

SPECIFICATIONS

E15CA--

GENERAL SPECIFICATIONS

Vehicles for Europe

Items	Engine	
	Petrol-powered vehicles	Diesel-powered vehicles
Air cleaner		
Element	Unwoven cloth type	Filter paper type
Exhaust system		
Front exhaust pipe	Dual type or Single type	Dual type
Muffler	Expansion resonance type	Expansion resonance type
Coupling	Flat coupling	Flat coupling
Suspension system	Rubber hanger	Rubber hanger

Vehicles for General Export and Australia

Items	Engine	
	Petrol-powered vehicles	Diesel-powered vehicles
Air cleaner		
Element	Filter paper type or Unwoven cloth type*	Filter paper type
Exhaust system		
Front exhaust pipe	Dual type	Dual type
Muffler	Expansion resonance type	Expansion resonance type
Coupling	Flat coupling	Flat coupling
Suspension system	Rubber hanger	Rubber hanger

NOTE

*: MPI

TORQUE SPECIFICATIONS

E15CC--

Items	Nm	kgm	ft.lbs.
Air cleaner <Petrol-powered vehicles>			
Air cleaner to engine <SOHC-Carburettor>	16–19	1.6–1.9	12–14
Air cleaner to body <MPI>	8–10	0.8–1.0	6–7
Resonator			
Mounting nut <4G13, 4G15, 4G37, 4G92, 4G93>	8–9	0.8–0.9	6–7
Mounting nut <4G37, 4G61, 4G67>	4–6	0.4–0.6	3–4
Mounting bolt	8–10	0.8–1.0	6–7
Air duct	8–10	0.8–1.0	6–7
Pre-cleaner	8–10	0.8–1.0	6–7
Battery holder	2–3	0.2–0.3	1.4–2.2
Hose clamp	3–5	0.3–0.5	2–4
Air cleaner bracket	10–13	1.0–1.3	7–9

Items	Nm	kgm	ft.lbs.
Air cleaner <Diesel-powered vehicles>			
Air cleaner			
Mounting bolt	8–10	0.8–1.0	6–7
Mounting nut	8–9	0.8–0.9	6–7
Air duct	8–10	0.8–1.0	6–7
Battery holder	2–3	0.2–0.3	1.4–2.2
Intake manifold <Petrol-powered vehicles>			
<SOHC-Carburettor>			
Air cleaner to engine	16–19	1.6–1.9	12–14
Air duct	8–10	0.8–1.0	6–7
EGR valve	19–28	1.9–2.8	14–20
Water outlet fitting	17–20	1.7–2.0	12–14
Vacuum pipe	7–11	0.7–1.1	5–8
Intake manifold stay	21–31	2.1–3.1	15–22
Distributor	10–13	1.0–1.3	7–9
Intake manifold	15–20	1.5–2.0	11–14
Thermo valve	20–40	2.0–4.0	14–29
Engine coolant temperature gauge unit	10–12	1.0–1.2	7–9
Engine coolant temperature sensor	20–40	2.0–4.0	14–29
Outer cable bracket <A/T>	12–15	1.2–1.5	9–11
Inner cable bracket <A/T>	12–15	1.2–1.5	9–11
<SOHC-MPI>			
Accelerator cable to air intake plenum	4–6	0.4–0.6	3–4
Delivery pipe to intake manifold	10–13	1.0–1.3	7–9
Air intake plenum stay	15–20	1.5–2.0	11–14
Air intake plenum	15–20	1.5–2.0	11–14
Throttle body	10–13* ¹	1.0–1.3* ¹	7–9* ¹
	15–22* ²	1.5–2.2* ²	11–16* ²
Vacuum hose and pipe assembly	8–12	0.8–1.2	6–9
Intake manifold stay	18–25	1.8–2.5	13–18
Intake manifold stay <4G13>	17–20	1.7–2.0	12–14
Intake manifold	15–20	1.5–2.0	11–14
Distributor	10–13	1.0–1.3	7–9
Ignition coil			
4G15	12–15	1.2–1.5	9–11
4G37	10–15	1.0–1.5	7–11
EGR valve	10–15	1.0–1.5	7–11
Water outlet fitting	17–20	1.7–2.0	12–14
Water outlet fitting and thermostat housing assembly <4G13>	15–20	1.5–2.0	11–14
Engine coolant temperature gauge unit	10–12	1.0–1.2	7–9
Engine coolant temperature sensor	20–40	2.0–4.0	14–29
Thermo valve	20–40	2.0–4.0	14–29
Harness protector to air intake plenum	4–6	0.4–0.6	3–4
High-pressure fuel hose <4G92>	4–6	0.4–0.6	3–4

NOTE

(1) *¹: Vehicles built up to April 1989

(2) *²: Vehicles built from May 1989

Items	Nm	kgm	ft.lbs.
<DOHC>			
Accelerator cable to intake manifold	4 – 6	0.4 – 0.6	3 – 4
Throttle body stay	15 – 22	1.5 – 2.2	11 – 16
High-pressure fuel hose to delivery pipe	4 – 6	0.4 – 0.6	3 – 4
Delivery pipe to engine	10 – 13	1.0 – 1.3	7 – 9
Intake manifold stay <4G93>	27 – 34	2.7 – 3.4	20 – 25
Intake manifold stay	25 – 30	2.5 – 3.0	18 – 22
Intake manifold mounting bolt and nut <4G93>	17 – 22	1.7 – 2.2	12 – 16
Intake manifold			
Mounting bolt (M8)	15 – 20	1.5 – 2.0	11 – 14
Mounting nut and bolt (M10)	30 – 42	3.0 – 4.2	22 – 30
Tension rod bracket to tension rod	35 – 55	3.5 – 5.5	25 – 40
Throttle body	15 – 22	1.5 – 2.2	11 – 16
Ignition coil	20 – 27	2.0 – 2.7	14 – 20
Power transistor unit	10 – 12	1.0 – 1.2	7 – 9
EGR valve	15 – 22	1.5 – 2.2	11 – 16
EGR valve <4G93>	17 – 26	1.7 – 2.6	12 – 19
Harness protector to intake manifold	4 – 6	0.4 – 0.6	3 – 4
Exhaust manifold <Petrol-powered vehicles>			
<SOHC-Carburettor>			
Air cleaner to engine	16 – 19	1.6 – 1.9	12 – 14
Air duct	8 – 10	0.8 – 1.0	6 – 7
Exhaust manifold cover (A) to exhaust manifold	27 – 33	2.7 – 3.3	20 – 24
Exhaust manifold cover (A) to exhaust manifold cover (B)	8 – 10	0.8 – 1.0	6 – 7
Exhaust manifold cover (B) to exhaust manifold	27 – 33	2.7 – 3.3	20 – 24
Oxygen sensor	40 – 50	4.0 – 5.0	29 – 36
Front exhaust pipe to exhaust manifold	30 – 40	3.0 – 4.0	22 – 29
Front exhaust pipe to engine	20 – 30	2.0 – 3.0	14 – 22
Air pipe to engine	10 – 14	1.0 – 1.4	7 – 10
Air pipe to exhaust manifold	70 – 100	7.0 – 10.0	51 – 72
Air pipe to reed valve	50 – 60	5.0 – 6.0	36 – 43
Heat cowl	27 – 33	2.7 – 3.3	20 – 24
Exhaust manifold	15 – 20	1.5 – 2.0	11 – 14
<SOHC-MPI>			
Front exhaust pipe to exhaust manifold			
4G15, 4G92	40 – 50	4.0 – 5.0	29 – 36
4G13	40 – 60	4.0 – 6.0	29 – 43
4G37	30 – 40	3.0 – 4.0	22 – 29
Exhaust manifold bracket to engine <4G92>	30 – 42	3.0 – 4.2	22 – 30
Front exhaust pipe to engine	20 – 30	2.0 – 3.0	14 – 22
Exhaust manifold cover (A) to exhaust manifold	27 – 33	2.7 – 3.3	20 – 24
Exhaust manifold cover (B) to exhaust manifold			
4G15	27 – 33	2.7 – 3.3	20 – 24
4G13, 4G37, 4G92	20 – 28	2.0 – 2.8	14 – 20
Exhaust manifold cover (A) to exhaust manifold cover (B)	8 – 10	0.8 – 1.0	6 – 7

Items	Nm	kgm	ft.lbs.
Exhaust manifold to engine <4G92>	27 – 33	2.7 – 3.3	20 – 24
Exhaust manifold to engine	15 – 20	1.5 – 2.0	11 – 14
Exhaust manifold bracket <4G92>	30 – 42	3.0 – 4.2	22 – 30
Oxygen sensor	40 – 50	4.0 – 5.0	29 – 36
Oil level gauge guide	12 – 15	1.2 – 1.5	9 – 11
<DOHC>			
Front exhaust pipe to exhaust manifold	40 – 50	4.0 – 5.0	29 – 36
Front exhaust pipe to engine	20 – 30	2.0 – 3.0	14 – 22
Heat protector (A)	12 – 15	1.2 – 1.5	9 – 11
Heat protector (B) <4G93>	12 – 15	1.2 – 1.5	9 – 11
Exhaust manifold to engine	25 – 30	2.5 – 3.0	18 – 22
Oxygen sensor	40 – 50	4.0 – 5.0	29 – 36
Exhaust manifold cover (A) <4G93>	27 – 33	2.7 – 3.3	20 – 24
Exhaust manifold cover (B) <4G93>	20 – 28	2.0 – 2.8	14 – 20
Exhaust manifold cover (A) to exhaust manifold cover (B) <4G93>	8 – 10	0.8 – 1.0	6 – 7
Exhaust manifold to engine <4G93>	15 – 20 27 – 33	1.5 – 2.0 2.7 – 3.3	11 – 14 20 – 24
Exhaust manifold bracket (A) and (B) <4G93>	30 – 42	3.0 – 4.2	22 – 30
Intake and exhaust manifold <Diesel-powered vehicles>			
Front exhaust pipe to engine	20 – 30	2.0 – 3.0	14 – 22
Front exhaust pipe to exhaust manifold	40 – 50	4.0 – 5.0	29 – 36
Heat protector	27 – 33	2.7 – 3.3	20 – 24
Oil level gauge guide to intake manifold (A)			
4D65	12 – 15	1.2 – 1.5	9 – 11
4D68	9 – 11	0.9 – 1.1	6.5 – 8
Bracket (A)	12 – 15	1.2 – 1.5	9 – 11
EGR pipe to intake manifold (A)	15 – 20	1.5 – 2.0	11 – 14
EGR bracket to intake manifold (A)	12 – 15	1.2 – 1.5	9 – 11
Intake manifold (A) to intake manifold (B)	12 – 15	1.2 – 1.5	9 – 11
Intake manifold (B) to engine	15 – 20	1.5 – 2.0	11 – 14
Exhaust manifold	15 – 20	1.5 – 2.0	11 – 14
Air inlet fitting to intake manifold	15 – 20	1.5 – 2.0	11 – 14
E.G.R. valve to air inlet fitting	20 – 30	2.0 – 3.0	14 – 22
Exhaust pipe and main muffler			
Front exhaust pipe to exhaust manifold <4G13>	40 – 60	4.0 – 6.0	29 – 43
Front exhaust pipe to exhaust manifold	40 – 50	4.0 – 5.0	29 – 36
Front exhaust pipe to engine	20 – 30	2.0 – 3.0	14 – 22
Front exhaust pipe to catalytic converter	40 – 60	4.0 – 6.0	29 – 43
Centre exhaust pipe to catalytic converter	30 – 40	3.0 – 4.0	22 – 29
Centre exhaust pipe to front exhaust pipe	30 – 40	3.0 – 4.0	22 – 29
Centre exhaust pipe to main muffler	30 – 40	3.0 – 4.0	22 – 29
Centre exhaust pipe to bracket	10 – 15	1.0 – 1.5	7 – 11
Hanger to body	10 – 15	1.0 – 1.5	7 – 11
Hanger to main muffler	10 – 15	1.0 – 1.5	7 – 11
Suspender to body	10 – 15	1.0 – 1.5	7 – 11
Suspender to centre exhaust pipe	10 – 15	1.0 – 1.5	7 – 11
Oxygen sensor	40 – 50	4.0 – 5.0	29 – 36

SEALANTS AND ADHESIVES

E15CE--

Items	Specified sealants	Quantity
Engine coolant temperature gauge unit Thermo switch Engine coolant temperature sensor Thermo valve	3M Adhesive nut locking No. 4171 or equivalent	As required

SPECIAL TOOL

E15DA--

Tool	Number	Name	Use
	MD998703	Oxygen sensor wrench	Removal/Installation of oxygen sensor
	MD998770		All vehicles except for DOHC and Diesel
(Vehicles built from June 1990)			

NOTES

SERVICE ADJUSTMENT PROCEDURE
AIR CLEANER ELEMENT INSPECTION AND RE-
PLACEMENT

Petrol-powered vehicles

<SOHC-Carburettor>

1. Disconnect the coupling of the breather hose, and remove the wing nut.
2. Remove the air cleaner cover, and take out the air cleaner element.
3. Check the air cleaner element for dirt or clogging.
4. Replace the air cleaner element if the dirt or clogging is serious.
5. Insert the element into the air cleaner body and insert the air cleaner cover.
6. Install the wing nut and connect the breather hose.



<SOHC-MPI>

1. Disconnect the air-flow sensor connector.
 2. Disconnect the breather hose.
 3. Remove the resonator retaining nut, 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 insert the air cleaner cover.
 9. Install the air intake hose and resonator.
 10. Connect the breather hose.
 11. Connect the air-flow sensor connector.



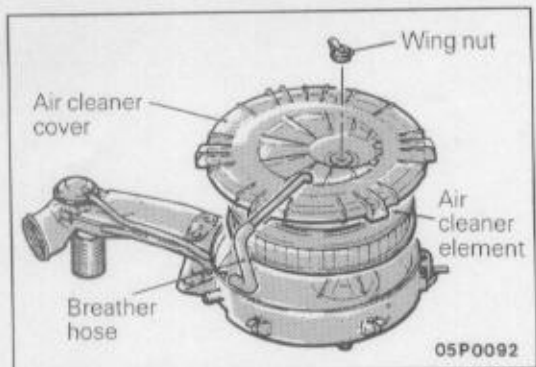
<DOHC>

1. Disconnect the air-flow sensor connector.
2. Disconnect the breather hose.
3. Remove the resonator retaining nut, and remove the air intake hose and the resonator together.
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.





SERVICE ADJUSTMENT PROCEDURES

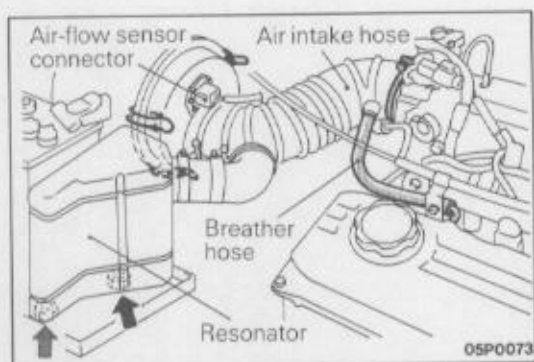
AIR CLEANER ELEMENT INSPECTION AND REPLACEMENT

E15FAAB

Petrol-powered vehicles

<SOHC-Carburettor>

1. Disconnect the coupling of the breather hose, and remove the wing nut.
2. Remove the air cleaner cover, and take out the air cleaner element.
3. Check the air cleaner element for dirt or clogging.
4. Replace the air cleaner element if the dirt or clogging is serious.
5. Insert the element into the air cleaner body and install the air cleaner cover.
6. Install the wing nut and connect the breather hose.



<SOHC-MPI>

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.



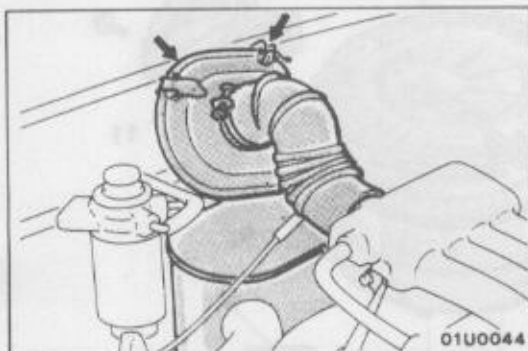
<DOHC>

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 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.



Diesel-powered vehicles

1. Unclamp and remove the air cleaner cover.
2. Take out the air cleaner element.
3. Check the air cleaner element for dirt or clogging.
4. Replace the air cleaner element if the dirt or clogging is serious.
5. Insert the element into the air cleaner body and install the air cleaner cover.

INTAKE MANIFOLD VACUUM INSPECTION

E15FBAA

Refer to GROUP 11 – Engine Adjustment.

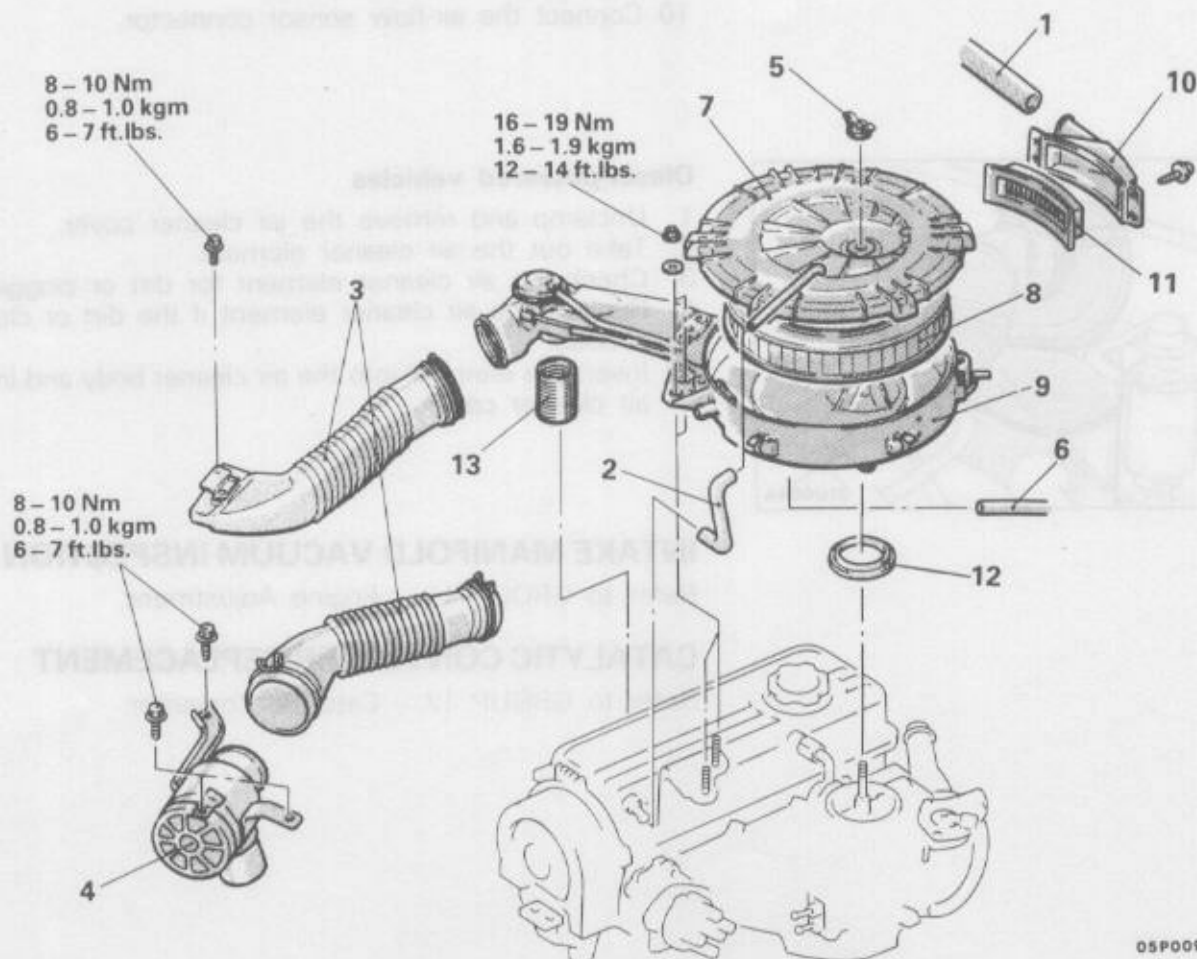
CATALYTIC CONVERTER REPLACEMENT

E15FCAA

Refer to GROUP 17 – Catalytic Converter.

AIR CLEANER <PETROL-POWERED VEHICLES>

REMOVAL AND INSTALLATION <SOHC-CARBURETTOR>



05P0093

Removal steps

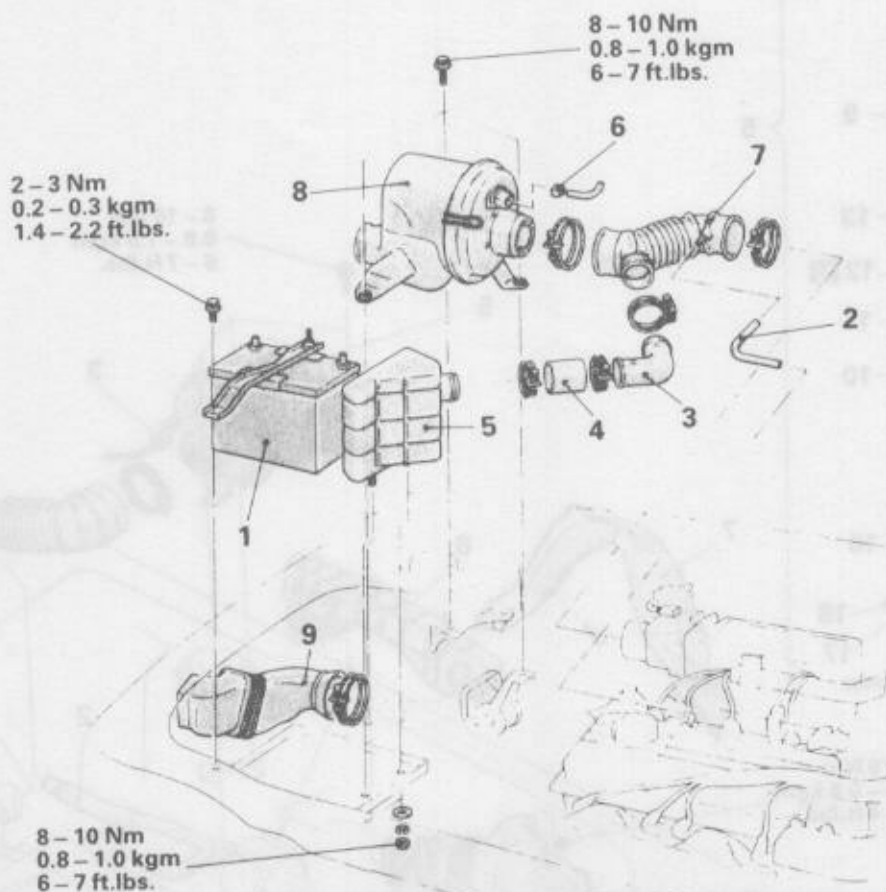
1. Connection for secondary air hose <Vehicles with catalytic converter>
2. Breather hose
3. Air duct
4. Pre-cleaner <Some vehicles for General Export>
5. Wing nut
6. Connection for vacuum hose
7. Air cleaner cover
8. Air cleaner element
9. Air cleaner body
10. Secondary air cleaner case <Vehicles with catalytic converter>
11. Secondary air cleaner element <Vehicles with catalytic converter>
12. Gasket
13. Heat duct

NOTE

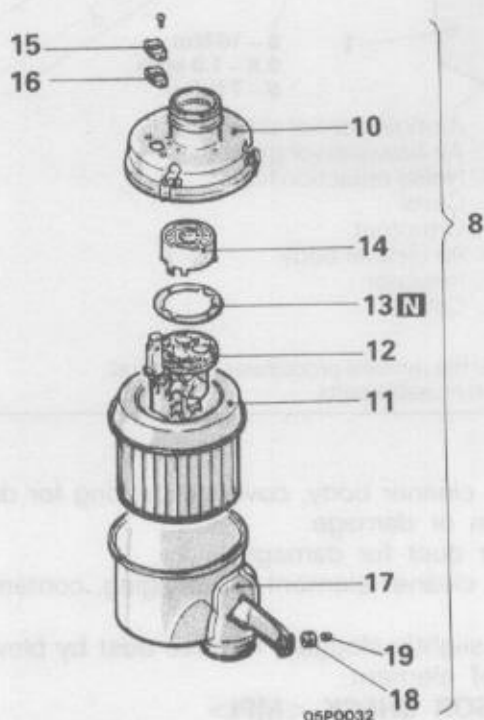
Reverse the removal procedures to reinstall.

REMOVAL AND INSTALLATION <SOHC-MPI>

E150A-B



05P0080



Removal steps

1. Battery
2. Breather hose
3. Tuning pipe
4. Tuning hose
5. Resonator
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

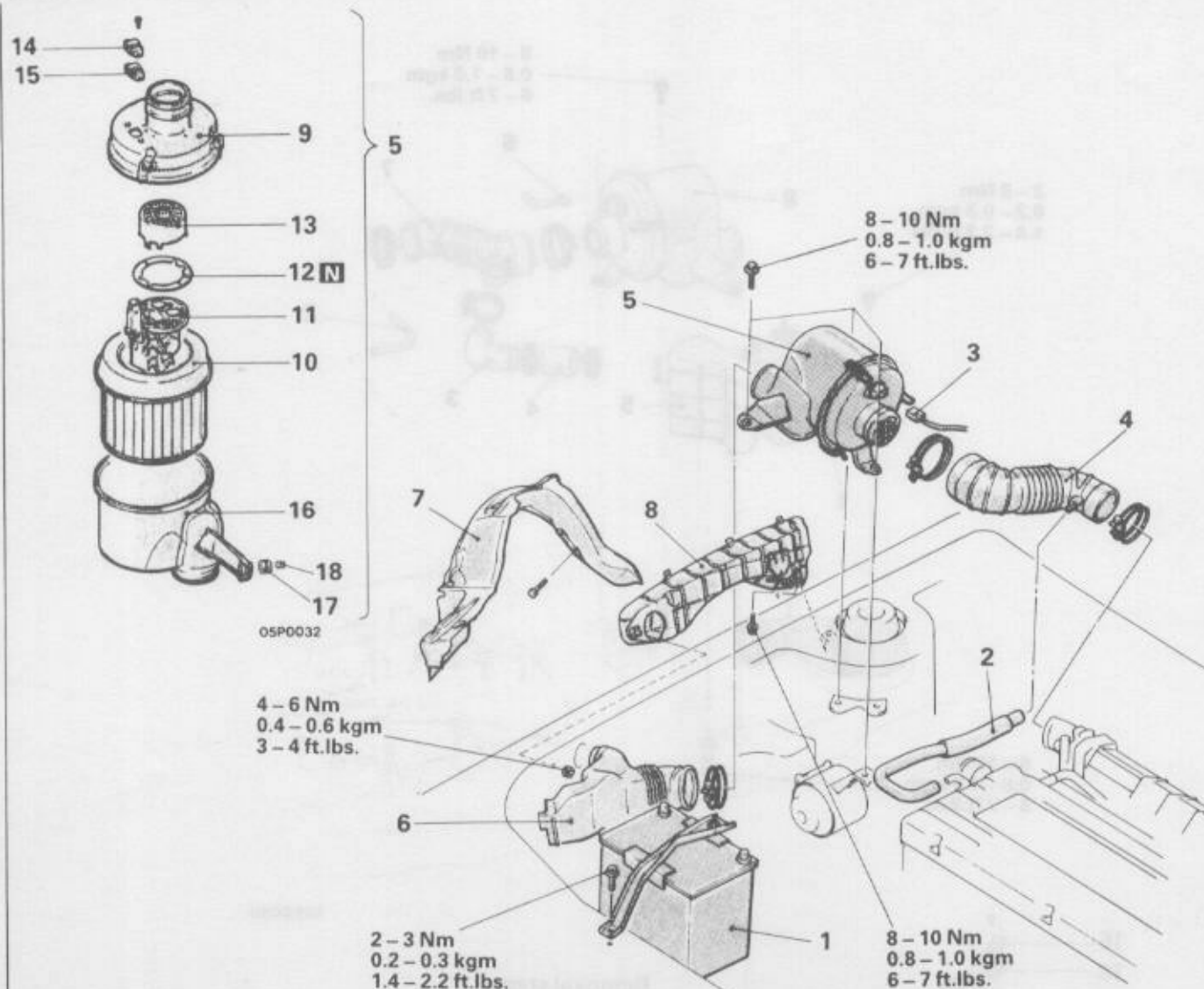
NOTE

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

05P0032

REMOVAL AND INSTALLATION <DOHC>

E150A-C



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

05P0079

INSPECTION

E150CAI

- 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.

AIR-FLOW SENSOR CHECK <MPI>

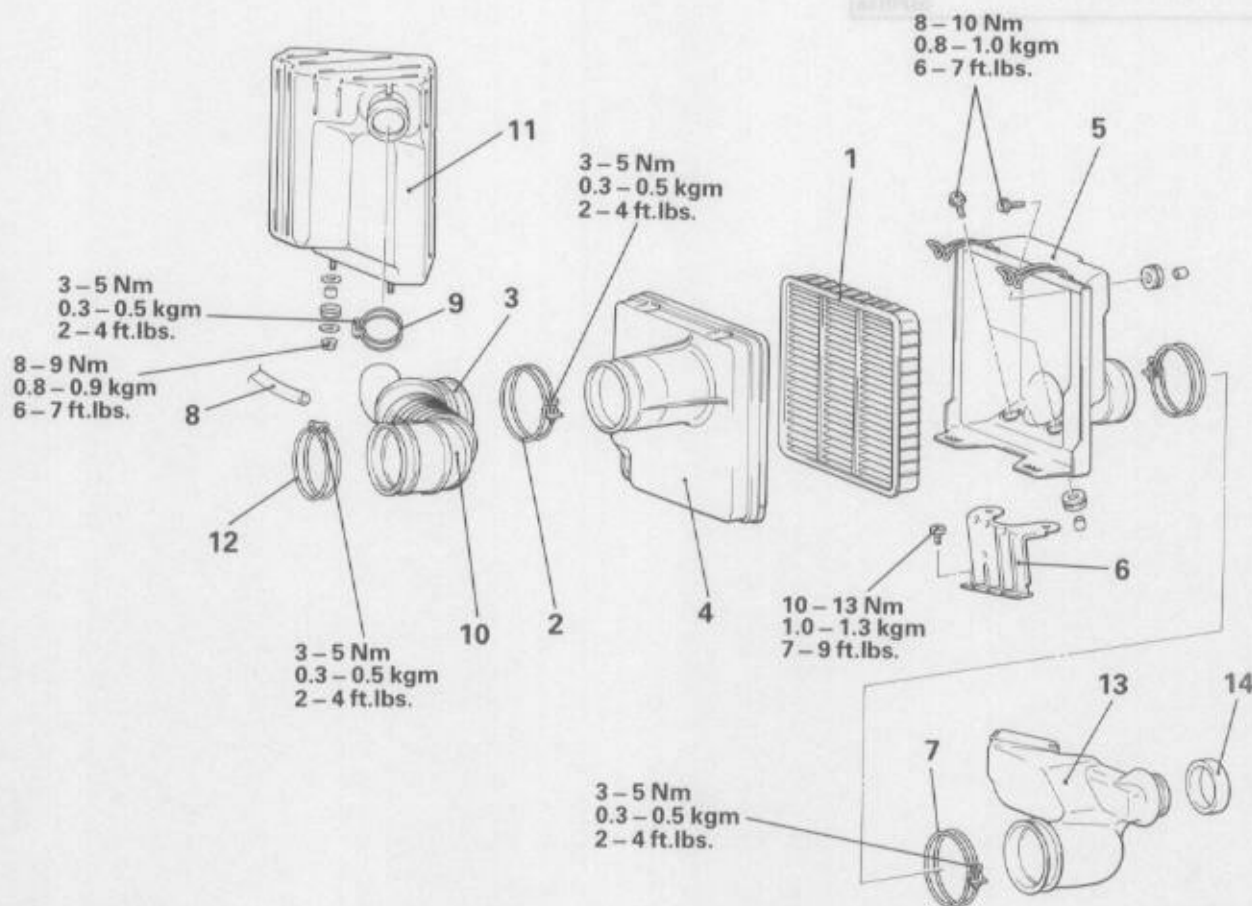
For inspection of air-flow sensor, refer to GROUP 13 – Air-flow Sensor Check.

<4G13>

Pre-removal and Post-installation Operation

<Air Duct A or B>

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



05D0151

1. Air cleaner element

Removal steps of air cleaner cover

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

Removal steps of air cleaner body

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

Removal steps of air resonator

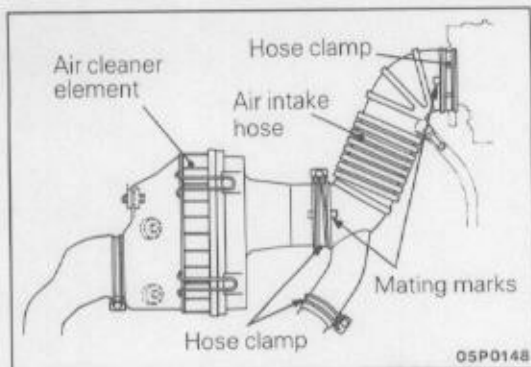
- ◆◆ 2. Hose clamp
- ◆◆ 7. Hose clamp
- 8. PCV hose
- 9. Hose clamp
- ◆◆ 10. Air intake hose
- 11. Resonator

Removal steps of air duct

- 1. Air cleaner element
- 4. Air cleaner cover
- 5. Air cleaner body
- 12. Hose clamp
- 13. Air duct
- 14. Packing

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ Refer to "Service Points of Installation".



SERVICE POINTS OF INSTALLATION

E150DAB

10. 7. 2. INSTALLATION OF AIR INTAKE HOSE AND HOSE CLAMPS

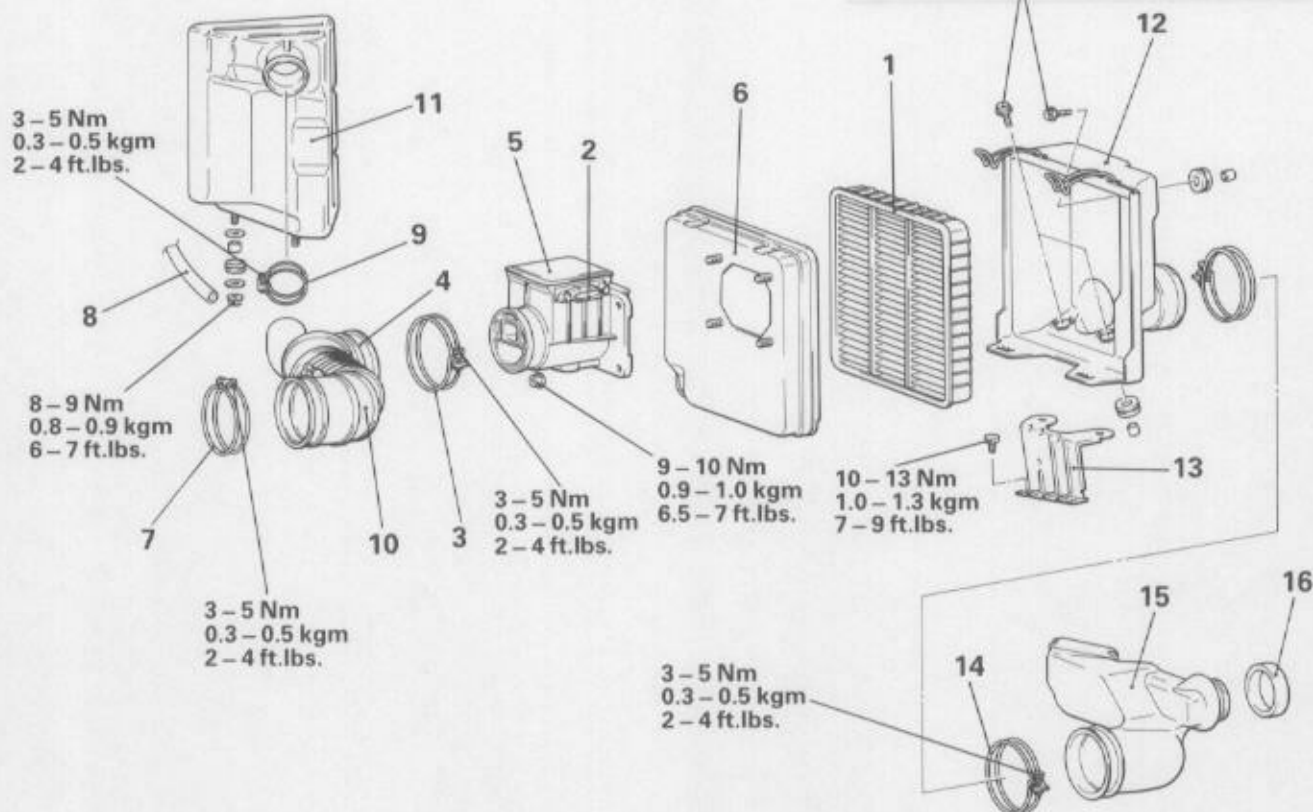
- (1) Install the air intake hose so that the "UP" mark is towards the top.
- (2) Install the hose clamp on the throttle body side so that the thread section of the hose clamp is horizontal.
- (3) Install the hose clamp on the air cleaner side so that the thread section of the hose clamp is vertical.

<4G92>

Pre-removal and Post-installation Operation

<Air Duct A or B>

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



0500150

1. Air cleaner element

Removal steps of air flow sensor

2. Air flow sensor connector
3. Hose clamp
4. Air intake hose connection
5. Air flow sensor

Removal steps of air cleaner cover

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

Removal steps of resonator

- ◆◆ 3. Hose clamp
- ◆◆ 7. Hose clamp
- 8. PCV hose
- 9. Hose clamp
- ◆◆ 10. Air intake hose
- 11. Resonator

Removal steps of air cleaner body

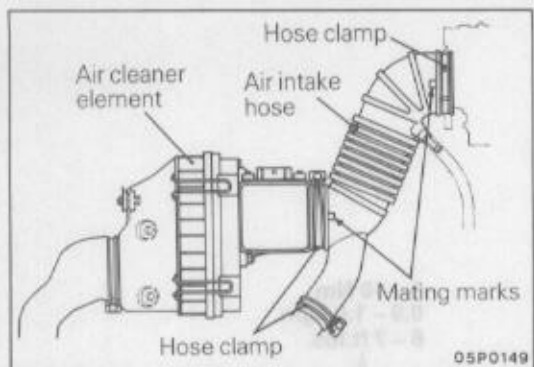
1. Air cleaner element
6. Air cleaner cover
12. Air cleaner body
13. Air cleaner bracket

Removal steps of air duct

1. Air cleaner element
6. Air cleaner cover
12. Air cleaner body
14. Hose clamp
15. Air duct
16. Packing

NOTE

- (1) Reverse the removal procedures to reinstall.
(2) ♦♦: Refer to "Service Points of Installation"

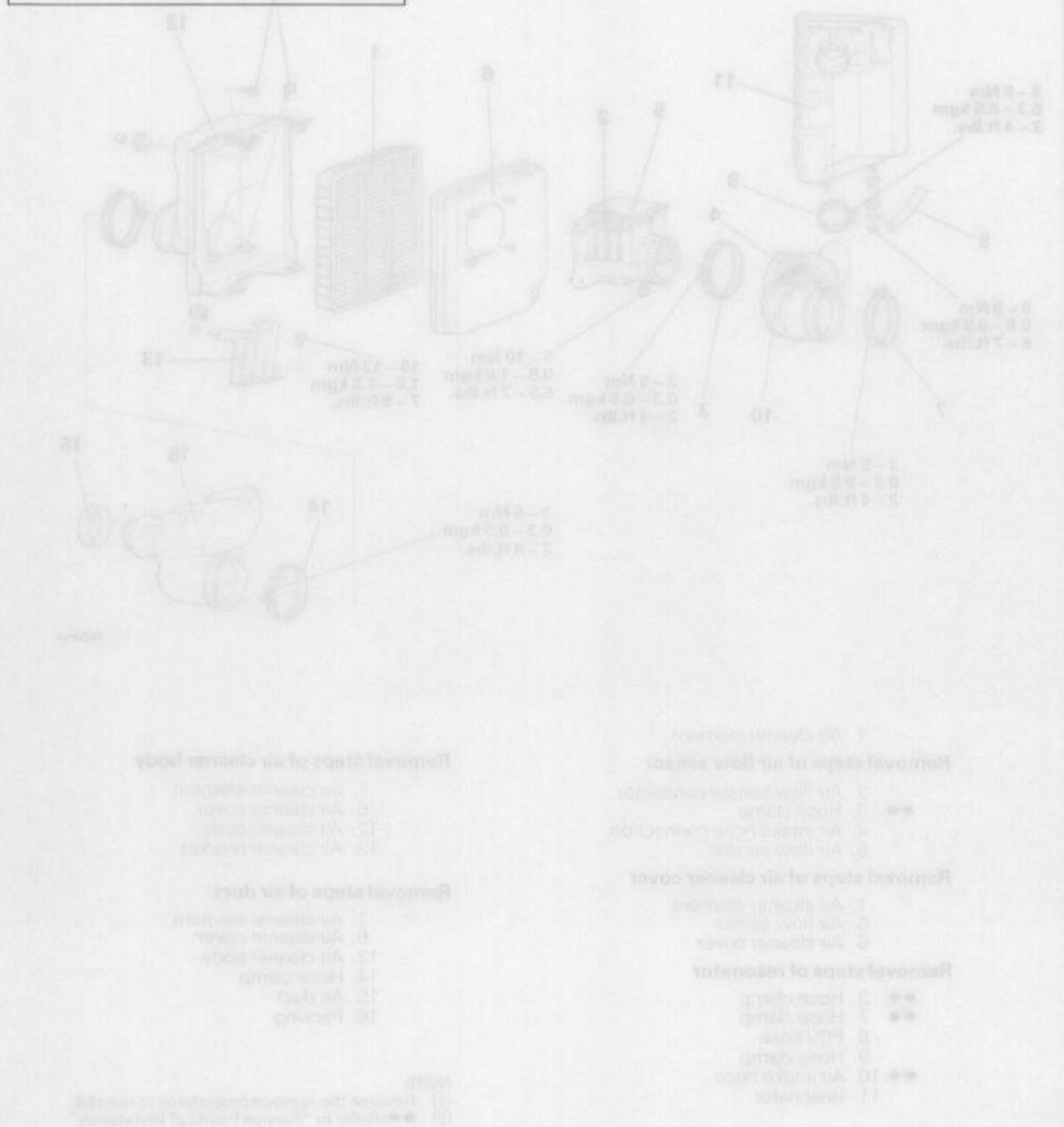


SERVICE POINTS OF INSTALLATION

E150DAB

10. 7. 3. INSTALLATION OF AIR INTAKE HOSE AND HOSE CLAMPS

- (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.

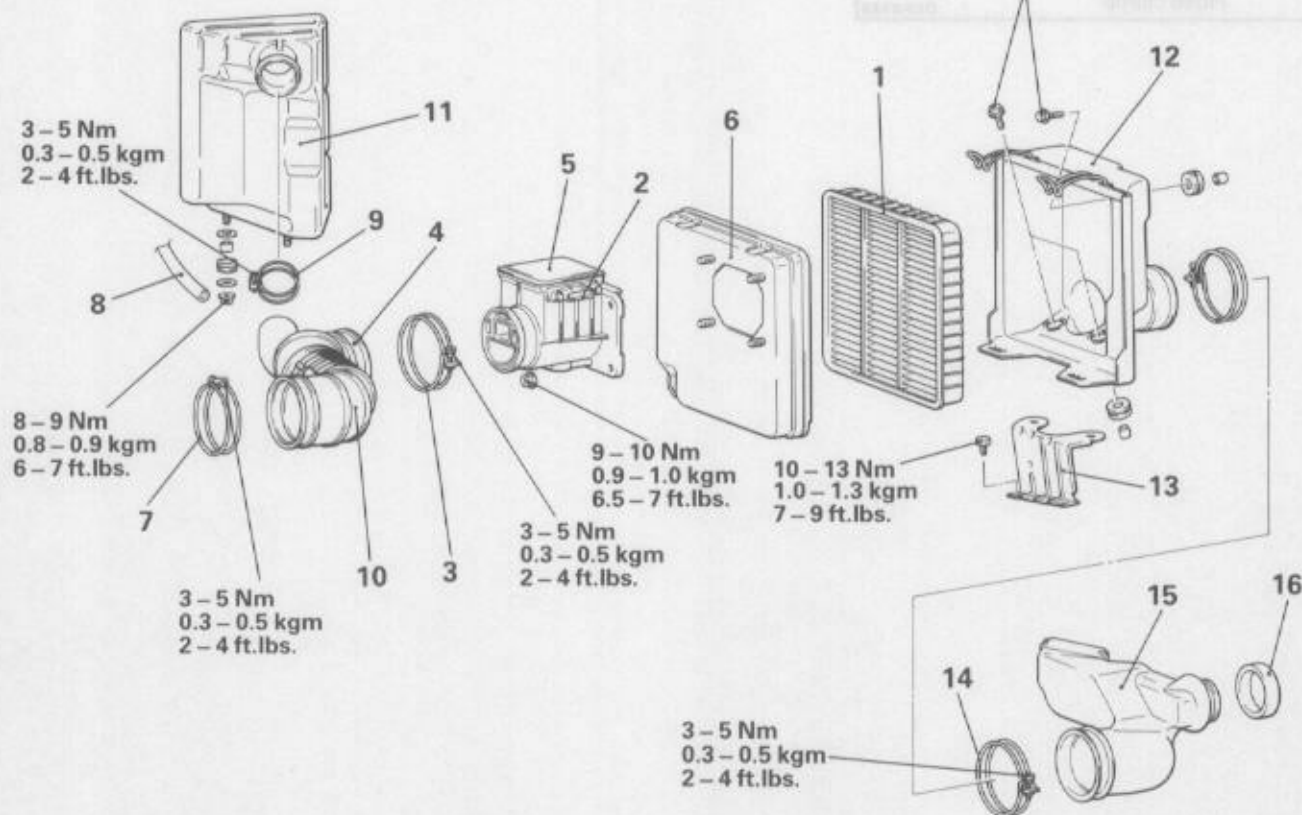


<4G93>

Pre-removal and Post-installation Operation

<Air Duct A or B>

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



0500150

1. Air cleaner element

Removal steps of air flow sensor

- ◆◆ 2. Air flow sensor connector
- ◆◆ 3. Hose clamp
- ◆◆ 4. Air intake hose connection
- ◆◆ 5. Air flow sensor

Removal steps of air cleaner cover

- ◆◆ 1. Air cleaner element
- ◆◆ 5. Air flow sensor
- ◆◆ 6. Air cleaner cover

Removal steps of resonator

- ◆◆ 3. Hose clamp
- ◆◆ 7. Hose clamp
- ◆◆ 8. PCV hose
- ◆◆ 9. Hose clamp
- ◆◆ 10. Air intake hose
- ◆◆ 11. Resonator

Removal steps of air cleaner body

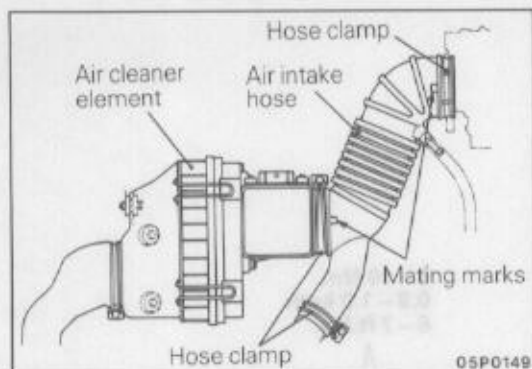
- ◆◆ 1. Air cleaner element
- ◆◆ 6. Air cleaner cover
- ◆◆ 12. Air cleaner body
- ◆◆ 13. Air cleaner bracket

Removal steps of air duct

- ◆◆ 1. Air cleaner element
- ◆◆ 6. Air cleaner cover
- ◆◆ 12. Air cleaner body
- ◆◆ 14. Hose clamp
- ◆◆ 15. Air duct
- ◆◆ 16. Packing

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ Refer to "Service Points of Installation".



SERVICE POINTS OF INSTALLATION

E150DAB

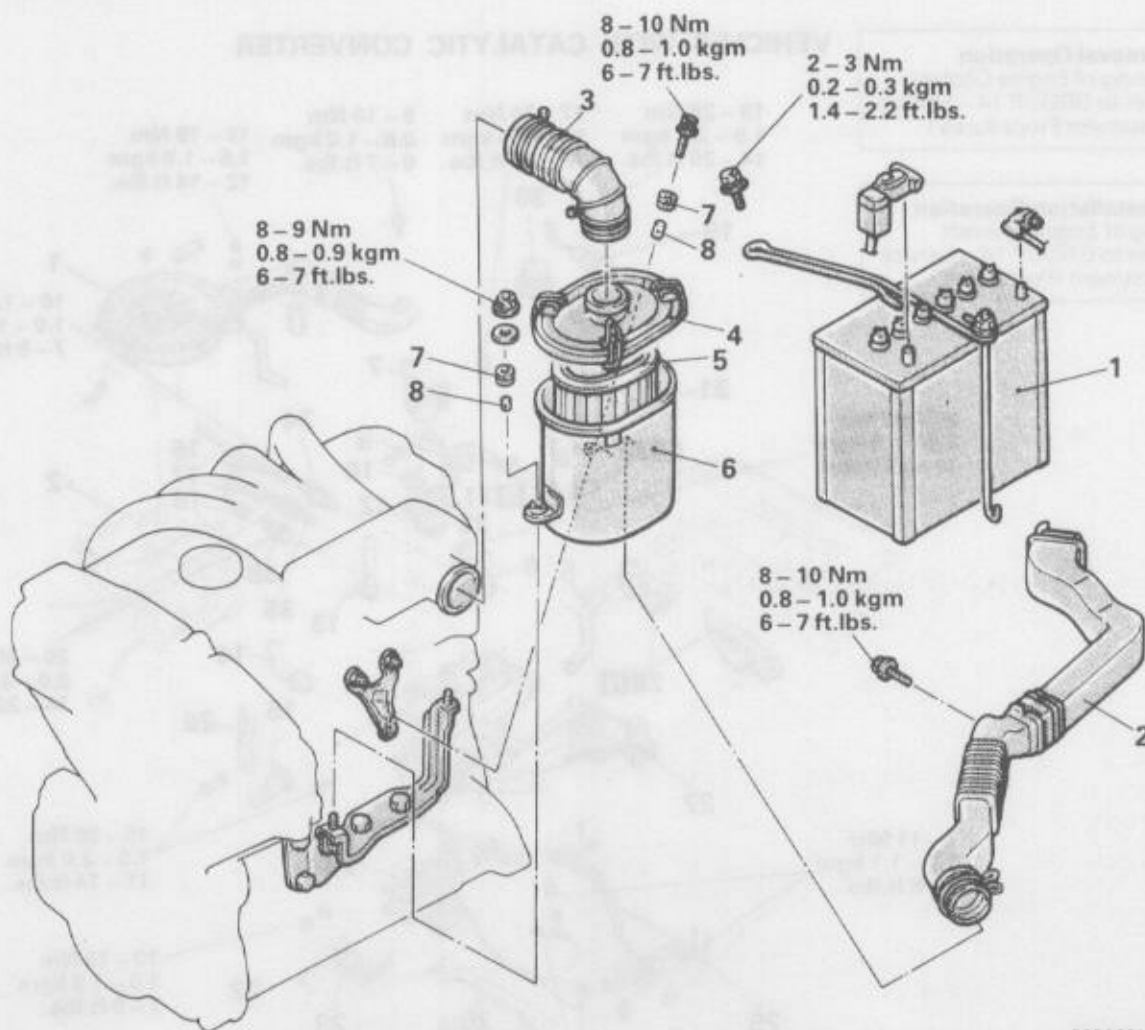
10. 7. 3. INSTALLATION OF AIR INTAKE HOSE AND HOSE CLAMPS

- (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 <DIESEL-POWERED VEHICLES>

E150A-D

REMOVAL AND INSTALLATION



05P0091

Removal steps

1. Battery
2. Air duct
3. Air intake hose
4. Air cleaner cover
5. Air cleaner element
6. Air cleaner body
7. Insulator
8. Collar

NOTE

Reverse the removal procedures to reinstall.

INSPECTION

E150CAG

- 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.

INTAKE MANIFOLD <PETROL-POWERED VEHICLES>

E15MA-A

REMOVAL AND INSTALLATION <SOHC-CARBURETTOR>

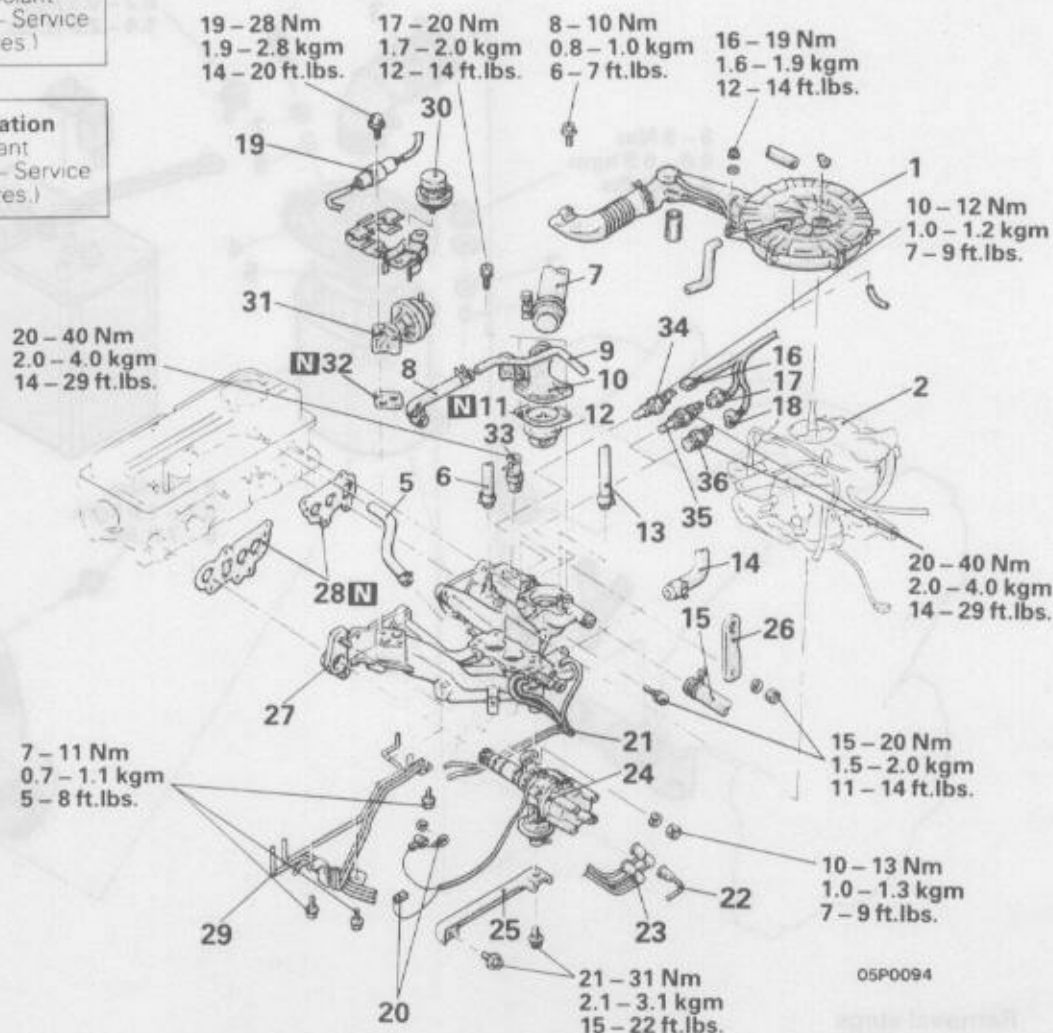
Pre-removal Operation

- Draining of Engine Coolant (Refer to GROUP 14 – Service Adjustment Procedures.)

Post-installation Operation

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

VEHICLES WITH CATALYTIC CONVERTER



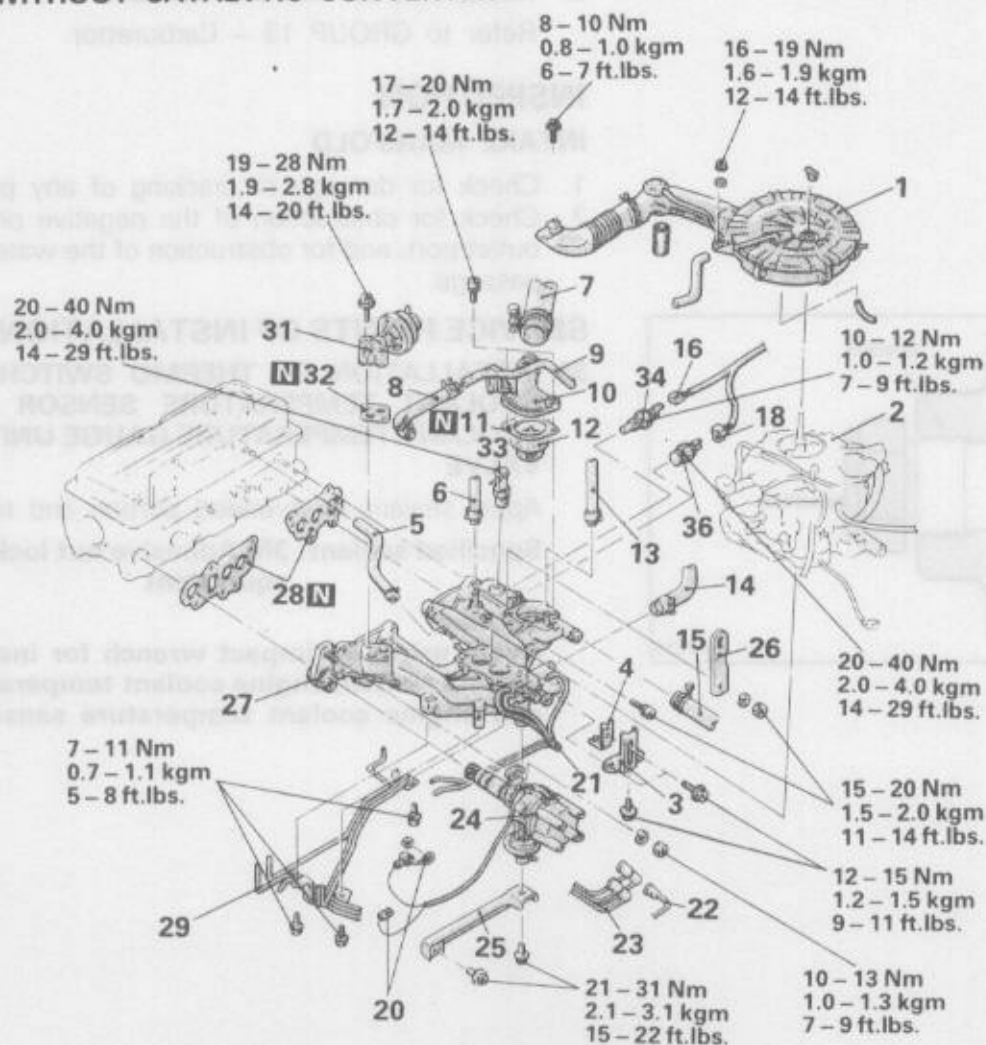
Removal steps

- ◆◆◆◆ 1. Air cleaner
- ◆◆◆◆ 2. Carburettor
- ◆◆◆◆ 5. PCV hose
- ◆◆◆◆ 6. Connection for brake booster vacuum hose
- ◆◆◆◆ 7. Connection for radiator upper hose
- ◆◆◆◆ 8. Fuel vapor hose
- ◆◆◆◆ 9. Fuel vapor pipe clamp
- ◆◆◆◆ 10. Water outlet fitting
- ◆◆◆◆ 11. Gasket
- ◆◆◆◆ 12. Thermostat
- ◆◆◆◆ 13. Connection for water hose
- ◆◆◆◆ 14. Connection for water by-pass hose
- ◆◆◆◆ 15. Connection for heater hose
- ◆◆◆◆ 16. Connection for engine coolant temperature gauge unit connector
- ◆◆◆◆ 17. Connection for engine coolant temperature sensor connector <Vehicles for Europe>
- ◆◆◆◆ 18. Connection for thermo switch connector <Vehicles for Australia>
- ◆◆◆◆ 19. Connection for oxygen sensor connector <Vehicles for Europe>
- ◆◆◆◆ 20. Connection for distributor connector
- ◆◆◆◆ 21. Connection for vacuum hoses
- ◆◆◆◆ 22. Connection for high tension cable
- ◆◆◆◆ 23. Connection for spark plug cable
- ◆◆◆◆ 24. Distributor
- ◆◆◆◆ 25. Intake manifold stay
- ◆◆◆◆ 26. Engine hanger
- ◆◆◆◆ 27. Intake manifold
- ◆◆◆◆ 28. Intake manifold gasket
- ◆◆◆◆ 29. Vacuum pipe
- ◆◆◆◆ 30. Vacuum regulator valve
- ◆◆◆◆ 31. EGR valve
- ◆◆◆◆ 32. Gasket
- ◆◆◆◆ 33. Thermo valve
- ◆◆◆◆ 34. Engine coolant temperature gauge unit
- ◆◆◆◆ 35. Engine coolant temperature sensor <Vehicles for Europe>
- ◆◆◆◆ 36. Thermo switch <Vehicles for Australia>

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

VEHICLES WITHOUT CATALYTIC CONVERTER



05P0095

Removal steps

- ◆◆◆ 1. Air cleaner
- ◆◆◆ 2. Carburettor
- ◆◆ 3. Outer cable bracket <A/T>
- ◆◆ 4. Inner cable bracket <A/T>
5. PCV hose
6. Connection for brake booster vacuum hose
7. Connection for radiator upper hose
8. Fuel vapor hose <Vehicles for GCC>
9. Fuel vapor pipe clamp <Vehicles for GCC>
10. Water outlet fitting
11. Gasket
12. Thermostat
13. Connection for water hose
14. Connection for water by-pass hose
15. Connection for heater hose
16. Connection for engine coolant temperature gauge unit connector
18. Connection for thermo switch connector <Vehicles for Europe, Singapore and Hong Kong>
20. Connection for distributor connector
21. Connection for vacuum hoses
22. Connection for high tension cable
23. Connection for spark plug cable
- ◆◆ 24. Distributor
- ◆◆ 25. Intake manifold stay
26. Engine hanger
27. Intake manifold
28. Intake manifold gasket
29. Vacuum pipe <A/T for Europe and GCC>
31. EGR valve <A/T for Europe and GCC>
32. Gasket <A/T for Europe and GCC>
- ◆◆ 33. Thermo valve <A/T for Europe and GCC>
- ◆◆ 34. Engine coolant temperature gauge unit
- ◆◆ 36. Thermo switch <Vehicles for Europe, Singapore and Hong Kong>

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 POINT OF REMOVAL

E15MBAJ

2. REMOVAL OF CARBURETTOR

Refer to GROUP 13 – Carburettor.

INSPECTION

E15MBBE

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.

SERVICE POINTS OF INSTALLATION

E15MBCG

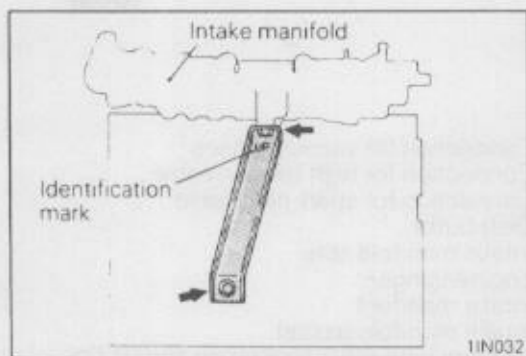
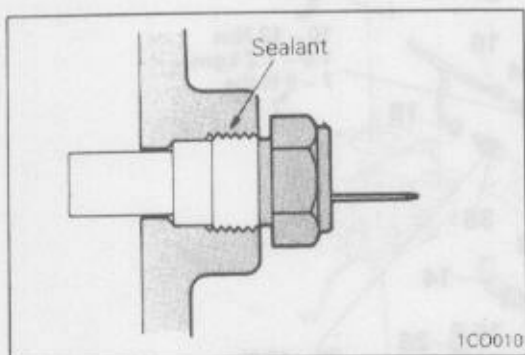
36. INSTALLATION OF THERMO SWITCH / 35. ENGINE COOLANT TEMPERATURE SENSOR / 34. ENGINE COOLANT TEMPERATURE GAUGE UNIT / 33. THERMO VALVE

Apply sealant to threaded portion and tighten.

Specified sealant: 3M Adhesive nut locking No. 4171 or equivalent

Caution

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



25. INSTALLATION OF INTAKE MANIFOLD STAY

Install intake manifold stay with its identification mark located on intake manifold.

24. INSTALLATION OF DISTRIBUTOR

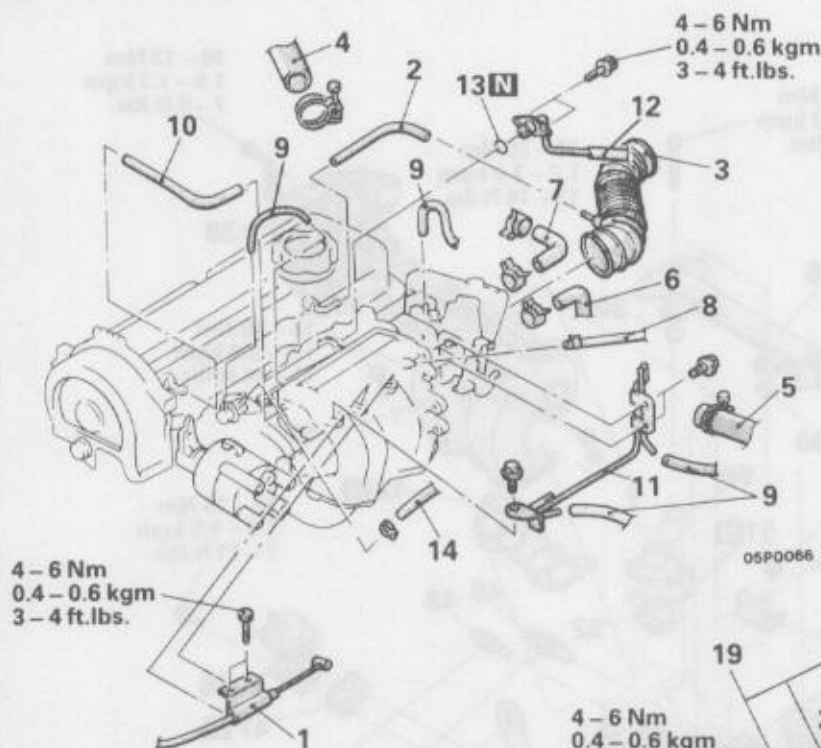
Refer to GROUP 16 – Ignition System.

2. INSTALLATION OF CARBURETTOR

Refer to GROUP 13 – Carburettor.

REMOVAL AND INSTALLATION <SOHC-MPI>

E15MA-B

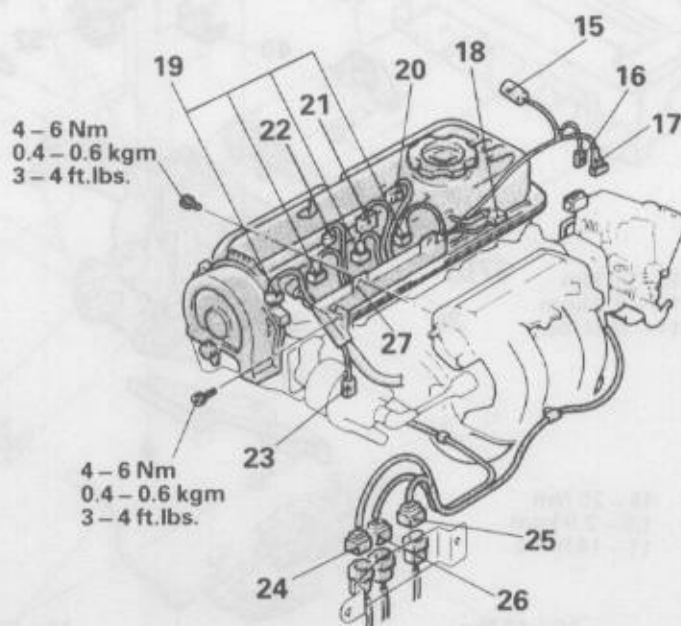


Pre-removal Operation

- Draining of Engine Coolant (Refer to GROUP 14 – Service Adjustment Procedures.)

Post-installation Operation

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



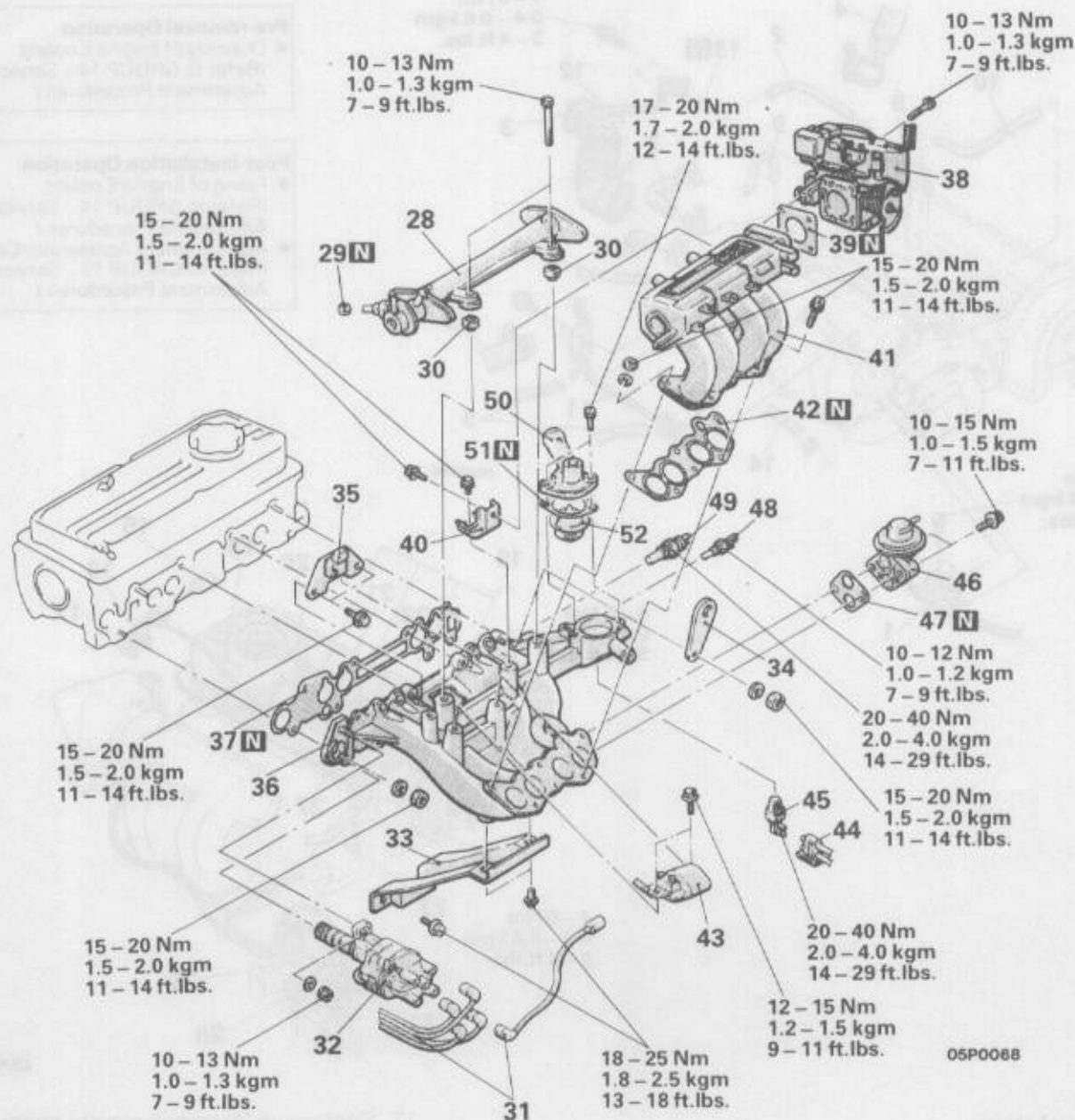
Removal steps

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 oxygen sensor connector <Vehicles with catalytic converter>
16. Connection for engine coolant temperature gauge unit connector

17. Connection for engine coolant temperature sensor connector
18. Connection for idle speed control connector
19. Connection for injector connector
20. Connection for knock sensor connector <Vehicles with catalytic converter>
21. Connection for power transistor connector
22. Connection for ignition coil connector
23. Connection for condenser connector
24. Connection for throttle position sensor connector
25. Connection for motor position sensor connector
26. Connection for distributor connector
27. Control harness

NOTE

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



Removal steps

- ◆◆ ◆◆ 28. Delivery pipe, fuel injector and pressure regulator
- 29. Insulator
- 30. Insulator
- 31. High tension cable and spark plug cable
- 32. Distributor
- 33. Intake manifold stay
- 34. Engine hanger
- 35. Power transistor bracket
- 36. Intake manifold
- 37. Intake manifold gasket
- 38. Throttle body assembly
- 39. Gasket
- 40. Air intake plenum stay
- 41. Air intake plenum

- 42. Air intake plenum gasket
- 43. Ignition coil
- 44. Vacuum hose
- ◆◆ 45. Thermo valve
- 46. EGR valve
- 47. EGR gasket
- ◆◆ 48. Engine coolant temperature gauge unit
- ◆◆ 49. Engine coolant temperature sensor
- 50. Water outlet fitting
- 51. Gasket
- 52. 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

SERVICE POINTS OF REMOVAL

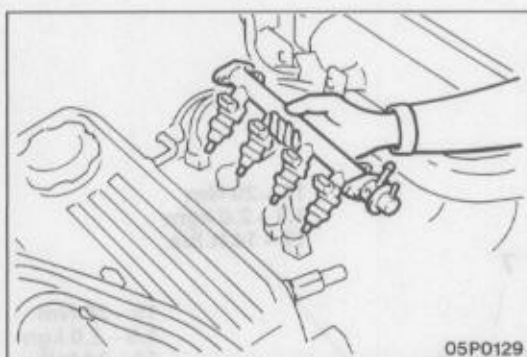
E15MBAD0

12. DISCONNECTION OF FUEL HIGH PRESSURE HOSE

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.



05P0129

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

Remove the delivery pipe with the fuel injectors and the pressure regulator attached. Be careful to remove assembly gently as the injectors can easily fall off.

INSPECTION

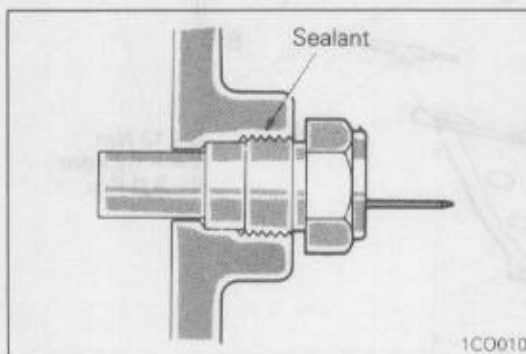
E15MBBF

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.



1C0010

SERVICE POINTS OF INSTALLATION

E15MBCH

49. INSTALLATION OF ENGINE COOLANT TEMPERATURE SENSOR / 48. ENGINE COOLANT TEMPERATURE GAUGE UNIT / 45. THERMO VALVE

Apply sealant to threaded portion and tighten.

Specified sealant: 3M Adhesive nut locking No. 4171 or equivalent

Caution

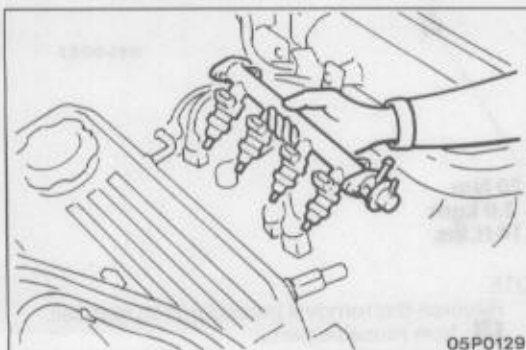
Avoid using an impact wrench for installation of the engine coolant temperature gauge unit and engine coolant temperature sensor.

39. INSTALLATION OF GASKET

Refer to GROUP 13 – Throttle Body.

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

Install the delivery pipe with the fuel injectors and the pressure regulator attached. Be careful to install assembly gently as the injectors can easily fall off.

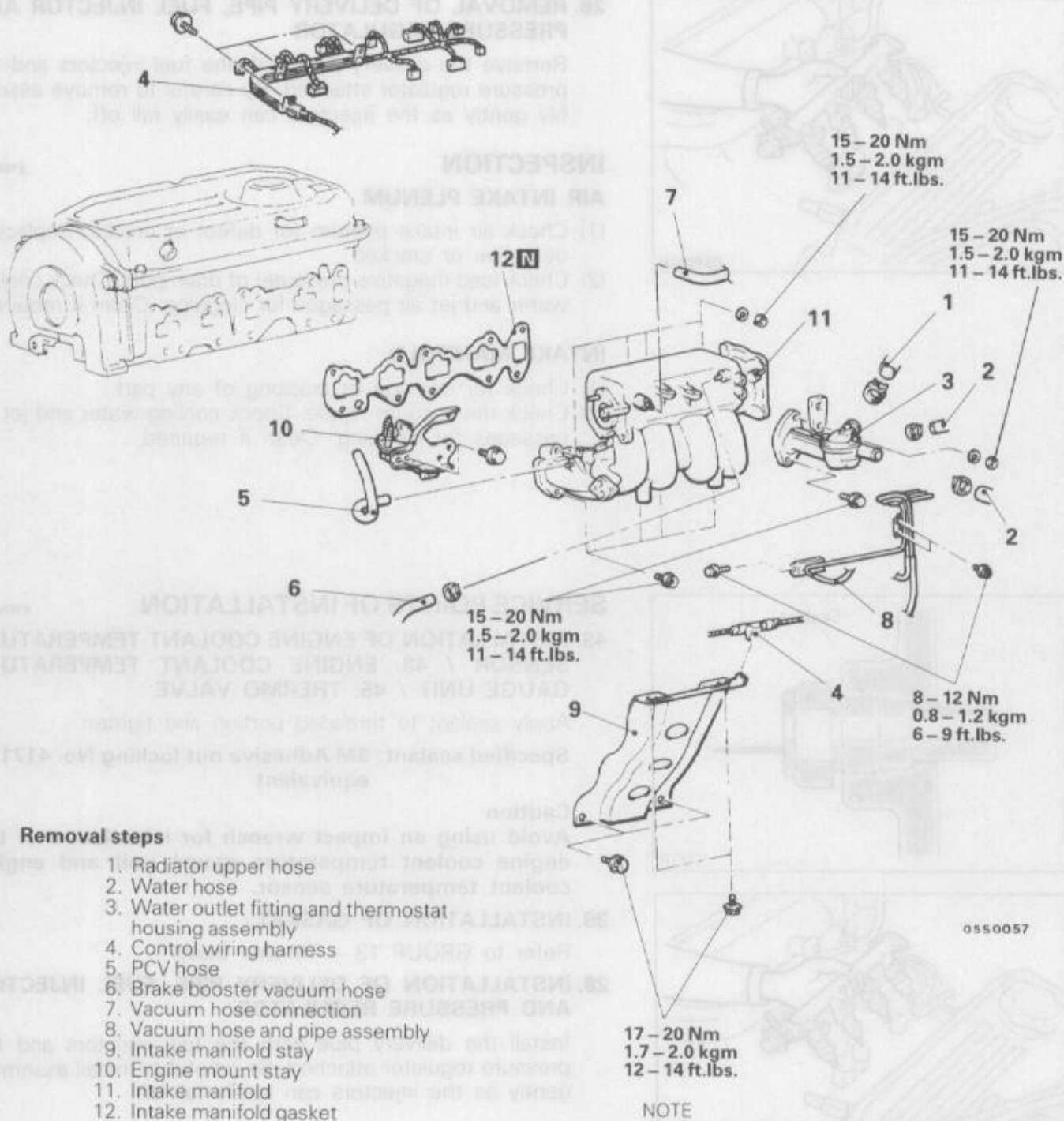


05P0129

<4G13>

Pre-removal and Post-installation Operation

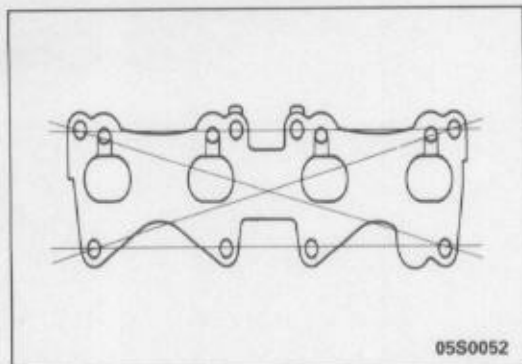
- Removal and Installation of Throttle Body
(Refer to GROUP 13 – Throttle Body.)
- Removal and Installation of Injector
(Refer to GROUP 13 – Injector.)

**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 manifold stay
10. Engine mount stay
11. Intake manifold
12. Intake manifold gasket

0550057

E15MBBA3



INSPECTION

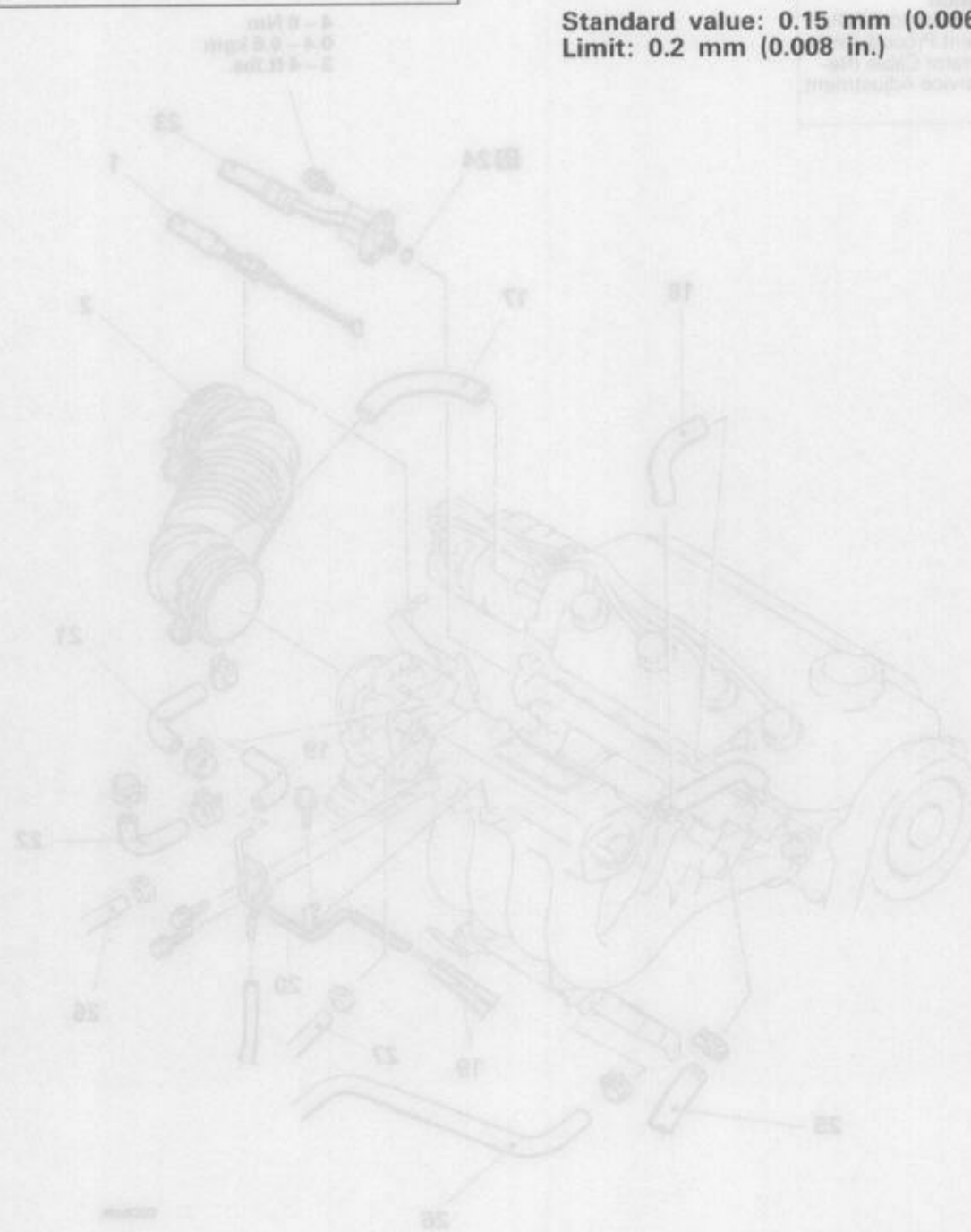
Check the following points; replace the part if a problem is found.

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 (0.006 in.) or less

Limit: 0.2 mm (0.008 in.)



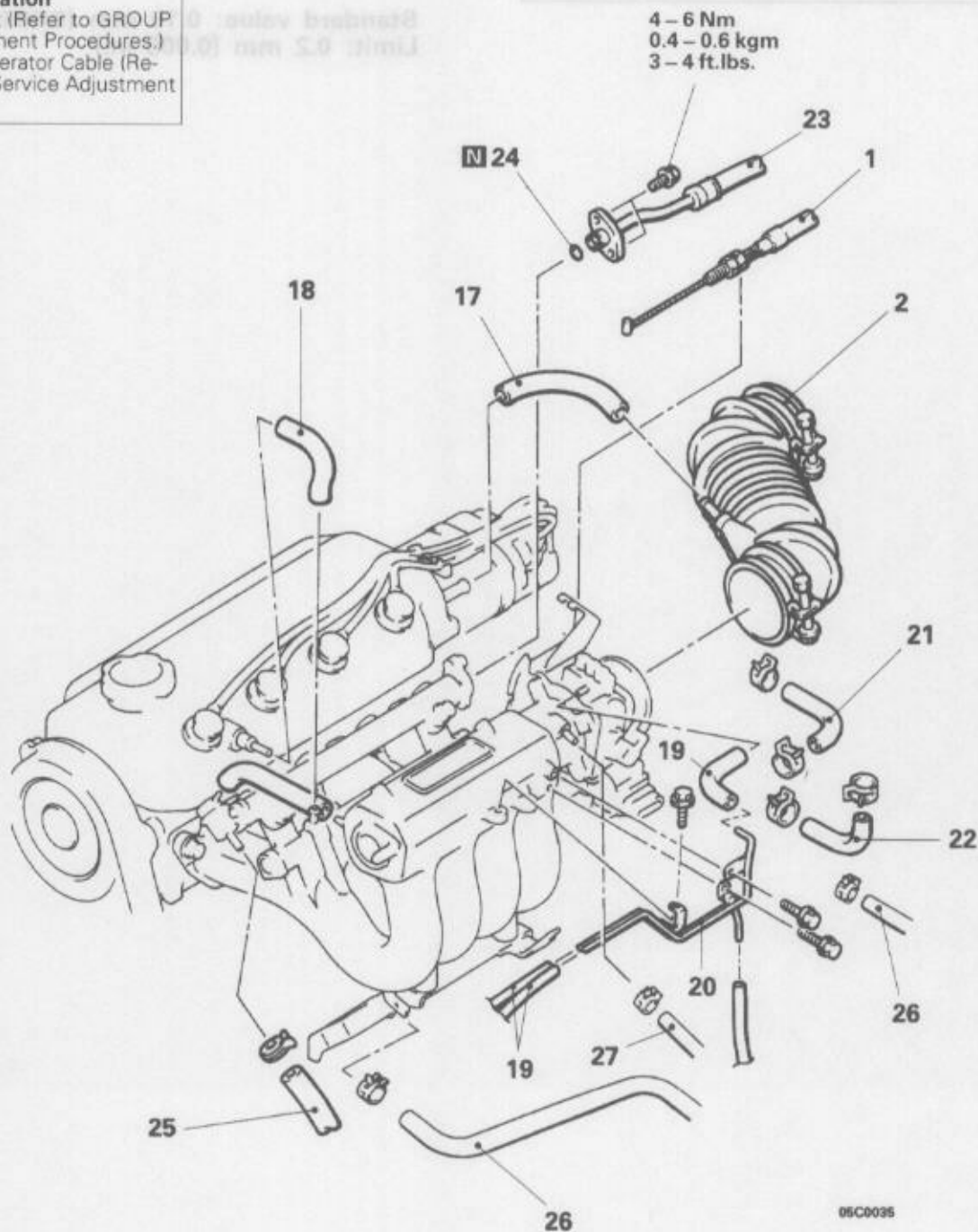
<4G92>

Pre-removal Operation

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

Post-installation Operation

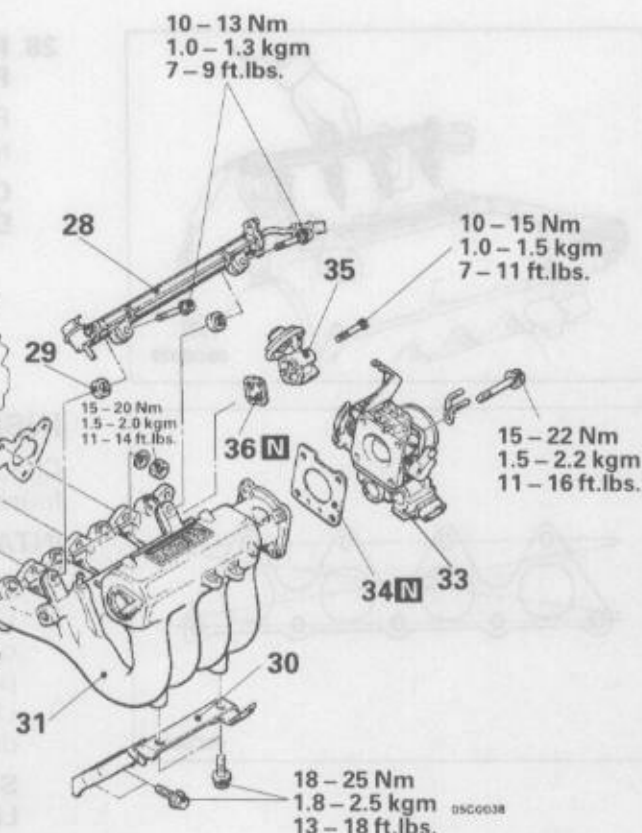
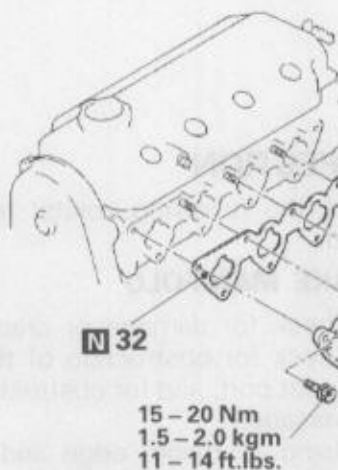
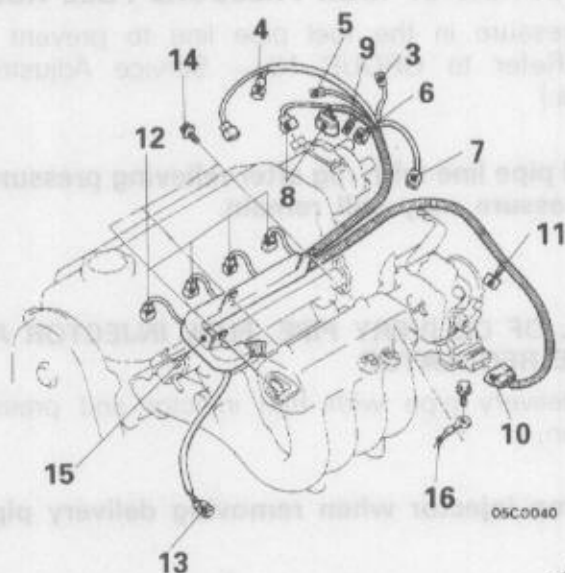
- Supplying of Coolant (Refer to GROUP 14 – Service Adjustment Procedures.)
- Adjustment of Accelerator Cable (Refer to GROUP 13 – Service Adjustment Procedures.)

**Removal steps**

1. Accelerator cable connection
2. Air intake hose

NOTE

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



3. Engine coolant temperature switch (A/C) connector
4. Oxygen sensor connector
5. Oil pressure switch connector
6. Water temperature gauge connector
7. Engine coolant temperature sensor connector
8. Distributor connector
9. Condenser connector
10. ISC connector
11. TPS connector
12. Injector connector
13. Detonation sensor connector
14. Engine coolant temperature switch (Engine control)
15. Control harness assembly
16. Earth wire
17. Breather hose connection
18. PCV hose connection
19. Vacuum hose connection
20. Vacuum pipe
21. Water hose connection (Thermostat case → Throttle body)

22. Water hose connection (Throttle body → Water inlet fitting)
23. High-pressure fuel hose connection
24. O-ring
25. Fuel return hose connection
26. Heater hose connection
27. Brake booster vacuum hose connection
28. Delivery pipe, injector and pressure regulator assembly
29. Insulator
30. Intake manifold stay
31. Intake manifold
32. Intake manifold gasket
33. Throttle body
34. Throttle body gasket
35. EGR valve
36. EGR valve 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

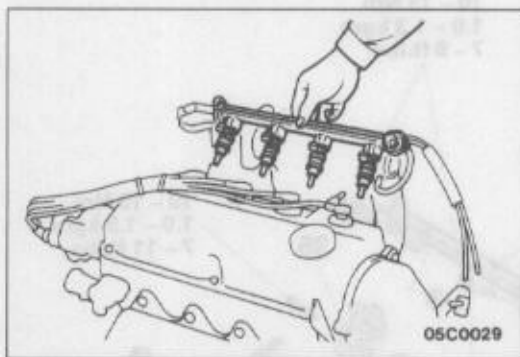
E15MBAD

23. DISCONNECTION OF HIGH PRESSURE FUEL HOSE

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

Caution

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



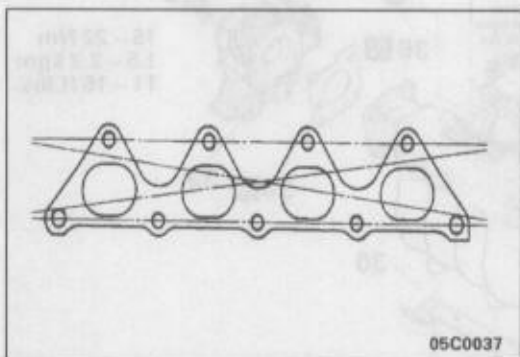
05C0029

28. 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.



05C0037

INSPECTION

E15M8BA3

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 (0.006 in.) or less

Limit: 0.2 mm (0.008 in.)

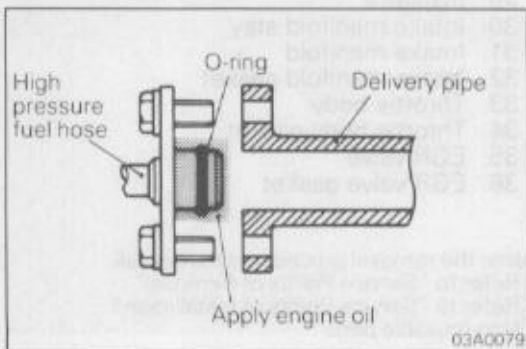
SERVICE POINT OF INSTALLATION

23. INSTALLATION OF HIGH PRESSURE FUEL HOSE

Apply engine oil to the hose union. Insert the hose, being careful not to damage the O-ring, and tighten securely.

Caution

Because there is high pressure applied between the fuel pump and the injection mixer, be especially sure that there is no fuel leakage in this area.



03A0079

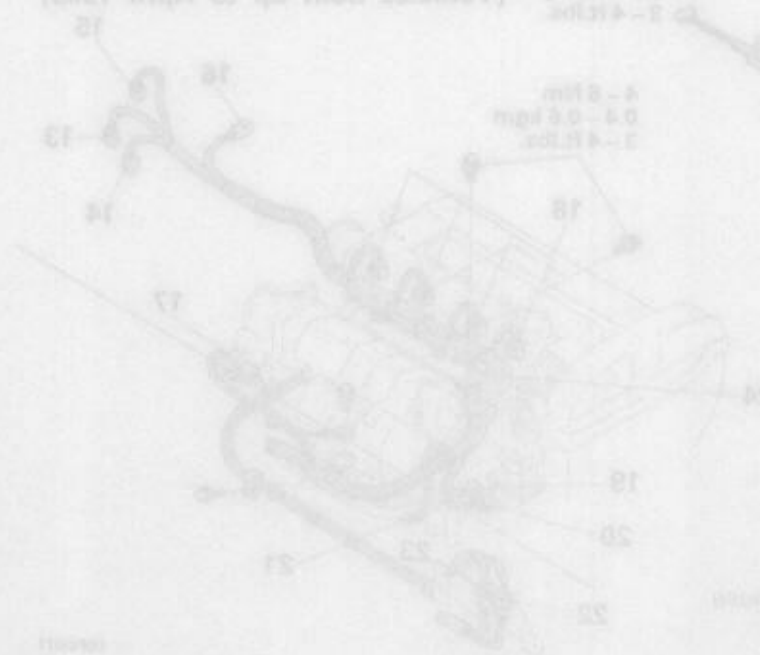
Pre-removal Operation

- Loosen of Engine Cover (Refer to GROUP 14 - Service Adjustment Procedures)

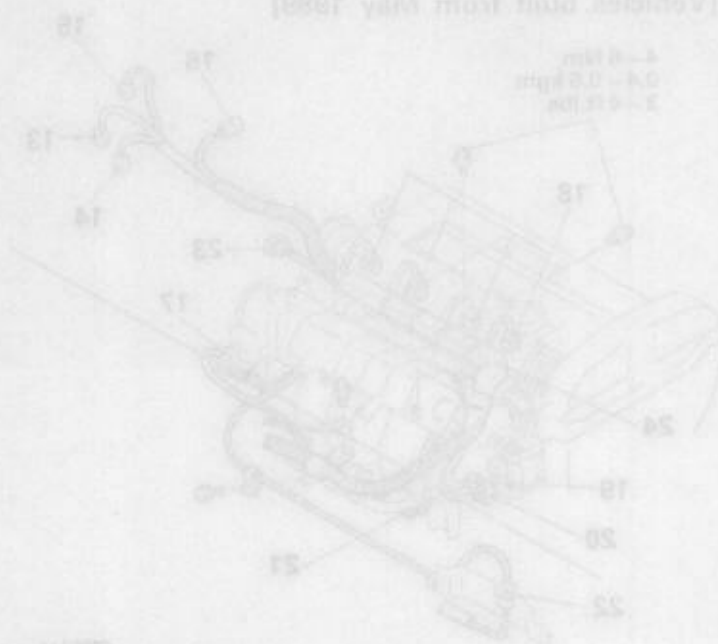
Post-installation Operation

- Tighten of Engine Cover (Refer to GROUP 14 - Service Adjustment Procedures)
- Adjustment of Accelerator Cable (Refer to GROUP 13 - Service Adjustment Procedures)

[Vehicles built up to April 1993]



[Vehicles built from May 1993]



- Removal steps**
1. Air filter
 2. Connection for accelerator cable
 3. Intake body stay
 4. Connection for water bypass hose
 5. Connection for water hose
 6. Connection for water hose (vacuum hose)
 7. Connection for fuel pump pressure hose
 8. O-ring
 9. Connection for fuel return hose
 10. Connection for PCV hose
 11. Connection for water hose
 12. Connection for air hose
 13. Engine coolant temperature sensor (with connector)
 14. Engine coolant temperature sensor unit (with connector)
 15. Spark plug
 16. Spark plug (with connector) (with connector)
 17. Oxygen sensor connector (with connector)
 18. Oxygen sensor
 19. Oxygen sensor
 20. Oxygen sensor
 21. Oxygen sensor connector (with connector)
 22. Oxygen sensor connector (with connector)
 23. Oxygen sensor connector (with connector)
 24. Oxygen sensor

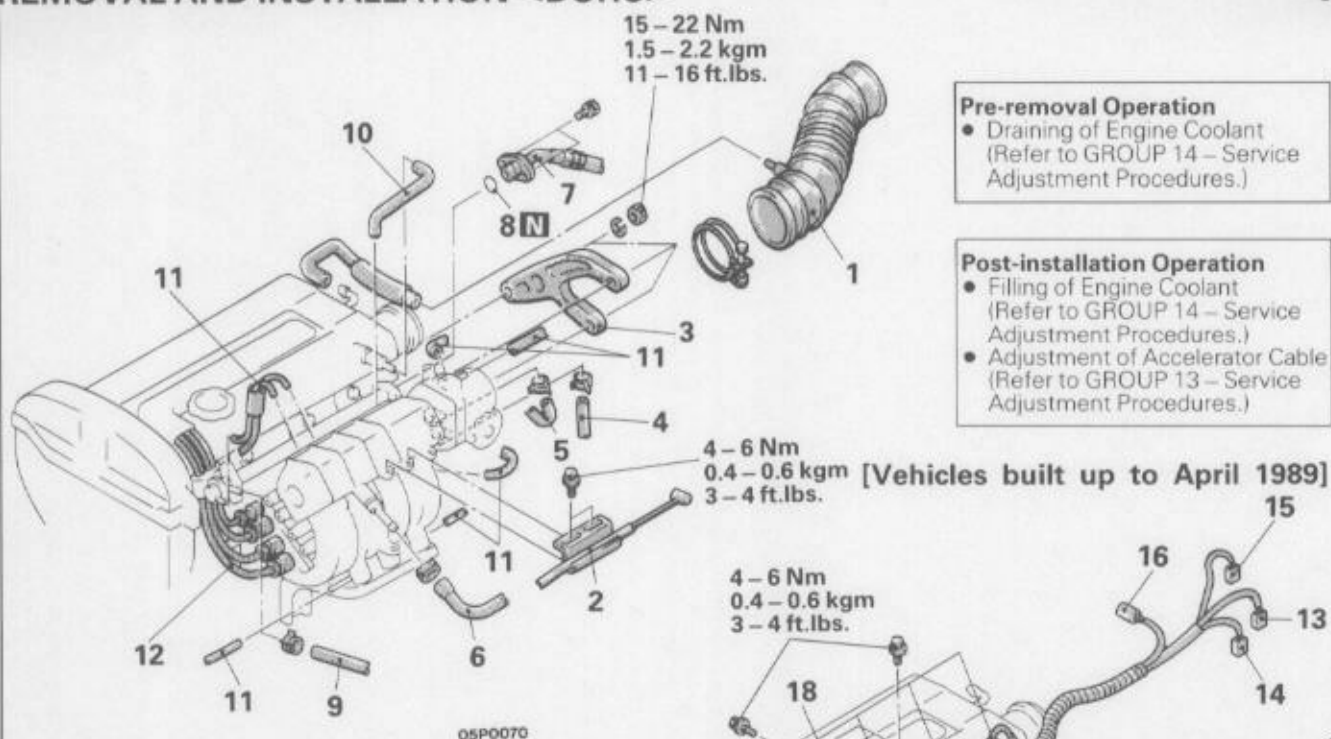
NOTE

1) Reverse the removal procedure to install.

2) Refer to "Service Points of Interest".

3) Refer to "Service Points of Interest".

REMOVAL AND INSTALLATION <DOHC>



Pre-removal Operation

- Draining of Engine Coolant (Refer to GROUP 14 – Service Adjustment Procedures.)

Post-installation Operation

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

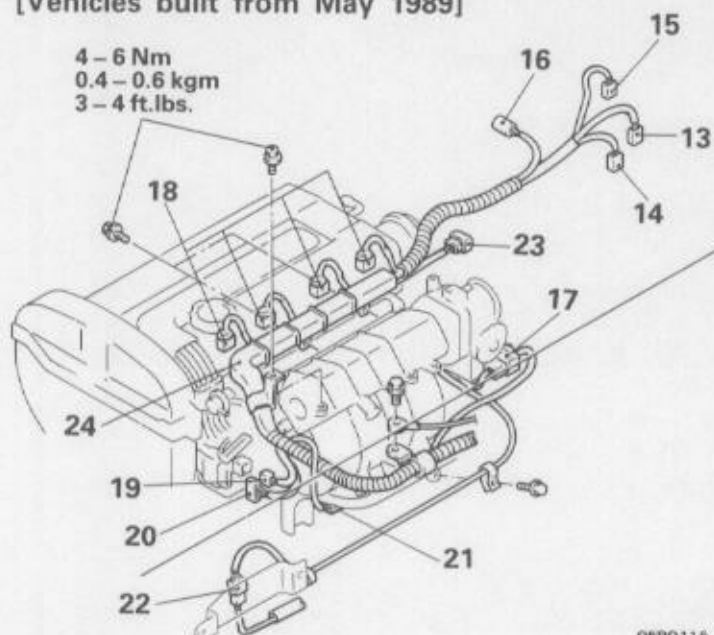
Removal steps

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. Engine coolant temperature sensor connector
14. Engine coolant temperature gauge unit connector
15. Engine coolant temperature switch connector <Air conditioner>
16. Oxygen sensor connector <Vehicles with catalytic converter>
17. Idle speed control connector
18. Injector connector
19. Ignition coil connector
20. Power transistor connector
21. Knock sensor connector <Vehicles for Europe>
22. Crank angle sensor connector
23. Throttle position sensor connector
24. Control harness

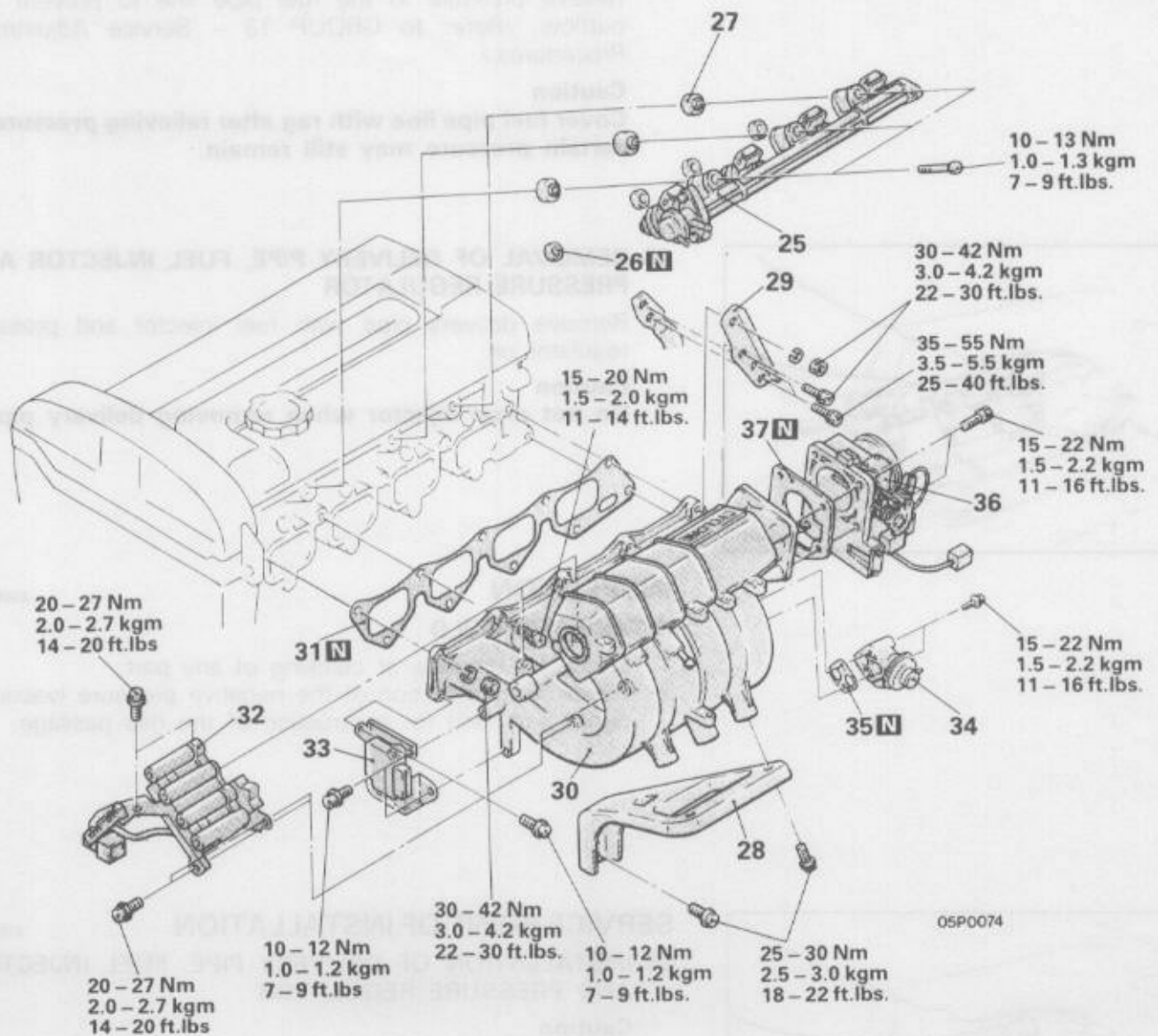
NOTE

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

[Vehicles built from May 1989]



05P0115



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. Throttle body
- 37. 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

E15MBAD1

7. DISCONNECTION OF FUEL HIGH PRESSURE HOSE

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

Caution

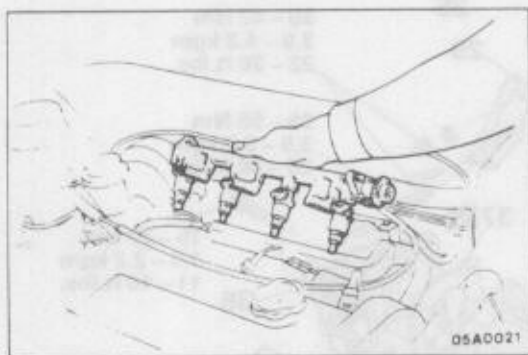
Cover fuel pipe line with rag after relieving pressure as certain pressure may still remain.

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

E15MBBG

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.

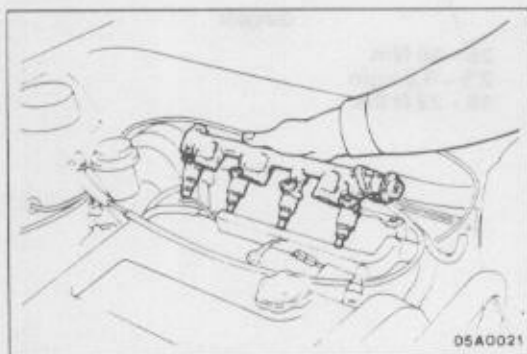
SERVICE POINT OF INSTALLATION

E15MBCI

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

Caution

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



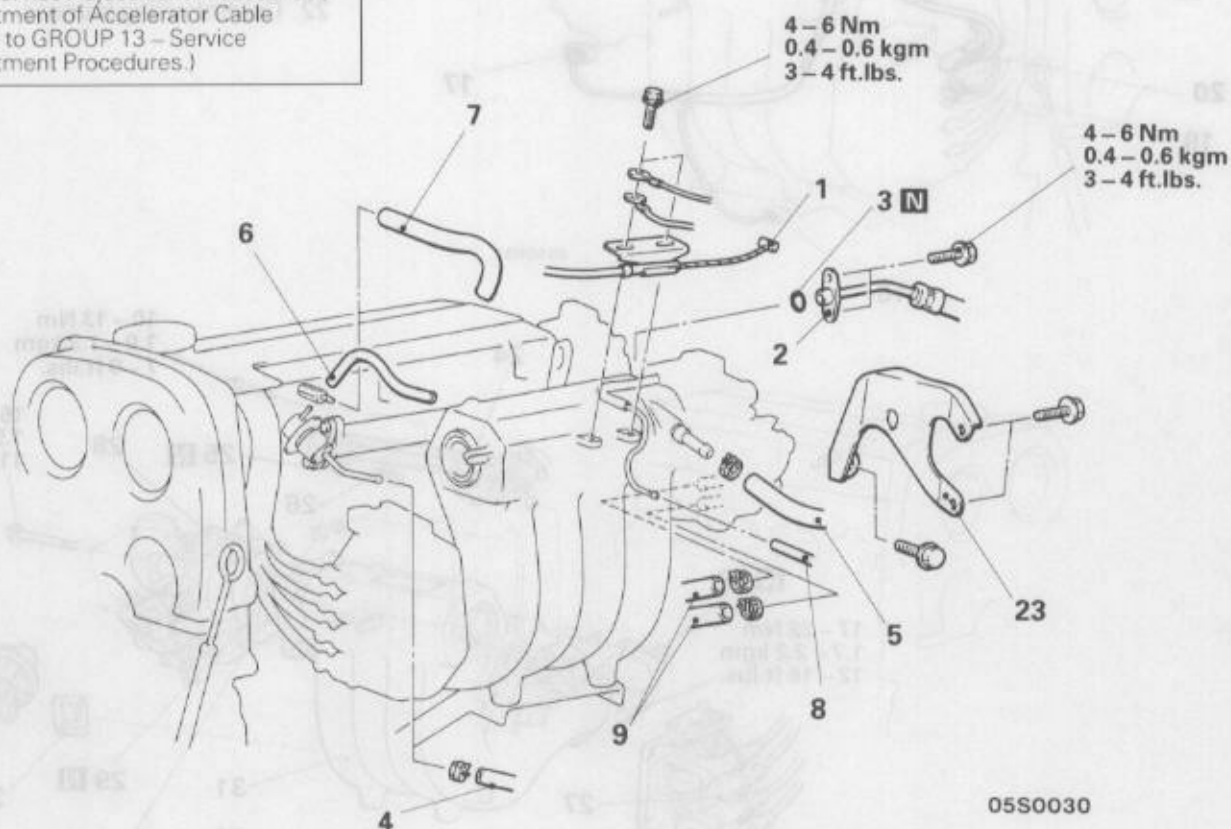
<4G93>

Pre-removal Operation

- Releasing of Residual Fuel Pressure (Refer to GROUP 13 – Service Adjustment Procedures.)
- Draining of Coolant (Refer to GROUP 14 – Service Adjustment Procedures.)
- Removal of Air Intake Hose (Refer to P.15-10-1.)

Post-installation Operation

- Installation of Air Intake Hose (Refer to P.15-10-1.)
- Supplying of Coolant (Refer to GROUP 14 – Service Adjustment Procedures.)
- Adjustment of Accelerator Cable (Refer to GROUP 13 – Service Adjustment Procedures.)



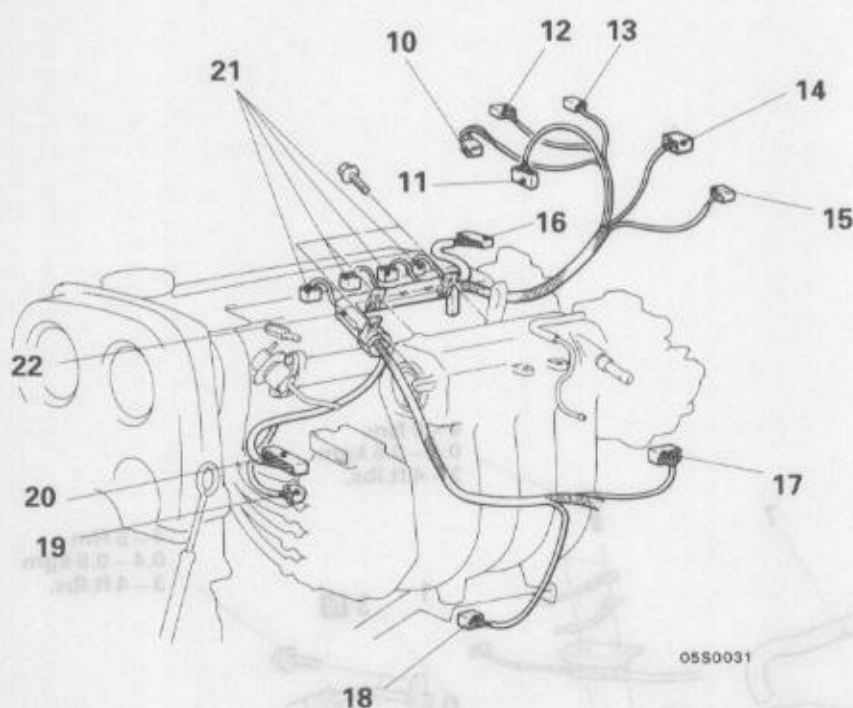
05S0030

Removal steps

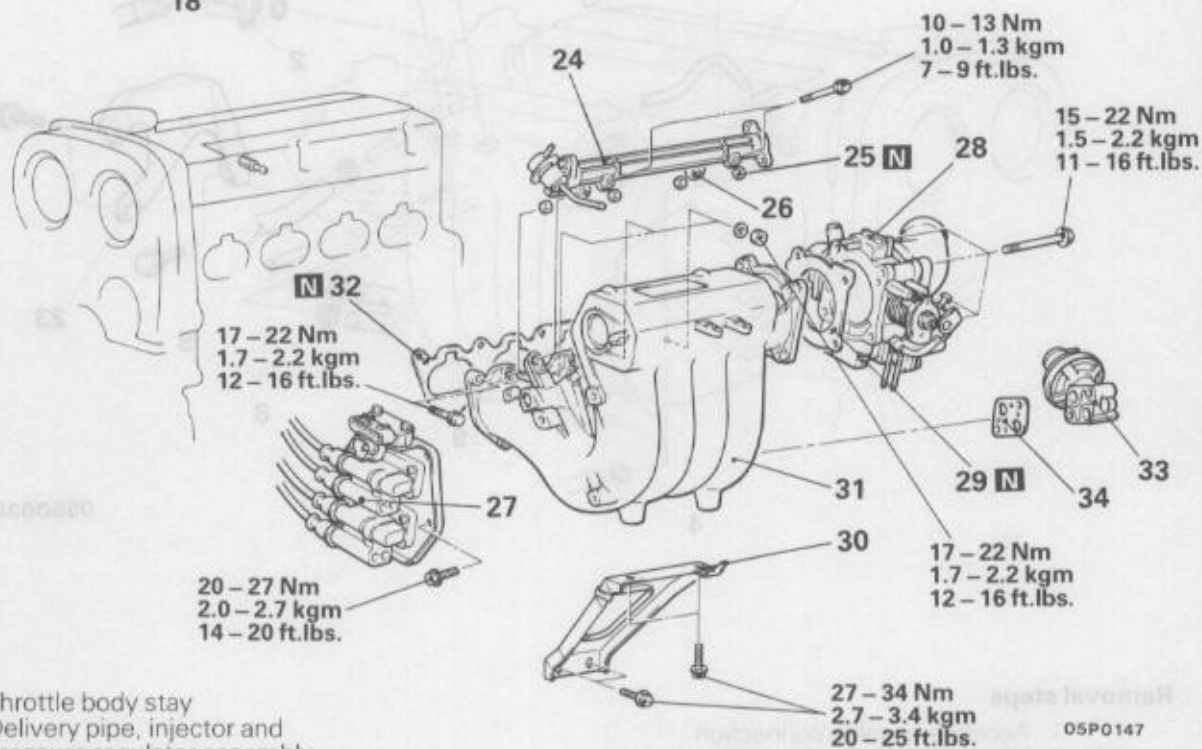
1. Accelerator cable connection
- ♦♦ 2. High-pressure fuel hose connection
3. O-ring
4. Fuel return hose connection
5. Brake booster vacuum hose connection
6. Vacuum hose
7. PCV hose
8. Vacuum hose
9. Water hose

NOTE

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



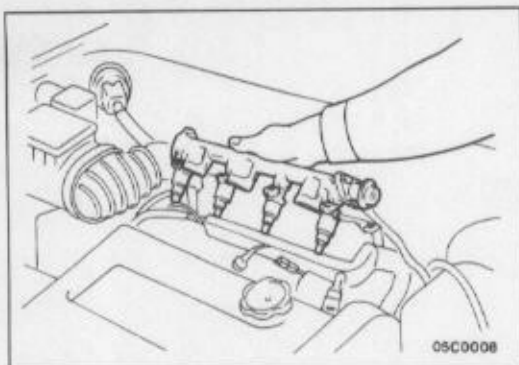
- 10. Water temperature switch (A/C) connector
- 11. Crank angle sensor connector
- 12. Oxygen sensor connector
- 13. Oil pressure switch connector
- 14. Water temperature sensor connector
- 15. Water temperature gauge connector
- 16. TPS connector
- 17. ISC connector
- 18. Detonation sensor connector
- 19. Power transistor connector
- 20. Ignition coil connector
- 21. Injector connector
- 22. Control wiring harness



- 23. Throttle body stay
- 24. Delivery pipe, injector and pressure regulator assembly
- 25. Insulator
- 26. Insulator
- 27. Ignition coil, power transistor and spark plug cable assembly
- 28. Throttle body
- 29. Gasket
- 30. Intake manifold stay
- 31. Intake manifold
- 32. Intake manifold gasket
- 33. EGR valve
- 34. EGR valve 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 POINT OF REMOVAL

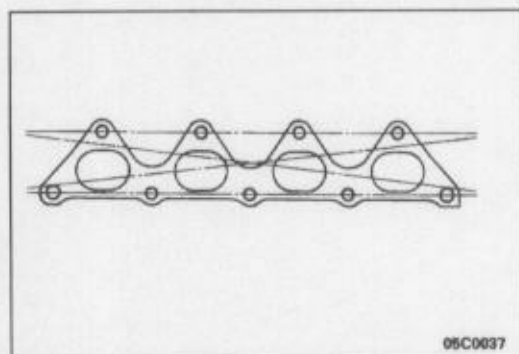
E15MBAD

24. 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

E15MBBA3

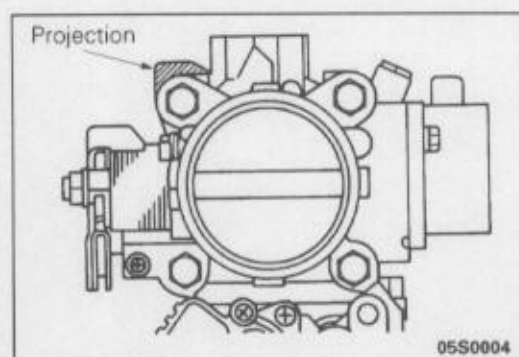
Check the following points; replace the part if a problem is found.

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 (0.006 in.) or less

Limit: 0.2 mm (0.008 in.)

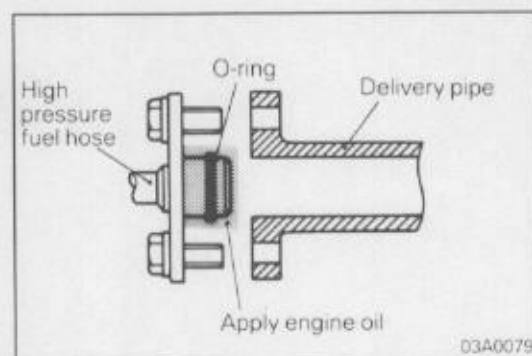


SERVICE POINTS OF INSTALLATION

E15MBAR

29. INSTALLATION OF GASKET

Install the gasket between the intake manifold and the throttle body with the gasket projection in the position shown in the illustration.



2. INSTALLATION OF HIGH PRESSURE FUEL HOSE

- (1) Apply engine oil to the hose union.
Insert the hose, being careful not to damage the O-ring, and tighten securely.

Caution

Because there is high pressure applied between the fuel pump and the injection mixer, be especially sure that there is no fuel leakage in this area.

24. 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

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 to 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 (0.006 in.) or less
Limit: 0.2 mm (0.008 in.)

SERVICE POINTS OF INSTALLATION

25. INSTALLATION OF GASKET

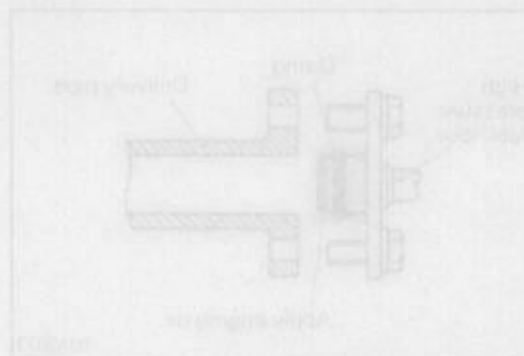
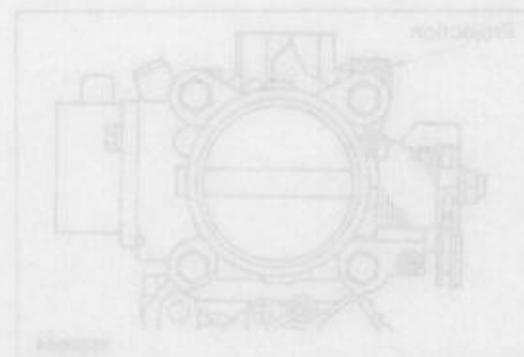
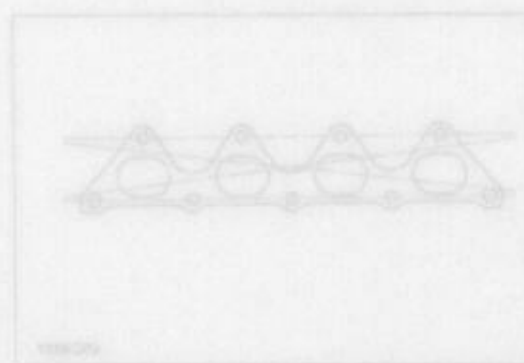
Install the gasket between the intake manifold and the throttle body with the gasket protection in the position shown in the illustration.

2. INSTALLATION OF HIGH PRESSURE FUEL HOSE

- (i) Apply engine oil to the hose union.
- (ii) Insert the hose, being careful not to damage the O-ring, and tighten securely.

Caution

Because there is high pressure applied between the fuel pump and the injection mixer, be especially sure that there is no fuel leakage in this area.

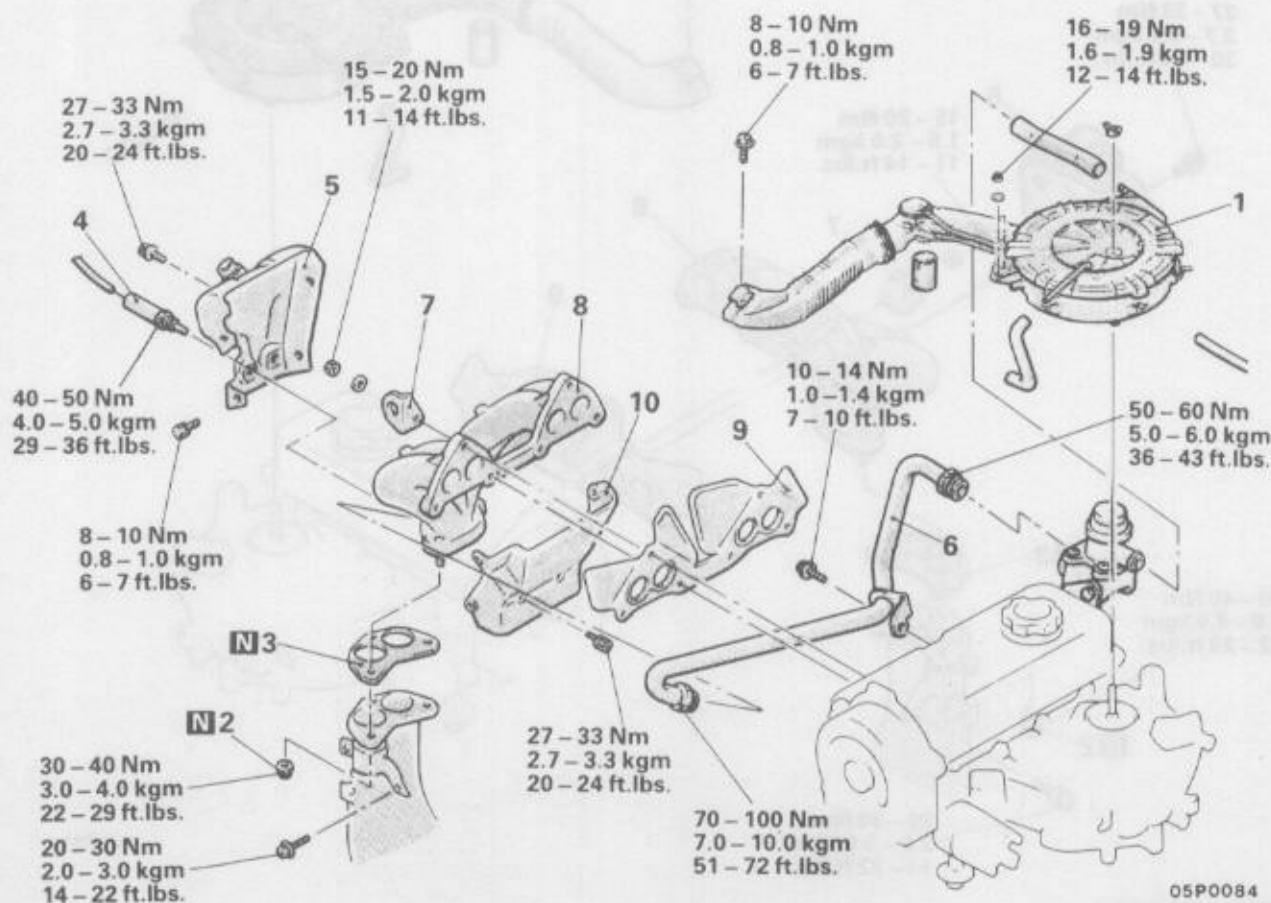


EXHAUST MANIFOLD <PETROL-POWERED VEHICLES>

E15NA A

REMOVAL AND INSTALLATION <SOHC-CARBURETTOR>

VEHICLES WITH CATALYTIC CONVERTER



05P0084

Removal steps

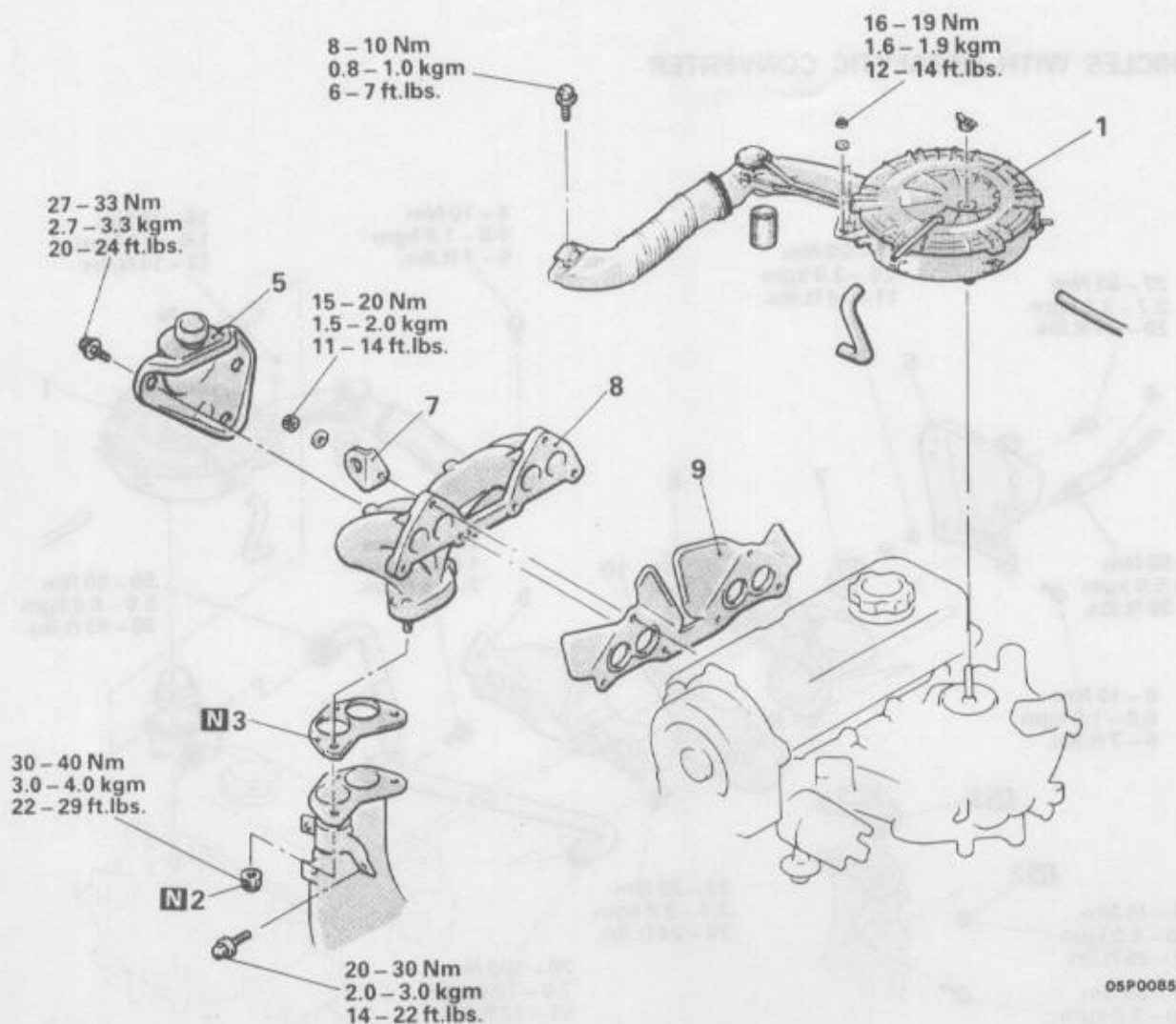
1. Air cleaner
2. Self-locking nut
3. Gasket
- ◆◆◆ 4. Oxygen sensor <Vehicles for Europe>
5. Exhaust manifold cover (A)
6. Air pipe
7. Engine hanger
8. Exhaust manifold
9. Exhaust manifold gasket
10. Exhaust manifold cover (B)

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

15-22 INTAKE AND EXHAUST – Exhaust Manifold <Petrol-powered vehicles>

VEHICLES WITHOUT CATALYTIC CONVERTER

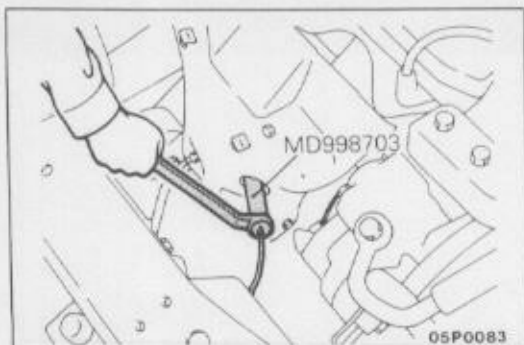


Removal steps

1. Air cleaner
2. Self-locking nut
3. Gasket
5. Heat cowl <Vehicles for Europe and some models for General Export>
7. Engine hanger
8. Exhaust manifold
9. Exhaust manifold gasket

NOTE

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



SERVICE POINT OF REMOVAL

E15NBA80

4. REMOVAL OF OXYGEN SENSOR <Vehicles for Europe>

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.

E15NCAC0

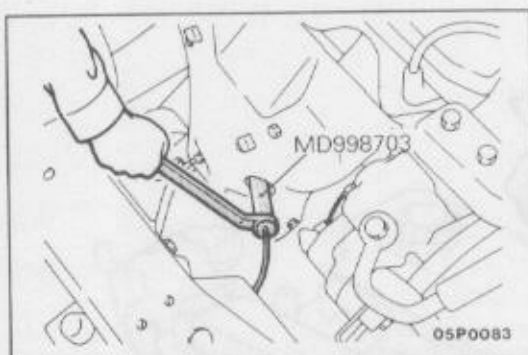
INSPECTION

EXHAUST MANIFOLD

Check for damage or cracking of any part.

EXHAUST MANIFOLD GASKET

Check for flaking or damage of the gasket.



SERVICE POINT OF INSTALLATION

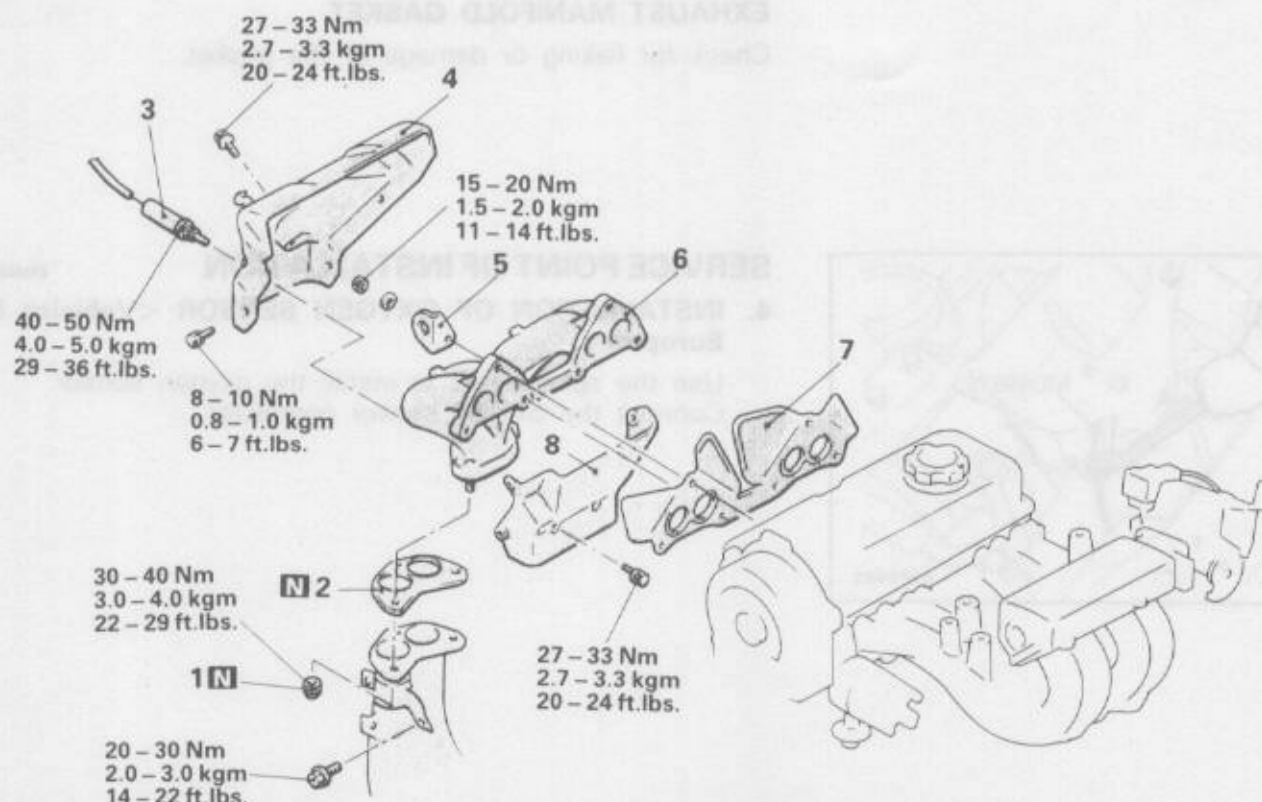
E15NDAB0

4. INSTALLATION OF OXYGEN SENSOR <Vehicles for Europe>

Use the special tool to install the oxygen sensor.
Connect the oxygen sensor connector.

REMOVAL AND INSTALLATION <SOHC-MPI>

E15NA-B



05P0028

Removal steps

1. Self-locking nut
2. Gasket
- ◆◆◆ 3. Oxygen sensor <Vehicles with catalytic converter>
4. Exhaust manifold cover (A)
5. Engine hanger
6. Exhaust manifold
7. Exhaust manifold gasket
8. Exhaust manifold cover (B)

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

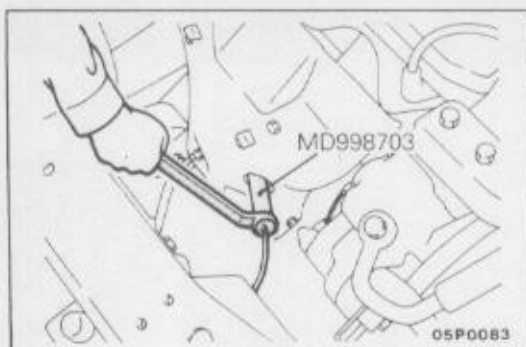
SERVICE POINT OF REMOVAL

E15NBAB1

3. REMOVAL OF OXYGEN SENSOR <Vehicles with catalytic converter>

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.



E15NCAC1

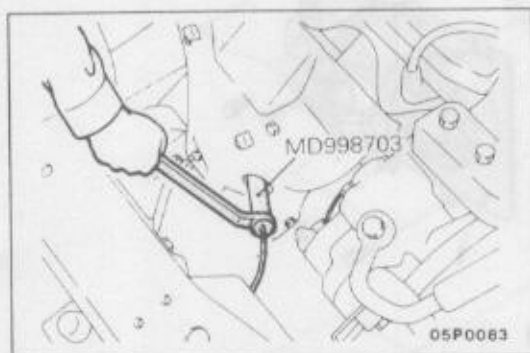
INSPECTION

EXHAUST MANIFOLD

Check for damage or cracking of any part.

EXHAUST MANIFOLD GASKET

Check for flaking or damage of the gasket.



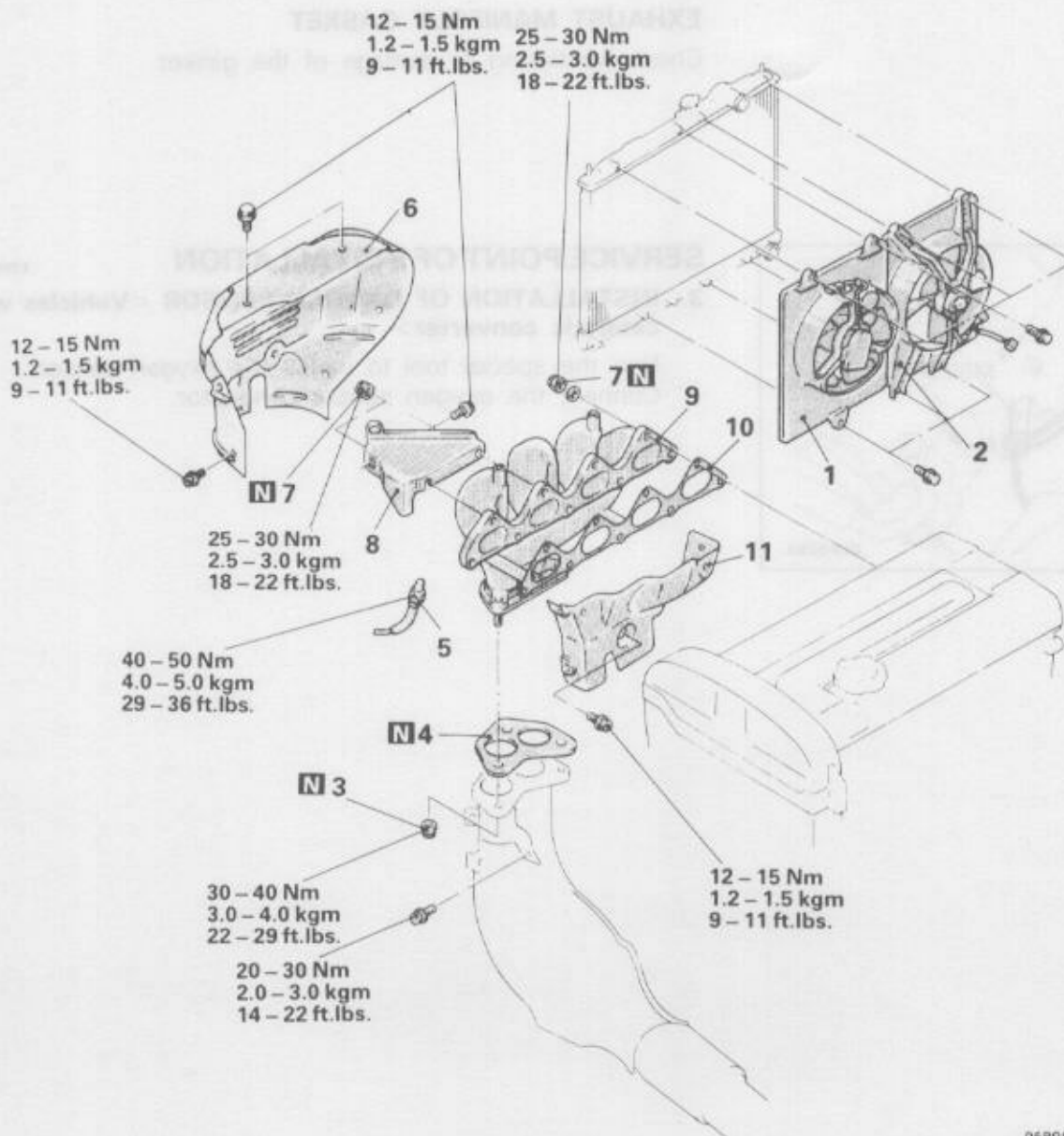
SERVICE POINT OF INSTALLATION

E15NDAB1

3. INSTALLATION OF OXYGEN SENSOR <Vehicles with catalytic converter>

Use the special tool to install the oxygen sensor.
Connect the oxygen sensor connector.

REMOVAL AND INSTALLATION <DOHC>



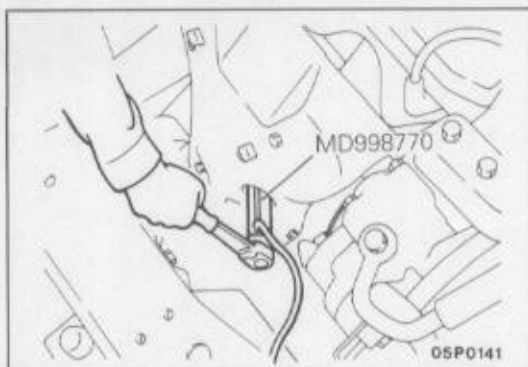
05P0045

Removal steps

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

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 POINT OF REMOVAL

E15NBAB1

5. REMOVAL OF OXYGEN SENSOR <Vehicles with catalytic converter>

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.

INSPECTION

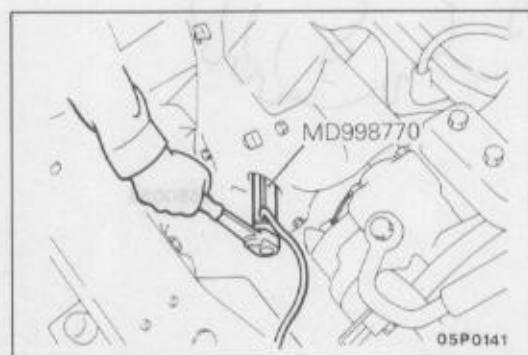
E15NCAC1

EXHAUST MANIFOLD

Check for damage or cracking of any part.

EXHAUST MANIFOLD GASKET

Check for flaking or damage of the gasket.



SERVICE POINT OF INSTALLATION

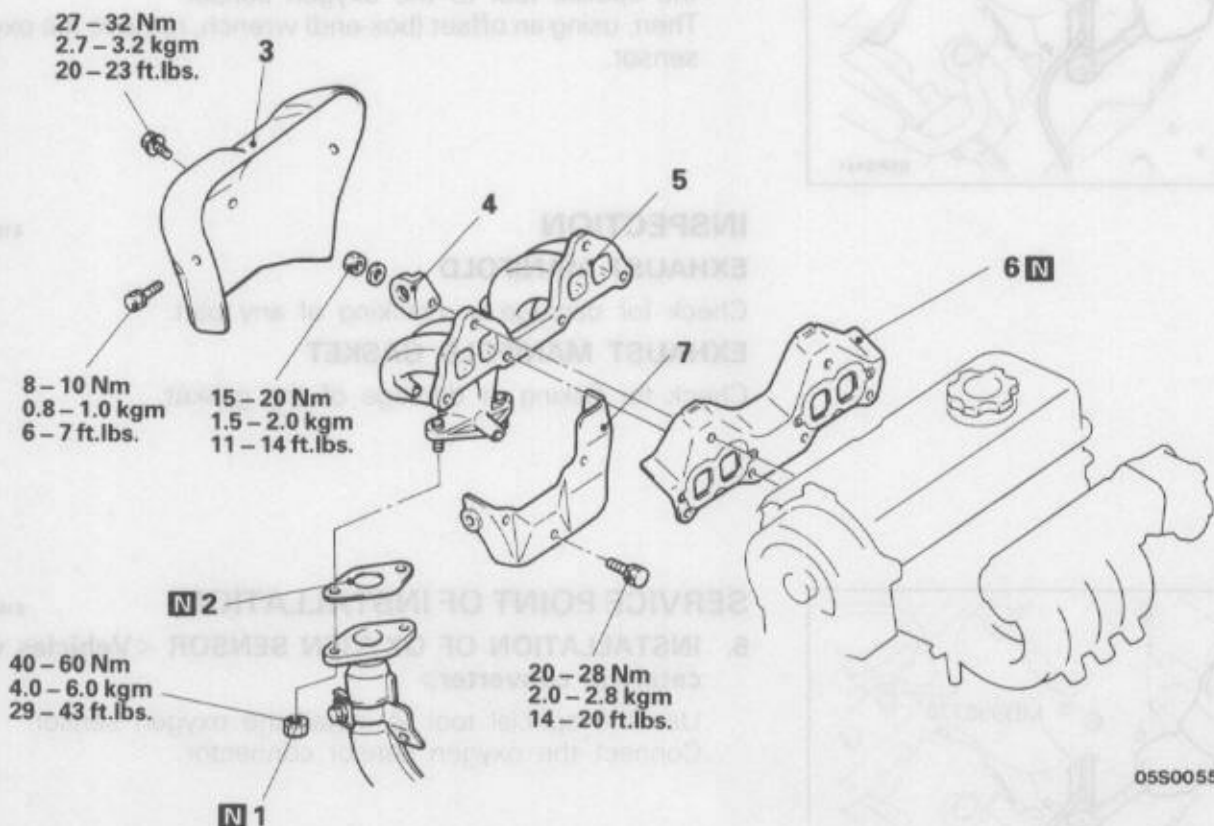
E15NDAB1

5. INSTALLATION OF OXYGEN SENSOR <Vehicles with catalytic converter>

Use the special tool to install the oxygen sensor.

Connect the oxygen sensor connector.

<4G13>

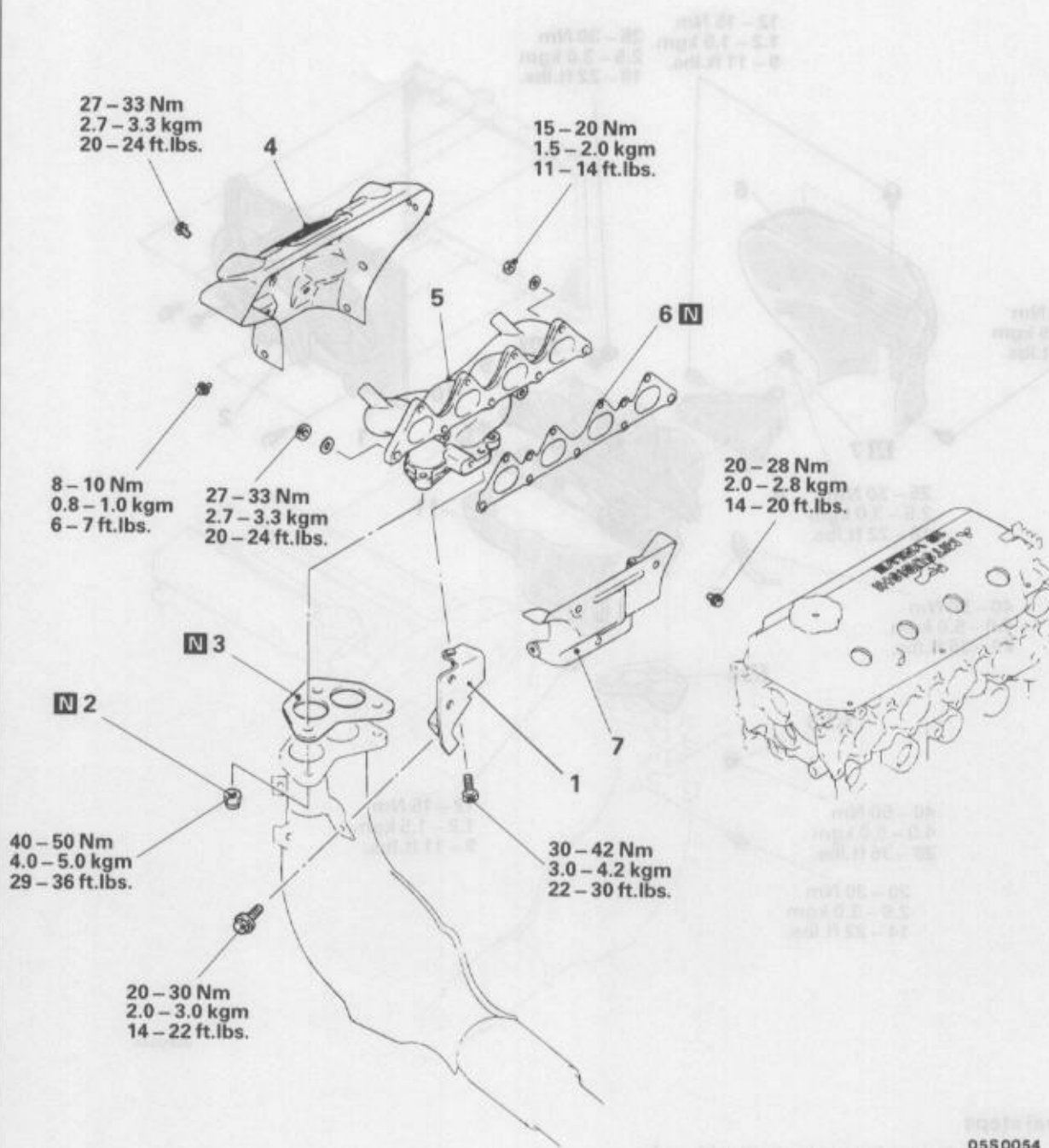
**Removal steps**

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

NOTE

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

<4G92>



Removal steps

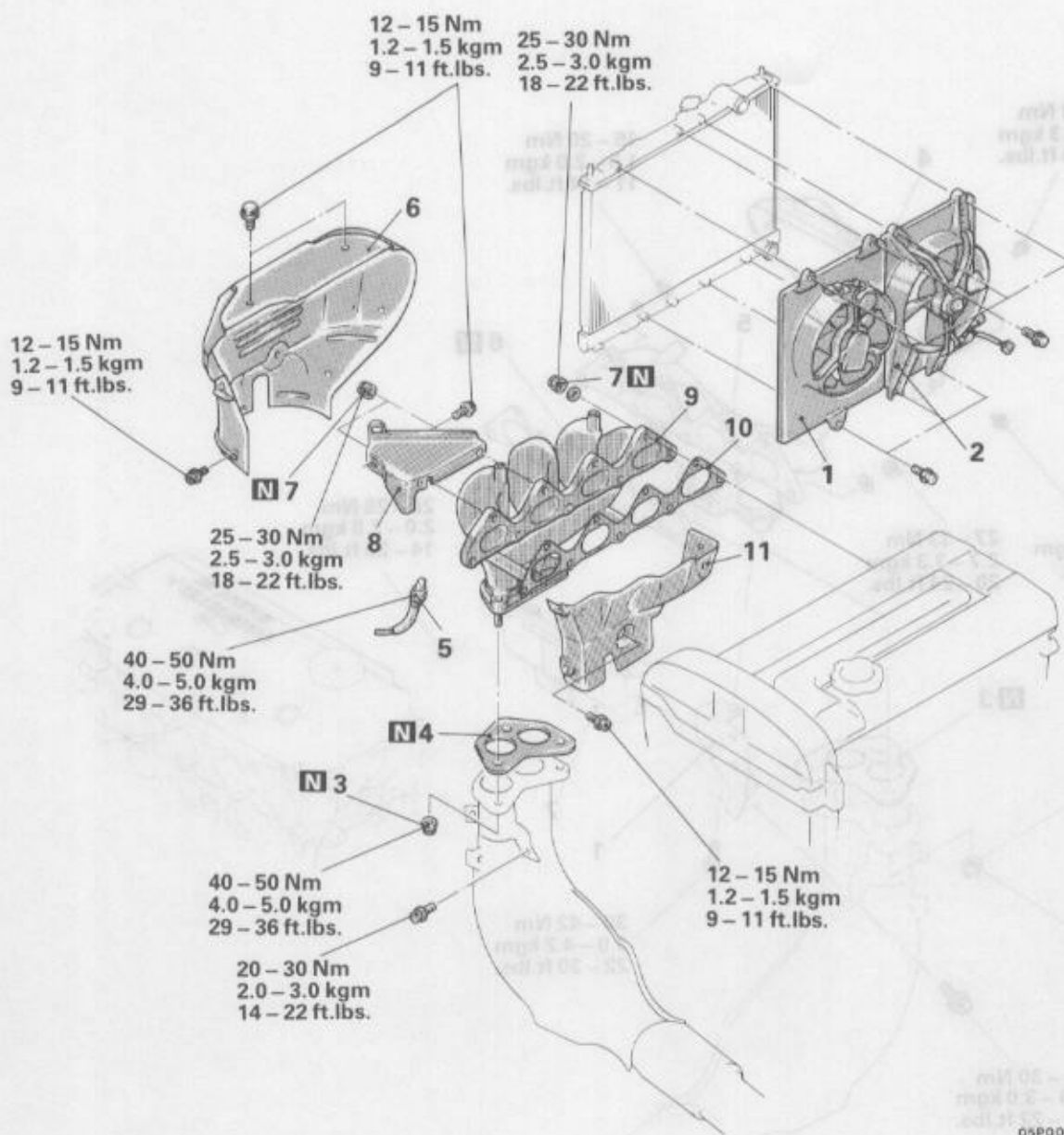
1. Exhaust manifold bracket
2. Self locking nut
3. Gasket
4. Exhaust manifold cover A
5. Exhaust manifold
6. Exhaust manifold gasket
7. Exhaust manifold cover B

NOTE

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

REMOVAL AND INSTALLATION <DOHC>

E15NA-C



Removal steps

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

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

E15NBAC

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 51 – Front 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.



5. REMOVAL OF OXYGEN SENSOR <Vehicles with catalytic converter>

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.

INSPECTION

E15NCAC2

EXHAUST MANIFOLD

Check for damage or cracking of any part.

EXHAUST MANIFOLD GASKET

Check for flaking or damage of the gasket.



SERVICE POINT OF INSTALLATION

E15NDAB2

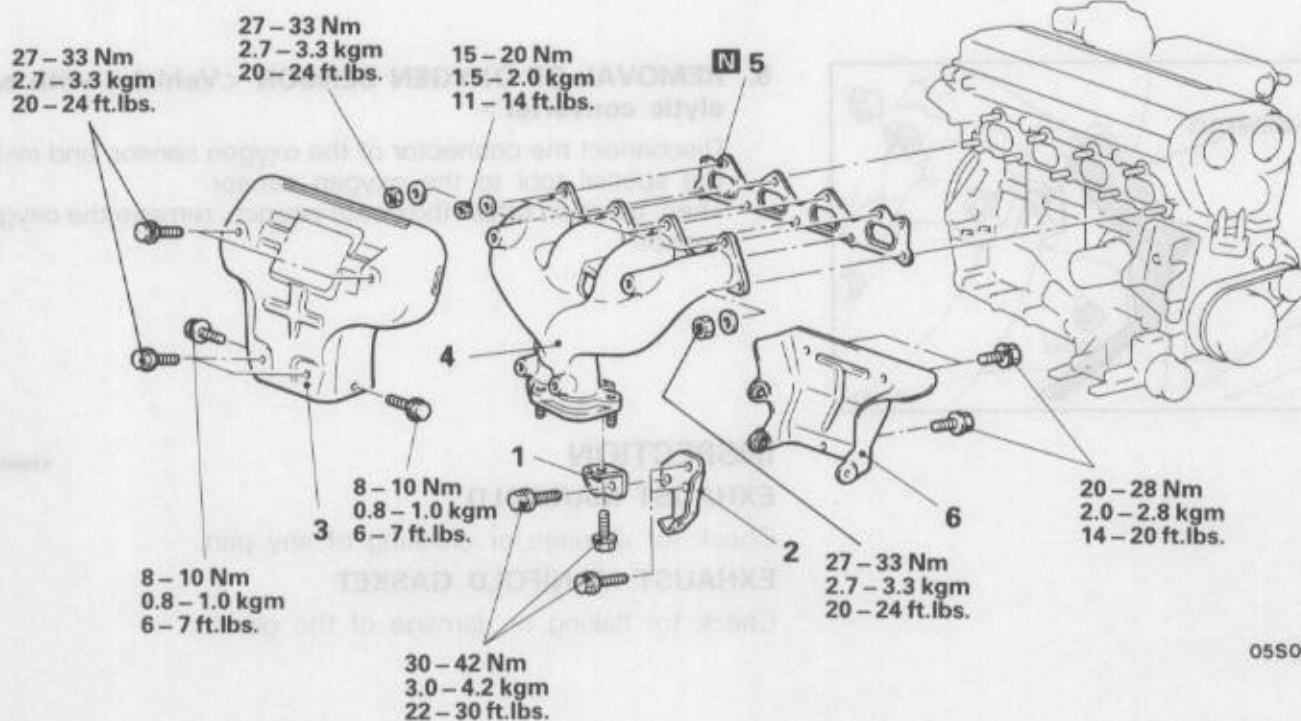
5. INSTALLATION OF OXYGEN SENSOR <Vehicles with catalytic converter>

Use the special tool to install the oxygen sensor. Connect the oxygen sensor connector.

<4G93>

Pre-removal and Post-installation Operation

- Removal and Installation of Front Exhaust Pipe (Refer to P.15-31.)



05S0056

Removal steps

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

NOTE

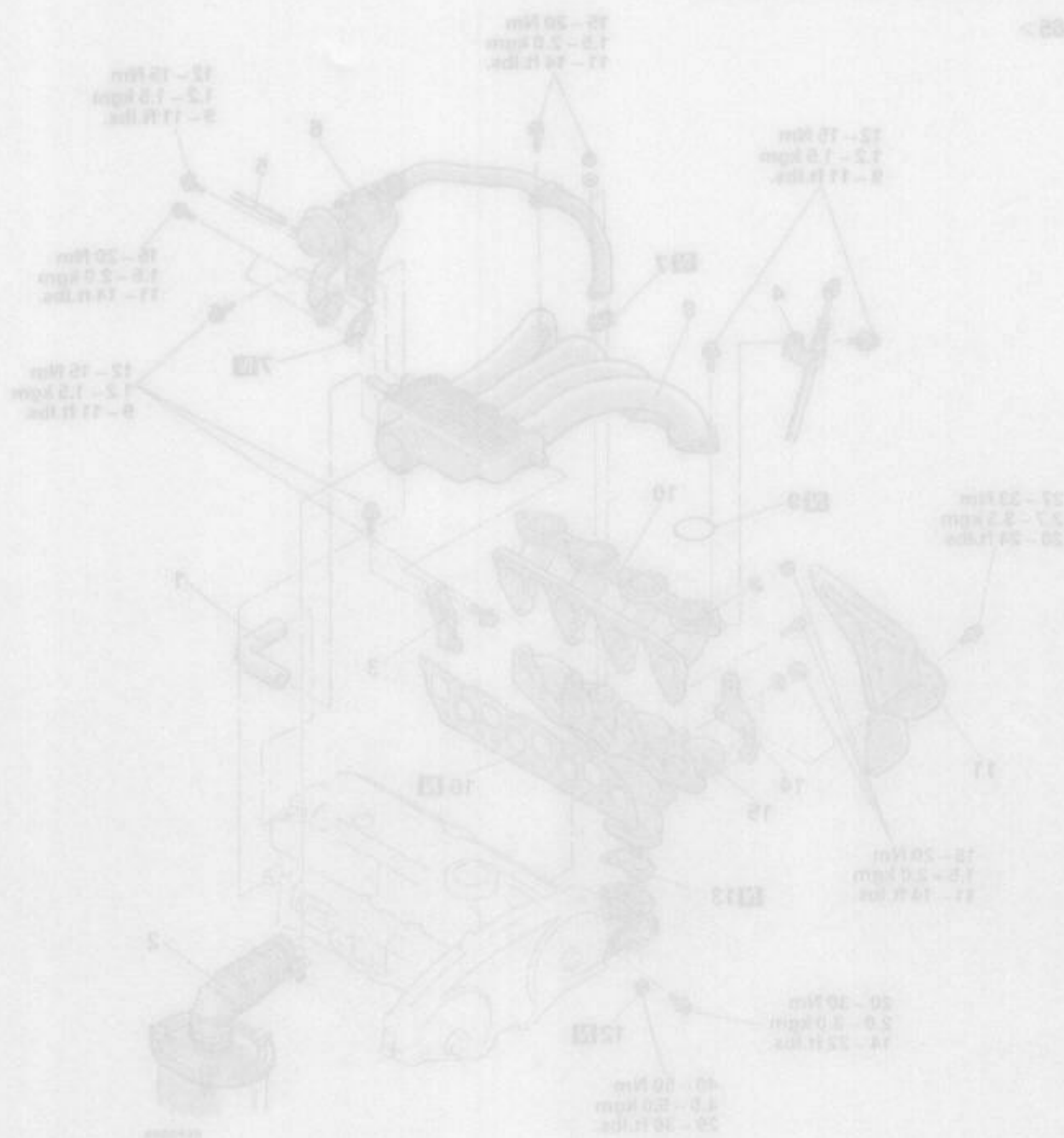
- (1) Reverse the removal procedures to reinstall.
- (2) **N**: Non-reusable parts



NOTES

REMOVAL AND INSTALLATION

<ADBS>



Removal steps

1. Bridge plate
2. Connection for air intake hose
3. Bracket (A)
4. Connection for oil level gauge
5. Connection for vacuum hose
6. EGR valve and EGR pipe (Vehicle with EGR system)
7. Gasket
8. Intake manifold (A)
9. Gasket
10. Intake manifold (B)

11. Heat protector
12. Self locking nut
13. Gasket
14. Engine hanger
15. Exhaust manifold
16. Intake and exhaust manifold gasket

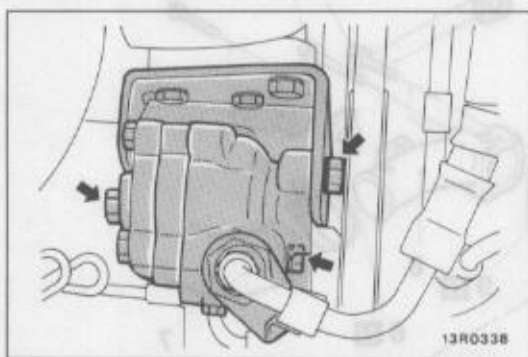
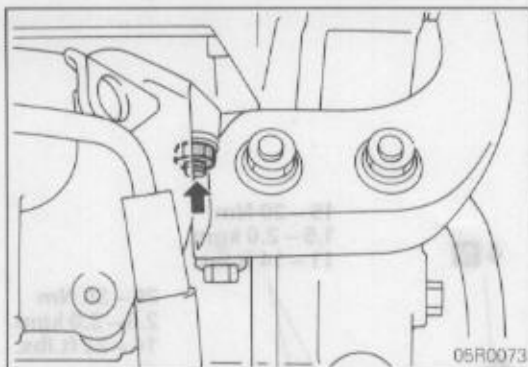
NOTE

(1) Remove the removal procedure is repeated.

(2) Refer to "Service Timing of Removal"

(3) For removal steps

E15UBAA



SERVICE POINT OF REMOVAL

15. REMOVAL OF EXHAUST MANIFOLD

Follow the procedures described below in order to remove the nut shown in the illustration, and then remove the nut.

(1) Remove the power steering oil pump's V-belt.

(2) Remove the power steering installation bolt, and then remove the power steering oil pump (with the hose attached) from the oil pump bracket.

NOTE

Place the power steering oil pump in the proper position.

INSPECTION

INTAKE MANIFOLD

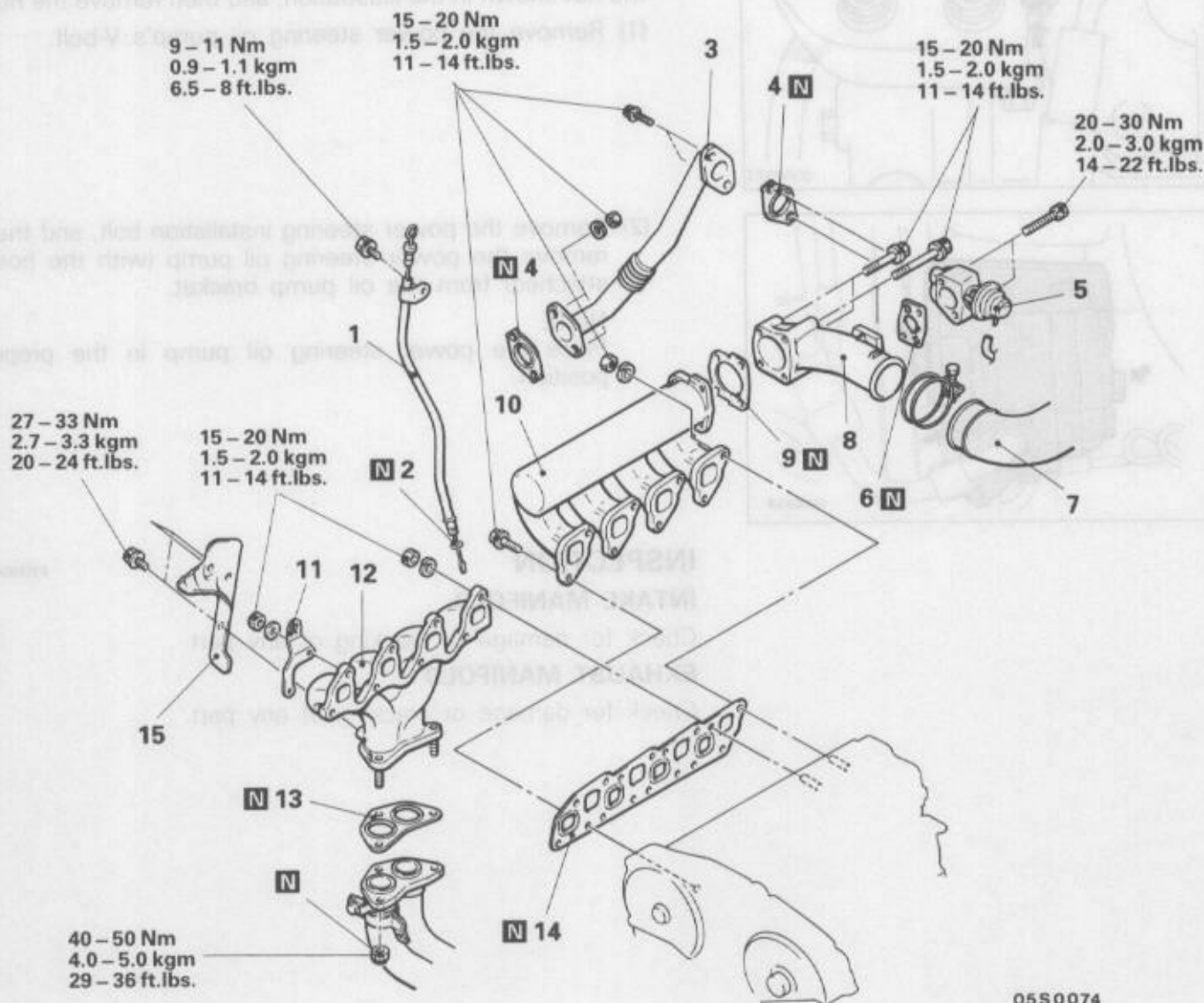
Check for damage or cracking of any part.

EXHAUST MANIFOLD

Check for damage or cracking of any part.

E15UCAD

<4D68>



05S0074

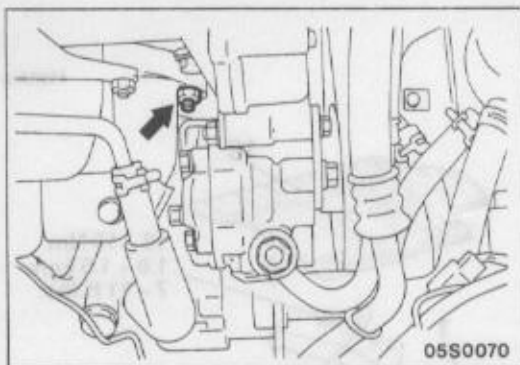
Removal steps

1. Oil level gauge guide assembly
2. O-ring
3. E.G.R. pipe
4. E.G.R. pipe gasket
5. E.G.R. valve
6. E.G.R. valve gasket
7. Air intake hose connection
8. Air inlet fitting
9. Air inlet fitting gasket
10. Intake manifold
11. Engine hanger
12. Exhaust manifold
13. Gasket
14. Intake and exhaust manifold gasket
15. Heat protector

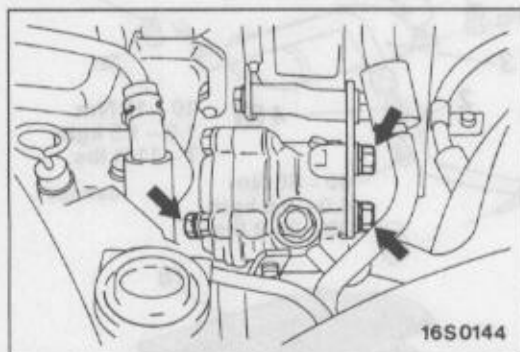
NOTE

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

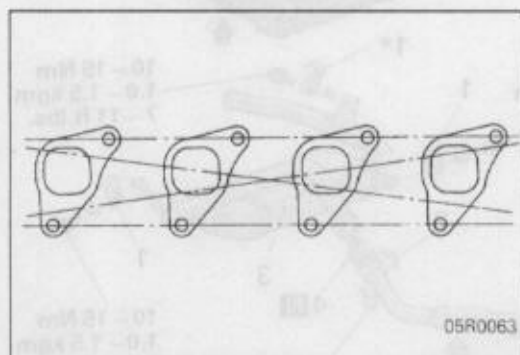
E15UBAD



05S0070



16S0144



05R0063

SERVICE POINT OF REMOVAL

12. REMOVAL OF EXHAUST MANIFOLD

Carry out the following procedure in order to remove the nut shown in the illustration.

- (1) Remove the drive belt of the power steering oil pump.

- (2) Remove the power steering oil pump mounting bolts, and then remove the power steering oil pump from the oil pump bracket with the hose still attached.

NOTE

Use wire or similar in an appropriate position to support the power steering oil pump.

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 (0.006 in.) or less

Limit: 0.2 mm (0.008 in.)

E15MBBA3

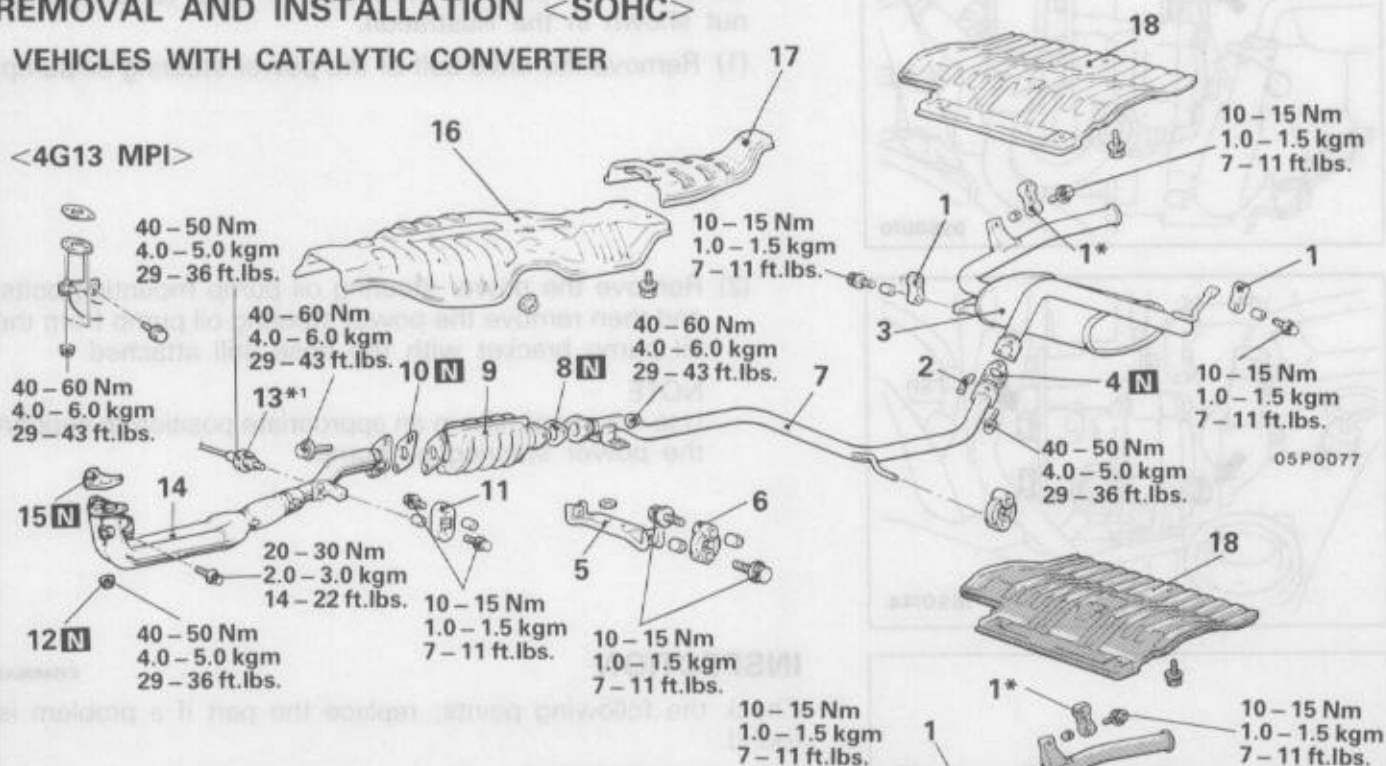
EXHAUST PIPE AND MAIN MUFFLER <PETROL-POWERED VEHICLES>

E15RA-A

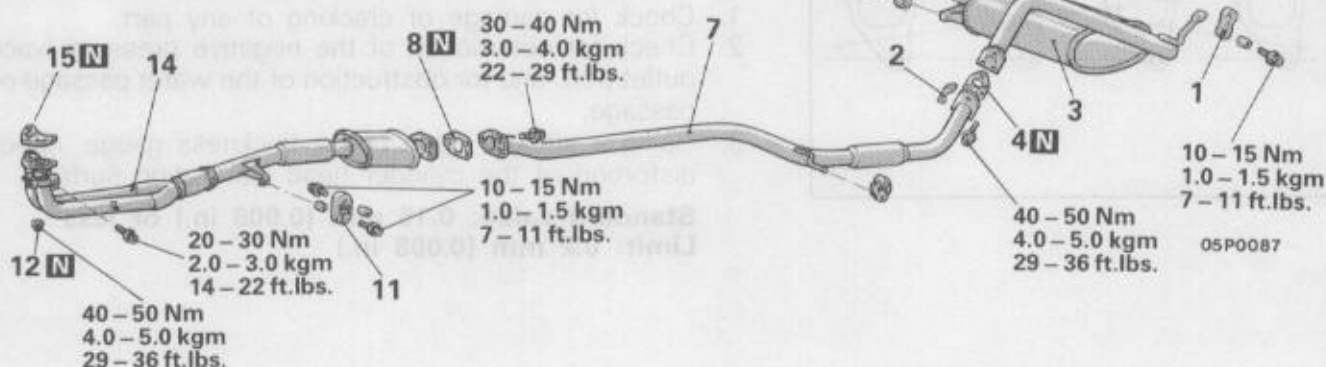
REMOVAL AND INSTALLATION <SOHC>

VEHICLES WITH CATALYTIC CONVERTER

<4G13 MPI>



VEHICLES WITHOUT CATALYTIC CONVERTER



Removal steps

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

NOTE

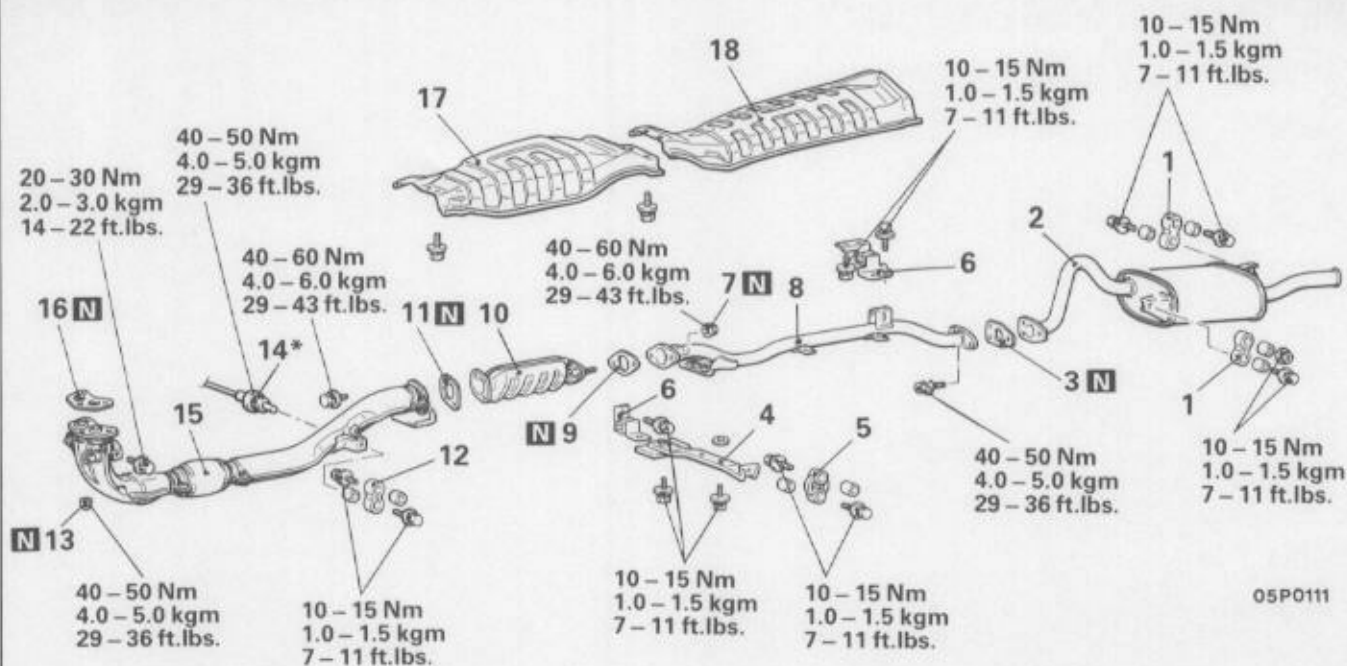
- (1) Reverse the removal procedures to reinstall.
- (2) **N**: Non-reusable parts
- (3) *: <Sedan>
- (4) *: Vehicles built from June 1992

INSPECTION

E15RCAF0

- 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 <SOHC-4WD>



05P0111

Removal steps

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

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) **N**: Non-reusable parts
- (3) *: Vehicles built from June 1992

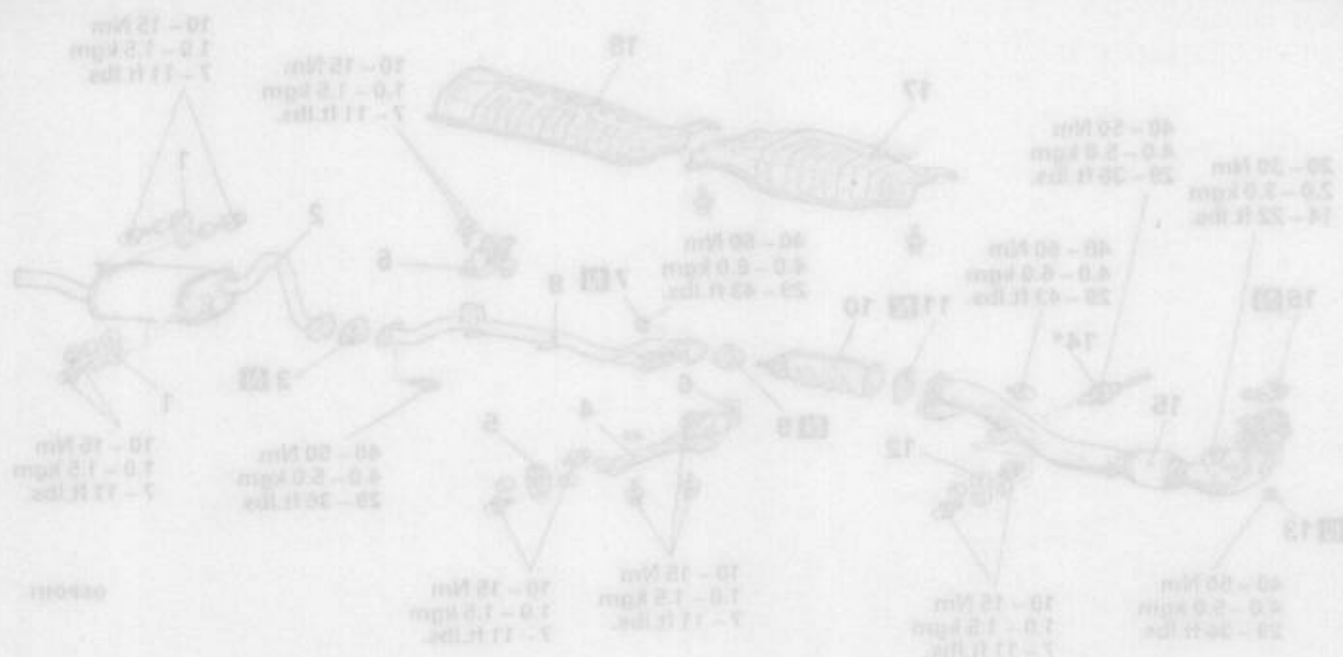
INSPECTION

E15RCAF0

- 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 <SOHC-4WD>

NOTES

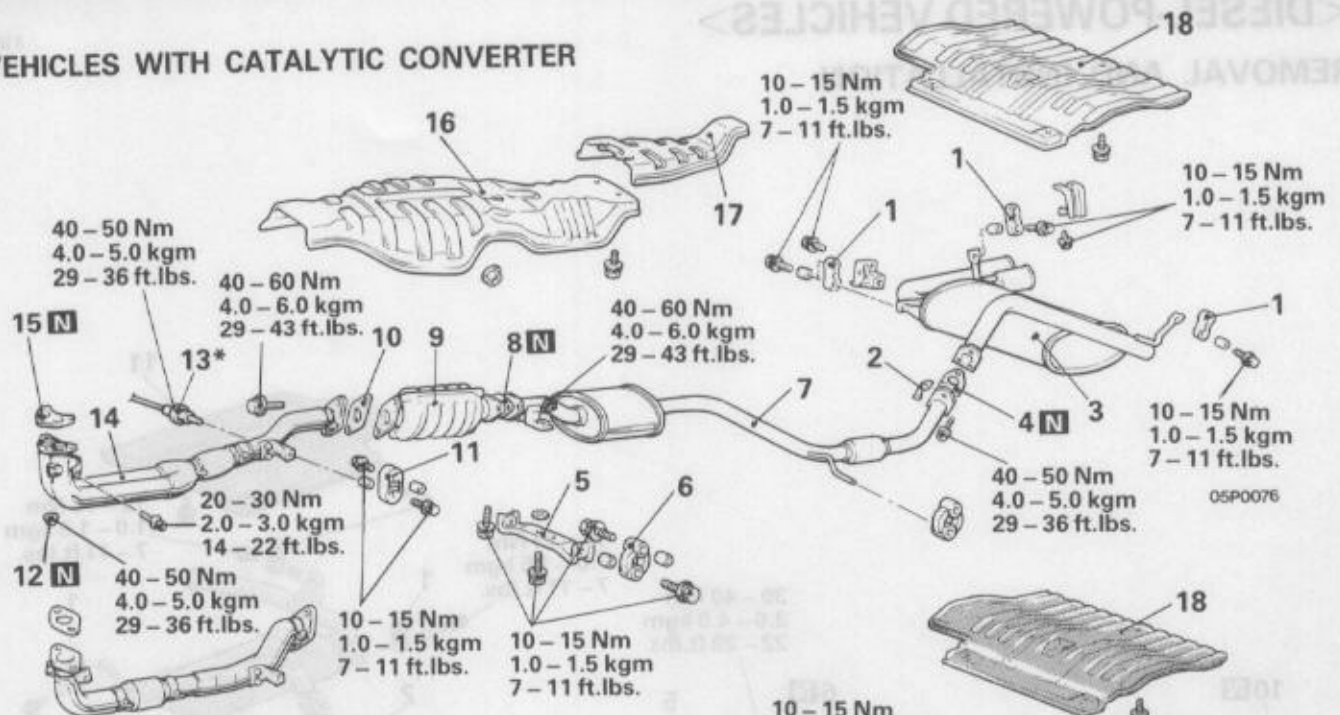


INSPECTION

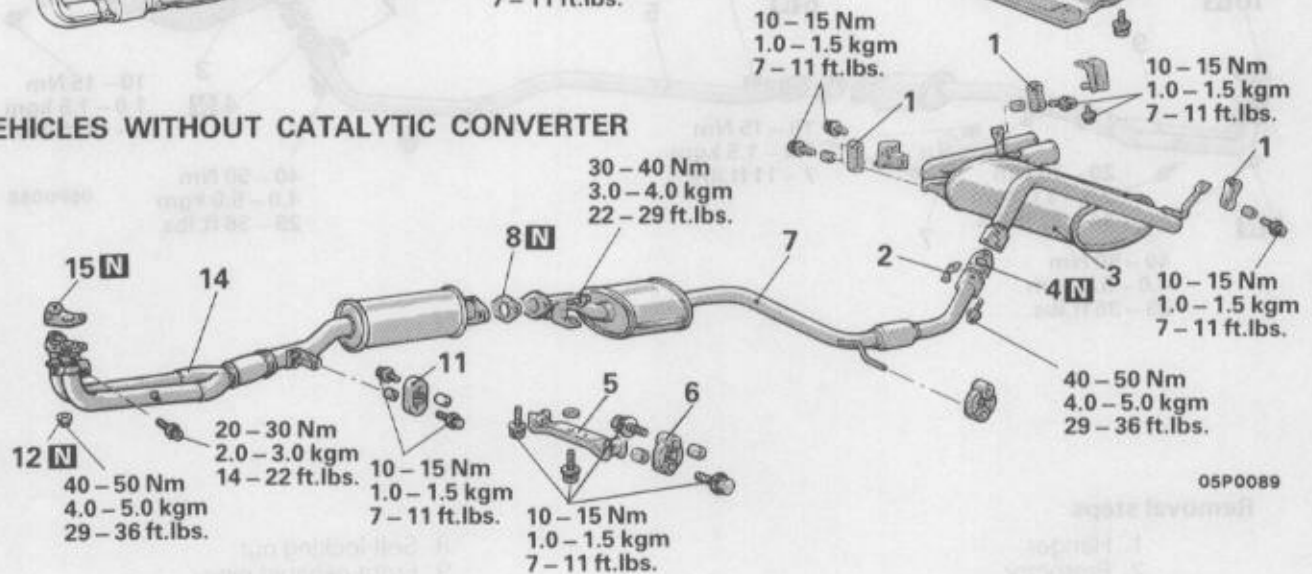
- Check the muffler and pipes for corrosion or damage.
- Check the rubber hangers for deterioration or damage.
- Check for gas leaks from mufflers and pipes.

REMOVAL AND INSTALLATION <DOHC>

VEHICLES WITH CATALYTIC CONVERTER



VEHICLES WITHOUT CATALYTIC CONVERTER



Removal steps

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

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) **N**: Non-reusable parts
- (3) *: Vehicles built from June 1992

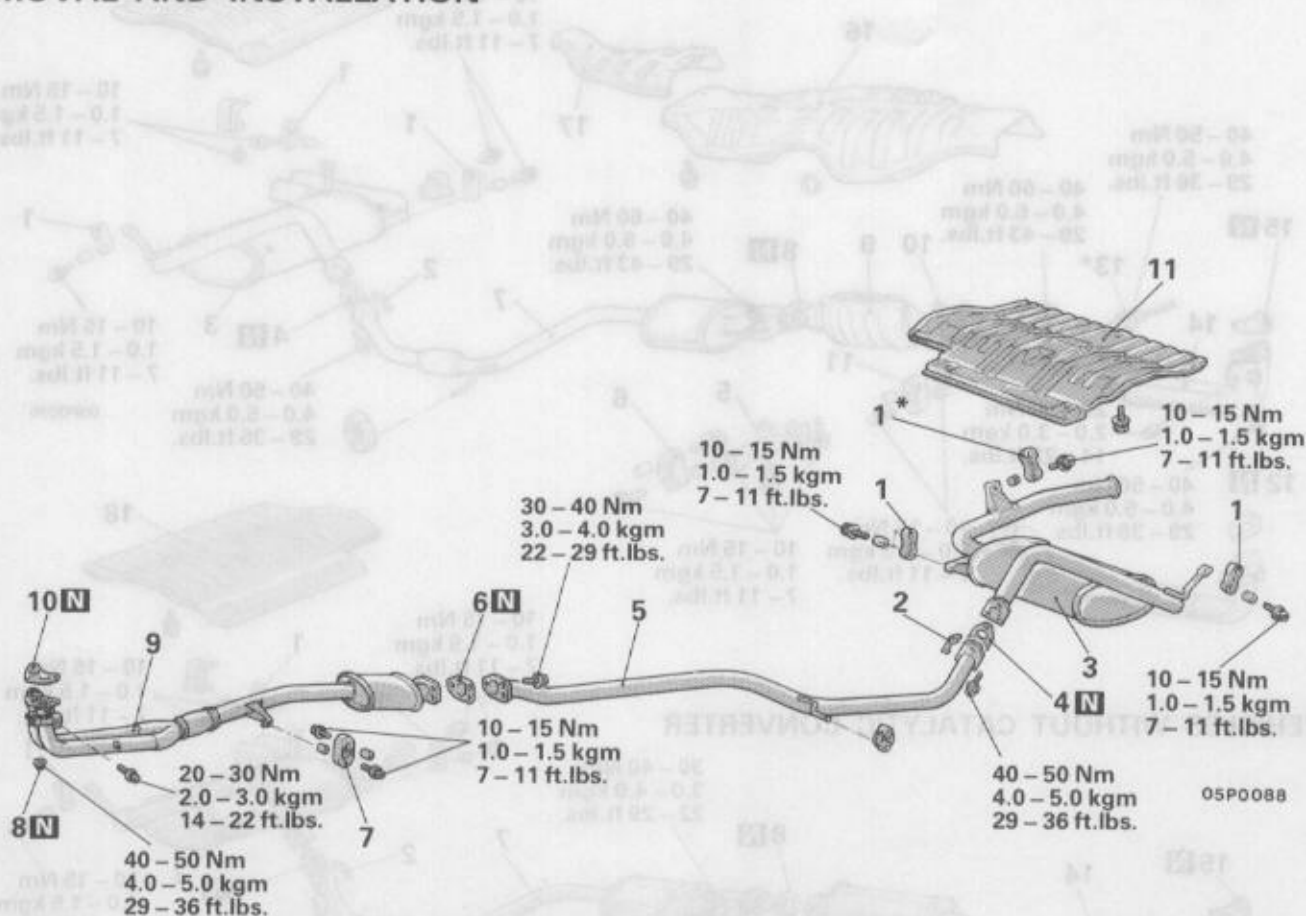
INSPECTION

- 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.

EXHAUST PIPE AND MAIN MUFFLER <DIESEL-POWERED VEHICLES>

E15RA-C

REMOVAL AND INSTALLATION



Removal steps

1. Hanger
2. Protector
3. Main muffler
4. Gasket
5. Centre exhaust pipe
6. Gasket
7. Hanger

8. Self-locking nut
9. Front exhaust pipe
10. Gasket
11. Heat protector rear floor panel

NOTE

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

INSPECTION

E15RCAF2

- 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.