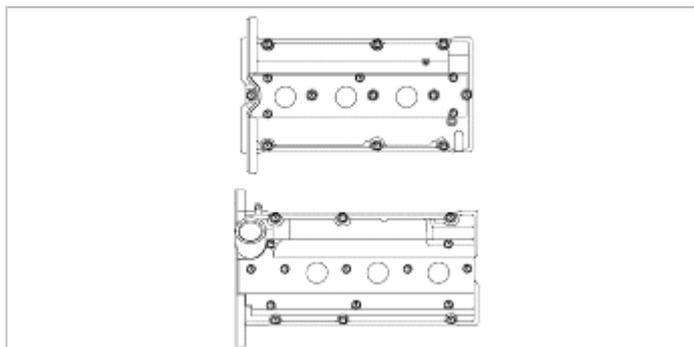
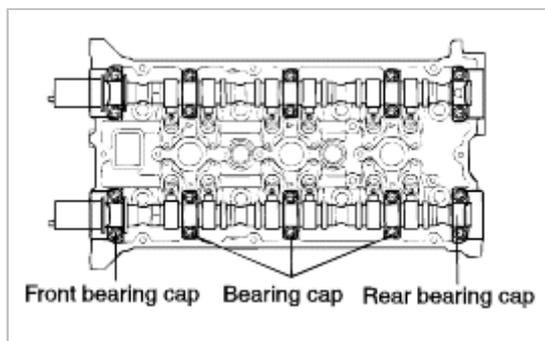


DISASSEMBLY

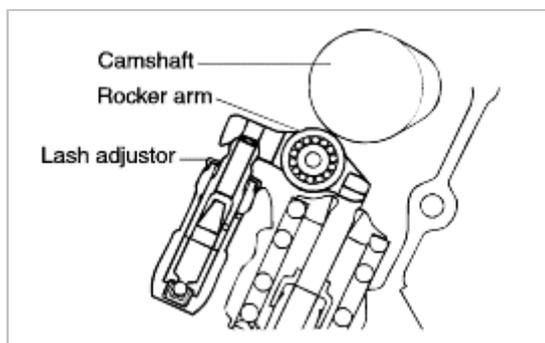
1. Remove intake manifold.
2. Disconnect the breather hose and the engine harness.
3. Remove the power steering pulley, air conditioner pulley, crankshaft pulley, idler pulley and tensioner pulley.
4. Remove the timing belt cover.
5. Loosen the auto tensioner.
6. Remove the timing belt from the camshaft sprocket.
7. Remove the spark plug cables.
8. Loosen the cylinder head cover bolts and then remove it.



9. Remove the camshaft sprockets.
10. Remove the camshaft bearing caps.



11. Remove the camshafts.



INSPECTION

Camshafts

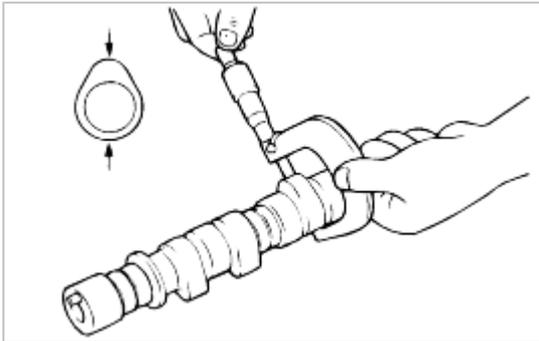
1. Check the camshaft journals for wear. If the journals are badly worn out, replace the camshaft.
2. Check the cam lobes for damage. If the lobe is damaged or excessively worn out, replace the camshaft.

Cam height

[Standard]

Intake : 35.098 - 35.298 mm (1.3818 - 1.3897 in.)

Exhaust : 34.81 - 35.01 mm (1.3705 - 1.3783 in.)



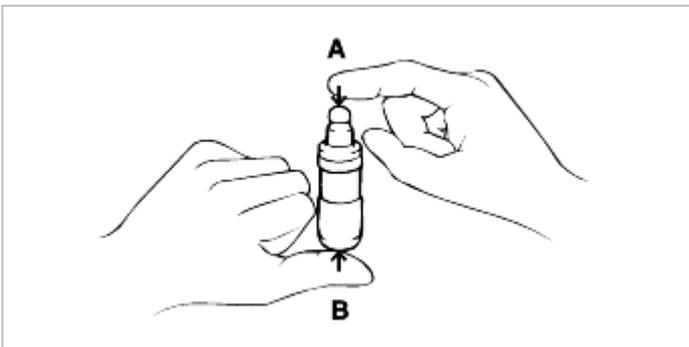
3. Check the cam surface for abnormal wear or damage, and replace if necessary.
4. Check each bearing for damage. If the bearing surface is excessively damaged, replace the cylinder head assembly or camshaft bearing cap, as necessary.

Camshaft end play : 0.1-0.15mm(0.0039-0.0059 in.)

Oil Seal (Camshaft front)

1. Check the lips for wear. If lip threads are worn out, replace the oil seal with new one.
2. Check a contact surface of oil seal lip on camshaft. If there stratified wear, replace the camshaft.

HLA (Hydraulic Lash Adjuster)

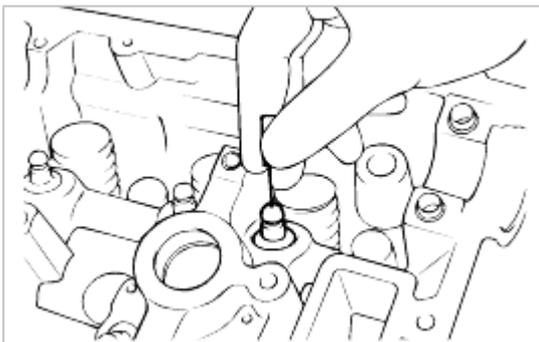


Problem		Possible cause	Action
1	Temporary noise when starting a cold engine	Normal	This noise will disappear after the oil in the engine reaches the normal pressure.
2	Continuous noise when the engine is started after parking more than 48 hours.	Oil leakage of the high pressure chamber on the HLA, allowing air to get in.	Noise will disappear within 15 minutes when engine runs at 2000-3000 rpm. If it doesn't disappear, refer to step 7 below.
3	Continuous noise when the	Insufficient oil in	

	engine is first started after rebuilding cylinder head.	cylinder head oil gallery.	
4	Continuous noise when the engine is started after excessively cranking the engine by the starter motor or band.	Oil leakage of the high-pressure chamber in the HLA, allowing air to get in. Insufficient oil in the HLA	<div style="border: 1px solid black; background-color: #e0f0ff; padding: 5px;"> <p>Do not run engine at a speed higher than 3000 rpm, as this may damage the HLA.</p> </div>
5	Continuous noise when the engine is running after changing the HLA.		
6	Continuous noise during idle after high engine speed.	Engine oil level too high or too low.	Check oil level. Drain or add oil as necessary.
		Excessive amount of air in the oil at high engine speed.	Check oil supply system
		Deteriorated oil.	Check oil quality. If deteriorated, replace with specified type.
7	Noise continues for more than 15 minutes.	Low oil pressure.	Check oil pressure and oil supply system of each part of engine.
		Faulty HLA.	Remove the cylinder head cover and press HLA down by hand. If it moves, replace the HLA.

Auto Lash Adjuster

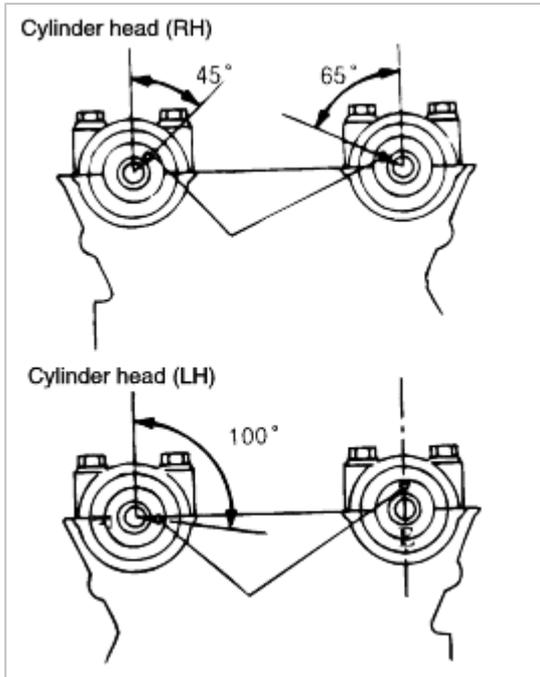
1. Check auto - lash adjusters for free play by inserting a small wire through the air bleed hole in the rocker arm and push the autolash adjuster check ball down very lightly.
2. While lightly holding the check ball down move the rocker arm up and down to check for free play. If there is no play replace the auto - lashadjuster.



REASSEMBLY

CAMSHAFT AND BEARING CAP

1. Rotate the crankshaft and No. 1 cylinder is in TDC (Compression stroke)
2. Check the position of the rocker arm whether it is exactly installed on the lash adjuster and valve or not.
3. Install the camshaft dowel pin as illustration.



4. The left and right banks of the camshafts are different and you should be careful not to confuse them.

Identification signal

Left bank

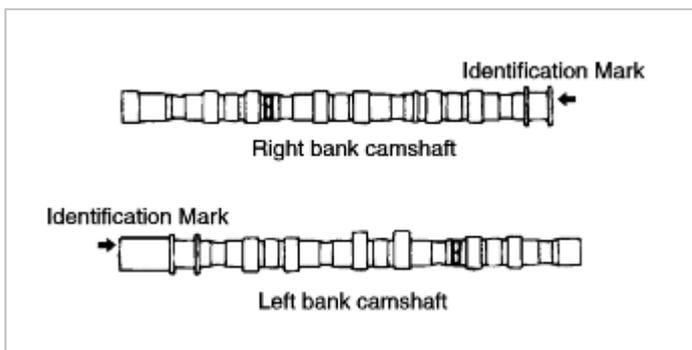
Intake (IN) : I

Exhaust (Ex) : E

Right bank

Intake (IN) : J

Exhaust (Ex) : H

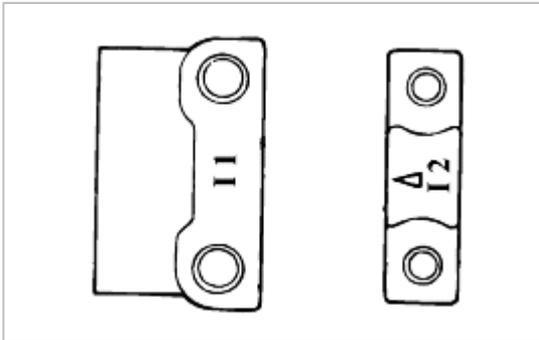


5. Confirm the identification mark and the number.

Bearing caps of No.3, No.4, and No.5 have the front mark and arrange the front mark upon the cylinder head while installing the bearing caps.

Identification mark

Intake : I
 Exhaust : E



6. Tighten the bearing cap by 2 or 3 steps

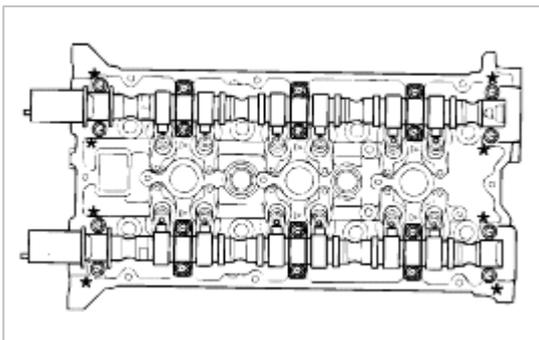
Tightening Torque

Outer (*) 16 EA :

18.6-20.6 N·m(190-210 kg.cm, 13.7-15.2 lb.ft)

Inner 24 EA :

9.8-11.8 N·m(100-120 kg.cm, 7.2-8.7 lb.ft)



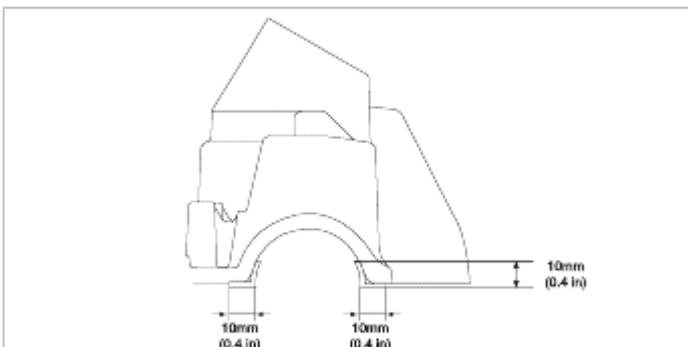
7. Install the cylinder head cover.

- (1) Install the gasket to the cylinder head cover correctly.
- (2) Clean sealing surface on camshaft cap.

Clean sealing surface with use plastic scraper, to prevent oil leak.

- (3) Apply sealant to the sealing surface on cylinder head cover and camshaft cap.

Sealant type : LT 5900



(4) Install the cylinder head cover to the cylinder head.

Be careful of gasket escapement when installing the cylinder head cover. You must use the washer when installing the cylinderhead cover bolts.

