

INTAKE AND EXHAUST SYSTEM

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SPECIFICATIONS

N11CA--

GENERAL SPECIFICATIONS

Items \ Engine	1.5L Engine	1.6L Engine-N/A	1.6L Engine-T/C
Air cleaner			
Element	Unwoven cloth type	Unwoven cloth type	Unwoven cloth type
Turbocharger			
Type	—	—	Exhaust gas turbine
Identification No.	—	—	TD04-11B-4
Supercharging pressure control	—	—	Waste gate actuator and valve
Exhaust system			
Front exhaust pipe	Dual type	Dual type	Single type
Muffler	Expansion resonance type	Expansion resonance type	Expansion resonance type
Coupling	Flat coupling	Flat coupling	Flat coupling
Suspension system	Rubber hanger	Rubber hanger	Rubber hanger

TORQUE SPECIFICATIONS

N11CC--

Items	Nm	ft.lbs.
Air cleaner		
Air cleaner to body	8–10	6–7
Resonator		
<1.5L Engine-Hatchback>	8–9	6–7
<1.6L Engine-N/A>		
Mounting nut	4–6	3–4
Mounting bolt	8–10	6–7
Hose clamp <1.6L Engine-T/C>	3–5	2–4
Air by-pass valve <1.6L Engine-T/C>	15–22	11–16
Battery holder	2–3	1–2
Intake manifold <1.5L Engine>		
Accelerator cable to air intake plenum	4–6	3–4
Outer cable bracket <A/T>	12–15	9–11
Inner cable bracket <A/T>	12–15	9–11
Fuel high pressure hose to delivery pipe	4–6	3–4
Delivery pipe to intake manifold	10–13	7–9
Air intake plenum stay	15–20	11–14
Air intake plenum	15–20	11–14
Throttle body	10–13	7–9
Intake manifold stay	18–25	13–18
Intake manifold	15–20	11–14
Distributor	10–13	7–9
Ignition coil	12–15	9–11
EGR valve	10–15	7–11
EGR temperature sensor <Vehicles for California>	10–12	7–9
Water outlet fitting	17–20	12–14
Engine coolant temperature gauge unit	10–12	7–9

Items	Nm	ft.lbs.
Engine coolant temperature sensor	20 – 40	14 – 29
Thermo switch <A/T>	6 – 9	4 – 7
Thermo valve <Vehicles for Federal and Canada>	20 – 40	14 – 29
Harness protector to air intake plenum	4 – 6	3 – 4
Intake manifold <1.6L Engine>		
Accelerator cable to intake manifold	4 – 6	3 – 4
Throttle body stay	15 – 22	11 – 16
Fuel high pressure hose to delivery pipe	4 – 6	3 – 4
Delivery pipe to engine	10 – 13	7 – 9
Intake manifold stay	25 – 30	18 – 22
Intake manifold		
Mounting bolt (M8)	15 – 20	11 – 14
Mounting nut and bolt (M10)	30 – 42	22 – 30
Tension rod bracket to tension rod	35 – 55	25 – 40
Throttle body	15 – 22	11 – 16
Ignition coil	20 – 27	14 – 20
Power transistor unit	10 – 12	7 – 9
EGR valve	15 – 22	11 – 16
EGR temperature sensor <Vehicles for California>	10 – 12	7 – 9
Harness protector to intake manifold	4 – 6	3 – 4
Exhaust manifold <1.5L Engine>		
Front exhaust pipe to exhaust manifold	30 – 40	22 – 29
Front exhaust pipe to engine	20 – 30	14 – 22
Exhaust manifold cover (A), (B) to exhaust manifold	27 – 33	20 – 24
Exhaust manifold cover (A) to exhaust manifold cover (B)	8 – 10	6 – 7
Exhaust manifold to engine	15 – 20	11 – 14
Oxygen sensor	40 – 50	29 – 36
Exhaust manifold <1.6L Engine-N/A>		
Front exhaust pipe to exhaust manifold	30 – 40	22 – 29
Front exhaust pipe to engine	20 – 30	14 – 22
Heat protector (A), (B)	12 – 15	9 – 11
Exhaust manifold to engine	25 – 30	18 – 22
Oxygen sensor	40 – 50	29 – 36
Exhaust manifold and turbocharger <1.6L Engine-T/C>		
Front exhaust pipe to exhaust fitting	30 – 40	22 – 29
Front exhaust pipe to engine	20 – 30	14 – 22
Heat protector (A), (B)	12 – 15	9 – 11
Engine hanger to engine	12 – 15	9 – 11
Exhaust manifold to engine	25 – 30	18 – 22
Exhaust manifold to turbocharger	55 – 65	40 – 47
Oil pipe to engine	14 – 19	10 – 14
Water pipe (B) to water inlet pipe	40 – 50	29 – 36
Waste gate actuator	10 – 13	7 – 9
Oxygen sensor	40 – 50	29 – 36
Water pipe (B) to turbocharger	28 – 34	20 – 25
Air outlet fitting	9 – 14	7 – 10
Oil pipe to turbocharger	14 – 19	10 – 14
Oil pipe mounting bolt	8 – 10	6 – 7

11-4 INTAKE AND EXHAUST SYSTEM — Specifications / Special Tool / Troubleshooting

Items	Nm	ft.lbs.
Water pipe (A) to turbocharger	28 – 34	20 – 25
Water pipe (A) mounting bolt	10 – 12	7 – 9
Exhaust fitting	55 – 65	40 – 47
Oil return pipe	8 – 10	6 – 7
Exhaust pipe and main muffler		
Front exhaust pipe to exhaust manifold <1.5L Engine, 1.6L Engine-N/A>	30 – 40	22 – 29
Front exhaust pipe to exhaust fitting <1.6L Engine-T/C>	30 – 40	22 – 29
Front exhaust pipe to engine	20 – 30	14 – 22
Front exhaust pipe to catalytic converter	40 – 60	29 – 43
Center exhaust pipe to catalytic converter	30 – 40	22 – 29
Center exhaust pipe to main muffler	30 – 40	22 – 29
Center exhaust pipe to bracket	10 – 15	7 – 11
Hanger to body	10 – 15	7 – 11
Hanger to main muffler	10 – 15	7 – 11

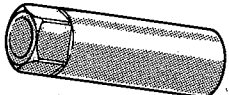
SEALANTS

N11CD--

Items	Specified sealants	Quantity
Engine coolant temperature gauge unit	MOPAR Part No. 4318034 or equivalent	As required
Thermo switch	MOPAR Part No. 4318034 or equivalent	As required
Engine coolant temperature sensor	MOPAR Part No. 4318034 or equivalent	As required
Thermo valve	MOPAR Part No. 4318034 or equivalent	As required

SPECIAL TOOL

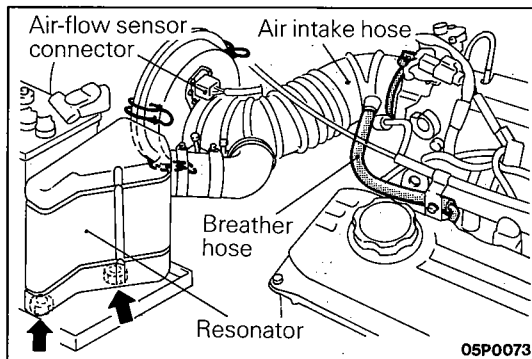
N11DA--

Tool	Number	Name	Use
	MB998748	Oxygen sensor wrench	Removal/Installation of oxygen sensor <1.6L Engine-T/C>

TROUBLESHOOTING

N11EAAB

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

AIR CLEANER ELEMENT INSPECTION AND REPLACEMENT

N11GBAB

<1.5L Engine-Sedan>

1. Disconnect the air-flow sensor connector.
2. Disconnect the breather hose.
3. Remove the resonator retaining nuts, and remove the air intake hose and the resonator together.
4. Unclamp and remove the air cleaner cover.

Caution

Care must be taken when removing the air cleaner cover, because the air-flow sensor is attached.

5. Take out the air cleaner element.
6. Check the air cleaner element for dirt or clogging.
7. Replace the air cleaner element if the dirt or clogging is serious.
8. Insert the element into the air cleaner body and install the air cleaner cover.
9. Install the air intake hose and resonator.
10. Connect the breather hose.
11. Connect the air-flow sensor connector.

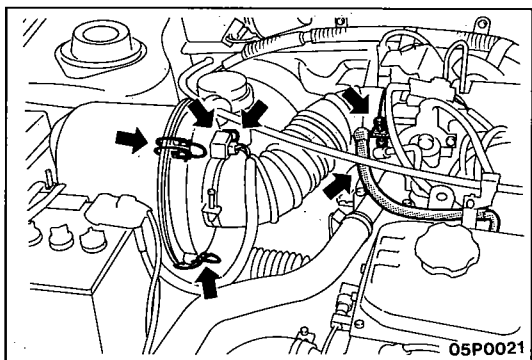
<1.5L Engine-Hatchback>, <1.6L Engine-N/A>

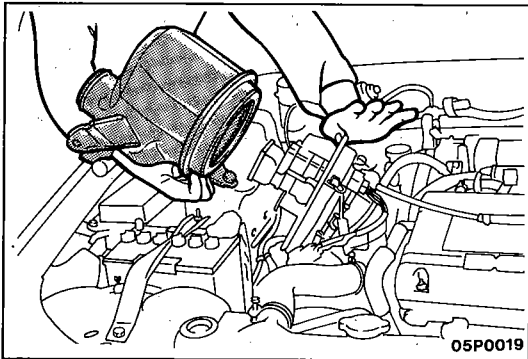
1. Disconnect the air-flow sensor connector.
2. Disconnect the breather hose.
3. Disconnect the air intake hose from the carburetor throttle body.
4. Unclamp and remove the air cleaner cover together with the air intake hose.

Caution

Care must be taken when removing the air cleaner cover, because the air-flow sensor is attached.

5. Take out the air cleaner element.
6. Check the air cleaner element for dirt or clogging.
7. Replace the air cleaner element if the dirt or clogging is serious.
8. Insert the element into the air cleaner body and install the air cleaner cover and the air intake hose.
9. Connect the breather hose.
10. Connect the air-flow sensor connector.





<1.6L Engine-T/C>

1. Remove the air cleaner retaining bolts.
2. Disconnect the air duct.
3. Unclamp the air cleaner cover.
4. Remove the air cleaner body with the cleaner element in place.

Caution

Care must be taken when removing the air cleaner cover, because the air-flow sensor is attached.

5. Take out the air cleaner element.
6. Check the air cleaner element for dirt or clogging.
7. Replace the air cleaner element if the dirt or clogging is serious.
8. Insert the element into the air cleaner body.
9. Clamp the air cleaner cover.
10. Connect the air duct.
11. Install and tighten the air cleaner retaining bolts to the specified torque.

INTAKE MANIFOLD VACUUM INSPECTION

N11GCAA

Refer to GROUP 9 – Engine Adjustment.

CATALYTIC CONVERTER REPLACEMENT

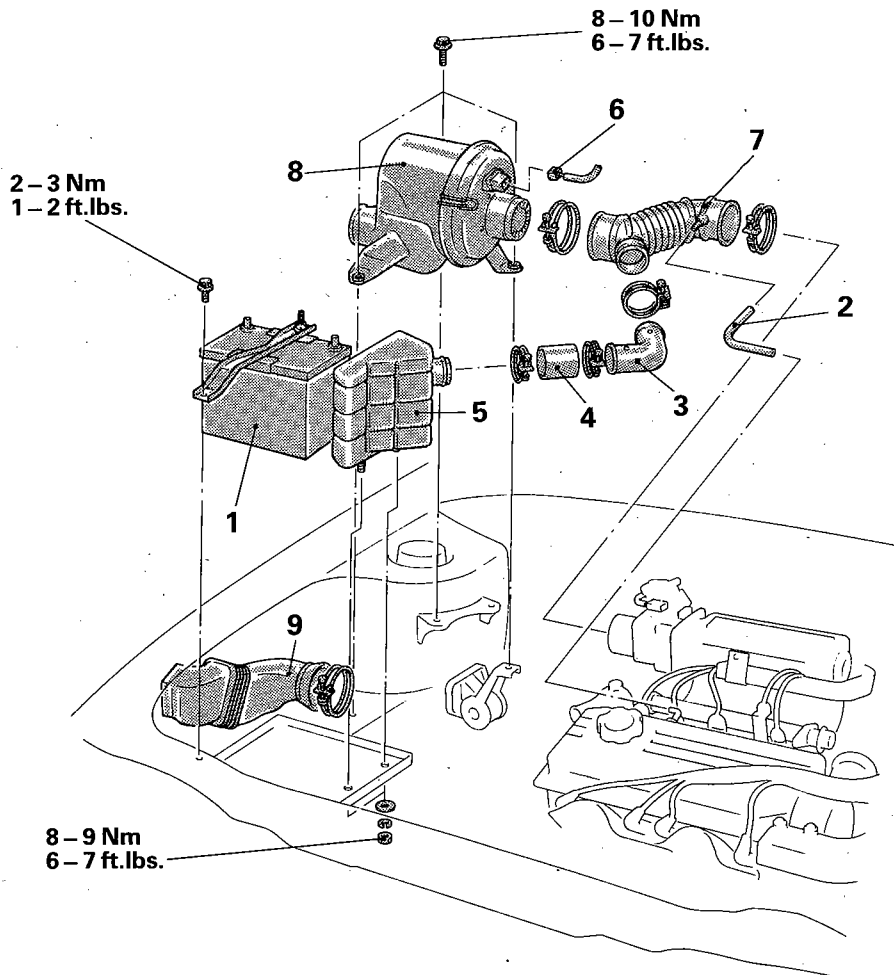
N11GDAA

Refer to GROUP 25 – Catalytic Converter.

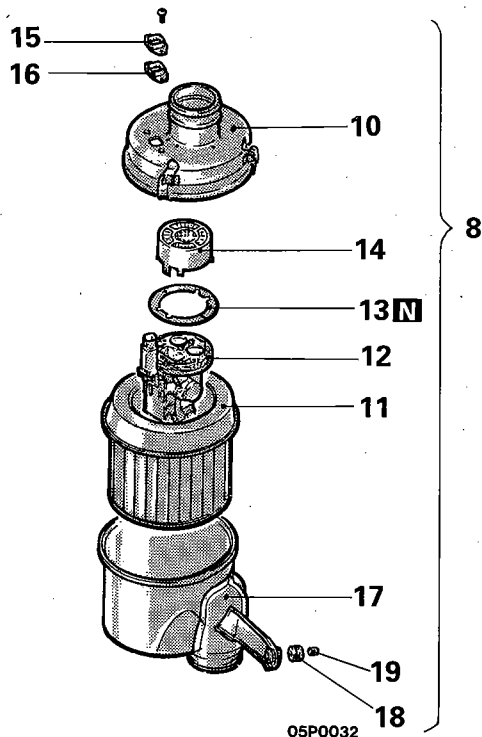
AIR CLEANER

N11FA-A

REMOVAL AND INSTALLATION <1.5L Engine>



05P0080



Removal steps

1. Battery
2. Breather hose
3. Tuning pipe <Sedan>
4. Tuning hose <Sedan>
5. Resonator <Sedan>
6. Connection for air-flow sensor connector
7. Air intake hose
8. Air cleaner
9. Air duct
10. Air cleaner cover
11. Air cleaner element
12. Air-flow sensor assembly
13. Air-flow sensor gasket
14. Noise reduction filter
15. Cover
16. Grommet
17. Air cleaner body
18. Insulator
19. Collar

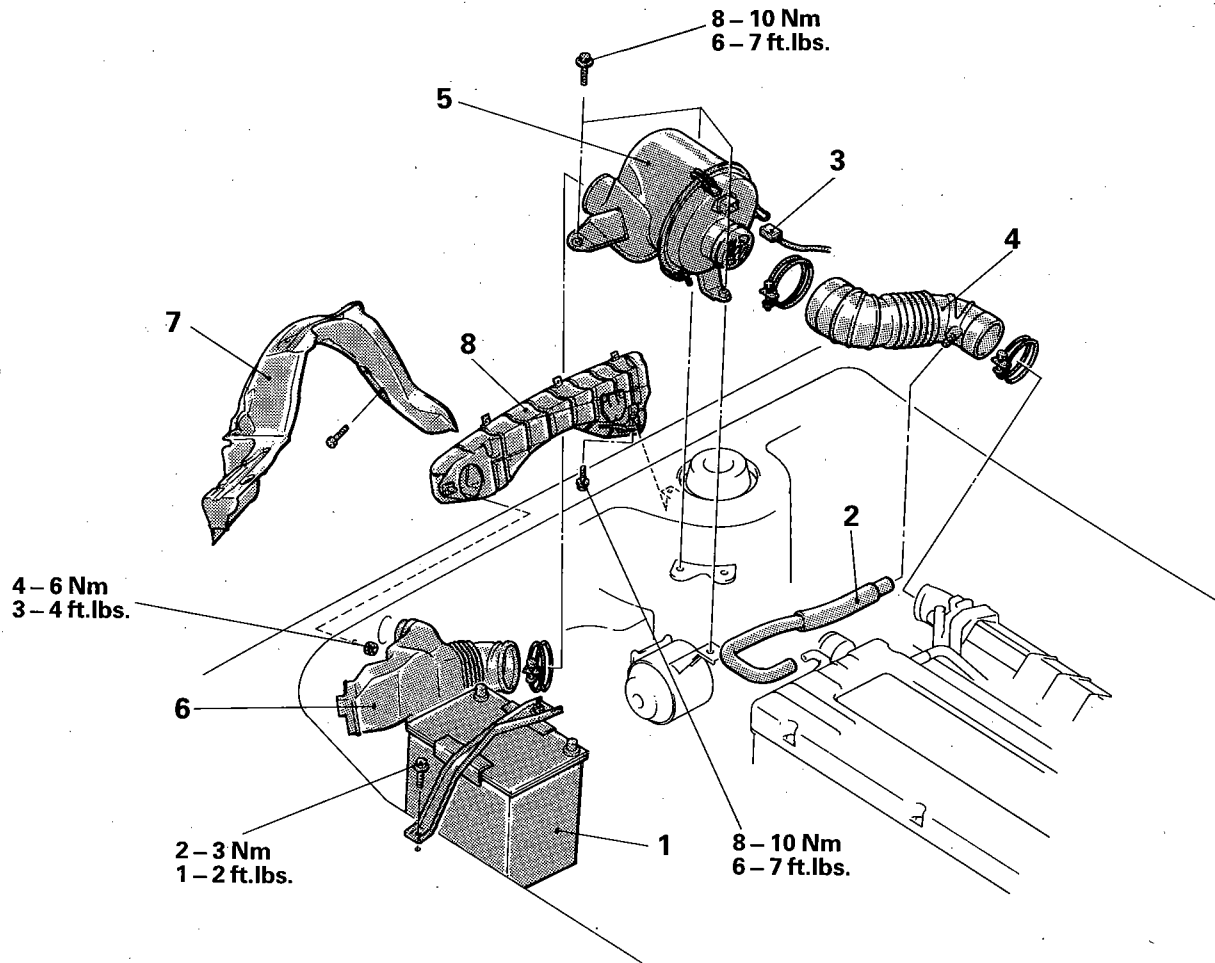
NOTE

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

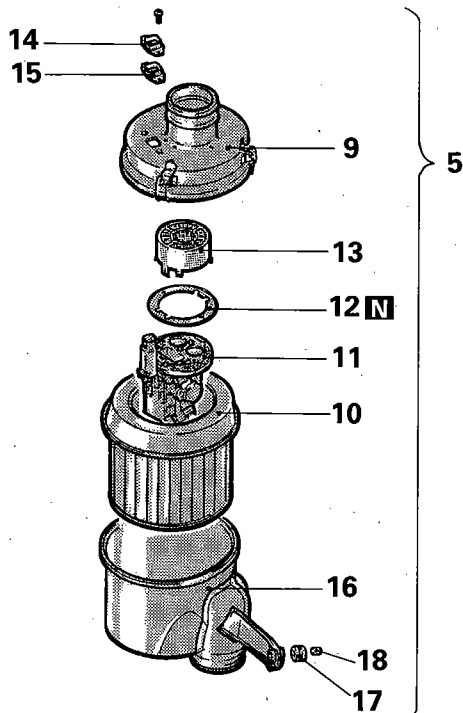
05P0032

REMOVAL AND INSTALLATION <1.6L Engine-N/A>

N11FA-B



05P0079



05P0032

Removal steps

1. Battery
2. Breather hose
3. Connection for air-flow sensor connector
4. Air intake hose
5. Air cleaner
6. Air duct
7. Splash shield
8. Resonator
9. Air cleaner cover
10. Air cleaner element
11. Air-flow sensor assembly
12. Air-flow sensor gasket
13. Noise reduction filter
14. Cover
15. Grommet
16. Air cleaner body
17. Insulator
18. Collar

NOTE

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

N11FA-C



05P0081

15. Air cleaner cover
16. Air cleaner element
17. Air-flow sensor assembly
18. Air-flow sensor gasket
19. Cover
20. Grommet
21. Air cleaner body
22. Insulator
23. Collar

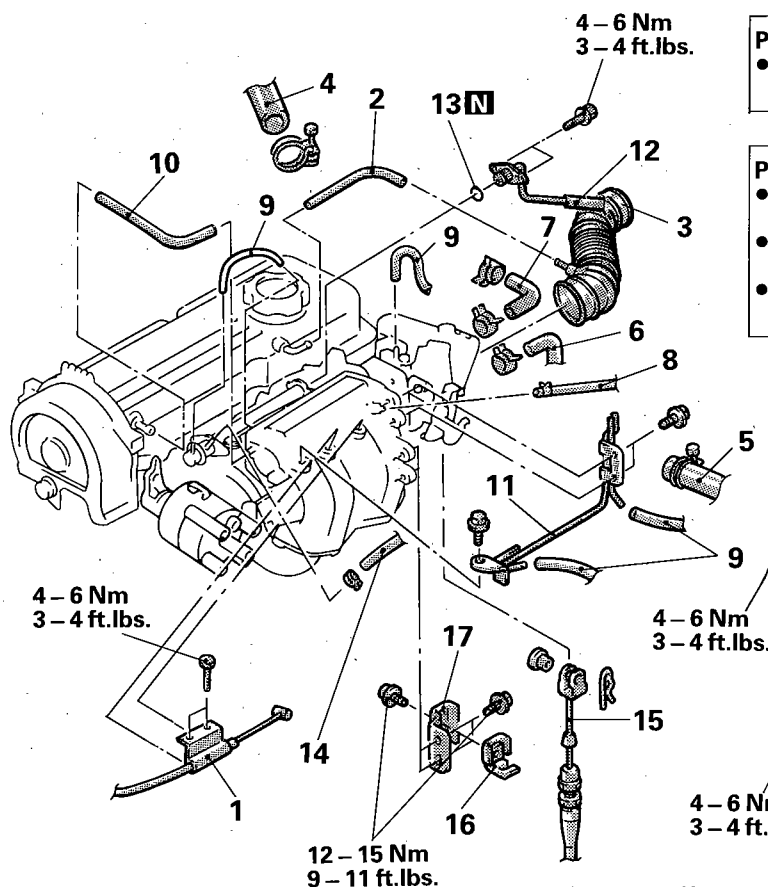
- (1) Reverse the removal procedures to reinstall.
- (2) **N**: Non-reusable parts
- (3) Torque for tightening hose band marked with * is 3–5 Nm (2–4 ft.lbs.).

N11FCAB

- AIR FLOW SENSOR CHECK**
For inspection of air-flow sensor, refer to GROUP 14 – Air-flow Sensor Check.

INTAKE MANIFOLD <1.5L Engine>

REMOVAL AND INSTALLATION

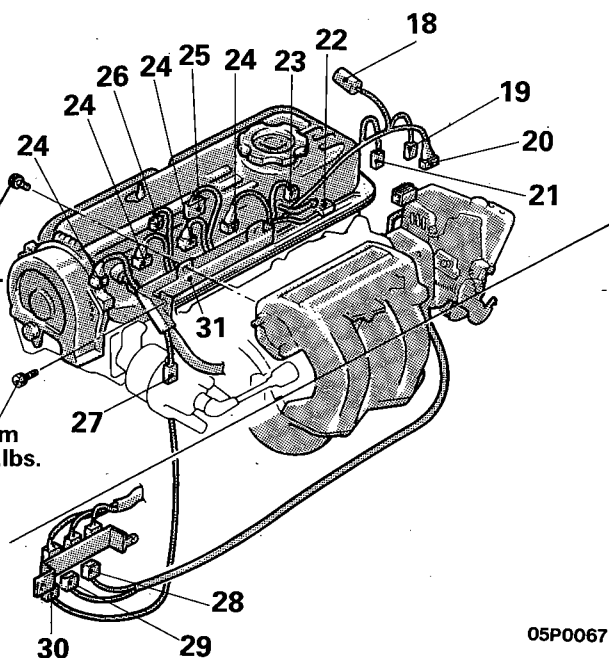


Pre-removal Operation

- Draining Engine Coolant
(Refer to GROUP 7 – Service Adjustment Procedures.)

Post-installation Operation

- Filling Engine Coolant
(Refer to GROUP 7 – Service Adjustment Procedures.)
- Adjustment of Throttle Control Cable
(Refer to GROUP 21 – Service Adjustment Procedures.)
- Adjustment of Accelerator Cable
(Refer to GROUP 14 – Service Adjustment Procedures.)



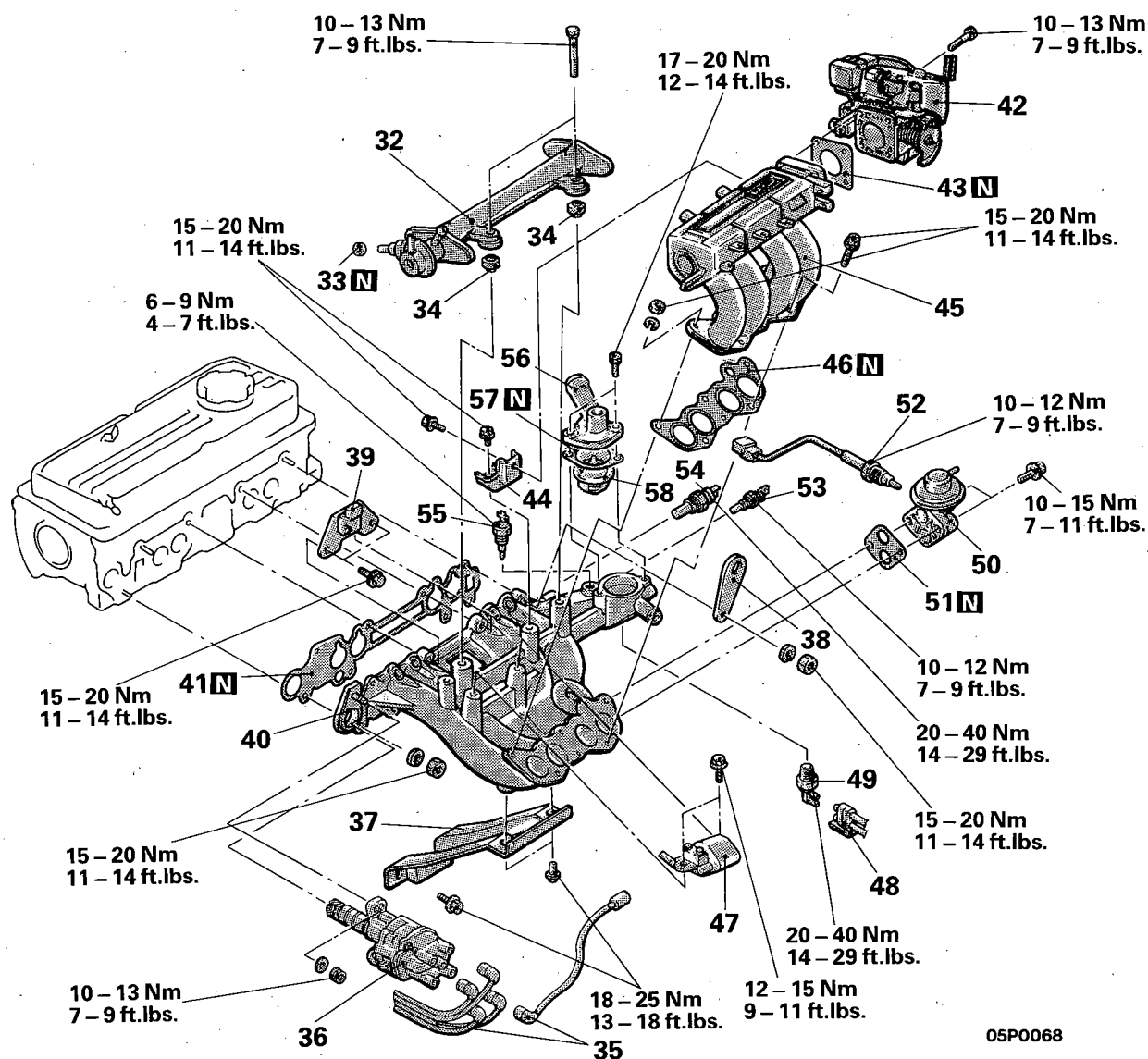
Removal steps

1. Connection for accelerator cable
2. Breather hose
3. Air intake hose
4. Connection for radiator upper hose
5. Heater hose
6. Connection for water by-pass hose
7. Water hose
8. Connection for brake booster vacuum hose
9. Connection for vacuum hoses
10. PCV hose
11. Vacuum pipe
12. Connection for fuel high pressure hose
13. O-ring
14. Connection for fuel return hose
15. Connection for throttle control cable <A/T>
16. Inner cable bracket <A/T>
17. Outer cable bracket <A/T>
18. Connection for oxygen sensor connector
19. Connection for engine coolant temperature gauge unit connector
20. Connection for engine coolant temperature sensor connector

21. Connection for thermo switch connector <A/T>
22. Connection for idle speed control connector
23. Connection for EGR temperature sensor connector <Vehicles for California>
24. Connection for injector connector
25. Connection for power transistor connector
26. Connection for ignition coil connector
27. Connection for condenser connector
28. Connection for throttle position sensor connector
29. Connection for motor position sensor connector
30. Connection for distributor connector
31. Control harness

NOTE

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



Removal steps

- ◆◆ ◆◆ 32. Delivery pipe, fuel injector and pressure regulator
- 33. Insulator
- 34. Insulator
- 35. High tension cable and spark plug cable
- 36. Distributor
- 37. Intake manifold stay
- 38. Engine hanger
- 39. Power transistor bracket
- 40. Intake manifold
- 41. Intake manifold gasket
- 42. Throttle body assembly
- 43. Gasket
- 44. Air intake plenum stay
- 45. Air intake plenum
- 46. Air intake plenum gasket
- 47. Ignition coil
- 48. Vacuum hose <Vehicles for Federal and Canada>

- ◆◆ 49. Thermo valve <Vehicles for Federal and Canada>
- 50. EGR valve
- 51. EGR gasket
- 52. EGR temperature sensor <Vehicles for California>
- ◆◆ 53. Engine coolant temperature gauge unit
- ◆◆ 54. Engine coolant temperature sensor
- ◆◆ 55. Thermo switch <A/T>
- 56. Water outlet fitting
- 57. Gasket
- 58. Thermostat

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

05P0068

SERVICE POINTS OF REMOVAL

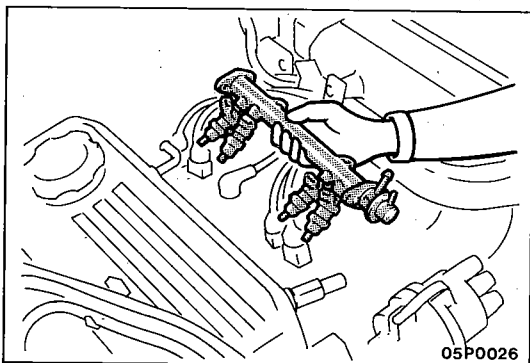
N11MBAJO

12. DISCONNECTION OF FUEL HIGH PRESSURE HOSE

Relieve pressure in the fuel pipe line to prevent fuel outflow. (Refer to GROUP 14 – Service Adjustment Procedures.)

Caution

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



32. REMOVAL OF DELIVERY PIPE, FUEL INJECTION AND PRESSURE REGULATOR

Remove delivery pipe with fuel injector and pressure regulator.

Caution

Do not drop injector when removing delivery pipe.

INSPECTION

N11MLAK

AIR INTAKE PLENUM

- (1) Check air intake plenum for defect or cracks. Replace if defective or cracked.
- (2) Check load (negative pressure) of drain port. Check cooling water and jet air passages for clogging. Clean if required.

INTAKE MANIFOLD

- (1) Check for damage or cracking of any part.
- (2) Check the vacuum nipple. Check cooling water and jet air passages for clogging. Clean if required.

SERVICE POINTS OF INSTALLATION

N11MDAM

55. INSTALLATION OF THERMO SWITCH <A/T> / 54. ENGINE COOLANT TEMPERATURE SENSOR / 53. ENGINE COOLANT TEMPERATURE GAUGE UNIT / 49. THERMO VALVE

Apply sealant to threaded portion and tighten.

Specified sealant: MOPAR Part No. 4318034 or equivalent

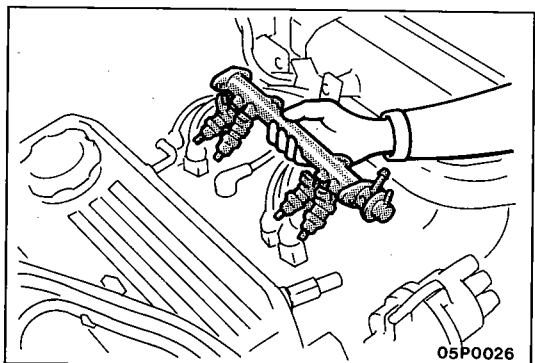
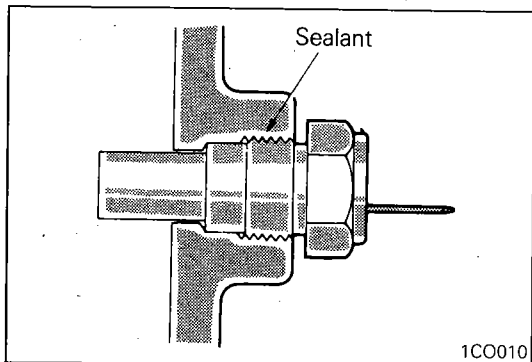
Caution

Avoid using an impact wrench for installation of the thermo switch, engine coolant temperature gauge unit and engine coolant temperature sensor.

32. INSTALLATION OF DELIVERY PIPE, FUEL INJECTOR AND PRESSURE REGULATOR

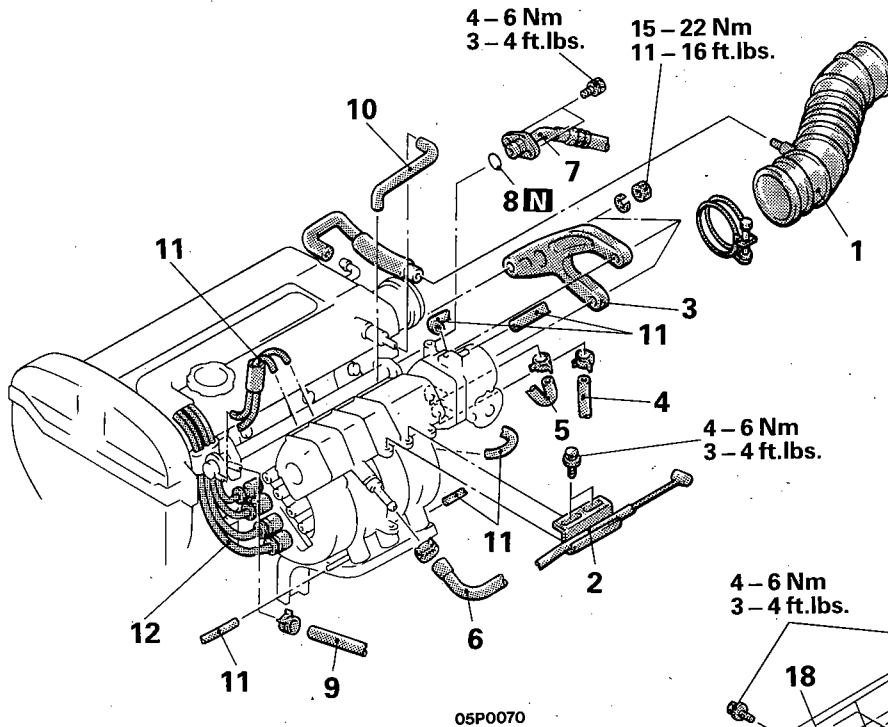
Caution

When installing the delivery pipe, make sure that the injector is not dropped.



INTAKE MANIFOLD <1.6L Engine-N/A>

REMOVAL AND INSTALLATION

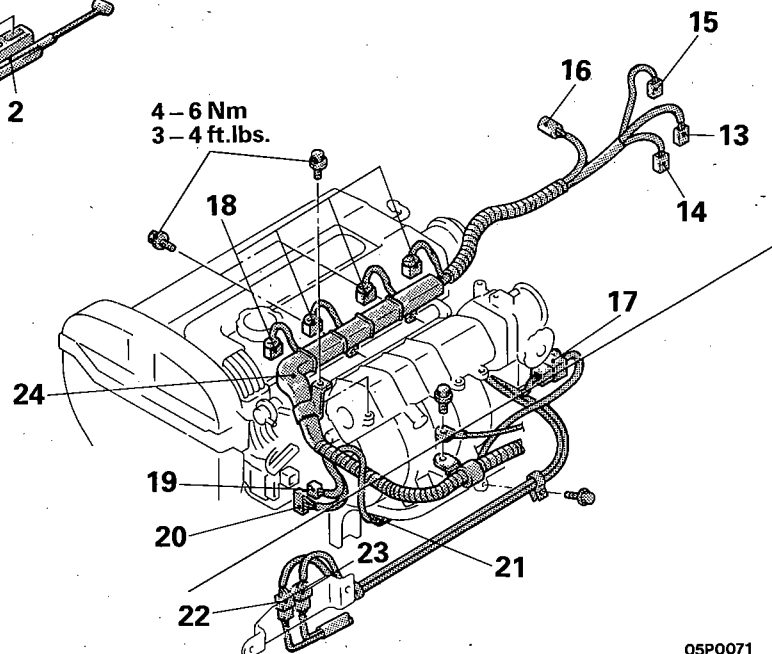


Pre-removal Operation

- Draining Engine Coolant (Refer to GROUP 7 – Service Adjustment Procedures.)

Post-installation Operation

- Filling Engine Coolant (Refer to GROUP 7 – Service Adjustment Procedures.)
- Adjustment of Accelerator Cable (Refer to GROUP 14 – Service Adjustment Procedures.)



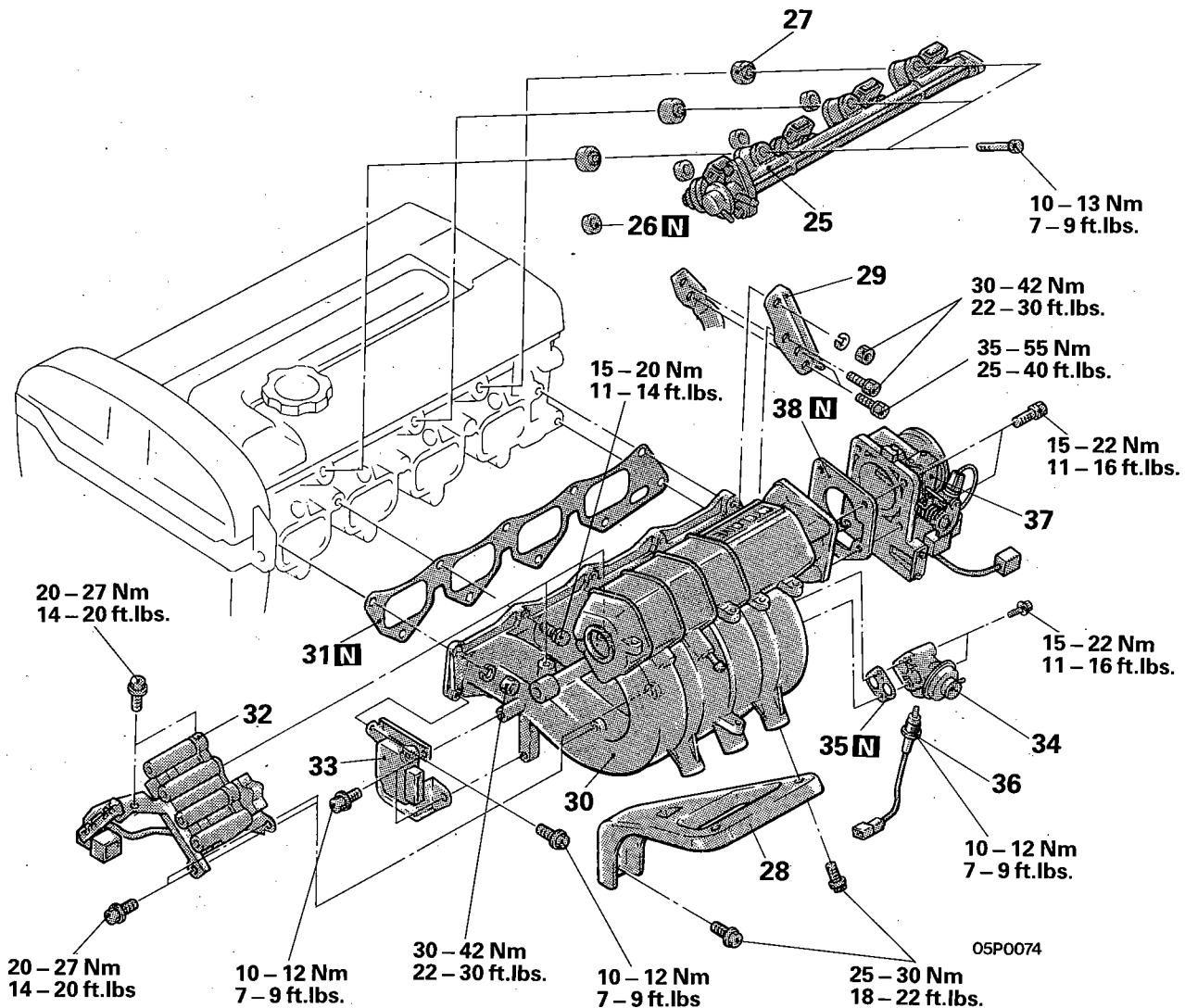
Removal steps

1. Air intake hose
2. Connection for accelerator cable
3. Throttle body stay
4. Connection for water by-pass hose
5. Connection for water hose
6. Connection for brake booster vacuum hose
7. Connection for fuel high pressure hose
8. O-ring
9. Connection for fuel return hose
10. Connection for PCV hose
11. Connection for vacuum hoses
12. Connection for spark plug cable
13. Connection for engine coolant temperature sensor connector
14. Connection for engine coolant temperature gauge unit connector
15. Connection for engine coolant temperature switch connection <Air conditioner>

16. Connection for oxygen sensor connector
17. Connection for idle speed control connector
18. Connection for injector connector
19. Connection for ignition coil connector
20. Connection for power transistor connector
21. Connection for EGR temperature sensor connector <Vehicles for California>
22. Connection for crank angle sensor connector
23. Connection for throttle position sensor connector
24. Control harness

NOTE

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



Removal steps

- ◆◆ ◆◆ 25. Delivery pipe, fuel injector and pressure regulator
- 26. Insulator
- 27. Insulator
- 28. Intake manifold stay
- 29. Tension rod bracket
- 30. Intake manifold
- 31. Intake manifold gasket
- 32. Ignition coil
- 33. Power transistor unit
- 34. EGR valve
- 35. Gasket
- 36. EGR temperature sensor <Vehicles for California>
- 37. Throttle body
- 38. 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

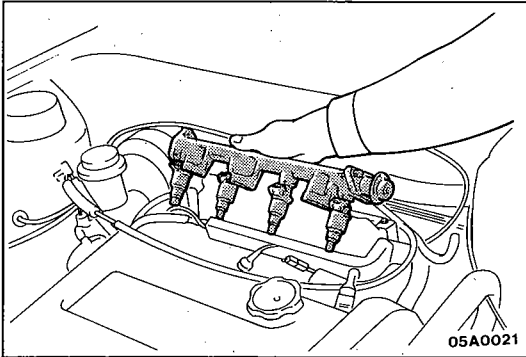
N11MBAJ1

7. DISCONNECTION OF FUEL HIGH PRESSURE HOSE

Relieve pressure in the fuel pipe line to prevent fuel outflow. (Refer to GROUP 14 – Service Adjustment Procedures.)

Caution

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



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

Remove delivery pipe with fuel injector and pressure regulator on.

Caution

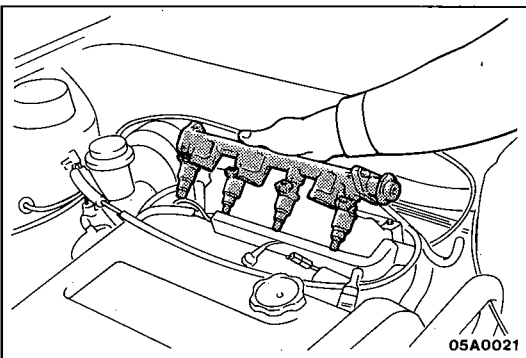
Do not drop injector when removing delivery pipe.

INSPECTION

N11MCAL0

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 gas passage.



SERVICE POINT OF INSTALLATION

N11MDAN0

25. INSTALLATION OF DELIVERY PIPE, FUEL INJECTOR AND PRESSURE REGULATOR

Caution

When installing the delivery pipe, make sure that the injector is not dropped.

INTAKE MANIFOLD <1.6L Engine-T/C>

N11MA-C

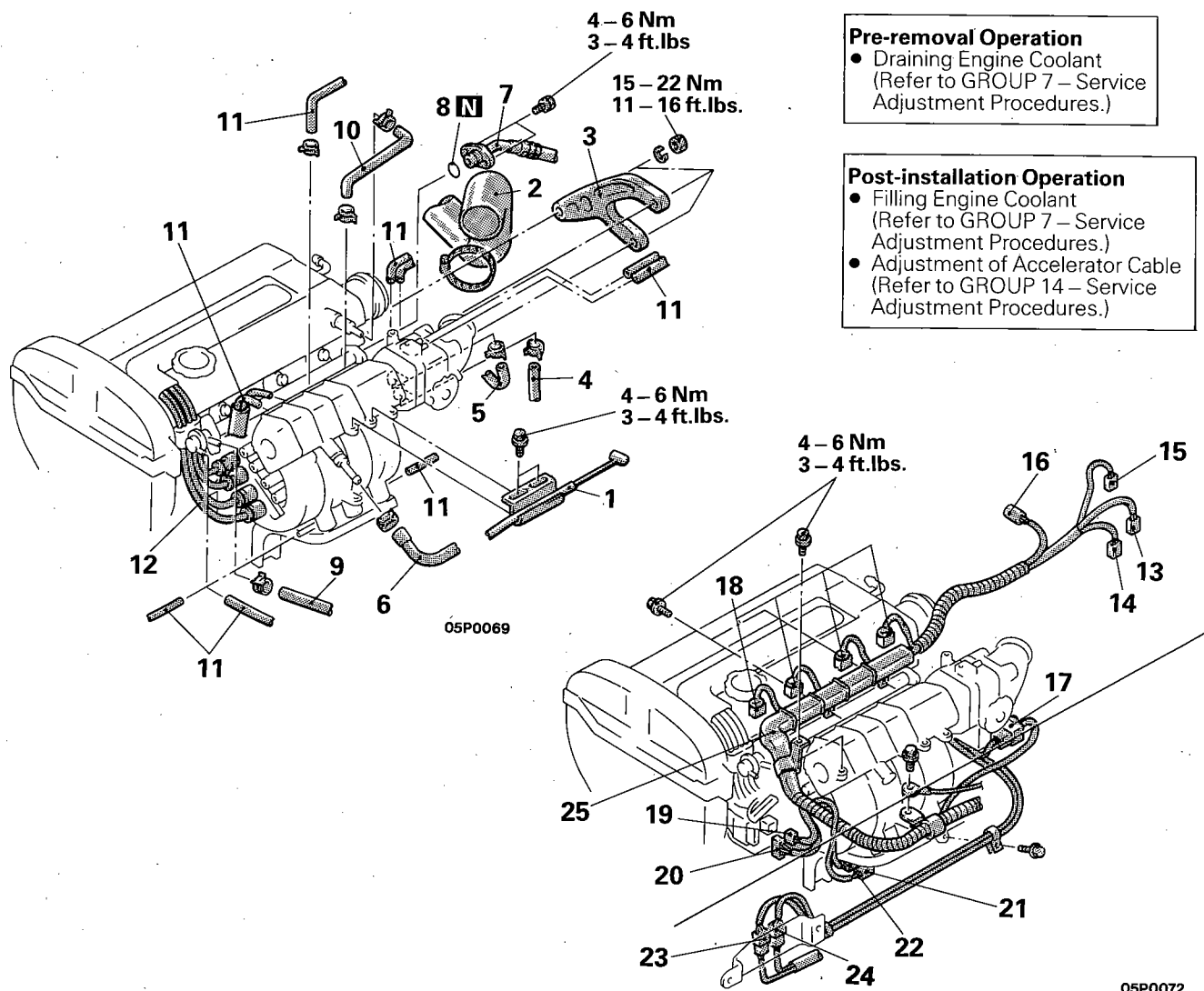
REMOVAL AND INSTALLATION

Pre-removal Operation

- Draining Engine Coolant (Refer to GROUP 7 – Service Adjustment Procedures.)

Post-installation Operation

- Filling Engine Coolant (Refer to GROUP 7 – Service Adjustment Procedures.)
- Adjustment of Accelerator Cable (Refer to GROUP 14 – Service Adjustment Procedures.)

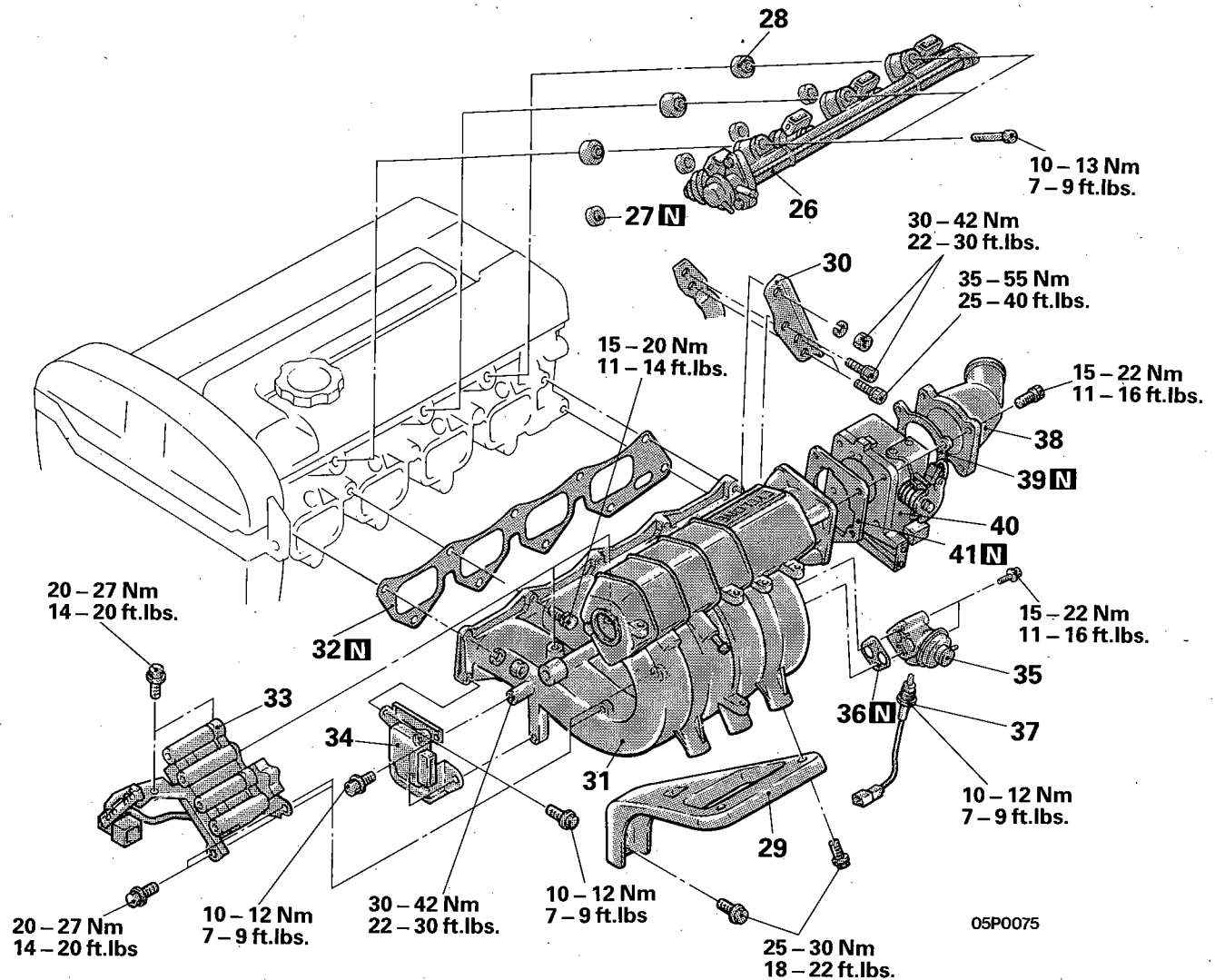
**Removal steps**

1. Connection for accelerator cable
2. Connection for air hose E
3. Throttle body stay
4. Connection for water by-pass hose
5. Connection for water hose
6. Connection for brake booster vacuum hose
7. Connection for fuel high pressure hose
8. O-ring
9. Connection for fuel return hose
10. Connection for PCV hose
11. Connection for vacuum hoses
12. Connection for spark plug cable
13. Connection for engine coolant temperature sensor connector
14. Connection for engine coolant temperature gauge unit connector
15. Connection for engine coolant temperature switch connector <Air conditioner>

16. Connection for oxygen sensor connector
17. Connection for idle speed control connector
18. Connection for injector connector
19. Connection for ignition coil connector
20. Connection for power transistor connector
21. Connection for detonation sensor connector
22. Connection for EGR temperature sensor connector <Vehicles for California>
23. Connection for crank angle sensor connector
24. Connection for throttle position sensor connector
25. Control harness

NOTE

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



Removal steps

- ◆◆ ◆◆ 26. Delivery pipe, fuel injector and pressure regulator
- 27. Insulator
- 28. Insulator
- 29. Intake manifold stay
- 30. Tension rod bracket
- 31. Intake manifold
- 32. Intake manifold gasket
- 33. Ignition coil
- 34. Power transistor unit
- 35. EGR valve
- 36. Gasket
- 37. EGR temperature sensor <Vehicles for California>
- 38. Air fitting
- 39. Gasket
- 40. Throttle body
- 41. 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

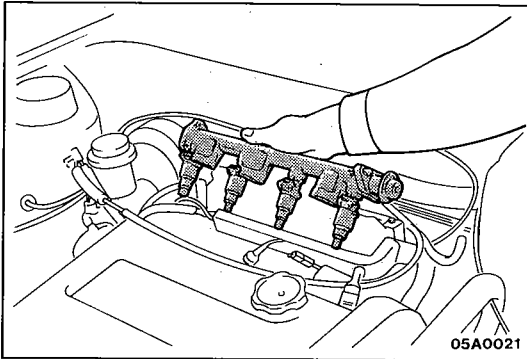
N11MBAJ2

7. DISCONNECTION OF FUEL HIGH PRESSURE HOSE

Relieve pressure in the fuel pipe line to prevent fuel outflow. (Refer to GROUP 14 – Service Adjustment Procedures.)

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 on.

Caution

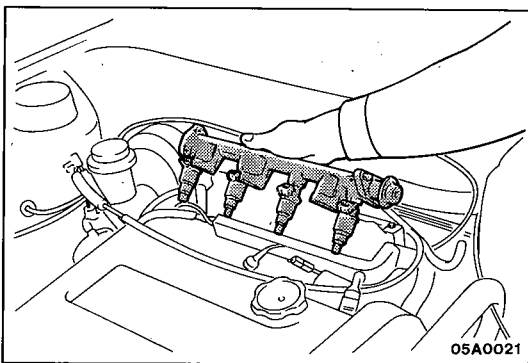
Do not drop injector when removing delivery pipe.

INSPECTION

N11MCAL1

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 gas passage.

**SERVICE POINT OF INSTALLATION**

N11MDAN1

26. INSTALLATION OF DELIVERY PIPE, FUEL INJECTOR AND PRESSURE REGULATOR**Caution**

When installing the delivery pipe, make sure that the injector is not dropped.

TURBOCHARGER

REMOVAL AND INSTALLATION

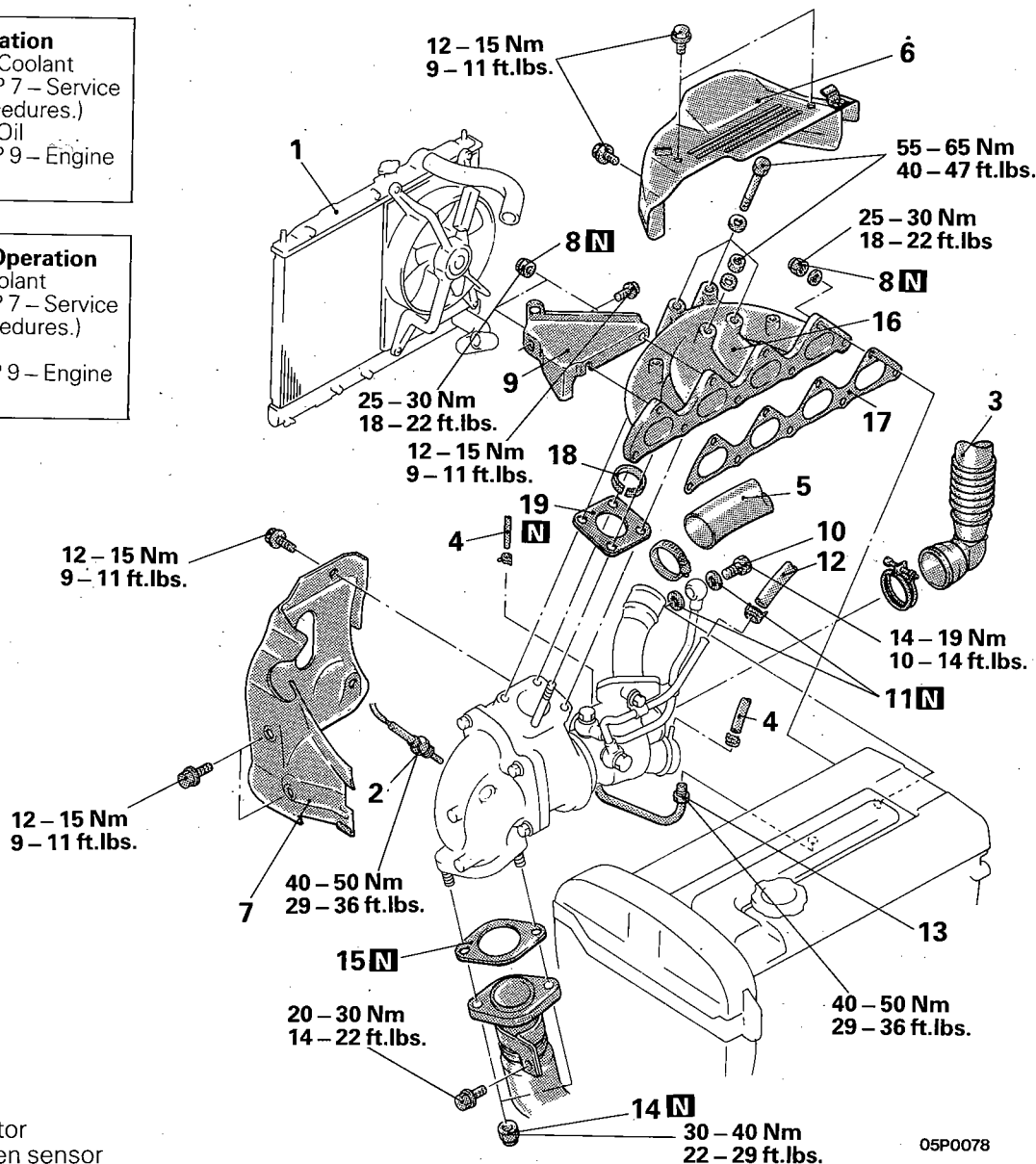
N11LA--

Pre-removal Operation

- Draining Engine Coolant
(Refer to GROUP 7 – Service Adjustment Procedures.)
- Draining Engine Oil
(Refer to GROUP 9 – Engine Adjustment.)

Post-installation Operation

- Filling Engine Coolant
(Refer to GROUP 7 – Service Adjustment Procedures.)
- Filling Engine Oil
(Refer to GROUP 9 – Engine Adjustment.)



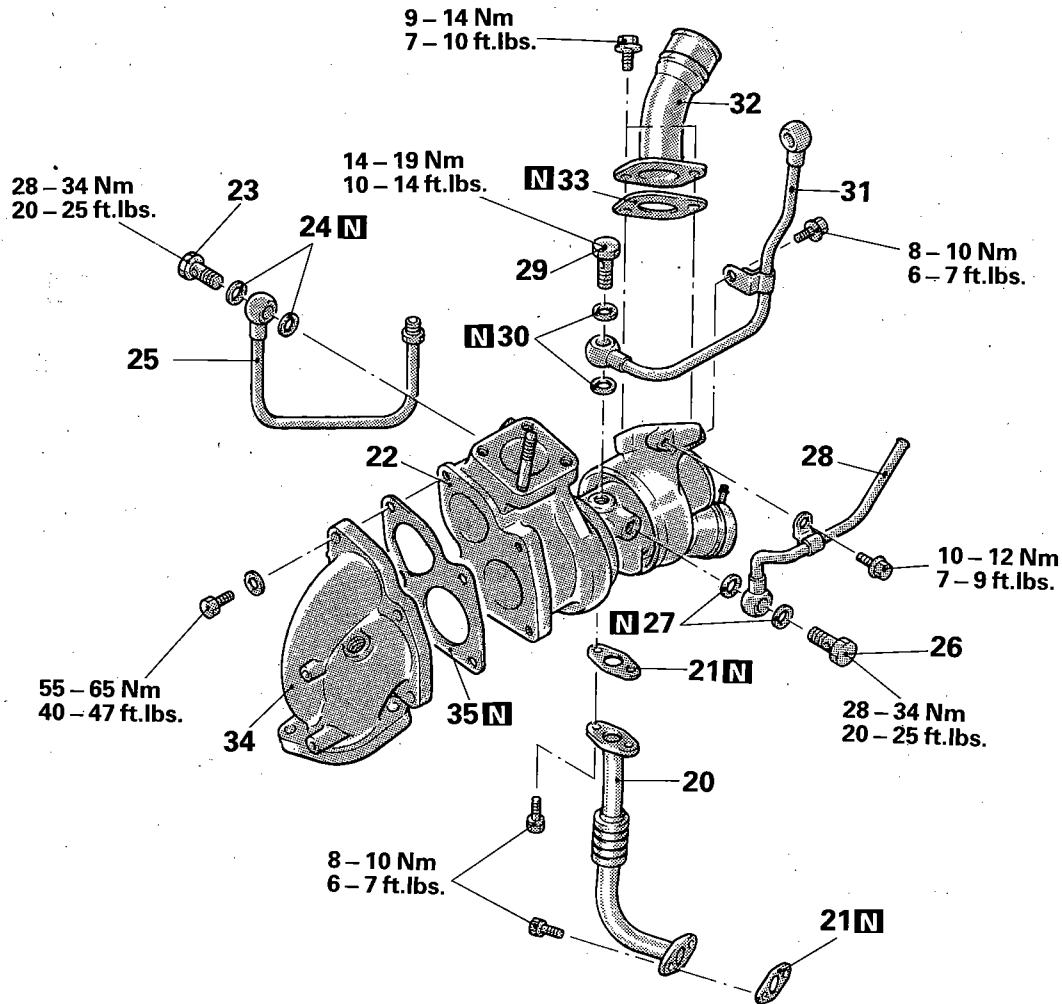
Removal steps

- ➡ ➡ 1. Radiator
- ➡ ➡ 2. Oxygen sensor
- ➡ ➡ 3. Connection for air intake hose
- ➡ ➡ 4. Connection for vacuum hose
- ➡ ➡ 5. Connection for air hose A
- ➡ ➡ 6. Heat protector A
- ➡ ➡ 7. Heat protector B
- ➡ ➡ 8. Self-locking nut
- ➡ ➡ 9. Engine hanger
- ➡ ➡ 10. Eye bolt
- ➡ ➡ 11. Gasket
- ➡ ➡ 12. Connection for water hose
- ➡ ➡ 13. Connection for water pipe B
- ➡ ➡ 14. Self-locking nut
- ➡ ➡ 15. Gasket
- ➡ ➡ 16. Exhaust manifold
- ➡ ➡ 17. Exhaust manifold gasket
- ➡ ➡ 18. Ring
- ➡ ➡ 19. 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

05P0078



05P0043

Removal steps

- 20. Oil return pipe
- 21. Gasket
- ↔ ↔ 22. Turbocharger assembly
- 23. Eye bolt
- 24. Gasket
- 25. Water pipe B
- 26. Eye bolt
- 27. Gasket
- 28. Water pipe A
- 29. Eye bolt
- 30. Gasket
- ↔ ↔ 31. Oil pipe

- 32. Air outlet fitting
- 33. Gasket
- 34. Exhaust fitting
- 35. Gasket

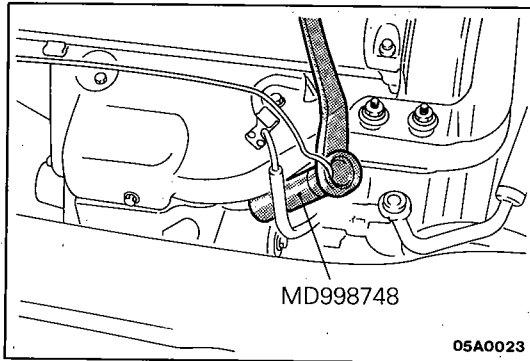
NOTE

- (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**1. REMOVAL OF RADIATOR**

Refer to GROUP 7 – Radiator.

N11LBAC



2. REMOVAL OF OXYGEN SENSOR

Disconnect the connector of the oxygen sensor, and install the special tool to the oxygen sensor. Then, using an offset (box-end) wrench, remove the oxygen sensor.

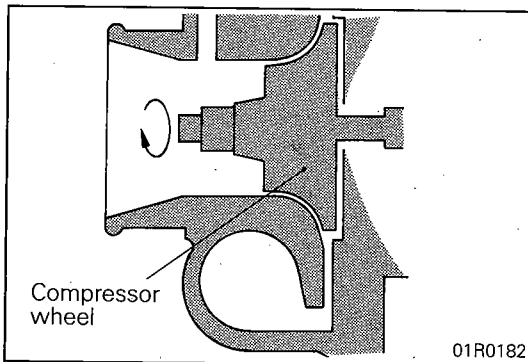
22. REMOVAL OF TURBOCHARGER ASSEMBLY

Remove the turbocharger assembly with the exhaust fitting, water pipe A, water pipe B and the oil pipe attached to it.

31. REMOVAL OF OIL PIPE

Caution

After disconnecting the oil pipe, take care that foreign material does not enter the oil passage hole of the turbocharger assembly.



INSPECTION

N11LCAC

TURBOCHARGER ASSEMBLY CHECK

- (1) Visually check the turbine wheel and the compressor wheel for cracking or other damage.
 - (2) Check whether the turbine wheel and the compressor wheel can be easily turned by hand.
 - (3) Check for oil leakage from the turbocharger assembly.
 - (4) Check whether or not the waste gate valve remains open.
- If any problem is found, replace the part after disassembly.

OIL PIPE AND OIL-RETURN PIPE CHECK

Check the oil pipe and oil-return pipe for clogging, bending, or other damage.

If there is clogging, clean it.

SERVICE POINTS OF INSTALLATION

N11LDAC

31. INSTALLATION OF OIL PIPE

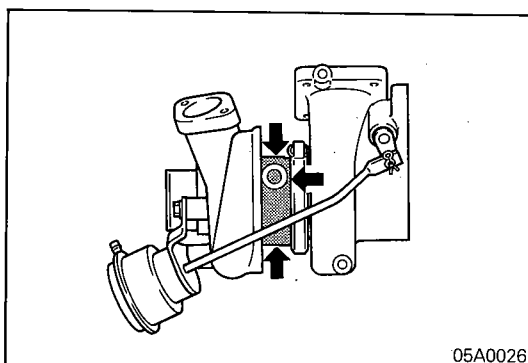
Supply clean engine oil through the oil pipe installation hole of the turbocharger assembly.

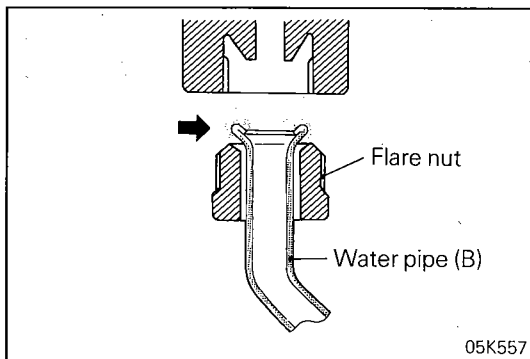
22. INSTALLATION OF TURBOCHARGER ASSEMBLY

Clean the alignment surfaces shown in the illustration.

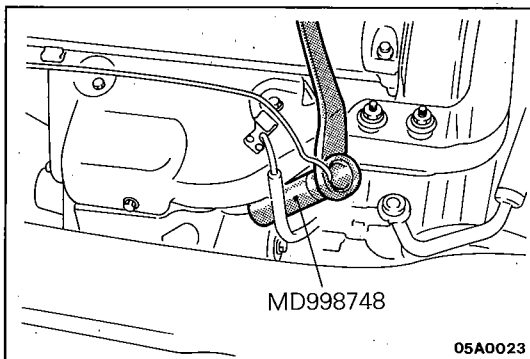
Caution

When cleaning, care must be taken so that a piece of the gasket does not enter the oil passage hole.



**13. INSTALLATION OF WATER PIPE (B)**

Before installing to the water inlet pipe, apply machine oil to the inner surface of the pipe flare.

**2. INSTALLATION OF OXYGEN SENSOR**

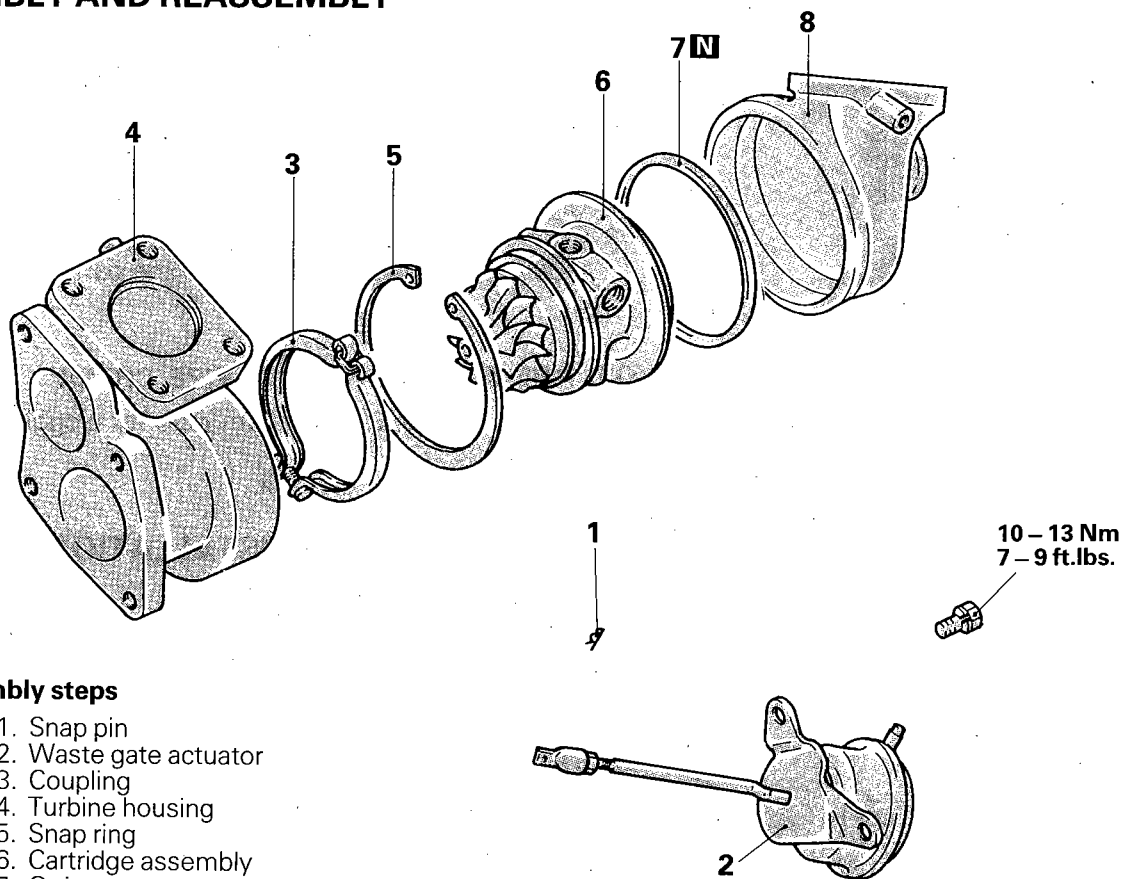
Use the special tool to install the oxygen sensor.

1. INSTALLATION OF RADIATOR

Refer to GROUP 7 – Radiator.

DISASSEMBLY AND REASSEMBLY

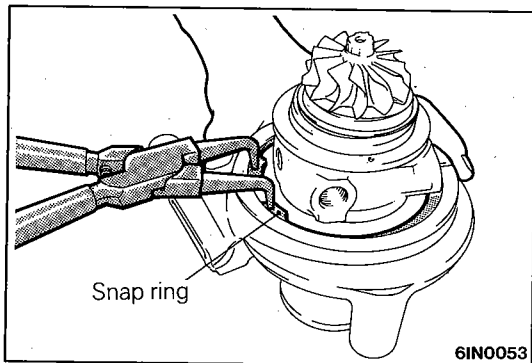
N11LE -

**Disassembly steps**

1. Snap pin
2. Waste gate actuator
3. Coupling
4. Turbine housing
5. Snap ring
6. Cartridge assembly
7. O-ring
8. Compressor cover

NOTE

- (1) Reverse the disassembly procedures to reassemble.
- (2) $\blacktriangleleft\blacktriangleright$: Refer to "Service Points of Disassembly".
- (3) $\blacktriangleleft\blacktriangleright$: Refer to "Service Points of Reassembly".
- (4) **N**: Non-reusable parts



SERVICE POINTS OF DISASSEMBLY

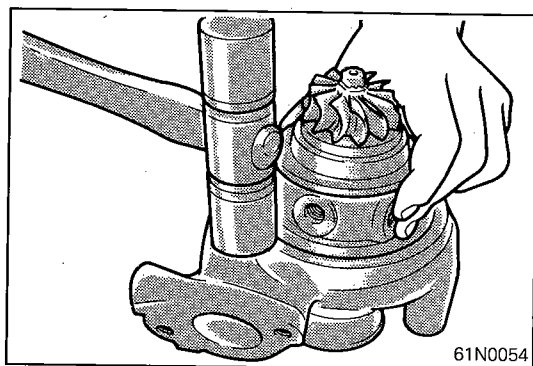
N11LFAB

5. REMOVAL OF SNAP RING

Place the compressor cover assembly on the floor with its end surface down and remove the snap ring with pliers.

Caution

During removal, hold with a finger the snap ring which can spring out.



6. REMOVAL OF CARTRIDGE ASSEMBLY

Remove the cartridge assembly by tapping the compressor cover with a soft hammer.

Caution

Some resistance will be experienced in the removal due to the O-ring on the cartridge assembly.

INSPECTION

N11LGAA

TURBOCHARGER

1. Inspect the cast-iron turbine housing for damage, cracks, or evidence of contact between the turbine blades and the housing.
2. Manually open and close the waste gate valve to make sure it operates freely.
3. Inspect the turbine and compressor wheels for wear, damage, bent or broken blades.
4. Inspect the oil passage in the cartridge for signs of deposits or blockage.
5. Clean the inlet section of the compressor cover with a rag. Inspect it for signs of contact with the compressor turbine. If worn, replace it.

WASTE GATE ACTUATOR

1. Leak-test the waste gate valve actuator with a hand vacuum pump. Replace the actuator if it does not hold vacuum.
2. Check the rod to see that it is not bent or binding.

SERVICE POINTS OF REASSEMBLY

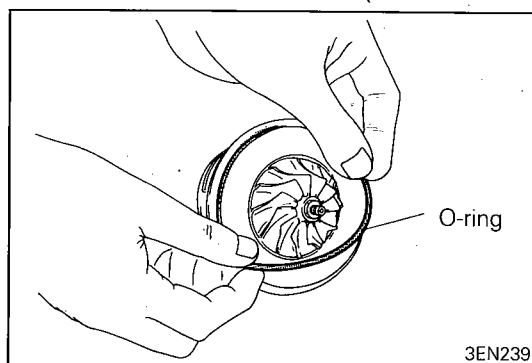
N11LHAB

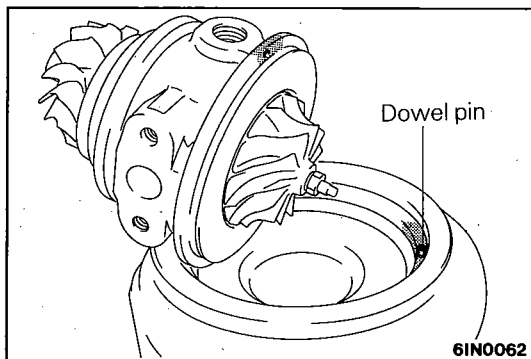
7. INSTALLATION OF O-RING

Coat the inner surface of a new O-ring with a thin film of engine oil, and set it in the groove of the cartridge assembly.

Caution

Be careful not to damage the O-ring while installing it as oil leakage could result.



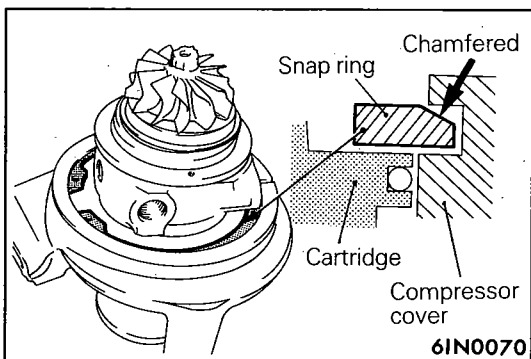


6. INSTALLATION OF CARTRIDGE ASSEMBLY

- (1) Coat the outer circumference of the cartridge assembly O-ring with a thin film of engine oil.
- (2) Install the cartridge assembly on the compressor cover by aligning the dowel pin.

Caution

When installing the cartridge assembly on the compressor cover, be careful not to damage the compressor wheel blades.

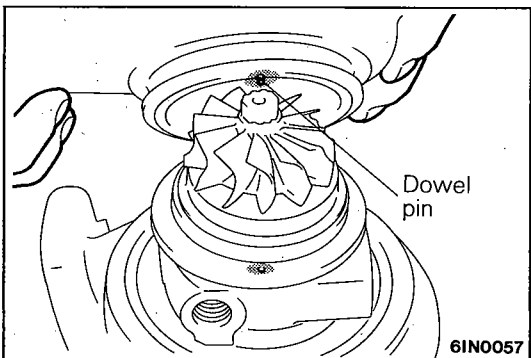


5. INSTALLATION OF SNAP RING

Place the cartridge assembly with the compressor cover faced down and install the snap ring.

Caution

Install the snap ring with the tapered side of its outside diameter up.

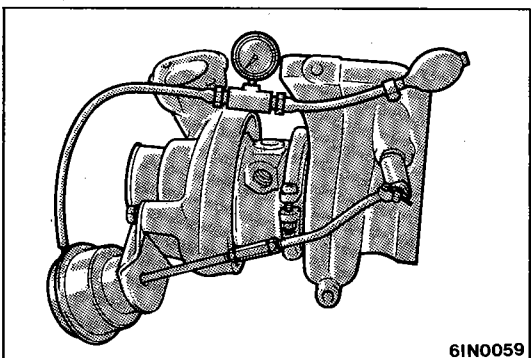


4. INSTALLATION OF TURBINE HOUSING

Install the compressor cover and cartridge assembly on the turbine housing with the dowel pin in alignment.

Caution

1. Be careful not to damage the blades of the turbine wheel.
2. Be careful to install the turbine housing in the correct direction.



TEST OF WASTE GATE ACTUATOR OPERATION

N11LIAA

Using a tester, apply a pressure of approx. 63 kPa (9.2 psi) to the actuator and make sure that the rod moves.

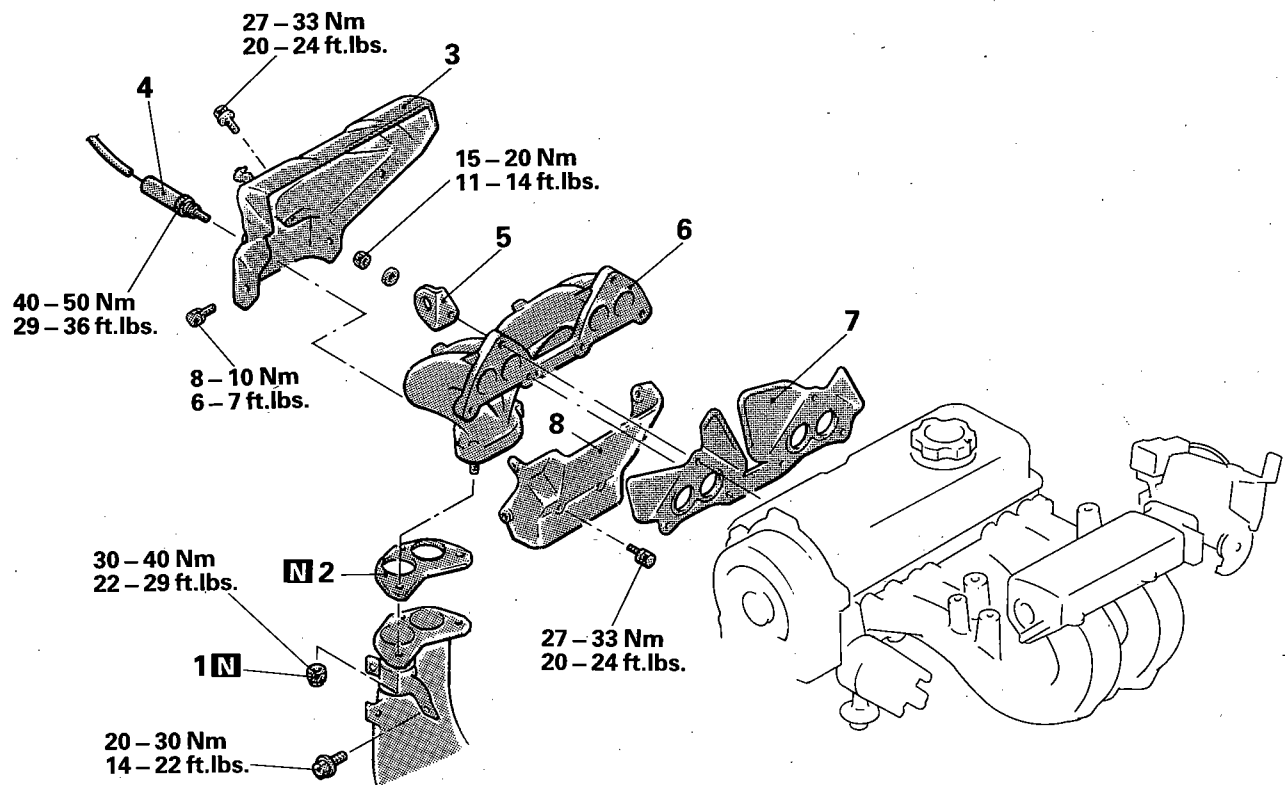
Caution

Do not apply a pressure of more than 71 kPa (10.3 psi) to the actuator. Otherwise, diaphragm may be damaged. Never attempt to adjust the waste gate valve.

EXHAUST MANIFOLD <1.5L Engine>

N11NA-A

REMOVAL AND INSTALLATION



05P0028

Removal steps

1. Self-locking nut
2. Gasket
3. Exhaust manifold cover (A)
4. Oxygen sensor
5. Engine hanger
6. Exhaust manifold
7. Exhaust manifold gasket
8. Exhaust manifold cover (B)

NOTE

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

INSPECTION

EXHAUST MANIFOLD

Check for damage or cracking of any part.

EXHAUST MANIFOLD GASKET

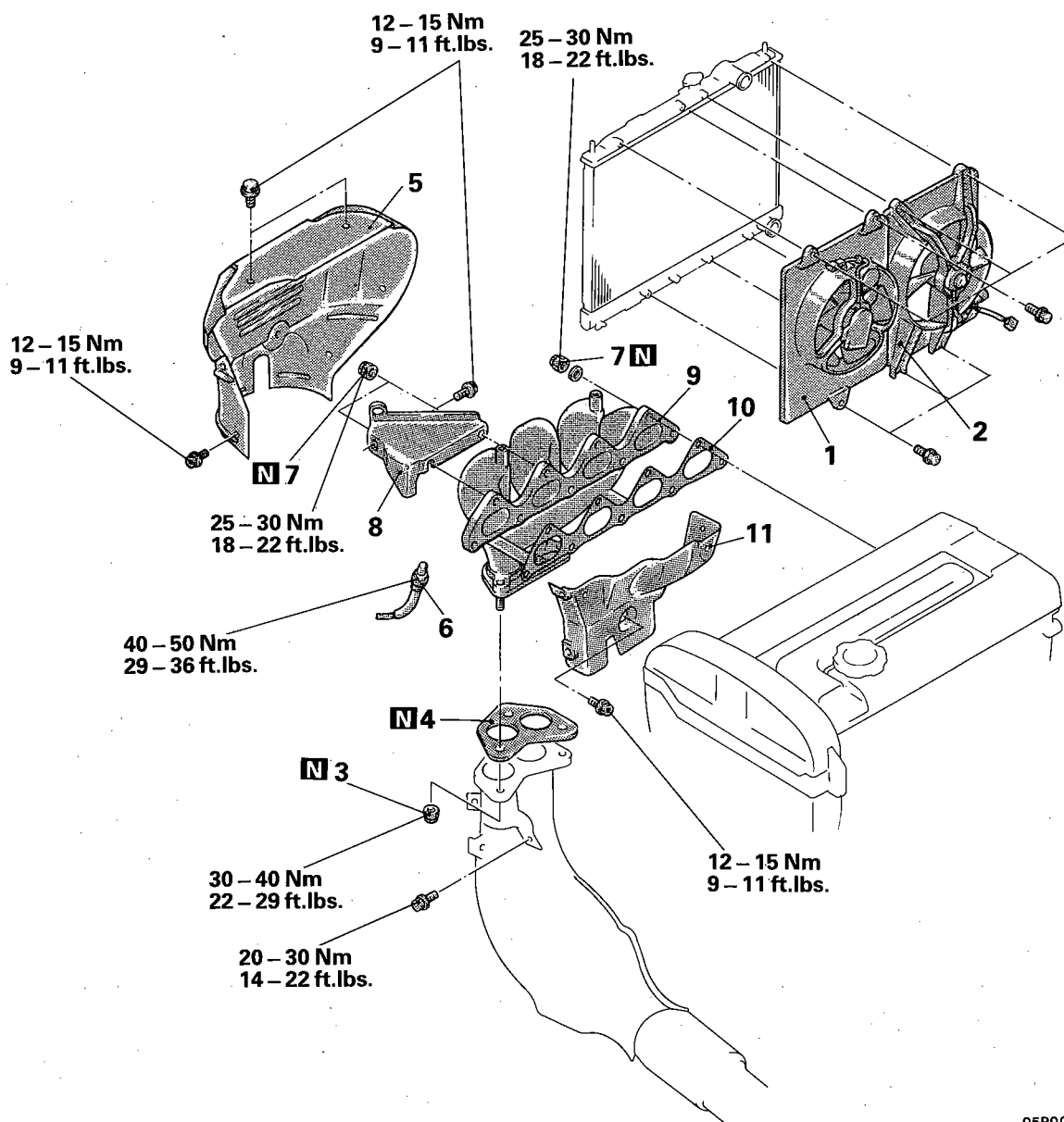
Check for flaking or damage of the gasket.

N11NCAL0

EXHAUST MANIFOLD <1.6L Engine-N/A>

N11NA-B

REMOVAL AND INSTALLATION



05P0045

Removal steps

1. Condenser fan motor assembly <Air conditioner>
2. Radiator fan motor assembly
3. Self-locking nut
4. Gasket
5. Heat protector
6. Oxygen sensor
7. Self-locking nut
8. Engine hanger
9. Exhaust manifold
10. Exhaust manifold gasket
11. Heat protector B

NOTE

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

SERVICE POINT OF REMOVAL

N11NBAD

2. REMOVAL OF RADIATOR FAN MOTOR ASSEMBLY

- (1) Remove the radiator fan motor assembly attaching bolts.
- (2) Remove the battery holder and washer tank. For removal, refer to GROUP 8 – Windshield Washer.
- (3) Move the radiator fan motor assembly to a position where it does not interfere with the heat protector (A) when it is removed and reinstalled.

INSPECTION

N11NCAL1

EXHAUST MANIFOLD

Check for damage or cracking of any part.

EXHAUST MANIFOLD GASKET

Check for flaking or damage of the gasket.

EXHAUST MANIFOLD <1.6L Engine-T/C>

N11NA-C

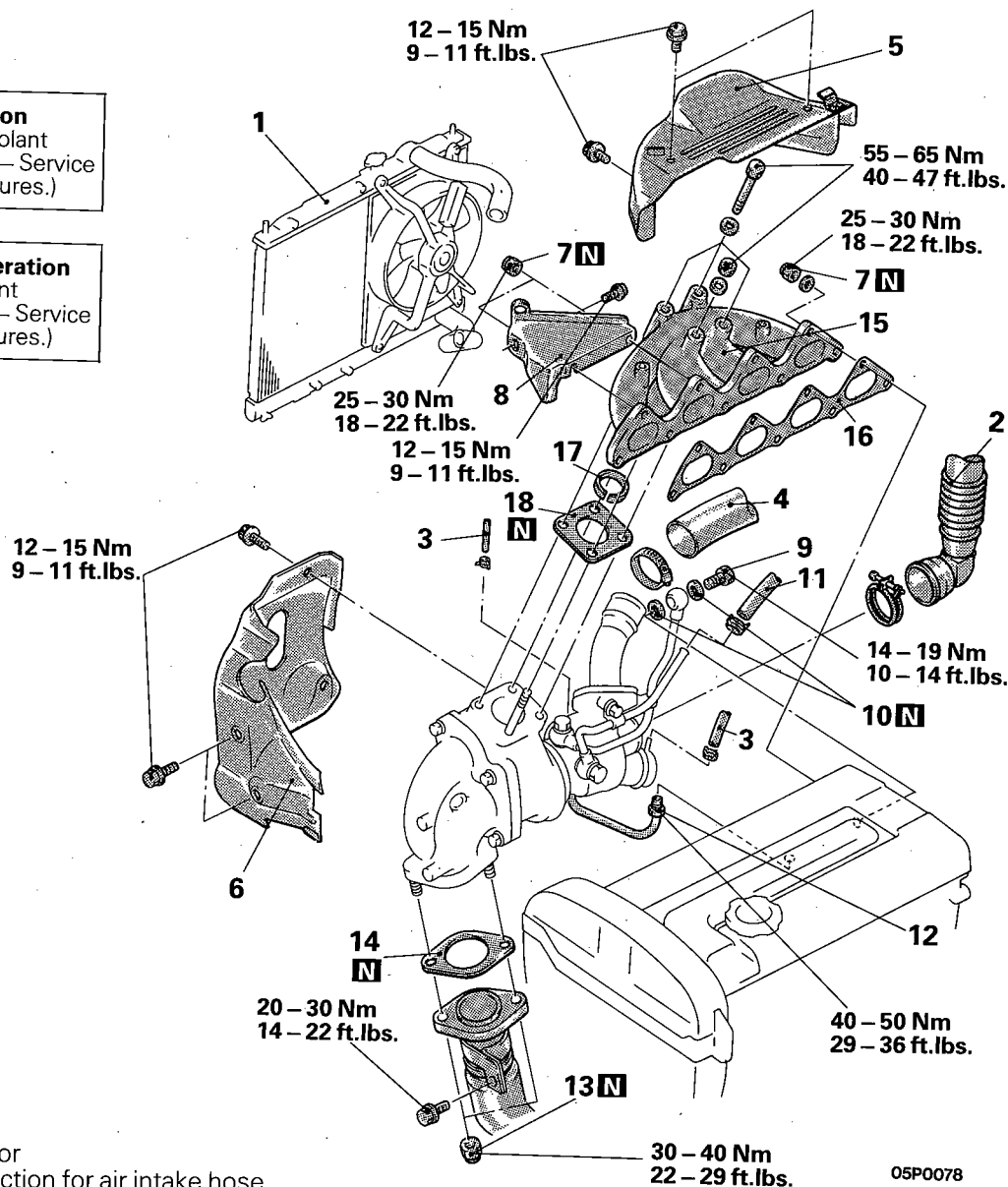
REMOVAL AND INSTALLATION

Pre-removal Operation

- Draining Engine Coolant
(Refer to GROUP 7 – Service Adjustment Procedures.)

Post-installation Operation

- Filling Engine Coolant
(Refer to GROUP 7 – Service Adjustment Procedures.)

**Removal steps**

- ◄◄ ◄◄ 1. Radiator
- 2. Connection for air intake hose
- 3. Connection for vacuum hose
- 4. Connection for air hose A
- 5. Heat protector A
- 6. Heat protector B
- 7. Self-locking nut
- 8. Engine hanger
- 9. Eye bolt
- 10. Gasket
- 11. Connection for water hose
- ◄◄ 12. Connection for water pipe B
- 13. Self-locking nut
- 14. Gasket
- 15. Exhaust manifold
- 16. Exhaust manifold gasket
- 17. Ring
- 18. 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.

05P0078

SERVICE POINT OF REMOVAL

N11NBAE

1. REMOVAL OF RADIATOR

Refer to GROUP 7 – Radiator.

INSPECTION

N11NCAL2

EXHAUST MANIFOLD

Check for damage or cracking of any part.

EXHAUST MANIFOLD GASKET

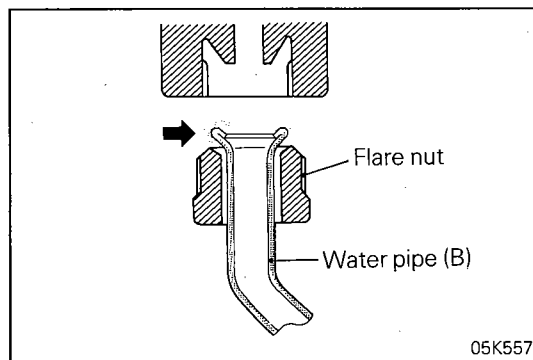
Check for flaking or damage of the gasket.

SERVICE POINTS OF INSTALLATION

N11NDAE

12. INSTALLATION OF WATER PIPE (B)

Before installing to the water inlet pipe, apply machine oil to the inner surface of the pipe flare.

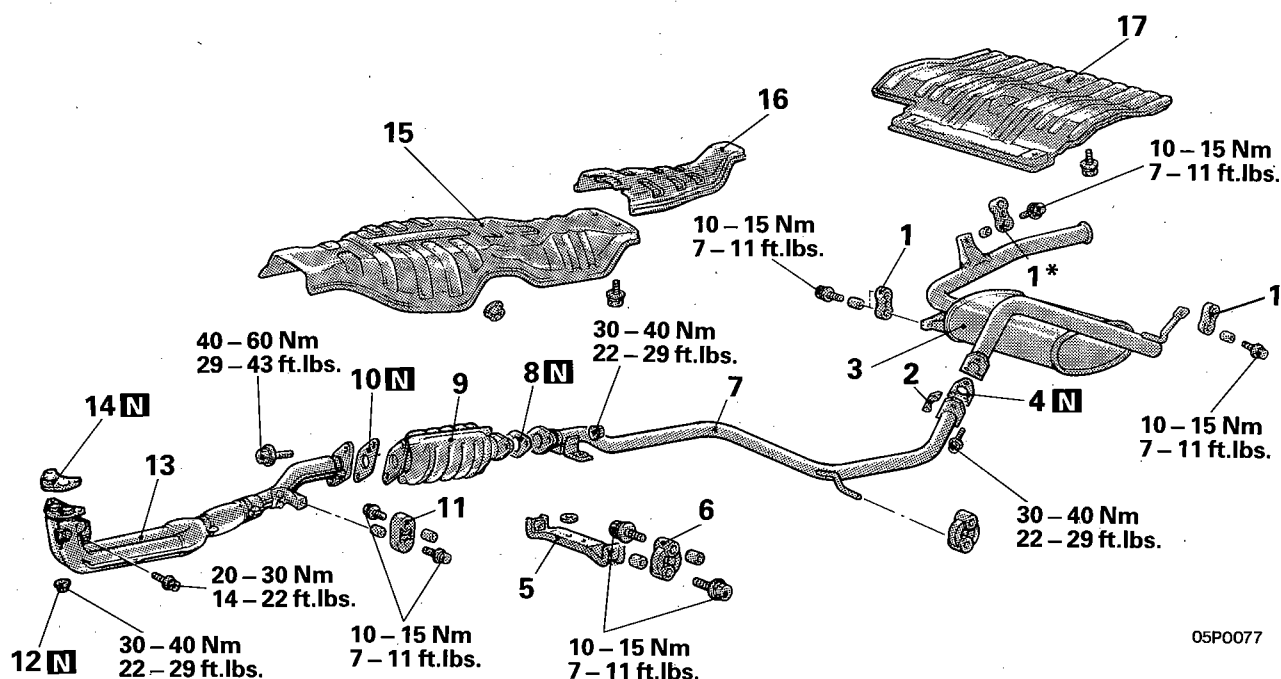


1. INSTALLATION OF RADIATOR

Refer to GROUP 7 – Radiator.

EXHAUST PIPE AND MAIN MUFFLER

REMOVAL AND INSTALLATION <1.5L Engine>



05P0077

Removal steps

1. Hanger
2. Protector
3. Main muffler
4. Gasket
5. Bracket
6. Hanger
7. Center exhaust pipe
8. Gasket
9. Catalytic converter
10. Gasket
11. Hanger
12. Self-locking nut
13. Front exhaust pipe
14. Gasket
15. Heat protector panel
16. Heat protector back bone rear panel
17. Heat protector rear floor panel

NOTE

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

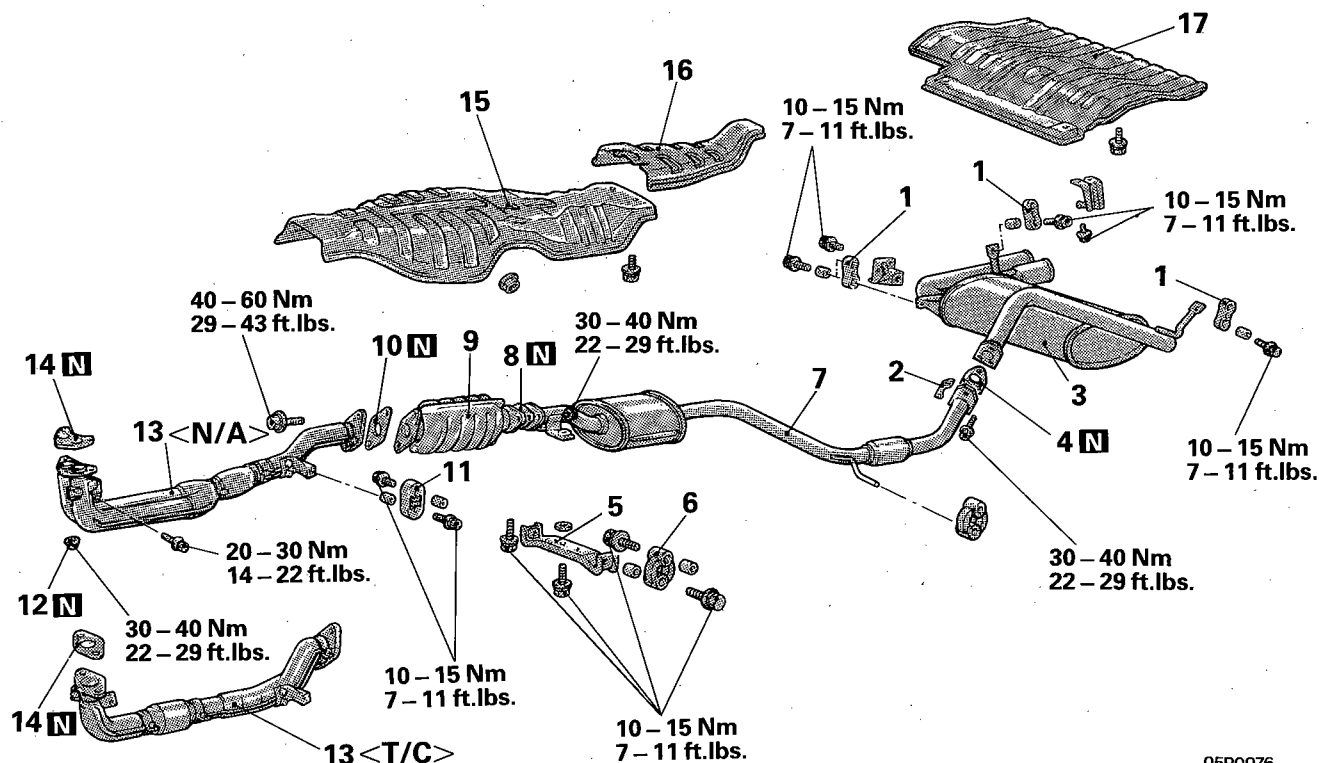
INSPECTION

N11RCA10

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

REMOVAL AND INSTALLATION <1.6L Engine>

N11RA-B



05P0076

Removal steps

1. Hanger
2. Protector
3. Main muffler
4. Gasket
5. Bracket
6. Hanger
7. Center exhaust pipe
8. Gasket
9. Catalytic converter
10. Gasket

11. Hanger
12. Self-locking nut
13. Front exhaust pipe
14. Gasket
15. Heat protector panel
16. Heat protector back bone rear panel
17. Heat protector rear floor panel

NOTE

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

INSPECTION

N11RCA11

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