

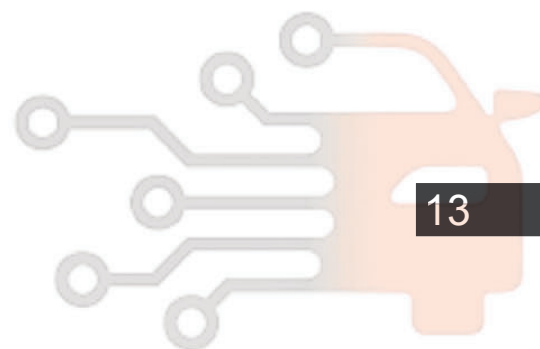
SQRD4G15B LUBRICATION SYSTEM

GENERAL INFORMATION	13-3	Installation	13-12
Description	13-3	Oil Pressure Switch	13-14
Specifications	13-4	Removal	13-14
Tools	13-5	Inspection	13-14
Lubrication System Flowchart	13-6	Installation	13-15
DIAGNOSIS & TESTING	13-7	Oil Pan	13-16
Problem Symptoms Table	13-7	Removal	13-16
Engine Oil Level Inspection	13-7	Installation	13-17
Oil Pressure Inspection	13-8	Oil Strainer	13-19
ON-VEHICLE SERVICE	13-10	Removal	13-19
Engine Oil Replacement	13-10	Installation	13-19
Engine Oil Draining	13-10	Oil Pump Assembly	13-20
Engine Oil Adding	13-11	Removal	13-20
Oil Filter	13-12	Installation	13-21
Removal	13-12		

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



13

021 62 99 92 92

www.digitalkhodro.com

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

13

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

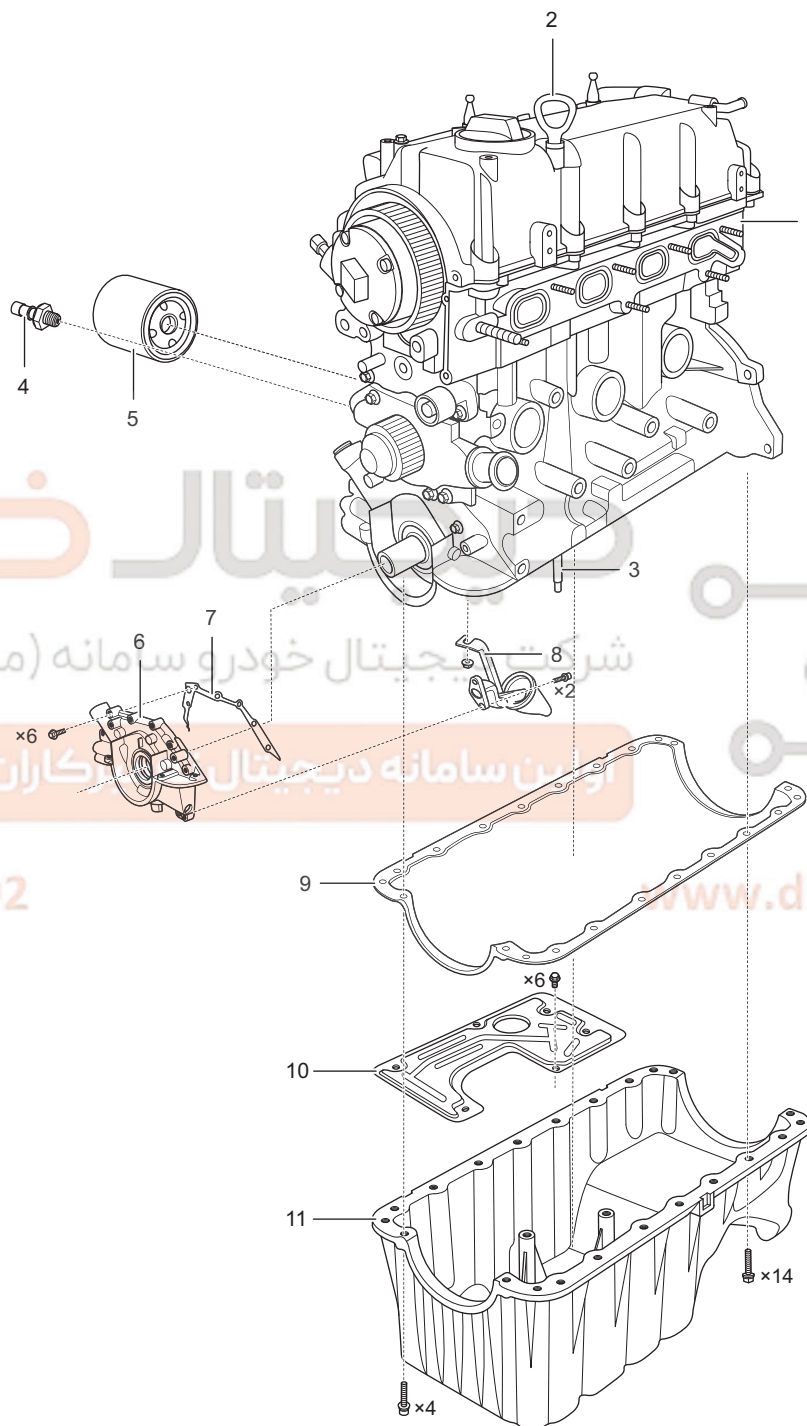


021 62 99 92 92

www.digitalkhodro.com

GENERAL INFORMATION

Description



RA13T130010

13 - SQRD4G15B LUBRICATION SYSTEM

1 - Engine Assembly	2 - Oil Dipstick
3 - Oil Dipstick Tube	4 - Oil Pressure Switch
5 - Oil Filter	6 - Oil Pump Assembly
7 - Water Pump Assembly Gasket	8 - Oil Strainer
9 - Oil Pan Gasket	10 - Oil Deflector
11 - Oil Pan	

Function of lubrication system is that when engine is operating, oil pump driven by crankshaft, sucks oil from oil pan and pumps it through oil filter. This filtered oil then flows through oil passages, to surfaces of all engine drive parts and forms oil films between moving surfaces to reduce friction and finally returns to oil pan, thus reducing friction resistance between parts, power consumption and parts wear, to increase reliability and durability of engine operation.

⚠ WARNING

Prolonged and repeated contact with engine oil will result in the removal of natural oils from skin, leading to dryness, irritation and dermatitis. In addition, the used engine oil contains potentially harmful contaminants, which may cause skin cancer.

Precautions should be followed when replacing engine oil to minimize the risk of your skin making contact with used engine oil.

- Wear protective clothing and gloves.
- Wash your skin thoroughly with soap and water, or use waterless hand cleaner to remove any used engine oil.
- Never use gasoline, thinners or solvents.

Specifications**System Pressures**

Condition	Pressure (bar)
Idling (650 ± 50 r/min, oil temperature 90°C)	More than 1.5
High Idling (4000 ± 50 r/min, oil temperature 100°C)	More than 3.5

Oil Specifications

Engine Type	SQRD4G15B
Oil Capacity (L)	3.9 ± 0.5
Oil Specifications	Summer: SAE 10W-40 (SL grade or higher) Winter: SAE 5W-40 (SL grade or higher)

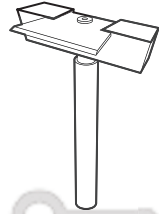
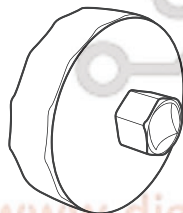
Torque Specifications

Description	Torque (N·m)
Drain Plug	35 ± 3
Oil Filter	$22 \sim 25$
Coupling Bolt Between Oil Pan and Transmission Case	45 ± 5

Description	Torque (N·m)
Fixing Bolt of Baffle Plate Between Oil Pan and Transmission Case	45 ± 5
Oil Pressure Switch	20 ± 2
Oil Pan Fixing Bolt	11 ± 1
Oil Pan Baffle Plate Fixing Bolt	$8 + 3$
Oil Strainer Bracket Fixing Nut	$17 - 23$
Coupling Bolt Between Oil Strainer and Oil Pump	$8 \sim 11$
Oil Pump Fixing Bolt	$8 + 3$

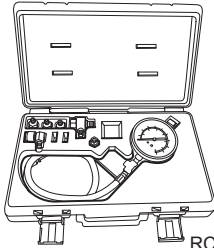
Tools

Special Tools

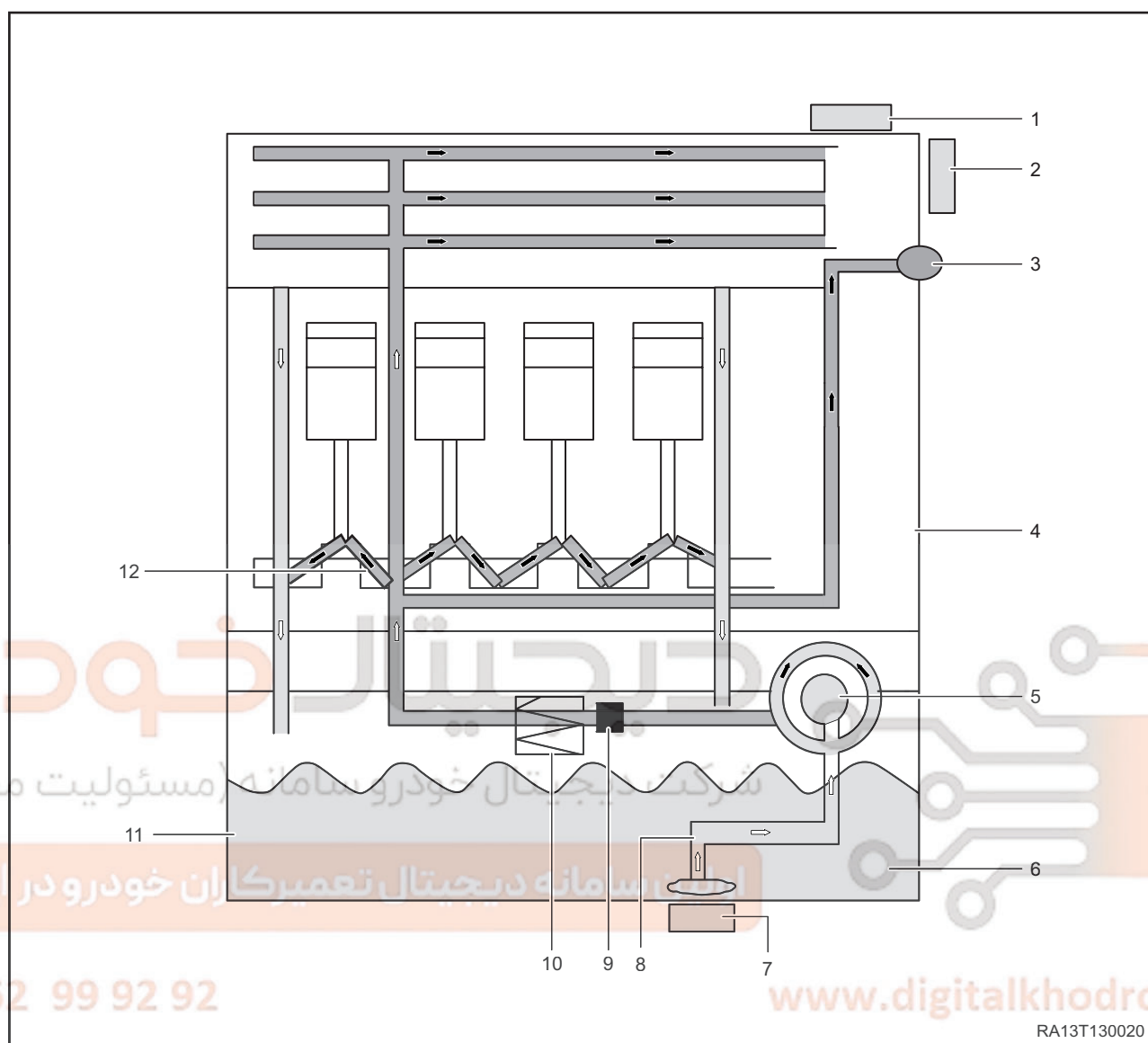
Oil Pan Remover and Scraper	 RCH0000056
Oil Filter Remover	 RCH0000054

13

General Tool

Oil Pressure Tester	 RCH0000006
---------------------	--

Lubrication System Flowchart



1 - Oil Filler Cap	2 - Phaser
3 - VVT Solenoid Valve	4 - Cylinder Block
5 - Oil Pump	6 - Engine Oil
7 - Drain Plug	8 - Oil Strainer
9 - Oil Pressure Switch	10 - Oil Filter
11 - Oil Pan	12 - Crankshaft

Description

1. Solid arrow: indicates flow of high-pressure lubricant.
2. Hollow arrow: indicates flow of low-pressure lubricant.
3. Dark area: indicates high-pressure lubricant.
4. Bright area: indicates low-pressure lubricant.

DIAGNOSIS & TESTING

Problem Symptoms Table

Symptom	Suspected Area	See page
Low pressure in lubrication system	Oil pan (dirty, leakage)	13-16
	Oil strainer (mesh dirty, blocked)	13-19
	Oil pump	13-20
	Line (blocked)	-
High oil consumption	Engine oil (excessive oil filling capacity)	13-10
	Oil filter	13-12
	Each engine seal surface (leakage)	-
	Engine oil (leakage)	-
Oil pressure warning light comes on	Engine oil (insufficient oil, low oil viscosity)	13-10
	Oil filter (blocked)	13-12
	Lubrication system (leakage)	-
	Oil pressure switch	13-14
	Instrument cluster (oil pressure warning light)	38-8
	Cylinder block (cracks occur in water jacket, resulting in coolant leaking into oil pan, which will cause oil dilution)	07-68
After engine cranked, engine produces clunk sound	Line (blocked)	-
	Engine oil (high oil viscosity, excessive oil filling capacity)	13-7
	Cylinder block (blocked oil passage)	07-68

13

Engine Oil Level Inspection

HINT:

Check oil level indicated by oil dipstick, when engine is stopped after it reaches operating temperature.

1. Park vehicle on level ground, stop engine after warming up and wait for 5 minutes.
2. Open hood, pull out oil dipstick and wipe it off with a clean piece of cloth.

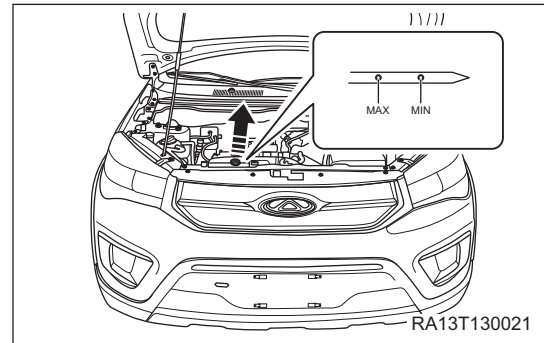
CAUTION

- Please put a piece of cloth under oil dipstick end, to prevent oil from splashing onto engine and body.

3. Reinsert oil dipstick and check if oil level is proper.
4. Pull out oil dipstick again and check if oil level is proper.
If engine oil level is too low, check for leakage and add oil up to full level mark.

13 - SQRD4G15B LUBRICATION SYSTEM

- If oil level is at or above "MAX" mark, drain excessive engine oil.
- If oil level is between "MIN" mark and "MAX" mark, it shows that oil level is proper.
- If oil level is at or below "MIN" mark, it is necessary to add engine oil.


CAUTION

- When adding engine oil, oil level should not be above "MAX" mark.

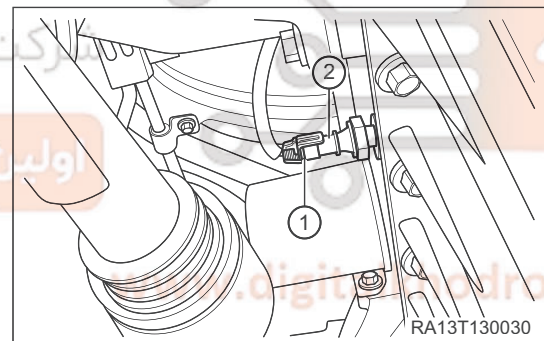
Oil Pressure Inspection

Preconditions

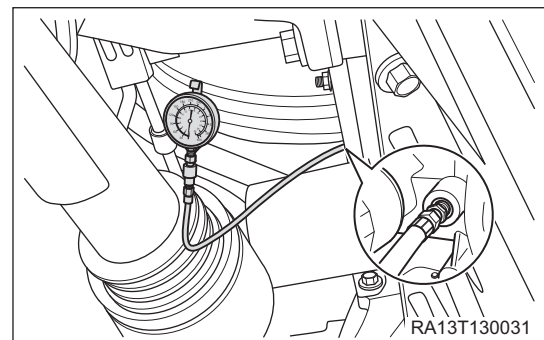
- Engine oil level is proper.
- Oil filter is used within 5000 km.
- Engine reaches the normal operating temperature.

Inspection

- Disconnect oil pressure switch connector (1) and remove oil pressure switch (2).
(Tightening torque: $20 \pm 2 \text{ N}\cdot\text{m}$)



- Screw oil pressure tester into threaded hole of oil pressure switch as shown in illustration.



- Start the engine. When engine inspection conditions are met, read oil pressure values at idling speed and high speed respectively. If lubrication system pressure is low, clean oil pan and oil strainer mesh, and then test again. If lubrication system pressure is still low, it shows there is a malfunction in oil pump and the oil pump must be replaced.

Oil pressure at idling speed ($650 \pm 50 \text{ r/min}$): more than 1.5 bar.

Oil pressure at high speed ($4000 \pm 50 \text{ r/min}$): more than 3.5 bar.

4. Install the oil pressure switch.

HINT:

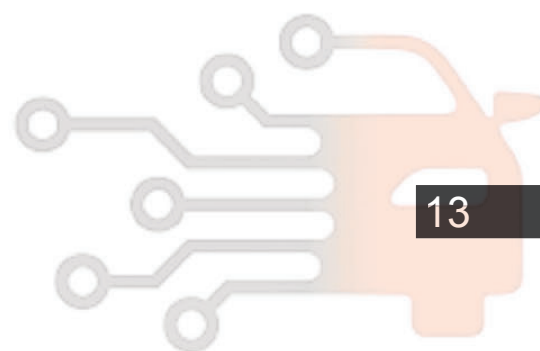
Apply a small amount of seal gum to threads when installing oil pressure switch.

5. Connect oil pressure switch connector and check engine oil for leakage.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



13

021 62 99 92 92

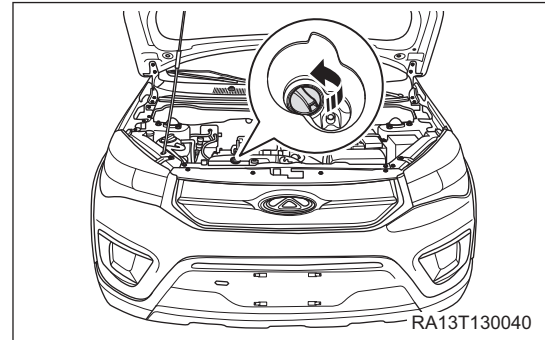
www.digitalkhodro.com

ON-VEHICLE SERVICE

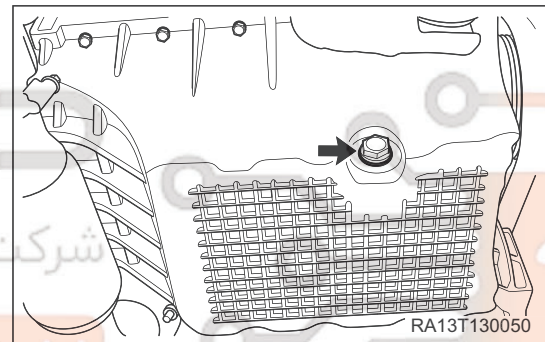
Engine Oil Replacement

Engine Oil Draining

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Open the oil filler cap.



4. Unscrew drain plug (arrow), and drain oil into a container.



WARNING

- Apply a certain pushing force to drain plug while loosening plug by hand, and have drain plug attached to thread tightly to prevent oil from overflowing in advance. Move away your hand quickly to prevent burn by oil with a certain temperature.

ENVIRONMENTAL PROTECTION

- Wasted engine oil should be handled by specialized department according to local laws and regulations. Never discard it at will.

5. Wipe off and tighten drain plug.
(Tightening torque: $35 \pm 3 \text{ N}\cdot\text{m}$)

Engine Oil Adding

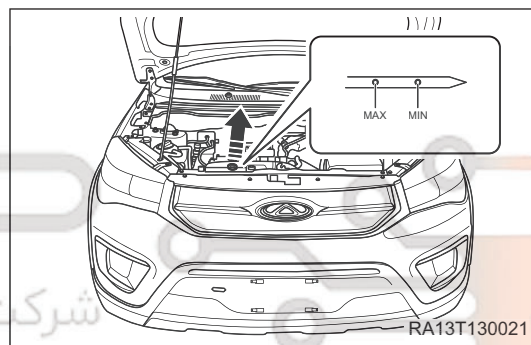
Only use engine oil that meets Chery specifications.

Engine Type	SQRD4G15B
Oil Capacity (L)	3.9 ± 0.5
Oil Specifications	Summer: SAE 10W-40 (SL grade or higher) Winter: SAE 5W-40 (SL grade or higher)

CAUTION

- DO NOT use inferior engine oil.
- DO NOT mix different types of engine oil.
- Be careful not to spill engine oil on any part of engine, when adding engine oil.

1. Add a proper amount of oil, and check that oil level is between "MIN" mark and "MAX" mark with oil dipstick.



13

2. Turn off engine after running for 1 to 2 minutes, park vehicle on a level surface and wait for approximately 5 minutes. Check if oil level is between "MIN" mark and "MAX" mark. Refill oil if necessary.
3. Check vehicle for oil leakage after replacing oil.

Oil Filter

Removal

WARNING

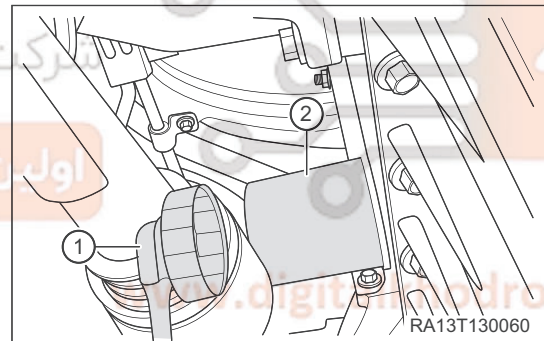
- DO NOT remove oil filter until engine cools down.
- Prolonged and repeated contact with engine oil will be harmful to your skin. If engine oil spills on your skin, wash it off immediately with water. In addition, used engine oil contains potentially harmful contaminants, which may cause skin cancer. Therefore, always take proper skin protection measures when servicing vehicle.

CAUTION

- When repairing oil filter, use oil filter installer to prevent oil filter from deforming.

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Drain the engine oil (See page 13-10).
4. Remove the oil filter.

- a. Using oil filter remover (1), remove oil filter (2).
(Tightening torque: 22 - 25 N·m)



ENVIRONMENTAL PROTECTION

- Removed oil filter should be handled by specialized department according to local laws and regulations. Never discard it at will.

Installation

Installation is in the reverse order of removal.

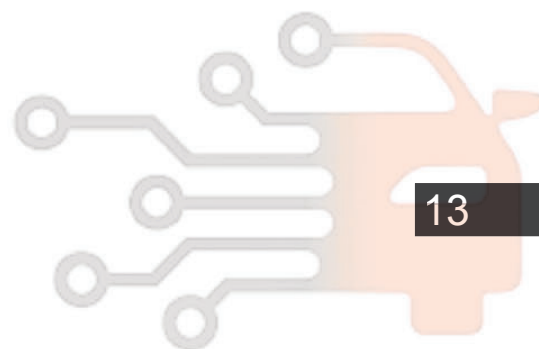
 CAUTION

- Check oil filter bracket grommet for damage and cracks. If there is damage or cracks, replace grommet.
- Check and clean installation surface between oil filter and oil filter bracket.
- Apply a layer of clean engine oil to a new oil filter grommet.
- Slightly rotate oil filter in place by hand, and tighten oil filter until grommet contacts with oil filter bracket base.
- Use a special tool to tighten oil filter.
- (Tightening torque: 22 - 25 N·m)

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



13

021 62 99 92 92

www.digitalkhodro.com

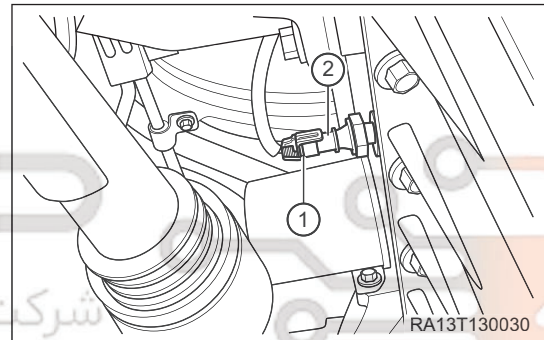
Oil Pressure Switch

Removal

WARNING

- DO NOT remove oil filter until engine cools down.
- Prolonged and repeated contact with engine oil will be harmful to your skin. If engine oil spills on your skin, wash it off immediately with water. In addition, used engine oil contains potentially harmful contaminants, which may cause skin cancer. Therefore, always take proper skin protection measures when servicing vehicle.

1. Turn off all electrical equipment and the ignition switch.
 2. Disconnect the negative battery cable.
 3. Remove the oil pressure switch.
 - a. Disconnect oil pressure switch connector (1) and remove oil pressure switch (2).
- (Tightening torque: $20 \pm 2 \text{ N}\cdot\text{m}$)

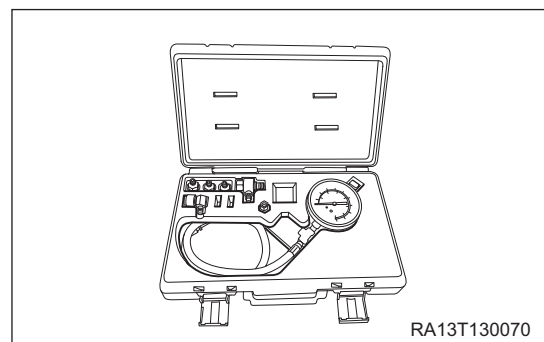


Inspection

CAUTION

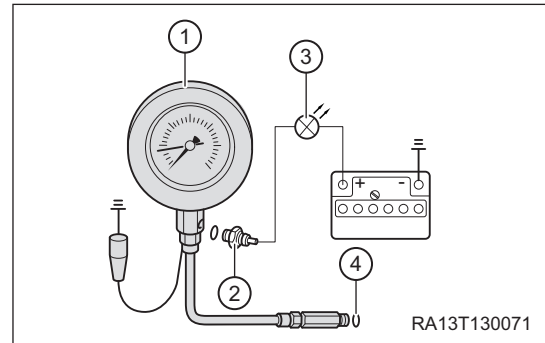
- Before inspecting oil pressure switch, please make sure that oil level is correct, coolant temperature is above 90°C , oil filter is used within 5000 km and electric fan has stopped operating.

1. Use an oil pressure tester as shown in illustration.



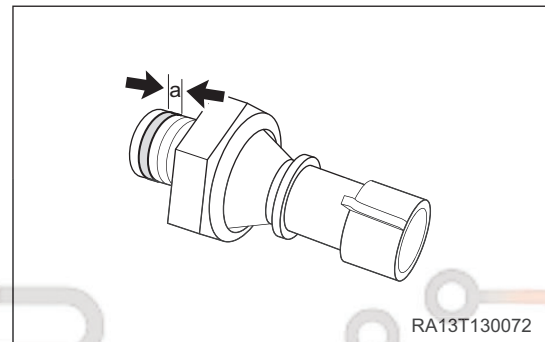
13 - SQRD4G15B LUBRICATION SYSTEM

2. Install oil pressure tester into threaded hole (4) of oil pressure switch as shown in illustration.
3. Install oil pressure switch (2) onto tester (1) and connect oil pressure switch connector.
4. Connect oil pressure switch to body.
5. After engine starts and oil pressure warning light (3) comes on, observe pressure reading on tester. If warning light still comes on when oil pressure is higher than 75 kPa, replace oil pressure switch.



Installation

1. Remove oil and impurities on oil pressure switch and its threaded hole.
2. Apply a small amount of seal gum to threads when installing oil pressure switch as shown in illustration.
Width of a: 3 mm



دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

Oil Pan

Removal

WARNING

- DO NOT remove oil filter until engine cools down.
- Prolonged and repeated contact with engine oil will be harmful to your skin. If engine oil spills on your skin, wash it off immediately with water. In addition, used engine oil contains potentially harmful contaminants, which may cause skin cancer. Therefore, always take proper skin protection measures when servicing vehicle. DO NOT remove oil filter until engine cools down.

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the front pipe assembly (See page 11-10).
4. Drain the engine oil (See page 13-10).

ENVIRONMENTAL PROTECTION

- Wasted engine oil should be handled by specialized department according to local laws and regulations. Never discard it at will.

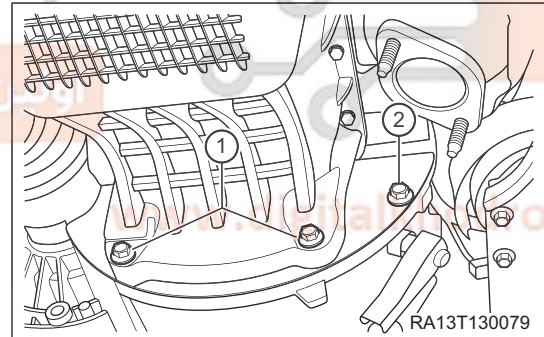
5. Remove baffle plate between oil pan and transmission case.

- a. Remove 2 coupling bolts (1) between oil pan and transmission case.

(Tightening torque: $45 \pm 5 \text{ N}\cdot\text{m}$)

- b. Remove fixing bolt (2) of baffle plate between oil pan and transmission case.

(Tightening torque: $45 \pm 5 \text{ N}\cdot\text{m}$)

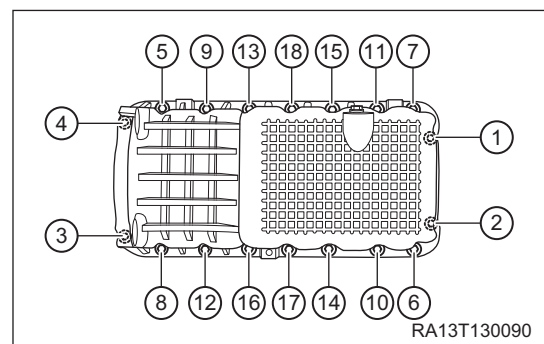


- c. Remove baffle plate between oil pan and transmission case.

6. Remove the oil pan.

- a. Pre-loosen oil pan fixing bolts first, and then remove oil pan fixing bolts in order shown in illustration.

(Tightening torque: $11 \pm 1 \text{ N}\cdot\text{m}$)



b. Pry oil pan at specific prying locations on oil pan with oil pan remover and scraper and remove it.

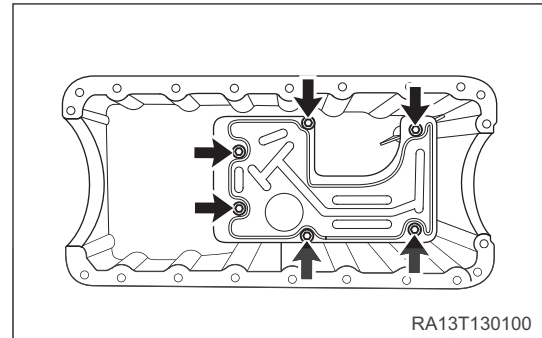
CAUTION

- Because seal gum is used as a seal between oil pan and cylinder block, never use hard objects, such as a hammer, to tap it during removal, but it can be tapped slowly from left and right with a rubber hammer.
- A transmission carrier can be used to support oil pan during removal, to prevent personal injury from sudden dropping of oil pan.

c. Remove the oil pan gasket.

d. Remove fixing bolt (arrow) from oil pan oil deflector, and remove oil pan oil deflector.

(Tightening torque: $8 + 3 \text{ N}\cdot\text{m}$)



Installation

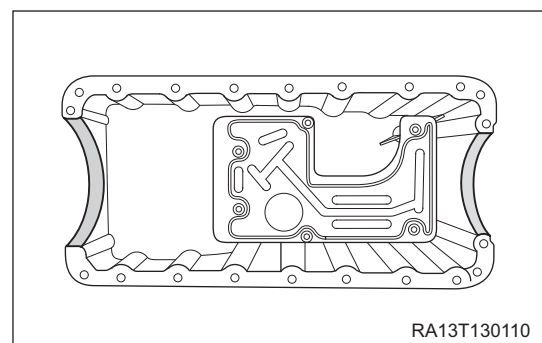
Installation is in the reverse order of removal.

CAUTION

- When applying seal gum, check type and expiration date of seal gum.
- Remove impurities, iron chips and seal gum residues from oil pan.
- Remove oil stain and seal gum residues from cylinder block and threaded hole of oil pan.
- Seal gum should not be applied too thick; otherwise it will overflow into oil pan due to squeezing, which will block oil strainer.
- DO NOT add engine oil until seal gum becomes dry after installing oil pan.

1. Apply seal gum to joint surface between oil pan gasket and oil pump, and semicircular joint surface between rear oil seal bracket and oil pan as shown in illustration.

Recommended seal gum: Loctite 5910

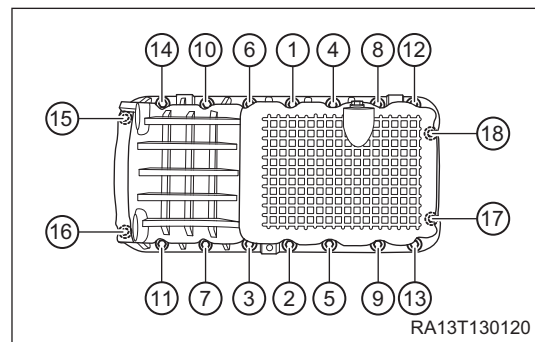


2. Replace oil pan gasket with a new one.

13 - SQRD4G15B LUBRICATION SYSTEM

3. Pre-tighten oil pan fixing bolts until oil pan is sufficiently pressed, and then tighten bolts in order as shown in illustration.

(Tightening torque: $11 \pm 1 \text{ N}\cdot\text{m}$)



دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

13

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



021 62 99 92 92

www.digitalkhodro.com

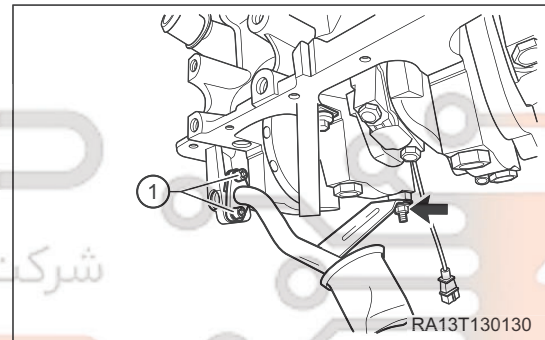
Oil Strainer

Removal

WARNING

- DO NOT remove oil filter until engine cools down.
- Prolonged and repeated contact with engine oil will be harmful to your skin. If engine oil spills on your skin, wash it off immediately with water. In addition, used engine oil contains potentially harmful contaminants, which may cause skin cancer. Therefore, always take proper skin protection measures when servicing vehicle. DO NOT remove oil filter until engine cools down.

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the oil pan (See page 13-16).
4. Remove the oil strainer.
 - a. Remove fixing nut (arrow) from oil strainer bracket.
(Tightening torque: 17 - 23 N·m)
 - b. Remove coupling bolt (1) between oil strainer and oil pump.
(Tightening torque: 8 - 11 N·m)



13

- c. Remove oil strainer and its grommet.

Installation

Installation is in the reverse order of removal.

CAUTION

- Check oil strainer grommet for damage and cracks. If there is damage or cracks, replace grommet.

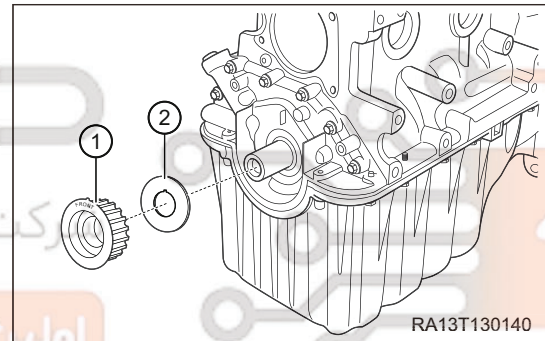
Oil Pump Assembly

Removal

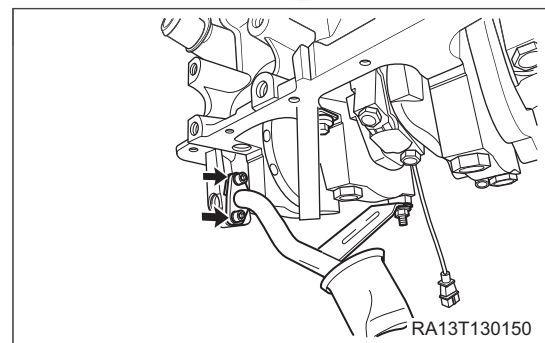
WARNING

- DO NOT remove oil filter until engine cools down.
- Prolonged and repeated contact with engine oil will be harmful to your skin. If engine oil spills on your skin, wash it off immediately with water. In addition, used engine oil contains potentially harmful contaminants, which may cause skin cancer. Therefore, always take proper skin protection measures when servicing vehicle. DO NOT remove oil filter until engine cools down.

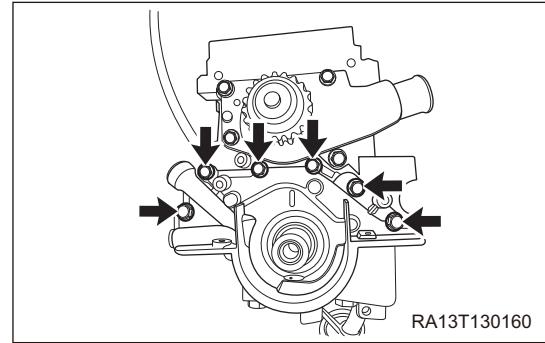
1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Drain the engine oil (See page 13-10).
4. Remove the engine accessory drive belt (See page 07-19).
5. Remove the engine timing belt (See page 07-23).
6. Remove crankshaft timing pulley (1) and crankshaft timing pulley gasket (2) from crankshaft.



7. Remove the crankshaft front oil seal (See page 07-27).
8. Remove the oil pan (See page 13-16).
9. Remove the oil pump assembly.
 - a. Remove coupling bolt (arrow) between oil strainer and oil pump.
(Tightening torque: 8 - 11 N·m)



- b. Remove 6 fixing bolts (arrow) from oil pump assembly.
(Tightening torque: 8 + 3 N·m)



- c. Remove oil pump assembly and its grommet.



ENVIRONMENTAL PROTECTION

- Wasted engine oil should be handled by specialized department according to local laws and regulations. Never discard it at will.

Installation

Installation is in the reverse order of removal.



CAUTION

- When installing crankshaft pulley, make "FRONT" side of crankshaft pulley face forward.
- Rotate oil pump until oil in oil passage overflows from outlet.
- Replace the oil pump gasket.
- Apply seal gum to flat surface between bottom of oil pump assembly and cylinder block, then install oil pump assembly.
- Replace oil strainer gasket, and install oil strainer.
- Replace oil pan gasket, and install oil pan.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



021 62 99 92 92

www.digitalkhodro.com