
INTAKE AND EXHAUST

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120002519

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	 Refer to GROUP 17	

15-2 INTAKE AND EXHAUST – Service Specifications/Special Tool/Sealant

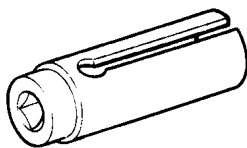
SERVICE SPECIFICATIONS

120002308

Items		Standard value	Limit
Waste gate actuator activation pressure kPa	Panel van and window van	Approx. 83	–
	Wagon	Approx. 92	–
Air temperature switch °C <Vehicles with intercooler turbocharger>	OFF → ON	57 or more	–
	ON → OFF	45 or less	–
Manifold distortion of the installation surface mm		0.15 or less	0.20

SPECIAL TOOL

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

SEALANT

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Item	Specified sealant	Remark
Thermo valve <4G63 (Carburettor)>	3M Nut Locking Part No. 4171 or equivalent	Drying sealant
Water outlet fitting <4G63, 4G64>	MITSUBISHI GENUINE PART MD970389 or equivalent	Semi-drying sealant

SERVICE ADJUSTMENT PROCEDURES

INTAKE MANIFOLD VACUUM INSPECTION <4G6>

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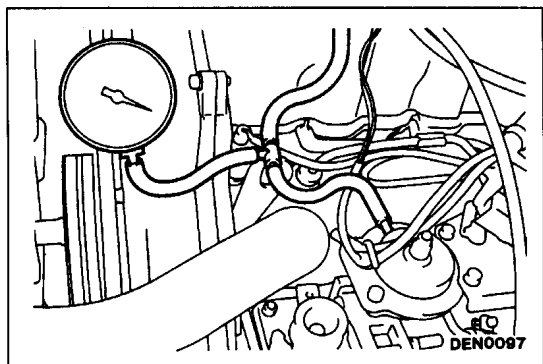
Refer to GROUP 11D–Service Adjustment Procedures.

TURBOCHARGER SUPERCHARGING INSPECTION <4D56>

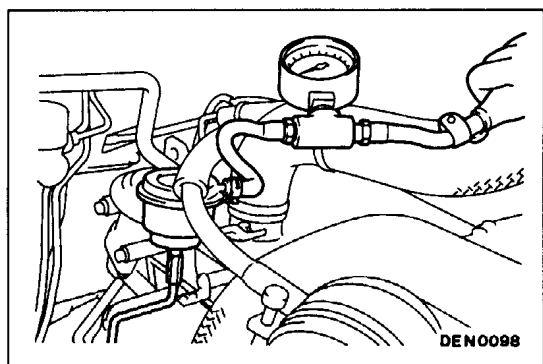
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Caution

Conduct the driving test in a location where driving at full acceleration can be done with safety. Two persons should be in the vehicle when the test is conducted; the person in the passenger seat should read the indications shown by the pressure meter.



1. Remove the boost compensator hose from the fuel injection pump, and install a pressure gauge as shown in the illustration.
2. Drive at full-throttle acceleration in second gear and then measure the supercharging when the engine speed is about 3,000 r/min.
3. When the indicated supercharging does not become positive pressure, check the following items.
 - Malfunction of the waste gate actuator.
 - Leakage of supercharging pressure.
 - Malfunction of the turbocharger.
4. When the indicated supercharging is 84 kPa or more, supercharging control may be faulty, therefore check the followings.
 - Disconnection or cracks of the waste gate actuator rubber hose.
 - Malfunction of the waste gate actuator.
 - Malfunction of the waste gate valve.



WASTE GATE ACTUATOR INSPECTION <4D56>

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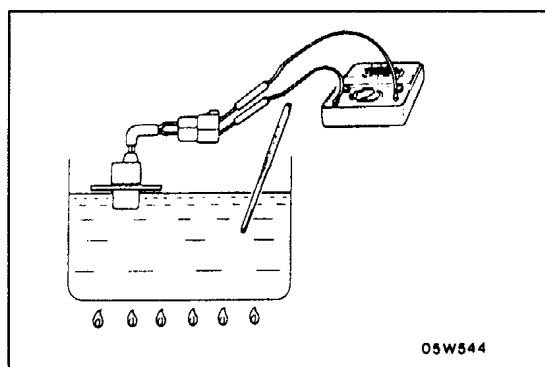
1. Connect a manual pump (pressure-application type) to nipple A.
2. While gradually applying pressure, check the pressure that begins to activate (approx. 1 mm stroke) the waste gate actuator rod.

Standard value: Approx. 83 kPa <Panel van and window van>
Approx. 92 kPa <Wagon>

Caution

In order to avoid damage to the diaphragm, do not apply a pressure of 91 kPa or higher <Panel van and window van>, 106 kPa or higher <Wagon>.

3. If there is a significant deviation from the standard value, check the actuator or the waste gate valve: replace if necessary.



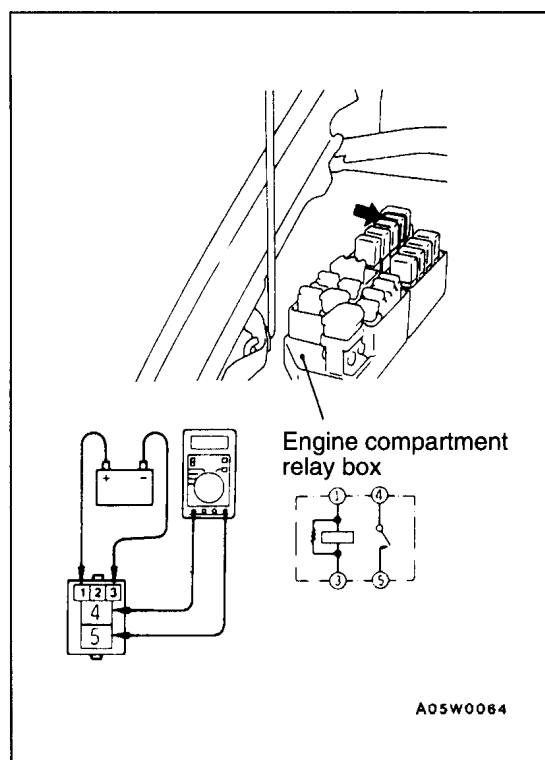
AIR TEMPERATURE SWITCH INSPECTION <Vehicles with intercooler turbocharger>

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1. Immerse the air temperature switch into warm water as shown in the illustration.
2. Check the continuity with a circuit tester as the temperature of the liquid changes, and the condition is normal if it is within the standard value.

Standard value:

Items	Temperature
OFF → ON	57 or more
ON → OFF	45 or less



POWER RELAY CHECK <Vehicles with intercooler turbocharger>

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INTERCOOLER FAN MOTOR RELAY CONTINUITY INSPECTION

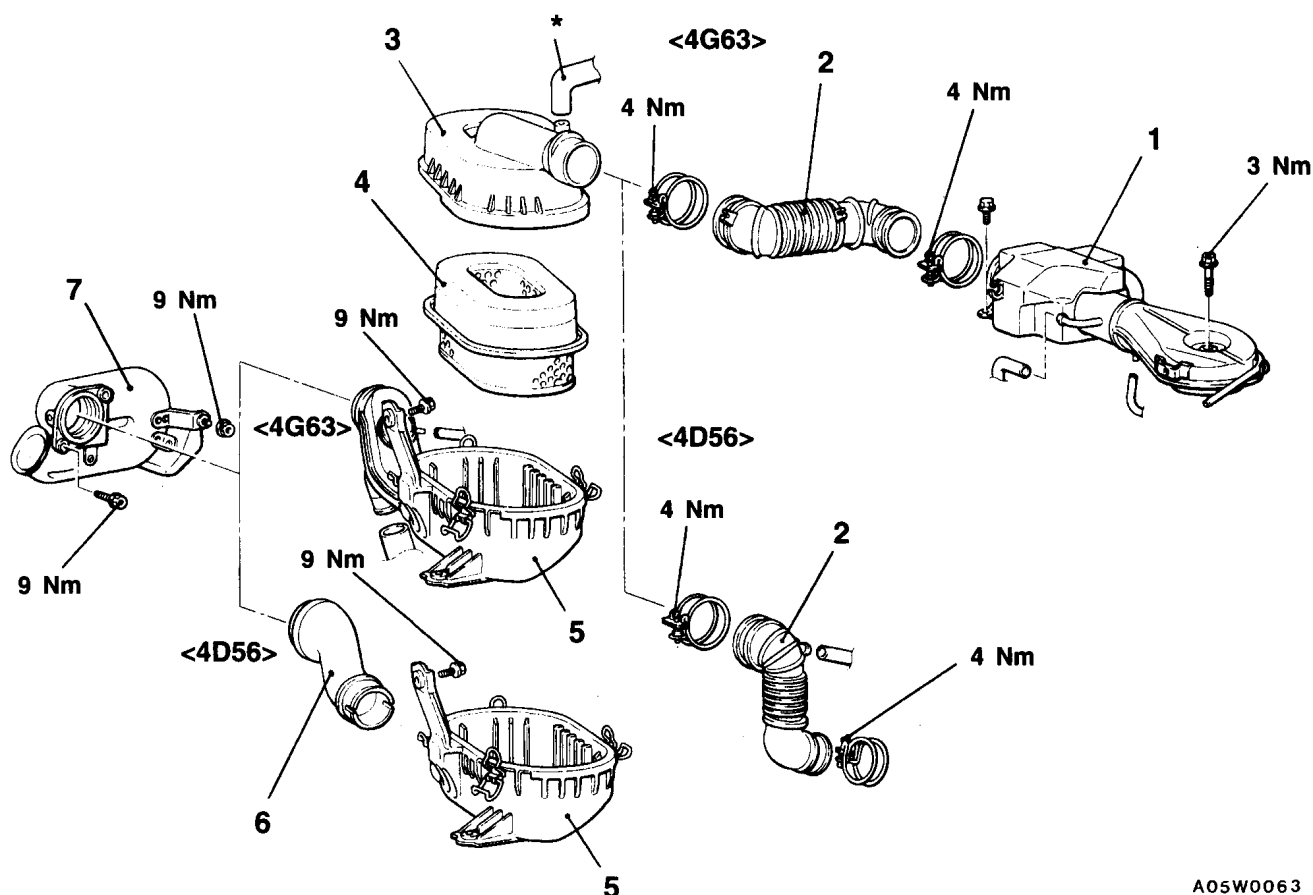
Battery voltage	Terminal No.			
	1	3	4	5
Power is not supplied	○	○		
Power is supplied	⊕	⊖	○	○

AIR CLEANER

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REMOVAL AND INSTALLATION

<4G63 (Carburettor), 4D56 – Normal type>



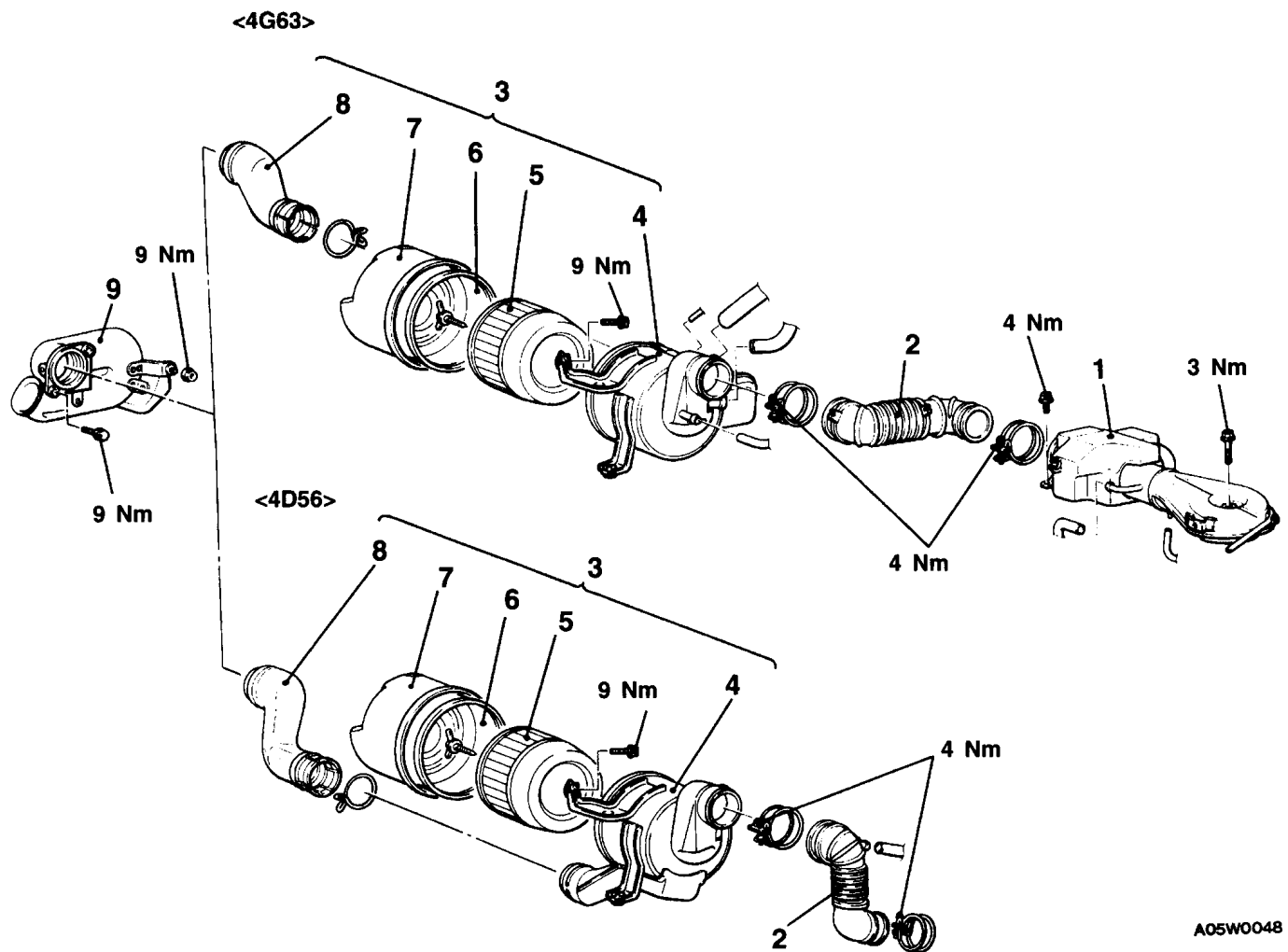
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NOTE
*: 4G63

Removal steps

1. Air horn assembly
2. Air intake hose
3. Air cleaner cover
4. Air cleaner element
5. Air cleaner body
6. Air duct B
- Splash shield <R.H.>
(Refer to GROUP 42 – Fender.)
7. Air duct A

<4G63 (Carburettor), 4D56 – Cyclone type>

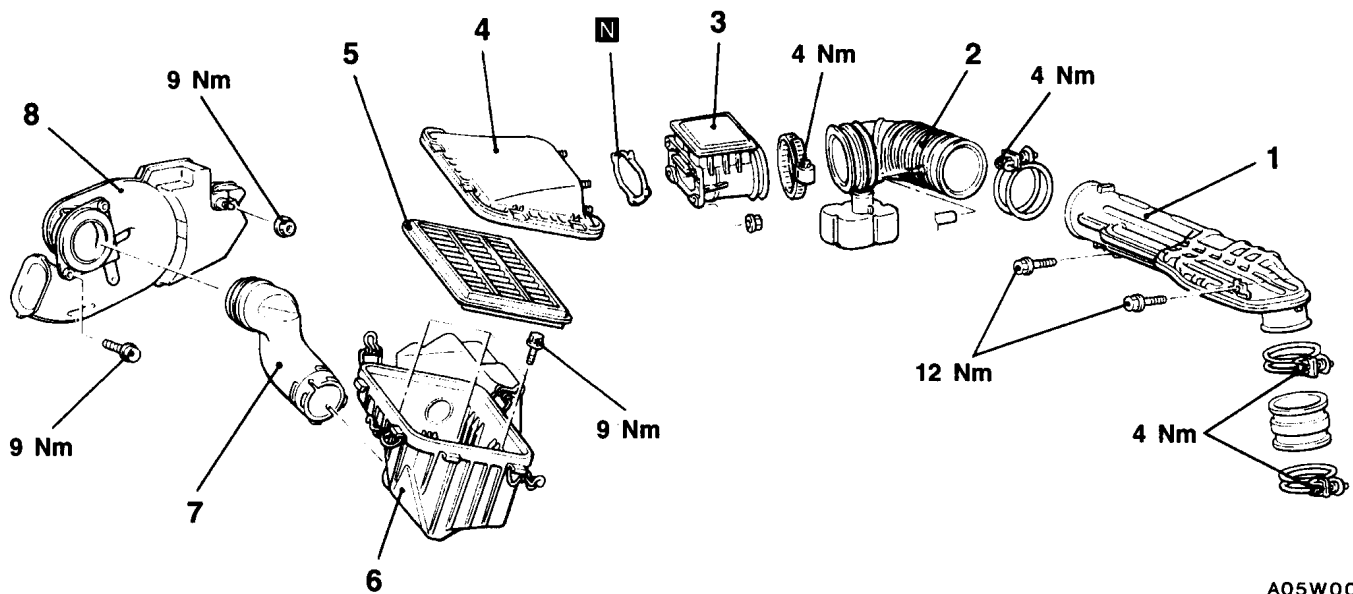


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Removal steps

1. Air horn assembly <4G63>
2. Air intake hose
3. Air cleaner assembly
4. Air cleaner cover
5. Air cleaner element
6. Baffle assembly
7. Air cleaner body
8. Air duct B
- Splash shield <R.H.> (Refer to GROUP 42 – Fender.)
9. Air duct A

<4G63 (MPI), 4G64>



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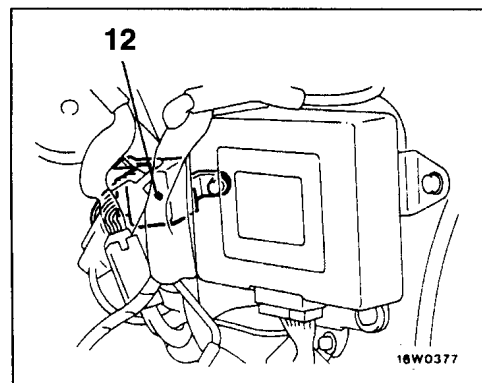
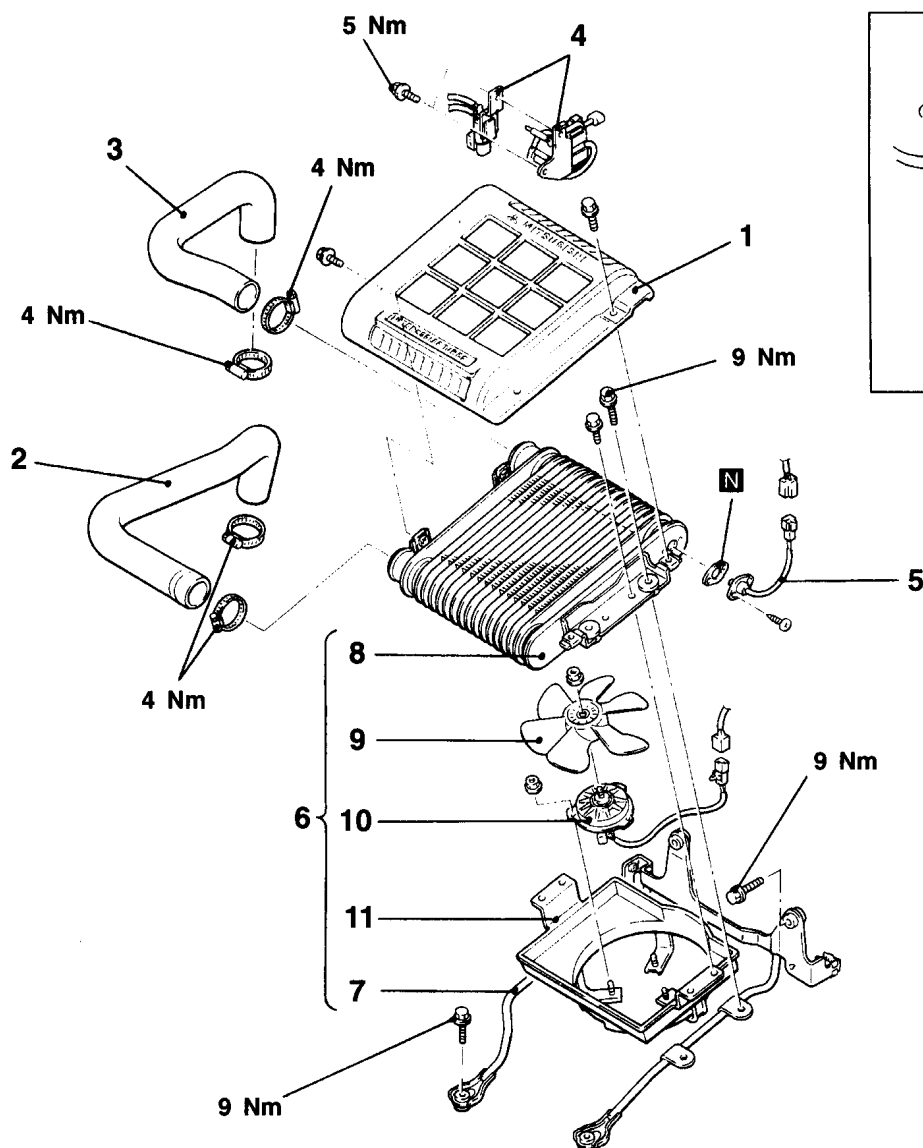
Removal steps

1. Resonance tank <4G64>
2. Air intake hose
3. Air flow sensor
4. Air cleaner cover
5. Air cleaner element
6. Air cleaner body
7. Air duct B or pre-cleaner assembly
- Splash shield <R.H.>
(Refer to GROUP 42 – Fender.)
8. Air duct A

INTERCOOLER AND INTERCOOLER FAN – ECU

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REMOVAL AND INSTALLATION



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Intercooler removal steps

1. Intercooler cover
2. Air hose A
3. Air hose B
4. Solenoid valve bracket connection
5. Air temperature switch
6. Intercooler bracket assembly
7. Intercooler bracket
8. Intercooler

9. Fan
10. Fan motor
11. Fan shroud

Intercooler fan – ECU removal steps

- Cowl side trim L.H.
(Refer to GROUP 52A – Trim.)
- 12. Intercooler fan – ECU

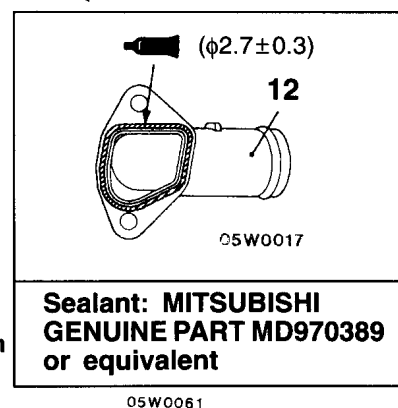
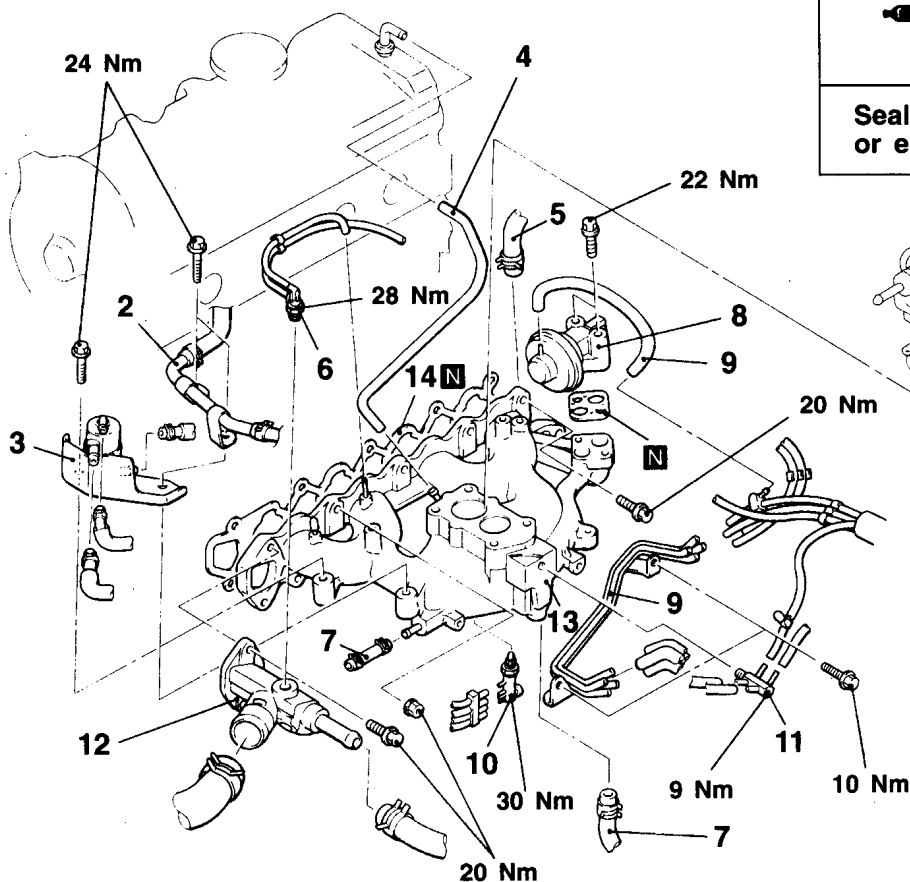
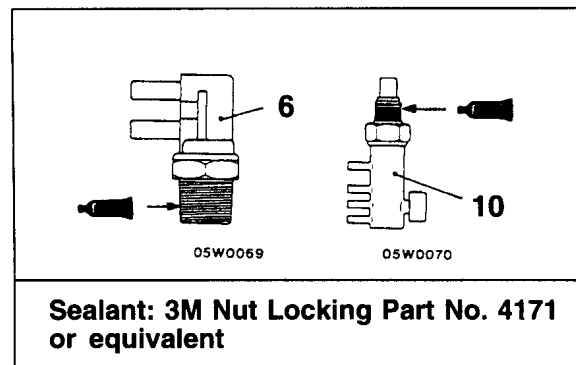
INTAKE MANIFOLD <4G63 (Carburettor)>

120002316

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

- (1) Engine Coolant Draining and Supplying
- (2) Air Cleaner Removal and Installation (Refer to P.15-5, 6.)
- (3) Battery and Battery Tray Removal and Installation



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Removal steps

1. Carburettor (Refer to GROUP 13 – Carburettor.)
2. Vapour pipe connection
3. Fuel vapour separator
4. PCV hose
5. Brake booster vacuum hose connection
6. Thermo valve
7. Water hose
8. EGR valve
9. Vacuum hose and pipe assembly
10. Thermo valve
11. Vacuum connector joint
12. Water outlet fitting
13. Intake manifold
14. Intake manifold gasket

INSPECTION

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 gauge, check for distortion of the cylinder head installation surface.

Standard value: 0.15 mm or less

Limit: 0.20 mm

INTAKE MANIFOLD <4G63 (MPI), 4G64>

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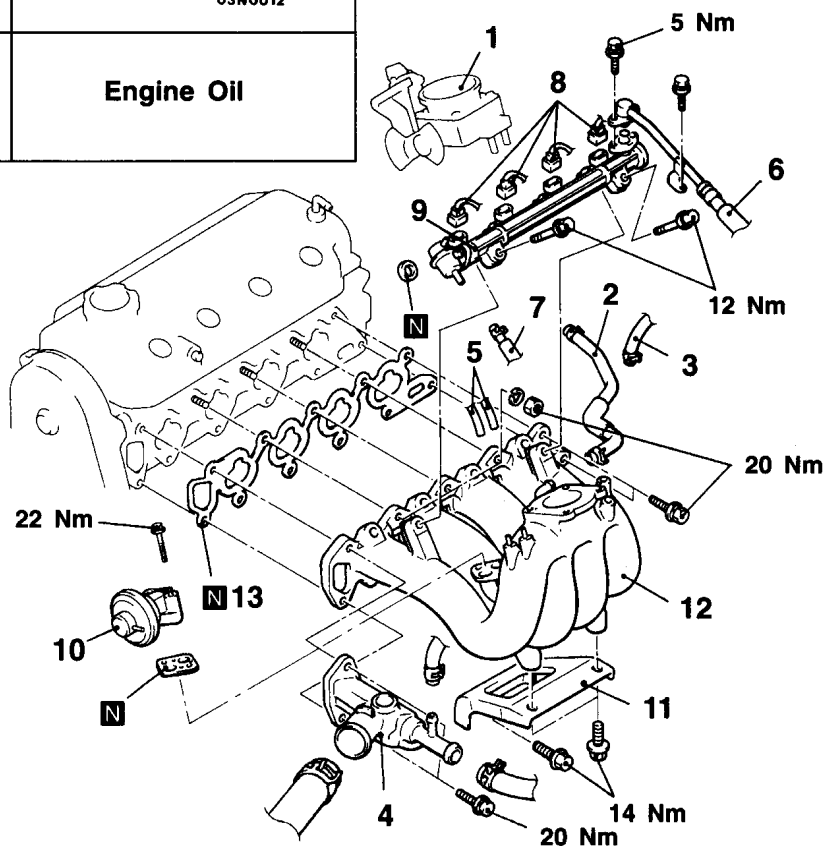
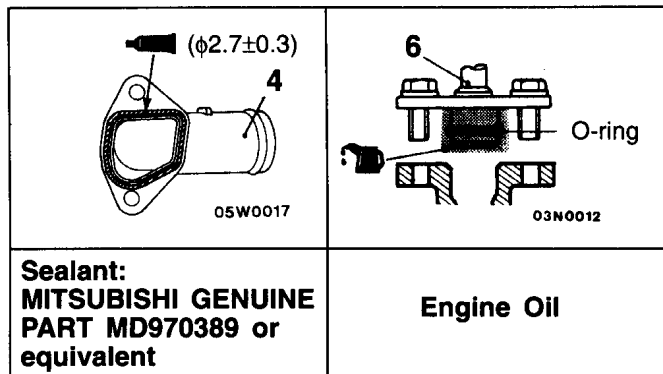
REMOVAL AND INSTALLATION

Pre-removal Operation

- (1) Fuel Discharge Prevention (Refer to GROUP 13A – Service Adjustment Procedures.)
- (2) Engine Coolant Draining
- (3) Air Cleaner Removal (Refer to P.15-7.)
- (4) Battery and Battery Tray Removal

Post-Installation Operation

- (1) Engine Coolant Supplying
- (2) Battery and Battery Tray Installation
- (3) Air Cleaner Installation (Refer to P.15-7.)



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Removal steps

1. Throttle body (Refer to GROUP 13A – Throttle Body.)
2. PCV hose
3. Brake booster vacuum hose connection
4. Water outlet fitting
5. Vacuum hose connection
6. Fuel high pressure hose connection

7. Fuel return hose connection
8. Injector connector
9. Injector and delivery pipe assembly
10. EGR valve
11. Intake manifold stay
12. Intake manifold
13. Intake manifold gasket



REMOVAL SERVICE POINT**◀A▶ INJECTOR AND DELIVERY PIPE ASSEMBLY
REMOVAL**

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

Caution

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

INSPECTION

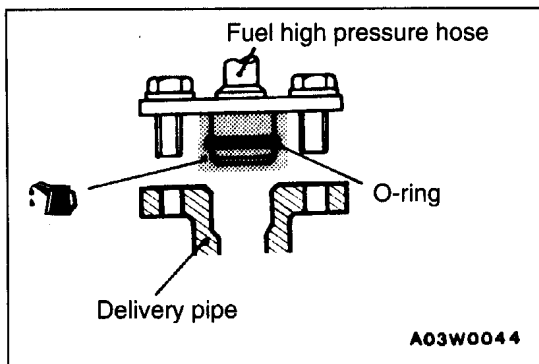
Check the following points; replace the part if a problem is found.

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 gauge, check for distortion of the cylinder head installation surface.

Standard value: 0.15 mm or less

Limit: 0.20 mm

**INSTALLATION SERVICE POINT****▶A◀ FUEL HIGH PRESSURE HOSE INSTALLATION**

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

Caution

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

INTAKE AND EXHAUST MANIFOLD, TURBOCHARGER <4D56>

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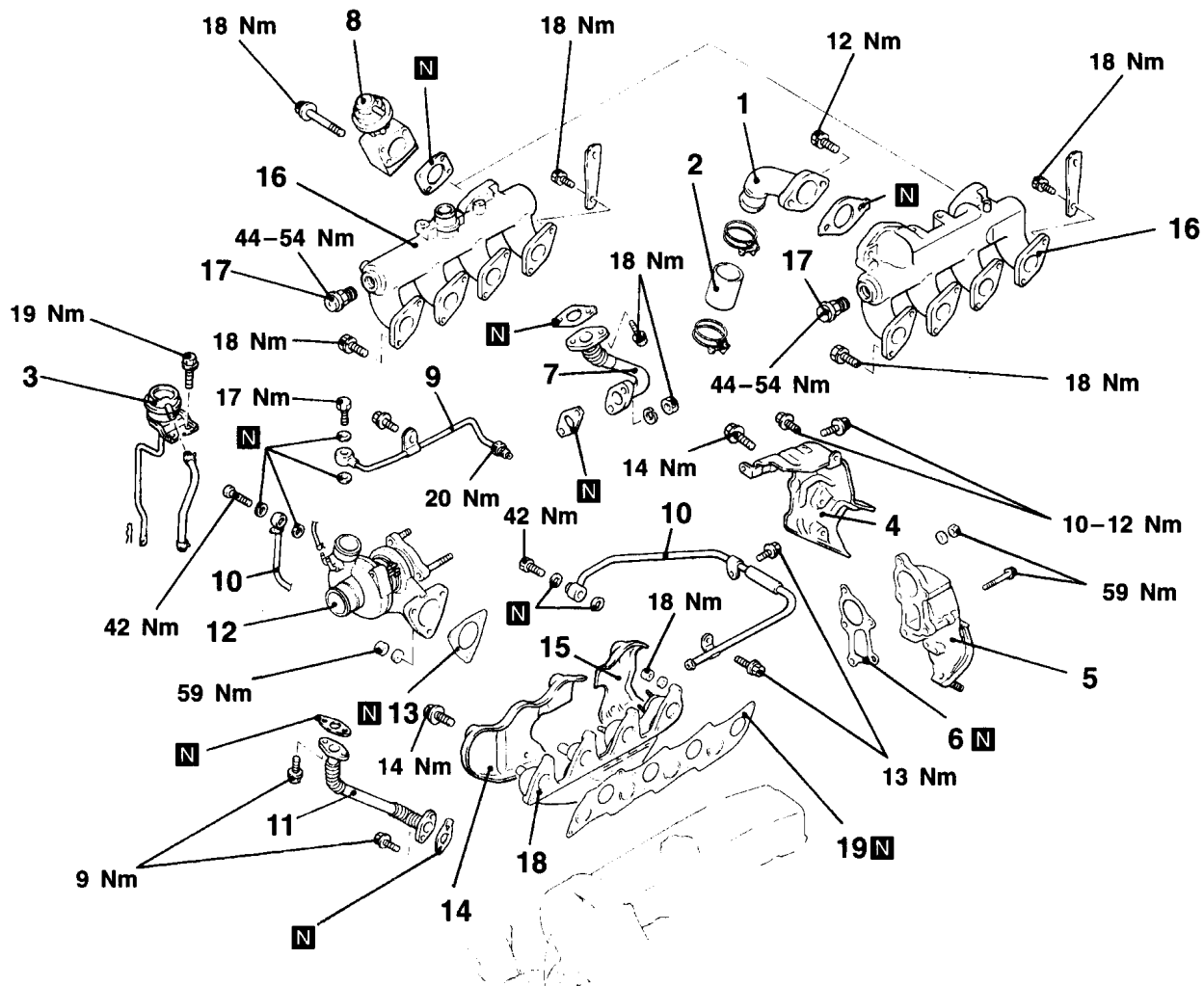
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

- | | |
|---|--|
| <ul style="list-style-type: none"> (1) Engine Coolant Draining and Supplying (2) Engine Oil Draining and Supplying (3) Air Cleaner Removal and Installation (Refer to P.15-5, 6.) (4) Intercooler Removal and Installation (Refer to P.15-8.) | <ul style="list-style-type: none"> (5) Front Exhaust Pipe and Front Heat Protector Removal and Installation (Refer to P.15-18.) (6) Heat Protector B Removal and Installation (Refer to GROUP 37A – Steering Wheel and Shaft.) |
|---|--|

<Vehicles with intercooler turbocharger>

<Vehicles without intercooler turbocharger>



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Removal steps

- | | |
|--|--|
| <ul style="list-style-type: none"> 1. Air inlet fitting <Vehicles without intercooler turbocharger> 2. Air hose <Vehicles without intercooler turbocharger> 3. Waste gate actuator 4. Heat protector 5. Exhaust fitting 6. Gasket B 7. EGR valve pipe 8. EGR valve | <ul style="list-style-type: none"> 9. Oil pipe 10. Water pipe connection 11. Oil return pipe 12. Turbocharger assembly 13. Gasket A 14. Heat protector front 15. Heat protector rear 16. Intake manifold 17. Relief valve 18. Exhaust manifold 19. Intake and exhaust manifold gasket |
|--|--|

INSPECTION

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

INTAKE MANIFOLD, EXHAUST MANIFOLD

1. Check for damage or cracking of any part.
2. Check deflection of installation surface with straight edge and thickness gauge.

Standard value: 0.15 mm or less

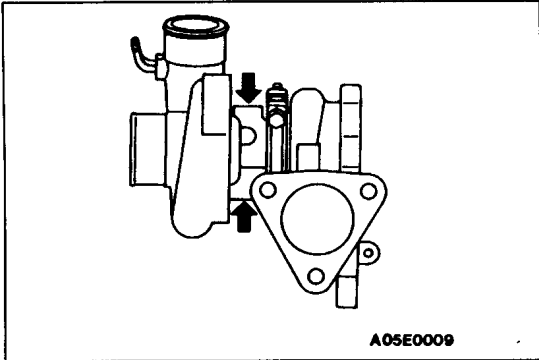
Limit: 0.20 mm

INSTALLATION SERVICE POINT**►A◄TURBOCHARGER ASSEMBLY INSTALLATION**

- (1) Clean the connection surfaces of the oil pipe, oil return pipe and water pipe.
- (2) Add new engine oil from the oil pipe mounting hole of the turbocharger.

Caution

Be careful that no foreign particles get into the turbocharger.



EXHAUST MANIFOLD <4G63, 4G64>

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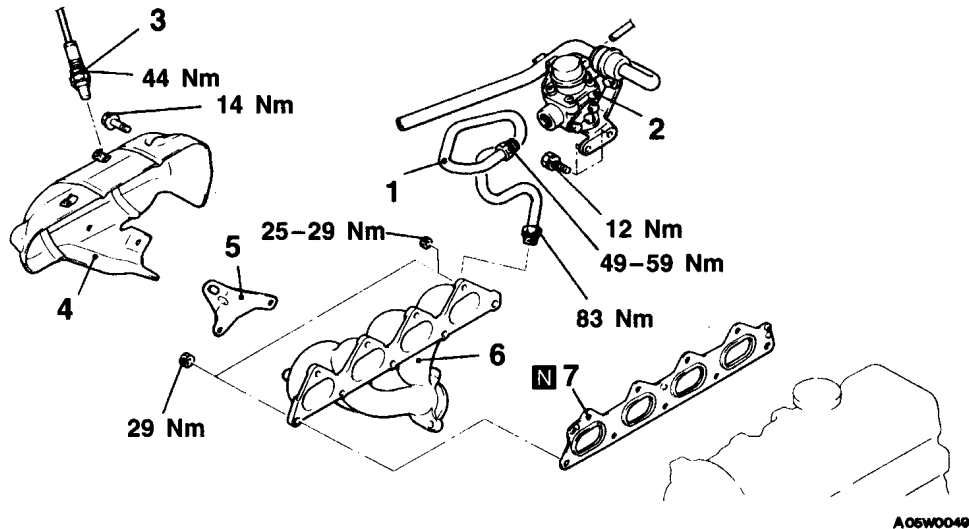
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

(1) Front Exhaust Pipe Removal and Installation
(Refer to P.15-16, 17.)

(2) Air Cleaner Removal and Installation (Refer to P.15-5, 6, 7.)

(3) Engine Oil Level Gauge Guide Removal and Installation



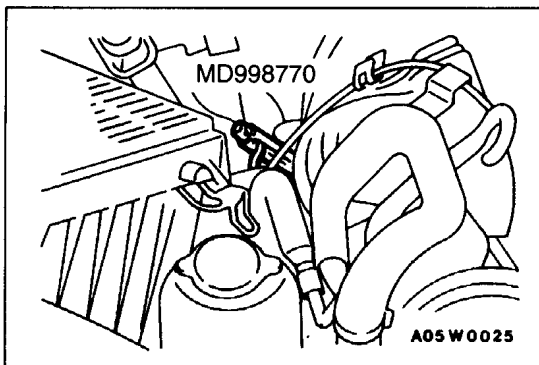
Removal steps

1. Air pipe assembly
<4G63 (Carburettor)>
2. Reed valve assembly
<4G63 (Carburettor)>
3. Oxygen sensor
<4G63 (Carburettor)>

4. Heat protector
5. Engine hanger
6. Exhaust manifold
7. Exhaust manifold gasket

REMOVAL SERVICE POINT

◀A▶ OXYGEN SENSOR REMOVAL



INSPECTION

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

EXHAUST MANIFOLD

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

Standard value: 0.15 mm or less

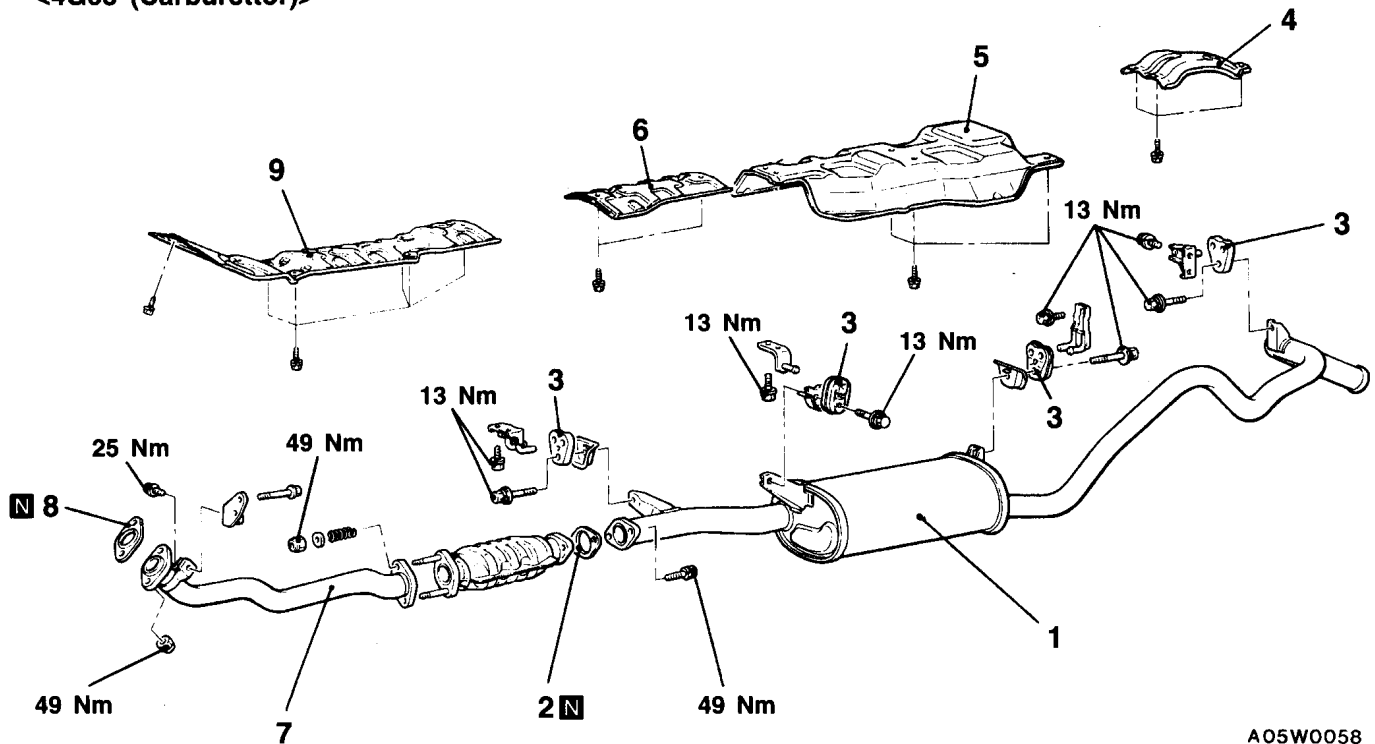
Limit: 0.20 mm

EXHAUST PIPE AND MAIN MUFFLER

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REMOVAL AND INSTALLATION

<4G63 (Carburettor)>



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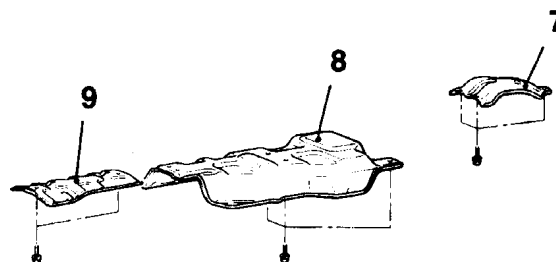
Main muffler assembly removal steps

1. Main muffler
2. Gasket
3. Hanger
4. Rear heat protector B
5. Rear heat protector A
6. Front heat protector B

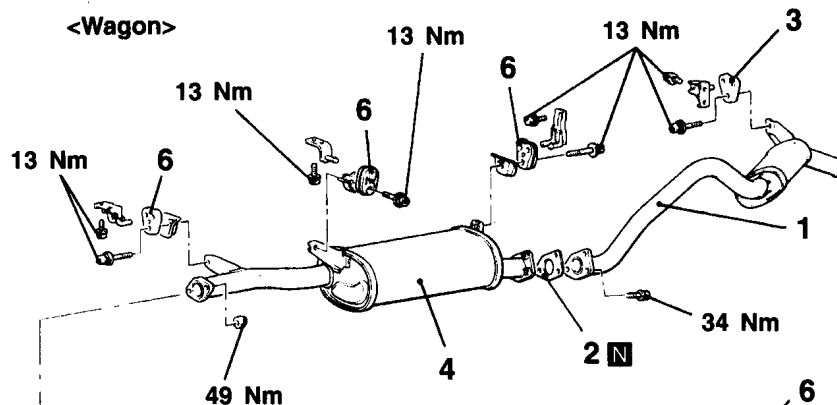
Front exhaust pipe removal steps

7. Front exhaust pipe
8. Gasket
9. Front heat protector A

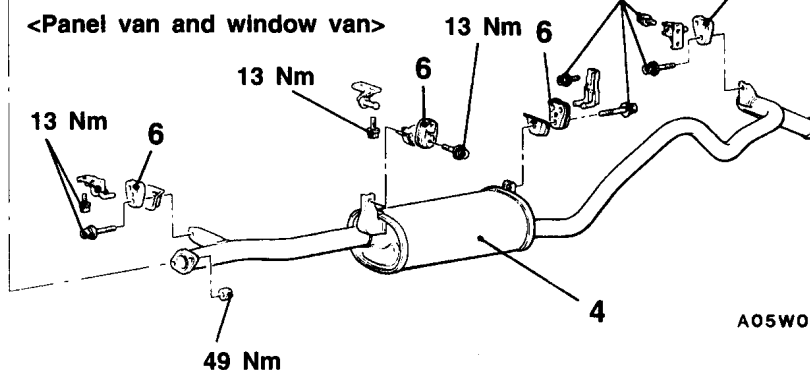
<4G63 (MPI), 4G64>



<Wagon>



<Panel van and window van>



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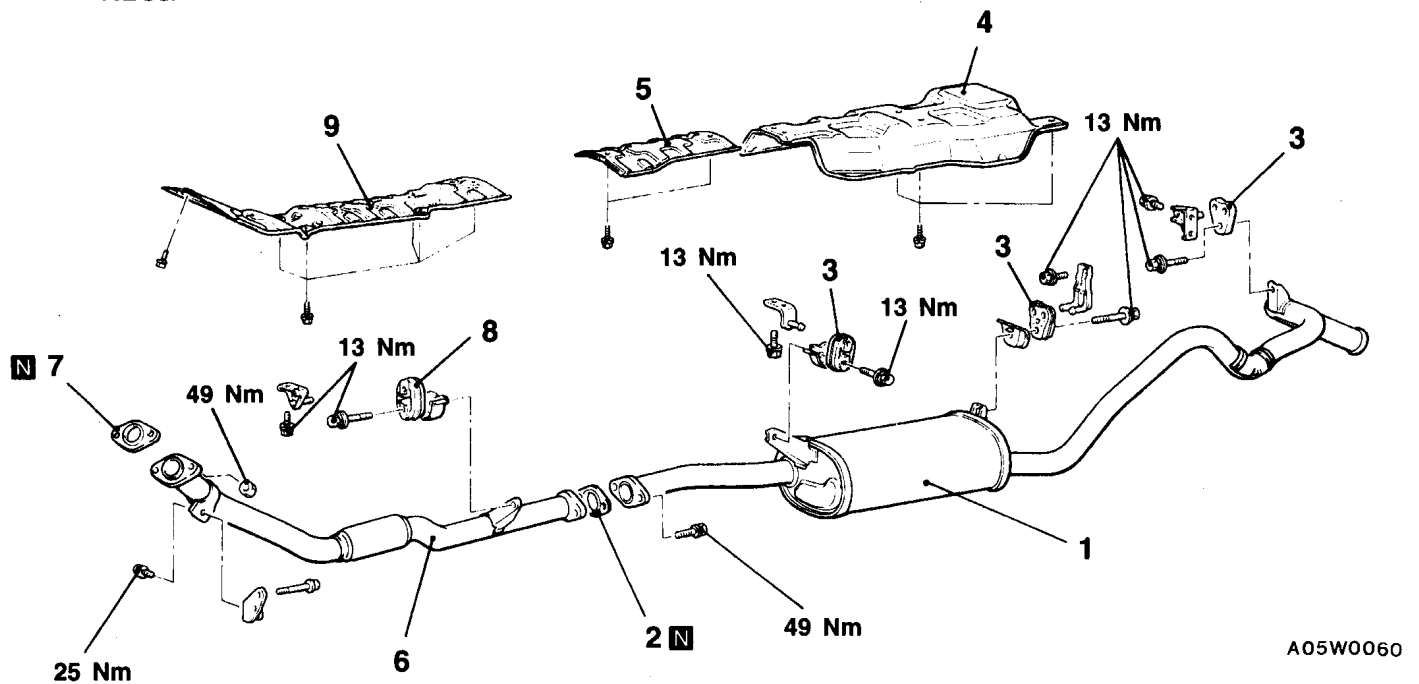
Main muffler assembly removal steps

1. Tail pipe <Wagon>
2. Gasket <Wagon>
3. Hanger <Wagon>
4. Main muffler
5. Gasket
6. Hanger
7. Rear heat protector B
8. Rear heat protector A
9. Front heat protector B

Front exhaust pipe removal steps

10. Oxygen sensor
11. Front exhaust pipe
12. Gasket
13. Hanger
14. Front heat protector A

<4D56>



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Main muffler assembly removal steps

1. Main muffler
2. Gasket
3. Hanger
4. Rear heat protector A
5. Front heat protector B

Front exhaust pipe removal steps

6. Front exhaust pipe
7. Gasket
8. Hanger
9. Front heat protector A