
GENERAL

CONTENTS

00109000904

| | |
|----------------------------------|-----|
| GENERAL <BODY AND CHASSIS> | 00 |
| GENERAL <ELECTRICAL> | 00E |

GENERAL <BODY AND CHASSIS>

CONTENTS

00109001172

| | | | |
|---|-----------|---|-----------|
| GENERAL DATA AND SPECIFICATIONS .. | 24 | Engine Coolant | 44 |
| HOW TO USE THIS MANUAL | 3 | Engine Oil | 39 |
| Definition of Terms | 3 | Engine Oil Filter | 40 |
| Explanation of Manual Contents | 4 | Evaporative Emission Control System | 33 |
| Model Indications | 3 | Exhaust System | 51 |
| Maintenance, Repair and Servicing Explanations | 3 | Fuel Hoses | 32 |
| Special Tool Note | 3 | Fuel System | 32 |
| Tightening Torque Indication | 3 | Ignition Cables | 33 |
| HOW TO USE TROUBLESHOOTING/INSPECTION SERVICE POINTS | 6 | Manual Transaxle | 41 |
| Connector Inspection Service Points | 10 | Rear Drum Brake Linings and Rear Wheel Cylinders | 45 |
| Connector Measurement Service Points | 9 | Spark Plugs | 33 |
| How to Cope with Intermittent Malfunctions | 11 | SRS Air Bag System | 47 |
| How to Use the Inspection Procedures | 8 | Timing Belt | 34 |
| Inspection Service Points for a Blown Fuse | 12 | PRECAUTIONS BEFORE SERVICE | 19 |
| Troubleshooting Contents | 6 | RECOMMENDED LUBRICANT AND LUBRICANT CAPACITY TABLE | 28 |
| LUBRICATION AND MAINTENANCE | 27 | SCHEDULED MAINTENANCE TABLE | 31 |
| MAIN SEALANT AND ADHESIVE TABLE .. | 52 | TIGHTENING TORQUE | 26 |
| MAINTENANCE SERVICE | 32 | TOWING AND HOISTING | 21 |
| Air Cleaner Element | 32 | VEHICLE IDENTIFICATION | 13 |
| Automatic Transaxle | 41 | Engine Model Stamping | 16 |
| Ball Joint and Steering Linkage Seals | 46 | Theft Protection | 16 |
| Brake Hoses | 46 | Vehicle Identification Code Chart Plate | 13 |
| Disc Brake Pads | 45 | Vehicle Identification Number List | 14 |
| Distributor Cap and Rotor | 34 | Vehicle Identification Number Location | 13 |
| Drive Belt | 35 | Vehicle Information Code Plate | 15 |
| Drive Shaft Boots | 46 | Vehicle Safety Certification Label | 15 |

HOW TO USE THIS MANUAL

00100010234

MAINTENANCE, REPAIR AND SERVICING EXPLANATIONS

This manual provides explanations, etc. concerning procedures for the inspection, maintenance, repair and servicing of the subject model. Unless otherwise specified, each service procedure covers all models. Procedures covering specific models are identified by the model codes, or similar designation (engine type, transaxle type, etc.). A description of these designations is covered in this manual under "VEHICLE IDENTIFICATION".

ON-VEHICLE SERVICE

"On-vehicle Service" are procedures for performing inspections and adjustments of particularly important locations with regard to the construction and for maintenance and servicing, but other inspections (for looseness, play, cracking, damage, etc.) must also be performed.

SERVICE PROCEDURES

The service steps are arranged in numerical order. Attention must be paid in performing vehicle service are described in detail in SERVICE POINTS.

DEFINITION OF TERMS

STANDARD VALUE

Indicates the value used as the standard for judging the quality of a part or assembly on inspection or the value to which the part or assembly is corrected and adjusted. It is given by tolerance.

LIMIT

Shows the standard for judging the quality of a part or assembly on inspection and means the maximum or minimum value within which the part or

assembly must be kept functionally or in strength. It is a value established outside the range of standard value.

REFERENCE VALUE

Indicates the adjustment value prior to starting the work (presented in order to facilitate assembly and adjustment procedures, and so they can be completed in a shorter time).

CAUTION

Indicates the presentation of information particularly vital to the worker during the performance of maintenance and servicing procedures in order to avoid the possibility of injury to the worker, or damage to component parts, or a reduction of component or vehicle function or performance, etc.

TIGHTENING TORQUE INDICATION

The tightening torque shown in this manual is a basic value with a tolerance of $\pm 10\%$ except the following cases when the upper and lower limits of tightening torque are given.

- (1) The tolerance of the basic value is within $\pm 10\%$.
- (2) Special bolts or the like are in use.
- (3) Special tightening methods are used.

SPECIAL TOOL NOTE

Only MMC special tool part numbers are called out in the repair sections of this manual. Please refer to the special tool cross reference chart, which is located in the service manual at the beginning of each group, for a cross reference from the MMC special tool number to the special tool number that is available in your market.

MODEL INDICATIONS

The following abbreviations are used in this manual for classification of model types.

M/T : Indicates the manual transaxle, or models equipped with the manual transaxle.

A/T : Indicates the automatic transaxle, or models equipped with the automatic transaxle.

EXPLANATION OF MANUAL CONTENTS

Indicates procedures to be performed before the work in that section is started, and procedures to be performed after the work in that section is finished.

Component Diagram

A diagram of the component parts is provided near the front of each section in order to give the reader a better understanding of the installed condition of component parts.

Indicates (by symbols) where lubrication is necessary.

Maintenance and Servicing Procedures

The numbers provided within the diagram indicate the sequence for maintenance and servicing procedures.

- Removal steps :
The part designation number corresponds to the number in the illustration to indicate removal steps.
- Disassembly steps :
The part designation number corresponds to the number in the illustration to indicate disassembly steps.

- Installation steps :
Specified in case installation is impossible in reverse order of removal steps. Omitted if installation is possible in reverse order of removal steps.
- Reassembly steps :
Specified in case reassembly is impossible in reverse order of disassembly steps. Omitted if reassembly is possible in reverse order of disassembly steps.

Classifications of Major Maintenance / Service points






When there are major points relative to maintenance and servicing procedures (such as essential maintenance and service points, maintenance and service standard values, information regarding the use of special tools, etc.), these are arranged together as major maintenance and service points and explained in detail.

◀A▶ : Indicates that there are essential points for removal or disassembly.

▶A◀ : Indicates that there are essential points for installation or reassembly.

Symbols for Lubrication, Sealants and Adhesives

Information concerning the locations for lubrication and for application of sealants and adhesives is provided, by using symbols, in the diagram of component parts or on the page following the component parts page, and explained.

-  : Grease (multipurpose grease unless there is a brand or type specified)
-  : Sealant or adhesive
-  : Brake fluid or automatic transmission fluid
-  : Engine oil, gear oil or air conditioning compressor oil
-  : Adhesive tape or butyl rubber tape

Indicates the group title.

Indicates the section title.

Indicates the group number.

Indicates the page number.

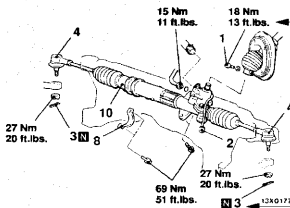
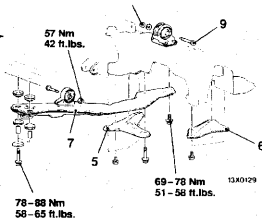
STEERING - Power Steering Gear Box

37A-23

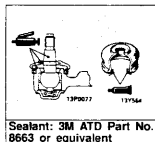
POWER STEERING GEAR BOX
REMOVAL AND INSTALLATION

110000526

- Pre-removal Operation**
- Power Steering Fluid Draining (Refer to P37A-15.)
 - Stabilizer Bar Removal (Refer to GROUP 33A - Stabilizer Bar)



Denotes tightening torque. If there is no indication of tightening torque, refer to TIGHTENING TORQUE.



Sealant: 3M ATD Part No. 8663 or equivalent



Steering gear seal kit

N denotes a non-reusable part.

Repair kit or set parts are shown. (Only very frequently used parts are shown.)

Removal steps

1. Joint assembly and gear box connecting bolt
2. Solenoid valve connector <Vehicles with EPS>
3. Cotter pin
4. Connection for tie-rod end and knuckle
5. Stay (L.H.)
6. Stay (R.H.)
7. Center member assembly
8. Clamp
9. Bolt
10. Gear box assembly

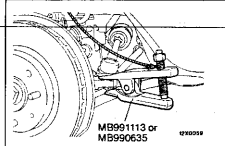
REMOVAL SERVICE POINTS

TIE-ROD END DISCONNECTION

Caution

1. Be sure to tie the cord of the special tool to the nearby part.
2. Loosen the nut but do not remove it.

Operating procedures, cautions, etc. on removal, installation, disassembly and reassembly are described.

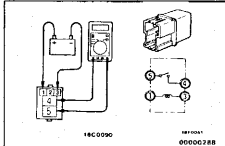


MB991113 or MB990635

FOG LIGHT RELAY CONTINUITY CHECK

| Battery voltage | Terminal | | | |
|-----------------------|----------|---|---|---|
| | 1 | 3 | 4 | 5 |
| Power is not supplied | ○ | ○ | ○ | ○ |
| Power is supplied | ⊕ | ⊖ | ⊖ | ⊕ |

○-○ indicates that there is continuity between the terminals.
⊕-○ indicates terminals to which battery voltage is applied.



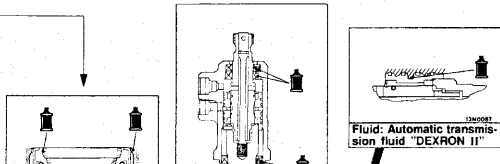
18C0990

37A-28

STEERING - Power Steering Gear Box

LUBRICATION AND SEALING POINTS

<Conventional power steering gear box>



The title of the page (following the page on which the diagram of Component parts is presented) indicating the locations of lubrication and sealing procedures.

HOW TO USE TROUBLESHOOTING/INSPECTION SERVICE POINTS

00100020121

Troubleshooting of electronic control systems for which the scan tool can be used follows the basic outline described below. Furthermore, even in systems for which the scan tool cannot be used, part of these systems still follow this outline.

TROUBLESHOOTING CONTENTS

1. STANDARD FLOW OF DIAGNOSTIC TROUBLESHOOTING

The main procedures for diagnostic troubleshooting are shown.

2. SYSTEM OPERATION AND SYMPTOM VERIFICATION TESTS

If verification of the trouble symptoms is difficult, procedures for checking operation and verifying trouble symptoms are shown.

3. DIAGNOSTIC FUNCTION

The following diagnostic functions are shown.

- Method of reading diagnostic trouble codes
- Method of erasing diagnostic trouble codes
- Input inspection service points

4. INSPECTION CHART FOR DIAGNOSTIC TROUBLE CODES

5. INSPECTION PROCEDURE FOR DIAGNOSTIC TROUBLE CODES

Indicates the inspection procedures corresponding to each diagnostic trouble code. (Refer to the next page on how to read the inspection procedures.)

6. INSPECTION CHART FOR TROUBLE SYMPTOMS

If there are trouble symptoms, even though the results of inspection using the scan tool show that all diagnostic trouble codes are normal, inspection procedures for each trouble symptom will be found by means of this chart.

7. INSPECTION PROCEDURE FOR DIAGNOSTIC SYMPTOM

Indicates the inspection procedures corresponding to each trouble symptoms classified in the Inspection Chart for Trouble Symptoms. (Refer to the next page on how to read the inspection procedures.)

8. SERVICE DATA REFERENCE TABLE

Inspection items and normal judgement values have been provided in this chart as reference information.

9. CHECK AT ECU TERMINALS

Terminal numbers for the ECU connectors, inspection items and standard values have been provided in this chart as reference information.

Terminal Voltage Checks

1. Connect a needle-nosed wire probe or paper clip to a voltmeter probe.
2. Insert the needle-nosed wire probe into each of the ECU connector terminals from the wire side, and measure the voltage while referring to the check chart.

NOTE

1. Measure voltage with the ECU connectors connected.
2. You may find it convenient to pull out the ECU to make it easier to reach the connector terminals.
3. Checks don't have to be carried out in the order given in the chart.

Caution

Short-circuiting the positive (+) probe between a connector terminal and ground could damage the vehicle wiring, the sensor, the ECU, or all three.

Use care to prevent this !

3. If voltage readings differ from Normal Condition values, check related sensors, actuators, and wiring, then replace or repair.

4. After repair or replacement, recheck with the voltmeter to confirm that the repair has corrected the problem.

Terminal Resistance and Continuity Checks

1. Turn the ignition switch to "OFF".
2. Disconnect the ECU connector.
3. Measure the resistance and check for continuity between the terminals of the ECU harness-side connector while referring to the check chart.

NOTE

Checks don't have to be carried out in the order given in the chart.

Caution

If resistance and continuity checks are performed on the wrong terminals, damage to the vehicle wiring, sensors, ECU, and/or ohmmeter may occur.

Use care to prevent this!

4. If the ohmmeter shows any deviation from the Normal Condition value, check the corresponding sensor, actuator and related electrical wiring, then repair or replace.
5. After repair or replacement, recheck with the ohmmeter to confirm that the repair has corrected the problem.

10. INSPECTION PROCEDURES USING AN OSCILLOSCOPE

When there are inspection procedures using an oscilloscope, these are listed here.

HOW TO USE THE INSPECTION PROCEDURES

The causes of many problems occurring in electronic circuitry are generally the connectors, components, the ECU and the harnesses between connectors, in that order. These inspection procedures follow this order. They first try to discover a problem with a connector or a defective component.

CHECKING PROCEDURE 4

- Indicator does not turn on or off even if control mode switch is pressed.
- Indicator which should not be illuminated is illuminated.

In the above cases, the ECS switch circuit is defective or the indicator circuit is defective.

Probable cause

1. Indicates inspection carried out using the scan tool.
Indicates the operation and inspection procedures.
Indicates the OK judgement conditions.

2. Detailed inspection procedures (methods) such as component inspection and circuit inspection are listed on a separate page, and are given here for reference.

Scan Tool Data List

17 Control mode selection switch
OK: Voltage changes between approx. 0V → approx. 2.5V → approx. 5V when the switch is operated.

OK

NG

ECU switch component inspection (Refer to P.3-44.)

OK

Measure at switch connector A-44

- Disconnect the connector, and measure at the harness side.
- Voltage between terminal 6 - earth and terminal 8 - ground
OK: Approx. 5V

OK

Check the following connector. A-44

OK

Check trouble symptom.

Replace the ECS-ECU.

3. Indicates voltage and resistance to be measured at a particular connector.
(Refer to "Connector Measurement Service Points".)
The connector position can be located in the wiring diagram in Volume -2 manual by means of this symbol.
Indicates operation and inspection procedures, inspection terminals and inspection conditions.
Indicates the OK judgement conditions.

4. Inspect the contact condition at each connector terminal.
(Refer to "Connector Inspection Service Points".)
The connector position can be located in the wiring diagram in Volume -2 manual by means of this symbol.
Caution
After carrying out connector inspection, always be sure to reconnect the connector as it was before.

5. Confirm that there are trouble symptoms. If trouble symptoms have disappeared, the connector may have been inserted incorrectly and the trouble symptom may have disappeared during inspection.
If it seems that trouble symptoms still remain, proceed to the next stage of instructions.

6. If trouble symptoms still remain up to this stage, there is a possibility that there is an open or short circuit in the harness between the connectors, so check the harness. Alternatively, the cause may be a defective ECU, so try replacing the ECU and check if the trouble symptom disappears.

HARNESS INSPECTION

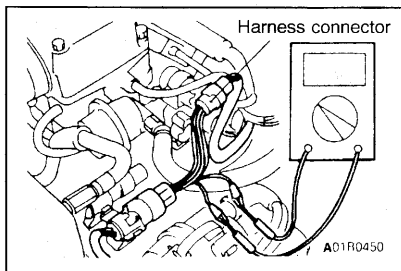
Check for an open or short circuit in the harness between the terminals which were defective according to the connector measurements. Carry out this inspection while referring to Volume 2 Electrical manual. Here, "Check harness between power supply and terminal xx" also includes checking for blown fuses. For inspection service points when there is a blown fuse, refer to "Inspection Service Points for a Blown Fuse".

MEASURES TO TAKE AFTER REPLACING THE ECU

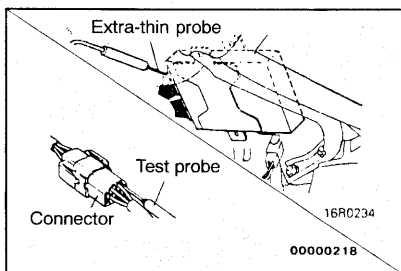
If the trouble symptoms have not disappeared even after replacing the ECU, repeat the inspection procedure from the beginning.

CONNECTOR MEASUREMENT SERVICE POINTS

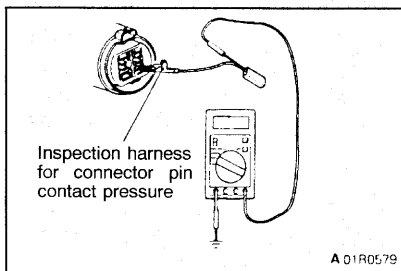
Turn the ignition switch to OFF when connecting and disconnecting the connectors. Turn the ignition switch to ON when measuring if there are no instructions to the contrary.

**IF INSPECTING WITH THE CONNECTOR CONNECTED (WITH CIRCUIT IN A CONDITION OF CONTINUITY)****Waterproof Connectors**

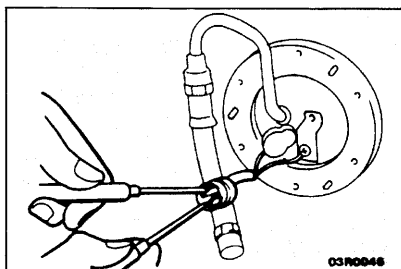
Be sure to use the special tool (harness connector). Never insert a test probe from the harness side, as this will reduce the waterproof performance and result in corrosion.

**Ordinary (non-waterproof) Connectors**

Check by inserting the test probe from the harness side. Note that if the connector (control unit, etc.) is too small to permit insertion of the test probe, it should not be forced; use a special tool (the extra-thin probe in the harness set for checking) for this purpose.

**IF INSPECTING WITH THE CONNECTOR DISCONNECTED****<When Inspecting a Female Pin>**

Use the special tool (inspection harness for connector pin contact pressure in the harness set for inspection). The inspection harness for connector pin contact pressure should be used. The test probe should never be forcibly inserted, as it may cause a defective contact.

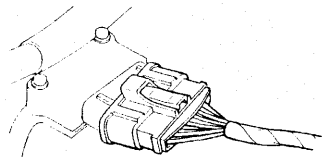
**<When Inspecting a Male Pin>**

Touch the pin directly with the test bar.

Caution

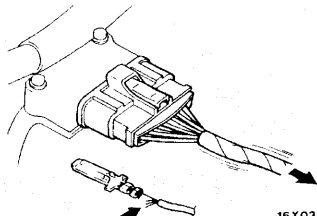
At this time, be careful not to short the connector pins with the test probes. To do so may damage the circuits inside the ECU.

Connector disconnected or improperly connected



16S0256

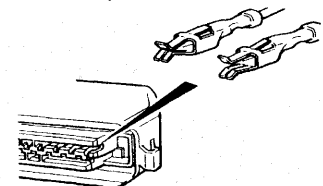
Defective connector contact



Harness wire breakage at terminal section

16X0369

Low contact pressure



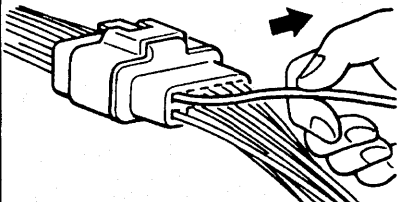
16S0254
00000219

CONNECTOR INSPECTION SERVICE POINTS VISUAL INSPECTION

- Connector is disconnected or improperly connected
- Connector pins are pulled out
- Due to harness tension at terminal section
- Low contact pressure between male and female terminals
- Low connection pressure due to rusted terminals or foreign matter lodged in terminals

CONNECTOR PIN INSPECTION

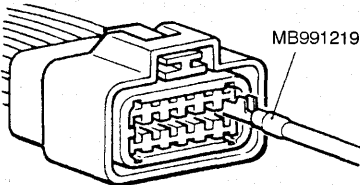
If the connector pin stopper is damaged, the terminal connections (male and female pins) will not be perfect even when the connector body is connected, because the pins may pull out of the back side of the connector. Therefore, gently pull the wires one by one to make sure that no pins pull out of the connector.



16R1317

CONNECTOR ENGAGEMENT INSPECTION

Use the special tool (connector pin connection pressure inspection harness of the inspection harness set) to inspect the engagement of the male pins and female pins. [Pin drawing force : 1 N (.2 lbs.) or more]



MB991219

A 16R1318