip

Required Special Tools:

- MB990242: Puller Shaft
- MB990244: Puller Bar
- MB990767: Front Hub and Flange Yoke Holder
- MB990998: Front Hub Remover and Installer
- MB991000: Spacer
- MB991354: Puller Body
- MB991897 or MB992011: Ball Joint Remover

TSB Revision

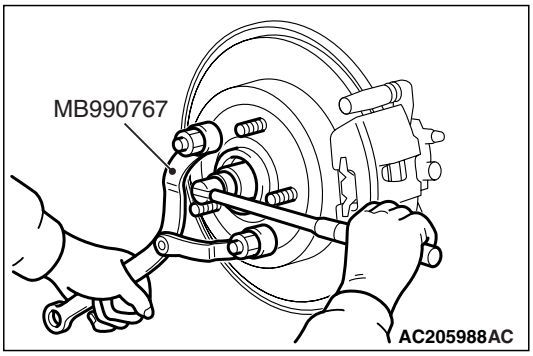
REMOVAL SERVICE POINTS

<<A>> REAR DRIVESHAFT NUT REMOVAL

⚠ CAUTION

Do not apply the vehicle weight on the rear wheel hub assembly with the driveshaft nut loosened. Otherwise, the wheel bearing will be broken.

Use special tool MB990767 to fix the hub and remove the rear driveshaft nut.

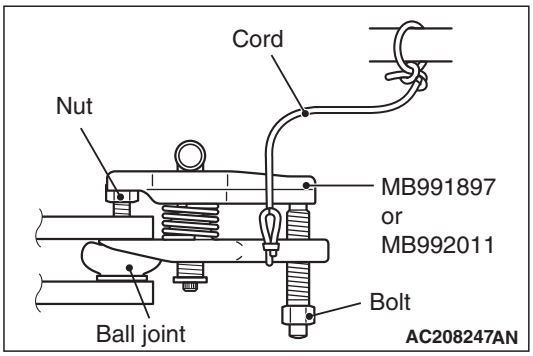


<<B>> SELF-LOCKING NUT REMOVAL

⚠ CAUTION

- **Loosen the self-locking nut (trailing arm ball joint, control link ball joint, and knuckle connection) from the ball joint, but do not remove here. Use the special tool.**
- **To prevent the special tool from dropping off, suspend it with a rope.**
- **If the dust cover is damaged during operation, replace the dust cover. (Refer to GROUP 34 –Control Link Ball Joint Dust Cover Replacement P.34-16, Trailing Arm Ball Joint Dust Cover Replacement P.34-20.)**

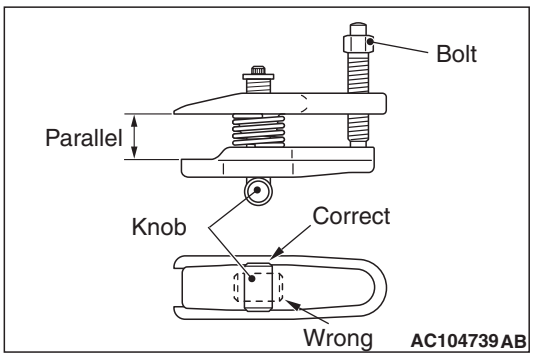
1. Install special tool MB991897 or MB992011 as shown in the figure.



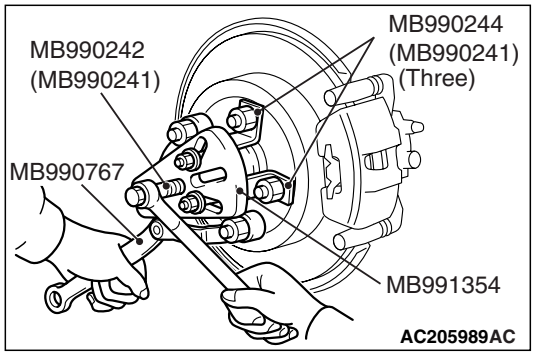
2. Turn the bolt and knob to make the special tool jaws parallel, then hand-tighten the bolt. After tightening, check that the jaws are still parallel.

   NOTE: To adjust the special tool jaws to be parallel, set the orientation of the knob as shown in the figure.

3. Tighten the bolt with a wrench to disconnect the ball joint connection.



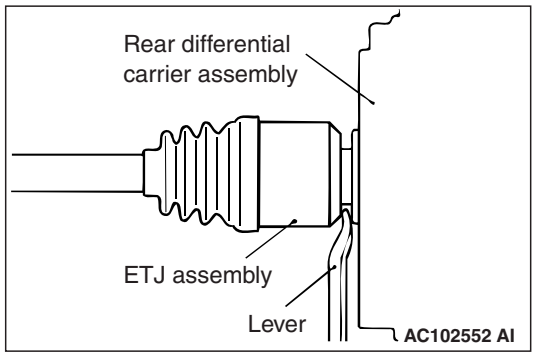
<<C>>REAR DRIVESHAFT ASSEMBLY REMOVAL



1. If the rear driveshaft assembly is seized with the rear wheel hub assembly, use special tools MB990242 and MB990244, MB990767 and MB991354 to push the rear driveshaft assembly out from the rear wheel hub assembly.

⚠ CAUTION

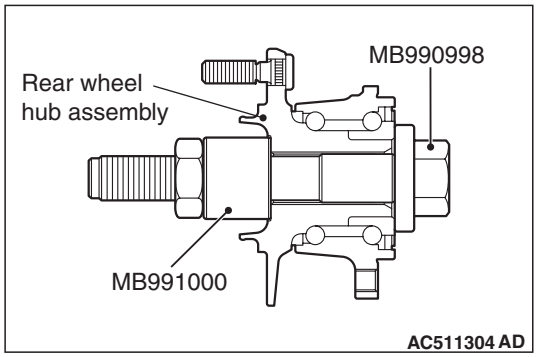
- **Never pull out the rear driveshaft assembly from the EBJ assembly side. Otherwise, the ETJ assembly may be damaged. Always pull out from the ETJ side with a lever.**
- **Care must be taken to ensure that the oil seal of the rear differential carrier assembly is not damaged by the spline part of the rear driveshaft assembly.**



2. Insert a lever between the rear differential carrier assembly and rear driveshaft assembly, and then pull the rear driveshaft assembly out from the rear driveshaft assembly.

⚠ CAUTION

- **Do not apply the vehicle weight to the rear wheel bearing with the rear driveshaft assembly removed.**
- **If, however, the vehicle weight shall be applied to the bearing (in order to move the vehicle), tighten the following special tools MB991000 and MB990998 to the specified torque 144 –176 N· m (107 –129 ft-lb).**



INSTALLATION SERVICE POINTS

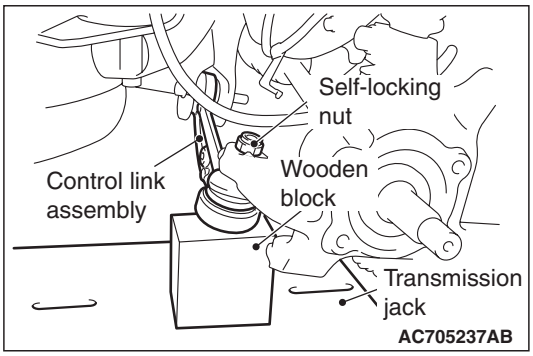
>>A<< REAR DRIVESHAFT ASSEMBLY INSTALLATION

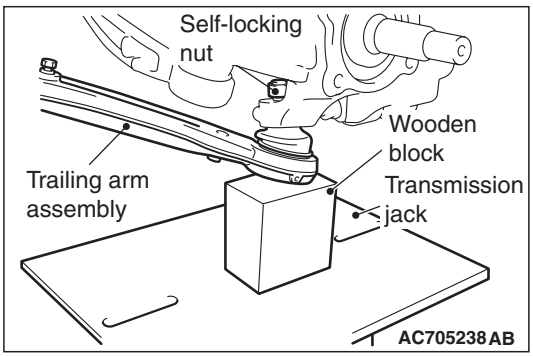
⚠ CAUTION

Care must be taken to ensure that the oil seal of the rear differential carrier assembly is not damaged by the spline part of the rear driveshaft assembly.

>>B<< SELF-LOCKING NUT INSTALLATION

Support the transaxle jack with a wooden block, raise the control link or trailing arm using a jack, and then tighten the self-locking nut.





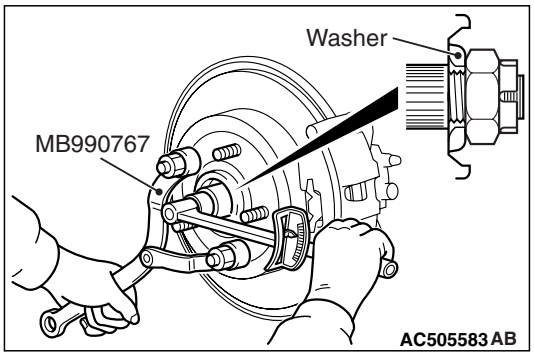
>>C<< WASHER/REAR DRIVESHAFT NUT INSTALLATION

⚠ CAUTION

Do not apply the vehicle weight on the rear wheel bearing before fully tightening the rear driveshaft nut. Otherwise, the rear wheel bearing may be broken.

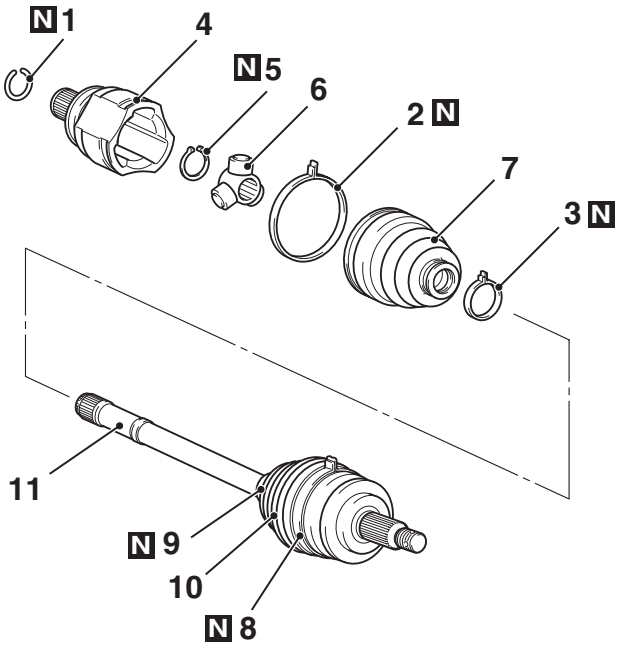
1. Be sure to install the rear driveshaft washer in the illustrated direction.
2. Using special tool MB990767, tighten the rear driveshaft nut. At this time, tighten the nut to the specified lower limit torque so that the pin hole may align with cotter pin.

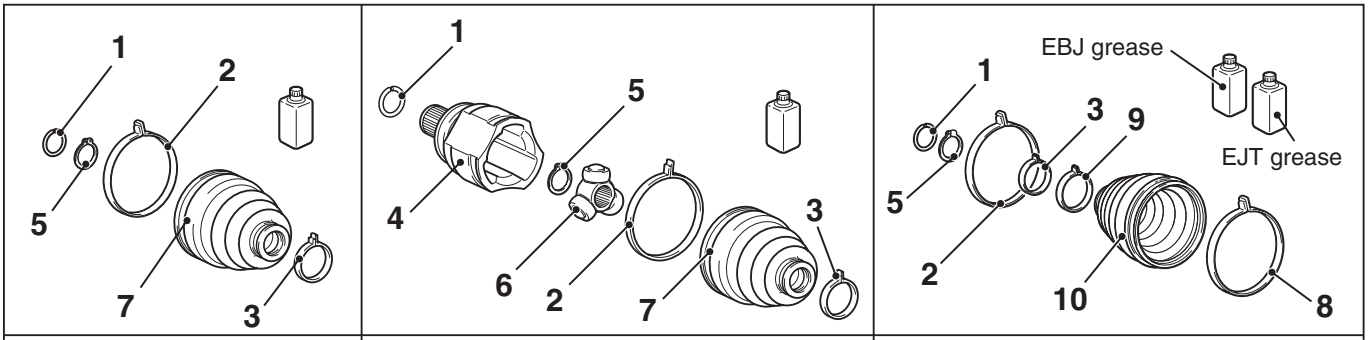
   Tightening torque: 144 –176 N· m (107 –129 ft-lb)
3. If the pin hole does not align with the pin, tighten the driveshaft nut [less than 176 N· m (129 ft-lb)] and find the nearest hole, then fit the cotter pin.



DISASSEMBLY AND ASSEMBLY

M1271003500389





ETJ boots repair kit	ETJ repair kit	EBJ boots repair kit

AC705261AB

Disassembly steps

		1.	Circlip
	>>**C**<<	2.	ETJ boot band (large)
	>>**C**<<	3.	ETJ boot band (small)
<<**A**>>	>>**B**<<	4.	ETJ case
		5.	Snap ring
	>>**B**<<	6.	Spider assembly

Disassembly steps (Continued)

<<**B**>>	>>**A**<<	7.	ETJ boot
		8.	EBJ boot band (large)
		9.	EBJ boot band (small)
		10.	EBJ boot
		11.	EBJ assembly

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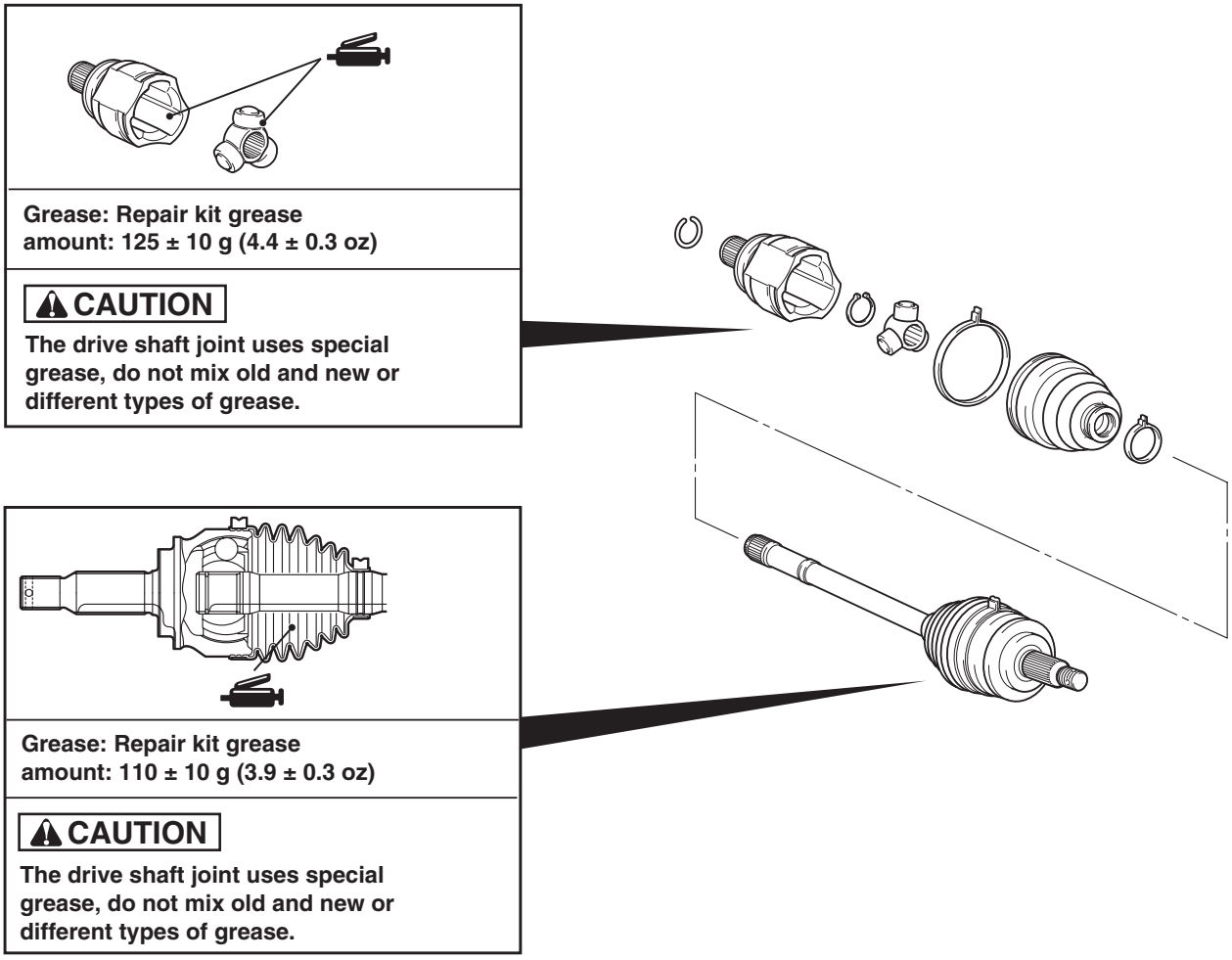
LUBRICATION POINTS



Grease: Repair kit grease
amount: 125 ± 10 g (4.4 ± 0.3 oz)

⚠ CAUTION
The drive shaft joint uses special grease, do not mix old and new or different types of grease.

Grease: Repair kit grease
amount: 110 ± 10 g (3.9 ± 0.3 oz)

⚠ CAUTION
The drive shaft joint uses special grease, do not mix old and new or different types of grease.

AC706941AB

DISASSEMBLY SERVICE POINTS

<<A>> ETJ CASE REMOVAL

⚠ CAUTION
Never disassemble the spider assembly.

<<B>> ETJ BOOT REMOVAL

1. Wipe off the grease on the shaft spline.
2. When reusing the ETJ boot, wrap plastic tape around the shaft spline to avoid damaging the boot.

ASSEMBLY SERVICE POINTS

>>A<< ETJ BOOT INSTALLATION

Apply a tape to the shaft spline area. Then incorporate the ETJ boot.

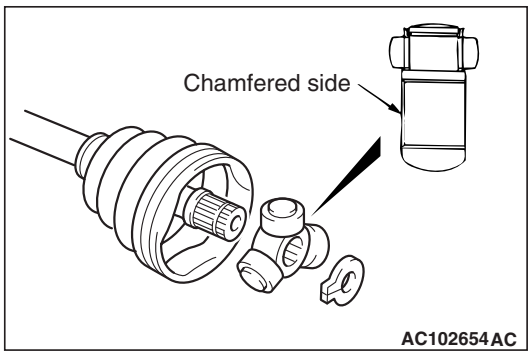
>>B<< SPIDER ASSEMBLY/ETJ CASE INSTALLATION

⚠ CAUTION

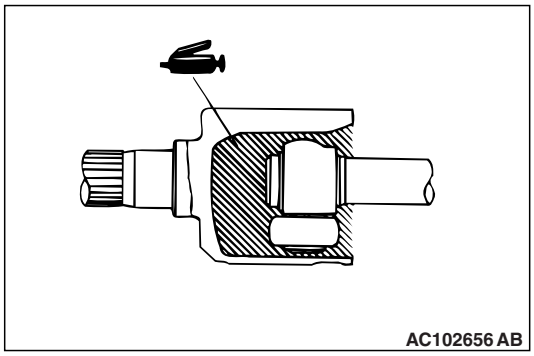
- **The driveshaft joint use special grease. Do not mix old and new or different types of grease.**
- **If the spider assembly has been cleaned, take special care to apply the specified grease.**

1. Apply the specified grease furnished in the repair kit to the spider assembly between the spider axle and the roller.

   Specified grease: Repair kit grease



2. Install the spider assembly to the shaft from the direction of the spline chamfered side.



3. After applying the specified grease to the ETJ case, insert the driveshaft and apply grease one more time.

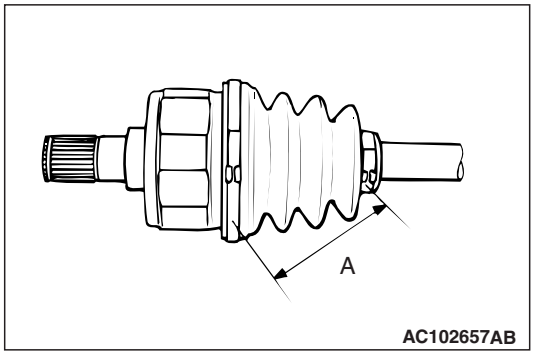
   Specified grease: Repair kit grease
   Amount to use: 125 ±10 g (4.4 ±0.3 ounce)

   NOTE: When using the repair kit grease, fill the half of the grease into the joint and the other half into the boot as a guideline, and consume the grease completely.

>>C<< ETJ BOOT BAND (SMALL)/ETJ BOOT BAND (LARGE) INSTALLATION

Adjust the distance (A shown in the illustration) between the boot bands to the standard value to adjust the air volume inside the ETJ boot to the specified value, then be sure to tighten the ETJ boot band (large) and ETJ boot band (small).

Standard value (A): 80 ±3 mm (3.14 ±0.12 inches)



EBJ BOOT REPLACEMENT

M1271006200020

Replace with the same procedure as for the front driveshaft, excluding the followings. (Refer to GROUP 26 –EBJ Boot Replacement P.26-23.)

Fill the inside of the boot with the specified amount of the specified grease.

Specified grease: Repair kit grease
Amount to use: 110 ±10 g (3.9 ±0.3 ounces)

DIFFERENTIAL CARRIER ASSEMBLY

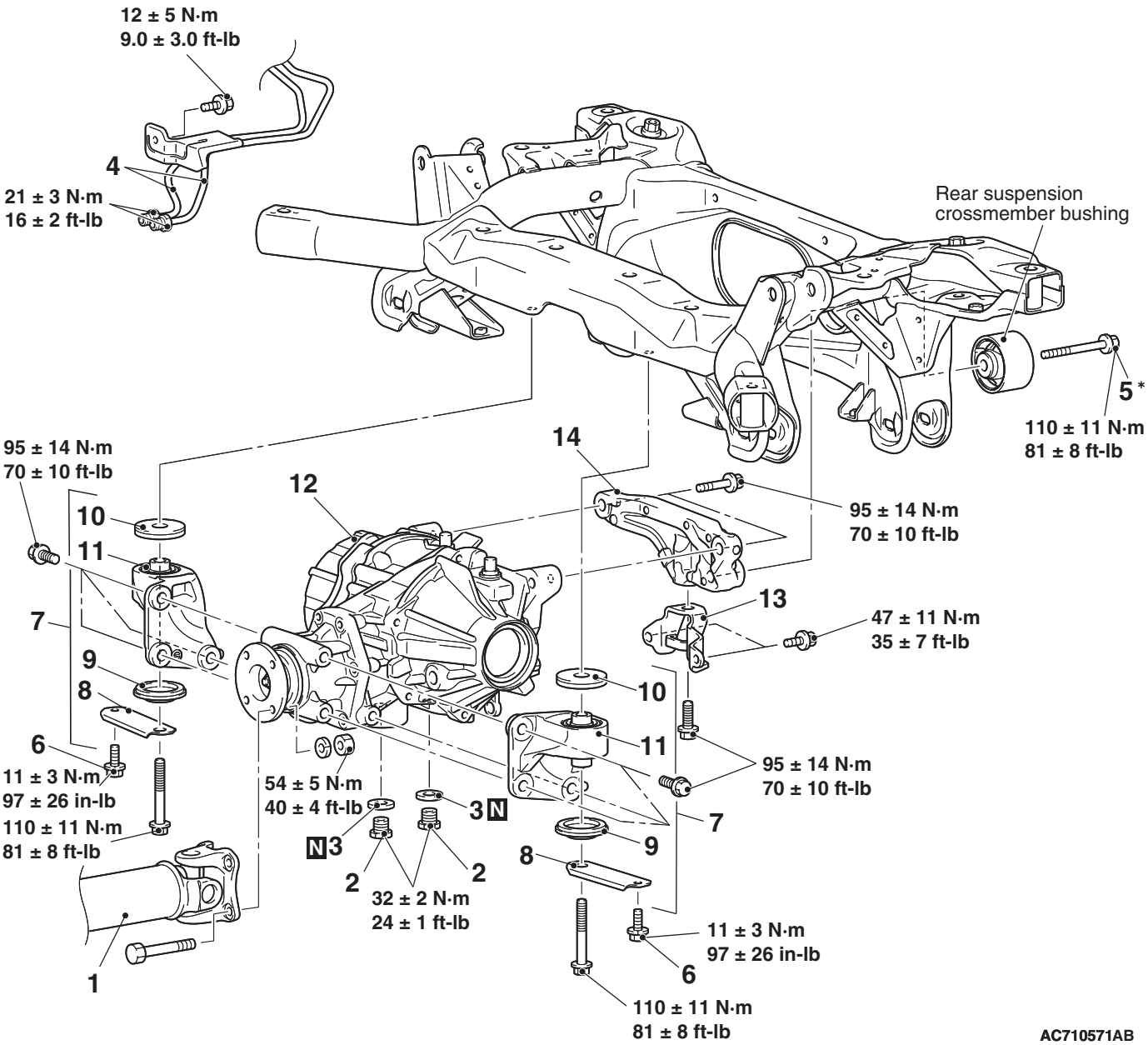
REMOVAL AND INSTALLATION

M1271005300132

⚠ CAUTION

- **The part indicated by * is the bolt with friction coefficient stabilizer. In removal, ensure there is no damage, clean dust and soiling from the bearing and thread surfaces, and tighten them to the specified torque.**

Pre-removal operation	Post-installation operation
• Gear oil draining (Refer to P.27-29.) • Rear driveshaft assembly removal (Refer to P.27-43.)	• Rear driveshaft assembly installation (Refer to P.27-43.) • Gear oil filling (Refer to P.27-29.) • AYC air bleeding (Refer to P.27-30.)



<<A>>

Removal steps

1. Propeller shaft connection
2. Drain plug
3. Gasket
4. AYC pressure tube connection

Removal steps (Continued)

5. Differential support bracket and rear suspension crossmember connecting bolt
6. Stay mounting bolt

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Removal steps (Continued)

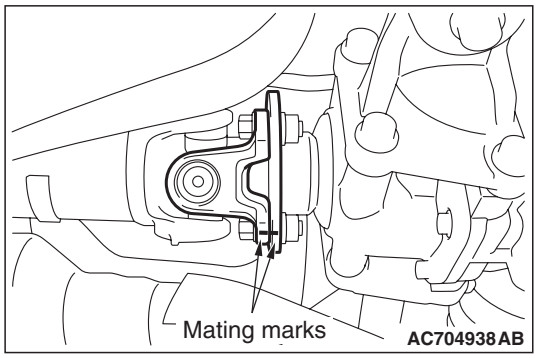
7. Differential mount bracket assembly (LH/RH) and stay
8. Stay
9. Lower stopper
10. Upper stopper
11. Differential mount bracket (LH/RH)
12. Differential carrier assembly
- Rear suspension crossmember bushing (for rear differential mount) replacement
13. Differential mount bracket
14. Differential support bracket

Required Special Tools:

- MB990847: Base
- MB991218: Bearing
- MB991162: Bolt
- MB992234: Bearing
- MB992235: Adapter
- MB992253: Remover and Installer
- MB992254: Base

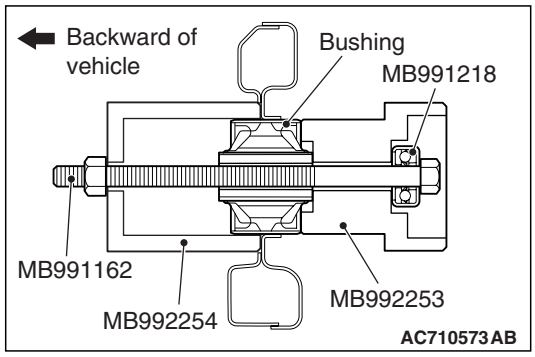
REMOVAL SERVICE POINT

<<A>> PROPELLER SHAFT DISCONNECTION



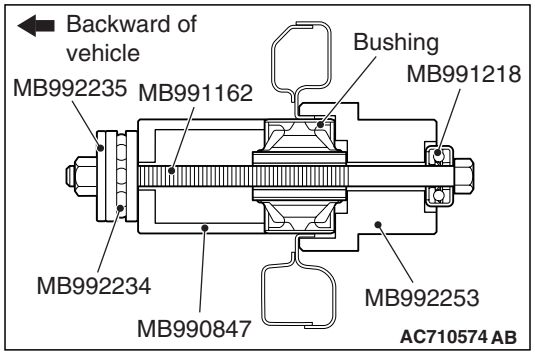
1. Put mating marks on the flange yoke and the differential companion flange and remove the connecting nuts.
2. Suspend the disconnected propeller shaft from the body with a wire to prevent bending.

REAR SUSPENSION CROSSMEMBER BUSHING (FOR REAR DIFFERENTIAL MOUNT) REPLACEMENT



1. Remove the rear differential
2. Use special tools MB991162, MB991218, MB992253 and MB992254 to remove the bushing.

   NOTE: When removing the bushing, insert special tool MB991162 from the forward of vehicle and fix the nut with a wrench.

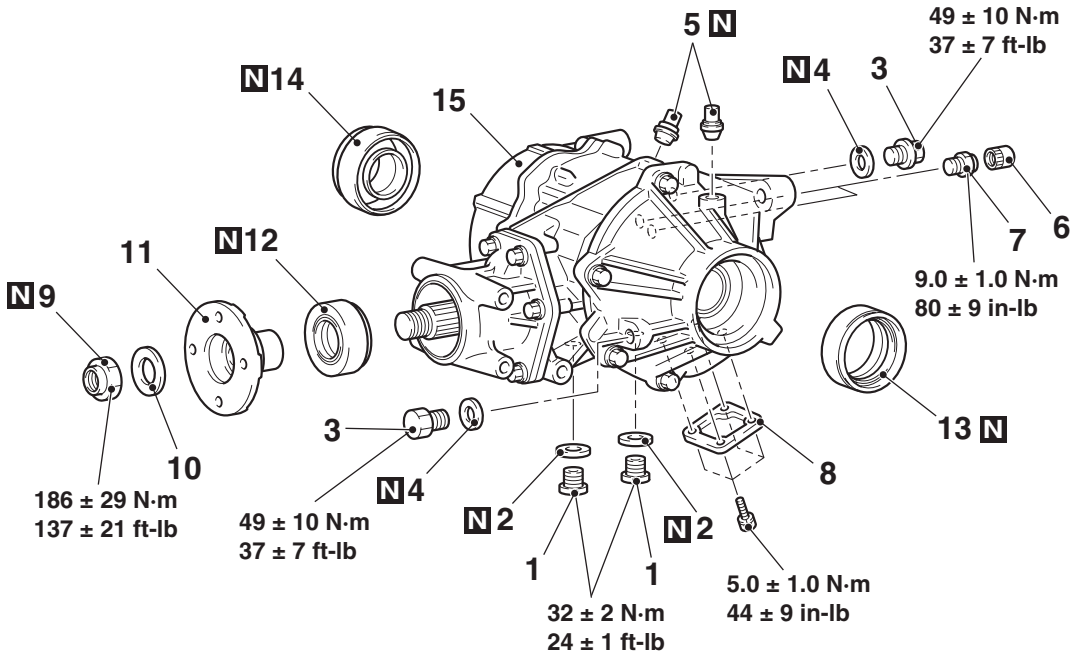


3. Use special tools MB990847, MB991162, MB991218, MB992234, MB992235 and MB992253 to press-fit the bushing.

   NOTE: When installing the bushing, insert special tool MB991162 from the forward of vehicle and fix the nut with a wrench.
4. Install the rear differential.

DISASSEMBLY AND REASSEMBLY

M1272008400012



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Disassembly steps

1. Drain plug
2. Gasket
3. Filler plug
4. Gasket
5. Vent plug
6. Bleeder cap
7. Bleeder screw
8. Cover

<<**A**>> 9. Self-locking nut

10. Washer
11. Companion flange

>>**C**<< 12. Oil seal

Disassembly steps (Continued)

>>**B**<< 13. Oil seal

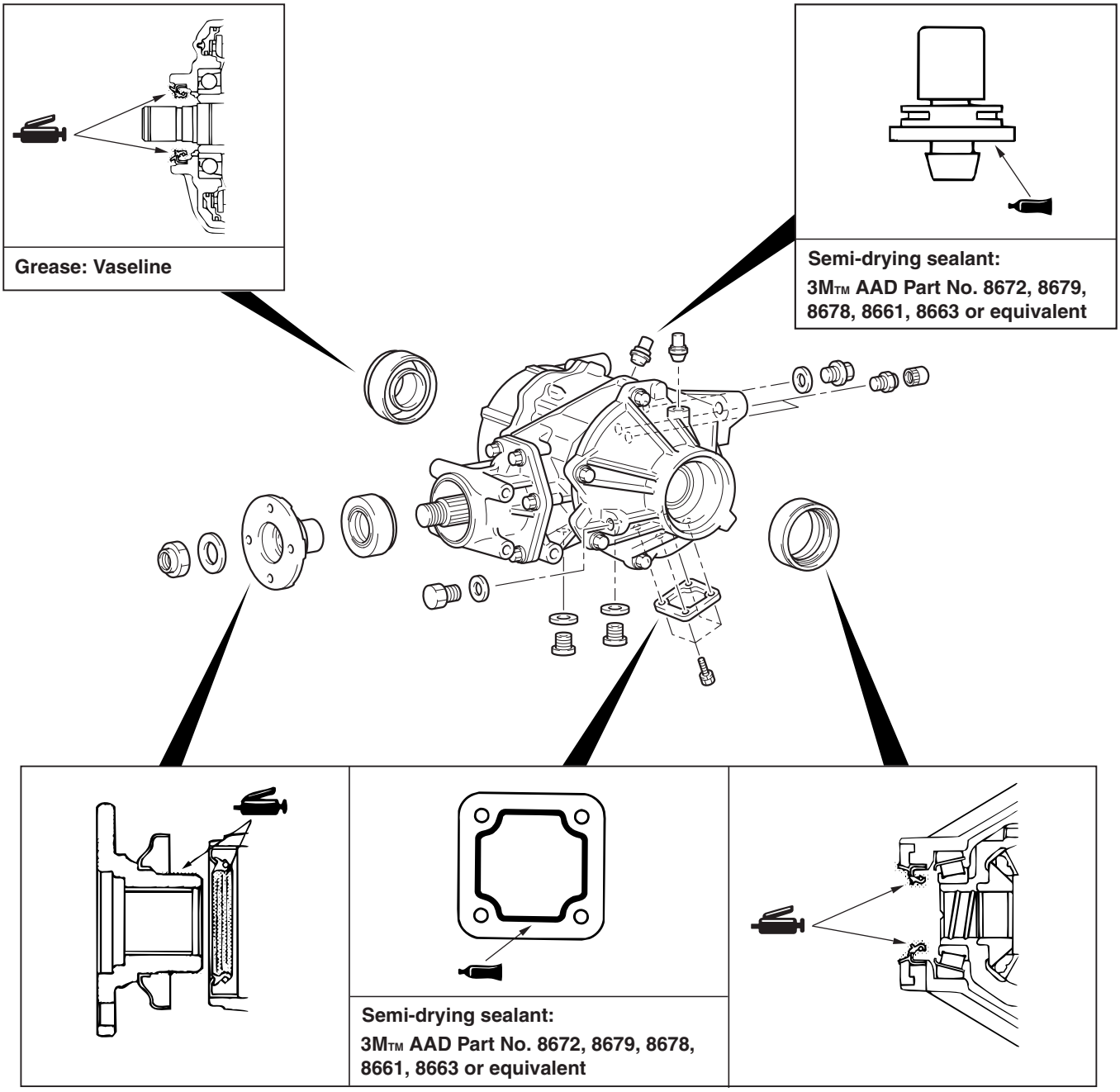
>>**A**<< 14. Oil seal

15. Differential carrier assembly

Required Special Tools:

- MB990727: Oil Seal Installer
- MB990850: End Yoke Holder
- MB990938: Installer Bar
- MB991245: Lower Arm Bush Ring
- MB991551: Bearing Outer Race Installer

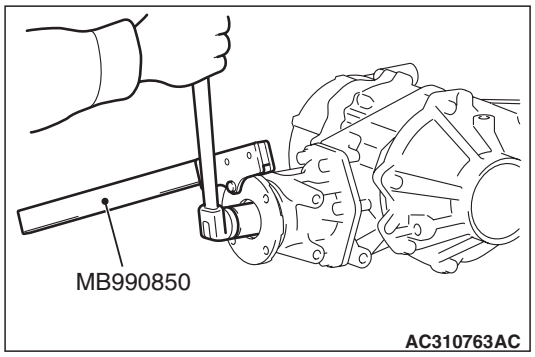
LUBRICATION AND ADHESIVE POINTS



DISASSEMBLY SERVICE POINT

<<A>> SELF-LOCKING NUT REMOVAL

Use special tool MB990850 to hold the companion flange, and then remove the companion flange self-locking nut.

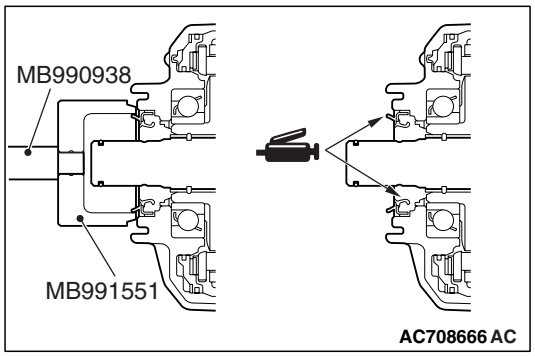


ASSEMBLY SERVICE POINTS

>>A<< OIL SEAL INSTALLATION

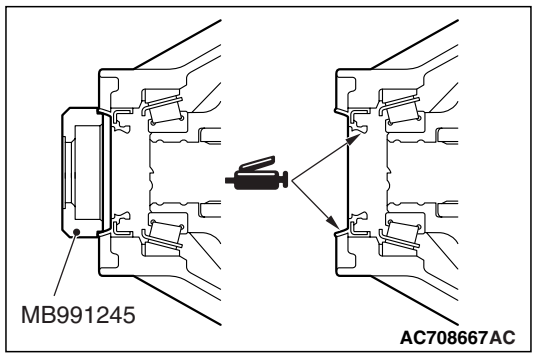
1. Use special tools MB990938 and MB991551 to press-fit the oil seal.
2. Apply specified grease to the oil seal lip and driveshaft oil seal seating area.

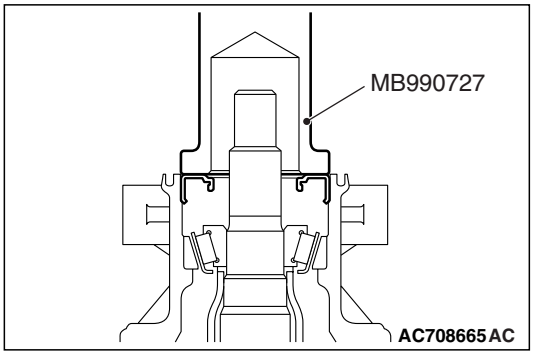
   Specified grease: Vaseline



>>B<< OIL SEAL INSTALLATION

1. Use special tool MB991245 to press-fit the oil seal.
2. Apply multi-purpose grease to the oil seal lip and driveshaft oil seal seating area.





>>C<< OIL SEAL INSTALLATION

Use special tool MB990727 to press-fit the oil seal.

HYDRAULIC UNIT

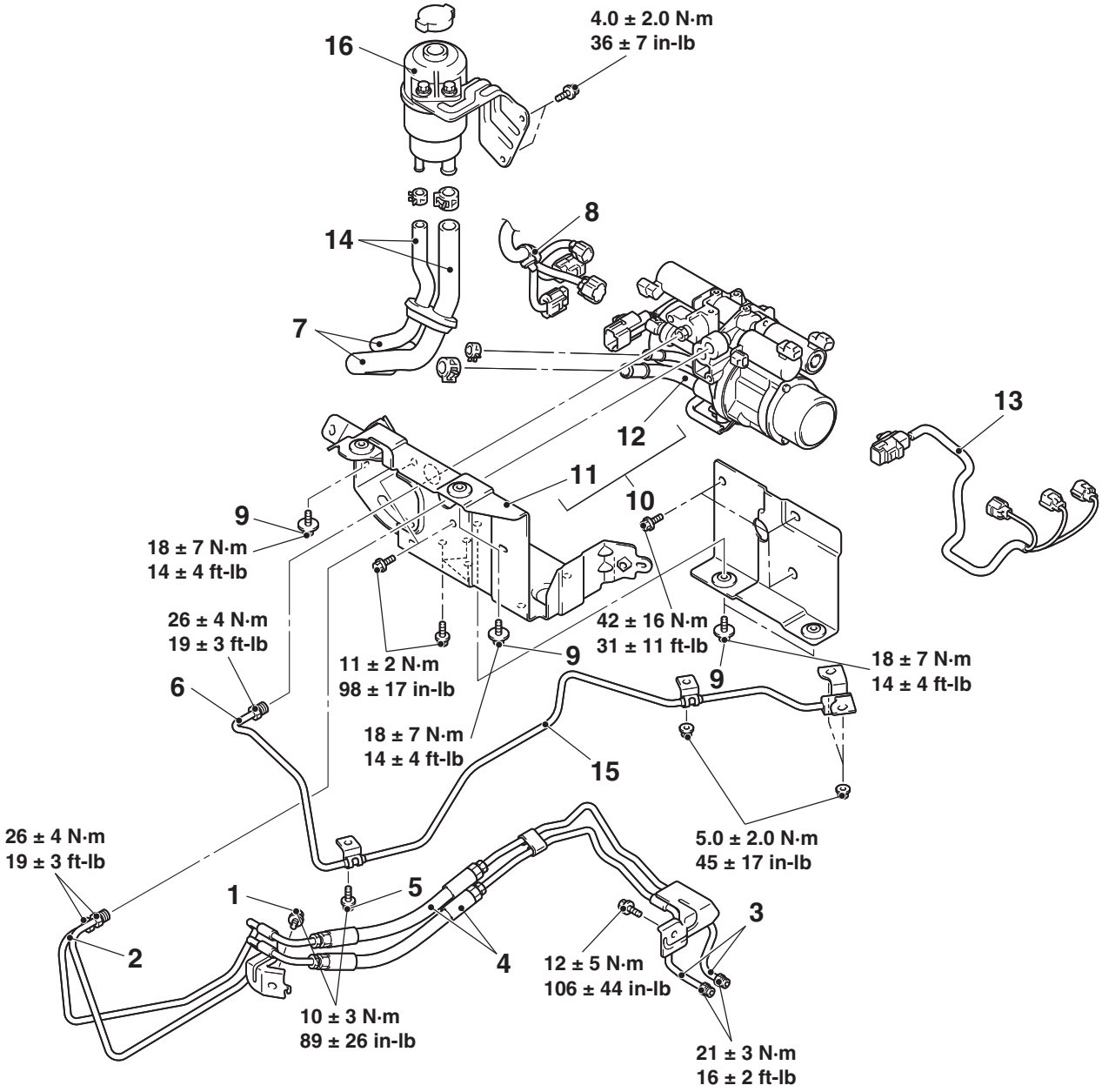
REMOVAL AND INSTALLATION

M1272005400046

⚠ CAUTION

- **When connecting the reservoir hose assembly, do not apply lubricant.**
- **No foreign matter should be allowed in the hydraulic unit and hose connection part..**

Pre-removal Operation	Post-installation Operation
• Rear wheel (RH) removal • Rear wheelhouse splash shield removal (Refer to GROUP 42A –Splash Shield P.42A-13.) • Trunk room side trim (RH) removal (Refer to GROUP 52A –Interior Trim P.52A-11.)	• Air bleeding (Refer to On-vehicle Inspection –AYC Air Bleeding P.27-30) • Trunk room side trim (RH) installation (Refer to GROUP 52A –Interior Trim P.52A-11.) • Rear wheelhouse splash shield installation (Refer to GROUP 42A –Splash Shield P.42A-13.) • Rear wheel (RH) installation



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TSB Revision

Removal steps

1. AYC pressure tube assembly mounting bolt
2. AYC pressure tube assembly and hydraulic unit connection
3. AYC pressure tube assembly and AYC differential connection
4. AYC pressure tube assembly
5. ACD pressure tube assembly mounting bolt
6. ACD pressure tube assembly and hydraulic unit connection
7. Reservoir hose assembly and hydraulic unit connection

Removal steps (Continued)

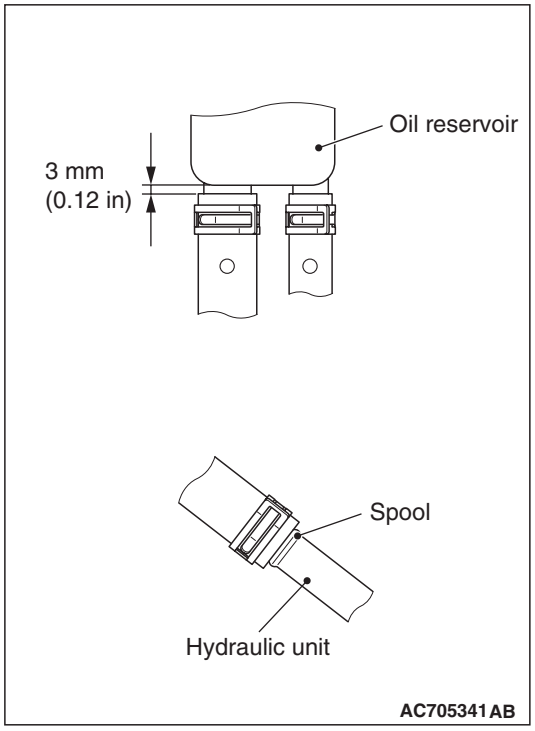
8. Hydraulic unit connector connection
9. Hydraulic unit bracket A, hydraulic unit and hydraulic unit bracket B connecting bolt

>>**B**<< 10. Hydraulic unit and hydraulic unit bracket B

11. Hydraulic unit bracket B
12. Hydraulic unit
13. AYC harness

>>**A**<< 14. RESERVOIR HOSE ASSEMBLY

15. ACD pressure tube assembly
16. Oil reservoir

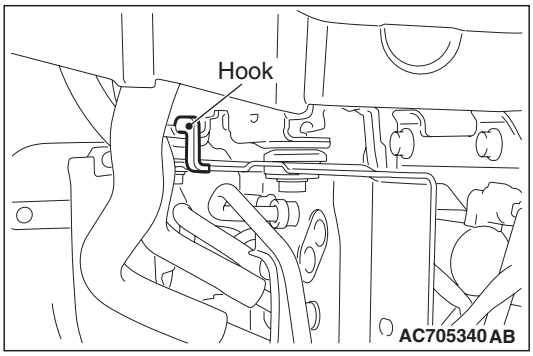


INSTALLATION SERVICE POINTS

>>A<< RESERVOIR HOSE ASSEMBLY INSTALLATION

1. On the oil reservoir side, insert the hose to the position shown in the figure.
2. On the hydraulic unit side, insert the hose to the spool shown in the figure.

>>B<< HYDRAULIC UNIT AND HYDRAULIC UNIT BRACKET B INSTALLATION



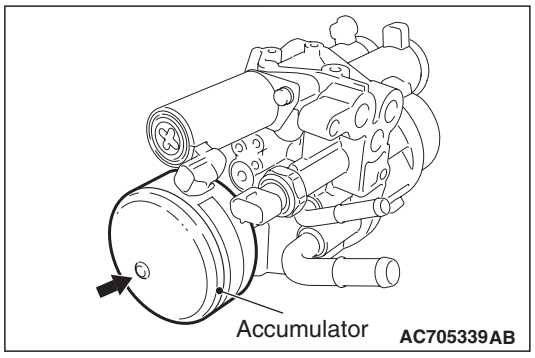
Insert the hook of hydraulic unit bracket B into the body-side bracket, and tighten the installation bolt.

HYDRAULIC UNIT DISPOSAL

M1272008300037

⚠ CAUTION

- **The hydraulic unit has its accumulator filled with a high-pressure gas. Never attempt to disassemble without breathing.**
- **Never throw the accumulator into a fire. Also, never attempt to cut or weld it.**
- **Do not drop or shock to the accumulator.**
- **When drilling a hole in the accumulator, be sure to wear safety goggles since drill chips may blow out together with the gas.**



When discarding the hydraulic unit, make a hole on the accumulator as shown in the figure to release the gas, and then discard.