

## GROUP 15

# INTAKE AND EXHAUST

### **GENERAL**

#### **OUTLINE OF CHANGES**

The following maintenance service procedures have been established to correspond to the addition of vehicles with 4G9-GDI engine. Maintenance service procedures not listed below are the same as before.

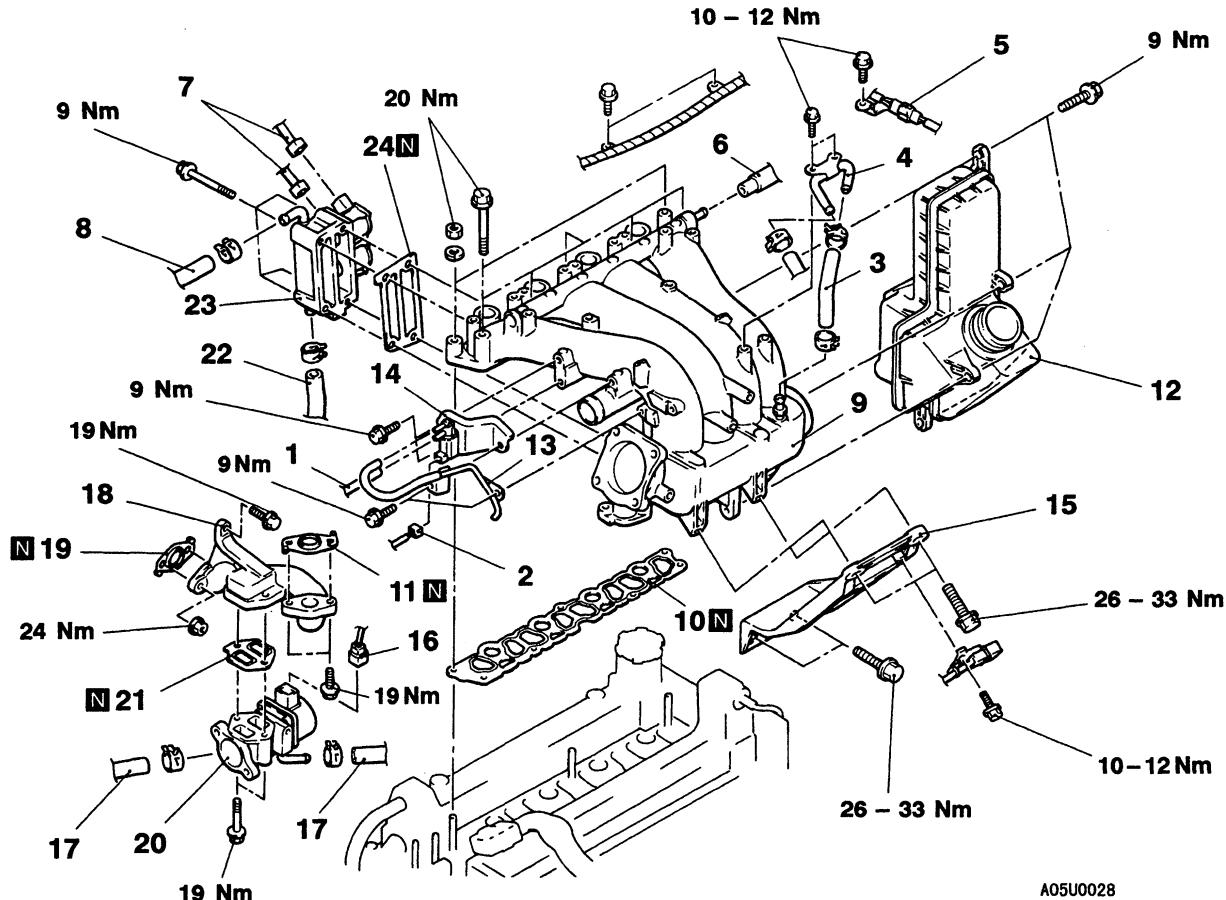
## INTAKE MANIFOLD

### REMOVAL AND INSTALLATION

#### Pre-removal and Post-installation Operation

- Engine Coolant Draining and Supplying
- Air Intake Hose Assembly Removal and Installation
- Engine Cover Removal and Installation

- Ignition Coil Removal and Installation
- Throttle Body Removal and Installation  
(Refer to GROUP 13J.)



A05U0028

#### Intake manifold removal steps

1. Vacuum hose connection
2. Purge control solenoid valve connector
3. Brake booster vacuum hose connection
4. Brake booster vacuum pipe
5. Connector bracket (for crank angle sensor)
6. PCV hose connection
7. Air by-pass solenoid valve connector
8. Water hose connection
9. Intake manifold assembly
10. Intake manifold gasket
11. EGR pipe gasket
12. Surging resonator
13. Vacuum pipe and hose assembly
14. Purge control solenoid valve
15. Intake manifold stay

#### EGR valve assembly removal steps

9. Intake manifold assembly
16. EGR servo connector
17. Water hose connection
18. EGR valve support
19. EGR pipe gasket
20. EGR valve assembly
21. EGR valve gasket

#### Air by-pass valve removal steps

9. Intake manifold assembly
22. Water hose connection
23. Air by-pass valve
24. Air by-pass valve gasket

## INSPECTION

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

### INTAKE MANIFOLD CHECK

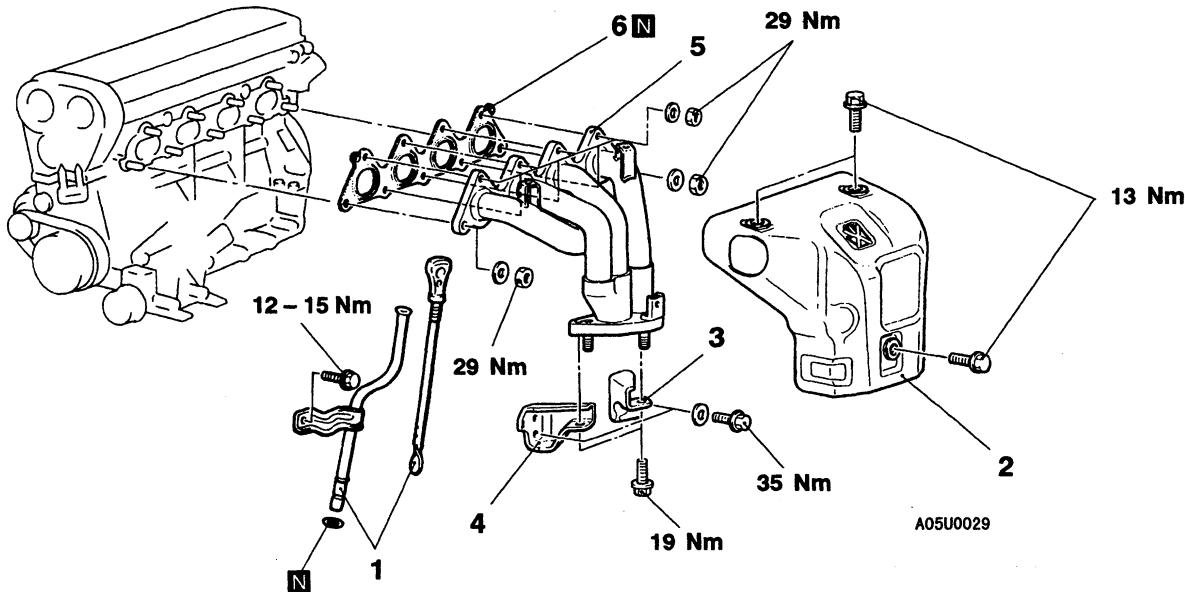
1. Check for damage or cracking of any part.
2. Check for obstruction of the negative pressure (vacuum) outlet port, and for obstruction of the water passage or gas passage.
3. Using a straight edge and thickness gauge, check for distortion of the cylinder head installation surface.

**Standard value: 0.15 mm or less**

**Limit: 0.20 mm**

**EXHAUST MANIFOLD****REMOVAL AND INSTALLATION**

**Pre-removal and Post-installation Operation**  
Front Exhaust Pipe Removal and installation  
(Refer to P.15-5.)

**Removal steps**

1. Oil level gauge guide assembly
2. Heat protector
3. Exhaust manifold bracket (A)
4. Exhaust manifold bracket (B)
5. Exhaust manifold
6. Exhaust manifold gasket

**INSPECTION****EXHAUST MANIFOLD CHECK**

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

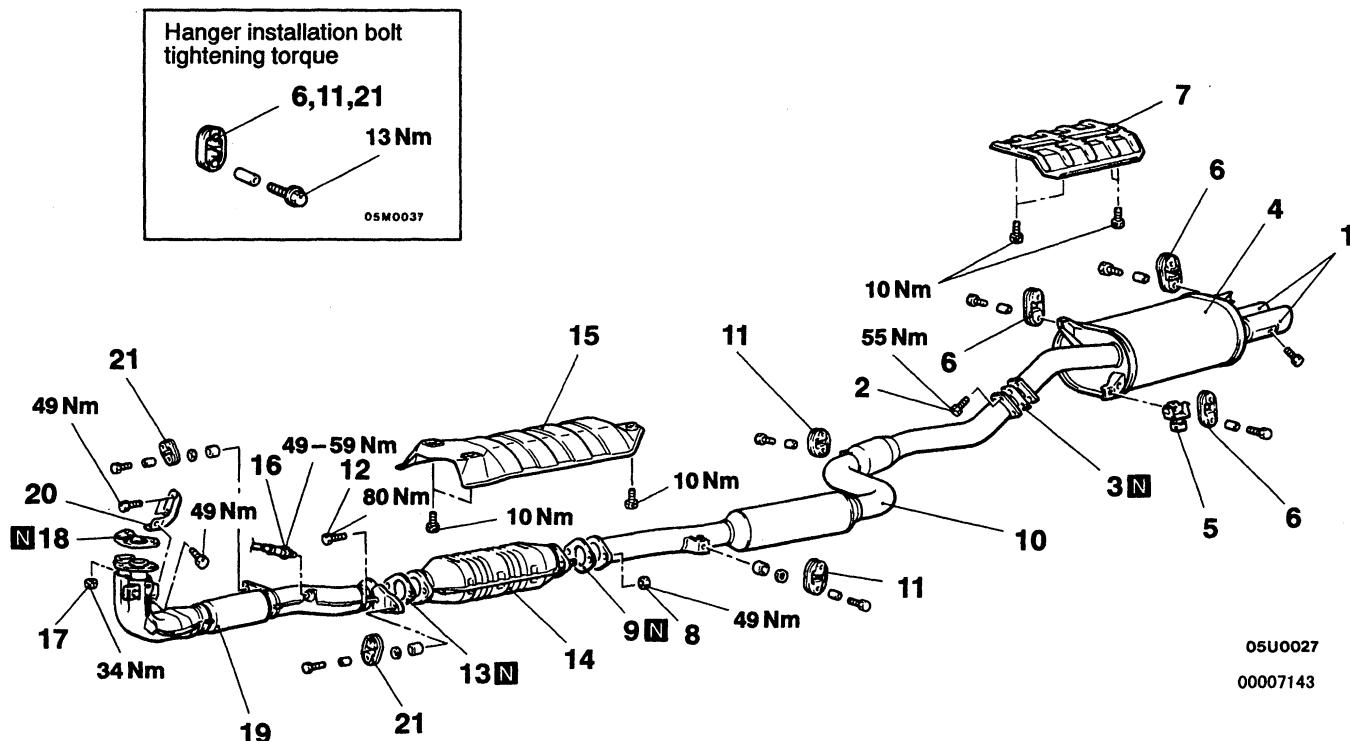
**Standard value: 0.15 mm or less**

**Limit: 0.20 mm**

# EXHAUST PIPE AND MAIN MUFFLER

## REMOVAL AND INSTALLATION

**Pre-removal and Post-installation Operation**  
Under Cover Removal and Installation



### Main muffler removal steps

1. Mouldings
2. Bolt
3. Gasket
4. Main muffler
5. Dynamic damper
6. Hanger
7. Rear floor heat protector panel

### Center exhaust pipe removal steps

2. Bolt
3. Gasket
8. Self locking nuts
9. Gasket
10. Center exhaust pipe
11. Hanger
12. Bolt
13. Gasket

14. Catalytic converter
15. Front floor heat protector panel

### Front exhaust pipe removal steps

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12. Bolt
13. Gasket
16. Oxygen sensor
17. Self locking nuts
18. Gasket
19. Front exhaust pipe
20. Front exhaust pipe bracket
21. Hanger

### NOTE

Removal and installation service points are the same as before.

**NOTES**