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# LUBRICATION

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## GENERAL INFORMATION

### 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.

## SPECIFICATIONS

### GENERAL SPECIFICATIONS

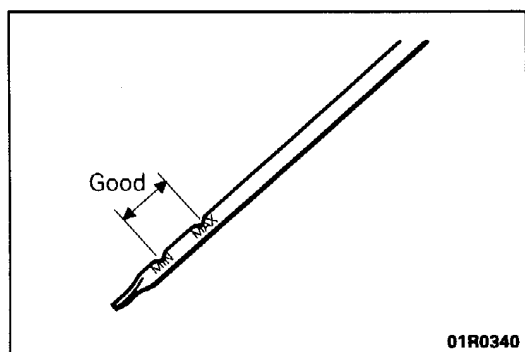
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Items		DOHC
Engine oil cooler Performance	J/h (kcal/h, BTU/h)	20,930 × 10 <sup>3</sup> (5,000, 19,841)

### LUBRICANTS

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Items		SOHC	DOHC
Engine oil			
Quantity	lit (U.S.qts, Imp.qts.)		
Oil pan		4.0 (4.2, 3.5)	4.0 (4.2, 3.5)
Oil filter		0.3 (0.32, 0.26)	0.3 (0.32, 0.26)
Oil cooler		0.1 (0.11, 0.09)	0.3 (0.32, 0.26)
Brand (API classification)		SG or higher	SG or higher



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## SERVICE ADJUSTMENT PROCEDURES

### ENGINE OIL INSPECTION

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1. Pull out the oil level gauge and remove oil adhered to the level gauge, wiping with clean cloth.
2. Insert the level gauge into the oil level gauge guide.
3. Pull out the level gauge slowly and check that the oil level is in the illustrated range.

#### NOTE

1. For this inspection, place the vehicle on a level surface.
2. Check while the engine is stationary. If the engine has been started, stop it and allow for some time before inspection.
4. If below the minimum level, supply with specified oil.

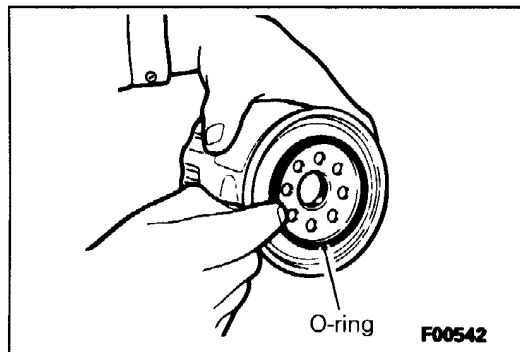
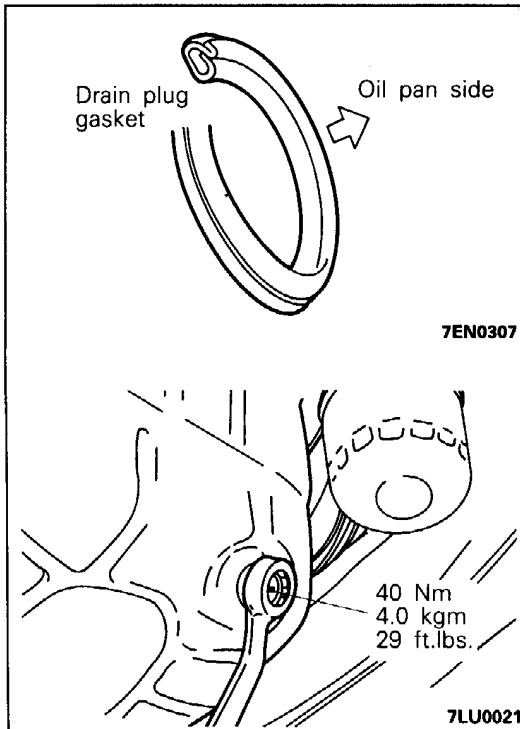
**Specified oil: (API classification)**

**SG or higher**

#### Caution

**Refilling beyond the maximum level has adverse effect on engine performance.**

5. Run the engine at idle and stop. Then allow some time and check oil level again to make sure it is within the specified range.
6. Check to ensure that the oil is not noticeably dirty or mixed with coolant or gasoline, and that it has the proper viscosity.



## ENGINE OIL REPLACEMENT

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1. Warm up the engine and then remove the filler cap.
2. Drain the engine oil by removing the drain plug.
3. Replace the gasket with a new part, install it in the direction shown in the illustration, and tighten the drain plug to the specified torque.
4. Fill with new engine oil through the oil filler.

**Specified oil (API classification): SG or higher**

**Oil quantity: 4.0 lit. (4.2 U.S.qts., 3.5 Imp.qts.)  
(excluding residual oil in the oil filter and oil cooler)**

### Caution

**Cover the alternator with a rag so that if the oil is spilt it will not get on the alternator (DOHC engine).**

5. Start the engine and let it idle for a few minutes.
6. Stop the engine and check the oil level with the level gauge.

## OIL FILTER REPLACEMENT

E12FBAC

1. Remove the filler cap.
2. Drain the engine oil by removing the oil drain plug.
3. Use an oil filter wrench to remove the engine oil filter.
4. Clean the surface of the filter bracket attachment.
5. Lubricate the O-ring of the new oil filter with a small amount of engine oil.
6. Screw in the oil filter by hand, and after the O-ring contacts the flange surface, tighten it another 3/4 turns with a filter wrench. etc. [approx. 14 Nm (1.4 kgm, 10 ft.lbs.)]
7. Refill the engine oil.
8. Race the engine two or three times to make sure that no engine oil leaks from the oil filter seal.

**ENGINE OIL COOLER <DOHC>  
REMOVAL AND INSTALLATION**

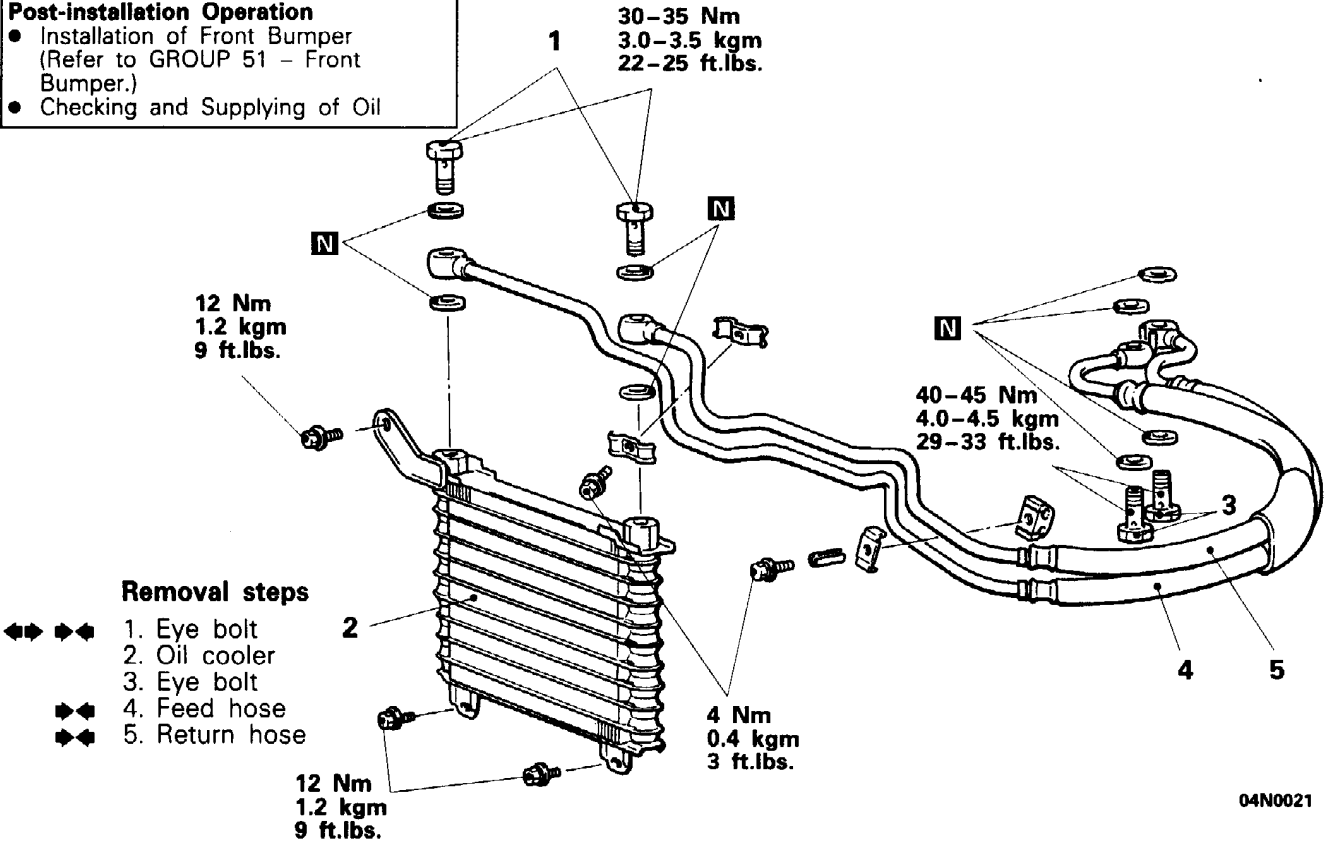
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**Pre-removal Operation**

- Removal of Front Bumper  
(Refer to GROUP 51 – Front Bumper.)

**Post-installation Operation**

- Installation of Front Bumper  
(Refer to GROUP 51 – Front Bumper.)
- Checking and Supplying of Oil



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**SERVICE POINT OF REMOVAL**

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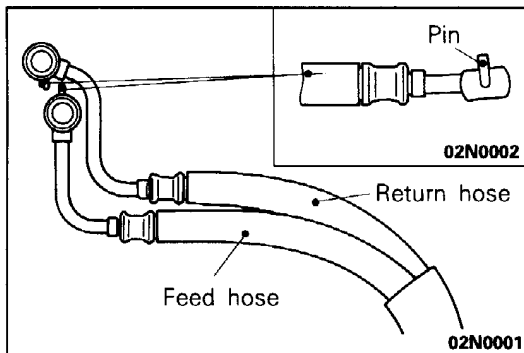
**1. REMOVAL OF EYE BOLT****Caution**

Be sure to hold the weld nut of the oil cooler while loosening the eye bolt.

**INSPECTION**

E12JCAE

- Check for foreign material between oil cooler fins.
- Check the oil cooler fins for bend or damage.
- Check the oil cooler and cooler hoses for cracks, damage, clogging or deterioration.
- Check the eye bolts for clogging.

**SERVICE POINTS OF INSTALLATION**

E12JDAG

**5. INSTALLATION OF RETURN HOSE/4. FEED HOSE (ENGINE SIDE)**

Insert the eye joint pin into the oil filter bracket hole and install as shown in the diagram.

**1. INSTALLATION OF EYE BOLT****Caution**

Be sure to hold the weld nut of the oil cooler while tightening the eye bolt.