GROUP 2

PERIODIC INSPECTION AND MAINTENANCE

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For items which indicate both distance and time (in months), the inspection should be made at whichever (distance or time) comes first.

- Applicable for LANCER EVOLUTION

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<td>A1 Check V-belt for cracks, fraying, wear, and adjust its tension</td>
<td>Inspection</td>
<td>Every 15,000 km or every 12 months</td>
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<tr>
<td>A2 Check condition of distributor, cap and rotor</td>
<td>Inspection</td>
<td>Every 60,000 km or every 4 years</td>
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<tr>
<td>A3 Check ignition cables for damage</td>
<td>Inspection</td>
<td>Every 30,000 km or every 2 years</td>
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<tr>
<td>A4 Check vacuum pump oil hose for damage (diesel-powered vehicles)</td>
<td>Inspection</td>
<td>Every 15,000 km or every 12 months</td>
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<tr>
<td>A5 Check intake air hose and turbocharger oil hose for damage (vehicles with turbocharger)</td>
<td>Inspection</td>
<td>Every 30,000 km or every 2 years</td>
<td></td>
</tr>
<tr>
<td>A6 Replace engine timing belt [including timing belt B with 4G6/4D5 engine] (except vehicles with timing chain)</td>
<td>Replace</td>
<td>Every 90,000 km</td>
<td></td>
</tr>
<tr>
<td>A7 Check operation of crankcase emission control system (petrol-powered vehicles)</td>
<td>Inspection</td>
<td>Every 30,000 km or every 2 years</td>
<td></td>
</tr>
<tr>
<td>A8 Replace spark plugs</td>
<td>Standard type Replace</td>
<td>Every 45,000 km</td>
<td></td>
</tr>
<tr>
<td>Platinum-tipped type Replace</td>
<td>Every 90,000 km</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A9 Check radiator hoses for damage and proper connection</td>
<td>Inspection</td>
<td>Every 30,000 km or every 2 years</td>
<td></td>
</tr>
<tr>
<td>A10 Check engine coolant level in reservoir</td>
<td>Inspection</td>
<td>Every 30,000 km or every 2 years</td>
<td></td>
</tr>
<tr>
<td>A11 Change engine coolant</td>
<td>Change</td>
<td>Every 60,000 km or every 4 years</td>
<td></td>
</tr>
<tr>
<td>A12 Check air cleaner element for clogging and damage</td>
<td>Inspection Normal usage</td>
<td>Every 15,000 km or every 12 months</td>
<td></td>
</tr>
<tr>
<td>Severe usage</td>
<td>Every 7,500 km or every 6 months</td>
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<td></td>
</tr>
<tr>
<td>A13 Replace air cleaner element</td>
<td>Replace Normal usage</td>
<td>Every 45,000 km or every 3 years</td>
<td></td>
</tr>
<tr>
<td>Severe usage</td>
<td>More frequently</td>
<td></td>
<td></td>
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<tr>
<td>A14 Check fluid level in brake reservoir and clutch reservoir (for hydraulic type clutch)</td>
<td>Inspection</td>
<td>Every 15,000 km or every 12 months</td>
<td></td>
</tr>
<tr>
<td>A15 Change brake fluid</td>
<td>Change</td>
<td>Every 30,000 km or every 2 years</td>
<td></td>
</tr>
<tr>
<td>A16 Check battery electrolyte level</td>
<td>Inspection</td>
<td>Every 15,000 km or every 12 months</td>
<td></td>
</tr>
<tr>
<td>Maintenance item</td>
<td>Maintenance operation</td>
<td>Maintenance interval</td>
<td>Application</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------</td>
<td>-----------------------</td>
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<td>-------------</td>
</tr>
<tr>
<td>A17 Check injection nozzle [If dark smoke is exhausted or engine power is low]</td>
<td>Inspection</td>
<td>Every 60,000 km or every 4 years</td>
<td></td>
</tr>
<tr>
<td>(diesel-powered vehicles)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A18 Replace fuel filter</td>
<td>Replace</td>
<td>Every 150,000 km or every 10 years</td>
<td></td>
</tr>
<tr>
<td>Petrol-powered vehicles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel-powered vehicles</td>
<td>Replace</td>
<td>Every 30,000 km or every 2 years</td>
<td></td>
</tr>
<tr>
<td>A19 Removal of water from the fuel filter (vehicle with F9Q engine)</td>
<td>Removal</td>
<td>Every 15,000 km</td>
<td></td>
</tr>
<tr>
<td>A20 Clean brake booster vacuum nipple (PAJERO PININ with GDI engine)</td>
<td>Clean</td>
<td>Every 45,000 km or every 3 years</td>
<td></td>
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**OPERATIONS UNDER THE VEHICLE**

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<tbody>
<tr>
<td>B1 Check suspension system for damage and looseness</td>
<td>Inspection</td>
<td>Every 30,000 km or every 2 years</td>
<td></td>
</tr>
<tr>
<td>B2 Check suspension arm ball joints for play, and dust covers for damage</td>
<td>Inspection</td>
<td>Every 30,000 km or every 2 years</td>
<td></td>
</tr>
<tr>
<td>B3 Lubricate suspension arm, steering linkage and propeller shaft with grease fitting</td>
<td>Lubrication</td>
<td>Every 30,000 km or every 2 years</td>
<td></td>
</tr>
<tr>
<td>B4 Check drive shaft boots for damage</td>
<td>Inspection</td>
<td>Normal usage</td>
<td>Every 30,000 km or every 2 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe usage</td>
<td>Every 7,500 km</td>
</tr>
<tr>
<td>B5 Check steering linkage for damage and loose connections (including seals and boots)</td>
<td>Inspection</td>
<td>Every 60,000 km or every 4 years</td>
<td></td>
</tr>
<tr>
<td>B6 Check gear oil level in manual transmission</td>
<td>Inspection</td>
<td>Every 15,000 km or every 12 months</td>
<td></td>
</tr>
<tr>
<td>B7 Check gear oil level in transfer case (4WD) (except vehicles with ACD)</td>
<td>Inspection</td>
<td>Every 15,000 km or every 12 months</td>
<td></td>
</tr>
<tr>
<td>Check gear oil level in transfer case (4WD) (vehicles with ACD)</td>
<td>Inspection</td>
<td>Every 20,000 km</td>
<td></td>
</tr>
<tr>
<td>B8 Change gear oil in manual transmission</td>
<td>Change</td>
<td>Normal usage</td>
<td>Every 105,000 km or every 7 years</td>
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<tr>
<td></td>
<td></td>
<td>Severe usage</td>
<td>Every 45,000 km or every 3 years</td>
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<tr>
<td>B9 Change gear oil in transfer case (4WD)</td>
<td>Change</td>
<td>Normal usage</td>
<td>Every 105,000 km or every 7 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Severe usage</td>
<td>Every 45,000 km or every 3 years</td>
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<td>Change gear oil in transfer case (4WD) (OUTLANDER, SPACE WAGON)</td>
<td>Change</td>
<td>Every 75,000 km or every 5 years</td>
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</tr>
<tr>
<td>Change gear oil in transfer case (4WD) (LANCER EVOLUTION)</td>
<td>Change</td>
<td>Every 40,000 km</td>
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### PERIODIC INSPECTION AND MAINTENANCE SCHEDULE

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<td><strong>B10</strong> Check gear oil level in front and rear differential (except vehicles with AYC)</td>
<td>Inspection</td>
<td>Every 30,000 km or every 2 years</td>
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<tr>
<td>Check gear oil level in front and rear differential [including torque transfer differential] (vehicles with AYC)</td>
<td>Inspection</td>
<td>Every 20,000 km</td>
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<td><strong>B11</strong> Check fluid level in oil reservoir tank (vehicles with ACD and AYC)</td>
<td>Inspection</td>
<td>Every 20,000 km</td>
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<tr>
<td><strong>B12</strong> Change gear oil in front and rear differential (except vehicles with AYC)</td>
<td>Change Conventional differential or VCU type LSD</td>
<td>Normal usage Every 90,000 km or every 6 years Severe usage Every 45,000 km or every 3 years</td>
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</tr>
<tr>
<td></td>
<td>Change Mechanical type LSD or Hybrid type LSD</td>
<td>Normal usage Every 60,000 km or every 4 years Severe usage Every 30,000 km or every 2 years</td>
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<td></td>
<td>Check gear oil in front and rear differential [including torque transfer differential] (vehicles with AYC)</td>
<td>Change</td>
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<td><strong>B13</strong> Check exhaust pipe connections for gas leakage, and check pipe installation</td>
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### OPERATIONS INSIDE THE VEHICLE

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<td><strong>C1</strong> Check brake pedal and clutch pedal for free play</td>
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<td>Every 15,000 km or every 12 months</td>
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<td><strong>C2</strong> Check parking brake lever stroke and play</td>
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<td>Every 15,000 km or every 12 months</td>
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<td><strong>C3</strong> Replace air purifier filter (pollen filter)</td>
<td>Replace</td>
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<td><strong>C4</strong> Check SRS airbag system</td>
<td>Inspection</td>
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### OPERATIONS OUTSIDE THE VEHICLE

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<td><strong>D2</strong> Check front wheel bearings for play</td>
<td>Inspection</td>
<td>Every 60,000 km or every 4 years</td>
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<td><strong>D3</strong> Check brake hoses and pipes for leakage</td>
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<td>Every 30,000 km or every 2 years</td>
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<td><strong>D5</strong> Check brake shoe linings and drums for wear</td>
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<td>Maintenance item</td>
<td>Maintenance operation</td>
<td>Maintenance interval</td>
<td>Application</td>
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<tr>
<td><strong>E1</strong> Check fluid level in automatic transmission</td>
<td>Inspection</td>
<td>Every 15,000 km or every 12 months</td>
<td>Normal usage</td>
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| **E2** Change automatic transmission fluid | Change | Normal usage Every 90,000 km or every 6 years
Severe usage Every 45,000 km or every 3 years |
|               | 2WD*1 Change | Normal usage Every 90,000 km or every 6 years
Severe usage Every 45,000 km or every 3 years |
|               | 4WD Change | Normal usage Every 90,000 km or every 6 years
Severe usage Every 45,000 km or every 3 years |
|               | 4WD Change | Normal usage Every 45,000 km or every 3 years |
| **E3** Change engine oil (petrol-powered vehicles without a turbocharger) | Change | Normal usage Every 15,000 km or every 12 months
Severe usage Every 7,500 km |
|                | ACEA and API classifications "ACEA A1, A2, A3" / "For service SG" or higher | Change | Normal usage Every 7,500 km or every 6 months
Severe usage Every 5,000 km |
|                | Change engine oil (petrol-powered vehicles with a turbocharger) | Change | Normal usage Every 7,500 km or every 6 months
Severe usage Every 4,000 km |
|                | ACEA and API classifications "ACEA B1, B2, B3, B4" / "For service CD" or higher | Change | Normal usage Every 15,000 km or every 12 months
Severe usage Every 8,000 km |
| **E4** Replace engine oil filter (petrol-powered vehicles without a turbocharger) | Replace | Normal usage Every 15,000 km or every 12 months
Severe usage Every 7,500 km |
|                | ACEA and API classifications "ACEA A1, A2, A3" / "For service SG" or higher | Replace | Normal usage Every 7,500 km or every 6 months
Severe usage Every 5,000 km |
|                | Replace engine oil filter (petrol-powered vehicles with a turbocharger) | Replace | Normal usage Every 15,000 km or every 12 months
Severe usage Every 8,000 km |
|                | ACEA and API classifications "ACEA A1, A2, A3" / "For service SG" or higher | Replace | Normal usage Every 15,000 km or every 12 months
Severe usage Every 8,000 km |
| **E5** Check engine idling speed | Inspection | Every 15,000 km or every 12 months |
| **E6** Check CO concentration (petrol-powered vehicles) | Inspection | Every 15,000 km or every 12 months |
| **E7** Check ignition timing (vehicles with distributor) (except vehicles with crankshaft mounted-crankshaft angle sensor) | Inspection | Every 80,000 km or every 4 years |
PERIODIC INSPECTION AND MAINTENANCE
OPERATIONS INSIDE THE ENGINE COMPARTMENT

2-7

**NOTE:**
- ACD: Active centre differential control system.
- AYC: Active yaw control system.
- *1: Replacement is not required for RWD vehicles used in normal operating conditions.
- "Severe usage" specifications apply to only vehicles used under severe operating conditions. Severe operating conditions include the followings:
  1. Driving in a dusty area.
  2. Driving on rough roads, on submerged roads, or hilly areas.
  3. Driving cold zones.
  4. Engine idling for a long time or short-distance travel during cold weather.
  5. Frequent, sudden application of brakes.
  6. Towing of a trailer.
  7. Use as a taxi or as a rent-a-car.
  8. When more than 50% of driving is in heavy city traffic and the ambient temperature is 32°C or more.
  9. When more than 50% of driving is at 120 km/h or more and the ambient temperature is 30°C or more.

**OPERATIONS INSIDE THE ENGINE COMPARTMENT**

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<th>Application</th>
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<tr>
<td>E8</td>
<td>Check exhaust gas recirculation (EGR) system</td>
<td>Inspection</td>
<td>Every 15,000 km or every 12 months</td>
</tr>
<tr>
<td>E9</td>
<td>Check valve clearance (except vehicles with auto-lash adjuster)</td>
<td>Inspection</td>
<td>Every 15,000 km or every 12 months</td>
</tr>
<tr>
<td>F1</td>
<td>Check body condition for damage</td>
<td>Inspection</td>
<td>Every year</td>
</tr>
<tr>
<td>F2</td>
<td>Road test</td>
<td>Inspection</td>
<td>Every 15,000 km or every 12 months</td>
</tr>
</tbody>
</table>

**V-BELT CONDITION**
Check the whole rounds of the V-belt for cracks, fraying and wear.

1. Check that the indicator marking of the auto-tensioner is within the range as shown in the illustration A of the tensioner bracket.

**CAUTION**
Inspection must be carried out after turning the crankshaft clockwise for more than once.
2. If the marking is outside the range as shown in the illustration A, replace the drive belt.

NOTE:
Due to the adoption of the auto-tensioner, no adjustment for belt tension is required.

A3. CHECK IGNITION CABLES FOR DAMAGE

1. Check the ignition cable and rubber cap for damage or weakness, and check the installation condition.
2. Check the ignition cable and spark plug, distributor, and ignition coil connections for contamination, dirt, etc.
3. If dirty, clean it; if damaged, replace it.

A5. CHECK INTAKE AIR HOSE AND TURBOCHARGER OIL HOSE FOR DAMAGE

INTAKE AIR HOSES
1. The air entered from outside the air cleaner element may make intake air dirty, resulting in engine power less than normal.
2. Inspect the intake air hoses for cracks or damage.

TURBOCHARGER OIL HOSES
1. The oil leakage from oil hose may provide insufficient lubrication in the turbocharger, resulting in engine power less than normal.

A6. REPLACE ENGINE TIMING BELT <EXCEPT VEHICLES WITH TIMING CHAIN>

For information concerning the replacement procedures, refer to the Workshop Manual.

A7. CHECK OPERATION OF CRANKCASE EMISSION CONTROL SYSTEM

BREATHER HOSE
1. Inspect the breather hose for cracks or damage.
2. Clean the inside of the breather hose if necessary.
3. Inspect the ventilation filter for clogging.

VENTILATION HOSE
1. Check entire circumference and length of hoses using a mirror as required.
2. Check all clamps for tightness and the connections for leakage.
3. Hoses should be replaced immediately if there is any evidence of deterioration or damage.

POSITIVE CRANKCASE VENTILATION SYSTEM CHECK
1. Remove the ventilation hose from the PCV (Positive crankcase ventilation) valve.
2. Remove the PCV valve from the rocker cover.
3. Reinstall the PCV valve at the ventilation hose.
4. Start the engine and run at idle.
5. Place finger at the opening of the PCV valve and check that vacuum of the intake manifold is felt. 
   **NOTE:** At this moment, the plunger in the PCV valve moves back and forth.
6. If vacuum is not felt, clean the PCV valve or replace it.

**PCV VALVE CHECK**

1. Insert a thin rod into the PCV valve from the side shown in the illustration (rocker cover installation side), and move the rod back and forth to check that the plunger moves.
2. If the plunger does not move, there is clogging in the PCV valve. In this case, clean or replace the PCV valve.

**A8. REPLACE SPARK PLUGS**

After removing old spark plugs, install new ones and tighten them at the specified torque.

**A9. CHECK RADIATOR HOSES FOR DAMAGE AND PROPER CONNECTION**

1. Check entire circumference and length of hoses, using a mirror as required.
2. Check that hoses installed in grommets pass through the centre of the grommets.
3. Check all clamps for tightness and connections for leakage.

**A10. CHECK ENGINE COOLANT LEVEL IN RESERVOIR**

Check that the coolant level is between the "FULL" and "LOW" lines when the engine is at the normal operating temperature.

**A11. CHANGE ENGINE COOLANT**

1. Stop the engine after it is fully warmed up.
2. Add detergent to the engine coolant in order to flush the cooling system, and start the engine.
3. Loosen the drain plug, remove the radiator can and drain the coolant.
4. Feed fresh water into the cooling system through the filler port of the radiator in order to wash the cooling system, and then tighten the drain plug.
5. Drain the coolant from the reserve tank.
6. Install the reserve tank.

7. Depending upon conditions of operation, determine the amount of long life coolant, antifreeze or antitrust to be added to the coolant.
   
   **Recommended antifreeze**: DIA QUEEN SUPER LONG LIFE COOLANT or equivalent

   **CAUTION**
   Do not use alcohol or methanol anti-freeze or any engine coolants mixed with alcohol or methanol anti-freeze. The use of an improper anti-freeze can cause the corrosion of the aluminium components.

8. Fill the cooling system with soft water through the filler port, and add long life coolant, if necessary.
9. Fill the reserve tank with coolant.
10. Install the radiator cap and the reserve tank cap.
11. Recheck the engine coolant level after a road test.

   **CAUTION**
   When removing the radiator cap, be careful to blow out steam and boiling water.

**REMOVAL OF ENGINE COOLANT FROM THE CYLINDER BLOCK DRAIN PLUG**

1. Drain the engine coolant by removing the drain plug and then the radiator cap.
2. Remove the cylinder block drain plug from the cylinder block to drain the engine coolant.
3. Remove the reserve tank to drain the engine coolant.
4. When the engine coolant has drained, pour in water from the radiator cap to clean the engine coolant line.
5. Coat the thread of the cylinder block drain plug with the specified sealant and tighten to the specified torque.
   
   **Specified sealant**: 3M Nut Locking Part No.4171 or equivalent
   **Tightening torque**: 44 ± 5 N·m
6. Securely tighten the radiator drain plug.
7. Install the reserve tank.

8. Use special tool LLC changer (MB991871) to refill the coolant.
   
   **NOTE**: For How to use special tool MB991871, refer to its manufacturer's instructions.

   **Recommended antifreeze**: DIA QUEEN SUPER LONG LIFE COOLANT or equivalent
   **Quantity**: 6.0 L
CAUTION
Do not use alcohol or methanol anti-freeze or any engine coolants mixed with alcohol or methanol anti-freeze. The use of an improper anti-freeze can cause the corrosion of the aluminium components.

9. Install the radiator cap securely.
10. Start the engine and warm the engine until the thermostat opens. (Touch the radiator hose with your hand to check that warm water is flowing.)
11. After the thermostat opens, race the engine several times, and then stop the engine.
12. Cool down the engine, and then pour engine coolant into the reserve tank until the level reaches the FULL line. If the level is low, repeat the operation from step 9.

A12. CHECK AIR CLEANER ELEMENT FOR CLOGGING AND DAMAGE

1. Check air cleaner element for clogging and damage.
2. Clean deposited dust from the element in the following manner.
   (1) Lightly tap the element against the top of a bench.
   (2) Blow compressed air from inside the element.
3. Wipe off dust on the air cleaner interior.
4. Install the air cleaner body.

A13. REPLACE AIR CLEANER ELEMENT

The air cleaner element will become dirty and loaded with dust during use, and the filtering effect will be substantially reduced. Replace it with a new one.

A14. CHECK FLUID LEVEL IN BRAKE RESERVOIR AND CLUTCH RESERVOIR (for hydraulic-type clutch only)

1. Unclasp the air cleaner cover clip.
2. Remove the air cleaner element and install a new one.
3. Be sure to close the air cleaner cover completely when clamping it.

A15. CHANGE BRAKE FLUID

1. Remove the cap of the bleeder screw, connect a vinyl tube, and place its other end in a receptacle.
2. Loosen the bleeder screw and depress the brake pedal; supply new brake fluid when the level of the fluid within the reservoir tank decreases.
OPERATIONS INSIDE THE ENGINE COMPARTMENT

PERIODIC INSPECTION AND MAINTENANCE

2-12

CAUTION

If the reservoir tank completely runs out of fluid during operation, air will find its way into the brake line. Pay attention, therefore, to the fluid level and replenish as necessary.

Specified brake fluid: DOT3 or DOT4

CAUTION

Use the specified brake fluid. Avoid using a mixture of the specified brake fluid and other fluid. If brake fluid is exposed to the air, it will absorb moisture; as water is absorbed from the atmosphere, the boiling point of the brake fluid will decrease and the braking performance will be seriously impaired. For this reason use a hermetically sealed 1 lit. or 0.5 lit. brake fluid container. Firmly close the cap of the brake fluid container after use.

3. When fresh fluid has come to flow out from the vinyl tube, tighten the bleeder screw.

NOTE:
This change from existing to fresh fluid can be judged by change in color of fluid that flows out.

4. Repeat above steps for other bleeder screws.

NOTE:
The operating steps for each bleeder screws are illustrated on this page.

MASTER CYLINDER BLEEDING

The master cylinder used has no check valve, so if bleeding is carried out by the following procedure, bleeding of air from the brake pipeline will become easier. (When brake fluid is not contained in the master cylinder.)

1. Fill the reserve tank with brake fluid.
2. Keep the brake pedal depressed.

3. Have another person cover the master cylinder outlet with a finger.
4. With the outlet still closed, release the brake pedal.
5. Repeat steps (2) - (4) three or four times to fill the inside of the master cylinder with brake fluid.

A16. CHECK BATTERY ELECTROLYTE LEVEL

1. Inspect whether or not the battery fluid is between the UPPER LEVEL and LOWER LEVEL marks.

CAUTION

If the battery fluid is below the LOWER LEVEL, the battery could explode in using.
2. If the battery fluid is over the UPPER LEVEL, leakage could result.
3. Use a hydrometer and thermometer to check the specific gravity of the battery fluid.

Standard value: 1.220 – 1.290 [20°C]
3. The specific gravity of the battery fluid varies with the temperature, so use the following formula to calculate the specific gravity for 20°C. Use the calculated value to determine whether or not the specific gravity is satisfactory.

\[
D_{20} = (t - 20) \times 0.0007 + D_t
\]

- **D<sub>20</sub>**: Specific gravity of the battery fluid calculated for 20°C.
- **D<sub>t</sub>**: Actually measured specific gravity
- **t**: Actually measured temperature

**A18. REPLACE FUEL FILTER**

1. Remove the rear seat cushion assembly.
2. Remove the service hole cover.
3. Disconnect the harness connector.
4. Disconnect fuel high-pressure hose, suction hose and fuel return hose.
5. Unscrew the mounting nuts to remove the fuel pump module.
When withdrawing the fuel pump module from the fuel tank, be careful not damage the module unit and the float.

6. Remove the fuel filter from fuel pump module.
7. Install the new fuel filter.
8. Install the fuel pump module. Tighten the mounting nuts to the specified torque.
   **Tightening torque: 2.5 \pm 0.5 \text{ N m}**
9. Connect the harness connector, fuel high-pressure hose, suction hose and fuel return hose.

When installing the fuel pump module into the fuel tank, be careful not damage the module unit and the float.
Snap the fuel high-pressure hose one-touch joint into place, then pull back slightly on the hose to assure it is secure. However, the connection should have a play of approximately 3.0 mm.

10. Install the service hole cover.
11. Install the rear seat cushion assembly
B1. CHECK SUSPENSION SYSTEM FOR DAMAGE AND LOOSENESS

**FRONT SUSPENSION**
- Deterioration and sagging
- Bends and damage
- Cracks and damage

**REAR SUSPENSION**
- Deterioration and sagging
- Cracks and damage
- Cracks, bends and dents
- Noise and oil leakage

**Notes:**
- Noise and oil leakage
- Cracks, bends and dents
- Cracks and damage
B2. CHECK SUSPENSION ARM BALL JOINTS FOR PLAY, AND DUST COVERS FOR DAMAGE

LOWER ARM BALL JOINT END PLAY CHECK

1. Raise the vehicle.
2. Remove the stabilizer bar from the lower arm assembly.
3. Move the lower arm up and down with your hands to check for an excessive play in the axial direction of the ball joint. If there is an excessive play, replace the lower arm assembly.

DUST COVERS FOR DAMAGE
Check dust covers for damage.

B4. CHECK DRIVE SHAFT BOOTS FOR DAMAGE

Check the drive shaft boots for damage.

B5. CHECK STEERING LINKAGE FOR DAMAGE AND LOOSE CONNECTIONS (INCLUDING SEALS AND BOOTS)

1. Move the steering wheel bit by bit to the left or right, and check to be sure that there is no play or looseness in the linkage coupling, that the installation is not loose, and that the rod or arm is not bent or damaged.

2. Check to be sure that the seal and boot of the ball joint are correctly installed (in the correct position), and that they are not damaged.
3. Check tie-rod end lock nut for looseness. If lock nut is loose, adjust toe-in and then tighten lock nut to the specified torque.

Tightening torque: $52 \pm 2 \text{ N}\cdot\text{m}$

B6. CHECK GEAR OIL LEVEL IN MANUAL TRANSMISSION
1. Remove the filler plug of the transmission case.

2. Oil level should be at the lower portion of the filler plug hole.

3. Check that the transmission oil is not noticeably dirty, and that it has a suitable viscosity.

4. Tighten the filler plug to the specified torque.
   
   **Tightening torque: 32 ± 2 N m**

**B8. CHANGE GEAR OIL IN MANUAL TRANSMISSION**

1. Remove oil filler plug and oil drain plug.

2. Drain the gear oil.

3. Before installing the plug, remove iron powder attached to the magnet of the drain plug. Tighten the oil drain plug to the specified torque.

   **Tightening torque: 32 ± 2 N m**

4. Fill the transmission fresh oil by using a lubricator.

5. Fill with specified oil till the level comes to the lower portion of oil filler plug hole.

   **Specified transmission oil: Gear oil API classification GL-4 or higher SAE 75W-85W or 75W-90**

   **Quantity: 2.8L**

6. Tighten the oil filler plug to the specified torque.

   **Tightening torque: 32 ± 2 N m**
B9. CHANGE GEAR OIL IN TRANSFER CASE (4WD)

1. Remove oil filler plug and oil drain plug.
2. Drain the gear oil.
3. Before installing the plug, remove iron powder attached to the magnet of the drain plug. Tighten the oil drain plug to the specified torque.
   **Tightening torque:** 32 ± 2 N·m
4. Fill the transfer case fresh oil by using a lubricator.
5. Fill with specified oil till the level comes to the lower portion of oil filler plug hole.
   **Specified transfer oil:**
   MITSUBISHI Genuine Gear Oil Part No. 8149630 EX or CASTROL HYPOY LS
   **Quantity:** 0.6L
6. Tighten the oil filler plug to the specified torque.
   **Tightening torque:** 32 ± 2 N·m

B10. CHECK GEAR OIL LEVEL IN FRONT AND REAR DIFFERENTIAL (Including torque transfer differential)

1. Remove the filler plug.
2. Check that the gear oil level is within the specified range from the bottom end of the filler plug hole.
3. If the gear oil level exceeds the standard value, add the specified gear oil up to the bottom end of the filler plug hole.
   **Specified gear oil:**
   Gear oil API classification GL-5 or higher
   Above 10°C: SAE 90
   Below 10°C: SAE 80W
4. Fit the filler plug and tighten it to the specified torque.
   **Tightening torque:** 49 ± 9 N·m
Torque transfer mechanism part

1. Remove the filler plug.

2. Check that the gear oil level is within the specified range from the bottom end of the filler plug hole.
3. If the gear oil level exceeds the standard value, add the specified gear oil up to the bottom end of the filler plug hole.

   **Specified gear oil:** DIA QUEEN ATF-SP III

4. Fit the filler plug and tighten it to the specified torque.

   **Tightening torque:** 49 ± 9 N·m

**B11. CHECK FLUID LEVEL IN OIL RESERVOIR TANK (vehicles with ACD and AYC)**

1. Remove the maintenance lid located in the luggage compartment.
2. **<Not using MUT-II/III>**
   If the vehicle has been run, leave it for 90 min. or more in an ordinary temperature (10°C – 30°C) to allow the accumulator internal pressure to drop.

   **NOTE:** If the ambient temperature is 10°C or less, allow more time to leave the vehicle to stand idle.
3. **<Using MUT-II/III>**
   Set MUT-II/III to 16 pin diagnostic connector. Turn the ignition switch to the "ON" position, operate MUT-II/III to drive (item 03: directional valve) forcibly, release the pressure in the accumulator.

   **CAUTION**
   Turn the ignition switch to the "LOCK (OFF)" position before connecting or disconnecting the MUT-II/III.

   **NOTE:**
   - To drive (oil level check mode) forcibly, turn the directional valve of the hydraulic unit 20 turns from side to side, release the differential automatically. Drive can also be cleared forcibly using the clear key of MUT-II/III.
   - If the function has been stopped by fail safe, the hydraulic unit cannot be cleared forcibly.

4. Check that the fluid level in the oil reservoir is in the range between MAX and MIN.
5. If the fluid level is lower than MIN, add the specified fluid.

   **Specified fluid:** DIA QUEEN ATF-SP III

6. Reinstall the maintenance lid.

**B12. CHANGE GEAR OIL IN FRONT AND REAR DIFFERENTIAL (Including torque transfer differential)**

**Differential part**

1. Remove the drain plug to discharge the gear oil.
2. Fit the drain plug and tighten it to the specified torque.

   **Tightening torque:** 49 ± 9 N·m
3. Remove the filler plug and add the specified gear oil up to the bottom end of the filler plug hole.

   **Specified gear oil:**
   - **Gear oil API classification GL-5 or higher**
     - Above 10°C: SAE 90
     - Below 10°C: SAE 80W
   - **Amount to use:** 0.55 ± 0.02 L

4. Fit the filler plug and tighten it to the specified torque.

   **Tightening torque:** 49 ± 9 N·m

Torque transfer mechanism part

1. Remove the drain plug to discharge the gear oil.

2. Fit the drain plug and tighten it to the specified torque.

   **Tightening torque:** 49 ± 9 N·m

3. Remove the filler plug.

4. Using the oil suction gun (general service tool), between the body and differential support arm, apply the specified gear oil up to the under of the filler plug hall.

   **Specified gear oil:** DIA QUEEN ATF-SP III
   - **Amount to use:** 0.55 ~ 0.6 L

5. Fit the filler plug and tighten it to the specified torque.

   **Tightening torque:** 49 ± 9 N·m

**B13. CHECK EXHAUST PIPE CONNECTIONS FOR GAS LEAKAGE, AND CHECK PIPE INSTALLATION**

1. Confirm that the exhaust pipe does not interfere with any body components.
2. Check the exhaust pipe for damage by stones, etc.
3. Start the engine and check for gas leaks from the exhaust pipe connections.
C1. CHECK BRAKE PEDAL AND CLUTCH PEDAL FOR FREE PLAY

BRAKE PEDAL FREE PLAY

1. With the engine stopped, depress the brake pedal two or three times. After eliminating the vacuum in the power brake booster, press the pedal down by hand, and confirm that the amount of movement before resistance is met (the free play) is within the standard value.

   Standard value (B): 3 – 8 mm

2. If the brake pedal play is not within the standard value, check the following, and adjust or replace if necessary:
   - Excessive play between the brake pedal and the clevis pin, or between the clevis pin and the brake booster operating rod
   - Brake pedal height
   - Installation position of the stop lamp switch, etc.

CLUTCH PEDAL FREE PLAY

1. Measure the clutch pedal free play (including the play at the clutch pedal clevis pin).

   Standard value: 4 – 13 mm

2. If the clutch pedal free play do not meet the standard value, probably there is air in the hydraulic system or a malfunction of the clutch itself, so bleed out the air or disassemble and inspect the clutch.

C2. CHECK PARKING BRAKE LEVER STROKE AND PLAY

1. Pull the parking brake lever with a force of approx. 200 N and count the number of notches.

   Standard value: 5 – 7 notches

2. If the parking brake lever stroke is not the standard value, adjust as described below.

   (1) Remove the floor console assembly.
   (2) Loosen the adjusting nut to move it to the cable rod end so that the cable will be free.
   (3) Depress the brake pedal repeatedly until the lever has no change in its stroke.

   NOTE: Depressing the brake pedal repeatedly adjusts shoe clearance correctly.

   (4) Turn the adjusting nut to adjust the parking brake lever stroke to the standard value. After adjusting, check that there is no space between the adjusting nut and the parking brake lever. Check that the adjusting nut is secured with the nut holder.

   CAUTION

   If the parking brake lever stroke is below the standard value and the braking is too firm, the rear brakes may drag.

   (5) After adjusting the parking brake lever stroke, jack up the rear end of the vehicle, and then release the parking brake and turn the rear wheels to check that the rear brakes are not dragging.
C3. REPLACE AIR PURIFIER FILTER (POLLEN FILTER)

1. Remove the glove box.
2. Remove the two screws as shown, and replace the air purifier filter.
3. Install the glove box.

C4. CHECK SRS AIRBAG SYSTEM

SRS WARNING LAMP CHECK

Turn the ignition key to the ON position. Does the SRS warning lamp illuminate for about 7 seconds, turn off and then remain extinguished for at least 5 seconds? If yes, SRS system is functioning properly.

SRS COMPONENT VISUAL CHECK

Turn the ignition key to the LOCK position, disconnect the negative battery cable and tape the terminal.

CAUTION

Wait at least 60 seconds after disconnecting the battery cable before doing any further work.

FRONT IMPACT SENSORS

1. Check that the arrow on the front impact sensor label faces towards the front of the vehicle.

CAUTION

1. The SRS may not activate if a front impact sensor is not installed properly, which could result in serious injury or death to the vehicle’s driver and passenger.
2. If a dent, crack, deformation or rust is detected, replace with a new sensor.
3. Check the front side member and front impact sensor for deformation or rust.
4. Check the front impact sensor wiring harness for binding; Check the connector for damage; and check the terminals for deformation. Replace the sensor and/or wiring harness if they fail the visual check.

SRS CONTROL UNIT (SRS-ECU)

1. Check SRS-ECU case and brackets for dents, cracks, deformation or rust.
OPERATIONS INSIDE THE VEHICLE

PERIODIC INSPECTION AND MAINTENANCE

CAUTION

The SRS may not activate if the SRS-ECU is not installed properly, which could result in serious injury or death to the vehicle’s driver or front passenger.

2. Check connector for damage, and terminals for deformation or rust.
   Replace SRS-ECU if it fails visual check.

AIR BAG MODULES, STEERING WHEEL AND CLOCK SPRING

1. Remove the air bag modules, steering wheel and clock spring.
   CAUTION
   The removed air bag modules should be stored in a clean, dry place with the pad cover face up.

2. Check pad cover for dents, cracks or deformation.
3. Check connector for damage, terminals for deformation, and harness for binds.
4. Check air bag inflator case for dents, cracks or deformation.
5. Check harness and connectors for damage, and check the terminals for deformation.

6. Check clock spring connectors and protective tube for damage, and terminals for deformation.
7. Visually check the clock spring case for damage.
   REPLACE ANY VISUALLY INSPECTED PART IF IT FAILS THAT INSPECTION.

8. Align the mating marks of the clock spring and, after turning the vehicle’s front wheels to straight-ahead position, install the clock spring to the column switch.
   Mating Mark Alignment

9. Turn the clock spring clockwise fully, and then turn it back approx. 3 3/4 turns counterclockwise to align the mating marks.
   CAUTION
   If the clock spring’s mating mark is not properly aligned, the steering wheel may not be completely rotational during a turn, or the flat cable within the clock spring may be severed, obstructing normal operation of the SRS and possibly leading to serious injury to the vehicle’s driver or front passenger.

10. Install the steering column covers, steering wheel and the air bag module.
11. Check steering wheel for noise, binds of difficult operation.
12. Check steering wheel for excessive free play.
   CAUTION
   The SRS may not activate if any of the above components is not installed properly, which could result in serious injury or death to the vehicle’s driver or front passenger.
### SEAT BELT WITH PRE-TENSIONER

1. Check the seat belt pre-tensioner for dents or deformation.

2. Check that the seat belt pre-tensioner is installed correctly to the vehicle body.
INSTRUMENT PANEL WIRING
HARNESS/FLOOR WIRING HARNESS

- Air bag module connector <driver's side>
- Clock spring connector
- SRS-ECU connector

- Air bag module connector <passenger's side>
- Front impact sensor connector (LH)
- Front impact sensor connector (RH)

- Seat belt pre-tensioner connector (LH)
- Seat belt pre-tensioner connector (RH)
1. Check connector for poor connection.
2. Check harnesses for binds, connectors for damage, and terminals for deformation.

**REPLACE ANY CONNECTORS OR HARNESS THAT FAIL THE VISUAL INSPECTION**

**CAUTION**
The SRS may not activate if SRS harnesses or connectors are damaged or improperly connected, which could result in serious injury or death to the vehicle’s driver or front passenger.

---

**POST-INSTALLATION INSPECTION**

Reconnect the negative battery terminal. Turn the ignition key to the ON position. Does the SRS warning lamp illuminate for about 7 seconds, turn off and then remain extinguished for at least 5 seconds? If yes, SRS system is functioning properly.

---

**OPERATIONS OUTSIDE THE VEHICLE**

**D1. CHECK UNEVEN TYRE WEAR**

Check the entire periphery of the tyres for uneven wear. If any tyre shows uneven wear, check the toe-in and toe-out, and adjust if necessary.

**TOE-IN**

1. Using a toe-in gauge, measure toe-in.
   
   **Toe-in = B - A**

   **Standard value:**
   
   **At the centre of tyre tread:** $0 \pm 2 \text{ mm}$

   1. Adjust the toe-in by undoing the clip and lock nut, and turning the left and right tie rod turnbuckles by the same amount (in opposite directions).
   
   **NOTE:**
   
   The toe will move out as the left turnbuckle is turned toward the front of the vehicle and the right turnbuckle is turned toward the rear of the vehicle.
   
   2. Install the clip and tighten the lock nut to the specified torque.
   
   **Tightening torque:** $52 \pm 2 \text{ N m}$
   
   3. Confirm that the toe-in is at the standard value.

---
4. Use a turning radius gauge to check that the steering angle is at the standard value.

**Standard value:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner wheels</td>
<td>31°45’ ± 1°30’</td>
</tr>
<tr>
<td>Outer wheels (for reference)</td>
<td>27°15’</td>
</tr>
</tbody>
</table>

**CAMBER, CASTER AND KINGPIN INCLINATION**

**Standard value:**

<table>
<thead>
<tr>
<th>Item (Selectable from 2 options)</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camber</td>
<td>−1°00’ ± 30° or −2°00’ ± 30°</td>
</tr>
<tr>
<td>Caster</td>
<td>3°55’ ± 30°</td>
</tr>
<tr>
<td>Kingpin inclination</td>
<td>13°45’ ± 1°30’</td>
</tr>
</tbody>
</table>

**NOTE:**
1. *: difference between right and left wheels must be less than 30’
2. Caster and kingpin inclination are preset at the factory and cannot be adjusted.

**SELECTION THE CAMBER**

Select the camber by the installation direction of the arrow of the connecting bolt of the strut assembly and the knuckle.
- −1°00’ ± 30’: Install the bolt turning the arrow in the direction of inside the vehicle.
- −2°00’ ± 30’: Install the bolt turning the arrow in the direction of outside the vehicle.

**REAR TOE-IN**

**Standard value:**
At the centre of tyre tread: 3 ± 2 mm

1. Be sure to adjust the camber before making toe adjustment.

2. Carry out adjustment by turning the toe adjusting bolt (assist link mounting bolt which is located on the inner side of the body).

   Left wheel: Turning clockwise (+) toe-in
   Right wheel: Turning clockwise (−) toe-in

**NOTE:**
The scale has gradations of approximately 3.3 mm (single side toe angle equivalent to 19’)

**REAR CAMBER**

**Standard value:** −1°00’ ± 30’
(difference between right and left wheel: less than 30’)

If camber and/or toe-in is not within the standard value, adjust by following procedures.

1. Carry out camber adjustment by turning the camber adjusting bolt (lower arm to rear crossmember mounting bolt.)

   Left wheel: Turning clockwise (+) camber
   Right wheel: Turning clockwise (−) camber

   **NOTE:** The scale has gradations of approximately 14’

2. After adjusting the camber, the toe should be adjusted.
D2. CHECK FRONT WHEEL BEARINGS FOR PLAY

1. Remove the disc brake caliper and suspend it with a wire.
2. Remove the brake disc from the front hub.
3. Attach a dial gauge as shown in the illustration, and then measure the axial play while moving the hub in the axial direction.
   Limit: 0.05 mm
4. If axial play exceeds the limit, replace the front hub assembly.

D3. CHECK BRAKE HOSES AND PIPES FOR LEAKAGE

1. Check entire circumference and length of hoses and pipes.
2. Check all clamps for tightness and connections for leakage.
3. Standard value:
   10.0 mm <Front>
   9.0 mm <Rear>
   Limit: 2.0 mm
2. When the thickness is less than the limit, always replace the pads at an axle set.

D4. CHECK BRAKE PADS AND DISCS FOR WEAR

1. Check the brake pad thickness through the caliper body check port.
3. Using a micrometer, measure disc thickness at eight positions, approximately 45° apart and 10 mm in from the outer edge of the disc.
PERIODIC INSPECTION AND MAINTENANCE
OPERATIONS OUTSIDE THE VEHICLE

Standard value:
32.0 mm <Front>
22.0 mm <Rear>
Limit:
29.8 mm <Front>
20.4 mm <Rear>
4. If the disc thickness is less than the limits, replace it with a new one.

BRAKE DISC RUN-OUT CHECK
1. Remove the brake assembly, and then hold it with wire.
2. Temporarily install the disc with the hub nut.
3. Place a dial gauge approximately 5 mm from the outer circumference of the brake disc, and measure the run-out of the disc.

Limit: 0.03 mm

D5. CHECK BRAKE SHOE LININGS AND DRUMS FOR WEAR

BRAKE LINING THICKNESS CHECK
1. Remove the brake disc.

2. Measure the thickness of the brake lining at several places.
   Standard value (A): 2.8 mm
   Limit (A): 1.0 mm
3. If the thickness of the brake lining is below the limit, replace the shoe and lining assemblies on both sides of the vehicle. Never replace only one side.

BRAKE DRUM INSIDE DIAMETER CHECK
1. Remove the brake disc.

2. Measure the inside diameter of the brake disc in two places or more.
   Standard value (A): 168.0 mm
   Limit (A): 169.0 mm
3. If the inside diameter exceeds the limit, or if it is excessively worn or one side, replace the brake disc.
D6. CHECK FUEL HOSES AND PIPES FOR LEAKAGE OR DETERIORATION

1. Check entire circumference and length of hoses and pipes.
2. Check all clamps for tightness and connections for leakage.

E3. CHANGE ENGINE OIL

1. Start the engine and allow it to warm up until the temperature of the coolant reaches 80°C to 90°C.
2. Stop the engine and remove the engine oil filler cap.
3. Remove the drain plug to drain oil.
   \[ \text{CAUTION} \]
   Use care as oil could be hot.
4. Install a new drain plug gasket so that it faces in the direction shown in the illustration, and then tighten the drain plug to the specified torque.
   \[ \text{Tightening torque: } 39 \pm 5 \text{ N m} \]
5. Refill with specified quantity of oil.
   \[ \text{Specified Engine Oil} \]
   \[ \text{Total quantity (includes volume inside oil filter and oil cooler): } 5.1 \text{ L} \]
6. Remove the dipstick from the engine, and check whether or not the engine oil level is within the range between MAX and MIN.
7. Install the engine oil filler cap.
8. Start the engine and run it for a few minutes.
9. Stop the engine and check the oil level.
OPERATIONS AFTER ENGINE IS WARMED UP

PERIODIC INSPECTION AND MAINTENANCE

Selection of engine oil

1. Use engine oil conforming to the following API classification:

   ACEA and API classifications: “ACEA A1, A2, A3”/“FOR SERVICE SG” or higher

2. Select engine oil of the proper SAE viscosity number according to the atmospheric temperature.

E4. REPLACE ENGINE OIL FILTER

1. Start the engine and allow it to warm up until the temperature of the coolant reaches 80 °C to 90 °C.
2. Remove the engine oil filler cap.
3. Remove the drain plug to drain oil.
4. Use care as oil could be hot.
5. Remove the under cover.
6. Use the commercially-available tool to remove the engine oil filter.
7. Clean the filter bracket side mounting surface.
8. Apply a small amount of engine oil to the O-ring of the new oil filter.
9. Once the O-ring of the oil filter is touching the flange, tighten the oil filter to the specified torque using the commercially-available tool.

   Tightening torque: Approximately 3/4 turn (14 ± 2 N m)

10. Install the drain plug and refill the engine oil.

E5. CHECK ENGINE IDLING SPEED

1. Before inspection, set the vehicle to the pre-inspection condition.
2. Turn the ignition switch to "LOCK" (OFF) position.
3. Connect the MUT-II/III to the diagnosis connector.
4. Connect a timing lamp.
5. Start the engine and let it run at idle.
6. Check that ignition timing is at the standard value.

   Standard value: approximately 5° BTDC

7. Check the idle speed.

   Standard value: 850 ± 100 r/min

   NOTE:
   1. The idle speed is controlled automatically by the idle speed control system.
   2. When using the MUT-II/III, select item No.22 and take a reading of the idle speed.
8. If the idle speed is outside the standard value, inspect the MPI system. (Refer to WORKSHOP MANUAL GROUP 13 – Troubleshooting)

E6. CHECK CO CONCENTRATION

1. Before inspection, set the vehicle to the pre-inspection condition.
2. Turn the ignition switch to “LOCK” (OFF) position.
3. Connect the MUT-II/III to the diagnosis connector.
4. Connect a timing lamp.
5. Start the engine and let it run at idle.
6. Check that ignition timing is at the standard value.
   Standard value: approximately 5° BTDC
7. Run the engine at 2,500 r/min for 2 minutes.
8. Set the CO, HC tester.
9. Check the CO contents and the HC contents at idle.
   Standard value
   CO contents: 0.5% or less
   HC contents: 100 ppm or less
10. If there is a deviation from the standard value, check the following items:
   • Diagnosis output
   • Fuel pressure
   • Injector
   • Ignition coil, spark plug cable, spark plug
   • EGR control system
   • Evaporative emission control system
   • Compression pressure

NOTE:
Replace the three way catalyst when the CO and HC contents are not within the standard value, even though the result of the inspection is normal on all items.

E8. CHECK EXHAUST GAS RECIRCULATION (EGR) SYSTEM

EGR CONTROL VALVE CHECK

1. Remove the EGR valve and inspect for sticking, carbon deposits, etc. If found clean with a suitable solvent so that the valve seats correctly.
2. Connect a hand vacuum pump to the EGR valve.
3. Apply 67 kPa of vacuum, and check that the vacuum is maintained.
4. Apply a vacuum and check the passage of air by blowing through one side of the EGR passage.
5. Replace the gasket, and tighten to the specified torque.
   Tightening torque: 20 ± 2 N·m

EGR CONTROL SOLENOID VALVE CHECK

NOTE:
When disconnecting the vacuum hose, always make a mark so that it can be reconnected at original position.
1. Disconnect the vacuum hose from the solenoid valve.
2. Disconnect the harness connector.
3. Connect a hand vacuum pump to nipple (A) of the solenoid valve.
4. Check air tightness by applying a vacuum with voltage applied directly from the battery to the EGR control solenoid valve and without applying voltage.

5. Measure the resistance between the terminals of the solenoid valve.
   **Standard value:** 29 – 35 Ω (at 20°C)

**OTHERS**

**F1. CHECK BODY CONDITION FOR DAMAGE**
1. Check underbody coating for damage.
2. Check body painting for damage.

**F2. ROAD TEST**
1. Check free play of steering wheel.
2. Check efficiency of service brakes and parking brakes system.
3. Check driveability of engine.
4. Check condition of instruments, gauges, indicators, exterior lamps, heater and ventilators.
5. Check abnormal noise of each part.
6. Check the tyres for wear and for the correct air pressure.