
INTAKE AND EXHAUST

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15109000106

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GENERAL INFORMATION

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The intake manifold is made of an aluminium alloy, and the shape provides an increased intake inertia effect and has a good volumetric efficiency.

For 4G92 engine, the exhaust manifold is made of a stainless steel. The exhaust pipe is divided into four parts for MVV and three parts for the other models, respectively.

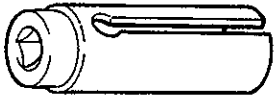
SERVICE SPECIFICATION

15100030081

Items	Standard value	Limit
Manifold distortion of the installation surface mm	0.15 or less	0.20

SPECIAL TOOL

15100060073

Tool	Number	Name	Use
	MD998770	Oxygen sensor wrench	Removal/Installation of oxygen sensor

ON-VEHICLE SERVICE

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INTAKE MANIFOLD VACUUM CHECK

Refer to GROUP 11A, B – On-vehicle Service.

INTAKE MANIFOLD

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REMOVAL AND INSTALLATION

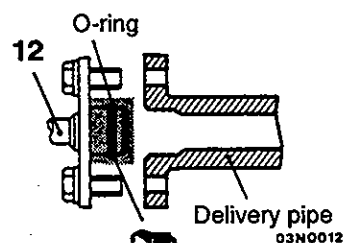
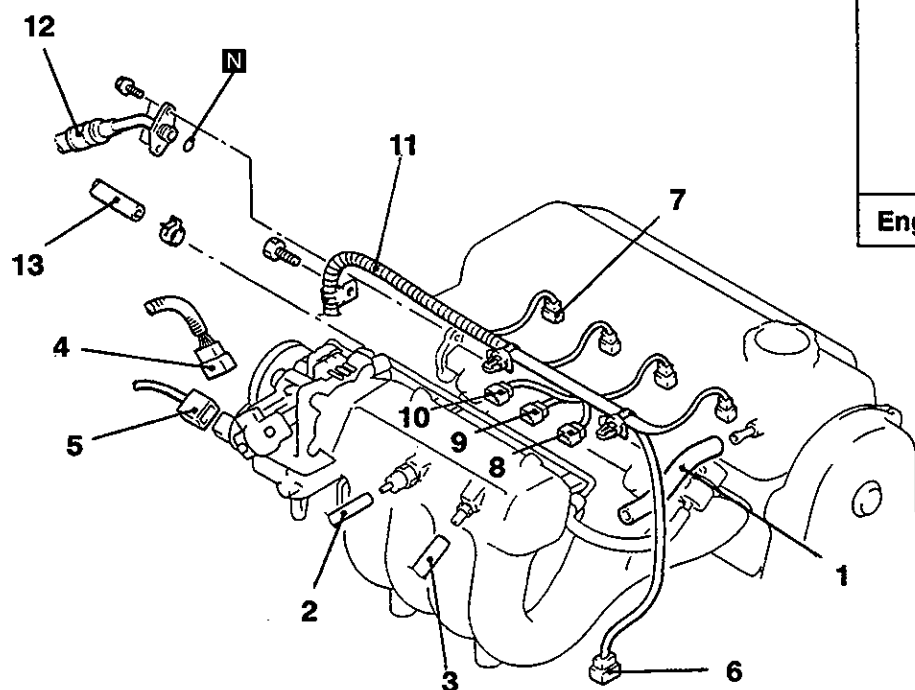
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Pre-removal Operation

- Fuel Discharge Prevention (Refer to GROUP 13A – On-vehicle Service.)
- Engine Coolant Draining (Refer to GROUP 14 – On-vehicle Service.)
- Air Cleaner Removal
- Throttle Body Removal (Refer to GROUP 13A)
- Thermostat Case Assembly Removal (Refer to GROUP 14)

Post-Installation Operation

- Engine Coolant Supplying (Refer to GROUP 14 – On-vehicle Service.)
- Accelerator Cable Adjustment (Refer to GROUP 17 – On-vehicle Service.)
- Thermostat Case Assembly Installation (Refer to GROUP 14)
- Throttle Body Installation (Refer to GROUP 13A)
- Air Cleaner Installation



Engine oil

05M0033

00004476

Removal steps

1. PCV hose
2. Vacuum hose connection
3. Brake booster vacuum hose
4. TPS connector
5. ISC connector
6. Oxygen sensor connector
7. Injector connector
8. Intake air temperature sensor connector

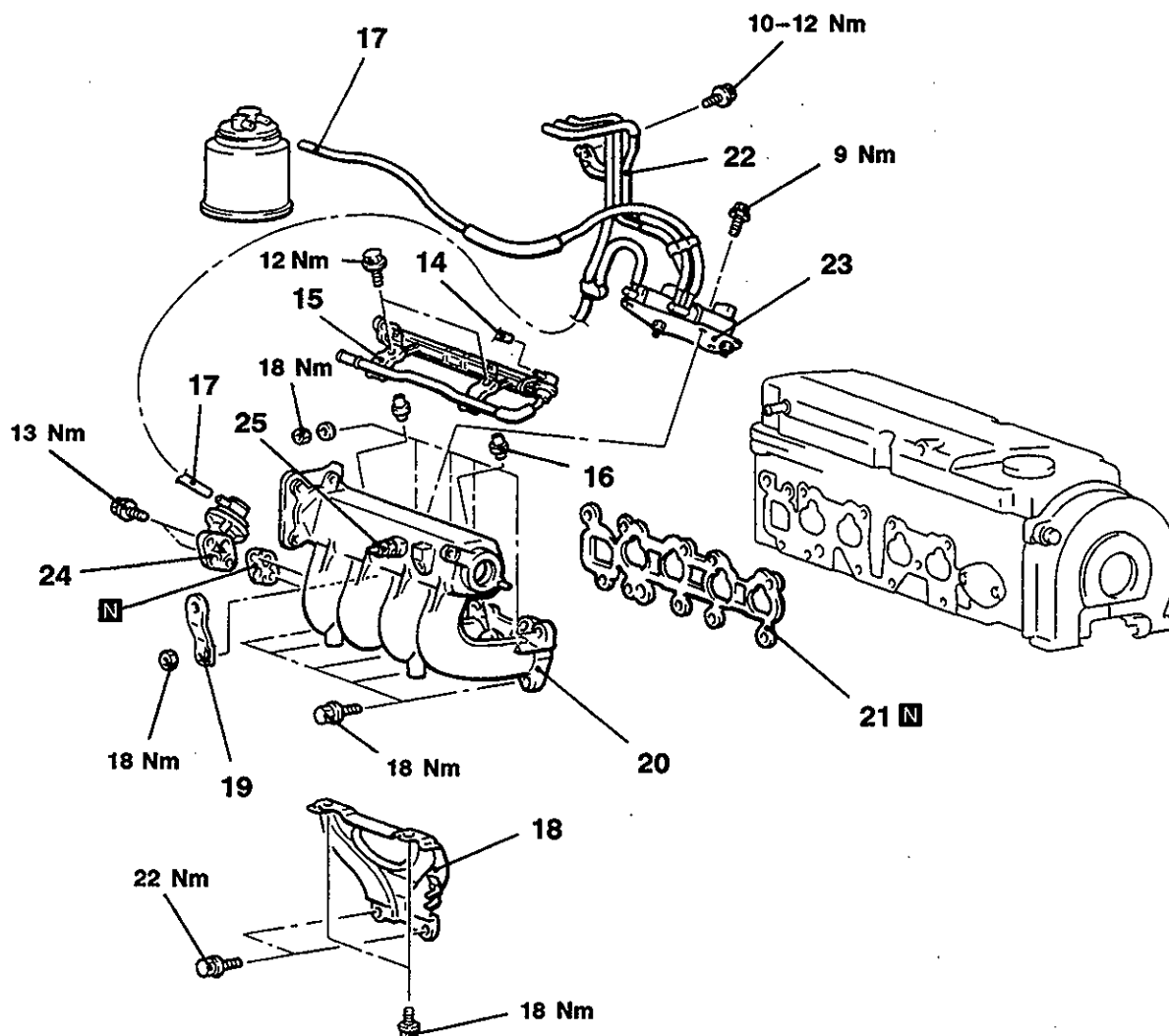
9. Purge control solenoid valve connector

10. EGR solenoid valve connector

11. Control wiring harness

12. High-pressure fuel hose connection

13. Fuel return hose connection



A05M0026



- 14. Vacuum hose connection
- 15. Delivery pipe, injector and pressure regulator assembly
- 16. Insulator
- 17. Vacuum hose connection
- 18. Intake manifold stay
- 19. Engine hanger

- 20. Intake manifold
- 21. Intake manifold gasket
- 22. Vacuum pipe and hose assembly
- 23. Solenoid valve assembly
- 24. EGR valve
- 25. Gas filter

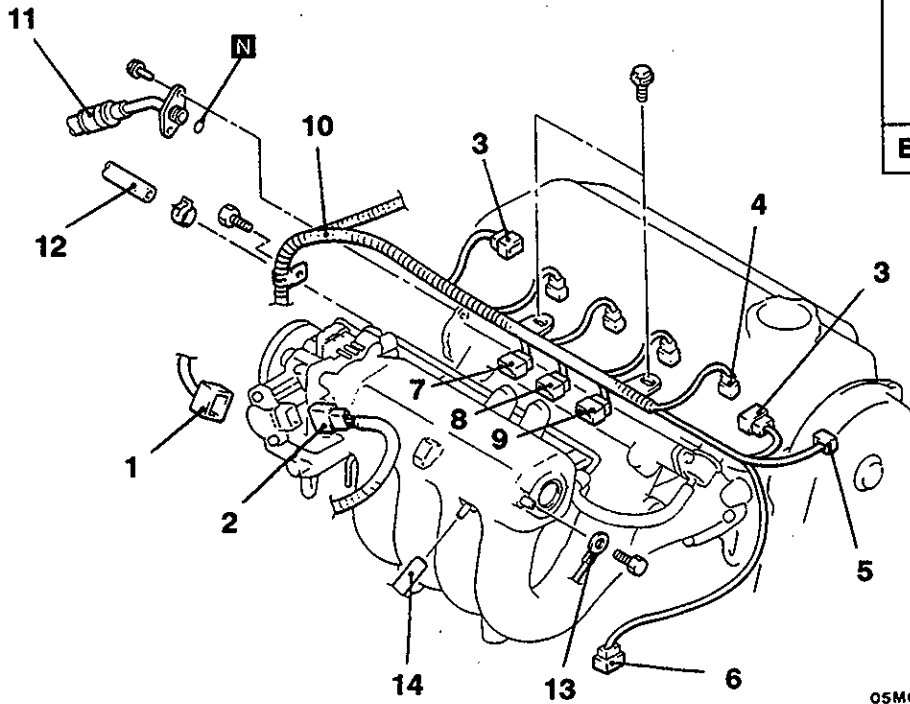
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Pre-removal Operation

- Fuel Discharge Prevention (Refer to GROUP 13A – On-vehicle Service.)
- Engine Coolant Draining (Refer to GROUP 14 – On-vehicle Service.)
- Air Cleaner Removal
- Throttle body Removal (Refer to GROUP 13A)

Post-Installation Operation

- Engine Coolant Supplying (Refer to GROUP 14 – On-vehicle Service.)
- Accelerator Cable Adjustment (Refer to GROUP 17 – On-vehicle Service.)
- Throttle Body Installation (Refer to GROUP 13A)
- Air Cleaner Installation

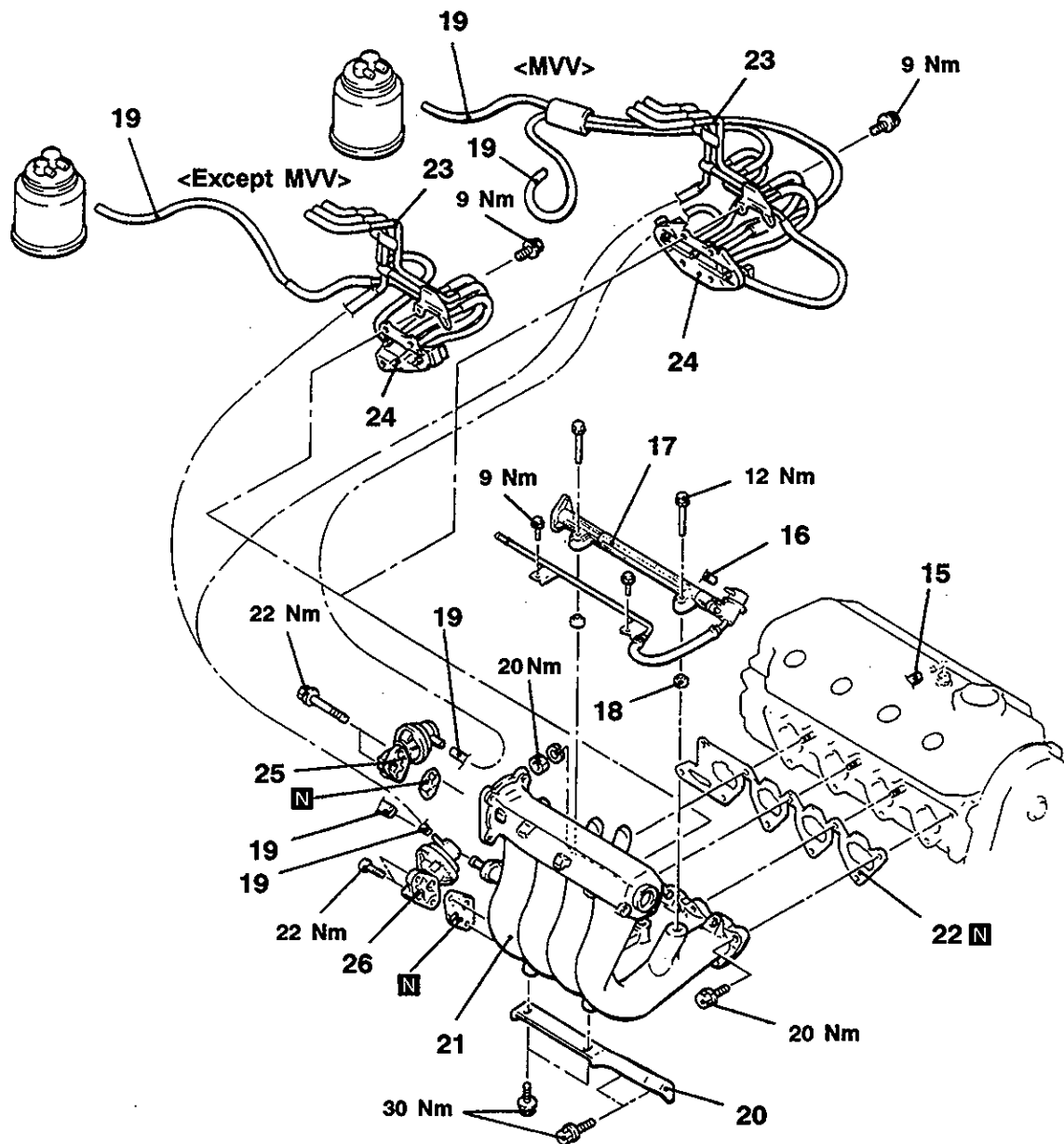


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Removal steps

1. ISC connector
2. TPS connector
3. Ignition coil connector
4. Injector connector
5. Crank angle sensor connector
6. Oxygen sensor <except MVV>
7. Air bypass solenoid valve connector <MVV>
8. Purge control solenoid valve connector
9. EGR solenoid valve connector
10. Control wiring harness
- ▶◀ 11. High-pressure fuel hose connection
12. Fuel return hose connection
13. Earth wire
14. Brake booster vacuum hose



A05M0025



- 15. PCV hose
- 16. Vacuum hose connection
- 17. Delivery pipe injector and pressure regulator assembly
- 18. Insulator
- 19. Vacuum hose connection
- 20. Intake manifold stay

- 21. Intake manifold
- 22. Intake manifold gasket
- 23. Vacuum pipe and hose assembly
- 24. Solenoid valve assembly
- 25. Air bypass solenoid valve <MVV>
- 26. EGR valve

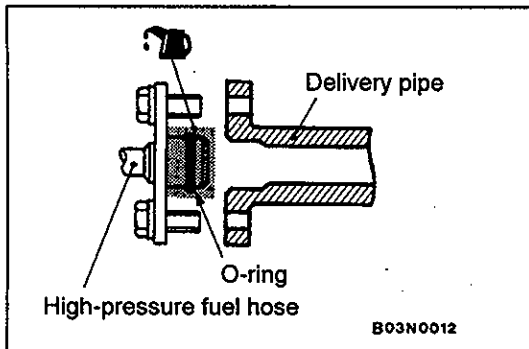
REMOVAL SERVICE POINT

◀A▶ DELIVERY PIPE, INJECTOR AND PRESSURE REGULATOR REMOVAL

Remove the delivery pipe (with the injectors and pressure regulator attached to it).

Caution

Care must be taken, when removing the delivery pipe, not to drop the injector.



INSTALLATION SERVICE POINT

▶A◀ HIGH-PRESSURE FUEL HOSE INSTALLATION

1. When connecting the high-pressure fuel hose to the delivery pipe, apply a small amount of new engine oil to the O-ring and then insert the high-pressure fuel hose, being careful not to damage the O-ring.

Caution

Be careful not to let any engine oil get into the delivery pipe.

2. While turning the high-pressure fuel hose to the left and right, install it to the delivery pipe.
3. Check to be sure that the injector turns smoothly. If it does not turn smoothly, the O-ring may be trapped, remove the high-pressure fuel hose and then re-insert it into the delivery pipe and check once again.

INSPECTION

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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

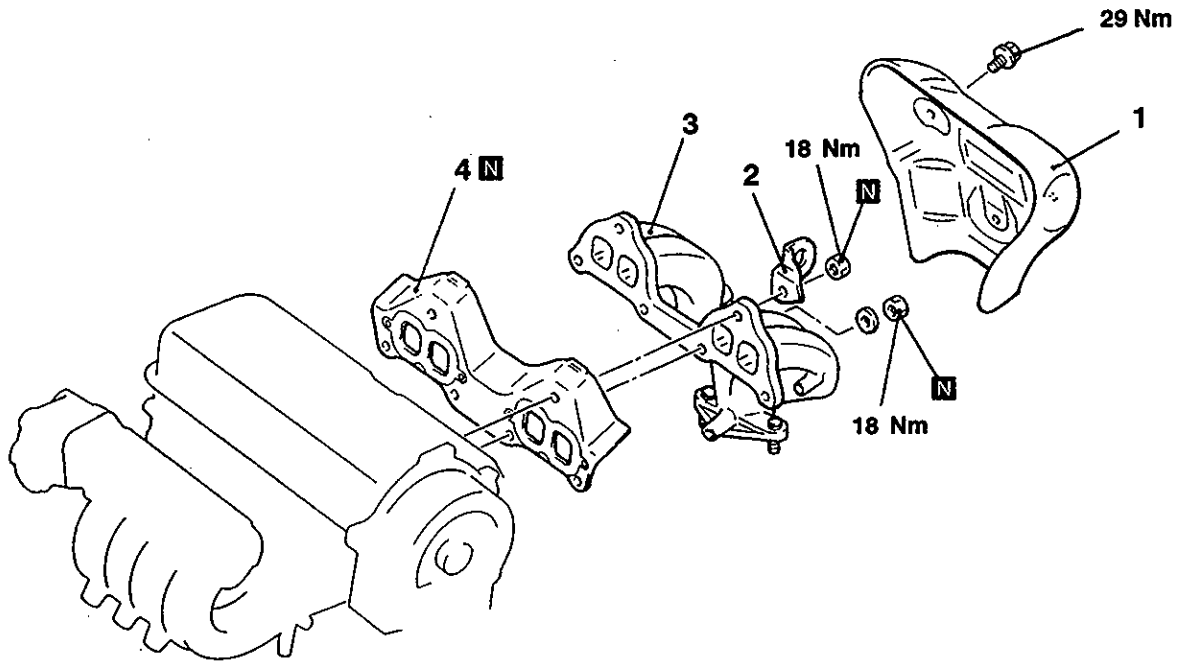
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REMOVAL AND INSTALLATION

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Pre-removal and Post-installation Operation

- Front Exhaust Pipe Removal and Installation
(Refer to P.15-10.)



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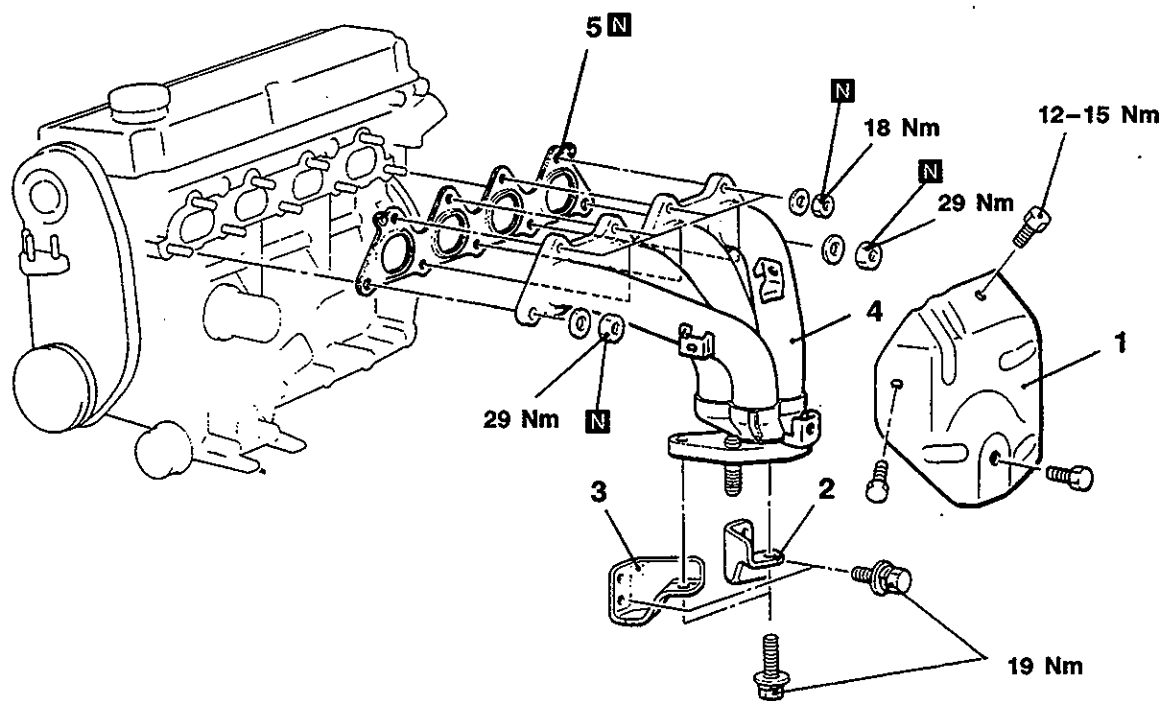
Removal steps

1. Exhaust manifold cover
2. Engine hanger
3. Exhaust manifold
4. Exhaust manifold gasket

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Pre-removal and Post-installation Operation

- Front Exhaust Pipe Removal and Installation
(Refer to P.15-10.)



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Removal steps

1. Exhaust manifold cover
2. Exhaust manifold bracket (A)
3. Exhaust manifold bracket (B)
4. Exhaust manifold
5. Exhaust manifold gasket

INSPECTION

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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

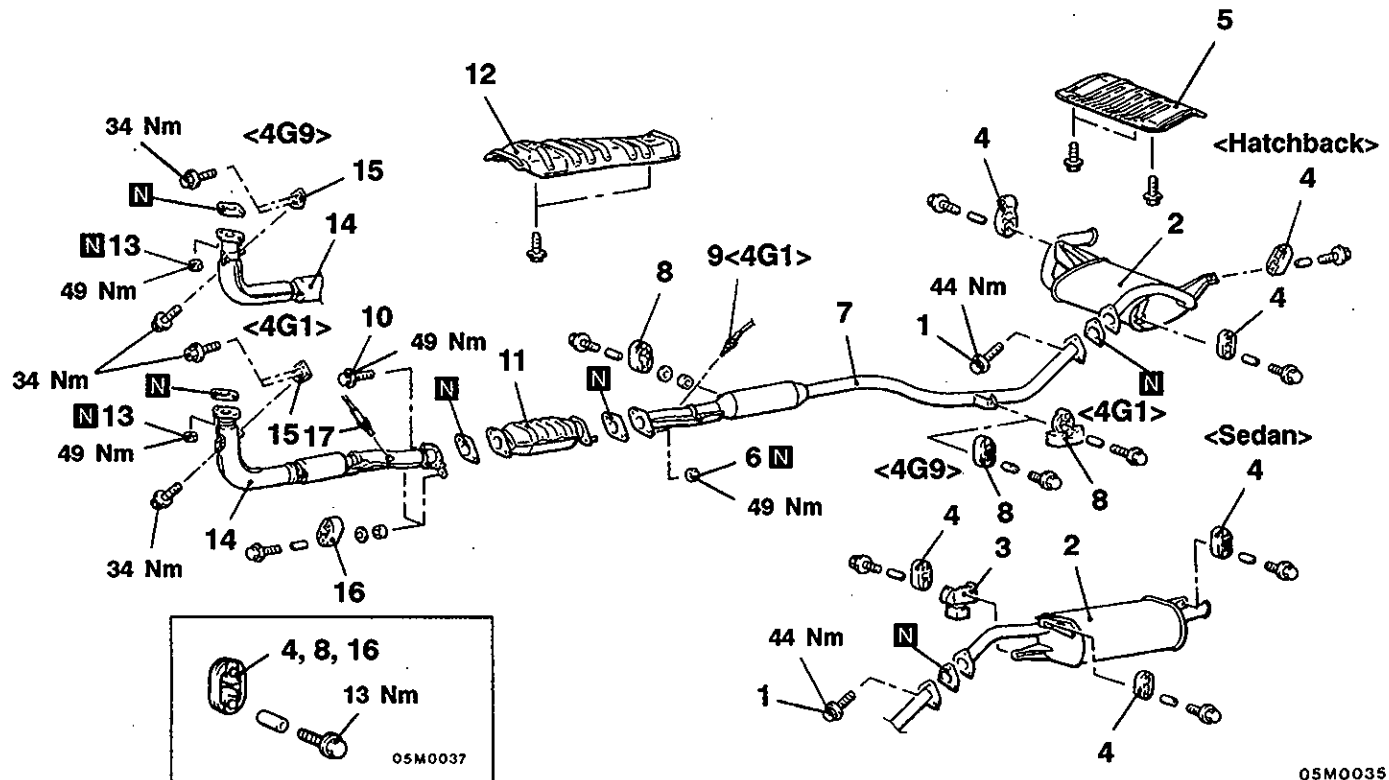
Limit: 0.20 mm

EXHAUST PIPE AND MAIN MUFFLER

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REMOVAL AND INSTALLATION

<Except MVV>

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Main muffler removal steps

1. Bolt
2. Main muffler
3. Dynamic damper <Sedan>
4. Hanger
5. Rear floor heat protector panel <Hatchback>

Front exhaust pipe removal steps

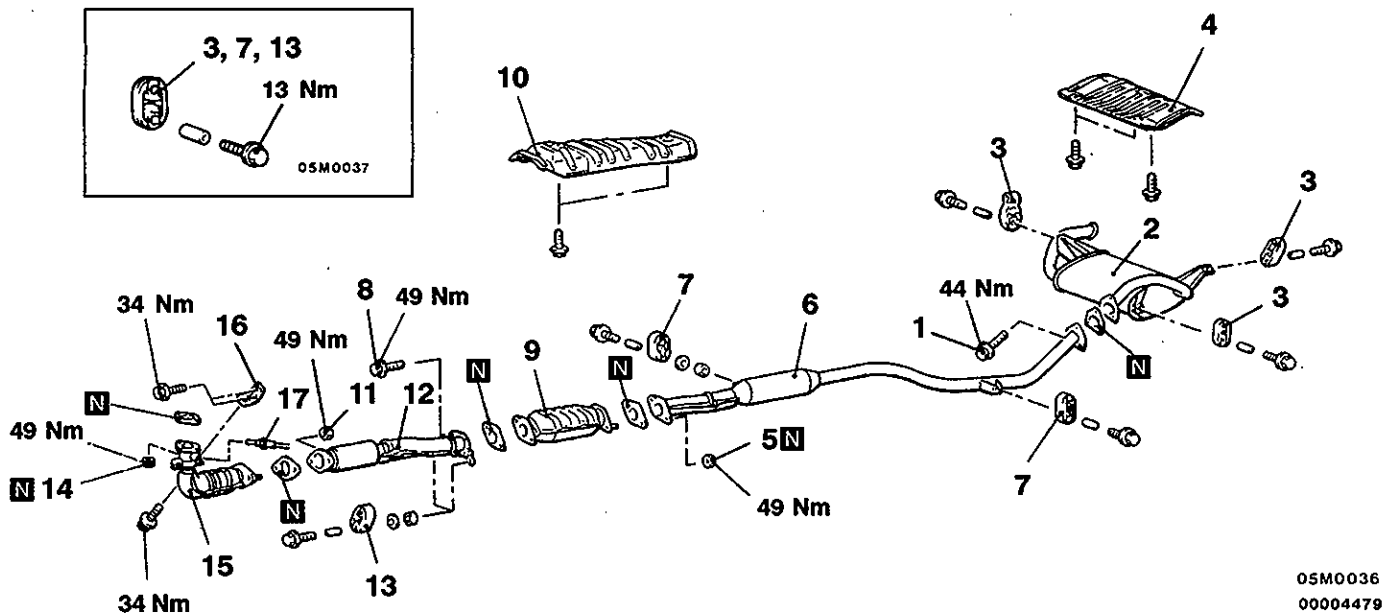
10. Bolt
13. Self locking nuts
14. Front exhaust pipe
15. Front exhaust pipe bracket
16. Hanger
17. Oxygen sensor



Center exhaust pipe removal steps

1. Bolt
6. Self locking nuts
7. Center exhaust pipe
8. Hanger
9. Oxygen sensor <4G1>
10. Bolt
11. Catalytic converter
12. Front floor heat protector panel

<MVV>



Main muffler removal steps

1. Bolt
2. Main muffler
3. Hanger
4. Rear floor heat protector panel

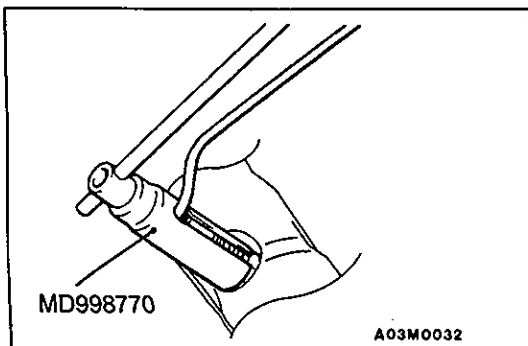
Center exhaust pipe removal steps

1. Bolt
5. Self locking nuts
6. Center exhaust pipe
7. Hanger
8. Bolt

9. Catalytic converter
10. Front floor heat protector panel

Front exhaust pipe removal steps

8. Bolt
11. Self locking nuts
12. Front exhaust pipe
13. Hanger
14. Self locking nuts
15. Front catalytic converter
16. Front exhaust pipe bracket
17. Oxygen sensor



REMOVAL SERVICE POINT

◀A▶ OXYGEN SENSOR REMOVAL

INSTALLATION SERVICE POINT

▶A◀ OXYGEN SENSOR INSTALLATION

NOTES