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</table>
GENERAL INFORMATION

All models are equipped with dry type air cleaners. A resonator is installed on all models except 4G32 and 4G33, to prevent resonance in induction system.

An air flow sensor and intake air temperature sensor are installed for MPI air cleaner.

The exhaust system is divided into the front exhaust pipe and main muffler, between which a catalytic converter is installed on FBC and MPI vehicles.

Petrol-powered vehicles without M.P.I.
(4G63, G63B)

Petrol-powered vehicles with M.P.I.
(4G64, G64B)

Diesel-powered vehicles
## SPECIFICATIONS

### GENERAL SPECIFICATIONS

*Vehicles built up to May 1994*

#### VEHICLES FOR EUROPE

<table>
<thead>
<tr>
<th>Items</th>
<th>Petrol-powered vehicles</th>
<th>Diesel-powered vehicles</th>
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<tr>
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<td>With M.P.I.</td>
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<td>Air filter</td>
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<tr>
<td>Type</td>
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<td>Dry type</td>
</tr>
<tr>
<td>Heated air intake</td>
<td>Vacuum motor type</td>
<td>Cyclone type</td>
</tr>
<tr>
<td>Element</td>
<td>Unwoven cloth type</td>
<td>Unwoven cloth type</td>
</tr>
<tr>
<td>Exhaust system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front exhaust pipe</td>
<td>Single or dual type*</td>
<td>Dual type</td>
</tr>
<tr>
<td>Muffler</td>
<td></td>
<td>Expansio n resonance type</td>
</tr>
<tr>
<td>Coupling</td>
<td>Spherical coupling or flat coupling*</td>
<td>Flat coupling</td>
</tr>
<tr>
<td>Suspension system</td>
<td>Rubber hangers</td>
<td>Rubber hangers</td>
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</tr>
<tr>
<td>NOTE</td>
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* indicates 4G63 (Mini-bus) and G63B.

### VEHICLES FOR GENERAL EXPORT

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<td>Air filter</td>
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<tr>
<td>Type</td>
<td>Dry type (cyclone type)*</td>
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<tr>
<td>Heated air intake</td>
<td>Vacuum motor type*</td>
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<tr>
<td>Element</td>
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<td>Front exhaust pipe</td>
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<td>Expansion resonance type</td>
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<td>Suspension system</td>
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* indicates vehicles for Gulf countries. Optional for other vehicles.

### VEHICLES FOR AUSTRALIA

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<tr>
<td>Element</td>
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<tr>
<td>Muffler</td>
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<td>Expansio n resonance type</td>
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<td>Coupling</td>
<td>Spherical* or flat* coupling</td>
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<td>Suspension system</td>
<td>Rubber hangers</td>
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(1) *1 indicates Van (4G63 engine) [Vehicles built up to September 1988].
(2) *2 indicates Van (4G63 engine) [Vehicles built from October] and Mini-bus.

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### VEIHICLES FOR EUROPE

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<th>Petrol-powered vehicles</th>
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<td>Vacuum motor type</td>
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<td>Muffler</td>
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<td>Coupling</td>
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**NOTE**
- * indicates optional

### VEHICLES FOR GENERAL EXPORT

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<tr>
<td></td>
<td>Dry type (cyclone type)*</td>
<td>Vacuum motor type</td>
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<td>Unwoven cloth type</td>
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<td>Suspension system</td>
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**NOTE**
- * indicates optional

1. * indicates vehicles with FBC. Optional for other vehicles.
2. * indicates vehicles for Gulf countries. Optional for other vehicles.

### VEHICLES FOR AUSTRALIA

<table>
<thead>
<tr>
<th>Items</th>
<th>Petrol-powered vehicles</th>
<th>Diesel-powered vehicles</th>
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<td>Coupling</td>
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PWWE8608-0 ADDED
## SERVICE SPECIFICATIONS

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<tr>
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<td>Standard value</td>
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</tr>
<tr>
<td>Distortion of the cylinder head installation surface</td>
<td>Less than 0.15 (0.006)</td>
</tr>
<tr>
<td>Turbocharger super charge pressure</td>
<td>Approx. 70 - 86 (0.70 - 0.90, 10 - 12)</td>
</tr>
<tr>
<td>Operation starting pressure of waste gate actuator</td>
<td>Approx. 77 (0.77, 11)</td>
</tr>
<tr>
<td>Limit</td>
<td></td>
</tr>
<tr>
<td>Distortion of the installation surface</td>
<td>0.2 (0.008)</td>
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## TORQUE SPECIFICATIONS

<table>
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<th>ft.lbs.</th>
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<tbody>
<tr>
<td>Water outlet fitting to intake manifold*&lt;sup&gt;1&lt;/sup&gt;</td>
<td>17 - 20</td>
<td>1.7 - 2.0</td>
<td>12 - 14</td>
</tr>
<tr>
<td>Intake manifold to cylinder head*&lt;sup&gt;2&lt;/sup&gt;</td>
<td>15 - 20</td>
<td>1.5 - 2.0</td>
<td>11 - 14</td>
</tr>
<tr>
<td>Distributor to intake manifold</td>
<td>10 - 13</td>
<td>1.0 - 1.3</td>
<td>7 - 9</td>
</tr>
<tr>
<td>Delivery pipe to intake manifold*</td>
<td>10 - 13</td>
<td>1.0 - 1.3</td>
<td>7 - 9</td>
</tr>
<tr>
<td>Ignition coil to intake manifold*</td>
<td>12 - 15</td>
<td>1.2 - 1.5</td>
<td>9 - 11</td>
</tr>
<tr>
<td>Intake manifold stay to intake manifold*</td>
<td>18 - 25</td>
<td>1.8 - 2.5</td>
<td>13 - 18</td>
</tr>
<tr>
<td>Surge tank to intake manifold*</td>
<td>15 - 20</td>
<td>1.5 - 2.0</td>
<td>11 - 14</td>
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<tr>
<td>Surge tank stay to surge tank</td>
<td>15 - 20</td>
<td>1.5 - 2.0</td>
<td>11 - 14</td>
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<td>Throttle body assembly to surge tank*</td>
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<td>Vehicles built up to June 1989</td>
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<td>Vehicles built from July 1989</td>
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<td>1.5 - 2.2</td>
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<td>Air intake pipe to rocker cover*</td>
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<td>1.0 - 1.2</td>
<td>7.2 - 8.6</td>
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<td>Connector clamp bracket assembly to rocker cover*</td>
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<td>1.2 - 1.5</td>
<td>9 - 11</td>
</tr>
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<td>Fuel high pressure hose and delivery pipe*</td>
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<td>18 - 25</td>
</tr>
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<td>Exhaust manifold to cylinder head*&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>1.5 - 2.0</td>
<td>11 - 14</td>
</tr>
<tr>
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<td>Oil pipe flare bolt</td>
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<td>1.6 - 2.4</td>
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<td>Oil pipe eye bolt</td>
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<td>Waste gate actuator to intake manifold</td>
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<td>1.5 - 2.2</td>
<td>11 - 16</td>
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<tr>
<td>Turbocharger to exhaust manifold</td>
<td>50 - 70</td>
<td>5.0 - 7.0</td>
<td>36 - 51</td>
</tr>
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<td>Oil return pipe to turbocharger</td>
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<td>0.8 - 1.0</td>
<td>6 - 7</td>
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<tr>
<td>Heat protector (B) to exhaust manifold</td>
<td>8 - 10</td>
<td>0.8 - 1.0</td>
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<tr>
<td>Heat protector (C) to exhaust fitting</td>
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<td>1.2 - 1.5</td>
<td>8.7 - 11</td>
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<td>2.7 - 3.3</td>
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<td>Exhaust fitting to turbocharger</td>
<td>50 - 70</td>
<td>5.0 - 7.0</td>
<td>36 - 51</td>
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<td>Heat protector (A) to turbocharger</td>
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<td>Engine bracket and exhaust manifold to cylinder head</td>
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<td>Heat cowli to exhaust manifold</td>
<td>8 - 10</td>
<td>0.8 - 1.0</td>
<td>5.8 - 7.2</td>
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</tbody>
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*NOTE*
*1*: 4G64 - 8 valve (M.P.I.)
*2*: Except 4G92 - 16 valve
*2*: Excep 4G63 - 16 valve

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### 15-4-1 INTAKE AND EXHAUST – Specifications

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<th>kgm</th>
<th>ft.lbs</th>
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<td>7.0-10.0</td>
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<td>1.0-1.3</td>
<td>7.2-9.4</td>
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<td>Air pipe stay to exhaust manifold</td>
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<td>12-15</td>
<td>1.2-1.5</td>
<td>8.7-11</td>
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<td>Vehicles built from November 1987</td>
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<td>7.2-9.4</td>
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<td>Single exhaust pipe (petrol-powered vehicles)*</td>
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<td>1.9-2.8</td>
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<td>20-25</td>
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<td>9-11</td>
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<td>Vacuum pipe assembly to intake manifold</td>
<td>8-12</td>
<td>0.8-1.2</td>
<td>5.8-8.9</td>
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<tr>
<td>Thermo valve to intake manifold (lower)</td>
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<tr>
<td>Single joint type</td>
<td>20-50</td>
<td>2.0-5.0</td>
<td>14-36</td>
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<td>Except single joint type</td>
<td>20-40</td>
<td>2.0-4.0</td>
<td>14-29</td>
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<tr>
<td>Kick-down cable bracket to intake manifold</td>
<td>12-15</td>
<td>1.2-1.5</td>
<td>9-11</td>
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<tr>
<td>Intake manifold to cylinder head*</td>
<td>17-22</td>
<td>1.7-2.2</td>
<td>12-16</td>
</tr>
<tr>
<td>Water outlet fitting to cylinder head*</td>
<td>17-22</td>
<td>1.7-2.2</td>
<td>12-16</td>
</tr>
<tr>
<td>Heat protector to exhaust manifold</td>
<td>12-15</td>
<td>1.2-1.5</td>
<td>9-11</td>
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<tr>
<td>Secondary air pipe</td>
<td></td>
<td></td>
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<tr>
<td>Reed valve side</td>
<td>50-60</td>
<td>5.0-6.0</td>
<td>36-43</td>
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<tr>
<td>Exhaust manifold side</td>
<td>70-100</td>
<td>7.0-10.0</td>
<td>51-72</td>
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**NOTE**

*: G63B
*1: Vehicles with spherical coupling exhaust pipe
*2: Except 4G92 (Hong Kong)
*3: 4G92, 4G63 and 4G64 - 16 valve
*4: 4G63 and 4G64 - 16 valve

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PWWE8608-O
ADDED
INTAKE AND EXHAUST – Specifications/Troubleshooting

<table>
<thead>
<tr>
<th>Items</th>
<th>Nm</th>
<th>kgm</th>
<th>ft.lbs.</th>
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<tbody>
<tr>
<td>Exhaust manifold attaching nut A</td>
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<td>4G92</td>
<td>15-20</td>
<td>1.5-2.0</td>
<td>11-14</td>
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<tr>
<td>4G63 and 4G64 – 16 valve</td>
<td>25-30</td>
<td>2.5-3.0</td>
<td>18-22</td>
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<tr>
<td>Exhaust manifold attaching nut B</td>
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<tr>
<td>Inlet fitting to intake manifold</td>
<td>27-33</td>
<td>2.7-3.3</td>
<td>20-24</td>
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<tr>
<td>EGR pipe</td>
<td>10-13</td>
<td>1.0-1.3</td>
<td>7-9</td>
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<td>Water pipe to turbocharger</td>
<td>15-20</td>
<td>1.5-2.0</td>
<td>11-14</td>
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<td>Front exhaust pipe to exhaust manifold*1</td>
<td>34-49</td>
<td>3.5-5.0</td>
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<tr>
<td>Front exhaust pipe to under catalytic converter*2</td>
<td>40-60</td>
<td>4.0-6.0</td>
<td>29-43</td>
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<tr>
<td>Under catalytic converter to main muffler*2</td>
<td>30-40</td>
<td>3.0-4.0</td>
<td>22-29</td>
</tr>
</tbody>
</table>

NOTE
*1: Vehicles with flat coupling exhaust pipe.
*2: 4G92 (Hong Kong)

SEALANT AND ADHESIVE

<table>
<thead>
<tr>
<th>Items</th>
<th>Specified sealant and adhesive</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine coolant temperature gauge unit</td>
<td>3M ATD Part No. 8660 or equivalent</td>
<td>Semi drying sealant</td>
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<tr>
<td>Engine coolant temperature sensor</td>
<td>3M Nut Locking Part No. 4171 or equivalent</td>
<td>Drying sealant</td>
</tr>
<tr>
<td>Thermo switch</td>
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<td></td>
</tr>
<tr>
<td>Water outlet fitting</td>
<td>Mitsubishi Genuine Parts No. MD970389 or equivalent</td>
<td>Semi drying sealant</td>
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TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Probable cause</th>
<th>Remedy</th>
<th>Reference page</th>
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<tbody>
<tr>
<td>Exhaust gas leakage</td>
<td>Loose joints</td>
<td>Retighten</td>
<td>15-24, 25</td>
</tr>
<tr>
<td></td>
<td>Broken pipe or muffler</td>
<td>Repair or replace</td>
<td>15-24, 25</td>
</tr>
<tr>
<td>Abnormal noise</td>
<td>Broken separator in muffler</td>
<td>Replace</td>
<td>15-24, 25</td>
</tr>
<tr>
<td></td>
<td>Broken rubber hangers</td>
<td>Replace</td>
<td>15-24, 25</td>
</tr>
<tr>
<td></td>
<td>Interference of pipe or muffler with vehicle body</td>
<td>Correct</td>
<td>15-24, 25</td>
</tr>
<tr>
<td></td>
<td>Broken pipe or muffler</td>
<td>Repair or replace</td>
<td>15-24, 25</td>
</tr>
</tbody>
</table>
AIR CLEANER

REMOVAL AND INSTALLATION [Petrol-powered vehicles (except M.P.I.)]

Removal steps
1. Air intake hose
2. Resonator
3. Inner vent hose
4. Air duct C
5. Air duct B
6. Air duct A
7. Secondary air hose
8. Vacuum hose
9. Air cleaner cover
10. Air cleaner element
11. Heat duct
12. Air cleaner body

NOTE
(1) Reverse the removal procedures to reinstall.
(2) *1: Vehicles with a secondary air pipe
(3) *2: Vehicles with a hot air control valve
(4) *3: Vehicles built from June 1994
INSPECTION

- 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.

CHECKING OF THE HOT AIR CONTROL VALVE

Check to ensure that when negative pressure is applied to nipple of vacuum motor, valve operates as indicated by arrow.
Removal steps
1. Air intake hose
2. Air duct C
3. Air duct B
4. Air duct A
5. Air cleaner cover
6. Air cleaner element
7. Air cleaner body
8. Resonator
9. Air flow sensor
10. Air flow sensor gasket
11. Noise reduction filter

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

9. REMOVAL OF AIR FLOW SENSOR

Remove air flow sensor from air cleaner case.

Caution
Do not pull air flow sensor harness, because its grommet is fitted in air cleaner case.

INSPECTION

- 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.
- Check the air cleaner for clogging, contamination or damage.

CHECKING OF THE AIR FLOW SENSOR

For inspection of air flow sensor, refer to GROUP 13 FUEL — Checking of the air flow sensor
Removal steps
1. Air intake hose
2. Air duct C
3. Air duct B
4. Air duct A
5. Air cleaner assembly
6. Dust pan assembly
7. Wing bolt
8. Air cleaner element

NOTE
Reverse the removal procedures to reinstall.
INSPECTION

- 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 BUILT UP TO MAY 1994 (EXCEPT M.P.I.)]

REMOVAL AND INSTALLATION

Pre-removal Operation
- Removal of driver's seat
- Removal of seat under frame
  (Refer to GROUP 01—Engine Compartment Work)
- Draining of engine coolant

Post-installation Operation
- Filling of engine coolant
  (Refer to GROUP 14—Service Adjustment Procedures)
- Installation of seat under frame
- Installation of driver's seat

Removal steps
1. Breather hose
2. Air horn
3. Carburetor
4. Water outlet fitting
5. Water outlet fitting gasket
6. Thermostat
7. Distributor
8. Purge control valve hose
9. Water hose
10. Heater hose
11. Brake booster vacuum hose
12. Vacuum hose
13. Connection of water temperature gauge unit to wiring harness connector
14. Intake manifold
15. Intake manifold gasket

NOTE
(1) Reverse the removal procedures to reinstall.
(2) **: Refer to “Service Points of Removal”.
(3) ***: Refer to “Service Points of Installation”.
(4) N: Non-reusable parts
(5) *: Indicates 4G63 and G63B.
SERVICE POINTS OF REMOVAL

3. REMOVAL OF CARBURETOR
   Refer to GROUP 13—Removal, Installation and Inspection of carburetor.

4. REMOVAL OF WATER OUTLET FITTING
   Refer to GROUP 14—Removal, Installation and Inspection of thermostat.

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.

SERVICE POINTS OF INSTALLATION

12. INSTALLATION OF VACUUM HOSES
   Refer to GROUP 17—Service Adjustment Procedures.

7. INSTALLATION OF DISTRIBUTOR
   Refer to GROUP 16—Ignition System.
INTAKE MANIFOLD [PETROL-POWERED VEHICLES BUILT UP TO MAY 1994 (WITH M.P.I.)]

REMOVAL AND INSTALLATION

Pre-removal Operation
- Removal of driver's seat
- Removal of seat under frame
  (Refer to GROUP 01 - Engine Compartment Work.)
- Draining of engine coolant

Surge Tank

Post-installation Operation
- Filling of engine coolant
  (Refer to GROUP 14 - Service Adjustment Procedures)
- Installation of seat under frame
- Installation of driver's seat
- Adjustment of accelerator cable
  (Refer to GROUP 13 - Service Adjustment Procedures)
- Inspection of fuel pressure
  (Refer to GROUP 13 - Service Adjustment Procedures)

Removal steps
1. Air intake hose
2. Breather hose
3. Wiring harness connector
4. Air intake pipe
  ● 5. Air hose
6. Accelerator cable and kick-down cable
  (vehicles with automatic transmission)
7. Water hose
  ● 8. Vacuum hose connection
9. Throttle body
10. Water hose
11. Gasket
12. P.C.V. hose
13. Brake booster vacuum hose
  ● 14. Vacuum hose connection
15. Fuel high pressure hose connection
16. Surge tank assembly
17. Surge tank gasket
18. Vacuum hose and pipe

[Vehicles built up to June 1989]

[Vehicles built from July 1989]
**Intake Manifold**

**Removal steps**

19. Fuel injector harness connector
20. Fuel high pressure hose connection
   ☢☢☢ 21. Delivery pipe, fuel injector and pressure regulator
   ☢☢ 22. Insulator
   23. Heater hose
   24. Wiring harness connector
   25. Water outlet fitting
   26. Water outlet fitting gasket
   27. Thermostat

   28. Distributor
   29. Ignition coil
   30. Surge tank stay
   31. Intake manifold stay
   32. Intake manifold
   33. Intake manifold gasket

**NOTE**

(1) Reverse the removal procedures to reinstall.
(2) ☢☢ : Refer to "Service Points of Removal".
(3) ☢☢ : Refer to "Service Points of Installation".
(4) ☢ : Non-reusable parts
SERVICE POINTS OF REMOVAL

15. DISCONNECTION OF FUEL HIGH PRESSURE HOSE
   Relieve pressure in the fuel pipe line to prevent fuel outflow.
   (See GROUP 13—Service Adjustment Procedures)
   Caution
   Cover fuel pipe line with rag after relieving pressure as certain pressure may still remain.

21. 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.

INSPECTION OF SURGE TANK
1. Check surge tank 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 load (negative pressure) of drain port. Check cooling water and jet air passages for clogging. Clean if required.
SERVICE POINTS OF INSTALLATION

22. INSTALLATION OF INSULATOR
Insert insulators (4) into intake manifold.

21. INSTALLATION OF DELIVERY PIPE, FUEL INJECTOR AND PRESSURE REGULATOR
Ensure that insulators are correctly inserted into delivery pipe hole.

14/8. CONNECTION TO VACUUM HOSE
Refer to GROUP 17 EMISSION CONTROL—Service Adjustment Procedures

5. INSTALLATION OF AIR HOSE
When installing air hose, tighten with the air hose band bolt about 45° against the horizontal surface.
INTAKE MANIFOLD (4G92)

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Carburetor Assembly Removal and installation
  (Refer to GROUP 13 - Carburetor.)

Specified sealant: 3M Nut Locking Part No. 4171 or equivalent

Removal steps
1. Vapor hose and pipe assembly
2. Fuel vapor separator
3. PCV hose
4. Brake booster vacuum hose connection
5. Water hose
6. Heater hose
7. Vacuum pipe assembly
8. Vacuum connector joint
9. EGR valve
10. EGR gasket
11. Thermo valve
12. Thermo valve
13. Engine coolant temperature sensor
14. Engine coolant temperature gauge unit
15. Intake manifold stay
16. Intake manifold
17. Intake manifold gasket

NOTE
(1) Reverse the removal procedures to reinstall.
(2) Refer to "Service Points of Installation".
(3) Non-reusable parts
(4) Vehicles with FBC
(5) Vehicles with power steering
(6) Vehicles with EGR system
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.

SERVICE POINTS OF INSTALLATION
15. INSTALLATION OF INTAKE MANIFOLD STAY
   (1) Install the intake manifold stay so that the identification mark is facing towards the intake manifold.
   (2) After provisionally tightening the bolts at both ends, check to be sure that the stay is secure against the boss, and then tighten to the specified torque.

14. INSTALLATION OF ENGINE COOLANT TEMPERATURE GAUGE UNIT
   Apply the specified sealant around the thread of engine coolant temperature gauge unit and install on the intake manifold.
   Specified sealant: 3M ATD Part No. 8660 or equivalent

13. INSTALLATION OF ENGINE COOLANT TEMPERATURE SENSOR/12. 11. THERMO VALVE
   Apply the specified sealant around the thread of engine coolant temperature sensor, thermo valve and install on the intake manifold.
   Specified sealant: 3M Nut Locking Part No. 4171 or equivalent
INTAKE MANIFOLD [4G63 - 16 VALVE (EXCEPT M.P.I.)]

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Carburetor Assembly Removal and installation
  (Refer to GROUP 13 - Carburetor.)

Removal steps
1. Vapor hose and pipe assembly
2. Fuel vapor separator
3. PCV hose
4. Brake booster vacuum hose connection
5. Radiator hose connection
6. Water hose connection
7. Heater hose connection
8. Water outlet fitting
9. Vacuum pipe assembly
10. Vacuum connector joint
11. EGR valve
12. EGR valve gasket
13. Kick-down cable bracket
(Vehicles with automatic transmission)

Specified sealant:
3M Nut Locking Part No. 4171 or equivalent

NOTES
(1) Reverse the removal procedures to reinstall.
(2) Refer to "Service Points of Removal".
(3) Refer to "Service Points of Installation".
(4) Non-reusable parts
(5) Vehicles with EGR system
(6) Except vehicles for Europe with FBC and Australia - A/T
(7) Vehicles for Europe with FBC and Australia
(8) Vehicles for GCC
(9) Except vehicles for General Export
(10) Except vehicles for Europe with FBC

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SERVICE POINTS OF REMOVAL

5. DISCONNECTION OF RADIATOR HOSE
After making mating marks on the radiator hose and the hose clamp, disconnect the radiator hose.

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.

SERVICE POINTS OF INSTALLATION

14. INSTALLATION OF THERMO VALVE
Apply the specified sealant around the thread of thermo valve and install on the intake manifold.

Specified sealant: 3M Nut Locking Part No. 4171 or equivalent

8. INSTALLATION OF WATER OUTLET FITTING
1. Use a gasket scraper or wire brush to clean all foreign materials from the surface of the gasket.
2. Apply an even amount of specified sealant to the surface of the gasket.

Specified sealant: Mitsubishi Genuine Parts No. MD970389 or equivalent
3. Before the sealant has dried (within 15 minutes), install the water outlet fitting. Do not apply sealant to any places other than where necessary.

5. CONNECTION OF RADIATOR HOSE
1. Insert each hose as far as the projection of the water outlet fitting or water inlet fitting.
2. Align the mating marks on the radiator hose and hose clamp, and then connect the radiator hose.
INTAKE AND EXHAUST — Intake manifold [4G63 and 4G64-16 valve (with M.P.I.]]

INTAKE MANIFOLD [4G63 AND 4G64 - 16 VALVE (WITH M.P.I.]

REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation
- Injector Removal and Installation (Refer to GROUP 13 - Injector)
- Throttle Body Removal and Installation (Refer to GROUP 13 - Throttle Body)

Removal steps
1. PCV hose
2. Brake booster vacuum hose connection
3. Radiator hose connection
4. Water hose connection
5. Heater hose connection
6. Water outlet fitting
7. EGR valve
8. EGR valve gasket (Vehicles with EGR system)
9. Intake manifold stay
10. Intake manifold
11. Intake manifold gasket

NOTE
(1) Reverse the removal procedures to reinstall.
(2) Refer to "Service Points of Removal".
(3) Refer to "Service Points of Installation".
(4) Vehicles with EGR system.
SERVICE POINTS OF REMOVAL
3. DISCONNECTION OF RADIATOR HOSE
   After making mating marks on the radiator hose and the hose clamp, disconnect the radiator hose.

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.

SERVICE POINTS OF INSTALLATION
6. INSTALLATION OF WATER OUTLET FITTING
   1. Use a gasket scraper or wire brush to clean all foreign materials from the surface of the gasket.
   2. Apply an even amount of specified sealant to the surface of the gasket.
   Specified sealant:
   Mitsubishi Genuine Parts No. MD970389 or equivalent
   3. Before the sealant has dried (within 15 minutes), install the water outlet fitting.
   Do not apply sealant to any places other than where necessary.

3. CONNECTION OF RADIATOR HOSE
   1. Insert each hose as far as the projection of the water outlet fitting or water inlet fitting.
   2. Align the mating marks on the radiator hose and hose clamp, and then connect the radiator hose.
EXHAUST MANIFOLD (PETROL-POWERED VEHICLES BUILT UP TO MAY 1994)

REMOVAL AND INSTALLATION

Pre-removal Operation
- Removal of driver’s seat (R.H.D.)
- Removal of seat under frame
(Refer to GROUP 01 - Engine Compartment Work.)

Post-installation Operation
- Installation of seat under frame
- Installation of driver’s seat (R.H.D.)

Removal steps
1. Vacuum hose
2. Air hose
3. Reed valve and air pipe
4. Air nozzle
5. Hot air duct
6. Heat cowl
7. Exhaust manifold
8. Exhaust manifold gasket

NOTE
(1) Reverse the removal procedures to reinstall.
(2) *1: Vehicles for Europe.
(3) *2: Vehicles built up to October 1987.
Removal steps
1. Vacuum hose
2. Air hose
3. Reed valve and air pipe
4. Air nozzle
5. Hot air duct
6. Heat cowl
7. Exhaust manifold
8. Gasket
9. Exhaust manifold gasket

NOTE
(1) Reverse the removal procedures to reinstall.
(2) N: Non-reusable parts
(3) *: Vehicles for Australia.
(4) **: Vehicles equipped with a dual type front exhaust pipe.
(5) ***: Vehicles built up to October 1987.
(6) ****: Vehicles built from November 1987.
Removal steps
1. Vacuum hose
2. Air hose
3. Reed valve and air pipe
4. Hot air duct
5. Heat cowl
6. Gasket
7. Oxygen sensor
8. Exhaust manifold
9. Exhaust manifold gasket

NOTE
(1) Reverse the removal procedures to reinstall.
(2) : Non-reusable parts
(3) : G63B engine
(4) : Vehicles built up to October 1987.
INSPECTION

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

EXHAUST MANIFOLD

Check for damage or cracking of any part.

EXHAUST MANIFOLD GASKET

Check for flaking or damage of the gasket.
15-21-1 INTAKE AND EXHAUST – Exhaust Manifold (4G92, 4G63 and 4G64 – 16 valve)

EXHAUST MANIFOLD (4G92, 4G63 AND 4G64 – 16 VALVE)
REMOVAL AND INSTALLATION

Pre-removal and Post-installation Operation

• Front exhaust pipe removal and installation
  (Refer to P15-24.)
• Air intake hose removal and installation
  (Refer to P15-6.)

<4G92>
40–50 Nm
4.0–5.0 kgm
29–36 ft.lbs.
12–15 Nm
1.2–1.5 kgm
9–11 ft.lbs.

<4G63, 4G64>
50–60 Nm
5.0–6.0 kgm
36–43 ft.lbs.
70–100 Nm
7.0–10.0 kgm
51–72 ft.lbs.
12–15 Nm
1.2–1.5 kgm
9–11 ft.lbs.

Removal steps
1. Secondary air pipe
2. Heat duct
3. Oxygen sensor
4. Heat protector
5. Engine hanger
6. Exhaust manifold
7. Exhaust manifold gasket

NOTE
(1) Reverse the removal procedures to reinstall.
(2) • Refer to “Service Points of Removal”.
(3) • Refer to “Service Points of Installation”.
(4) N Non-reusable parts
(5) *1 Vehicles with hot air control valve
(6) *2 Vehicles with FBC
(7) *3 Vehicles with secondary air supply system
(8) *4 Vehicles for Australia with MPI

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SERVICE POINTS OF REMOVAL
3. REMOVAL OF OXYGEN SENSOR

INSPECTION
EXHAUST MANIFOLD
Check for damage or cracking of any part.

SERVICE POINTS OF INSTALLATION
6. INSTALLATION OF EXHAUST MANIFOLD

<table>
<thead>
<tr>
<th>Engine items</th>
<th>Nut A Tightening torque</th>
<th>Nut B Tightening torque</th>
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<tbody>
<tr>
<td>4G92</td>
<td>15–20 Nm</td>
<td>27–33 Nm</td>
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<tr>
<td></td>
<td>1.5–2.0 kgm</td>
<td>2.7–3.3 kgm</td>
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<tr>
<td></td>
<td>11–14 ft.lbs.</td>
<td>20–24 ft.lbs.</td>
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<tr>
<td>4G63, 4G64</td>
<td>25–30 Nm</td>
<td>27–33 Nm</td>
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<tr>
<td></td>
<td>2.5–3.0 kgm</td>
<td>2.7–3.3 kgm</td>
</tr>
<tr>
<td></td>
<td>18–22 ft.lbs.</td>
<td>20–24 ft.lbs.</td>
</tr>
</tbody>
</table>
INTAKE AND EXHAUST MANIFOLD (DIESEL-POWERED VEHICLES)

REMOVAL AND INSTALLATION (VEHICLES WITHOUT A TURBOCHARGER)

Pre-removal Operation
- Removal of driver's seat (R.H.D.)
- Removal of seat under frame
  (Refer to GROUP 01 GENERAL - Engine Compartment Work.)

Post-installation Operation
- Installation of seat under frame
- Installation of driver's seat (R.H.D.)

Removal steps
1. Air intake hose
2. Breather hose
3. Intake manifold
4. Heat protector (except Mini-bus for Europe)
5. Exhaust manifold
6. Intake and exhaust manifold gasket

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

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

INTAKE AND EXHAUST MANIFOLD

Check for damage or cracking of any part.
REMOVAL AND INSTALLATION
(VEHICLES WITH A TURBOCHARGER BUILT UP TO JUNE 1993)

Pre-removal Operation
- Removal of seat under frame
  (Refer to GROUP 01 GENERAL—Engine Compartment Work.)

Post-installation Operation
- Installation of seat under frame

Removal steps
1. Boost hose
2. Inlet fitting
3. Inlet fitting gasket
4. Air hose
5. Heat protector (B)
6. Heat protector (A)
7. Waste gate actuator
8. Intake manifold
9. Engine hanger
10. Oil pipe
11. Gasket
12. Oil hose
13. Turbocharger
14. Turbocharger gasket
15. Oil return pipe
16. Oil return pipe gasket
17. Exhaust fitting
18. Exhaust fitting gasket
19. Heat protector (C)
20. Exhaust manifold
21. Intake and exhaust manifold gasket

NOTE
(1) Reverse the removal procedures to reinstall.
(2) ●●: Refer to “Service Points of installation”.
(3) N: Non-reusable parts
INSPECTION

CHECKING TURBOCHARGER SUPER CHARGE PRESSURE

Caution
The driving test is conducted in a two seat vehicle at a place where high speed, full throttle driving is safe. The pressure gauge indicated values are to be read by a person in the passenger seat.

(1) Remove the hose from the waste gate actuator and install a pressure gauge to a two way connector placed between the hose and the nipple.

(2) Drive the vehicle at full throttle in second gear and measure super charge pressure with engine rpm above 3000.

Standard value: Approximately 70—86 kPa (0.70—0.86 kg/sm$^2$, 10—12 psi)

Caution
When turbocharger pressure is not within the standard value, it should not be immediately assumed that there is a problem with the turbocharger, but the following should be checked first:

- Turbo charge pressure high:
  - Waste gate actuator malfunction

- Turbo charge pressure low:
  - Waste gate actuator malfunction
  - Turbo charger pressure leak
  - Turbo charger malfunction

CHECKING THE WASTE GATE ACTUATOR

(1) Connect a hand pump (pressurizer type) to the waste gate actuator nipple, then slowly increase pressure until the waste gate actuator rod begins to move (about a 1 mm stroke) and check the pressure. Continue to apply pressure, checking to ensure that the rod moves smoothly.

Standard value: Approximately 77 kPa (0.77 kg/cm$^2$, 11 psi)

Caution
To prevent damage to the diaphragm, keep the pressure under 93 kPa (0.93 kg/cm$^2$, 14 psi).

(2) When the result differs greatly from the standard value, check the actuator and the waste gate valve, replacing if necessary.

INTAKE AND EXHAUST MANIFOLD
Check for damage or cracking of any part.

SERVICE POINTS OF INSTALLATION

10. INSTALLATION OF OIL PIPE
Install the oil pipe, then, before installing the eye bolt (on top of the turbocharger), fill the turbocharger with clean oil and check to ensure that the turbine compressor wheel rotates smoothly.
REMOVAL AND INSTALLATION
(VEHICLES WITH A TURBOCHARGER BUILT FROM JULY 1993)

Pre-removal and Post-installation Operation
- Removal and Installation of Seat Under Frame
  (Refer to GROUP 01 GENERAL – Engine Compartment Work.)
- Draining and Supplying of the Coolant
- Draining and Supplying of the Engine Oil
- Removal and Installation of Air Cleaner Duct

Removal steps
1. Front exhaust pipe connection
2. Heat protector
3. Exhaust fitting
4. Exhaust fitting gasket
5. Boost hose
6. Vacuum hose
7. Inlet fitting
8. Air hose
9. Heat protector (A)
10. Waste gate actuator
11. EGR pipe
12. EGR valve
13. Oil pipe
14. Intake manifold
15. Water pipe A connection

16. Water pipe B connector
17. Turbocharger assembly
18. Turbocharger gasket
19. Heat protector (B)
20. Oil return pipe
21. Oil hose
22. Exhaust manifold
23. Intake and exhaust manifold gasket

NOTE
(1) Reverse the removal procedures to reinstall.
(2) Refer to "Service Points of Installation".
(3) Non-reusable parts
(4) Vehicles with EGR system

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INSPECTION

CHECKING TURBOCHARGER SUPER CHARGE PRESSURE

Caution

The driving test is conducted in a two seat vehicle at a place where high speed, full throttle driving is safe. The pressure gauge indicated values are to be read by a person in the passenger seat.

1) Remove the hose from the waste gate actuator and install a pressure gauge to a two way connector placed between the hose and the nipple.

2) Drive the vehicle at full throttle in second gear and measure super charge pressure with engine rpm above 3000.

Standard value: Approximately 70-86 kPa
(0.70-0.86 kg/cm², 10-12 psi)

Caution

When turbocharger pressure is not within the standard value, it should not be immediately assumed that there is a problem with the turbocharger, but the following checked first:

- Turbo charge pressure high:
  Waste gate actuator malfunction
- Turbo charge pressure low:
  Waste gate actuator malfunction
  Turbo charger pressure leak
  Turbo charger malfunction

CHECKING THE WASTE GATE ACTUATOR

1) Connect a hand pump (pressurizer type) to the waste gate actuator nipple, then slowly increase pressure until the waste gate actuator rod begins to move (about a 1 mm stroke) and check the pressure. Continue to apply pressure, checking to ensure that the rod moves smoothly.

Standard value: Approximately 77 kPa
(0.77 kg/cm², 11 psi)

Caution

To prevent damage to the diaphragm, keep the pressure under 93 kPa (0.93 kg/cm², 14 psi).

2) When the result differs greatly from the standard value, check the actuator and the waste gate valve, replacing if necessary.

INTAKE AND EXHAUST MANIFOLD

Check for damage or cracking of any part.

SERVICE POINTS OF INSTALLATION

17. INSTALLATION OF TURBOCHARGER ASSEMBLY

1) Clean the alignment surfaces shown in the illustration.

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

Caution

When cleaning, take care that no foreign material gets into the engine coolant or oil passages hole.
EXHAUST PIPES AND MUFFLERS

REMOVAL AND INSTALLATION

VEHICLES FOR EUROPE

4G32
4G63 - 8 valve (Van)
4D56

20-30 Nm
2.0-3.0 kgm
14-22 ft.lbs.

30-40 Nm
3.0-4.0 kgm
22-29 ft.lbs.

4G63 - 8 valve (Mini-bus)
N 3

20-30 Nm
2.0-3.0 kgm
14-22 ft.lbs.

40-55 Nm
4.0-5.5 kgm
29-40 ft.lbs.

G63B
4G64 - 8 valve
G64B
N 3

20-30 Nm
2.0-3.0 kgm
14-22 ft.lbs.

40-55 Nm
4.0-5.5 kgm
29-40 ft.lbs.

Removal steps

1. Front exhaust pipe
2. Gasket
3. Rubber hanger
4. Hanger bracket
5. Catalytic converter
6. Gasket
7. Rubber hanger
8. Rubber hanger
9. Main muffler

NOTE
(1) Reverse the removal procedures to reinstall.
(2) : Refer to "Service Points of Installation".
(3) N : Non-reusable parts
(4) * : Petrol-powered vehicles
(5) ** : Diesel-powered vehicles
4G63 - 16 valve

<Conventional carburetor>

20-30 Nm
2.0-3.0 kgm
14-22 ft.lbs.

40-60 Nm
4.0-6.0 kgm
29-43 ft.lbs.

<Feedback carburetor>

20-30 Nm
2.0-3.0 kgm
14-22 ft.lbs.

40-60 Nm
4.0-6.0 kgm
29-43 ft.lbs.

<M.P.I.>

20-30 Nm
2.0-3.0 kgm
14-22 ft.lbs.

40-60 Nm
4.0-6.0 kgm
29-43 ft.lbs.

Removal steps

1. Catalytic converter
2. Front exhaust pipe
3. Gasket
4. Oxygen sensor
5. Rubber hanger
6. Hanger bracket
7. Heat protector
8. Rubber hanger
9. Rubber hanger
10. Main muffler
11. Rubber hanger
12. Rubber hanger
13. Rubber hanger
14. Rubber hanger
15. Main muffler

NOTE
(1) Reverse the removal procedures to reinstall.
(2) : Refer to "Service Points of Installation".
(3) : Non-reusable parts
VEHICLES FOR GENERAL EXPORT

**4G32**

- 20-30 Nm
- 2.0-3.0 kg m
- 14-22 ft.lbs.

**4G33**

- 20-30 Nm
- 2.0-3.0 kg m
- 14-22 ft.lbs.

**4G63 - 8 valve**

- 30-40 Nm
- 3.0-4.0 kg m
- 22-29 ft.lbs.

**4D56**

- 25-35 Nm
- 2.5-3.5 kg m
- 18-25 ft.lbs.

**4G64 - 8 valve**

- 20-30 Nm
- 2.0-3.0 kg m
- 14-22 ft.lbs.

- 40-55 Nm
- 4.0-5.5 kg m
- 29-40 ft.lbs.

**Removal steps**

1. Heat protector
2. Front exhaust pipe
3. Gasket
4. Rubber hanger
5. Hanger bracket
6. Heat protector
7. Catalytic converter
8. Gasket
9. Rubber hanger
10. Rubber hanger
11. Main muffler

**NOTE**

1. Reverse the removal procedures to reinstall.
2. Refer to "Service Points of Installation".
3. Non-reusable parts
4. Petrol-powered vehicles
5. Diesel-powered vehicles

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INTAKE AND EXHAUST - Exhaust Pipes and Mufflers

**G33B**

20 - 30 Nm
2.0 - 3.0 kgm
14 - 22 ft.lbs.

25 - 35 Nm
2.5 - 3.5 kgm
18 - 25 ft.lbs.

30 - 40 Nm
3.0 - 4.0 kgm
22 - 29 ft.lbs.

**4G92 <Hong Kong>**

20 - 30 Nm
2.0 - 3.0 kgm
14 - 22 ft.lbs.

40 - 60 Nm
4.0 - 6.0 kgm
29 - 43 ft.lbs.

30 - 40 Nm
3.0 - 4.0 kgm
22 - 29 ft.lbs.

50 - 70 Nm
5.0 - 7.0 kgm
36 - 50 ft.lbs.

**Removal steps**

1. Front exhaust pipe
2. Gasket
3. Rubber hanger
4. Hanger bracket
5. Heat protector
6. Protector (Except for Hong Kong G33B)
7. Heat protector
8. Catalytic converter
9. Gasket
10. Rubber hanger
11. Rubber hanger
12. Rubber hanger
13. Rubber hanger
14. Protector
15. Main muffler

**NOTE**

(1) Reverse the removal procedures to reinstall.
(2) Non-reusable parts
(3) Non-reusable parts
INTAKE AND EXHAUST – Exhaust Pipes and Mufflers

4G92 [Except for Hong Kong]

4G63 – 16 valve

<Conventional carburetor>

20–30 Nm
2.0–3.0 kgm
14–22 ft.lbs.

40–60 Nm
4.0–6.0 kgm
29–43 ft.lbs.

Removal steps

1. Front exhaust pipe
2. Gasket
3. Oxygen sensor
4. Rubber hanger
5. Hanger bracket
6. Heat protector
7. Catalytic converter
8. Gasket
9. Rubber hanger
10. Hanger bracket

NOTE

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

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VEHICLES FOR AUSTRALIA

VAN (4G63 engine)
[ vehicles built up to September 1988]
Diesel powered Van

20 - 30 Nm
2.0 - 3.0 kgm
14 - 22 ft.lbs.

25 - 35 Nm
2.5 - 3.5 kgm
18 - 25 ft.lbs.

Van (4G64 engine)
[ vehicles built up to September 1988]
Petrol powered Van
[ vehicles built from October 1988 up to May 1994]
Mini-bus
[ vehicles built up to May 1994]

20 - 30 Nm
2.0 - 3.0 kgm
14 - 22 ft.lbs.

50 - 70 Nm
5.0 - 7.0 kgm
36 - 50 ft.lbs.

40 - 55 Nm
4.0 - 5.5 kgm
29 - 40 ft.lbs.

Removal steps:
1. Heat protector
2. Front exhaust pipe
3. Gasket
4. Rubber hanger
5. Hanger bracket
6. Protector
7. Heat protector
8. Catalytic converter
9. Gasket
10. Rubber hanger
11. Rubber hanger
12. Protector
13. Main muffler

NOTE:
1. Reverse the removal procedures to reinstall.
2. Refer to "Service Points of Installation"
3. Non-reusable parts
4. 2WD
INTAKE AND EXHAUST - Exhaust Pipes and Mufflers

4G63 and 4G64 - 16 valve

<2WD>

20-30 Nm
2.0-3.0 kgm
14-22 ft.lbs.

40-60 Nm
4.0-6.0 kgm
29-43 ft.lbs.

50-70 Nm
5.0-7.0 kgm
29-43 ft.lbs.

<4WD>

20-30 Nm
2.0-3.0 kgm
14-22 ft.lbs.

40-60 Nm
4.0-6.0 kgm
29-43 ft.lbs.

50-70 Nm
5.0-7.0 kgm
29-43 ft.lbs.

Removal steps

1. Front exhaust pipe
2. Gasket
3. Rubber hanger
4. Hanger bracket
5. Heat protector
6. Heat protector
7. Catalytic converter
8. Gasket
9. Rubber hanger
10. Rubber hanger
11. Protector
12. Main muffler

NOTE
(1) Reverse the removal procedures to reinstall.
(2) M ♦♦ Refer to "Service Points of Installation".
(3) N ♦♦ Non-reusable parts
INSPECTION
• Check the mufflers and pipes for corrosion or damage.
• Check rubber hangers for deterioration or damage.
• Check for gas leakage from mufflers or pipes.

SERVICE POINTS OF INSTALLATION
15. INSTALLATION OF MAIN MUFFLER /2. FRONT EXHAUST PIPE
   After fully tightening front exhaust pipe and main muffler, check to be sure there is no contact with the chassis at any place and there is no twisted hanger.