

INTAKE AND EXHAUST

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N11AA-

<2.6L ENGINE>

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<3.0L ENGINE>

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INTAKE AND EXHAUST <2.6L ENGINE>

SPECIFICATIONS

GENERAL SPECIFICATIONS

N11CA-0

Items	Specifications
Air cleaner Element Heated air intake	Unwoven cloth type Vacuum motor type
Exhaust system Front exhaust pipe Muffler Coupling Suspension system	Dual type Expansion resonance type Flat coupling Rubber hangers and suspenders

TORQUE SPECIFICATIONS

N11CC-0

Items	Nm	ft.lbs.
Air cleaner 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	17-20	13-14
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
Engine coolant temperature gauge unit to intake manifold	10-12	7-9
Engine coolant temperature sensor to intake manifold	20-40	14-29
Oxygen sensor	40-50	29-36
Joint to intake manifold	20-40	14-29
Air pipe assembly to bracket	12-15	9-11
Air pipe assembly to reed valve B bracket	10-13	7-9
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

SEALANTS AND ADHESIVES

N11CD-A

Items	Specified sealants and adhesives	Quantity
Engine coolant temperature gauge unit, Engine coolant temperature switch, Engine coolant temperature sensor, Thermo valve assembly and Joint (threaded part)	3M ART Part No. 8660 or equivalent	As required

TROUBLESHOOTING

N11EAAAa

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 or suspender	Replace
	Interference of pipe or muffler with vehicle body	Correct
	Broken pipe or muffler	Repair or replace

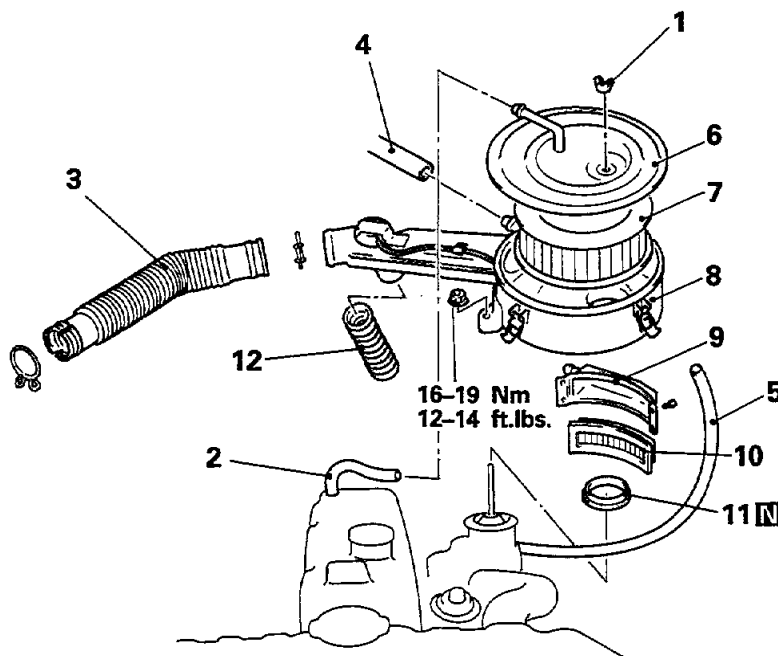
AIR CLEANER

N11FA-0

REMOVAL AND INSTALLATION

Removal steps

1. Wing nut
- ◆◆ 2. Connection for breather hose
3. Air duct
4. Connection for air hose
5. Connection for vacuum hose
6. Air cleaner cover
7. Air cleaner element
8. Air cleaner body
9. Secondary air case
10. Secondary air cleaner
11. Air cleaner gasket
12. Heater duct



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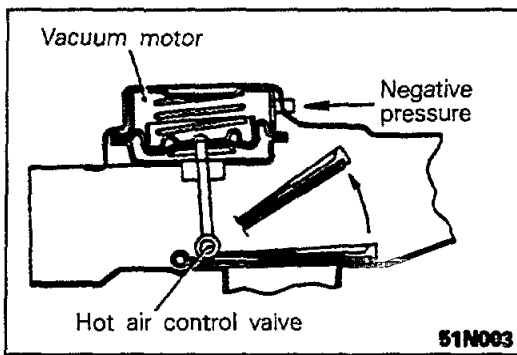
NOTE

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

INSPECTION

N11FCAD

- Check the air cleaner body, cover or packing for deformation, corrosion or damage.
- Check the air duct for damage.
- Check the air cleaner element for clogging, contamination or damage.
If element is slightly clogged, remove dust by blowing air from inside of element.

**HOT AIR CONTROL VALVE CHECK**

Check to ensure that when negative pressure is applied to nipple of vacuum motor, valve operates as indicated by arrow.

SERVICE POINT OF INSTALLATION

N11FDAA

2. INSTALLATION OF BREATHER HOSE**NOTE**

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

INTAKE MANIFOLD REMOVAL AND INSTALLATION

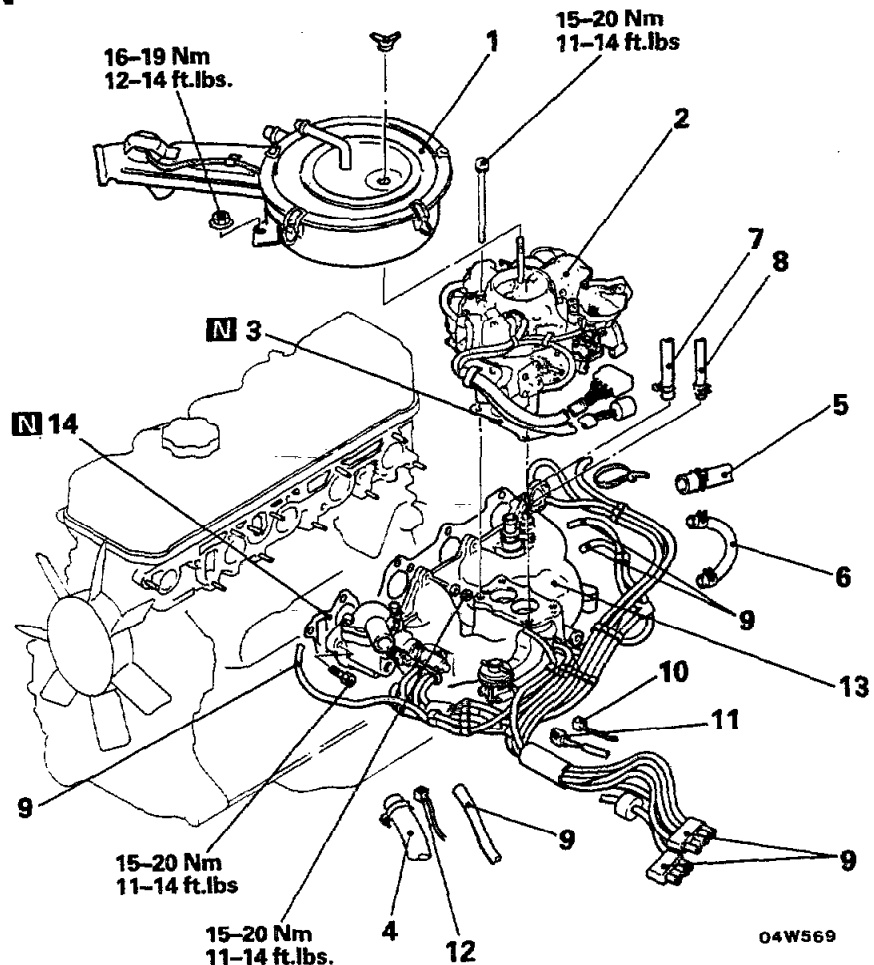
N11MA-0

Pre-removal Operation

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

Post-installation Operation

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

**Removal steps**

- ◄◄ ◄◄ 1. Air cleaner
- ◄◄ ◄◄ 2. Carburetor assembly
- 3. Gasket
- 4. Connection for radiator upper hose
- 5. Connection for water by-pass hose
- 6. Water hose
- 7. Connection for heater hose
- 8. Connection for brake booster vacuum hose
- 9. Connection for vacuum hose
- 10. Connection for engine coolant temperature switch (Vehicles with an air conditioner)

- 11. Connection for engine coolant temperature sensor
- 12. Connection for engine coolant temperature gauge unit
- 13. Intake manifold
- 14. Intake 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

SERVICE POINTS OF REMOVAL

N11MBADa

1. REMOVAL OF AIR CLEANER

Refer to P. 11-3.

2. REMOVAL OF CARBURETOR ASSEMBLY

Refer to GROUP 14 – Carburetor.

INSPECTION

N11MCAp

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

- (1) Damage or cracking of any part.
- (2) Clogging of the negative pressure (vacuum) outlet port, or clogging of the water or gas passages.

SERVICE POINTS OF INSTALLATION

N11MDACa

2. INSTALLATION OF CARBURETOR ASSEMBLY

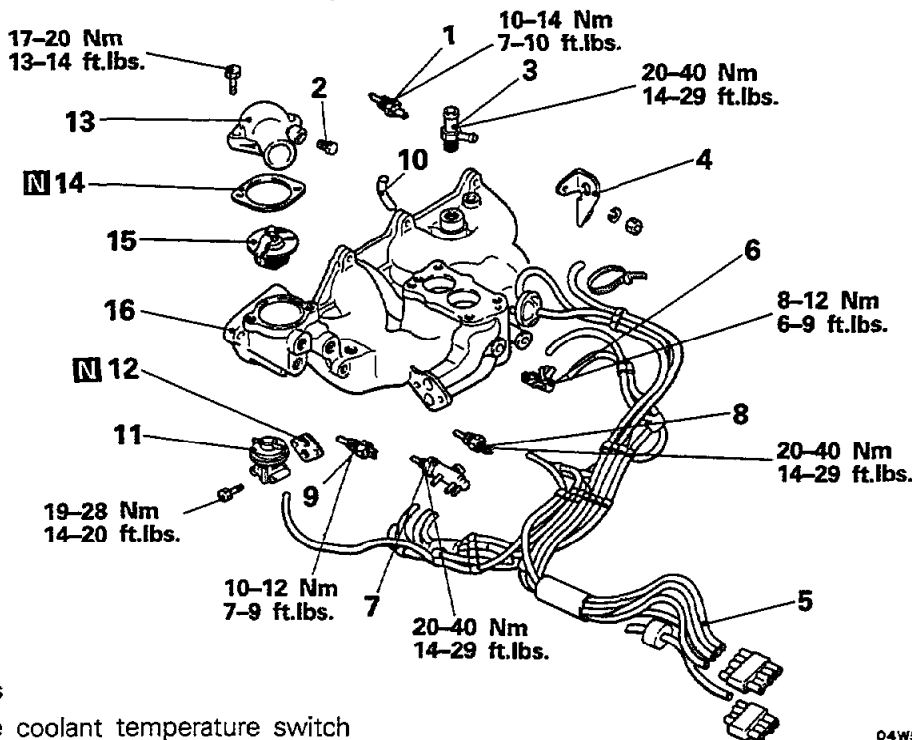
Refer to GROUP 14 – Carburetor.

1. INSTALLATION OF AIR CLEANER

Refer to P. 11-3.

DISASSEMBLY AND REASSEMBLY (INTAKE MANIFOLD)

N11ME-



Disassembly steps

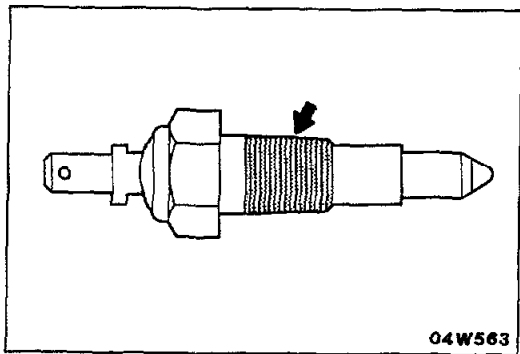
- ◆◆ 1. Engine coolant temperature switch (Vehicles with an air conditioner)
- ◆◆ 2. Plug (Vehicles without an air conditioner)
- ◆◆ 3. Joint
- ◆◆ 4. Engine hanger
- ◆◆ 5. Vacuum hose assembly
- ◆◆ 6. Joint
- ◆◆ 7. Thermo valve assembly
- ◆◆ 8. Engine coolant temperature sensor
- ◆◆ 9. Engine coolant temperature gauge unit
- ◆◆ 10. Purge control valve nipple

- ◆◆ 11. EGR valve assembly
- ◆◆ 12. EGR valve gasket
- ◆◆ 13. Water outlet fitting assembly
- ◆◆ 14. Gasket
- ◆◆ 15. Thermostat
- ◆◆ 16. Intake manifold

NOTE

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

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SERVICE POINTS OF REASSEMBLY

N11MHAC

15. INSTALLATION OF THERMOSTAT

Refer to GROUP 7 - Thermostat.

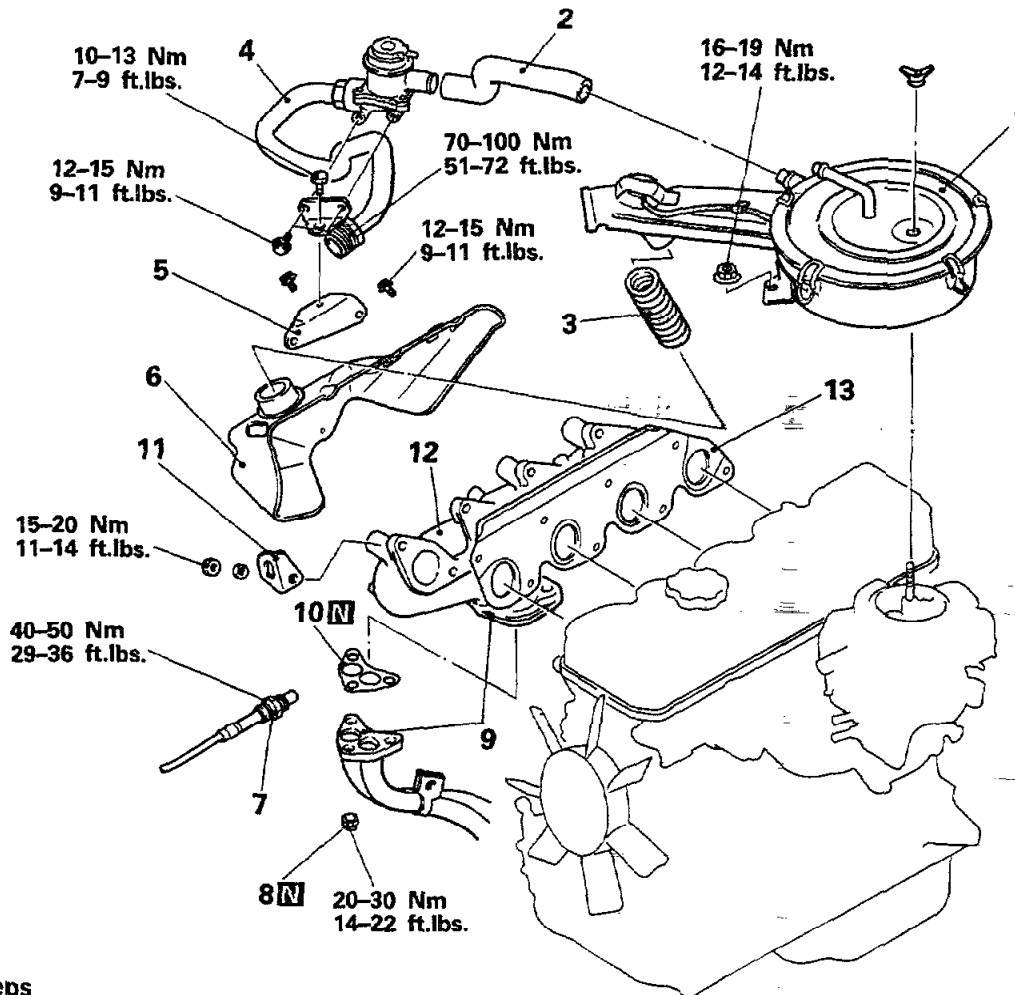
9. APPLICATION OF SEALANT TO ENGINE COOLANT TEMPERATURE GAUGE UNIT/8. ENGINE COOLANT TEMPERATURE SENSOR/7. THERMO VALVE ASSEMBLY/6./3./1. JOINT AND ENGINE COOLANT TEMPERATURE SWITCH

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

Specified sealant : 3M ART Part No. 8660 or equivalent

**EXHAUST MANIFOLD
REMOVAL AND INSTALLATION**

N11NA-0



04W568

Removal steps

- ◀▶▶▶ 1. Air cleaner
- ▶▶▶▶ 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 for 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

SERVICE POINTS OF REMOVAL

N11NBAAs

1. REMOVAL OF AIR CLEANER

Refer to P. 11-3.

INSPECTION

N11NCAP

EXHAUST MANIFOLD

Check the exhaust manifold for damage and cracks, and replace it if any defects are found.

EXHAUST MANIFOLD GASKET

Check for flaking or damage of the gasket.

SERVICE POINTS OF INSTALLATION

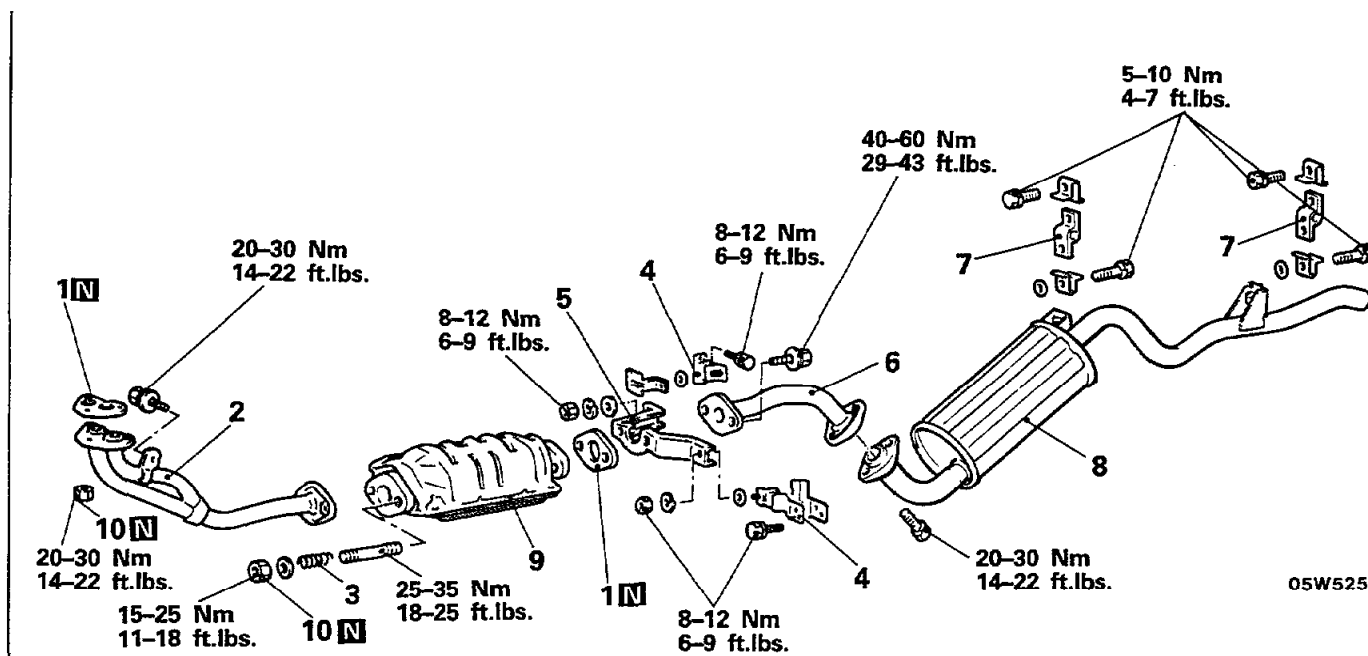
N11NDABs

1. INSTALLATION OF AIR CLEANER

Refer to P. 11-3.

**EXHAUST PIPES AND MUFFLERS
REMOVAL AND INSTALLATION**

N11RA-0



05W525

- 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.

INTAKE AND EXHAUST <3.0L ENGINE>

SPECIFICATIONS

N11CA-1

GENERAL SPECIFICATIONS

Items	Specifications
Air cleaner Element	Filter paper type
Exhaust system Front exhaust pipe Muffler Coupling Suspension system	Dual type Expansion resonance type Flat coupling Rubber hangers, O-rings and suspenders

TORQUE SPECIFICATIONS

N11CC-1

Items	Nm	ft.lbs.
Air cleaner to body	8-10	6-7
Air duct to fender shield	8-10	6-7
Accelerator cable bracket to air intake plenum	4-6	3-4
EGR pipe attaching bolts to air intake plenum	15-20	11-14
Engine oil filler neck bracket to air intake plenum	8-10	6-7
Throttle body to air intake plenum	10-13	7-9
Air intake plenum to front stay, rear stay	15-20	11-14
Air intake plenum to intake manifold	15-20	11-14
EGR valve to air intake plenum	17-26	12-19

Items	Nm	ft.lbs.
Fuel high pressure hose to delivery pipe	10-13	7-9
Delivery pipe to intake manifold	7-11	5-8
Heater pipe attaching bolts to intake manifold	10-13	7-9
Intake manifold to engine	15-20	11-14
Oxygen sensor	40-50	29-36
Front exhaust pipe to exhaust manifold	30-40	22-29
Front exhaust pipe (L.H.) to front exhaust pipe (R.H.)	20-30	14-22
Front exhaust pipe (L.H.) to oil pan bracket	20-30	14-22
Front exhaust pipe (R.H.) to catalytic converter	15-25	11-18
Heat protector to exhaust manifold	12-15	9-11
Engine hanger to engine	15-22	11-16
Alternator stay to engine	15-22	11-16
Exhaust manifold to engine	15-22	11-16
EGR pipe to exhaust manifold	15-20	11-14
Bracket to engine	15-22	11-16
Air intake plenum stay to bracket	15-20	11-14
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
Tail pipe to hanger	5-10	4-7
Hanger to frame	5-10	4-7
Tail pipe to main muffler	30-40	22-29
Engine coolant temperature switch	10-14	7-10
Engine coolant temperature sensor	20-40	14-29
Thermo switch	6-9	4-7
Engine coolant temperature gauge unit	10-12	7-9
Thermo valve assembly	20-40	14-27

SEALANTS AND ADHESIVES

N11CD-B

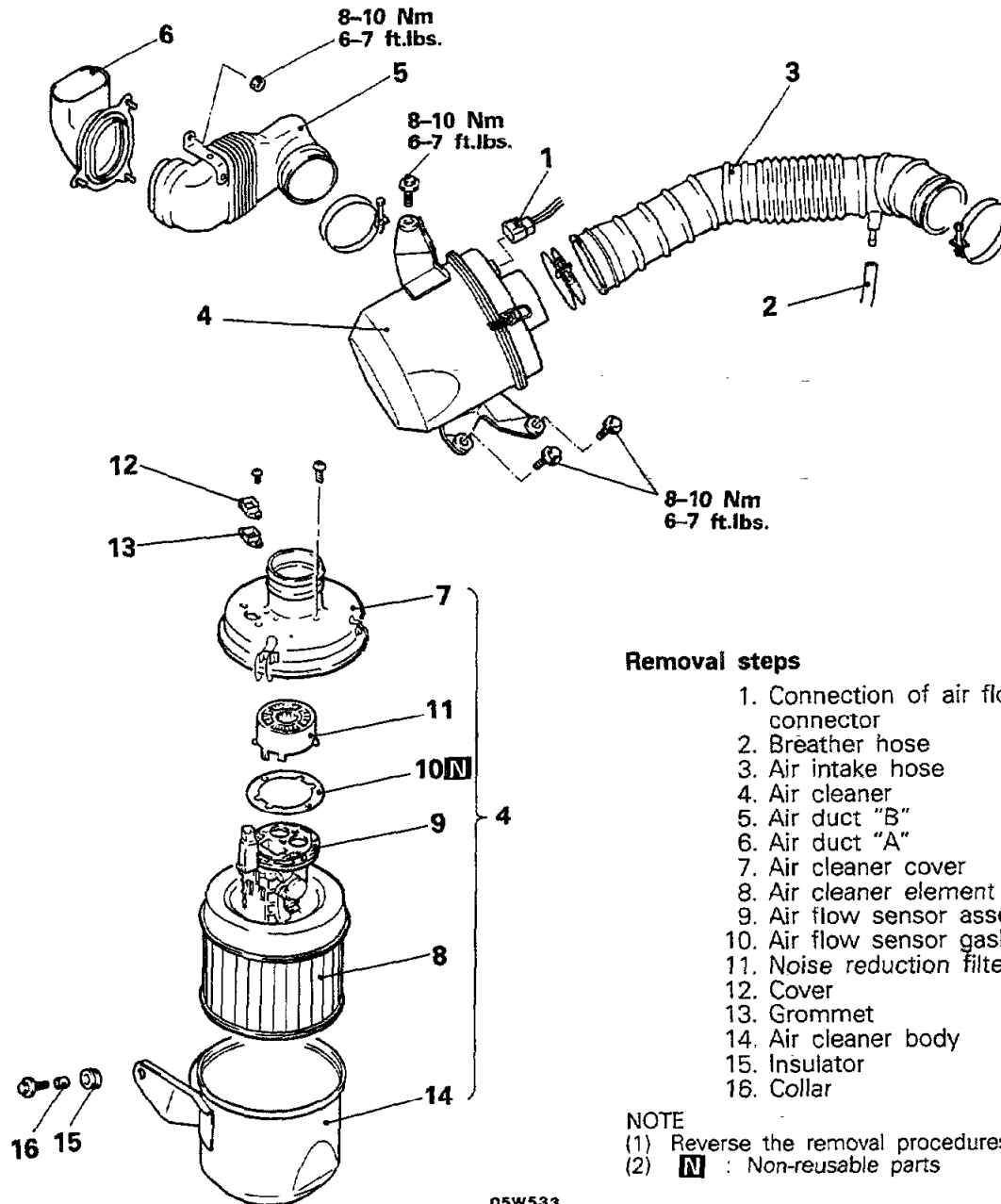
Items	Specified sealants and adhesives	Quantity
Engine coolant temperature gauge unit, Engine coolant temperature switch, Engine coolant temperature sensor, Thermo switch, Thermo valve assembly and Joint (threaded part)	3M ART Part No. 8660 or equivalent	As required

TROUBLESHOOTING

N11EAAC

Refer to P. 11-3.

AIR CLEANER REMOVAL AND INSTALLATION



Removal steps

1. Connection of air flow sensor connector
2. Breather hose
3. Air intake hose
4. Air cleaner
5. Air duct "B"
6. Air duct "A"
7. Air cleaner cover
8. Air cleaner element
9. Air flow sensor assembly
10. Air flow sensor gasket
11. Noise reduction filter
12. Cover
13. Grommet
14. Air cleaner body
15. Insulator
16. Collar

NOTE

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

05W533

INSPECTION

N11FCAE

- Check the air cleaner body, cover or packing for deformation, corrosion or damage.
- Check the air cleaner element for clogging, contamination or damage.
If element is slightly clogged, remove dust by blowing air from inside of element.

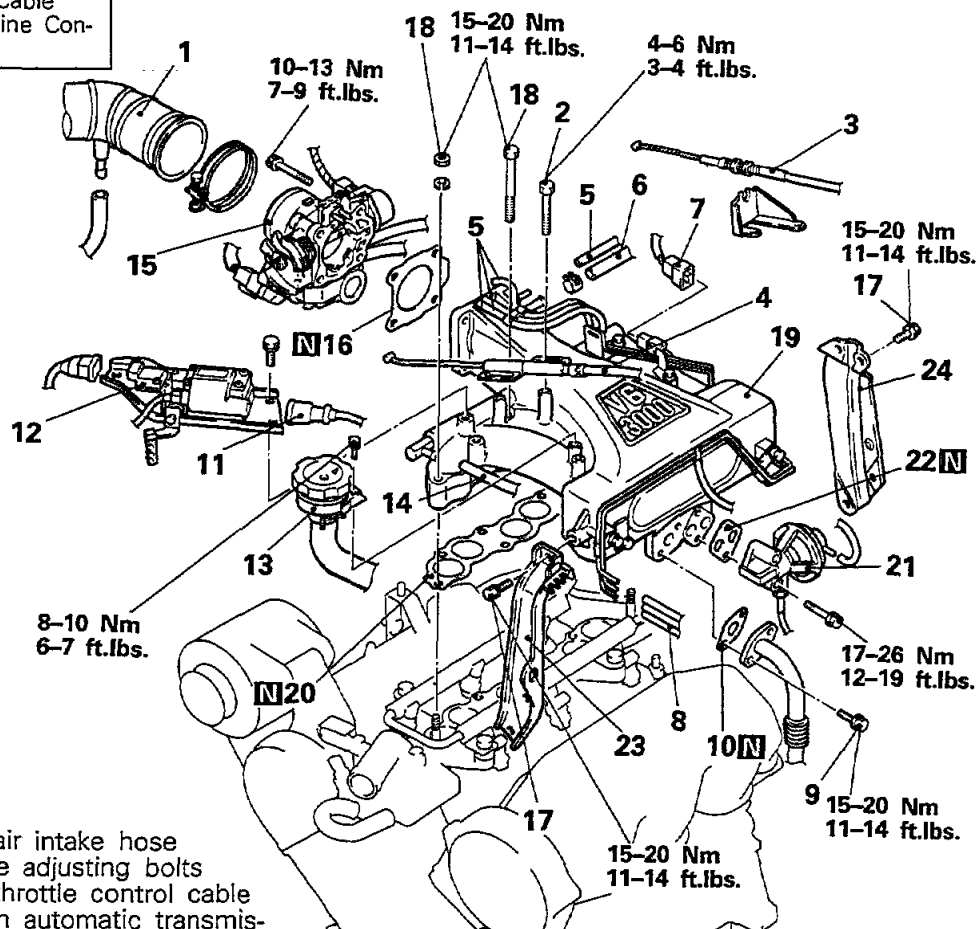
AIR-FLOW SENSOR CHECK

For inspection of air-flow sensor, refer to GROUP 14 - Air-Flow Sensor Check.

AIR INTAKE PLENUM REMOVAL AND INSTALLATION

Post-installation Operation

- Adjustment of Accelerator Cable
(Refer to GROUP 14 - Engine Control.)



05W532

Removal steps

1. Connection for air intake hose
2. Accelerator cable adjusting bolts
3. Connection for throttle control cable (Vehicles with an automatic transmission)
4. Connection for accelerator cable
5. Connection for vacuum hose
6. Connection for brake booster vacuum hose
7. EGR temperature sensor connector
8. Connection for vacuum hose
9. EGR pipe attaching bolts
10. Gasket
11. Connection for high tension cable
12. Ignition coil
13. Engine oil filler neck bracket
14. Connection for PCV hose
15. Throttle body assembly

16. Throttle body gasket
17. Bolts
18. Bolts and nuts
19. Air intake plenum
20. Air intake plenum gasket
21. EGR valve
22. EGR gasket
23. Air intake plenum front stay
24. Air intake plenum rear stay

NOTE

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

SERVICE POINTS OF REMOVAL

N11UBAB

15. REMOVAL OF THE THROTTLE BODY ASSEMBLY

Take out the throttle body installation bolts, taking care not to disturb the throttle body during the operation.

NOTE

Leave the water hoses attached to the throttle body assembly.

INSPECTION

N11UCAC

Check the air intake plenum for damage and cracks and replace it if any defects are found.

INTAKE MANIFOLD REMOVAL AND INSTALLATION

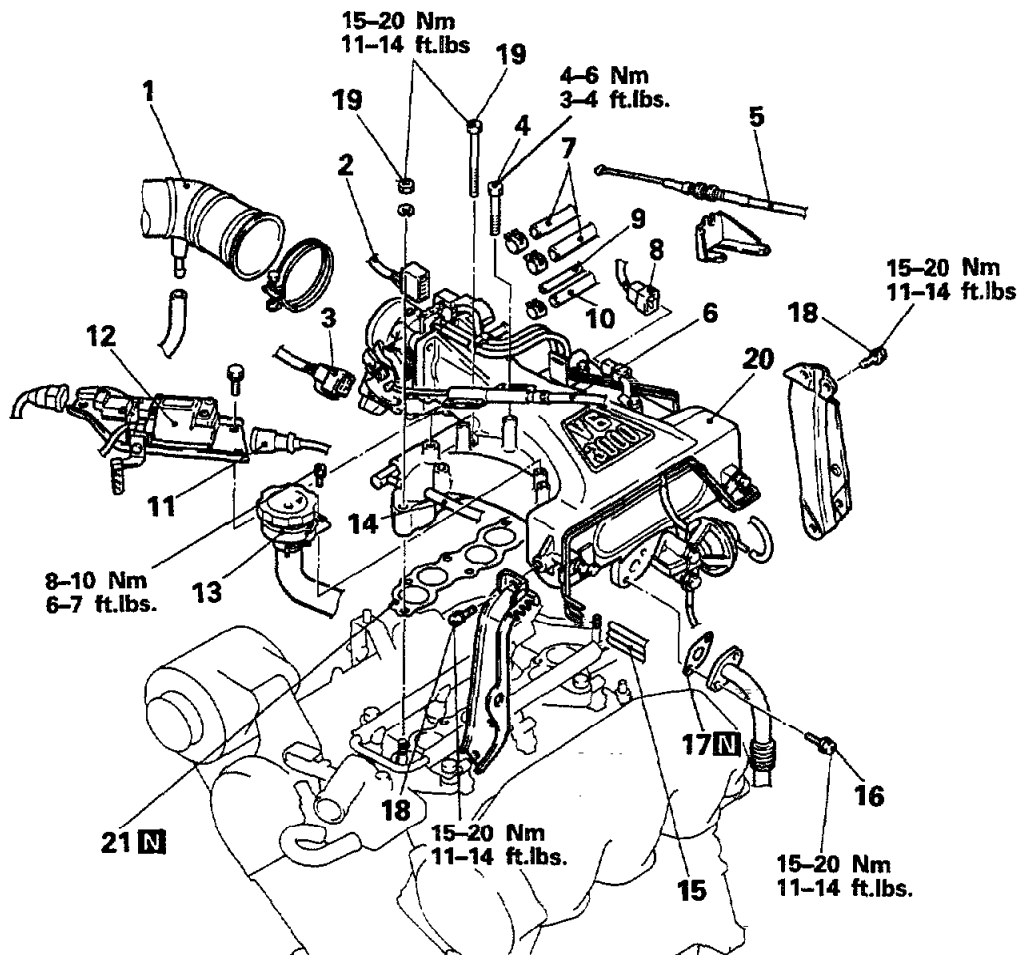
N11MA-1

Pre-removal Operation

- Draining of Engine Coolant
- Reduction of the Fuel Line internal pressure (Refer to GROUP 14 - MPI System.)

Post-installation Operation

- Filling of Engine Coolant (Refer to GROUP 0 - Maintenance Service.)
- Adjustment of Accelerator Cable (Refer to GROUP 14 - Engine Control.)
- Inspection of fuel pressure (Refer to GROUP 14 - MPI System.)



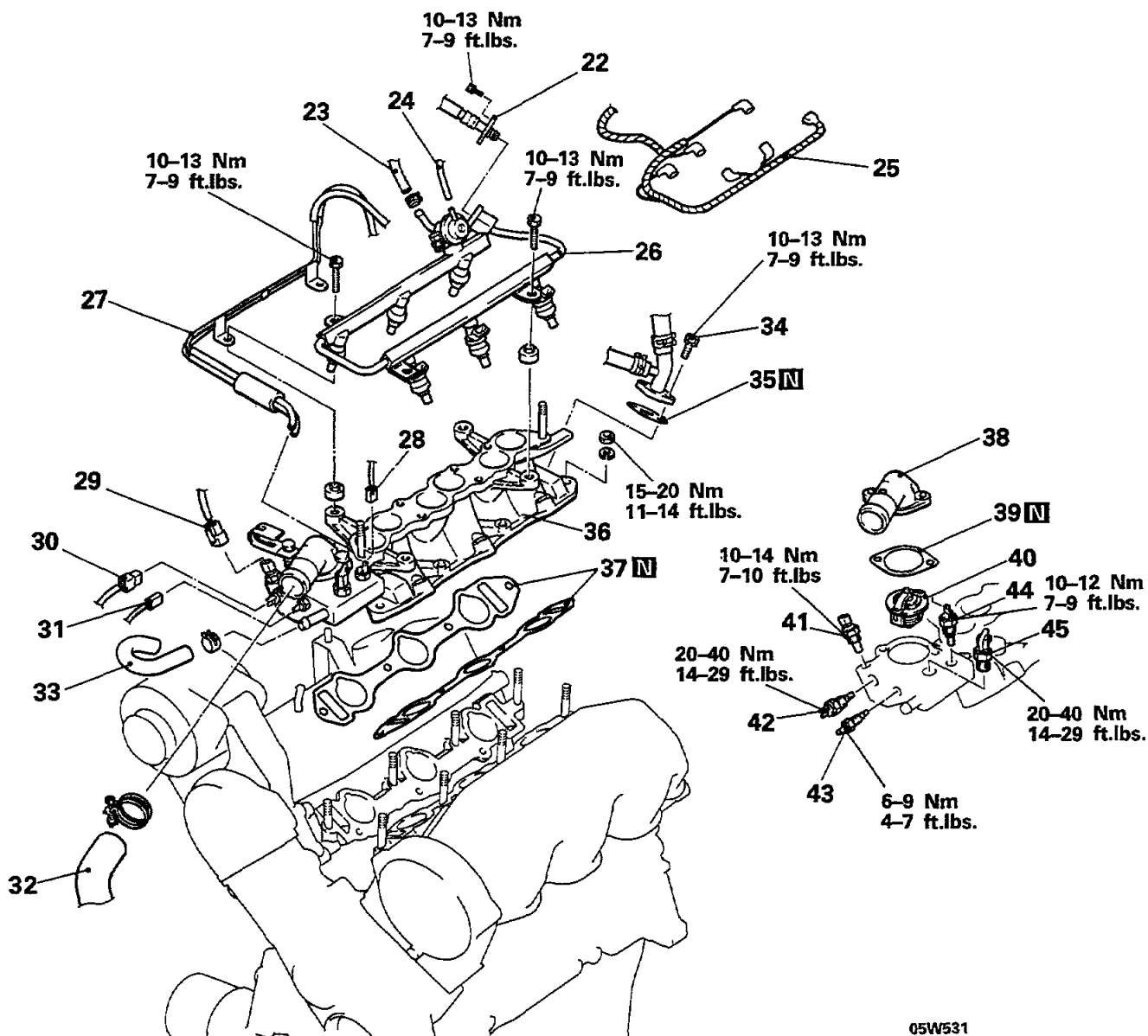
05W527

Removal steps

1. Connection for air intake hose
2. Throttle position sensor connector
3. Stepper motor connector
4. Accelerator cable adjusting bolts
5. Connection for throttle control cable (Vehicles with an automatic transmission)
6. Connection for accelerator cable
7. Connection for water hoses
8. EGR temperature sensor connector
9. Connection for vacuum hose
10. Connection for brake booster vacuum hose
11. Connection for high tension cable
12. Ignition coil
13. Engine oil filler neck bracket
14. Connection for PCV hose
15. Connection for vacuum hose
16. EGR pipe attaching bolts
17. Gasket
18. Bolts
19. Bolts and nuts
20. Air intake plenum and throttle body
21. Air intake plenum gasket

NOTE

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



05W531

- ↔ 22. Connection for fuel high pressure hose
 - ↔ 23. Connection for fuel return hose
 - ↔ 24. Vacuum hose
 - ↔ 25. Connection for control harness
 - ↔ 26. Delivery pipe, fuel injector and pressure regulator
 - 27. Vacuum hose and pipe assembly
 - 28. Connection for engine coolant temperature gauge unit connector
 - 29. Connection for engine coolant temperature switch connector (Vehicles with an air conditioner)
 - 30. Connection for engine coolant temperature sensor connector
 - 31. Connection for thermo switch connector (Vehicles with an automatic transmission)
 - 32. Radiator upper hose
 - 33. Connection for water by-pass hose
 - 34. Heater pipe attaching bolts
 - 35. Gasket
 - 36. Intake manifold
 - 37. Intake manifold gasket
 - 38. Water outlet fitting assembly
 - 39. Gasket
 - ↔ 40. Thermostat
 - ↔ 41. Engine coolant temperature switch (Vehicles with an air conditioner)
 - ↔ 42. Engine coolant temperature sensor
 - ↔ 43. Thermo switch (Vehicles with an automatic transmission)
 - ↔ 44. Engine coolant temperature gauge unit
 - ↔ 45. Thermo valve assembly
- 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

SERVICE POINTS OF REMOVAL

N11MBAL

22. DISCONNECTION OF FUEL HIGH PRESSURE HOSE**Caution**

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

26. REMOVAL OF DELIVERY PIPE, FUEL INJECTOR AND PRESSURE REGULATOR

Remove delivery pipe with fuel injector and pressure regulator.

Caution

Do not drop injector when removing delivery pipe.

INSPECTION

N11MCA

INTAKE MANIFOLD

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

- (1) Check for damage or cracking of any part.
- (2) Check for clogging of the water passages.

SERVICE POINTS OF INSTALLATION

N11MDAT

45. APPLICATION OF SEALANT TO THERMO VALVE ASSEMBLY/44. ENGINE COOLANT TEMPERATURE GAUGE UNIT/43. THERMO SWITCH/42. ENGINE COOLANT TEMPERATURE SENSOR/41. ENGINE COOLANT TEMPERATURE SWITCH

Refer to P. 11-6.

40. INSTALLATION OF THERMOSTAT

Refer to GROUP 7 - Thermostat.

N11NA-1

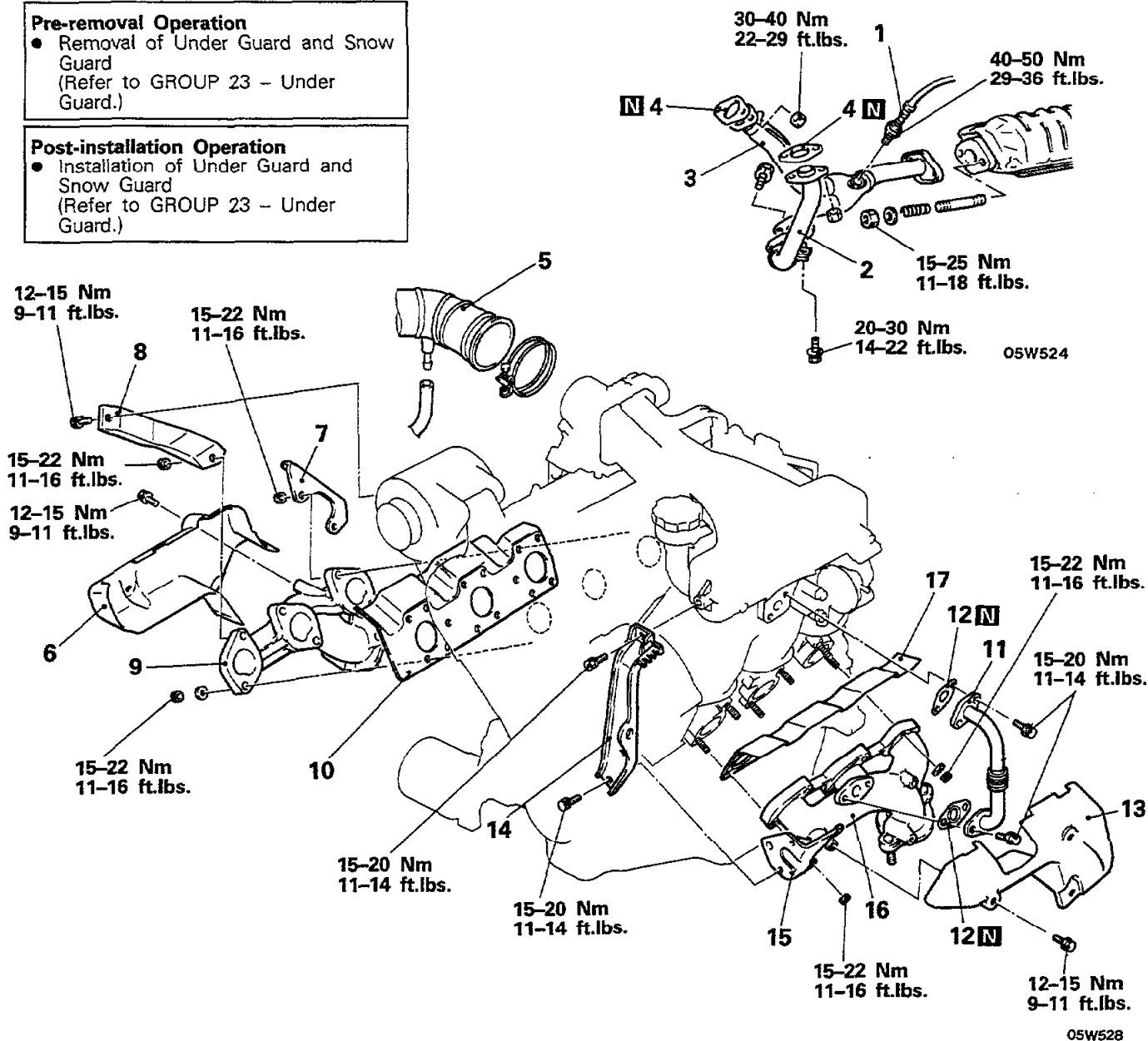
EXHAUST MANIFOLD REMOVAL AND INSTALLATION

Pre-removal Operation

- Removal of Under Guard and Snow Guard
(Refer to GROUP 23 - Under Guard.)

Post-installation Operation

- Installation of Under Guard and Snow Guard
(Refer to GROUP 23 - Under Guard.)



Removal steps of exhaust manifold (Right)

1. Oxygen sensor
2. Front exhaust pipe (L.H.)
3. Front exhaust pipe (R.H.)
4. Gasket
5. Air duct
6. Heat protector
7. Engine hanger
8. Alternator stay
9. Exhaust manifold
10. Gasket

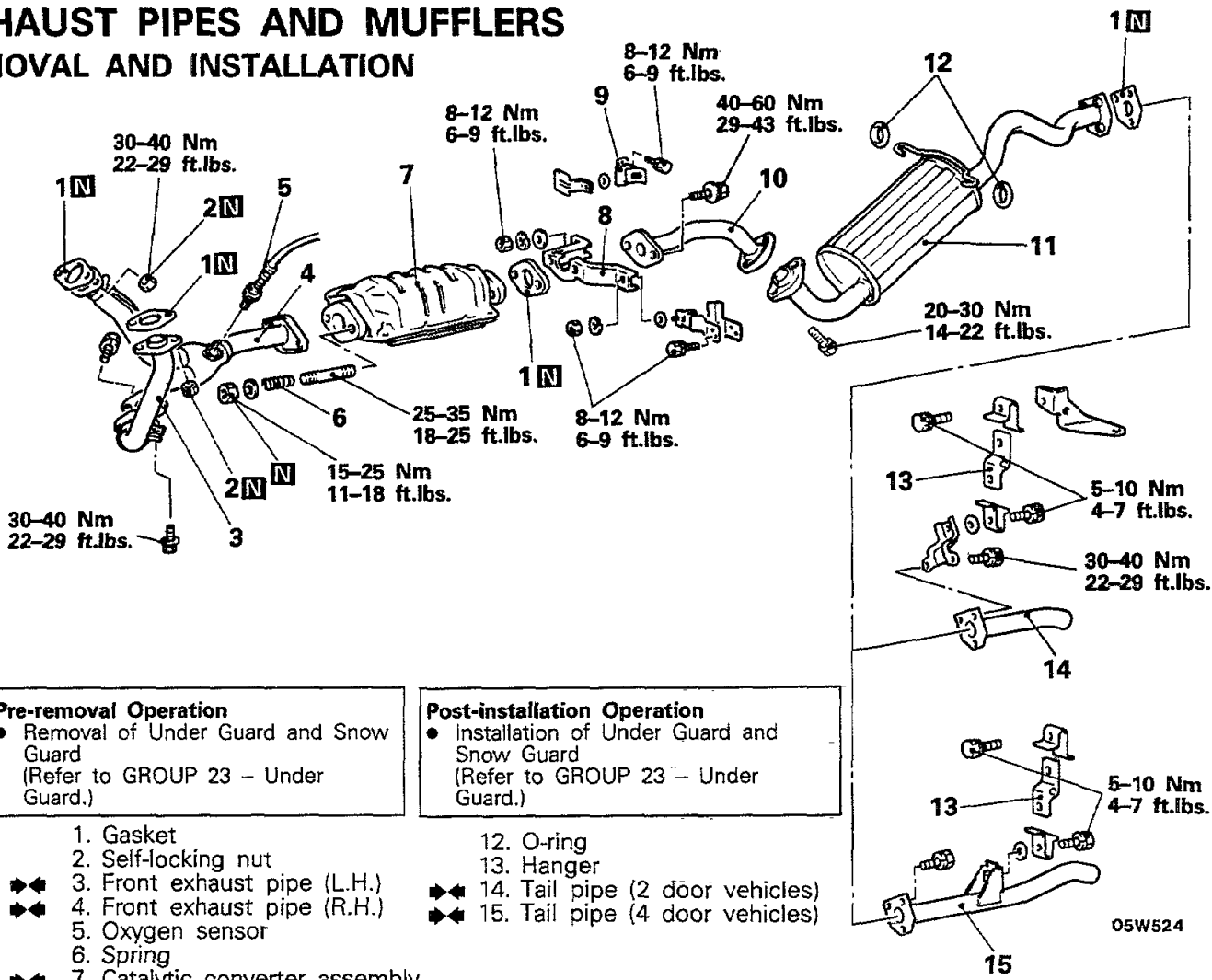
Removal steps of exhaust manifold (Left)

2. Front exhaust pipe (L.H.)
4. Gasket
11. EGR pipe
12. EGR gasket
13. Heat protector
14. Air intake plenum stay (front)
15. Bracket
16. Exhaust manifold
17. Gasket

NOTE

- (1) Reverse the removal procedure to reinstall.
- (2) **N** : Non-reusable parts

EXHAUST PIPES AND MUFFLERS
REMOVAL AND INSTALLATION



Pre-removal Operation

- Removal of Under Guard and Snow Guard (Refer to GROUP 23 - Under Guard.)

Post-installation Operation

- Installation of Under Guard and Snow Guard (Refer to GROUP 23 - Under Guard.)

- 1. Gasket
- 2. Self-locking nut
- ◀▶ 3. Front exhaust pipe (L.H.)
- ◀▶ 4. Front exhaust pipe (R.H.)
- 5. Oxygen sensor
- ◀▶ 6. Spring
- ◀▶ 7. Catalytic converter assembly
- 8. Hanger bracket
- 9. Suspender
- ◀▶ 10. Center exhaust pipe
- ◀▶ 11. Main muffler

- 12. O-ring
- ◀▶ 13. Hanger
- ◀▶ 14. Tail pipe (2 door vehicles)
- ◀▶ 15. Tail pipe (4 door vehicles)

NOTE

(1) ◀▶ : Refer to "Service Points of Installation".

(2) N : Non-reusable parts

INSPECTION

N11RCAJ

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

SERVICE POINTS OF INSTALLATION

N11RDAH

3./4. INSTALLATION OF FRONT EXHAUST PIPE/7. CATALYTIC CONVERTER ASSEMBLY/10. CENTER EXHAUST PIPE/11. MAIN MUFFLER/14./15. TAIL PIPE

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