

## GROUP 15

# INTAKE AND EXHAUST

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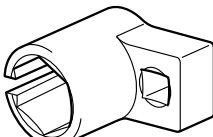
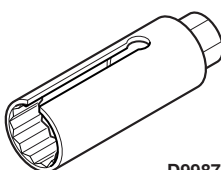
## SERVICE SPECIFICATIONS

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| Item                                                               |             | Standard value       | Limit        |
|--------------------------------------------------------------------|-------------|----------------------|--------------|
| Intake manifold distortion of the installation surface<br>mm (in)  | 3.0L ENGINE | 0.15 (0.006) or less | 0.20 (0.008) |
| Exhaust manifold distortion of the installation surface<br>mm (in) | 2.4L ENGINE | —                    | 0.70 (0.028) |
|                                                                    | 3.0L ENGINE | 0.7 (0.028) or less  | 0.5 (0.020)  |

## SPECIAL TOOLS

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| Tool                                                                                          | Tool number and name             | Supersession                           | Application                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>B991953  | MB991953<br>Oxygen sensor wrench | MB991953-01                            | <ul style="list-style-type: none"> <li>Removal and installation of heated oxygen sensor</li> <li>Removal and installation of linear air-fuel ratio sensor</li> </ul> |
| <br>D998770 | MD998770<br>Oxygen sensor wrench | MD998770-01 or<br>General service tool | Removal and installation of heated oxygen sensor                                                                                                                     |

## INTAKE AND EXHAUST DIAGNOSIS

## INTRODUCTION

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Intake leaks usually create driveability issues that are not obviously related to the intake system. Exhaust leaks or abnormal noise is caused by cracks, gaskets and fittings, or by exhaust pipe or muffler damage due to impacts during travel. The exhaust leaks from these sections and causes the exhaust noise to increase. There may be cases when the system contacts the body and vibration noise is generated.

## TROUBLESHOOTING STRATEGY

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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 an intake or exhaust system 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

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| Symptom         | Inspection procedure | Reference page |
|-----------------|----------------------|----------------|
| Exhaust leakage | 1                    | P.15-3         |
| Abnormal noise  | 2                    | P.15-3         |

## SYMPTOM PROCEDURES

### Inspection Procedure 1: Exhaust Leakage

#### DIAGNOSIS

**STEP 1. Start the engine. Have an assistant stay in the driver's seat. Raise the vehicle on a hoist. Have the assistant rev the engine while searching for exhaust leaks.**

**Q: Is the exhaust leaking?**

**YES :** Go to Step 2.

**NO :** The procedure is complete.

#### STEP 2. Check the gasket for cracks, damage.

**Q: Is the gasket damaged?**

**YES :** Replace the gasket, then go to Step 1.

**NO :** Go to Step 3.

#### STEP 3. Check for loosening in each coupling section.

**Q: Is there any loosening in any section?**

**YES :** Tighten, then go to Step 1.

**NO :** There is no action to be taken.

### Inspection Procedure 2: Abnormal Noise

#### DIAGNOSIS

**STEP 1. Start the engine. Have an assistant stay in the drivers seat. Raise the vehicle on a hoist. Have the assistant rev the engine while searching for exhaust leaks.**

**Q: Is any abnormal noise generated?**

**YES :** Go to Step 2.

**NO :** The procedure is complete.

**STEP 2. Check for missing parts in the muffler. Tap the muffler lightly to check for loose baffles, etc.**

**Q: Are there any missing parts in the muffler?**

**YES :** Replace, then go to Step 1.

**NO :** Go to Step 3.

#### STEP 4. Check for interference of the pipes and muffler with the body.

**Q: Are the pipes and muffler interfering with the body?**

**YES :** Repair, then go to Step 1.

**NO :** Go to Step 5.

#### STEP 5. Check the heat protectors.

**Q: Are any heat protectors loose or damaged?**

**YES :** Tighten or replace, then go to Step 1.

**NO :** Go to Step 6.

#### STEP 6. Check the pipes and muffler for damage.

**Q: Are the pipes and muffler damaged?**

**YES :** Replace, then go to Step 1.

**NO :** There is no action to be taken.

#### STEP 3. Check the hanger for cracks.

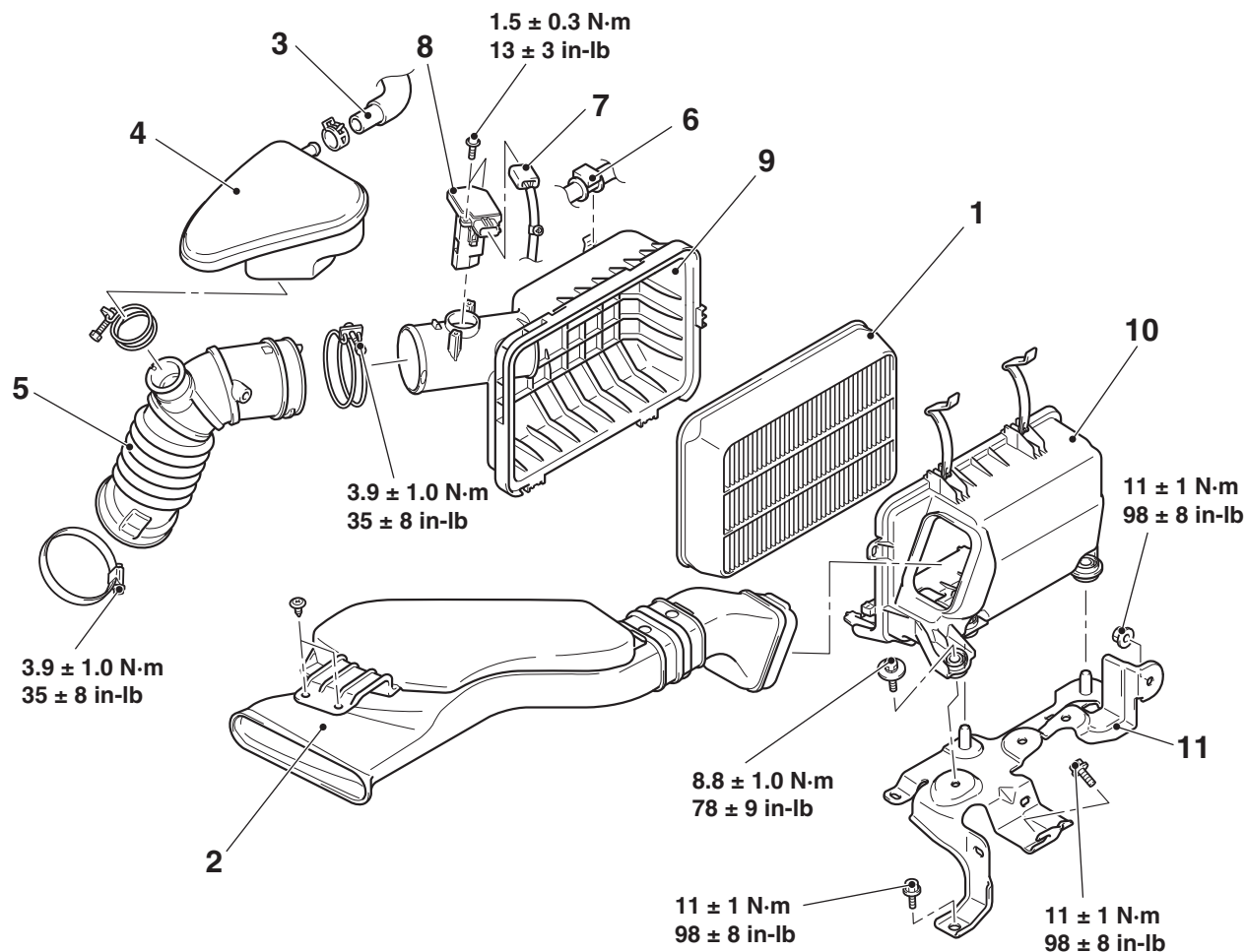
**Q: Is the hanger cracked?**

**YES :** Replace, then go to Step 1.

**NO :** Go to Step 4.

**AIR CLEANER****REMOVAL AND INSTALLATION <2.4L ENGINE>**

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**Removal steps**

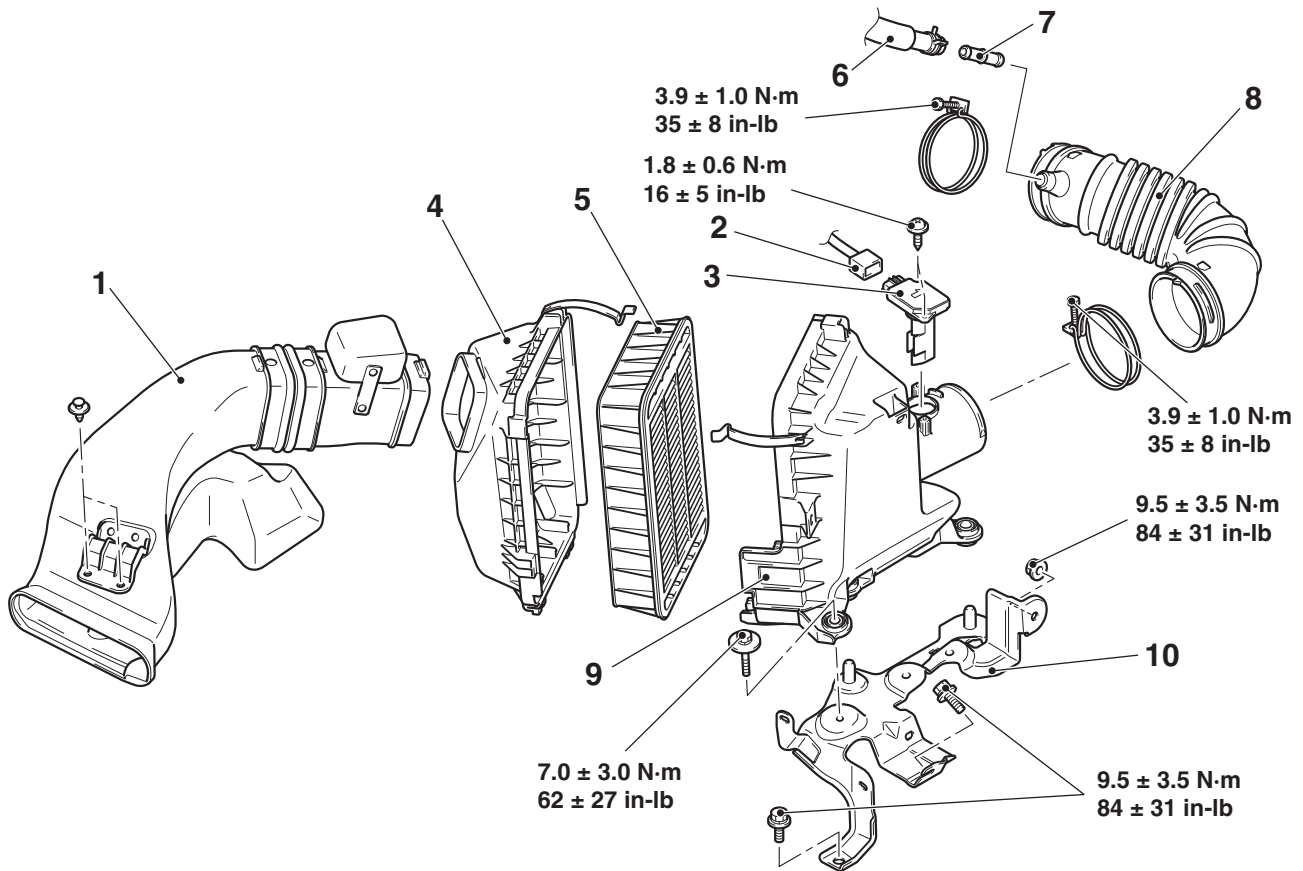
1. Air cleaner element
2. Air cleaner intake duct
3. Breather hose connection
4. Air cleaner resonator
5. Air cleaner intake hose
6. Vacuum hose connection
7. Mass airflow sensor connector connection

**Removal steps (Continued)**

8. Mass airflow sensor
9. Air cleaner cover
10. Air cleaner body
  - Engine control module [Refer to GROUP 13A, Engine Control Module (ECM) [P.13A-899](#)]
11. Air cleaner bracket

REMOVAL AND INSTALLATION <3.0L ENGINE>

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**Removal steps**

1. Air cleaner intake duct
2. Mass airflow sensor connector connection
3. Mass airflow sensor
4. Air cleaner body
5. Air cleaner element
6. Breather hose connection

**Removal steps (Continued)**

- >>A<< 7. Nipple
8. Air cleaner to throttle body duct
- Engine control module [Refer to GROUP 13B, Engine Control Module (ECM) [P.13B-903](#)]
9. Air cleaner cover
10. Air cleaner bracket

**INSTALLATION SERVICE POINT**

**>>A<< NIPPLE INSTALLATION**

**⚠ CAUTION**

Securely install the nipple to the air cleaner to throttle body duct.

# INTAKE MANIFOLD PLENUM <3.0L ENGINE>

## REMOVAL AND INSTALLATION

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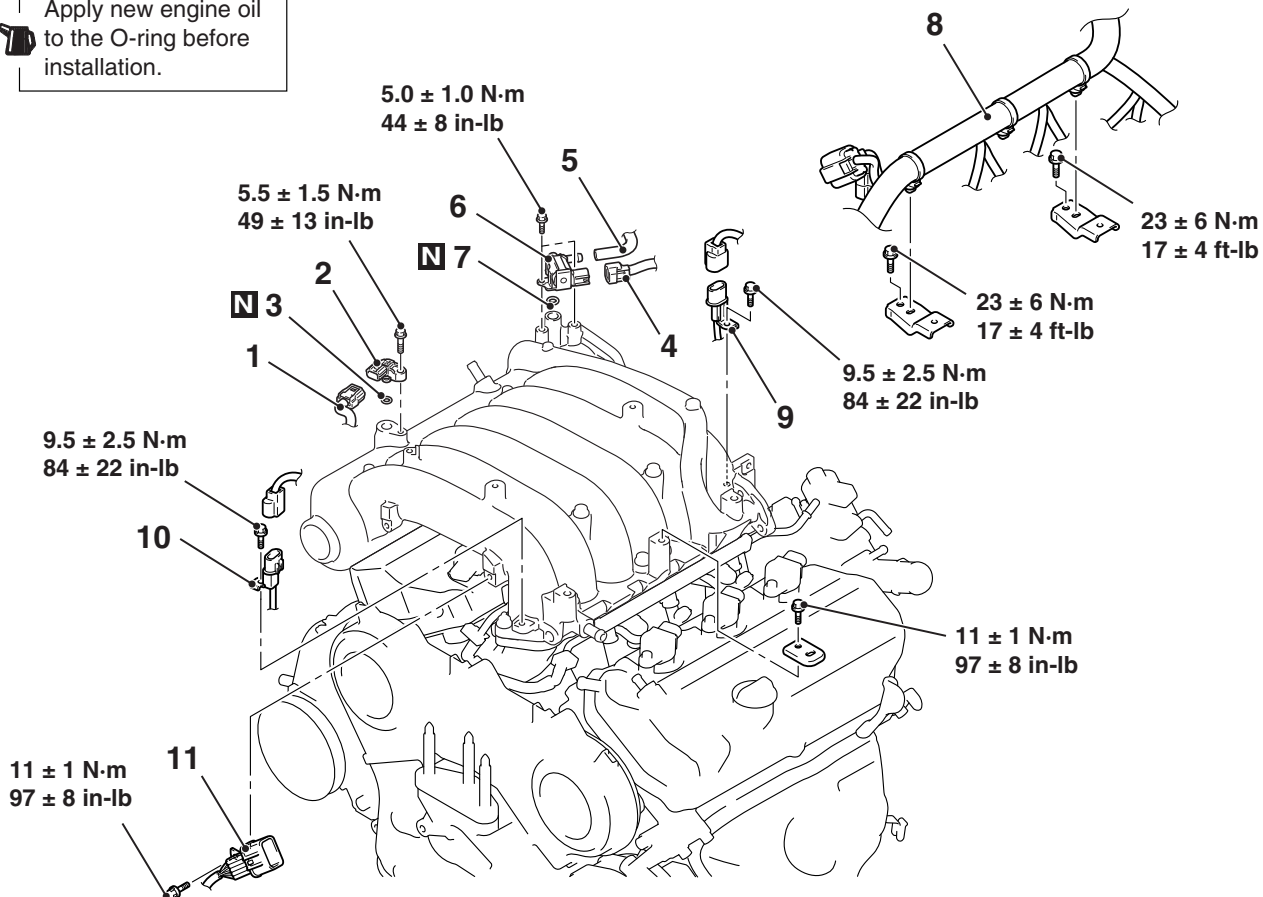
### Pre-removal Operation

- Engine Coolant Draining (Refer to GROUP 14, On-vehicle Service – Engine Coolant Change [P.14-26](#)).
- Engine Cover Removal (Refer to GROUP 16, Ignition System – Ignition Coil [P.16-49](#)).
- Strut Tower Bar Removal (Refer to GROUP 42A, Strut Tower Bar [P.42A-12](#)).
- Air Cleaner Assembly Removal (Refer to [P.15-5](#)).
- Throttle Body Assembly Removal (Refer to GROUP 13B, Throttle Body [P.13B-901](#)).

### Post-installation Operation

- Throttle Body Assembly Installation (Refer to GROUP 13B, Throttle Body [P.13B-901](#)).
- Air Cleaner Assembly Installation (Refer to [P.15-5](#)).
- Strut Tower Bar Installation (Refer to GROUP 42A, Strut Tower Bar [P.42A-12](#)).
- Engine Cover Installation (Refer to GROUP 16, Ignition System – Ignition Coil [P.16-49](#)).
- Engine Coolant Refilling (Refer to GROUP 14, On-vehicle Service – Engine Coolant Change [P.14-26](#)).

 Apply new engine oil to the O-ring before installation.



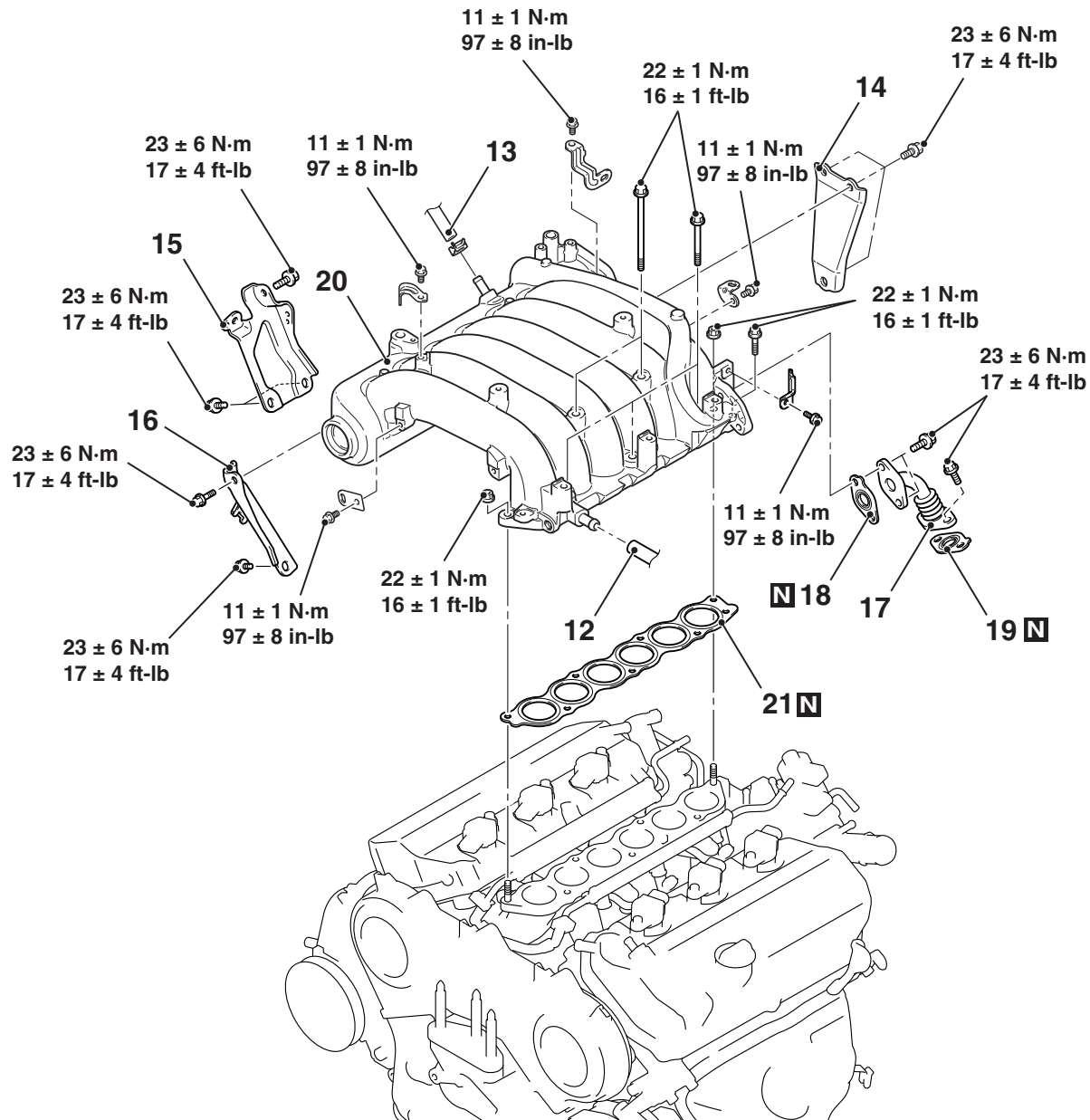
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### Removal steps

- >>A<<
1. Manifold absolute pressure sensor connector
  2. Manifold absolute pressure sensor
  3. O-ring
  4. Evaporative emission purge solenoid connector
  5. Purge hose connection
  6. Evaporative emission purge solenoid

### Removal steps (Continued)

7. O-ring
8. Control wiring harness connection
9. Right bank knock sensor connector
10. Left bank knock sensor connector
11. Control wiring harness and injector wiring harness combination connector



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**Removal steps**

12. PCV hose connection
13. Brake booster vacuum hose connection
14. Throttle body stay
15. Intake manifold plenum stay (rear)
16. Intake manifold plenum stay (front)

**Removal steps (Continued)**

17. EGR pipe
18. EGR pipe gasket
19. EGR pipe gasket
20. Intake manifold plenum
21. Intake manifold plenum gasket

**INSTALLATION SERVICE POINT****>>A<< MANIFOLD ABSOLUTE PRESSURE SENSOR INSTALLATION**** CAUTION**

- Install the manifold absolute pressure sensor, taking care not to give a shock to it.
- Do not use a manifold absolute pressure sensor that has fallen down.

# INTAKE MANIFOLD

## REMOVAL AND INSTALLATION <2.4L ENGINE>

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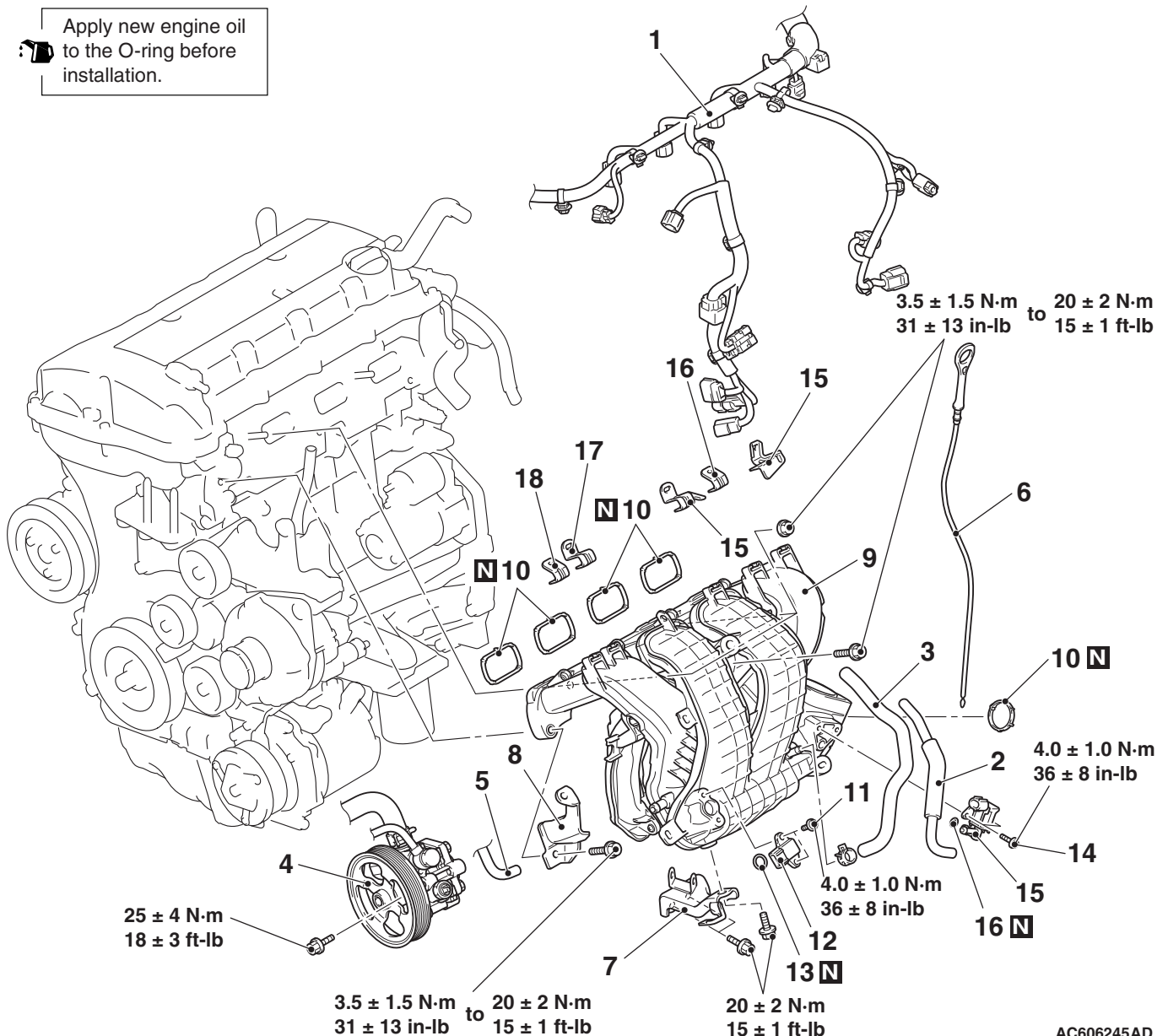
### Pre-removal operation

- Engine Coolant Draining (Refer to GROUP 14, On-vehicle Service – Engine Coolant Change [P.14-26](#) ).
- Engine Upper Cover Removal (Refer to GROUP 11A, Camshaft [P.11A-26](#)).
- Generator and Others Belt Removal (Refer to GROUP 11A, Crankshaft Pulley [P.11A-21](#)).
- Air Cleaner Intake Hose and Air Cleaner Assembly Removal (Refer to [P.15-4](#)).
- Throttle Body Assembly Removal (Refer to GROUP 13A, Throttle Body Assembly [P.13A-897](#)).
- Fuel Injector Removal (Refer to GROUP 13A, Injector [P.13A-892](#)).
- EGR Valve and EGR Valve Stay Removal (Refer to GROUP 17, EGR Valve [P.17-84](#) ).

### Post-installation operation

- EGR Valve and EGR Valve Stay Installation (Refer to GROUP 17, EGR Valve [P.17-84](#) ).
- Fuel Injector Installation (Refer to GROUP 13A, Injector [P.13A-892](#)).
- Throttle Body Assembly Installation (Refer to GROUP 13A, Throttle Body Assembly [P.13A-897](#)).
- Air Cleaner Intake Hose and Air Cleaner Assembly Installation (Refer to [P.15-4](#)).
- Generator and Others Belt Installation (Refer to GROUP 11A, Crankshaft Pulley [P.11A-21](#)).
- Engine Upper Cover Installation (Refer to GROUP 11A, Camshaft [P.11A-26](#)).
- Engine Coolant Refilling (Refer to GROUP 14, On-vehicle Service – Engine Coolant Change [P.14-26](#) ).

Apply new engine oil to the O-ring before installation.



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|       | Removal steps                        |       | Removal steps (Continued)             |
|-------|--------------------------------------|-------|---------------------------------------|
| <<A>> | 1. Control wiring harness connection |       | 10. Intake manifold gasket            |
|       | 2. Emission vacuum hose              | >>A<< | 11. Screw                             |
|       | 3. Brake booster vacuum hose         | >>B<< | 12. Manifold absolute pressure sensor |
|       | 4. Power steering oil pump assembly  |       | 13. O-ring                            |
|       | 5. Rocker cover PCV hose             | >>A<< | 14. Screw                             |
|       | 6. Engine oil level gauge            |       | 15. Purge control solenoid valve      |
|       | 7. Intake manifold stay              |       | 16. O-ring                            |
| >>C<< | 8. Injector protector front          |       | 17. Intake manifold harness bracket   |
| >>C<< | 9. Intake manifold assembly          |       | 18. Engine cover bracket              |

## REMOVAL SERVICE POINT

### <<A>> POWER STEERING OIL PUMP ASSEMBLY REMOVAL

1. With the hose installed, remove the power steering oil pump assembly from the bracket.
2. Tie the removed power steering oil pump assembly with a string at a position where it will not interfere with the removal and installation of the intake manifold.

## INSTALLATION SERVICE POINTS

### >>A<< SCREW INSTALLATION

#### CAUTION

Do not over-tighten. As the self-forming-type screw is used, the excessive torque can damage the intake manifold threads.

### >>B<< MANIFOLD ABSOLUTE PRESSURE SENSOR INSTALLATION

#### CAUTION

- Install the manifold absolute pressure sensor, taking care not to give a shock to it.
- Do not use a manifold absolute pressure sensor that has fallen down.

### >>C<< INTAKE MANIFOLD ASSEMBLY/INJECTOR PROTECTOR FRONT INSTALLATION

Install the intake manifold assembly and the injector protector front, and tighten mounting bolts and nuts temporarily.

*NOTE: The tightening of the fuel rail, the intake manifold assembly and the injector protector front and rear has the specified order. Temporarily tighten the intake manifold assembly and injector protector front mounting bolts and nuts (Refer to GROUP 13A, Injector P. 13A-892).*

REMOVAL AND INSTALLATION <3.0L ENGINE>

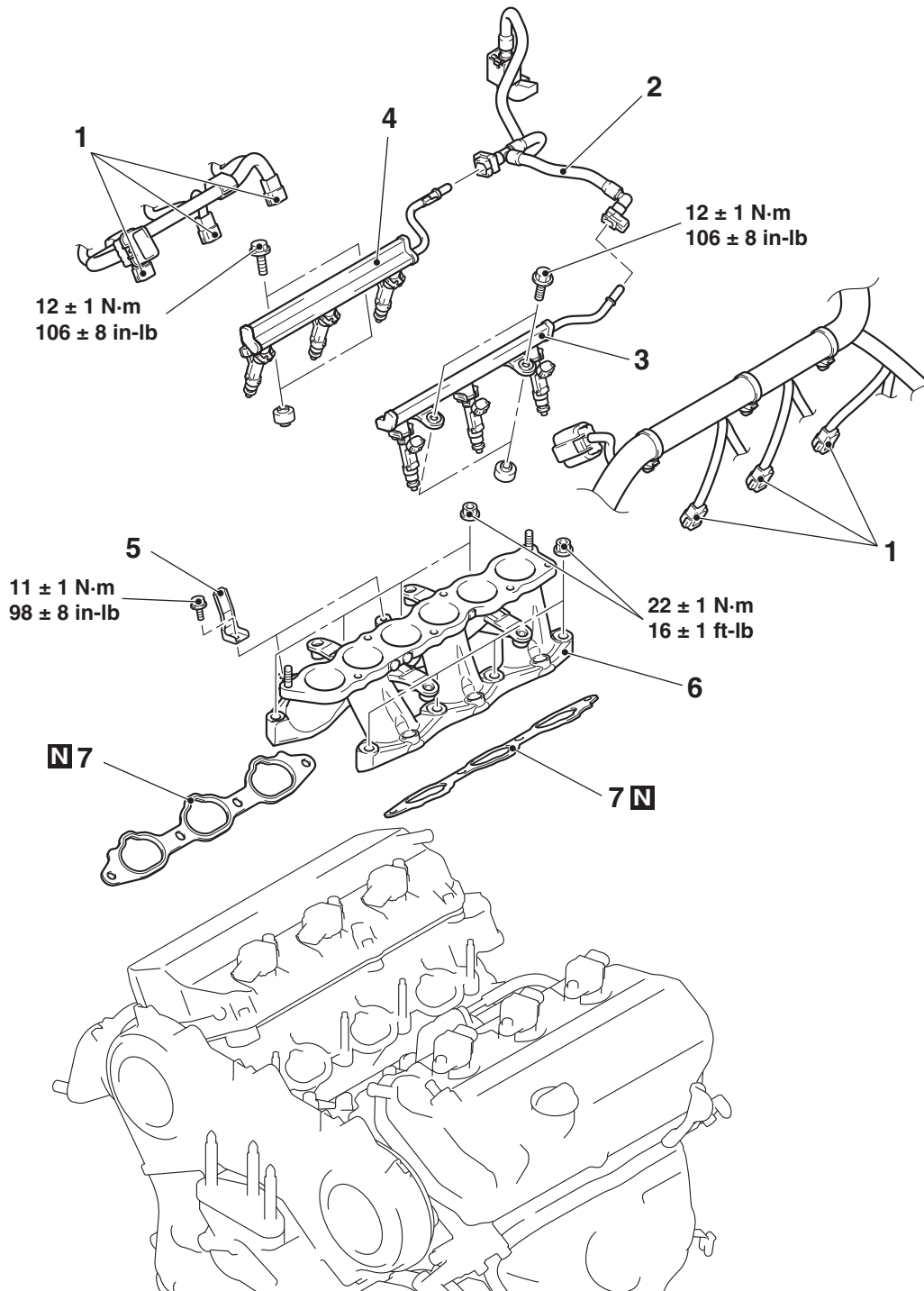
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**Pre-removal Operation**

- Fuel Discharge Prevention [Refer to GROUP 13B, On-vehicle Service – Fuel Pump Connector Disconnection (How to Reduce Pressurized Fuel Lines) [P.13B-886](#)].
- Intake Manifold Plenum Removal (Refer to [P.15-6](#)).

**Post-installation Operation**

- Intake Manifold Plenum Installation (Refer to [P.15-6](#)).
- Fuel Leakage Inspection



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| Removal steps |    |                                           | Removal steps (Continued) |    |                                            |
|---------------|----|-------------------------------------------|---------------------------|----|--------------------------------------------|
| <<A>> >>B<<   | 1. | Injector connector connection             | <<B>>                     | 4. | Right fuel rail and fuel injector assembly |
|               | 2. | Fuel high-pressure hose connection        |                           | 5. | Harness bracket                            |
| <<B>>         | 3. | Left fuel rail and fuel injector assembly | >>A<<                     | 6. | Intake manifold                            |
|               |    |                                           |                           | 7. | Intake manifold gasket                     |

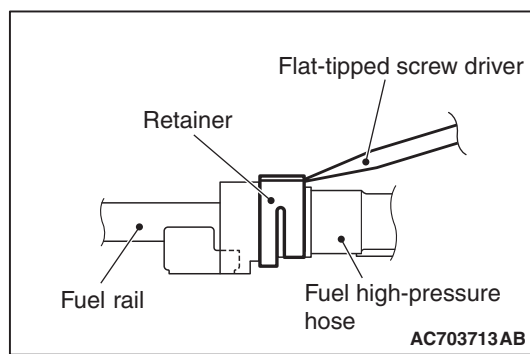
## REMOVAL SERVICE POINTS

### <<A>> FUEL HIGH-PRESSURE HOSE DISCONNECTION

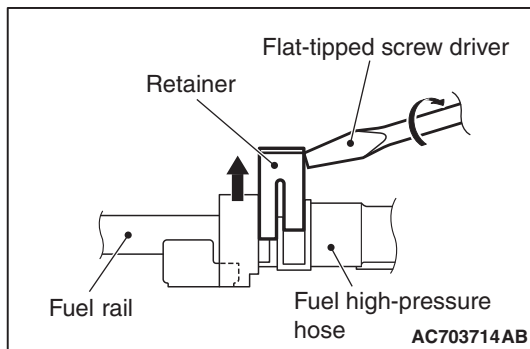
#### CAUTION

Do not kink the fuel high-pressure hose as it is made of plastics.

1. Insert a flat-tipped screwdriver [width 6 mm (0.24 inch), thickness 1 mm (0.04 inch)] to the retainer.



2. Turn the flat-tipped screwdriver approximately 90° to the arrowed direction, and lift the retainer to unlock and disconnect the fuel high-pressure hose.



### <<B>> FUEL RAIL AND INJECTOR ASSEMBLY REMOVAL

#### CAUTION

Do not drop the fuel injector.

Remove the fuel rail with the fuel injectors attached to it.

## INSTALLATION SERVICE POINTS

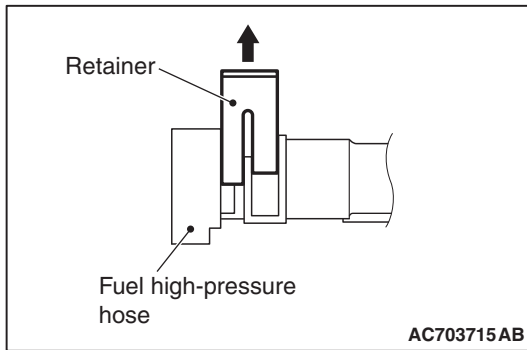
### >>A<< INTAKE MANIFOLD INSTALLATION

1. Coat the intake manifold mounting studs with engine oil.
2. Tighten the intake manifold mounting nuts by the following procedure.

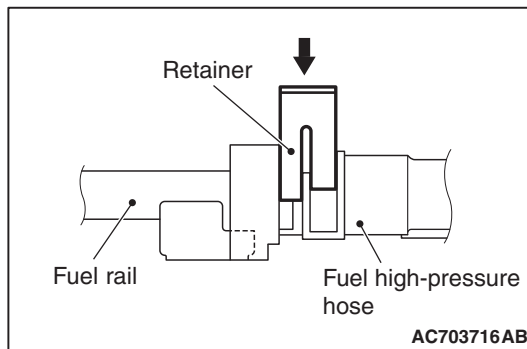
| Order | Mounting nuts   | Tightening torque                      |
|-------|-----------------|----------------------------------------|
| 1st   | Left bank nuts  | $6.5 \pm 1.5$ N·m ( $58 \pm 13$ in-lb) |
| 2nd   | Right bank nuts | $22 \pm 1$ N·m ( $16 \pm 1$ ft-lb)     |
| 3rd   | Left bank nuts  | $22 \pm 1$ N·m ( $16 \pm 1$ ft-lb)     |
| 4th   | Right bank nuts | $22 \pm 1$ N·m ( $16 \pm 1$ ft-lb)     |
| 5th   | Left bank nuts  | $22 \pm 1$ N·m ( $16 \pm 1$ ft-lb)     |

### >>B<< FUEL HIGH-PRESURE HOSE CONNECTION

1. Pull up the lock of fuel high-pressure hose to unlock before installing.



2. Install the fuel high-pressure hose to the fuel rail securely and push the lock of fuel high-pressure hose downward and lock thoroughly.
3. After installing, slightly pull the fuel high-pressure hose and ensure that there is no disengaged fuel high-pressure hose. Also confirm that there is approximately 1 mm (0.04 inch) play at this time.



**INSPECTION**

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Check the following points; replace the part if a problem is found.

**INTAKE MANIFOLD CHECK <2.4L ENGINE>**

1. Check for damage or cracking of any part.
2. Clogging of the negative pressure (vacuum) outlet port, or clogging of the exhaust gas recirculation passages.

**INTAKE MANIFOLD CHECK <3.0L ENGINE>**

1. Check for damage or cracking of any part.
2. Clogging of the negative pressure (vacuum) outlet port, or clogging of the exhaust gas recirculation passages.
3. Using a straight edge and feeler gauge, check for distortion of the cylinder head installation surface.

**Standard value: 0.15 mm (0.006 inch) or less**

**Limit: 0.20 mm (0.008 inch)**

# EXHAUST MANIFOLD

## REMOVAL AND INSTALLATION <2.4L ENGINE>

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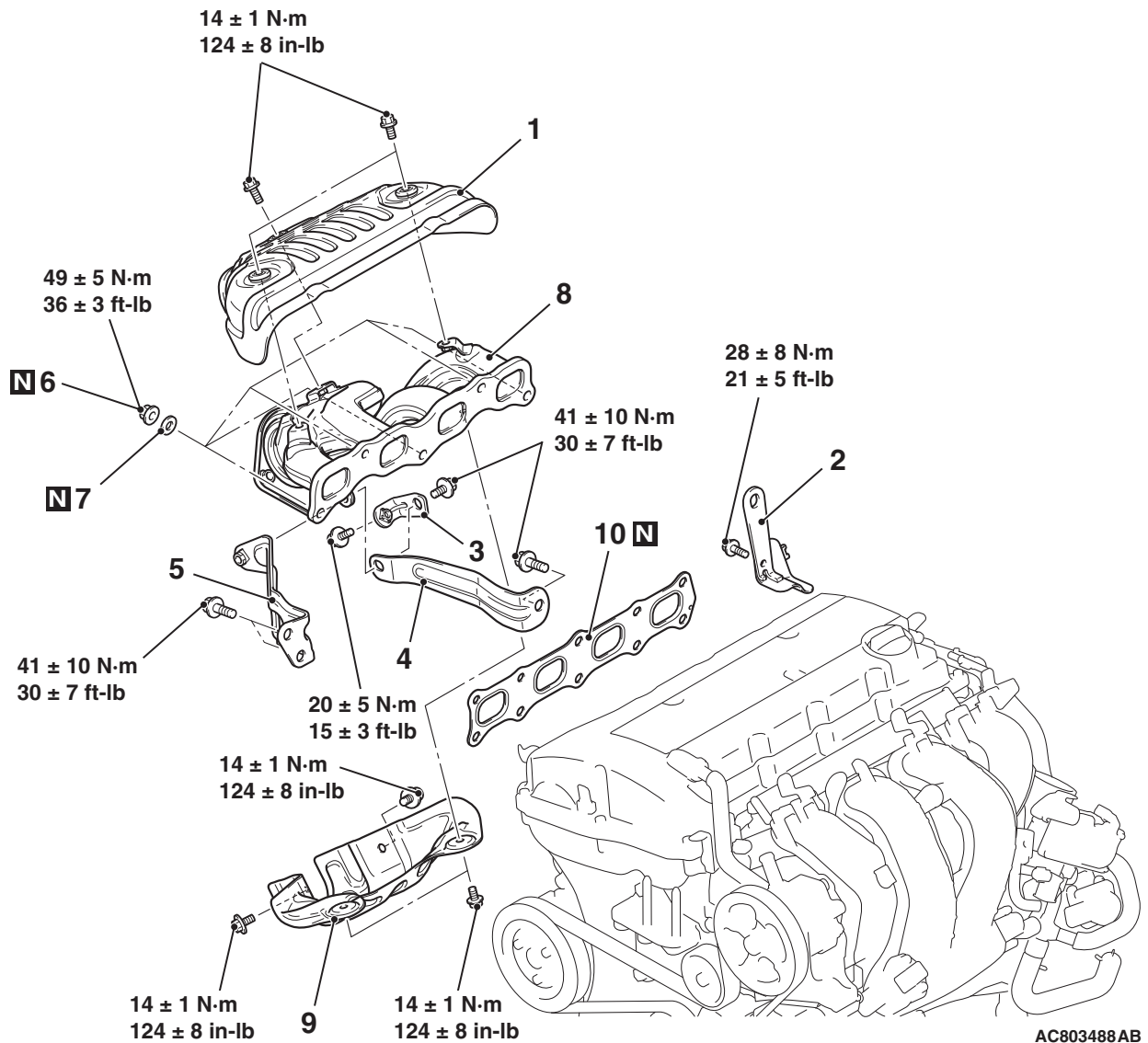
### Pre-removal operation

- Front Exhaust Pipe Removal (Refer to [P.15-22](#)).
- Strut Tower Bar Removal (Refer to GROUP 42A, Strut Tower Bar [P.42A-12](#)).

### Post-installation operation

- Strut Tower Bar Installation (Refer to GROUP 42A, Strut Tower Bar [P.42A-12](#)).
- Front Exhaust Pipe Installation (Refer to [P.15-22](#)).

<FWD>



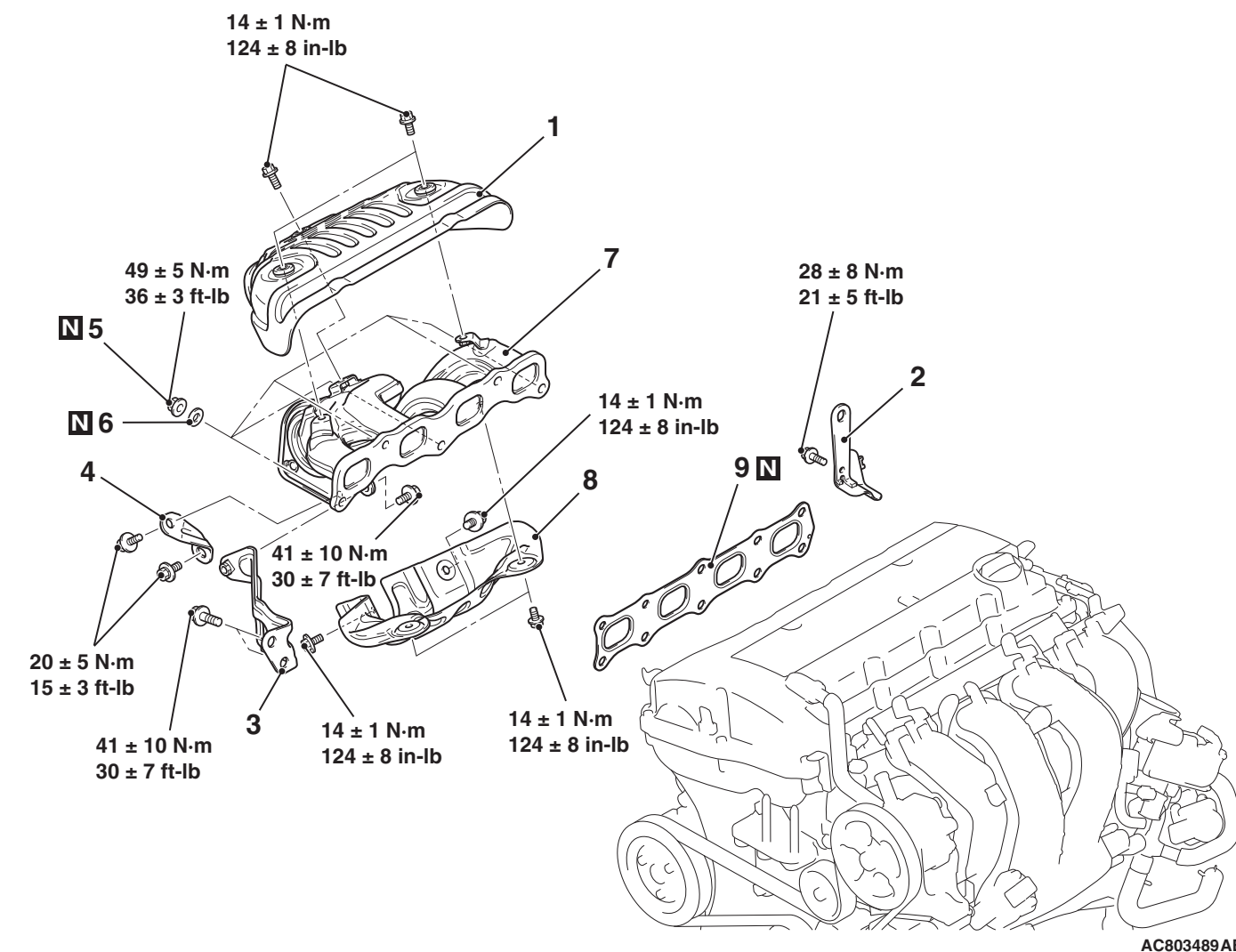
### Removal steps

1. Exhaust manifold cover (upper)
2. Engine hanger
- >>B<< 3. Exhaust manifold bracket
- >>B<< 4. Exhaust manifold bracket
- >>B<< 5. Exhaust manifold bracket

### Removal steps (Continued)

6. Exhaust manifold nut
7. Exhaust manifold washer
8. Exhaust manifold
9. Exhaust manifold cover (lower)
10. Exhaust manifold gasket

&lt;AWD&gt;



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**Removal steps**

1. Exhaust manifold cover (upper)
2. Engine hanger
- >>B<< 3. Exhaust manifold bracket
- >>B<< 4. Exhaust manifold bracket
- <<A>> >>A<< 5. Exhaust manifold nut

**Removal steps (Continued)**

- <<A>> >>A<< 6. Exhaust manifold washer
- <<A>> >>A<< 7. Exhaust manifold
- <<A>> >>A<< 8. Exhaust manifold cover (lower)
9. Exhaust manifold gasket

## REMOVAL SERVICE POINT

### <<A>> EXHAUST MANIFOLD NUT/EXHAUST MANIFOLD WASHER/EXHAUST MANIFOLD/EXHAUST MANIFOLD COVER (LOWER) REMOVAL

1. Remove the mounting bolts of the exhaust manifold cover (lower) and move them to the position where they will not interfere with the loosening of the exhaust manifold nuts.
2. Loosen the exhaust manifold nuts, and remove the exhaust manifold nuts and the exhaust manifold washers.
3. Remove the exhaust manifold and the exhaust manifold cover (lower) as a set.

## INSTALLATION SERVICE POINTS

### >>A<< EXHAUST MANIFOLD COVER (LOWER)/EXHAUST MANIFOLD/EXHAUST MANIFOLD WASHER/EXHAUST MANIFOLD NUT INSTALLATION

1. Install the exhaust manifold cover (lower) to the exhaust manifold (with mounting bolts removed), install the exhaust manifold and the exhaust manifold cover (lower) to the engine as a set.
2. Move the exhaust manifold cover (lower) to the position where it will not interfere with the installation of the exhaust manifold nuts.
3. Install the new exhaust manifold nuts and exhaust manifold washers, and tighten the exhaust manifold nuts to the specified torque.

**Tightening torque:  $49 \pm 5$  N·m ( $36 \pm 3$  ft-lb)**

4. Install the exhaust manifold cover (lower) to the exhaust manifold, and tighten the exhaust manifold cover (lower) mounting bolts to the specified torque.

**Tightening torque:  $14 \pm 1$  N·m ( $124 \pm 8$  in-lb)**

### >>B<< EXHAUST MANIFOLD BRACKET INSTALLATION

1. Temporarily tighten the exhaust manifold bracket with mounting bolts.
2. Make sure that the exhaust manifold bracket is closely contacted with the installation surface of each part.
3. Tighten the mounting bolts to the specified torque.

**Tightening torque:**

**M8:  $20 \pm 5$  N·m ( $15 \pm 3$  ft-lb)**

**M10:  $41 \pm 10$  N·m ( $30 \pm 7$  ft-lb)**

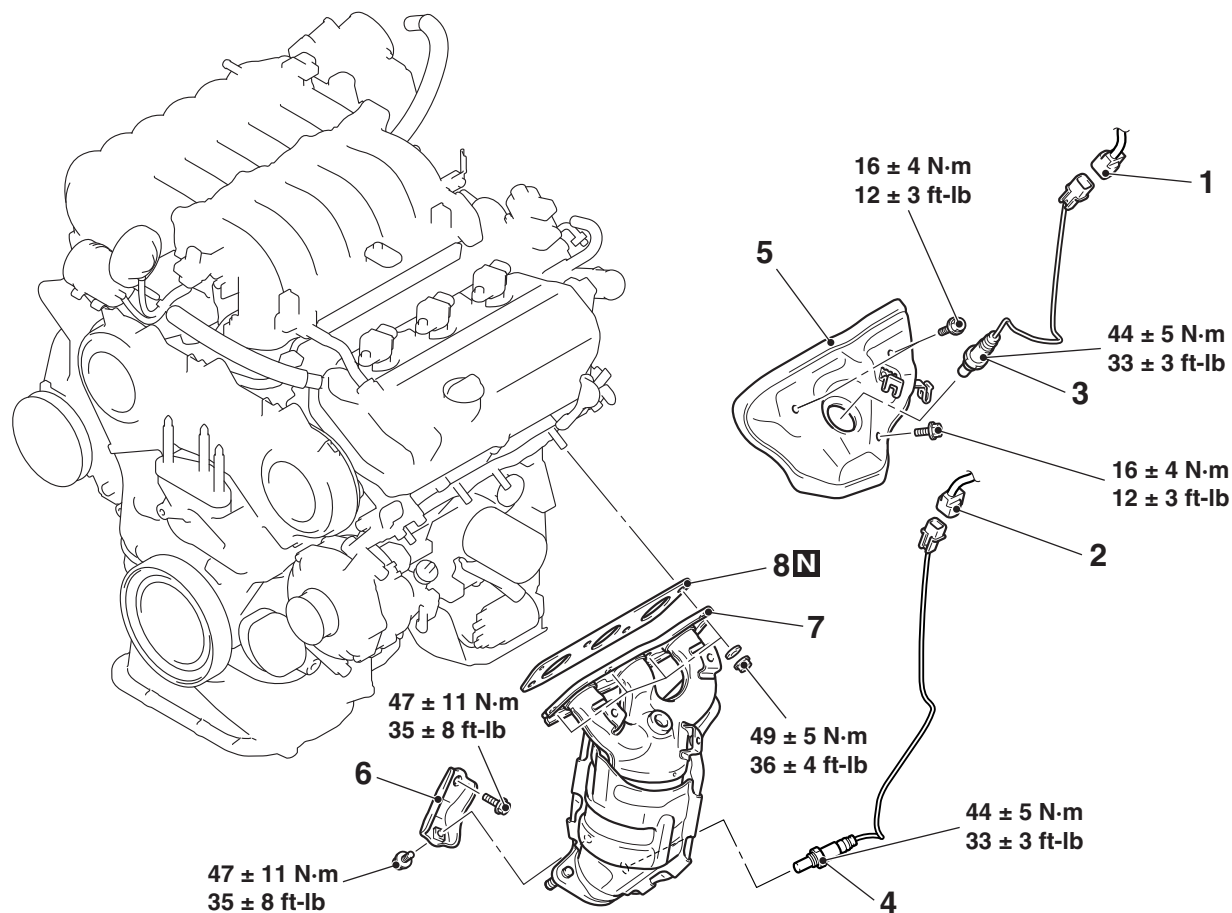
## REMOVAL AND INSTALLATION &lt;3.0L ENGINE&gt;

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## &lt;LEFT BANK&gt;

**Pre-removal and Post-installation Operation**

- Under Cover Removal and Installation (Refer to GROUP 51, Under Cover P.51-22).
- Air Duct Removal and Installation (Refer to P.15-5).
- Front Exhaust Pipe Removal and Installation (Refer to P.15-25).



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**Removal steps**

1. Left bank heated oxygen sensor (Front) connector connection
2. Left bank heated oxygen sensor (Rear) connector connection
3. Left bank heated oxygen sensor (Front)

&lt;&lt;A&gt;&gt; &gt;&gt;B&lt;&lt;

&lt;&lt;B&gt;&gt; &gt;&gt;A&lt;&lt;

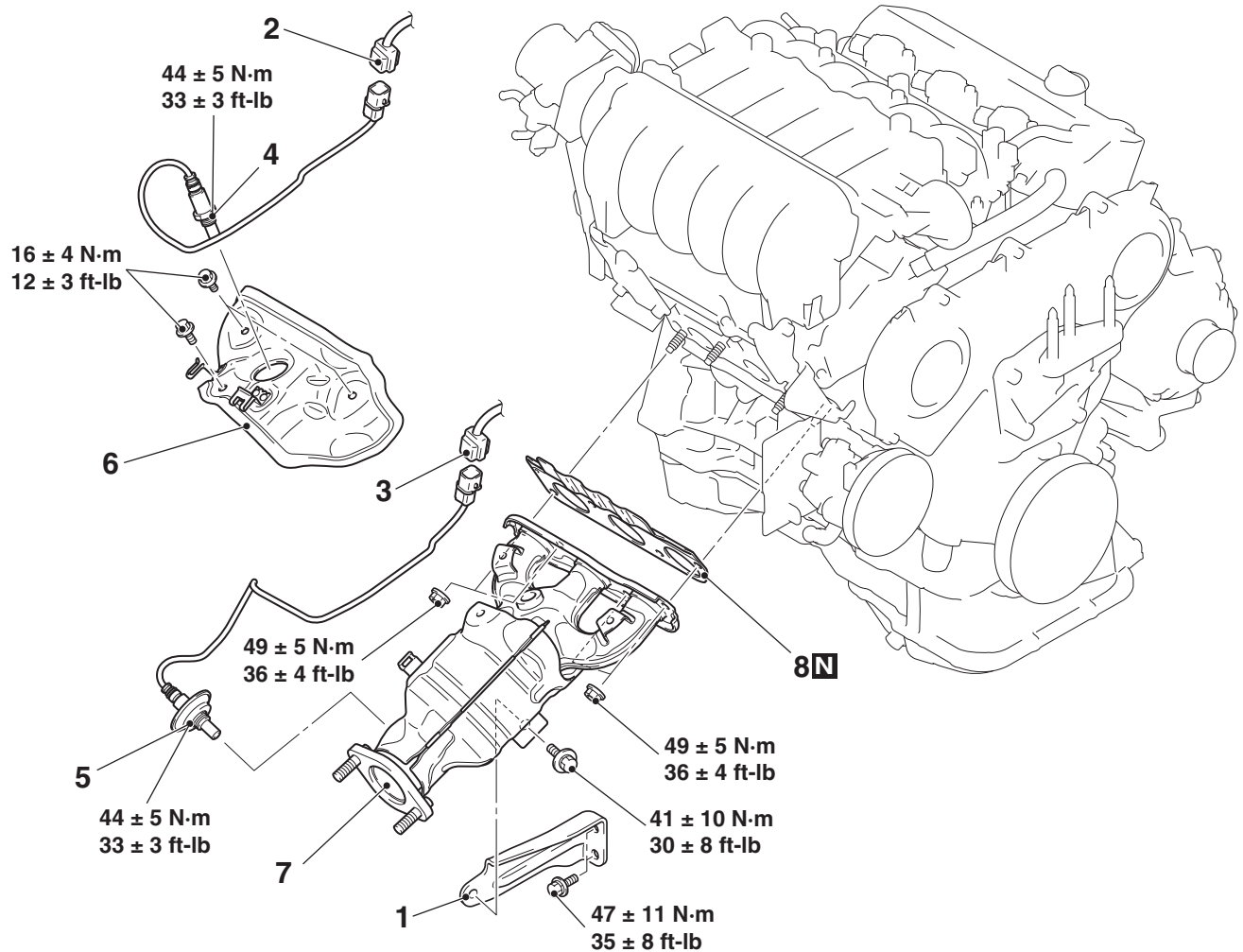
**Removal steps (Continued)**

4. Left bank heated oxygen sensor (Rear)
5. Heat protector
6. Left exhaust manifold bracket
7. Exhaust manifold
8. Exhaust manifold gasket

<RIGHT BANK>

**Pre-removal and Post-installation Operation**

- Air Cleaner Cover and Air Intake Duct Removal and Installation (Refer to P.15-5).
- Battery Removal and Installation
- Under Cover Removal and Installation (Refer to GROUP 51, Under Cover P.51-22).
- Front Exhaust Pipe, Center Exhaust Pipe and Front Floor Front Panel Heat Protector Removal and Installation (Refer to P.15-25).
- Strut Tower Bar Removal and Installation (Refer to GROUP 42A, Strut Tower Bar P.42A-12).



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**Removal steps**

1. Right exhaust manifold bracket  
<Vehicles without S-AWC>
2. Right bank heated oxygen sensor  
(Front) connector connection
3. Right bank heated oxygen sensor  
(Rear) connector connection

<<A>> >>B<<

<<B>> >>A<<

**Removal steps (Continued)**

4. Right bank heated oxygen sensor  
(Front)
5. Right bank heated oxygen sensor  
(Rear)
6. Heat protector
7. Exhaust manifold
8. Exhaust manifold gasket

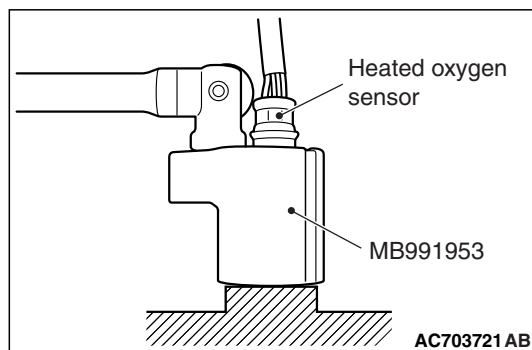
**Required Special Tools:**

- MB991953: Oxygen Sensor Wrench
- MD998770: Oxygen Sensor Wrench

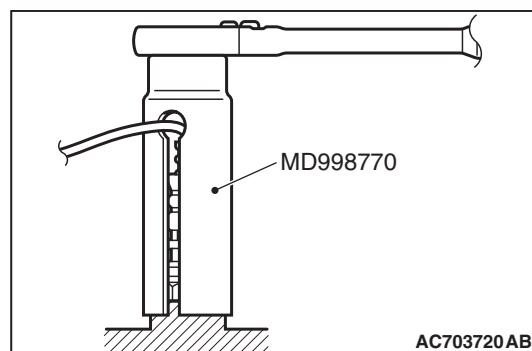
## REMOVAL SERVICE POINTS

<<A>> LEFT BANK HEATED OXYGEN SENSOR  
(FRONT)/RIGHT BANK HEATED OXYGEN SEN-  
SOR (FRONT) REMOVAL

Use special tool MB991953 to remove the heated oxygen sensor.

<<B>> LEFT BANK HEATED OXYGEN SENSOR  
(REAR)/RIGHT BANK HEATED OXYGEN SENSOR  
(REAR) REMOVAL

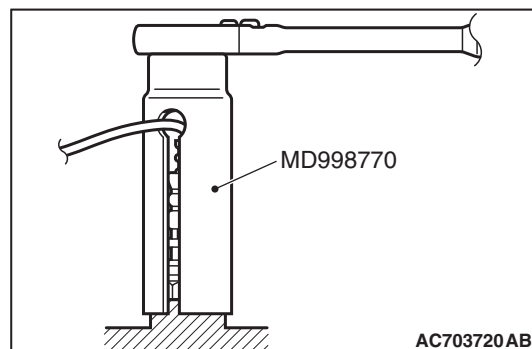
Use special tool MD998770 to remove the heated oxygen sensor.



## INSTALLATION SERVICE POINTS

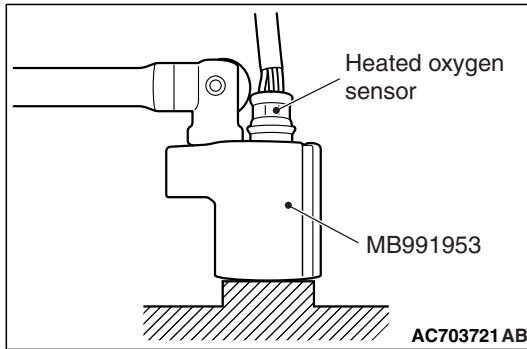
>>A<< RIGHT BANK HEATED OXYGEN SENSOR  
(REAR)/LEFT BANK HEATED OXYGEN SENSOR  
(REAR) INSTALLATION

Use special tool MD998770 to install the heated oxygen sensor.



**>>B<< RIGHT BANK HEATED OXYGEN SENSOR  
(FRONT)/LEFT BANK HEATED OXYGEN SENSOR  
(FRONT) INSTALLATION**

Use special tool MB991953 to install the heated oxygen sensor.



**INSPECTION**

M1151003401546

Check the following points; replace the part if a problem is found.

**EXHAUST MANIFOLD CHECK**

1. Check for damage or cracking of any part.
2. Using a straight edge and a feeler gauge, check for distortion of the cylinder head installation surface.

**<2.4L ENGINE>**

Limit: 0.70 mm (0.028 inch)

**<3.0L ENGINE>**

Standard value: 0.7 mm (0.028 inch) or less

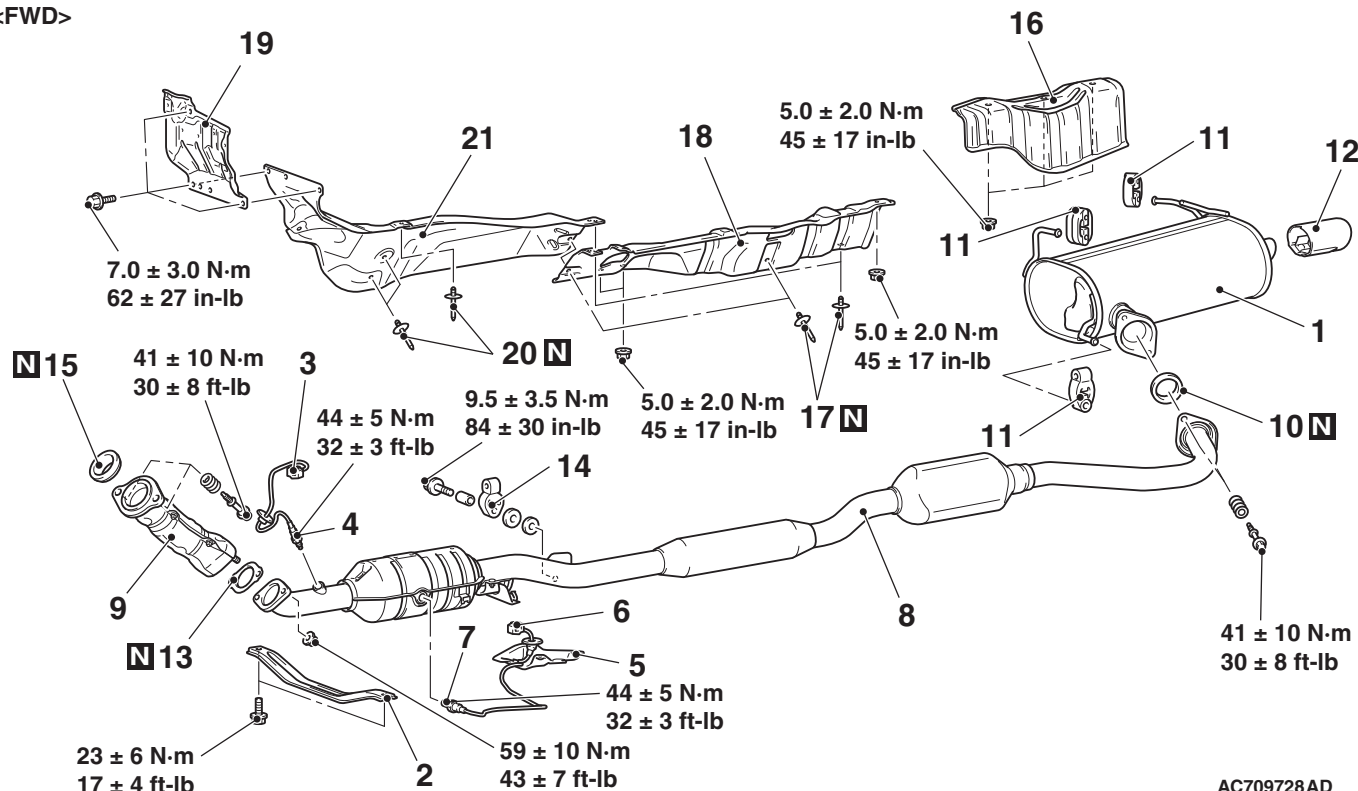
Limit: 0.5 mm (0.020 inch)

## EXHAUST PIPE AND MAIN MUFFLER

## REMOVAL AND INSTALLATION &lt;2.4L ENGINE&gt;

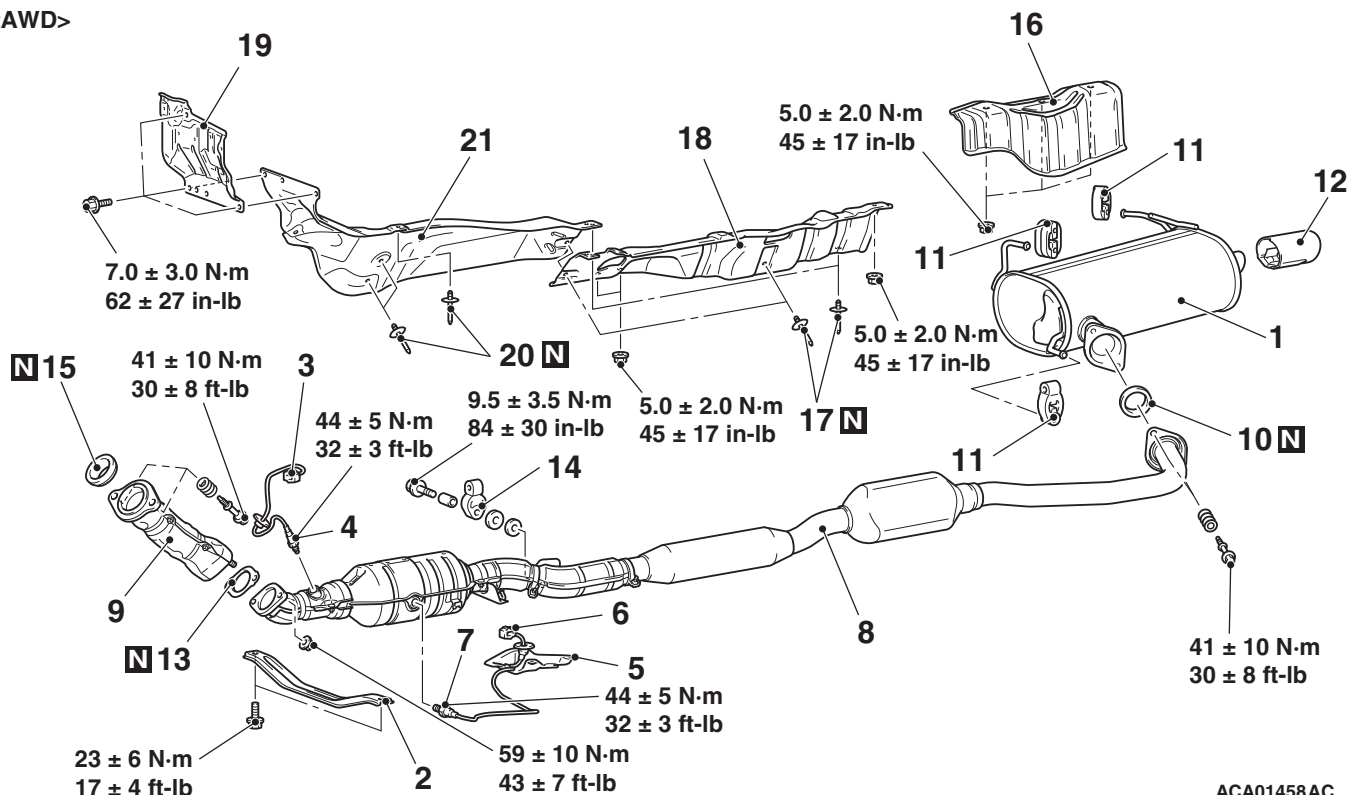
M1151008703173

&lt;FWD&gt;



AC709728 AD

&lt;AWD&gt;



ACA01458 AC

|       |       |                                                                                    |                                                                                   |       |       |                                                                                                |                                           |
|-------|-------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-------|------------------------------------------------------------------------------------------------|-------------------------------------------|
|       |       | <b>Exhaust main muffler and rear floor panel heat protector removal steps</b>      |                                                                                   |       |       | <b>Center exhaust pipe and front floor panel rear heat protector removal steps (Continued)</b> |                                           |
|       |       | 1.                                                                                 | Exhaust main muffler                                                              |       |       | 6.                                                                                             | Heated oxygen sensor connector connection |
|       |       | 10.                                                                                | Seal ring                                                                         |       |       | 7.                                                                                             | Heated oxygen sensor                      |
|       |       | 11.                                                                                | Exhaust muffler hanger                                                            | <<A>> | >>B<< | 8.                                                                                             | Center exhaust pipe                       |
| >>C<< |       | 12.                                                                                | Exhaust tail pipe diffuser                                                        |       |       | 10.                                                                                            | Seal ring                                 |
|       |       | 16.                                                                                | Rear floor panel heat protector                                                   |       |       | 13.                                                                                            | Exhaust pipe gasket                       |
|       |       | <b>Center exhaust pipe and front floor panel rear heat protector removal steps</b> |                                                                                   | <<B>> | >>A<< | 14.                                                                                            | Exhaust muffler hanger                    |
|       |       | 2.                                                                                 | Backbone brace                                                                    |       |       | 17.                                                                                            | Rivet                                     |
|       |       | •                                                                                  | Lower side cover (RH) (Refer to GROUP 52A, Front Floor Console Assembly P.52A-7). |       |       | 18.                                                                                            | Front floor rear panel heat protector     |
|       |       | •                                                                                  | Turn up the passenger's side floor carpet.                                        |       |       | <b>Front exhaust pipe and front floor panel front heat protector removal steps</b>             |                                           |
|       |       | 3.                                                                                 | Linear air-fuel ratio sensor connection                                           |       |       | 9.                                                                                             | Front exhaust pipe                        |
| <<A>> | >>B<< | 4.                                                                                 | Linear air-fuel ratio sensor                                                      |       |       | 13.                                                                                            | Exhaust pipe gasket                       |
|       |       | 5.                                                                                 | Harness cover                                                                     | <<B>> | >>A<< | 15.                                                                                            | Seal ring                                 |
|       |       | •                                                                                  | Front seat assembly (RH) (Refer to GROUP 52A, Front Seat Assembly P.52A-17).      |       |       | 19.                                                                                            | Dash panel heat protector                 |
|       |       |                                                                                    |                                                                                   |       |       | 20.                                                                                            | Rivet                                     |
|       |       |                                                                                    |                                                                                   |       |       | 21.                                                                                            | Front floor front panel heat protector    |

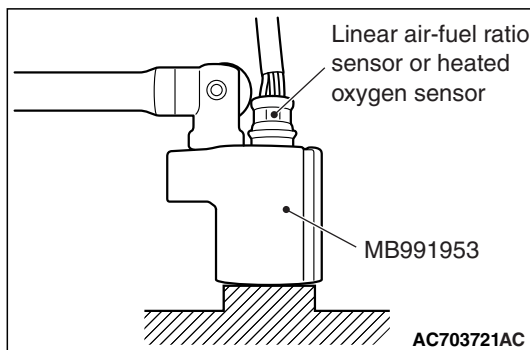
**Required Special Tool:**

- MB991953: Oxygen Sensor Wrench

**REMOVAL SERVICE POINTS**

**<<A>> LINER AIR-FUEL RATIO SENSOR/HEATED OXYGEN SENSOR REMOVAL**

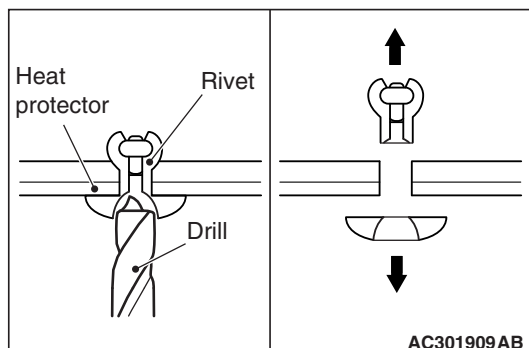
Remove the connection and clamp of linear air-fuel ratio sensor connector or heated oxygen sensor connector, and then use special tool MB991953 to remove the linear air-fuel ratio sensor or heated oxygen sensor.



## &lt;&lt;B&gt;&gt; RIVET REMOVAL

**⚠ CAUTION**

Be careful not to damage the heat protector with the drill.  
Use a drill [6.0 mm (0.24 inch)] to make a hole in the rivet to break it, and then remove the rivet.

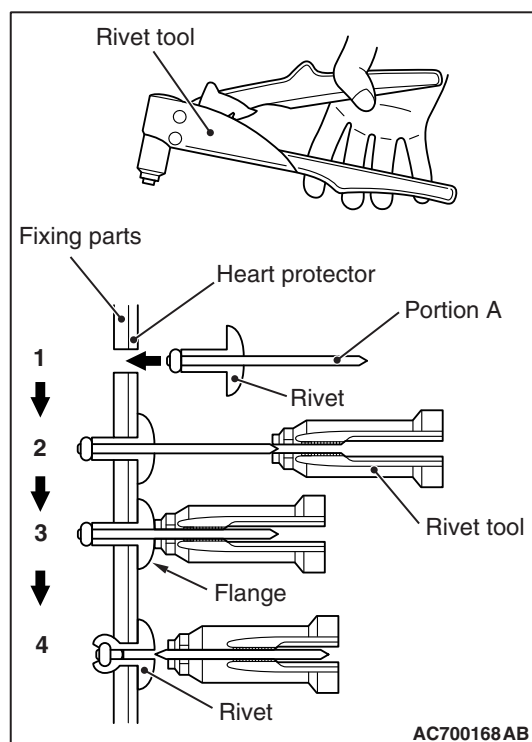


## INSTALLATION SERVICE POINTS

## &gt;&gt;A&lt;&lt; RIVET INSTALLATION

Use a rivet tool shown in the illustration to connect the parts with rivets by the following procedures.

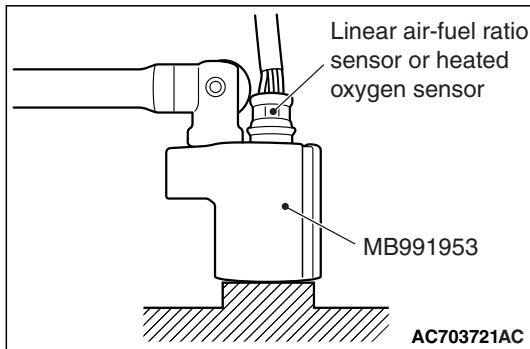
1. Insert the rivet into a corresponding location.
2. Set the rivet tool at a portion A of rivet.
3. While pushing the flange surface of the rivet onto parts to be fixed with the rivet tool, press the handle of the tool.
4. Thin part of portion A of the rivet will be cut off and the part is fixed in position.



## >>B<< LINER AIR-FUEL RATIO SENSOR/HEATED OXYGEN SENSOR INSTALLATION

Tighten the linear air-fuel ratio sensor or heated oxygen sensor to the specified torque by using special tool MB991953.

**Tightening torque:  $44 \pm 5$  N·m ( $32 \pm 3$  ft-lb)**



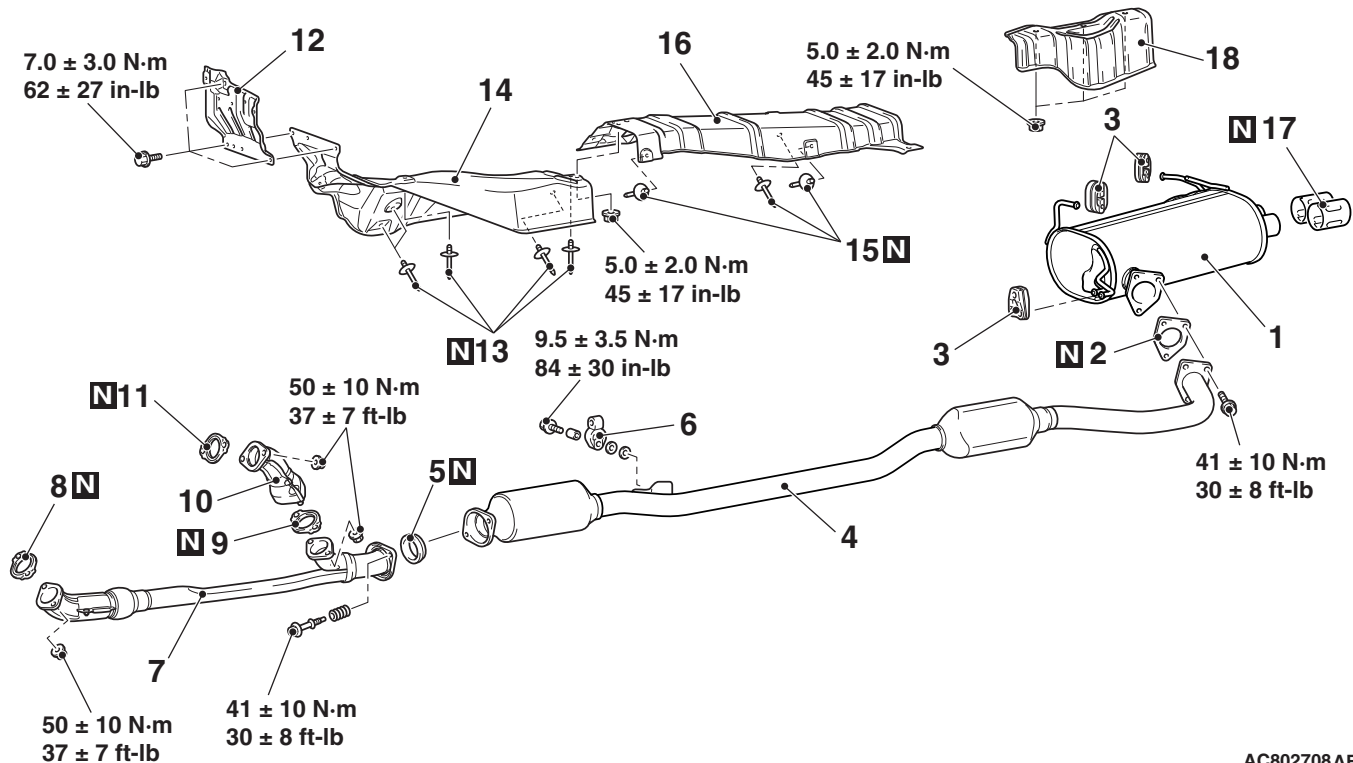
## >>C<< EXHAUST TAIL PIPE DIFFUSER INSTALLATION

When the part is reused, make sure that there is no excessive play after installation and that the part is securely fixed.

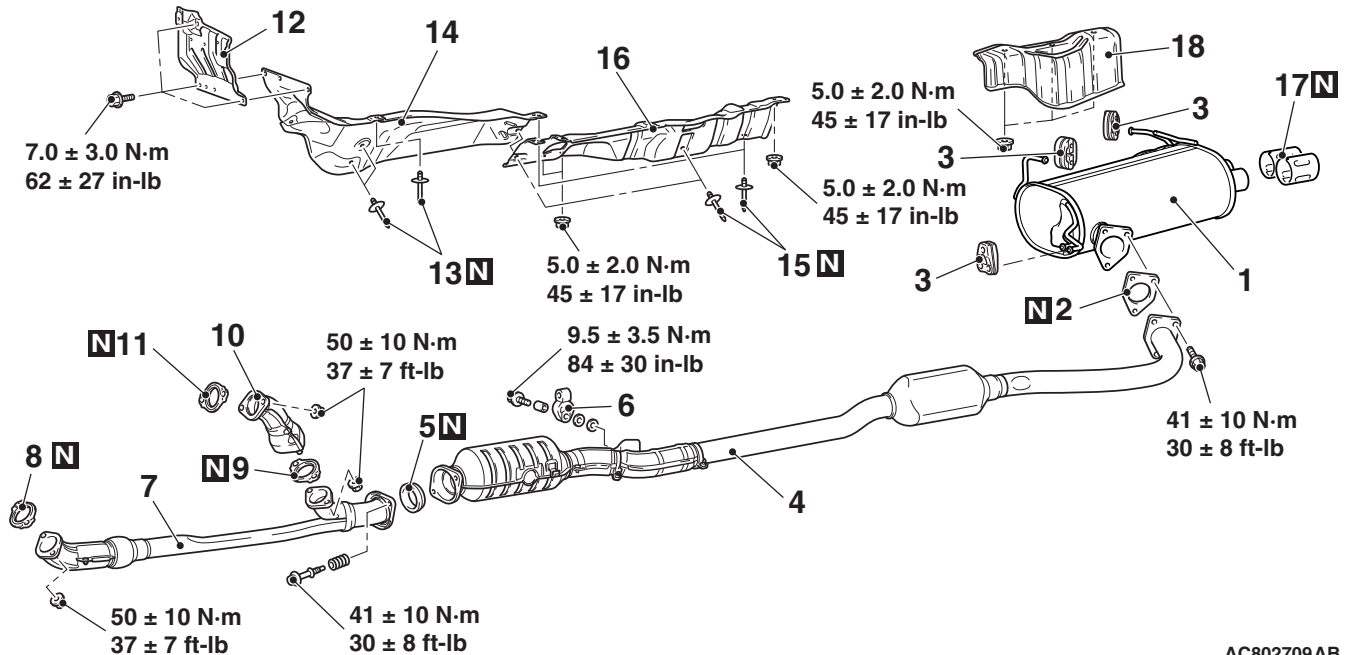
## REMOVAL AND INSTALLATION <3.0L ENGINE>

M1151008702697

<FWD>



&lt;AWD&gt;



AC802709AB

#### Exhaust main muffler and rear floor panel heat protector removal steps

1. Exhaust main muffler
2. Gasket
3. Hanger
17. Exhaust tail pipe diffuser
18. Rear floor panel heat protector

#### Center exhaust pipe removal steps

4. Center exhaust pipe
5. Seal ring
2. Gasket
6. Hanger

#### Front exhaust pipe and front floor rear panel heat protector removal steps

7. Front exhaust pipe
8. Gasket
9. Gasket
5. Seal ring
10. Front exhaust pipe RH

11. Gasket
12. Dash panel heat protector
13. Rivet
14. Front floor front panel heat protector

15. Rivet
16. Front floor rear panel heat protector

&lt;&lt;A&gt;&gt;

&lt;&lt;B&gt;&gt; &gt;&gt;A&lt;&lt;

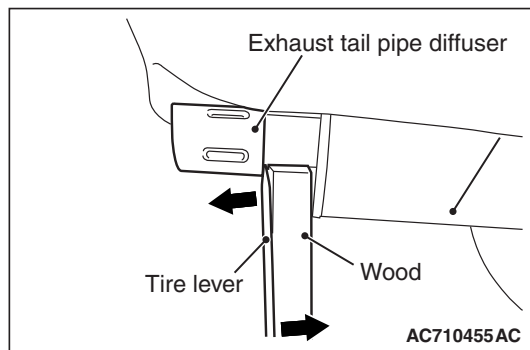
&lt;&lt;B&gt;&gt; &gt;&gt;A&lt;&lt;

## REMOVAL SERVICE POINTS

### <<A>> EXHAUST TAIL PIPE DIFFUSER REMOVAL

Insert the wood and tire lever between exhaust tail pipe diffuser and exhaust main muffler.

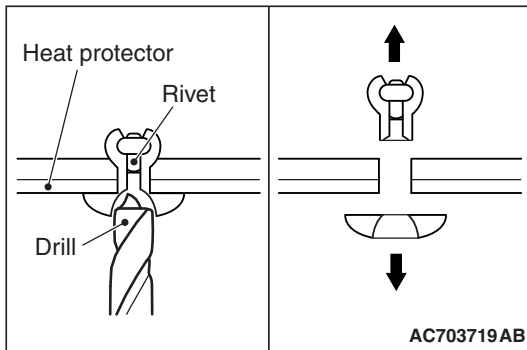
And then turn the tire lever and remove exhaust tail pipe diffuser.



## <<B>> RIVET REMOVAL

### ⚠ CAUTION

Be careful not to damage the heat protector with the drill.  
Use a drill [6.0 mm (0.24 inch)] to make a hole in the rivet to break it, and then remove the rivet.

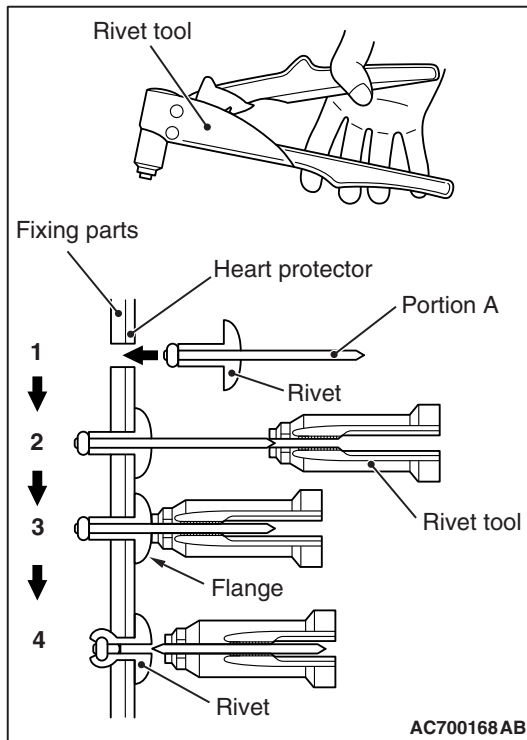


## INSTALLATION SERVICE POINT

### >>A<< RIVET INSTALLATION

Use a rivet tool shown in the illustration to connect the parts with rivets by the following procedures.

1. Insert the rivet into a corresponding location.
2. Set the rivet tool at a portion A of rivet.
3. While pushing the flange surface of the rivet onto parts to be fixed with the rivet tool, press the handle of the tool.
4. Thin part of portion A of the rivet will be cut off and the part is fixed in position.



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## NOTES