

4. Lightly tap the end of each valve stem two or three times with a plastic mallet to ensure proper seating of the valve and valve spring retainer locks.

 NOTE

Tap the valve stem only along its axis so you do not bend the stem.

5. Assembly of lash adjuster.
 - a. Until installing, lash adjuster shall be held upright so that gas oil in lash adjuster should not spill and assured that dust does not adhere to adjuster.
 - b. Lash adjust shall be inserted tenderly to the cylinder head not to spill gas oil from lash adjuster. In case of spilling air bent shall be done in accordance with the air bent procedure below.

 NOTE

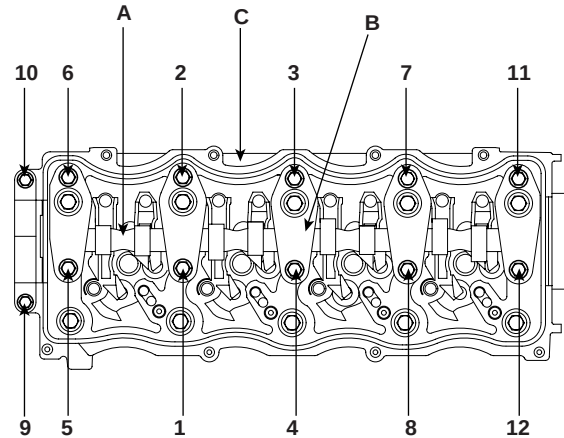
Air bent procedure

1. *In case of lash adjuster alone.*
Stroke lash adjuster in gas oil 4~5 times by pushing its cap while pushing the ball down slightly by hard steel wire.
Take care not to severely push hard steel wire down since ball is several grams.
 2. *After installed on engine*
Lash adjuster might give out unusual noise if air is mingled. Apply slow racing from idle to 3,000rpm (Approximately one minute per one racing) and the air shall be removed from adjuster.
Therefore noise can be extinguished.
6. Install the valve-caps.
 7. Put the cam followers on the lash adjusters and valve caps.
 8. After wiping down the camshaft and camshaft seal in the cylinder head, lubricate both surfaces and install the camshaft with engine oil.
 9. Confirm that cam followers are located on lash adjusters and their rollers are in touch with camshaft.
 10. In assembly camshaft bearing cap, to the cylinder head with the cylinder block, all pistons should be in the middle position between TDC(Top Dead Center) and BDC(Bottom ead Center) because valves come out of the bottom surface of the cylinder head.
 11. Install the bolts loosely.

12. Tighten each bolt two turns at a time in the sequence shown below to ensure that the cam followers do not bind on the valves.

Tightening torque

26.5 ~ 29.5N.m (2.65 ~ 2.95kgf.m, 20 ~ 22lb-ft)



ACIE073A

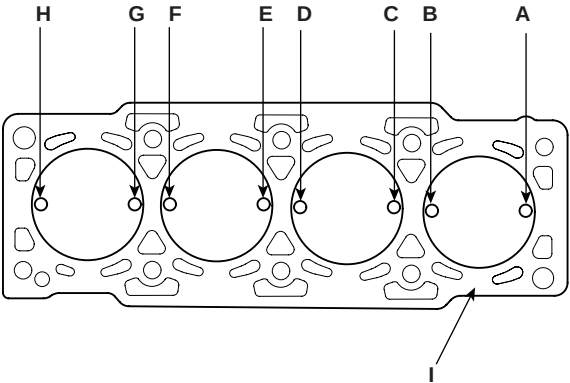
INSTALLATION E4F40791

Install the cylinder head in the reverse order of removal :

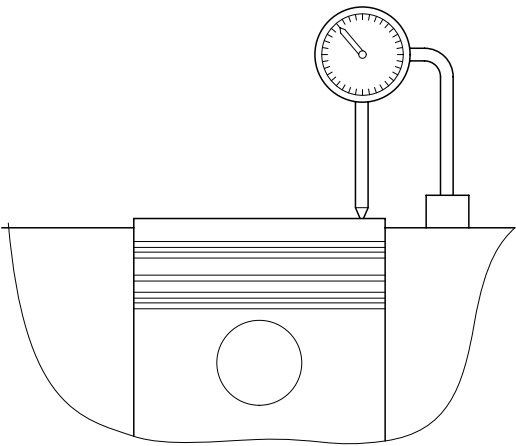
 NOTE

- Always use a new head gasket.
- Cylinder head and cylinder block surface must be clean.
- Turn the crankshaft so the No.1 piston is at TDC(Top Dead Center).

1. Cylinder head dowel pins must be aligned.
2. Select the cylinder head gasket.
 - a. Measure the piston protrusion from the upper cylinder block face (I) on 8 places (A ~ H) at T.D.C. Measure on the crankshaft center line considering the piston migration.

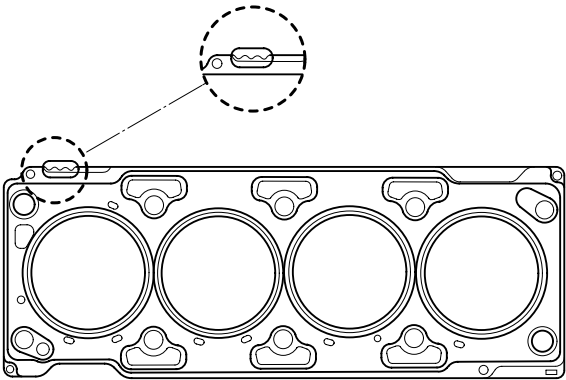


ACIE088A



ACIE089A

- b. Select the gasket in the table below using the average value of piston protrusions. Although even the only 1 point is over than the each rank limit, use 1 rank upper gasket than specified in the table below.



ACIE090A

Displacement	2.2 L		
Average of pisston protrusion	0.194 ~ 0.337mm (0.0079 ~ 0.013in.)	0.337 ~ 0.440mm (0.013 ~ 0.017in.)	0.440 ~ 0.542mm (0.017 ~ 0.021in.)
Gasket thickness	1.1 ± 0.05mm (0.0433 ± 0.0020in.)	1.2 ± 0.05mm (0.0472 ± 0.0020in.)	1.3 ± 0.05mm (0.0512 ± 0.0020in.)
Limit of each rank extant	0.43mm (0.0169in.)	0.53mm (0.0208in.)	-
Identification code	 SCMEM6102D	 SCMEM6103D	 SCMEM6104D

- c. Install the gasket so that the identification mark faces toward the flywheel side.

3. Position the cylinder head assembly over the gasket.
4. Tighten the cylinder head bolts slightly.
5. Install the camshaft sprocket, aligning the timing mark.

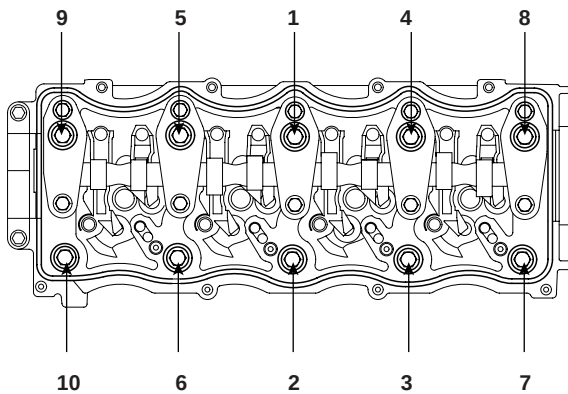
Tightening torque

122.6 ~ 137.3N.m (12.5 ~ 14.0kgf.m, 90.4 ~ 101.3lb-ft)

6. Tighten the bolts to the specified torque

Tightening torque

63.7N.m (6.5kgf.m, 47.0lb-ft) + 120° + 120°



ACIE094A

NOTE

- Tightening sequence of cylinder head bolt should be confirmed to the upper drawing.
 - Cylinder head bolt must be replaced.
7. Install the fuel pump assembly.
 8. Install the intake/exhaust manifold assemblies.
 9. Install the hose between the vacuum pump and the cylinder head.
 10. If it is necessary to replace the oil seals on the cylinder head cover for injectors, use the SST(09351-27401).
 11. Install the head cover gasket in the groove of the cylinder head cover.

NOTE

- Cylinder head cover gasket must be replaced.
- Before installing the head cover gasket, thoroughly clean the seal and the groove.
- When installing, make sure the head cover gasket is seated securely in the corners of the recesses with no gap.

12. Apply liquid gasket to the head cover gasket at the four corners of the recesses.

NOTE

- Use liquid gasket LOCTITE 5699 or TH1212D.
- Check that the mating surface are clean and dry before applying liquid gasket.
- Do not install the parts if five minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing old residue.
- After assembly, wait at least 30 minutes before filling the engine with oil.

13. When installing the cylinder head cover, hold the head cover gasket in the groove by placing your fingers on the camshaft holder contacting surfaces (top of the semicircles).
Once the cylinder head cover is on the cylinder head, slide the cover slightly back and forth to seat the head cover gasket.

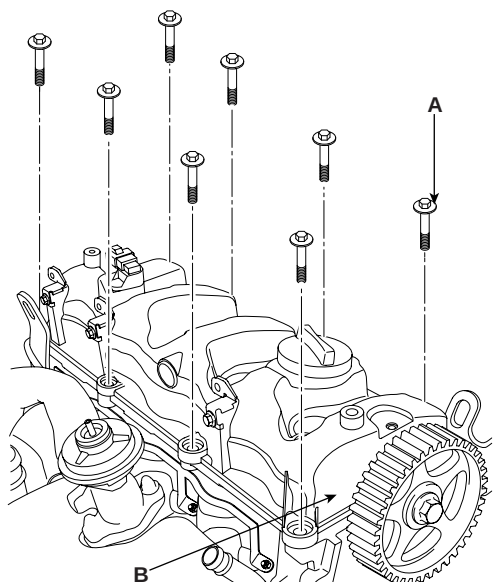
NOTE

- Before installing the cylinder head cover, clean the cylinder head contacting surfaces with a shop towel.
- Do not touch the parts where liquid gasket was applied.
- Take care not to damage the oil seals when installing the cylinder head cover.
- Visually check the oil seals for damage.
- Replace any washer that is damaged or deteriorated.

14. Tighten the nuts in two or three steps. In the final step, tighten all bolts, in sequence.

Tighten torque

8 ~ 10N.m (0.8 ~ 1.0kgf.m, 5.90 ~ 7.38lb-ft)



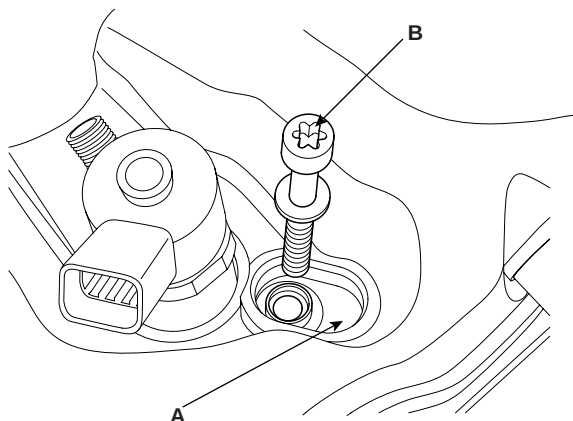
SCMEM6071D



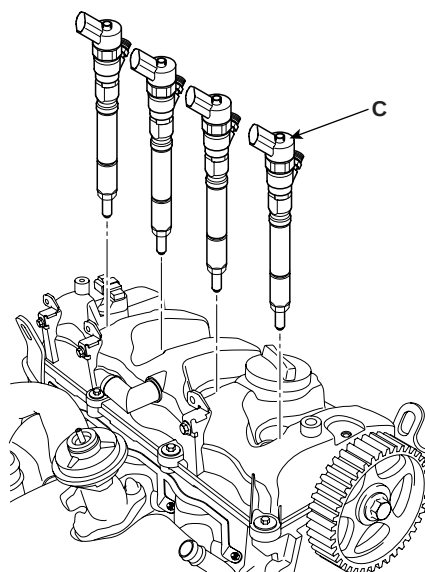
NOTE

After assembly, wait at least 30 minutes before filling the engine with oil.

15. After installing, check that all tubes, hoses and connectors are installed correctly.
16. Insert the injectors(C), moving back the injector holders(A) with the bolts(B).

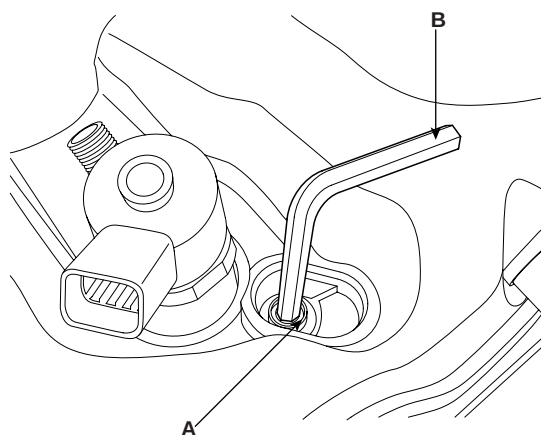


ACIE096A



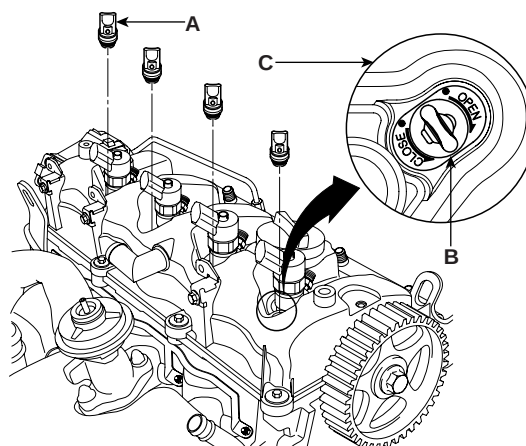
ACIE095A

17. Tighten the injector holder bolts(A) with 5mm hexagonal wrench(B).



ACIE059A

18. Install the injector plug(A).



ACIE097A

- a. Make sure that the stopper of the plug faces 'OPEN' side. Otherwise pull and rotate the plug clockwise so the stopper should face 'OPEN' side.
- b. Apply the engine oil on the head cover mating surface or the gasket of the plug.
- c. Insert the plugs in the head cover.
- d. Rotate the plug inserted counterclockwise 90° .
- e. After installation, rotate the plug clockwise. If it is rotated, repeat the step a ~ d.

**NOTE**

Plug gasket must be replaced.