

INTAKE AND EXHAUST

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110003071

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GENERAL INFORMATION

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The exhaust system consists of a three-piece type comprising of the front pipe, center pipe main muffler and catalytic converter.

The exhaust pipe is secured to the body through

rubber hangers to reduce vibrations transmitted from the exhaust system to the body.

In addition, a large size muffler is installed to reduce exhaust noise.

SERVICE SPECIFICATIONS

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Items	Standard value	Limit
Intake manifold and intake manifold plenum distortion of mating surface mm (in.)	0.15 (.006) or less	0.2 (.008)

TROUBLESHOOTING

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

SERVICE ADJUSTMENT PROCEDURES

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AIR CLEANER ELEMENT INSPECTION AND REPLACEMENT

Refer to GROUP 00 – Maintenance Service.

INTAKE MANIFOLD VACUUM INSPECTION

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Refer to GROUP 11 – Service Adjustment Procedures.

CATALYTIC CONVERTER REPLACEMENT

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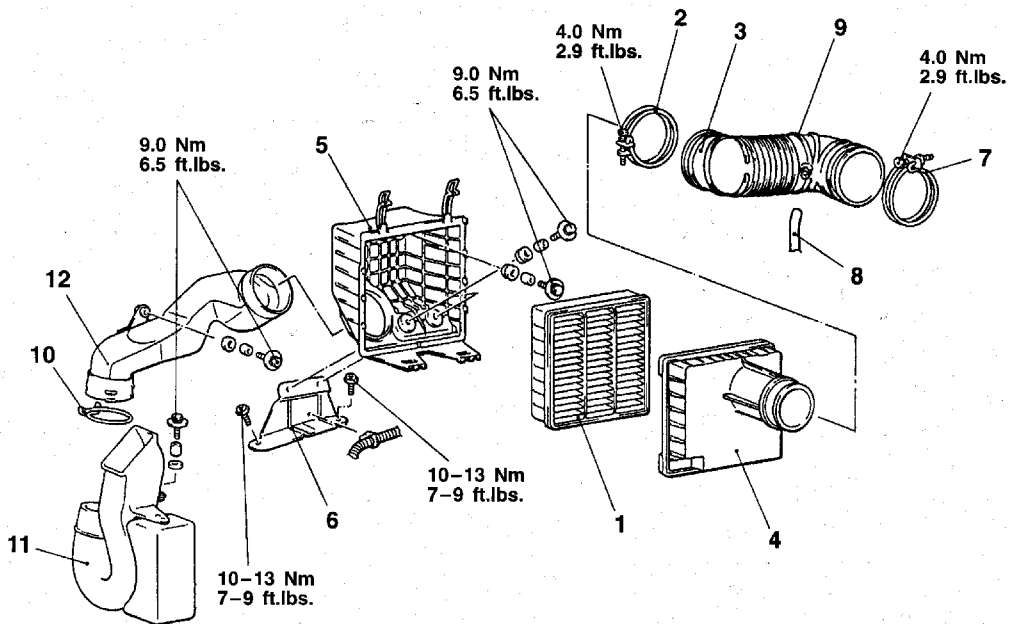
Refer to GROUP 17 – Catalytic Converter.

AIR CLEANER <1.5L Engine>

REMOVAL AND INSTALLATION

Pre-removal and Post-Installation Operation <Air Ducts A or B>

- Battery, Battery Seat and Tray Removal and Installation
- Splash Shield (R.H.) Removal and Installation



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1. Air cleaner element

Air cleaner cover removal steps



1. Air cleaner element
2. Hose clamp
3. Air intake hose connection
4. Air cleaner cover

Air cleaner body removal steps

1. Air cleaner element
4. Air cleaner cover
5. Air cleaner body
6. Air cleaner bracket

Air intake hose removal steps



2. Hose clamp
7. Hose clamp
8. PCV hose
9. Air intake hose

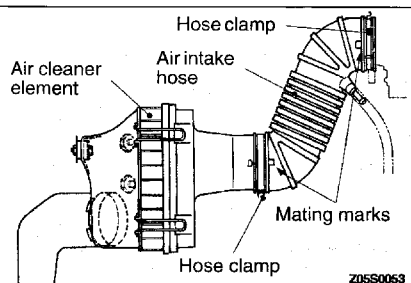
Air duct A and B removal steps

1. Air cleaner element
4. Air cleaner cover
5. Air cleaner body
10. Hose clamp
11. Air duct A
12. Air duct B

INSTALLATION SERVICE POINT

▶◀ AIR INTAKE HOSE AND HOSE CLAMPS INSTALLATION

- (1) Install the air intake hose so that the "UP" mark is towards the top.
- (2) Install the hose clamp on the throttle body side so that the thread section of the hose clamp is horizontal.
- (3) Install the hose clamp on the air cleaner side so that the thread section of the hose clamp is vertical.

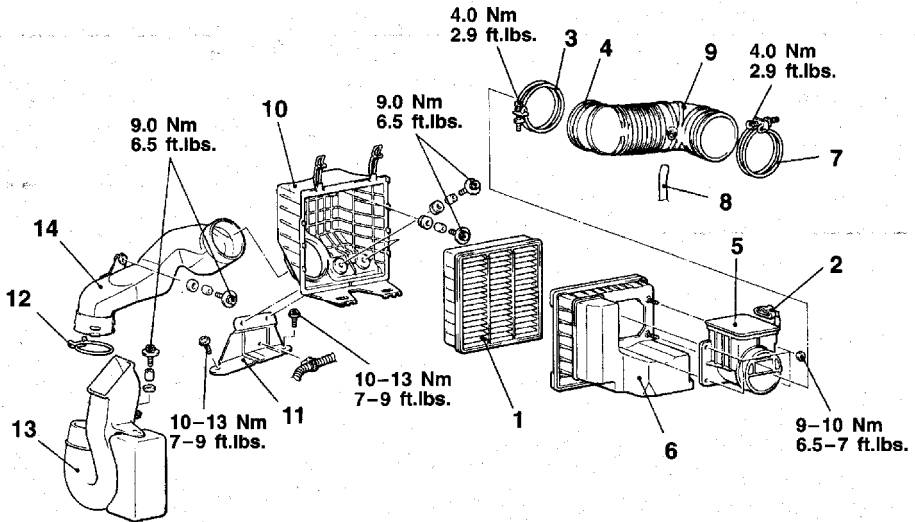


AIR CLEANER <1.8L Engine>

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation <Air Ducts A or B>

- Battery, Battery Seat and Tray Removal and Installation
- Splash Shield (R.H.) Removal and Installation



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1. Air cleaner element

Volume air flow sensor removal steps

- ▶▲▲
2. Volume air flow sensor connector
 3. Hose clamp
 4. Air intake hose connection
 5. Volume air flow sensor

Air cleaner cover removal steps

1. Air cleaner element
5. Volume air flow sensor
6. Air cleaner cover

Air intake hose removal steps

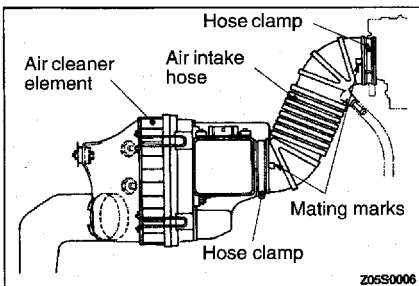
- ▶▲▲
- ▶▲▲
- ▶▲▲
3. Hose clamp
 7. Hose clamp
 8. PCV hose
 9. Air intake hose

Air cleaner body removal steps

1. Air cleaner element
6. Air cleaner cover
10. Air cleaner body
11. Air cleaner bracket

Air duct A and B removal steps

1. Air cleaner element
6. Air cleaner cover
10. Air cleaner body
12. Hose clamp
13. Air duct A
14. Air duct B



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INSTALLATION SERVICE POINT

▶▲▲ AIR INTAKE HOSE AND HOSE CLAMPS INSTALLATION

- (1) Install the air intake hose so that the "UP" mark is towards the top.
- (2) Install the hose clamp on the throttle body side so that the thread section of the hose clamp is horizontal.
- (3) Install the hose clamp on the air cleaner side so that the thread section of the hose clamp is vertical.

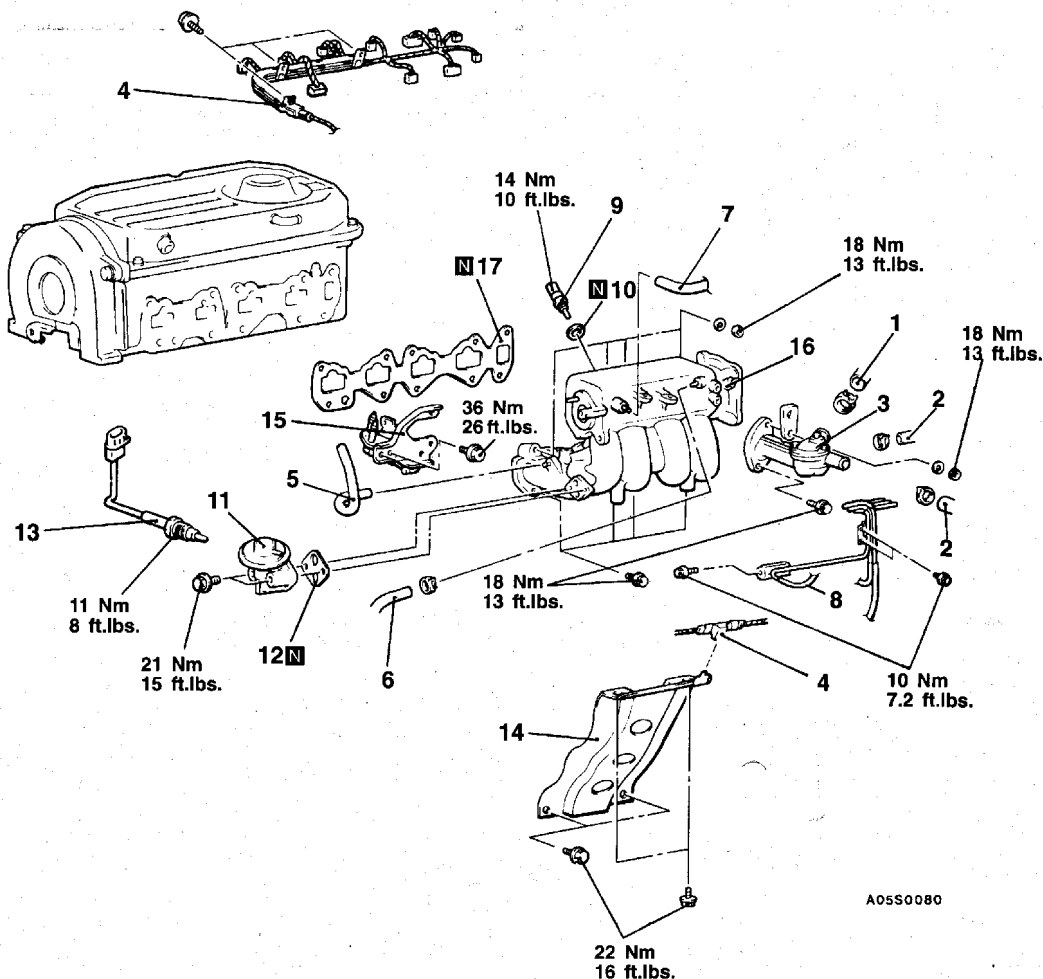
INTAKE MANIFOLD <1.5L Engine>

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

- Throttle Body Removal and Installation (Refer to GROUP 13 – Throttle Body.)
- Injector Removal and Installation (Refer to GROUP 13 – Injector.)

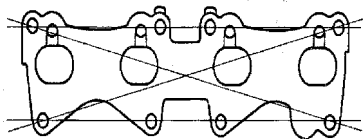
- Accelerator Cable Removal and Installation (Refer to GROUP 13 – Accelerator Cable and Pedal.)
- Accelerator Cable Adjustment (Refer to GROUP 13 – Service Adjustment Procedures.)



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Removal steps

1. Radiator upper hose
2. Water hose
3. Water outlet fitting and thermostat housing assembly
4. Control wiring harness
5. PCV hose
6. Brake booster vacuum hose
7. Vacuum hose connection
8. Vacuum hose and pipe assembly
9. Intake air temperature sensor
10. Gasket
11. EGR valve
12. EGR gasket
13. EGR temperature sensor <Vehicles for California (Up to 1994 models) and Federal (1994 and 1995 models)>
14. Intake manifold stay
15. Engine mount stay
16. Intake manifold
17. Intake manifold gasket



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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 and EGR gas passage.
3. Using a straight edge and a feeler gauge, check for distortion of the intake manifold to cylinder head mating surface.

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

Limit: 0.2 mm (.008 in.)

INTAKE MANIFOLD <1.8L Engine>

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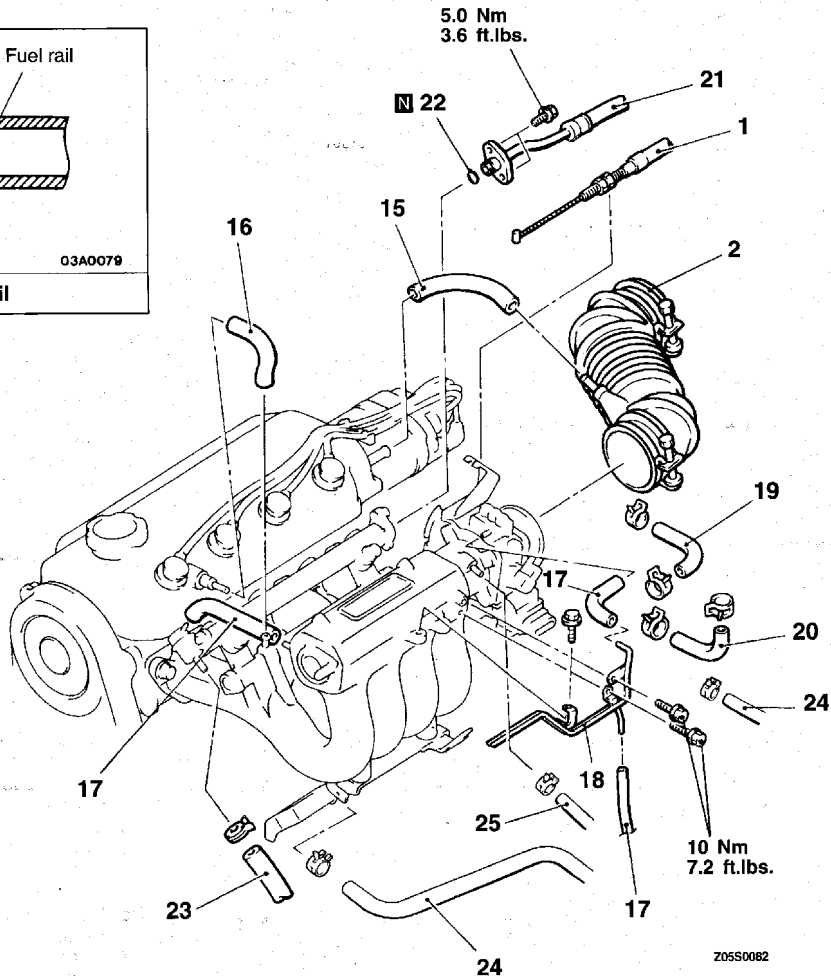
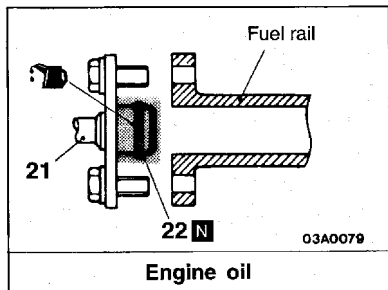
REMOVAL AND INSTALLATION

Pre-removal Operation

- Residual Fuel Pressure Releasing (Refer to GROUP 13 – Service Adjustment Procedures.)
- Coolant Draining (Refer to GROUP 14 – Service Adjustment Procedures.)

Post-installation Operation

- Coolant Supplying (Refer to GROUP 14 – Service Adjustment Procedures.)
- Accelerator Cable Adjustment (Refer to GROUP 13 – Service Adjustment Procedures.)



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Removal steps

1. Accelerator cable connection
2. Air intake hose

REMOVAL SERVICE POINTS

◀A▶ HIGH PRESSURE FUEL HOSE DISCONNECTION

Relieve pressure in the fuel pipe line to prevent fuel outflow.
(Refer to GROUP 13 – Service Adjustment Procedures.)

Caution

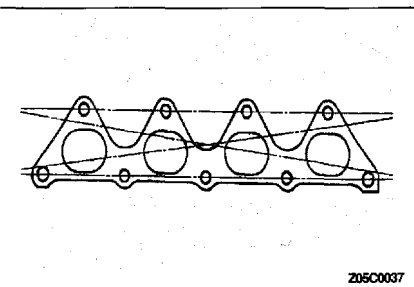
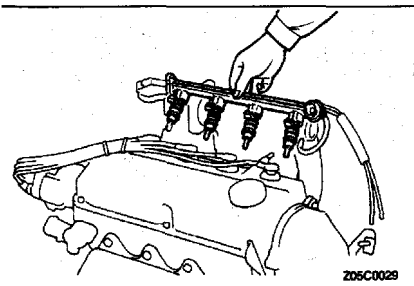
Cover fuel pipe line with shop towel after relieving pressure as certain pressure may still remain.

◀B▶ FUEL RAIL, FUEL INJECTOR AND PRESSURE REGULATOR REMOVAL

Remove fuel rail with fuel injector and pressure regulator on.

Caution

Do not drop injector when removing fuel rail.



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 EGR gas passage.
3. Using a straight edge and a feeler gauge, check for distortion of the intake manifold to cylinder head mating surface.

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

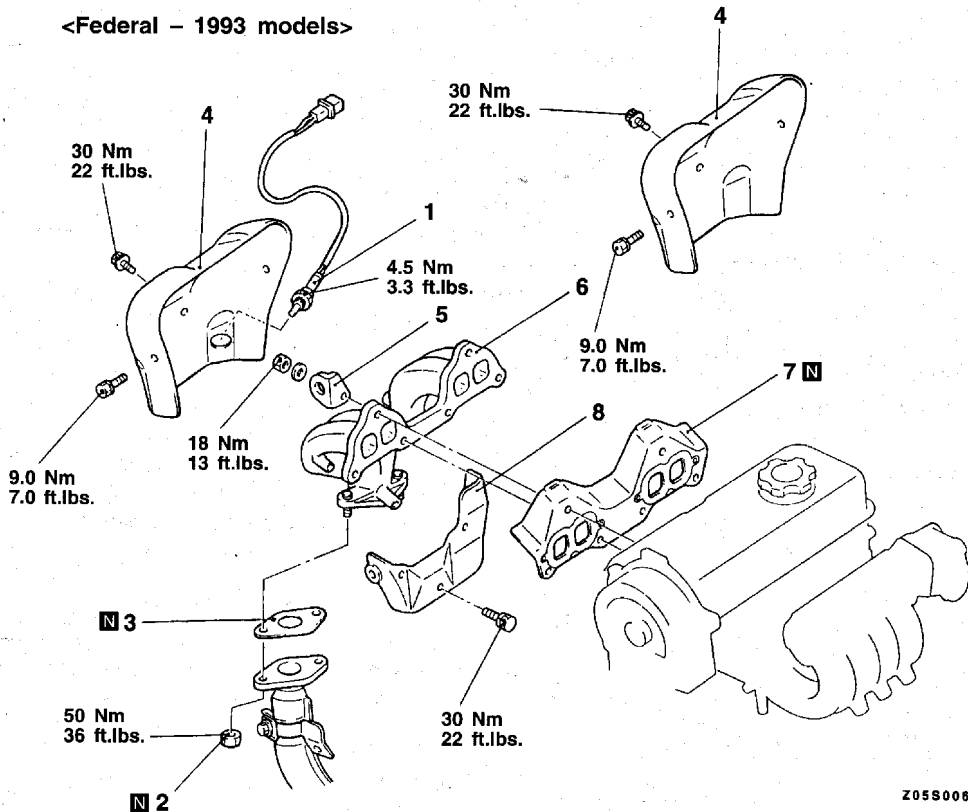
Limit: 0.2 mm (.008 in.)

EXHAUST MANIFOLD

REMOVAL AND INSTALLATION <1.5L Engine>

<Federal – From 1994 models
and California>

<Federal – 1993 models>



Removal steps

1. Heated oxygen sensor
2. Self locking nut
3. Gasket
4. Exhaust manifold cover A
5. Engine hanger
6. Exhaust manifold
7. Exhaust manifold gasket
8. Exhaust manifold cover B

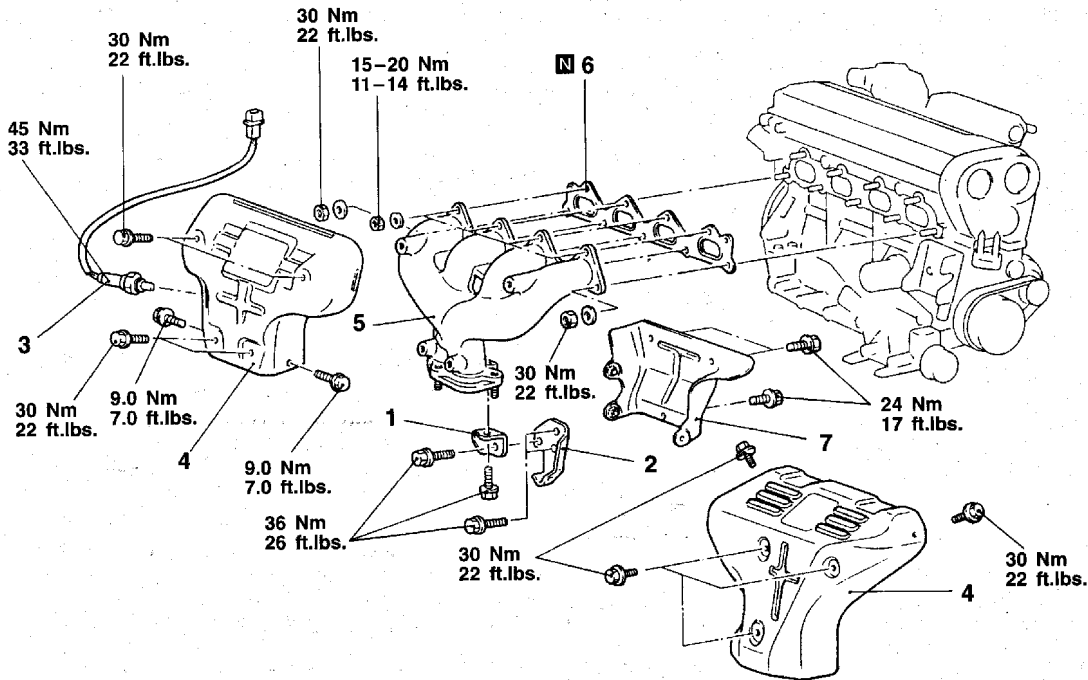
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REMOVAL AND INSTALLATION <1.8L Engine>

Pre-removal and Post-installation Operation

- Front Exhaust Pipe Removal and Installation (Refer to P.15-13.)

<Up to 1993 models>



(Vehicles for California)

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Removal steps

1. Bracket exhaust manifold B
2. Bracket exhaust manifold A
3. Oxygen sensor
4. Exhaust manifold cover A
5. Exhaust manifold
6. Exhaust manifold gasket
7. Exhaust manifold cover B

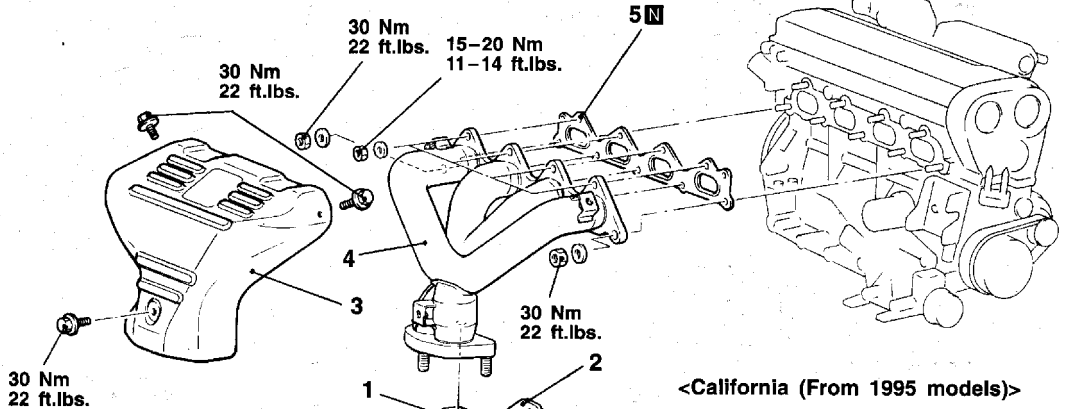
REMOVAL AND INSTALLATION <1.8L Engine>

Pre-removal and Post-installation Operation

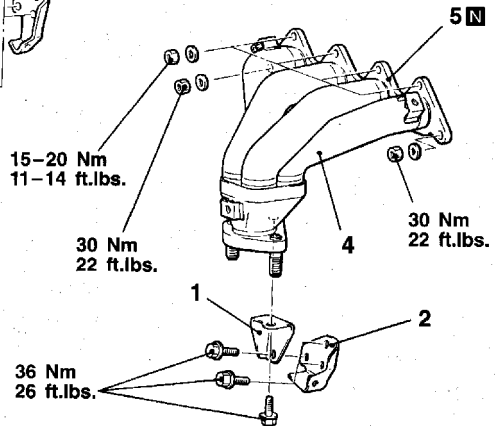
- Front Exhaust Pipe Removal and Installation
(Refer to P.15-13, 14.)

<From 1994 models>

<Federal and California (1994 models)>



<California (From 1995 models)>



Removal steps

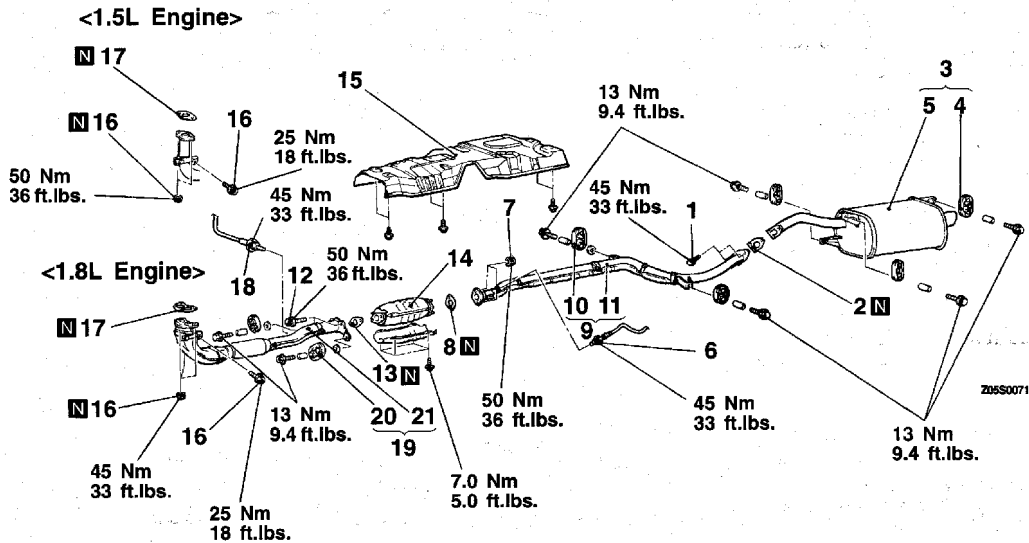
1. Bracket exhaust manifold B
2. Bracket exhaust manifold A
3. Exhaust manifold cover
4. Exhaust manifold
5. Exhaust manifold gasket

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EXHAUST PIPE AND MAIN MUFFLER

REMOVAL AND INSTALLATION

<Vehicles for California (Up to 1994 models) and Federal>



Main muffler removal steps

1. Bolt
2. Gasket
3. Main muffler assembly
4. Hanger
5. Main muffler

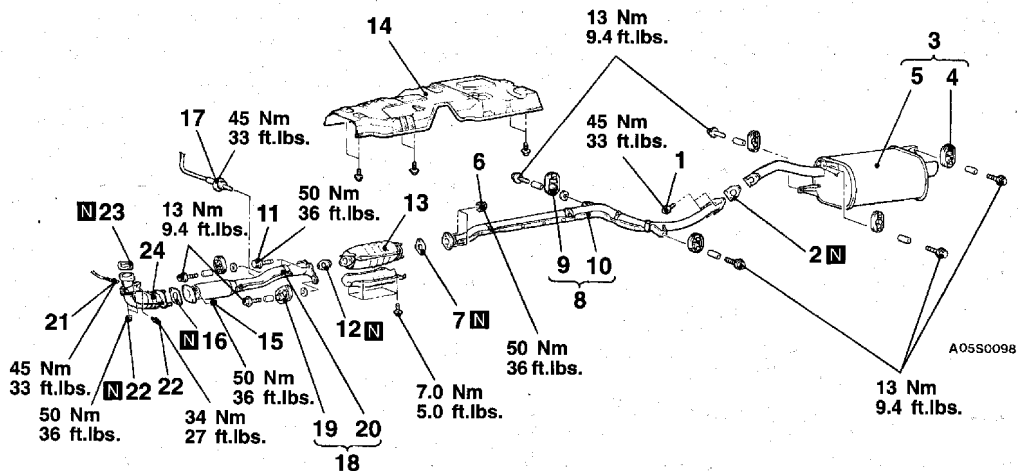
Front pipe removal steps

12. Bolt
13. Gasket
16. Self-locking nut and bolt
17. Gasket
18. Heated oxygen sensor <Except Federal – 1993 models>
19. Front pipe assembly
20. Hanger
21. Front pipe

Center pipe, catalytic converter and front floor heat protector panel removal steps

1. Bolt
2. Gasket
6. Heated oxygen sensor <Except Federal – 1993 models>
7. Self-locking nut
8. Gasket
9. Center pipe assembly
10. Hanger
11. Center pipe
12. Bolt
13. Gasket
14. Catalytic converter
15. Front floor heat protector panel

<Vehicles for California (From 1995 models)>

**Main muffler removal steps**

1. Bolt
2. Gasket
3. Main muffler assembly
4. Hanger
5. Main muffler

Front pipe and front catalytic converter removal steps

11. Bolt
12. Gasket
16. Gasket
17. Heated oxygen sensor (Rear)
18. Front pipe assembly
19. Hanger
20. Front pipe
21. Heated oxygen sensor (Front)
22. Self-locking nut and bolt
23. Gasket
24. Front catalytic converter

Center pipe, rear catalytic converter and front floor heat protector panel removal steps

1. Bolt
2. Gasket
6. Self-locking nut
7. Gasket
8. Center pipe assembly
9. Hanger
10. Center pipe
11. Bolt
12. Gasket
13. Rear catalytic converter
14. Front floor heat protector panel