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# ENGINE LUBRICATION

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# ENGINE LUBRICATION

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12109000020

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## GENERAL INFORMATION

12100010022

The lubrication method is a fully force-fed, full-flow filtration type. The oil pump is a trochoid type which is directly mounted to the crankshaft.

### 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.

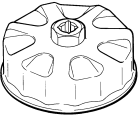
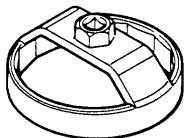
**LUBRICANTS**

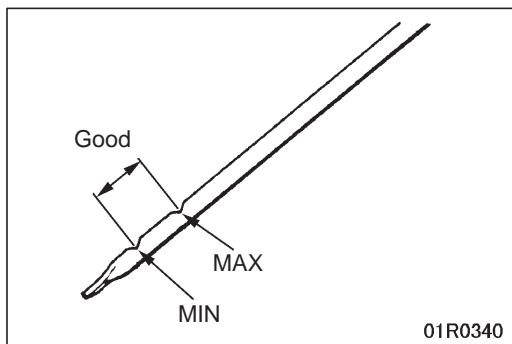
12100040243

Items		Engine oil (API classification)	Quantity ℓ
Oil filter		SG or higher	0.3
Total quantity	GDI		3.8
	MPI		3.3

**SPECIAL TOOLS**

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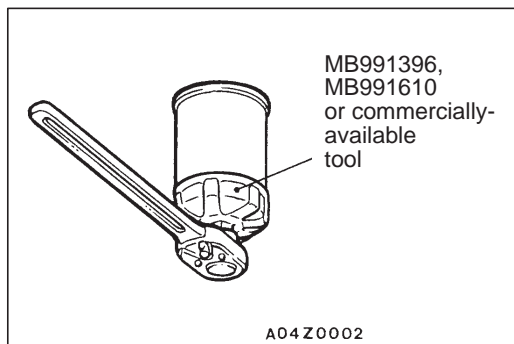
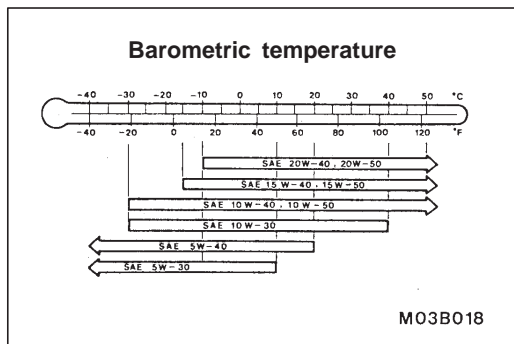
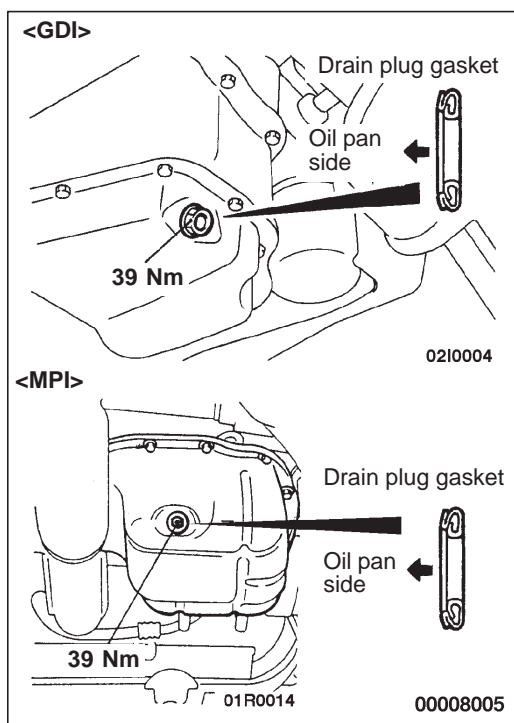
Tool	Number	Name	Use
	MB991396	Oil filter wrench	Removal and installation of engine oil filter (When using the oil filter of MD135737)
 B991610	MB991610	Oil filter wrench	Removal and installation of engine oil filter (When using the oil filter of MD136466)

**ON-VEHICLE SERVICE**

12100090125

**ENGINE OIL INSPECTION**

1. Pull out the 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 gasoline mixed in, and that it has sufficient viscosity.

**ENGINE OIL REPLACEMENT**

12100100255

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.

**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.

5. Refill with specified quantity of oil.

**Specified Engine Oil (API classification): SG or higher****Total quantity (Includes volume inside oil filter):****<GDI> 3.8 ℓ****<MPI> 3.3 ℓ**

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

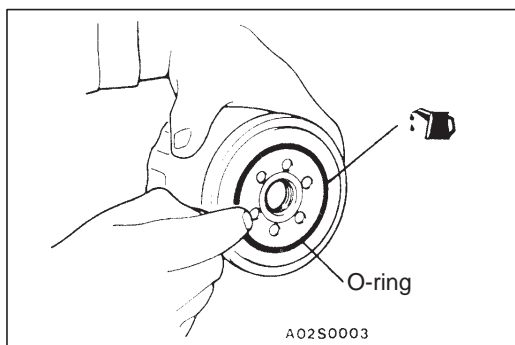
**OIL FILTER REPLACEMENT**

12100110241

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.

**Caution****Use care as oil could be hot.**

4. Use the following tools to remove the engine oil filter from the underside of the vehicle.
  - MD991396 or equivalent (When using the oil filter of MD135737)
  - MD991610 or equivalent (When using the oil filter of MD136466)
  - Commercial tool (When using the oil filter except for MD135737 and MD136466)
5. Clean the filter bracket side mounting surface.



6. Apply a small amount of engine oil to the O-ring of a new oil filter.
7. Once the O-ring of the oil filter is touching the flange, use the respective tool in the following table to tighten the oil filter to the specified torque.
8. Install the drain plug and refill the engine oil. (Refer to Engine Oil Replacement in P.12-4.)
9. Race the engine 2–3 times, and check to be sure that no engine oil leaks from installation section of the oil filter.

Number	Tool	Tightening torque
MD135737	MB991396 or equivalent tool	Approx. 1 turn (14 Nm)
MD136466	MB991610 or equivalent tool	Approx. 3/4 turn (17 Nm)
MD322508	Commercially–available tool	Approx. 3/4 turn (16 Nm)
MD325714 and MD332687		

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## NOTES

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# ENGINE LUBRICATION

## CONTENTS

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<b>LUBRICANT &lt;F9QT&gt;</b> .....	<b>2</b>	Engine Oil Replacement .....	2
		Oil Filter Replacement .....	3

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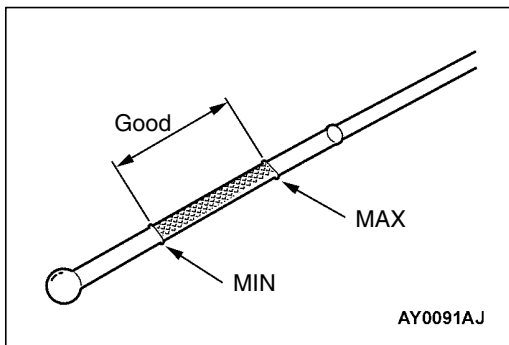


**GENERAL****OUTLINE OF CHANGE**

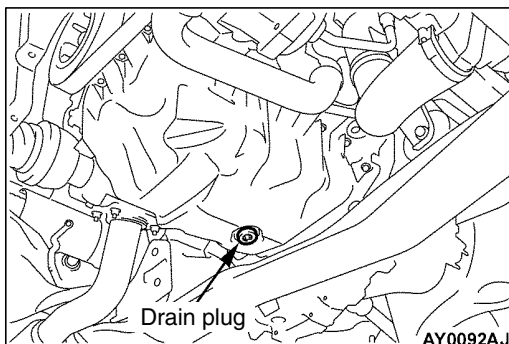
The following service procedures have been established to correspond to the addition of the F9QT diesel engine. Other service procedures are the same as before.

**LUBRICANT <F9QT>**

Items	Engine oil	Quantity L
Oil filter	CCMC classification For SERVICE PD2, ACEA classification For SERVICE B2-96 or B3-96	0.14
Total quantity		5.04

**ON-VEHICLE SERVICE <F9QT>****ENGINE OIL INSPECTION**

1. Pull out the 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 gasoline mixed in, and that it has sufficient viscosity.

**ENGINE OIL REPLACEMENT**

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 under cover.
4. Remove the drain plug to drain oil.

**Caution**

**Use care as oil could be hot.**

5. Fit the drain plug after oil has been drained completely.

**NOTE**

Tightening torque: 25 Nm

6. Refill with specified quantity of oil.

**Specified Engine Oil:**

**CCMC classification For SERVICE PD2**

**ACEA classification For SERVICE B2-96 or B3-96**

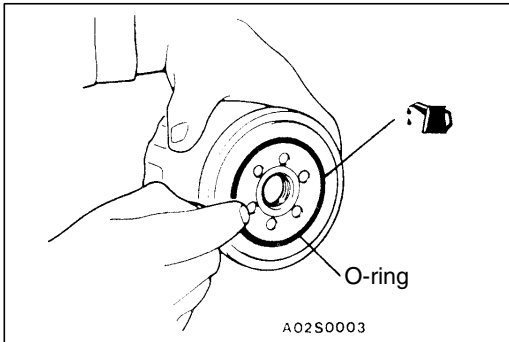
**Total quantity (Includes volume inside oil filter):**

**5.04 L**

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

**OIL FILTER REPLACEMENT**

1. After removing the engine oil filler cap, remove the engine oil drain plug to drain the engine oil.
2. Use the oil filter wrench to remove the engine oil filter.
3. Clean the cylinder block side mounting surface.



4. Apply a small amount of engine oil to the O-ring of a new oil filter.
5. Use the oil filter wrench to install the engine oil filter.

**NOTE**

Tightening torque: 10 – 14 Nm

6. Fill with engine oil.
7. Race the engine 2 – 3 times, and check to be sure that no engine oil leaks from installation section of the oil filter.


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## NOTES



# SERVICE BULLETIN

QUALITY INFORMATION ANALYSIS  
OVERSEAS SERVICE DEPT. MITSUBISHI MOTORS CORPORATION

<b>SERVICE BULLETIN</b>		No.: MSB-00E12-502	
		Date: 2001-07-11	
<b>Subject:</b> CORRECTION OF DESCRIPTIONS CONCERNING OIL FILTER WRENCH		<b>&lt;Model&gt;</b> (EC)GALANT(EA0) (EC)SPACE STAR (DG0A) (EC)SPACE RUNNER/SPACE WAGON (N60,N80,N90) (EC)PAJERO SPORT (K80W,K90W) (EC)L200(K60,K70)	<b>&lt;M/Y&gt;</b> 97-99 99-99 99-99 99-99 97-97
<b>Group:</b> ENGINE LUBRICATION		<b>Draft No.:</b> 00AL092714	
<b>CORRECTION</b>	INTERNATIONAL CAR ADMINISTRATION OFFICE	 J. MASAKI - MANAGER TECHNICAL SERVICE PLANNING	

## 1. Description:

This Service Bulletin informs you that correction has been made of descriptions concerning the oil filter wrench.

## 2. Applicable Manuals:

Manual	Pub. No.	Language	Page(s)
'97 GALANT Workshop Manual chassis	PWDE9611	(English)	12-3, 4, 5
	PWDS9612	(Spanish)	
	PWDF9613	(French)	
	PWDG9614	(German)	
	PWDD9615	(Dutch)	
	PWDW9616	(Swedish)	
'99 GALANT Workshop Manual chassis	PWDE9611-A	(English)	12-2, 4
	PWDS9612-A	(Spanish)	
	PWDF9613-A	(French)	
	PWDG9614-A	(German)	
	PWDD9615-A	(Dutch)	
	PWDW9616-A	(Swedish)	
'99 GALANT Workshop Manual chassis CD-ROM	PWDH9821R	(English)	
	PWDH9821R	(Spanish)	
	PWDH9821R	(French)	
	PWDK9817R	(German)	
	PWDK9817R	(Dutch)	
	PWDK9817R	(Swedish)	

<b>Manual</b>	<b>Pub. No.</b>	<b>Language</b>	<b>Page(s)</b>
'99 SPACE STAR Workshop Manual chassis	CMXE99E1	(English)	12-3, 4, 5
	CMXS99E1	(Spanish)	
	CMXF99E1	(French)	
	CMXG99E1	(German)	
	CMXD99E1	(Dutch)	
	CMXW99E1	(Swedish)	
	CMXI99E1	(Italian)	
'99 SPACE RUNNER/SPACE WAGON Workshop Manual chassis	PWDE9803	(English)	12-3, 5
	PWDS9804	(Spanish)	
	PWDF9805	(French)	
	PWDG9806	(German)	
	PWDD9807	(Dutch)	
	PWDW9808	(Swedish)	
'99 SPACE RUNNER/SPACE WAGON Workshop Manual chassis CD-ROM	PWDH9816R	(English)	
	PWDH9816R	(Spanish)	
	PWDH9816R	(French)	
	PWDK9817R	(German)	
	PWDK9817R	(Dutch)	
	PWDK9817R	(Swedish)	
'99 PAJERO SPORT Workshop Manual chassis	PWJE9812	(English)	12-3, 4, 5
	PWJS9813	(Spanish)	
	PWJF9814	(French)	
	PWJG9815	(German)	
'99 PAJERO SPORT Workshop Manual chassis CD-ROM	PWJT9818R	(English)	
	PWJT9818R	(Spanish)	
	PWJT9818R	(French)	
	PWJT9818R	(German)	
'97 L200 Workshop Manual chassis	PWTE96E1	(English)	12-3, 4
	PWTS96E1	(Spanish)	
	PWTF96E1	(French)	
	PWTG96E1	(German)	

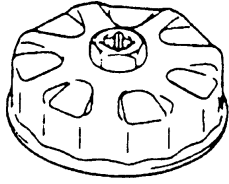
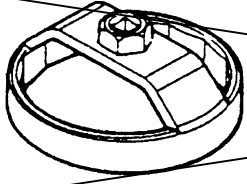
**LUBRICANTS**

12100040151

Items		4G6	6A1	4D6
Engine oil (API classification)		SG or higher	SG or higher	CD or higher
Engine oil quantity <i>ℓ</i>	Oil filter	0.3	0.3	0.8
	Oil cooler	-	0.1	0.3
	Total	4.3	4.3	5.1

**SPECIAL TOOLS**

12100100163

Tool	Number	Name	Use
 B991396	MB991396	Oil filter wrench	Removal and installation of engine oil filter (when using the oil filter of MD135737) <4G6>
 B991610	MB991610	Oil filter wrench	Removal and installation of engine oil filter (When using the oil filter of MD136466) <6A1>

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**ON-VEHICLE SERVICE**

12100090095

**ENGINE OIL CHECK**

1. Pull out the 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 gasoline mixed in, and that it has sufficient viscosity.

**ENGINE OIL REPLACEMENT**

12100100163

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.

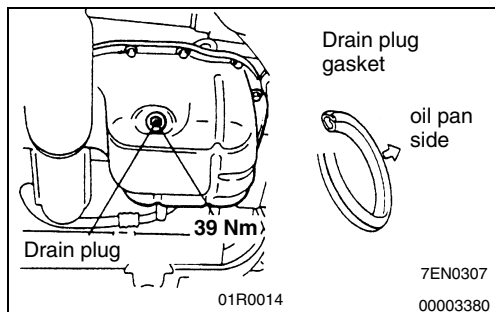
**Caution**

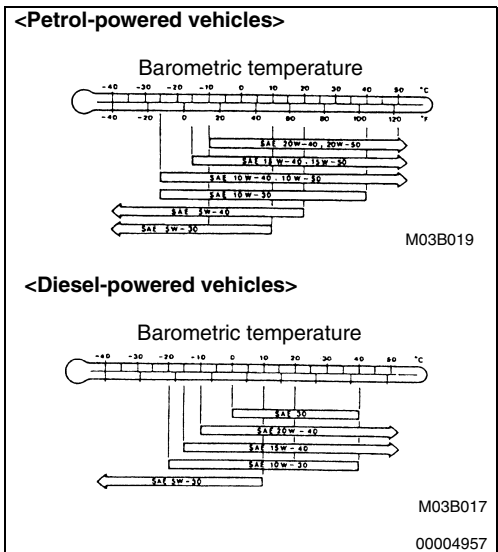
**Use care as oil could be hot.**

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.

**NOTE**

Install the drain plug gasket so it faces in the direction shown in the illustration.





5. Refill with specified quantity of oil

**Specified Engine Oil (API classification):**

<4G6, 6A1> SG or higher

<4D6> CD or higher

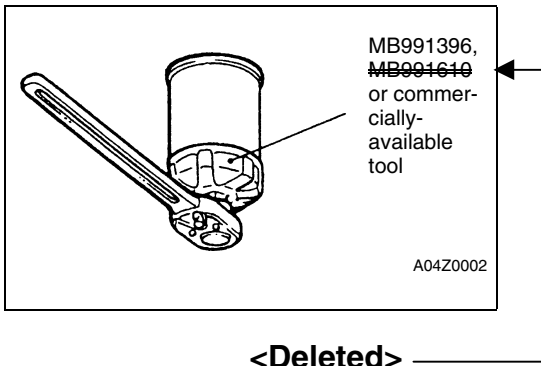
**Total quantity (includes volume inside oil filter and oil cooler):**

<4G6, 6A1> 4.3 ℓ

<4D6> 5.1 ℓ

6. Install the engine oil filler cap.

7. Check oil level.



**OIL FILTER REPLACEMENT**

12100110159

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.

**Caution**

**Use care as oil could be hot.**

4. Use the respective tool in the following table to remove the engine oil filter.

**Caution**

**For vehicles with 6A1 engine, the oil which is still inside the oil filter may overflow from the oil guide groove and get onto the starter motor. To prevent this, the oil inside the filter should be gradually removed while removing the oil filter.**

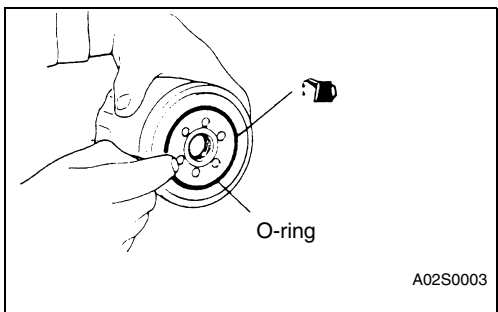
5. Clean the filter bracket side mounting surface.

6. Apply a small amount of engine oil to the O-ring of the new oil filter.

7. Once the O-ring of the oil filter is touching the flange, use the respective tool in the following table to tighten to the specified torque.

8. Install the drain plug and refill engine oil. (Refer to Engine Oil Replacement on P.12-3.)

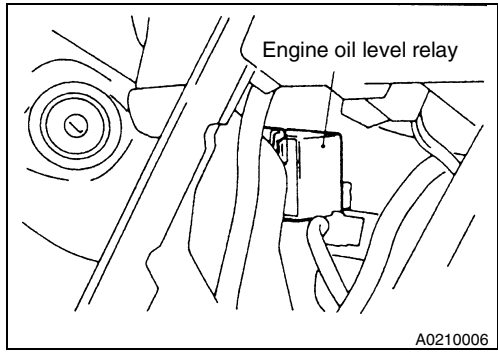
9. Race the engine 2-3 times, and check to be sure that no engine oil leaks from installation section of the oil filter.



Number	Engine	Tool	Tightening torque
MD135737	4G6	MB991396 or equivalent tool	Approx. 1 turn (14 Nm)
MD136466	6A1	<del>MB991610 or equivalent tool</del>	Approx. 3/4 turn (17 Nm)
MD336080	4D6	Commercially-available tool	Approx. 1-1/8 turns (20 Nm)

<Correct>

Commercially-available tool



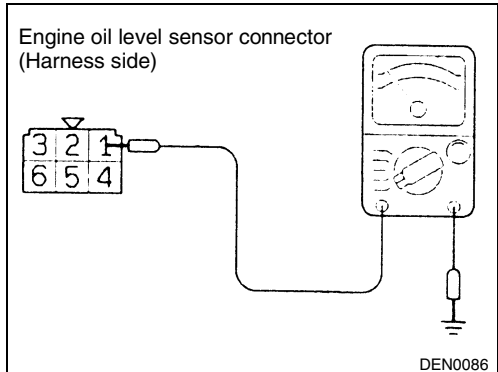
**OIL LEVEL WARNING SYSTEM**

12100200047

1. Check that the proper amount of oil has been filled.
2. When the ignition switch is turned to ON (do not start the engine), check that the oil level warning lamp illuminates.

**NOTE**

If the oil level warning lamp does not illuminate, the cause is probably a blown lamp, or a malfunction in the relay.



3. When the engine is started, check that the oil level warning lamp turns off.

If the oil level warning lamp will not go out, disconnect the connector of the oil level relay and measure the voltage of the No. 1 terminal on the harness side of the connector while idling the engine in order to confirm that it is the same as the battery voltage.

**NOTE**

- (1) If the voltage at the connector is the same as the battery voltage, the problem is probably a malfunction of either the oil level relay or the oil level sensor.
- (2) If the voltage at the connector is lower than the battery voltage, the problem is probably a malfunction of either the alternator or the wiring harness.

4. Disconnect the oil level sensor connector. Check that the oil level warning lamp illuminates after approximately 40 seconds.

If the oil level warning lamp does not illuminate, replace the oil level relay.



# GENERAL

## OUTLINE OF CHANGE

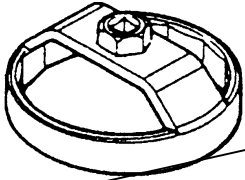
4G64-GDI engines have been introduced. Accordingly, service procedures have been added as follows.

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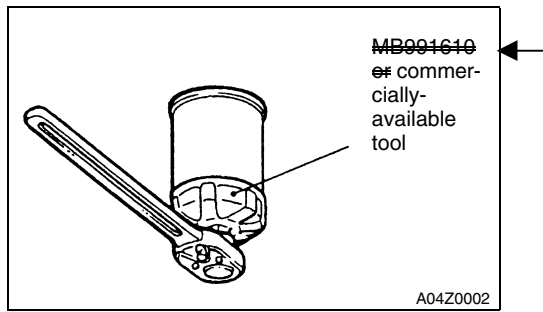
# LUBRICANTS

Items	4G64	
Engine oil (API classification)	SG or higher	
Engine oil quantity ℓ	Oil filter	0.3
	Total	4.3

# SPECIAL TOOL

Tool	Number	Name	Use
 B991610	MB991610	Oil filter wrench	Removal and installation of engine oil filter (When using the oil filter of MD136466 and MD356000)

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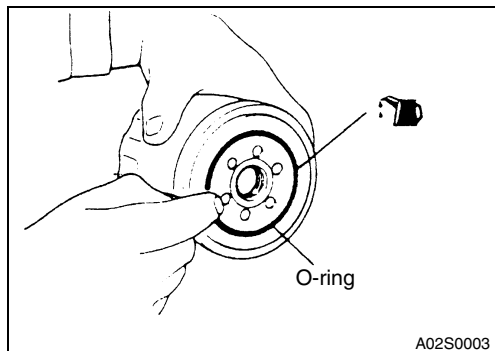
### OIL FILTER REPLACEMENT

1. Start the engine and warm it up until coolant reaches 80°C to 90°C.
2. Remove the engine oil filler cap.
3. Remove the drain plug to drain oil.

#### Caution

**Use care as oil could be hot.**

4. Remove the under cover.
5. Use the respective tool in the following table to remove the engine oil filter.
6. Clean the filter bracket side mounting surface.



7. Apply a small amount of engine oil to the O-ring of the new oil filter.
8. Once the O-ring of the oil filter is touching the flange, use the respective tool in the following table to tighten to the specified torque.
9. Install the drain plug and refill engine oil. (Refer to Engine Oil Replacement on P.12-3.)
10. Race the engine 2-3 times, and check to be sure that no engine oil leaks from installation section of the oil filter.

Number	Tool	Tightening torque
MD136466	<del>MB001610 or equivalent tool</del>	Approx. 3/4 turns (17 Nm)
MD322508	Commercially-available tool	Approx. 3/4 turns (17 Nm)
MD356000	<del>MB001610 or equivalent tool</del>	Approx. 3/4 turns (14 Nm)

<Incorrect>

<Correct>

Commercially-available tool

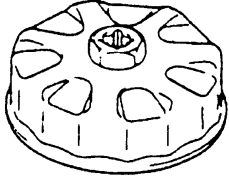
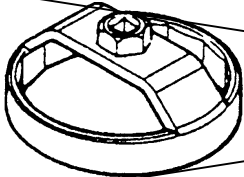
**LUBRICANTS**

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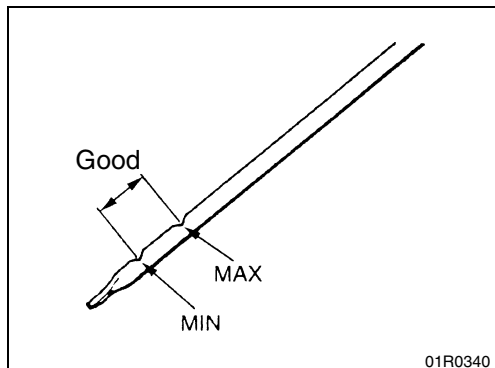
Items		Engine oil (API classification)	Quantity <i>ℓ</i>
Oil filter		SG or higher	0.3
Total quantity	GDI		3.8
	MPI		3.3

**SPECIAL TOOLS**

12100060140

Tool	Number	Name	Use
	MB991396	Oil filter wrench	Removal and installation of engine oil filter (when using the oil filter of MD135737)
	MB991610	Oil filter wrench	Removal and installation of engine oil filter (When using the oil filter of MD136466)

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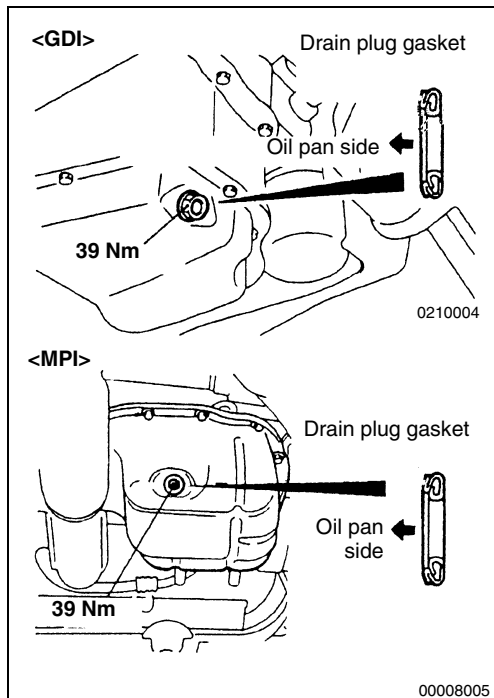


**ON-VEHICLE SERVICE**

12100090125

**ENGINE OIL INSPECTION**

1. Pull out the 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 gasoline mixed in, and that it has sufficient viscosity.



### ENGINE OIL REPLACEMENT

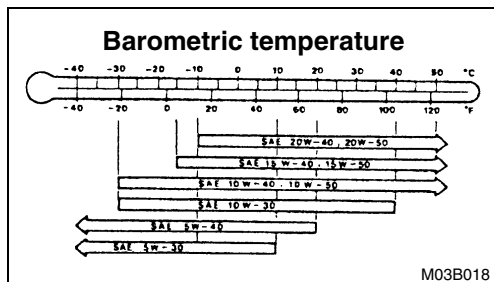
12100100255

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.

#### Caution

Use care as oil could be hot.

4. Install a new drain plug gasket so it faces in the direction shown in the illustration, and then tighten the drain plug to the specified torque.



5. Refill with specified quantity of oil.  
**Specified Engine Oil (API classification): SG or higher**  
**Total quantity (Includes volume inside oil filter):**

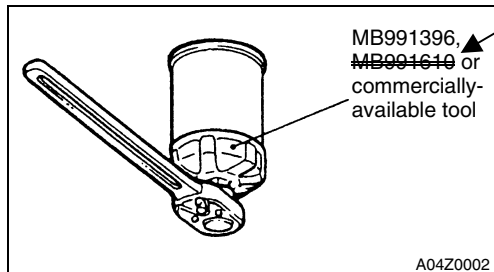
**<GDI> 3.8 l**  
**<MPI> 3.3 l**

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

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### OIL FILTER REPLACEMENT

12100110241

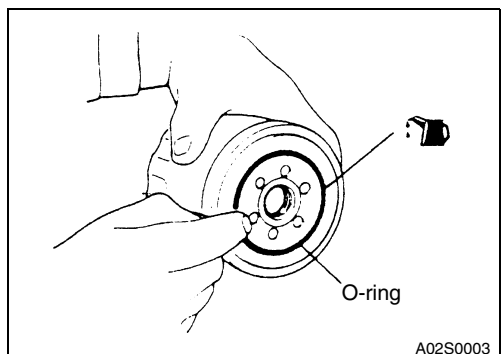


1. Start the engine and allow it to warm up until the temperature of the coolant reaches 80°C to 90°C.
2. Remove the engine oil filler cap.
3. Remove the drain plug to drain oil.

#### Caution

Use care as oil could be hot.

4. Use the following tools to remove the engine oil filter from the underside of the vehicle.
  - MB991396 or equivalent (When using the oil filter of MD135737)
  - MB991610 or equivalent (When using the oil filter of MD136466)
  - Commercial tool (When using the oil filter except MD135737 and MD136466)
5. Clean the bracket side mounting surface.



6. Apply a small amount of engine oil to the O-ring of a new oil filter
7. Once the O-ring of the oil filter is touching the flange, use the respective tool in the following table to tighten the oil filter to the specified torque.
8. Install the drain plug and refill engine oil. (Refer to Engine Oil Replacement in P.12-4.)
9. Race the engine 2-3 times, and check to be sure that no engine oil leaks from installation section of the oil filter.

Number	Tool	Tightening torque
MD135737	MB991396 or equivalent tool	Approx. 1 turn (14 Nm)
MD136466	<del>MB991610 or equivalent tool</del>	Approx. 3/4 turn (17 Nm)
MD322508	Commercially-available tool	
MD325714 and MD332687		Approx. 3/4 turn (16 Nm)

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**SERVICE SPECIFICATIONS**

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

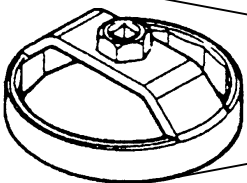
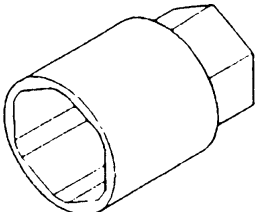
**SEALANT**

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

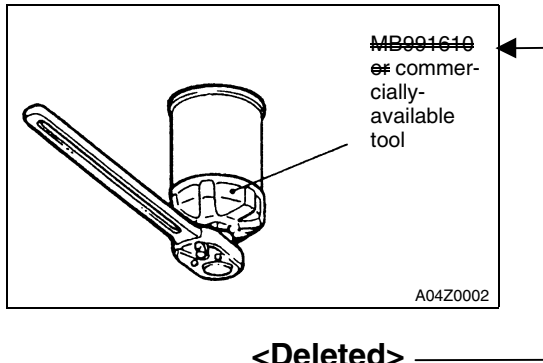
**LUBRICANTS**

Items		Specifications
Engine oil (API classification)		SG or higher
Engine oil quantity ℓ	Oil filter	0.3
	Total	3.8

**SPECIAL TOOLS**

Tool	Number	Name	Use
 B991610	MB991610	Oil filter wrench	Removal and installation of engine oil filter (When using the oil filter of MD136466 and MD356000)
	MD998054	Oil pressure switch wrench	Removal and installation of oil pressure switch

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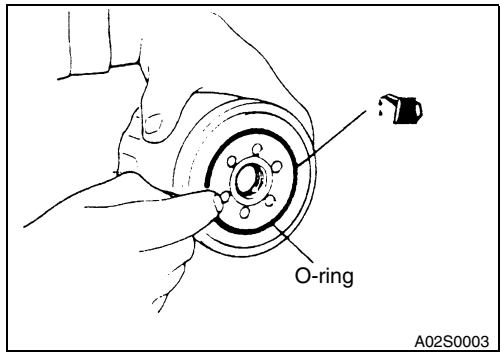
**OIL FILTER REPLACEMENT**

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.

**Caution**

**Use care as oil could be hot.**

4. Remove the under cover.
5. Use the respective tool in the following table to remove the engine oil filter.
6. Clean the filter bracket side mounting surface.



7. Apply a small amount of engine oil to the O-ring of the new oil filter.
8. Once the O-ring of the oil filter is touching the flange, use the respective tool in the following table to tighten to the specified torque.
9. Install the drain plug and refill engine oil. (Refer to Engine Oil Replacement on P.12-3.)
10. Race the engine 2-3 times, and check to be sure that no engine oil leaks from installation section of the oil filter.

Number	Tool	Tightening torque
MD136466	<del>MD001610 or equivalent tool</del>	Approx. 3/4 turn (17 Nm)
MD322508	Commercially-available tool	Approx. 3/4 turn (17 Nm)
MD356000	<del>MD001610 or equivalent tool</del>	Approx. 3/4 turn (14 Nm)

**<Incorrect>**

**<Correct>**

Commercially-available tool

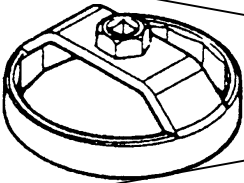
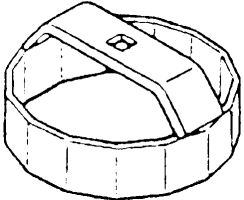
**LUBRICANTS**

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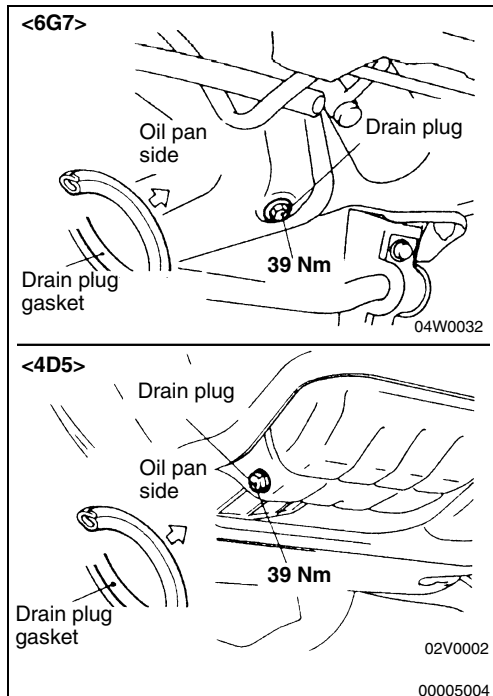
Items		6G7	4D5
Engine oil API classification		SG or higher	CD or higher
Engine oil quantity <i>ℓ</i>	Oil filter	0.3	0.8
	Oil cooler	-	0.4
	Total	4.5	6.5

**SPECIAL TOOLS**

12100060171

Tool	Number	Name	Use
 8991610	MB991610	Oil filter wrench	Removal and installation of engine oil filter (When using the oil filter of MD352626) <6G7>
 H061590	MH061590	Oil filter wrench	Removal and installation of engine oil filter (When using the oil filter of MD069782 or MD326489) <4D5>

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**ON-VEHICLE SERVICE**  
**ENGINE OIL CHECK**

12100090149

1. Check the engine oil using the oil level gauge.
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**

12100100286

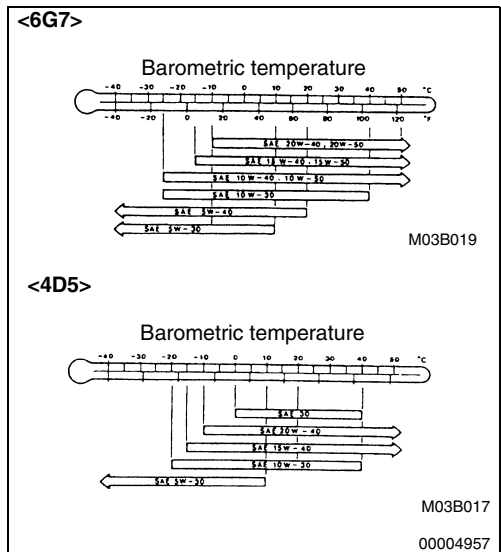
1. Start the engine and allow it to warm up until the temperature of the coolant reaches 80°C to 90°C.
2. Remove the engine oil filler cap.
3. Remove the drain plug to drain oil.

**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.





5. Refill with specified quantity of oil.

**Specified Engine Oil (API classification):**

**<6G7> SG or higher**

**<4D5> CD or higher**

**Total quantity (includes volume inside oil filter and oil cooler):**

**<4G7> 4.5 ℓ**

**<4D5> 6.5 ℓ**

6. Install the engine oil filler cap.

7. Check oil level.

**OIL FILTER REPLACEMENT**

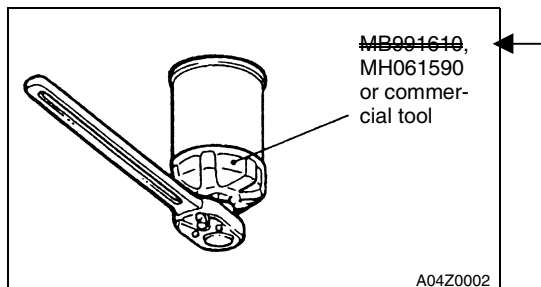
12100110272

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 under cover.
4. Remove the drain plug to drain oil

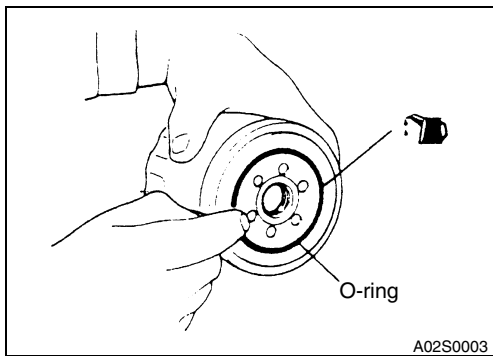
**Caution**

**Use care as oil could be hot.**

5. Remove the air cleaner, and cover the alternator with a rag so that oil will not get on the alternator. <4D56>
6. Use the respective tool in the following table to remove the engine oil filter.
7. Clean the filter bracket side mounting surface and ensure the old O-ring has been removed.



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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, use the respective tool in the following table to tighten to the specified torque.
10. Install the drain plug and refill engine oil. (Refer to P.12-3, Engine Oil Replacement.)

**Specified Engine Oil (API classification):**

- <6G7> SG or higher
- <4D5> CD or higher

**Total quantity (Includes volume inside oil filter and oil cooler):**

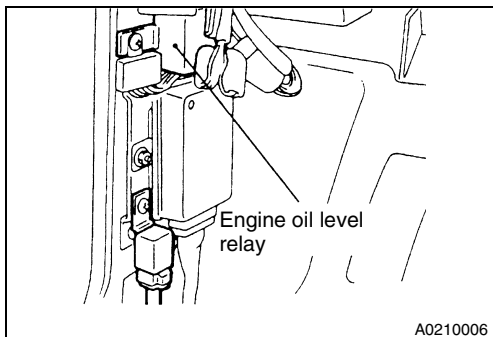
- <6G7> 4.5 ℓ
- <4D5> 6.5 ℓ

11. Race the engine a few times, and check to be sure that no engine oil leaks from the installation section of the oil filter.

Number	Engine	Tool	Tightening torque
MD352626	6G7	<del>MB991610 or equivalent tool</del>	Approx. 3/4 turn (14 Nm)
MD069782	4D5	MH061590 or equivalent tool	Approx. 5/8 turn (20 Nm)
MD326489			Approx. 3/4 turn (22 Nm)

**<Correct>**

Commercially-available tool



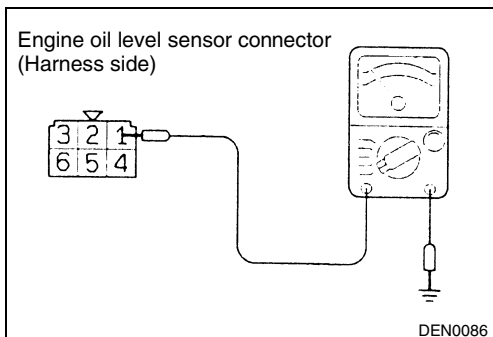
**OIL LEVEL WARNING SYSTEM CHECK**

12100200054

1. Check that the proper amount of oil has been filled.
2. When the ignition switch is turned to ON (do not start the engine), check that the oil level warning lamp illuminates.

**NOTE**

If the oil level warning lamp does not illuminate, the cause is probably a blown lamp, or a malfunction in the relay.



3. When the engine is started, check that the oil level warning lamp turns off.

If the oil level warning lamp will not go out, disconnect the connector of the oil level relay and measure the voltage of the No.1 terminal on the harness side of the connector while idling the engine in order to confirm that it is the same as the battery voltage.

**NOTE**

- (1) If the voltage at the connector is the same as the battery voltage, the problem is probably a malfunction of either the oil level relay or the oil level sensor.

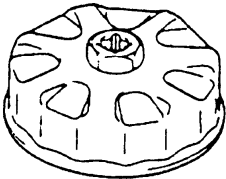
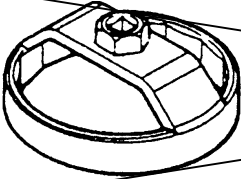
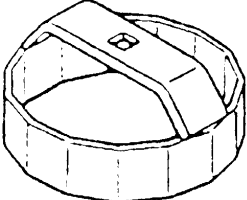
**LUBRICANTS**

12100040076

Items		4G63	4G64	4D56	4D56-Turbo
Engine oil API classification		SG or higher	SG or higher	CD or higher	CD or higher
Engine oil quantity <i>ℓ</i>	Oil filter	0.3	0.3	0.8	0.8
	Oil cooler	-	-	0.4	0.4
	Total	4.3	4.3	6.2	6.5

**SPECIAL TOOLS**

12100050065

Tool	Number	Name	Use
 B991396	MB991396	Oil filter wrench	Removal and installation of engine oil filter (when using the oil filter of MD135737) <4G6>
 B991610	MB991610	Oil filter wrench	Removal and installation of engine oil filter (When using the oil filter of MD136466) <4G6>
 H061590	MH061590 <b>&lt;Deleted&gt;</b>	Oil filter wrench	Removal and installation of engine oil filter (When using the oil filter of MD069782 or MD326489) <4D56>

**ON-VEHICLE SERVICE**

12100090057

**ENGINE OIL CHECK**

1. Check the engine oil using the oil level gauge.
2. Check that the oil is not excessively dirty, that there is no coolant or petrol mixed in, and that it has sufficient viscosity.

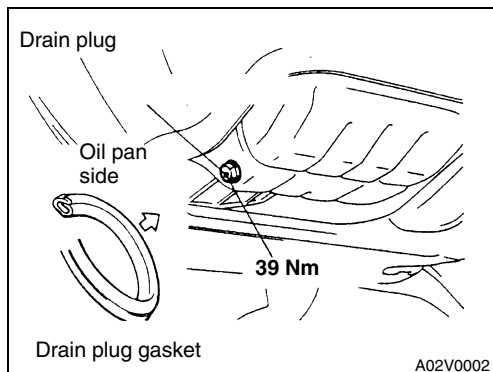
**ENGINE OIL REPLACEMENT**

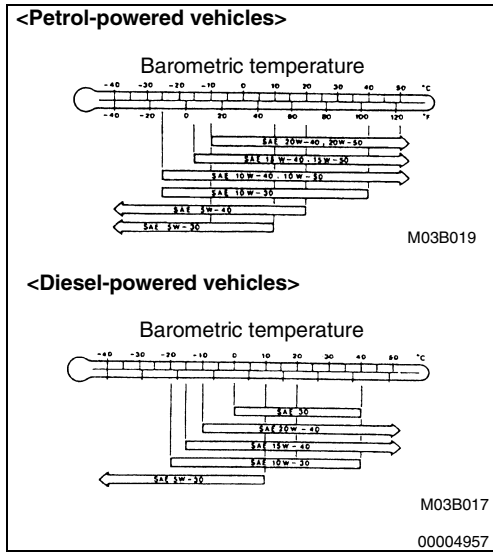
12100100071

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.

**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.
5. Refill with specified quantity of oil.

**Specified Engine Oil (API classification):**

- <4G63, 4G64> SG or higher
- <4D56> CD or higher

**Total quantity (includes volume inside oil filter and oil cooler):**

- <4G63> 4.3 l
- <4G64> 4.3 l
- <4D56> 6.2 l
- <4D56-Turbo> 6.5 l

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

**OIL FILTER REPLACEMENT**

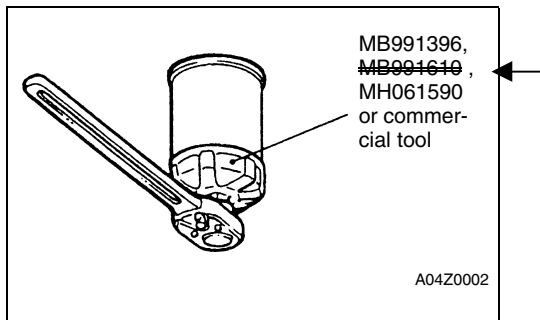
12100110067

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 under cover.
4. Remove the drain plug to drain oil.

**Caution**

**Use care as oil could be hot.**

5. Remove the air cleaner, and cover the alternator with a rag so that oil will not get on the alternator. <4D56>
6. Use the following tools to remove the engine oil filter.
  - MB991396 or equivalent (when using the oil filter of MD135737) <4G6>
  - MB991610 or equivalent (when using the oil filter of MD136466) <4G6>
  - MH061590 or equivalent (when using the oil filter of MD069782 or MD326489) <4D56>
  - Commercial tool (other vehicles than above)
7. Clean the filter bracket side mounting surface.



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