GROUP 12

ENGINE LUBRICATION

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GENERAL INFORMATION

M1121000100454

The lubrication method is a fully force-fed, full-flow filtration type. The engine oil pump is a gear type which is driven by the crankshaft via the timing belt.

ENGINE OILS

HEALTH WARNING

Prolonged and repeated contact with mineral oil will result in the removal of natural fats from the skin, leading to dryness, irritation and dermatitis. In addition, used engine oil contains potentially harmful contaminants which may cause skin cancer. Adequate means of skin protection and washing facilities must be provided.

RECOMMENDED PRECAUTIONS

The most effective precaution is to adapt working practices which prevent, as far as practicable, the risk of skin contact with mineral oils, for example by using enclosed systems for handling used engine oil and by degreasing components, where practicable, before handling them. Other precautions:

- Avoid prolonged and repeated contact with oils, particularly used engine oils.
- Wear protective clothing, including impervious gloves where practicable.
- Avoid contaminating clothes, particularly underpants, with oil.
- Do not put oily rags in pockets, the use of overalls without pockets will avoid this.
- Do not wear heavily soiled clothing and oil-impregnated foot-wear. Overalls must be cleaned regularly and kept separate from personal clothing.
- Where there is a risk of eye contact, eye protection should be worn, for example, chemical goggles or face shields; in addition an eye wash facility should be provided.
- Obtain First Aid treatment immediately for open cuts and wounds.
- Wash regularly with soap and water to ensure all oil is removed, especially before meals (skin cleansers and nail brushes will help). After cleaning, the application of preparations containing lanolin to replace the natural skin oils is advised.
- Do not use petrol, kerosine, diesel fuel, gas oil, thinners or solvents for cleaning skin.
- Use barrier creams, applying them before each work period, to help the removal of oil from the skin after work.
- If skin disorders develop, obtain medical advice without delay.

SERVICE SPECIFICATION

M1121000300265

Item		Standard value
Oil pressure kPa	at idle	29 or more
	at 3,500 r/min	294 – 686

LUBRICANT

M1121000400530

Item		Specification
Engine oil ACEA classification		A1, A2 or A3
Engine oil API classification		SG or higher
Engine oil quantity L	Oil filter	0.3
	Oil cooler	0.3
	Total	5.1

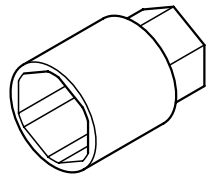
SEALANT

M1121000500269

Item	Specified sealant	Remark
Oil pressure switch	3M ATD Part No. 8660 or equivalent	Semi-drying sealant

SPECIAL TOOLS

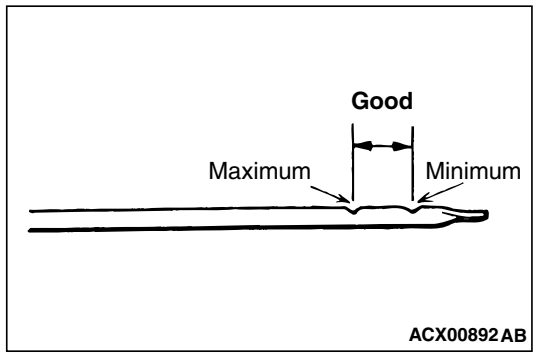
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Tool	Number	Name	Use
	MD998054	Oil pressure switch wrench	Removal and installation of oil pressure switch

ON-VEHICLE SERVICE

ENGINE OIL CHECK

M1121000900438



1. Pull out the engine oil level gauge slowly and check that the oil level is in the illustrated range.
2. Check that the oil is not excessively dirty, that there is no coolant or petrol mixed in, and that it has sufficient viscosity.

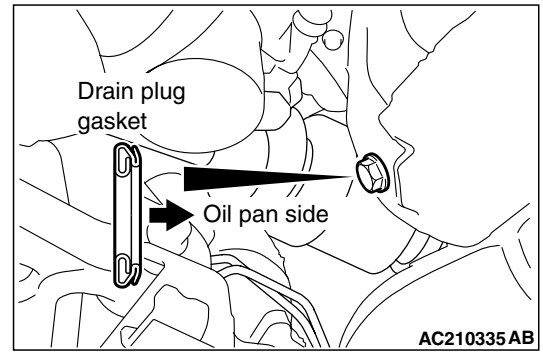
ENGINE OIL REPLACEMENT

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1. Start the engine and allow it to warm up until the temperature of the coolant reaches 80°C to 90°C.

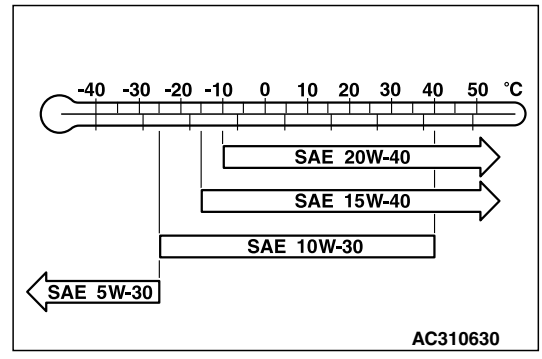
⚠ WARNING
Use care as oil could be hot.

2. Remove the engine oil filler cap.
3. Remove the drain plug to drain oil.



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.

Tightening torque: 39 ± 5 N·m



5. Refill with specified quantity of engine oil.

Specified Engine Oil (ACEA and API classification): ACEA A1, A2 or A3/API SG or higher
Total quantity (Includes volume inside oil filter and oil cooler): 5.1 L

6. Install the engine oil filler cap.
7. Check oil level.

ENGINE OIL FILTER REPLACEMENT

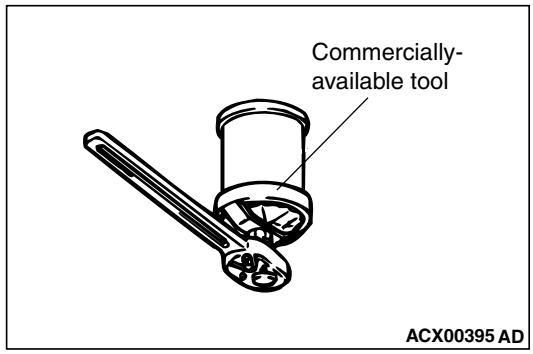
M1121001100468

1. Start the engine and allow it to warm up until the temperature of the coolant reaches 80°C to 90°C.

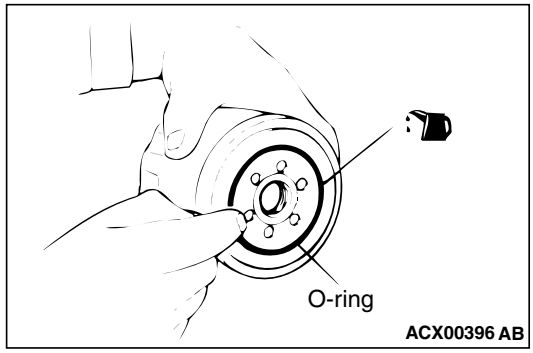
⚠ WARNING

Use care as oil could be hot.

2. Remove the engine oil filler cap.
3. Remove the drain plug to drain oil.
4. Remove the side cover.



5. Use the commercially-available tool to remove the engine oil filter.
6. Clean the filter bracket side mounting surface and ensure the old O-ring has been removed.



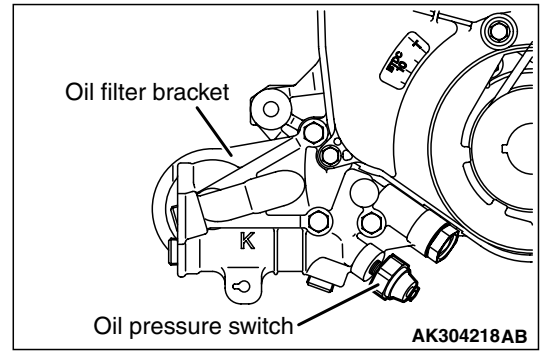
7. Apply a small amount of engine oil to the O-ring of the new oil filter.
8. Where the oil filter O-ring touches the oil pan flange, tighten the oil filter to the specified torque using the commercially-available tool.

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

9. Install the side cover.
10. Install the drain plug and refill engine oil. (Refer to Engine Oil Replacement P.12-3).
11. Rev the engine a few times, and check to be sure that no engine oil leaks from the installation area of the oil filter.

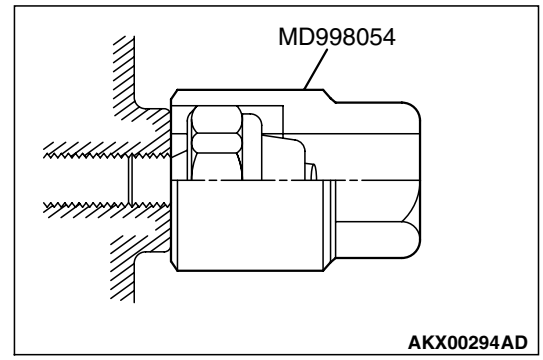
OIL PRESSURE CHECK

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1. Check engine oil quantity.
2. Remove the oil pressure switch terminal.

⚠ CAUTION



Since sealant is applied to the thread of oil pressure switch, take care not to damage the oil pressure switch when removing it.

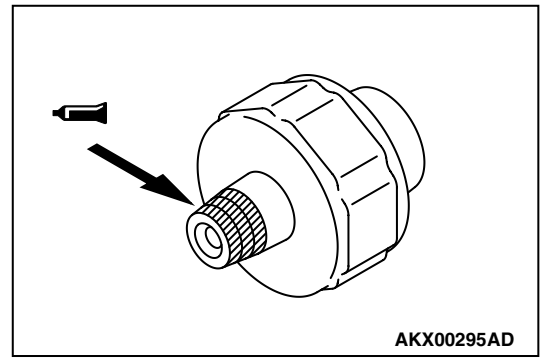
3. Use the special tool Oil pressure switch wrench (MD998054) to remove the oil pressure switch.
4. Install the oil pressure gauge.

   NOTE: Use an adapter of PT 1/8 thread.

5. Run the engine to warm it.
6. After the engine has been warmed up, check that oil pressure is within the standard value.

   Standard value:
   At idle: 29 kPa or more
   At 3,500 r/min: 294 – 686 kPa

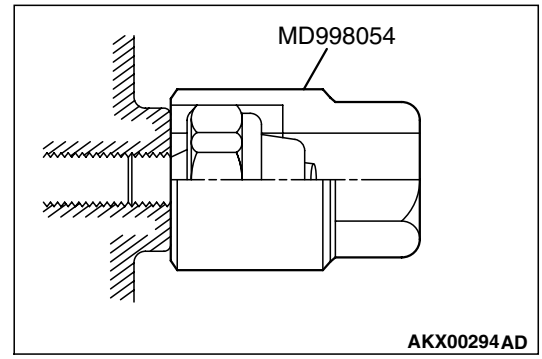
7. Remove the oil pressure gauge.



8. Apply the specified sealant to the thread of oil pressure switch.

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

⚠ CAUTION



Do not start the engine within one hour after the oil pressure switch has been installed.

9. Use the special tool to tighten the oil pressure switch to the specified torque.

   Tightening torque: 10 ± 2 N·m

10. Install the oil pressure switch terminal.

ENGINE OIL COOLER

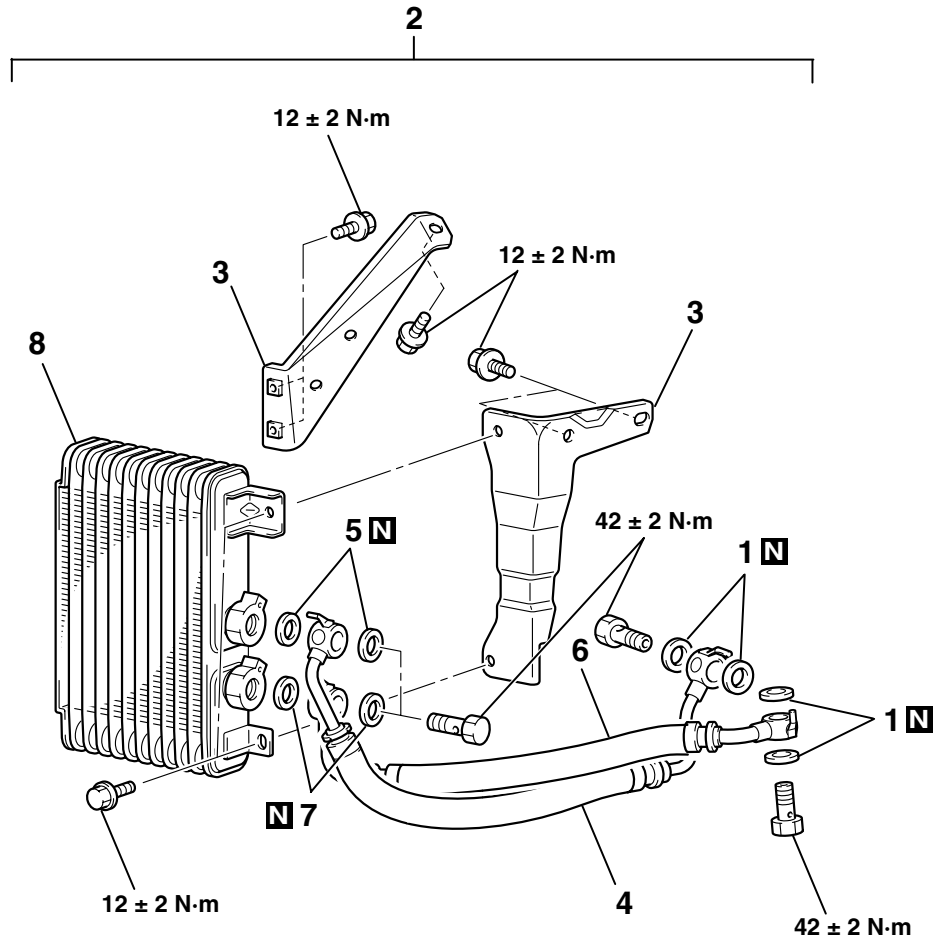
REMOVAL AND INSTALLATION

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⚠ CAUTION

If the vehicle is equipped with the Brembo™ disc brake, during maintenance, take care not to contact the parts or tools to the caliper because the paint of caliper will be scratched.

Pre-removal Operation	Post-installation Operation
• Engine Oil Draining (Refer to P.12-3). • Under Cover Removal (Refer to GROUP 51, Front Bumper P.51-3). • Side Cover Removal	• Side Cover Installation • Under Cover Installation (Refer to GROUP 51, Front Bumper P.51-3). • Engine Oil Refilling (Refer to P.12-3).



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Removal steps

1. Engine oil cooler tube gaskets
2. Engine oil cooler, bracket and hose assembly
3. Engine oil cooler brackets
4. Engine oil cooler feed hose

Removal steps (Continued)

5. Engine oil cooler tube gaskets
6. Engine oil cooler return hose
7. Engine oil cooler tube gaskets
8. Engine oil cooler