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# INTAKE AND EXHAUST

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N11AA--

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		Abnormal Noise	
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**GENERAL INFORMATION**

N11BAAD

Air filter is a dry type air filter.

The intake manifold, made of cast aluminum, functions to circulate engine coolant to the heat-riser (located at the carburetor installation part) and to facilitate the atomization of the air/ fuel mixture.

There are also passages for jet air and EGR (exhaust gas recirculation), and a thermostat housing is provided near the no. 1 port.

The exhaust system is a single consisting of four divisions: the front exhaust pipe, the under catalytic converter, the center exhaust pipe, and the main muffler.

The exhaust manifold, made of cast metal, is the dual type, and functions to reduce exhaust interference.

**SPECIFICATIONS****GENERAL SPECIFICATIONS**

N11CA--

Items	Specifications
Air filter	
Type	Dry type
Heated air intake	Vacuum motor type
Exhaust system	
Front exhaust pipe	Dual type
Muffler	Expansion resonance type
Coupling	Spherical coupling
Suspension system	Rubber hangers and suspenders

**SERVICE SPECIFICATIONS**

N11CB--

Items	Specifications
Standard value	
Intake and exhaust manifold	
Cylinder head installation surface distortion   mm (in.)	0.15 (.006) or less
Limit	
Intake and exhaust manifold	
Cylinder head installation surface distortion   mm (in.)	0.3 (.012) or less

**TORQUE SPECIFICATIONS**

N11CC--

Items	Nm	ft.lbs.
Air filter to rocker cover	16–19	12–14
Carburetor to intake manifold	15–20	11–14
Intake manifold to cylinder head	15–20	11–14
Water outlet fitting assembly to intake manifold	10–13	7–9
Thermo valve assembly to intake manifold	20–40	14–29
E.G.R. valve assembly to intake manifold	19–28	14–20
Vacuum connector joint	8–12	6–9
Air pipe assembly to bracket	12–15	9–11
Air pipe assembly to reed valve B bracket	10–13	7–9
Thermo switch to intake manifold	6–9	4–7
Water temperature gauge unit to intake manifold	8–10	6–7
Water temperature sensor to intake manifold	20–40	14–29
Joint to intake manifold	20–40	14–29
Exhaust manifold cover to exhaust manifold	12–15	9–11
Air pipe assembly to exhaust manifold	70–100	51–72
Exhaust manifold to cylinder head	15–20	11–14
Exhaust manifold to front exhaust pipe	20–30	14–22
Front exhaust pipe to exhaust pipe mounting bracket	20–30	14–22
Front exhaust pipe to under catalytic converter	15–25	11–18
Under catalytic converter to center exhaust pipe	40–60	29–43
Hanger bracket to suspender	8–12	6–9
Suspender to frame	8–12	6–9
Center exhaust pipe to main muffler	20–30	14–22
Main muffler to hanger	5–10	4–7
Hanger to frame	5–10	4–7
Oxygen sensor	40–50	29–36

**SEALANTS AND ADHESIVES**

N11CD--

Items	Specified sealant and adhesive	Quantity
Thermo switch (threaded part)	3M Adhesive Nut Locking 4171 or equivalent	As required
Water temperature gauge unit (threaded part)	3M Adhesive Nut Locking 4171 or equivalent	As required
Water temperature sensor (threaded part)	3M Adhesive Nut Locking 4171 or equivalent	As required
Thermo valve assembly (threaded part)	3M Adhesive Nut Locking 4171 or equivalent	As required
Joint (threaded part)	3M Adhesive Nut Locking 4171 or equivalent	As required
Water temperature switch (threaded part)	3M Adhesive Nut Locking 4171 or equivalent	As required

**TROUBLESHOOTING**

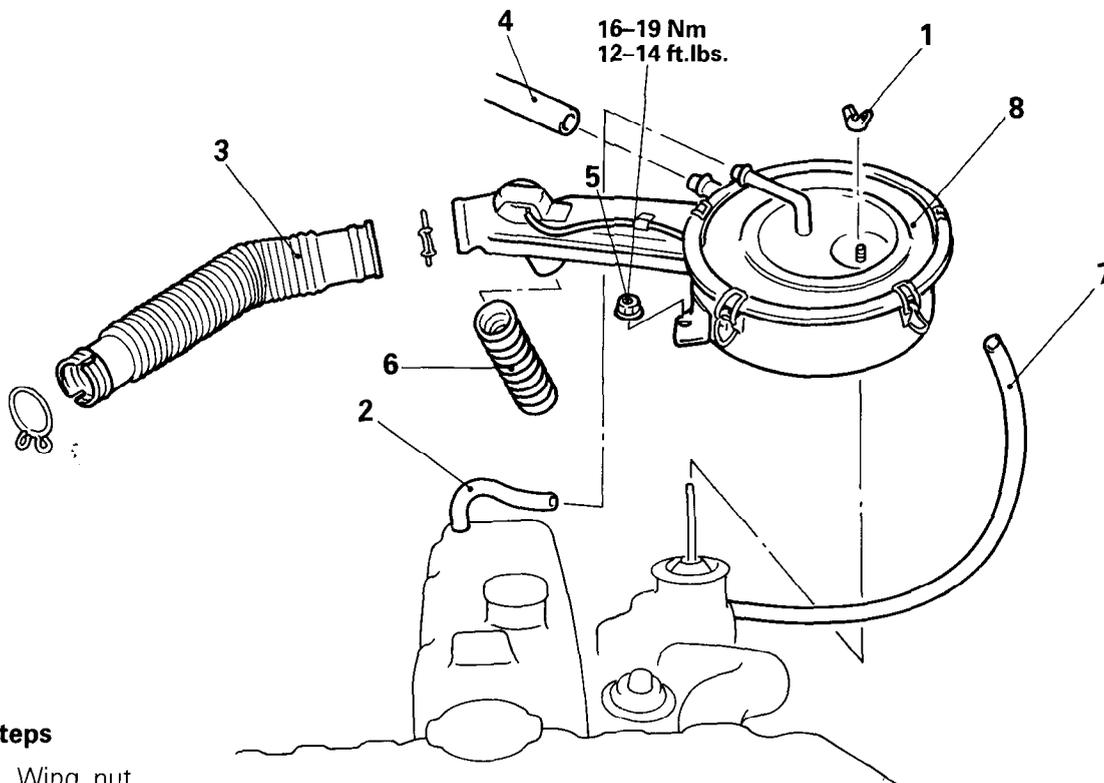
N11EAAA

Symptom	Probable cause	Remedy	Reference page
Exhaust gas leakage	Loose joints	Retighten	11-13
	Broken pipe or muffler	Repair or replace	11-13
Abnormal noise	Broken separator in muffler	Replace	11-13
	Broken rubber hangers or suspender	Replace	11-13
	Interference of pipe or muffler with vehicle body	Correct	11-13
	Broken pipe or muffler	Repair or replace	11-13

**AIR FILTER**

**REMOVAL AND INSTALLATION**

N11FA--



**Removal steps**

- 1. Wing nut
- ◆◆ 2. Connection of breather hose
- 3. Air duct
- 4. Connection of air hose
- 5. Air filter mounting nut
- 6. Heat duct
- 7. Connection of vacuum hose
- 8. Air filter

**NOTE**

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ : Refer to "Service Point of Installation".

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**SERVICE POINT OF INSTALLATION**

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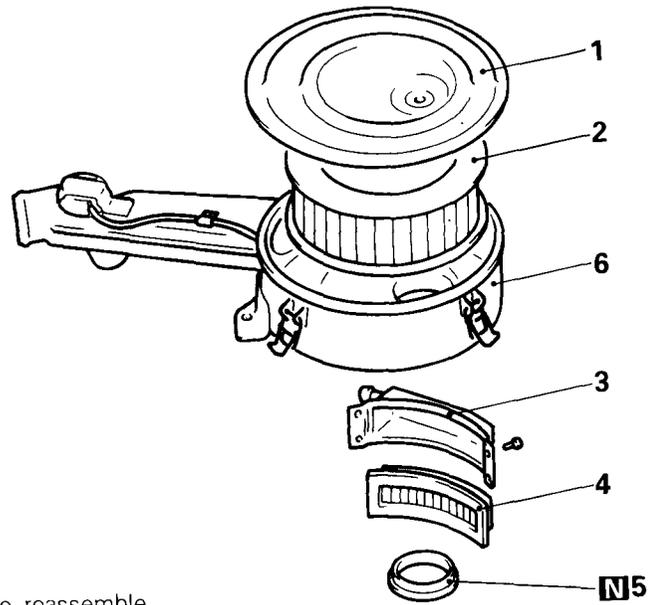
**2. INSTALLATION OF BREATHER HOSE**

**NOTE**

Be careful, when installing, not to apply oil etc. to the hose.

DISASSEMBLY AND REASSEMBLY

N11FEAA



**Disassembly steps**

1. Air filter cover
2. Air filter element
3. Secondary air case
4. Secondary air filter
5. Air filter gasket
6. Air filter body

NOTE

- (1) Reverse the disassembly procedures to reassemble.
- (2) **N**: Non-reusable parts

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## INTAKE MANIFOLD

## REMOVAL AND INSTALLATION

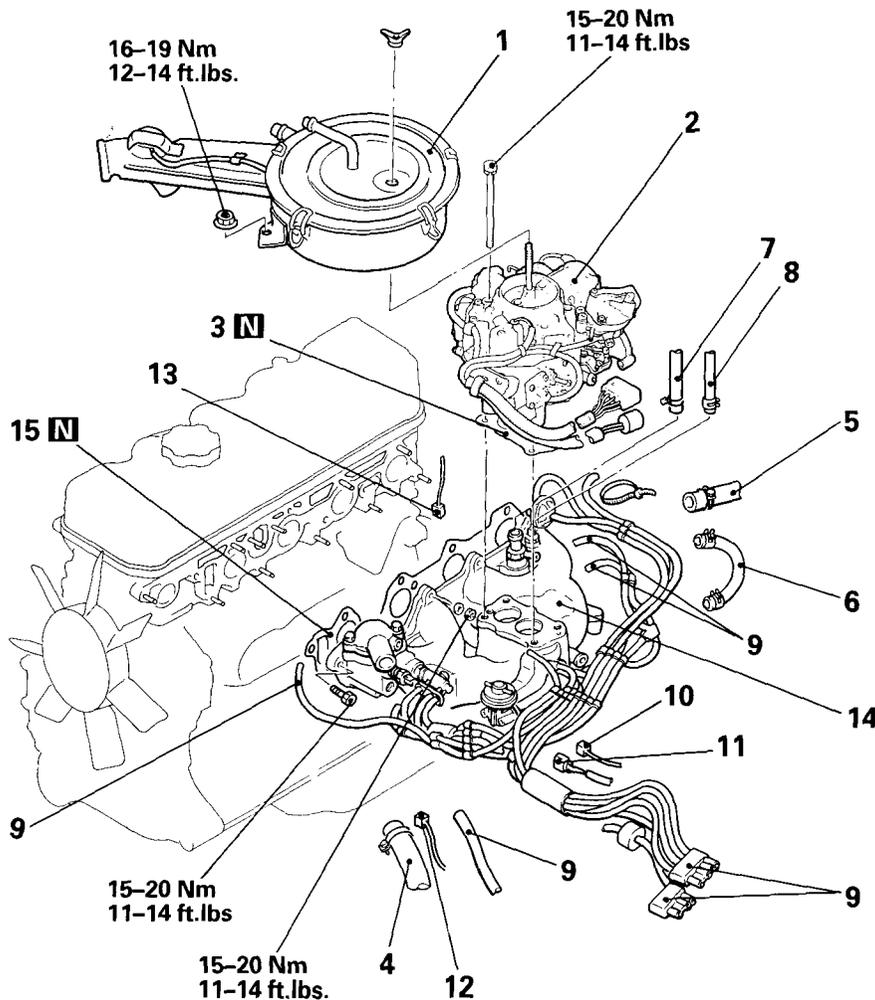
N11MA--

**Pre-removal Operation**

- Draining of Coolant (Refer to GROUP 0 LUBRICATION AND MAINTENANCE - Maintenance Service.)

**Post-installation Operation**

- Supplying of Coolant (Refer to GROUP 0 LUBRICATION AND MAINTENANCE - Maintenance Service.)
- Checking and adjustment of idling rpm and ignition timing (Refer to GROUP 9 ENGINE - Service Adjustment Procedures.)

**Removal steps**

- |       |   |   |
|-------|---|---|
| ◄◄ ◄◄ | 1. Air filter   | 11. Connection of water temperature sensor connector                                |
| ◄◄ ◄◄ | 2. Carburetor assembly  | 12. Connection of water temperature gauge unit connector                            |
|       | 3. Gasket   | 13. Connection of thermo switch connector (Vehicles with an automatic transmission) |
|       | 4. Connection of radiator upper hose  | 14. Intake manifold   |
|       | 5. Connection of water by-pass hose   | 15. Intake manifold gasket  |
|       | 6. Water hose   |   |
|       | 7. Connection of heater hose  |   |
|       | 8. Connection of brake booster vacuum hose  |   |
|       | 9. Connection of vacuum hose  |   |
|       | 10. Connection of water temperature switch connector (Vehicles with an air conditioner) |   |

**NOTE**

- (1) Reverse the removal procedures to reinstall.  
 (2) ◄◄ : Refer to "Service Points of Removal".  
 (3) ◄◄ : Refer to "Service Points of Installation".  
 (4) N : Non-reusable parts

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**SERVICE POINTS OF REMOVAL**

N11MBAD

**1. REMOVAL OF AIR FILTER**

Refer to P.11-4.

**2. REMOVAL OF CARBURETOR ASSEMBLY**

Refer to GROUP 14 FUEL SYSTEM – Carburetor.

**INSPECTION**

N11MCAD

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

**INTAKE MANIFOLD**

- (1) Check for damage or cracking of any part.
- (2) Check for obstruction of the negative pressure (vacuum) outlet port, and for obstruction of the water passage or gas passage.
- (3) Using a straight edge and a thickness gage, check for distortion of the cylinder head installation surface.

**Standard value : 0.15 mm (.006 in.) or less**

**Limit : 0.3 mm (.012 in.) or less**

**SERVICE POINTS OF INSTALLATION**

N11MDAC

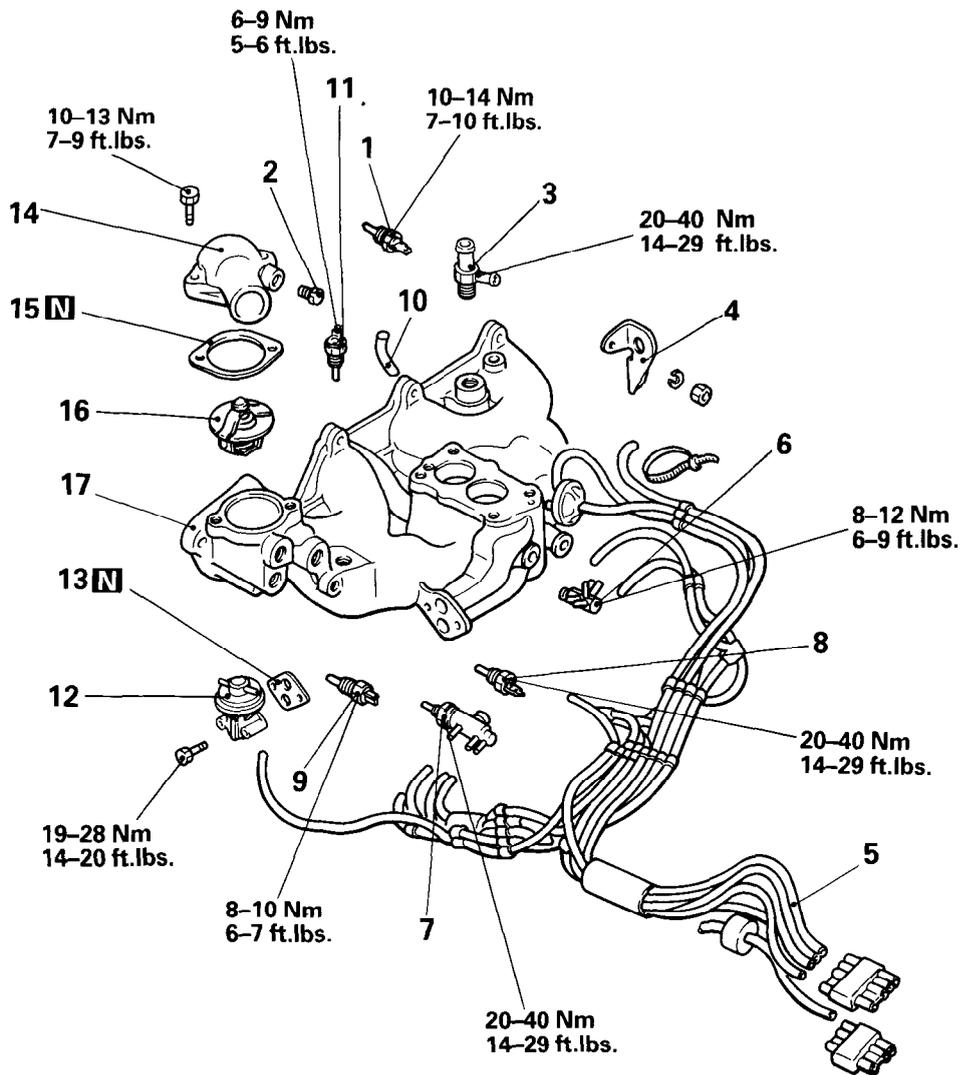
**2. INSTALLATION OF CARBURETOR ASSEMBLY**

Refer to GROUP 14 FUEL SYSTEM – Carburetor.

**1. INSTALLATION OF AIR FILTER**

Refer to P.11-4.

DISASSEMBLY AND REASSEMBLY



04W567

Disassembly steps

- ◆◆ 1. Water temperature switch (Vehicles with an air conditioner)
- ◆◆ 2. Plug (Vehicles without an air conditioner)
- ◆◆ 3. Joint
- ◆◆ 4. Engine hanger
- ◆◆ 5. Vacuum hose assembly
- ◆◆ 6. Joint
- ◆◆ 7. Thermo valve assembly
- ◆◆ 8. Water temperature sensor
- ◆◆ 9. Water temperature gauge unit
- ◆◆ 10. P.C.V. nipple
- ◆◆ 11. Thermo switch (Vehicles with an automatic transmission)
- ◆◆ 12. EGR valve assembly
- ◆◆ 13. EGR valve gasket
- ◆◆ 14. Water outlet fitting assembly
- ◆◆ 15. Gasket
- ◆◆ 16. Thermostat
- ◆◆ 17. Intake manifold

NOTE

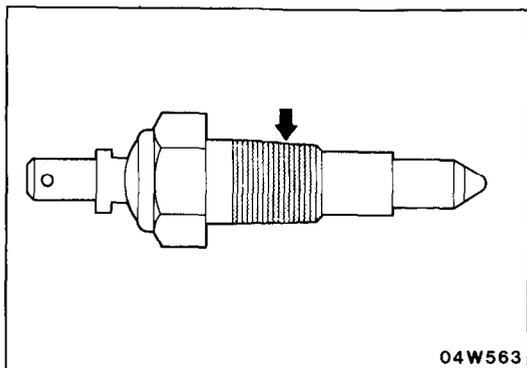
- (1) Reverse the disassembly procedures to reassemble.
- (2) ◆◆ : Refer to "Service Points of Reassembly."
- (3) **N** : Non-reusable parts

**SERVICE POINTS OF REASSEMBLY**

N11MHAB

**16. INSTALLATION OF THERMOSTAT**

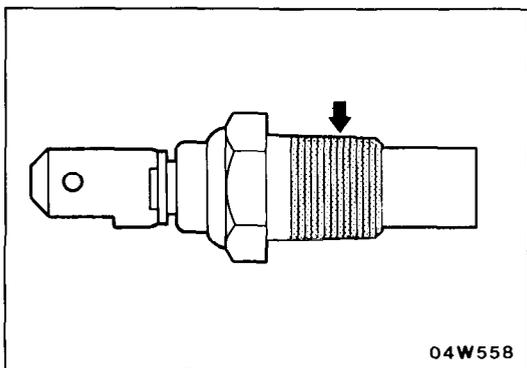
Refer to GROUP 7 COOLING – Thermostat



**11. APPLICATION OF ADHESIVE TO THERMO SWITCH**

Apply a coating of the specified adhesive to the threaded part, and then tighten at the specified torque.

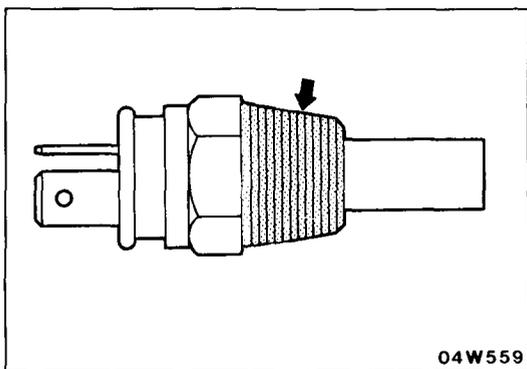
**Specified adhesive : 3M Adhesive Nut Locking 4171 or equivalent**



**9. APPLICATION OF ADHESIVE TO WATER TEMPERATURE GAUGE UNIT**

Apply a coating of the specified adhesive to the threaded part, and then tighten at the specified torque.

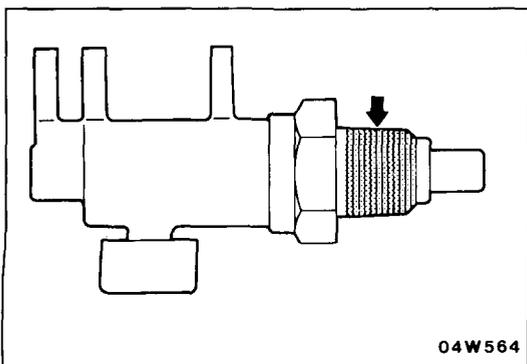
**Specified adhesive : 3M Adhesive Nut Locking 4171 or equivalent**



**8. APPLICATION OF ADHESIVE TO WATER TEMPERATURE SENSOR**

Apply a coating of the specified adhesive to the threaded part, and then tighten at the specified torque.

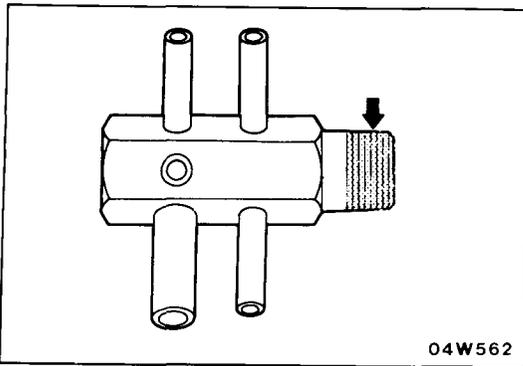
**Specified adhesive : 3M Adhesive Nut Locking 4171 or equivalent**



**7. APPLICATION OF SEALANT TO THERMO VALVE ASSEMBLY**

Apply a coating of the specified adhesive to the threaded part, and then tighten at the specified torque.

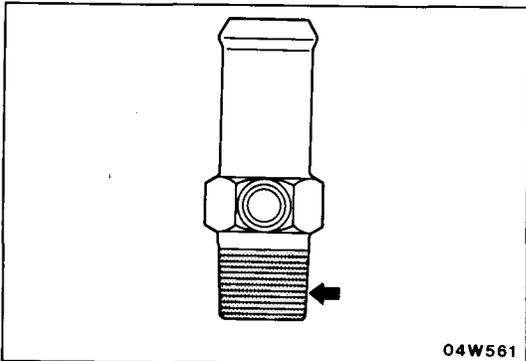
**Specified adhesive : 3M Adhesive Nut Locking 4171 or equivalent**



### 6. APPLICATION OF ADHESIVE TO JOINT

Apply a coating of the specified adhesive to the threaded part, and then tighten at the specified torque.

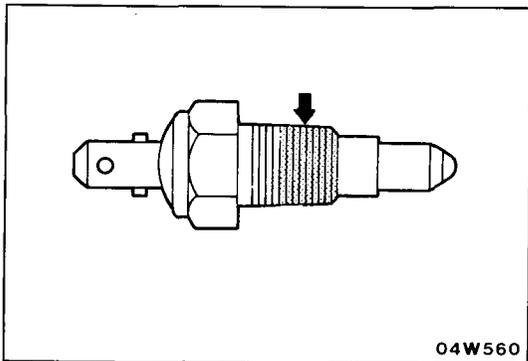
**Specified adhesive : 3M Adhesive Nut Locking 4171 or equivalent**



### 3. APPLICATION OF ADHESIVE TO JOINT

Apply a coating of the specified adhesive to the threaded part, and then tighten at the specified torque.

**Specified adhesive : 3M Adhesive Nut Locking 4171 or equivalent**



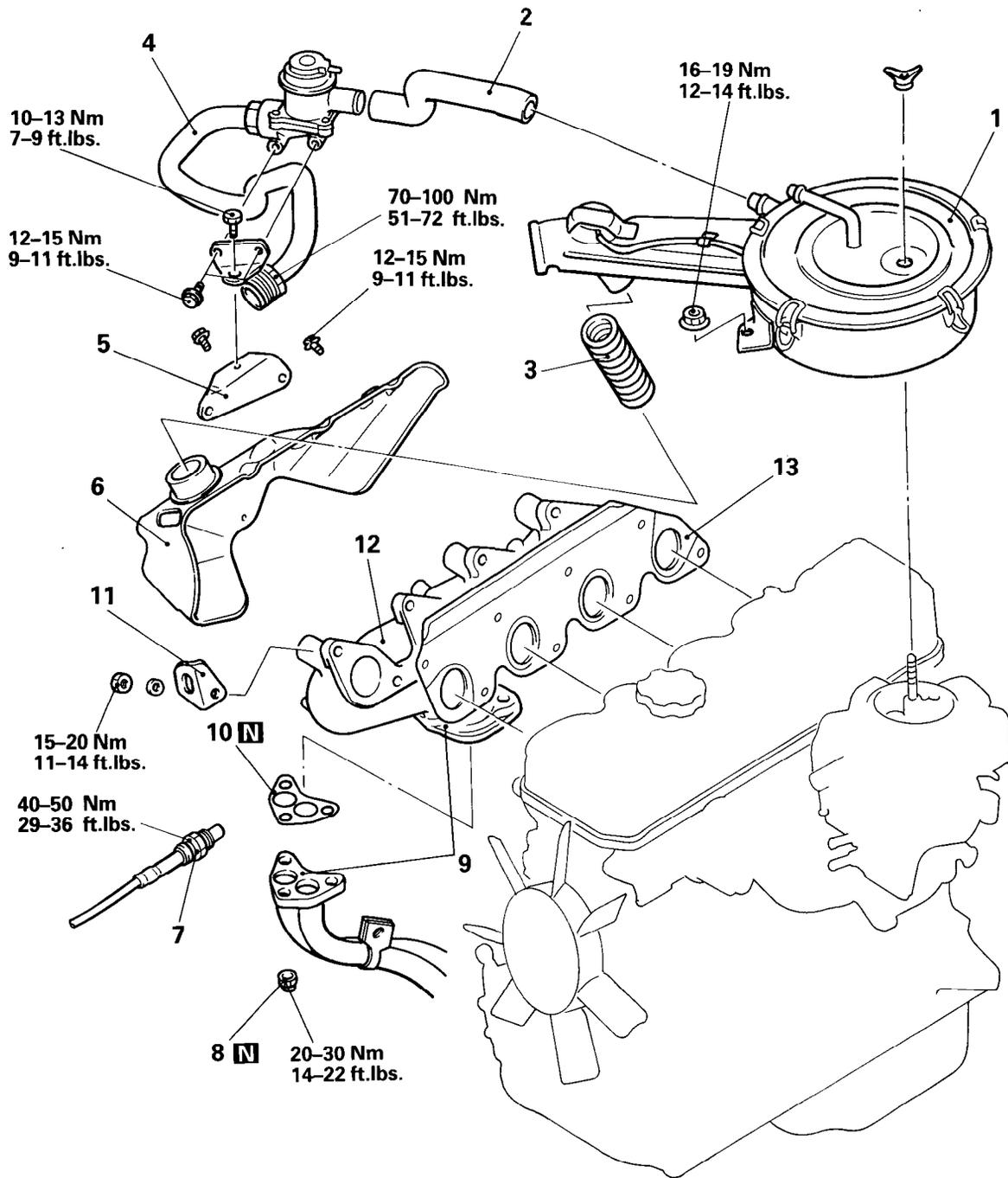
### 1. APPLICATION OF ADHESIVE TO WATER TEMPERATURE SWITCH

Apply a coating of the specified adhesive to the threaded part, and then tighten at the specified torque.

**Specified adhesive : 3M Adhesive Nut Locking 4171 or equivalent**

**EXHAUST MANIFOLD  
REMOVAL AND INSTALLATION**

N11NA--



**Removal steps**

- ◄◄ 1. Air filter
- ◄ 2. Air duct
- ◄ 3. Heat duct
- ◄ 4. Air pipe assembly
- ◄ 5. Reed valve B bracket
- ◄ 6. Exhaust manifold cover
- ◄ 7. Oxygen sensor
- ◄ 8. Self-locking nut
- ◄ 9. Connection of exhaust manifold and front exhaust pipe

- 10. Gasket
- 11. Engine hanger
- 12. Exhaust manifold
- 13. Exhaust manifold gasket

**NOTE**

- (1) Reverse the removal procedures to reinstall.
- (2) ◄◄ : Refer to "Service Points of Removal".
- (3) ◄ : Refer to "Service Points of Installation".
- (4) N : Non-reusable parts

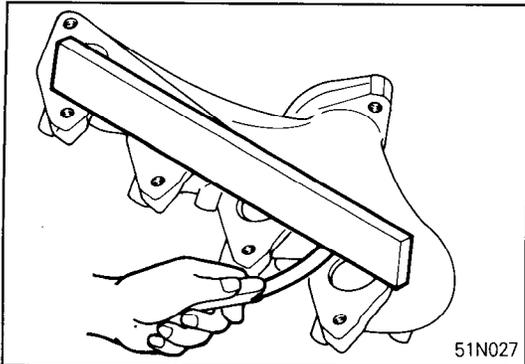
04W568

**SERVICE POINTS OF REMOVAL**

N11NBAA

**1. REMOVAL OF AIR FILTER**

Refer to P.11-4.

**INSPECTION**

N11NCAD

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

**EXHAUST MANIFOLD**

- (1) Check for damage or cracking of any part.
- (2) Check for obstruction of the negative pressure (vacuum) outlet port, and for obstruction of the water passage or gas passage.
- (3) Using a straight edge and a thickness gauge, check for distortion of the cylinder head installation surface.

**Standard value : 0.15 mm (.006 in.) or less**

**Limit : 0.3 mm (.012 in.) or less**

**EXHAUST MANIFOLD GASKET**

Check for flaking or damage of the gasket.

**SERVICE POINTS OF INSTALLATION**

N11NDAB

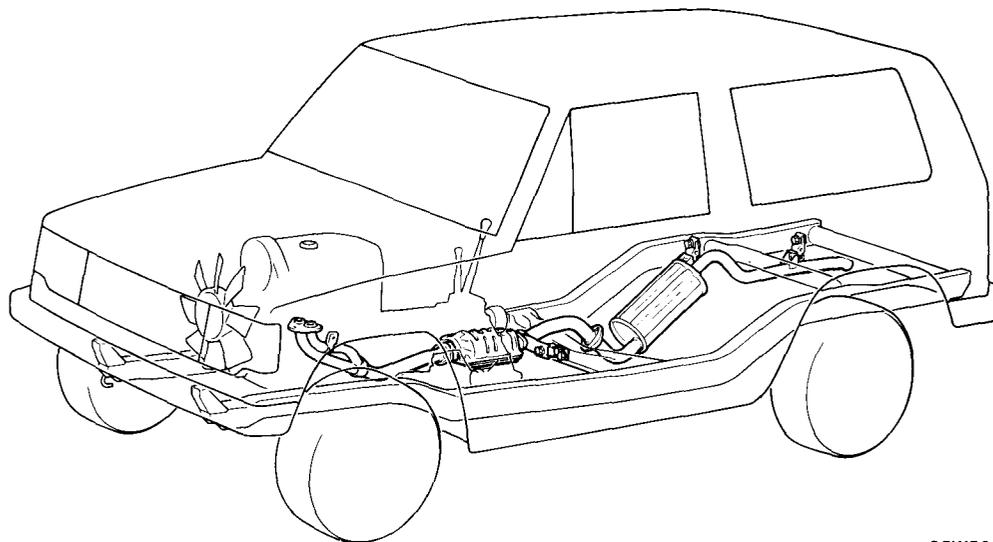
**1. INSTALLATION OF AIR FILTER**

Refer to P.11-4.

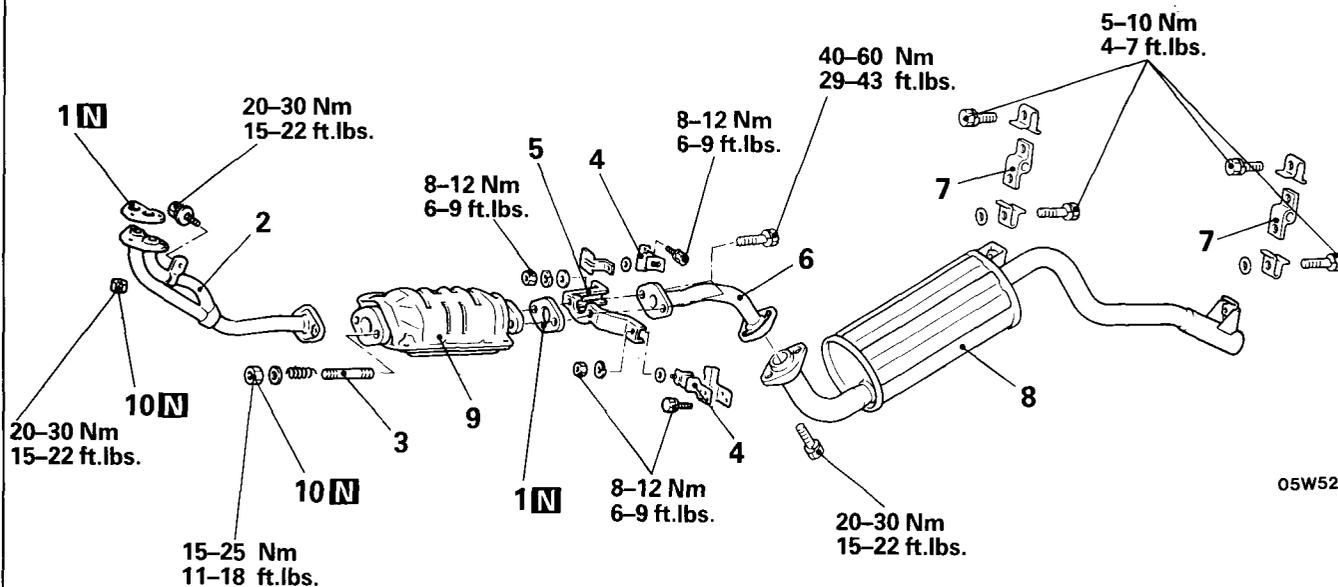
# EXHAUST PIPES AND MUFFLERS

## REMOVAL AND INSTALLATION

N11RA--



05W522



05W521

- 1. Gasket
- ◆◆ 2. Front exhaust pipe
- 3. Spring
- 4. Suspender
- 5. Hanger bracket
- ◆◆ 6. Center exhaust pipe
- 7. Hanger
- ◆◆ 8. Main muffler
- ◆◆ 9. Catalytic converter assembly
- 10. Self-locking nut

NOTE

- (1) ◆◆ : Refer to "Service Points of Installation".
- (2) N : Non-reusable parts

**INSPECTION**

N11RCAE

- Check the mufflers or pipes for corrosion or damage.
- Check the rubber hangers or suspenders for deterioration or damage.
- Check for gas leakage from mufflers or pipes.

**SERVICE POINTS OF INSTALLATION**

N11RDAE

**2. INSTALLATION OF FRONT EXHAUST PIPE/6. CENTER EXHAUST PIPE/8. MAIN MUFFLER /9. CATALYTIC CONVERTER ASSEMBLY**

- (1) Temporarily install the front exhaust pipe, the catalytic converter assembly, the center exhaust pipe, and the main muffler in that order.

**Caution**

**With temporarily tightened, check to be sure there is no distortion of the hangers.**

- (2) After fully tightening each exhaust pipe and main muffler, check to be sure there is no contact with the chassis at any place.