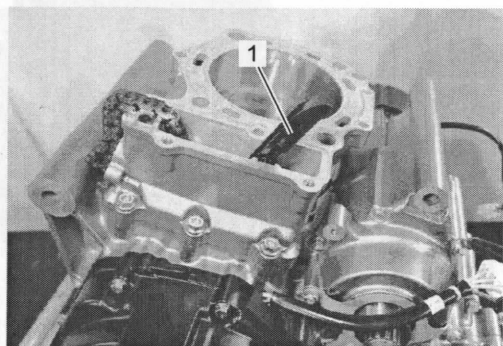


1D-30 Engine Mechanical:

Rear Cylinder Cam Chain Guide

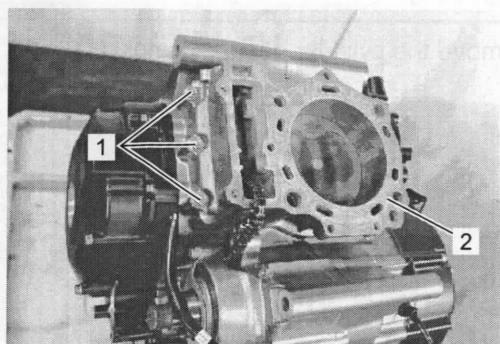
Remove the cam chain guide (1).



IE31J1140118-01

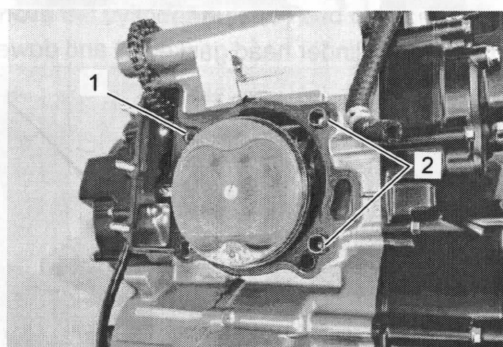
Rear Cylinder

1) Remove the cylinder nuts (1) and cylinder (2).



IE31J1140119-01

2) Remove the cylinder gasket (1) and dowel pins (2).



IE31J1140120-01

Cam Chain Tension Adjuster / Cam Chain Tensioner / Cylinder Head Assembly / Cam Chain Guide / Cylinder Installation

BENE31J11406056

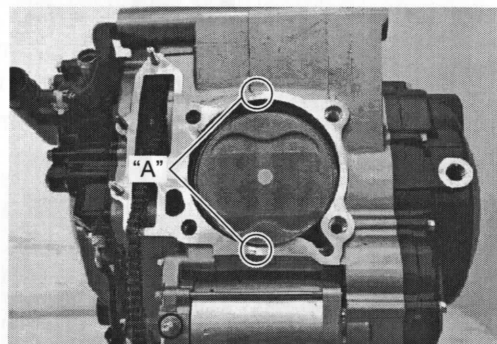
Refer to "Camshaft Installation" (Page 1D-9) and "Engine Assembly Installation" (Page 1D-23).

Cylinder

- 1) Thoroughly wipe off oil from the fitting surface of the crankcase.
- 2) Apply sealant lightly to the mating surfaces at the parting line between the right and left crankcases as shown.

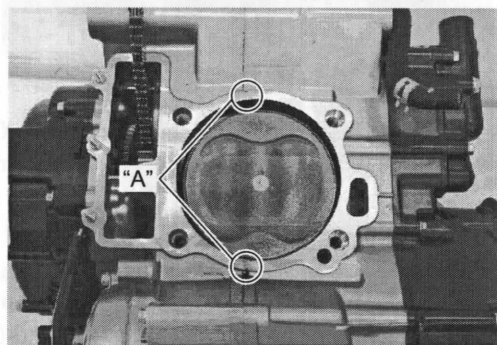
"A": Sealant 99000-31110 (SUZUKI BOND 1215)

Front cylinder side



IE31J1140121-01

Rear cylinder side



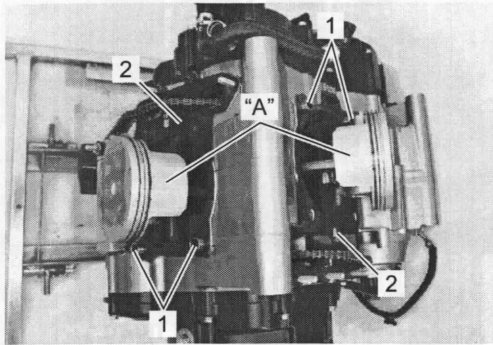
IE31J1140122-01

- 3) Install the dowel pins (1) and new cylinder gaskets (2).
- 4) Apply molybdenum oil solution to the sliding surface of the pistons and cylinder walls.

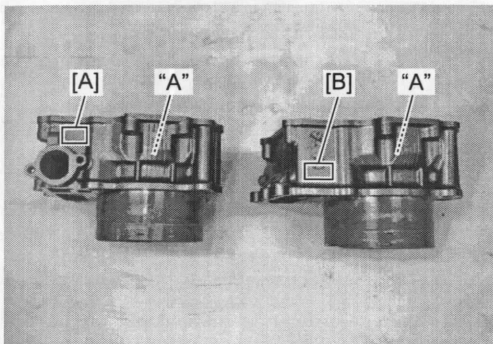
NOTE

The cylinders can be identified by the embossed letters.

"A": Assembly lubrication (Molybdenum oil solution)



IE31J1140123-01



IE31J1140124-01

[A]: 31JF (Front cylinder)

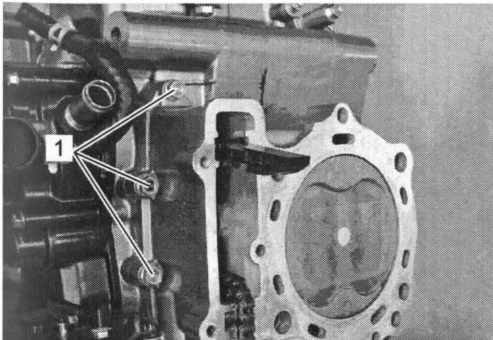
[B]: 31JR (Rear cylinder)

- 5) Hold the piston rings in proper positions, and insert each piston into the respective cylinders. (Page 1D-49)

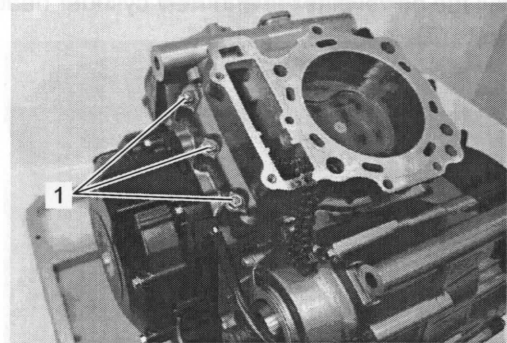
NOTE

When installing the cylinders, keep the cam chains taut.

- 6) Tighten the cylinder nuts (1) temporarily.

Front cylinder

IE31J1140125-01

Rear cylinder

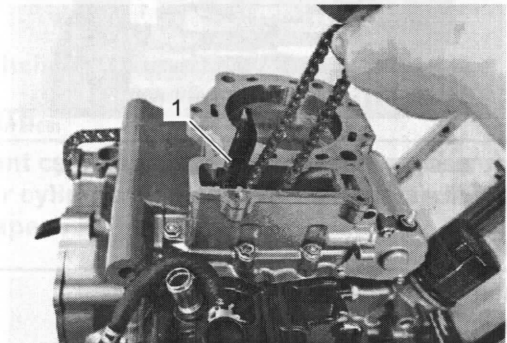
IE31J1140126-01

Cam Chain Guide

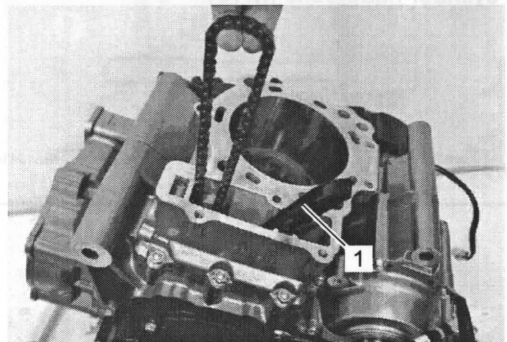
Pull the cam chains out of the cylinders and install the cam chain guides (1).

NOTE

There are the guide holders for the bottom ends of each cam chain guide cast in the crankcase. Be sure that the cam chain guides are inserted properly.

Front cylinder

IE31J1140127-01

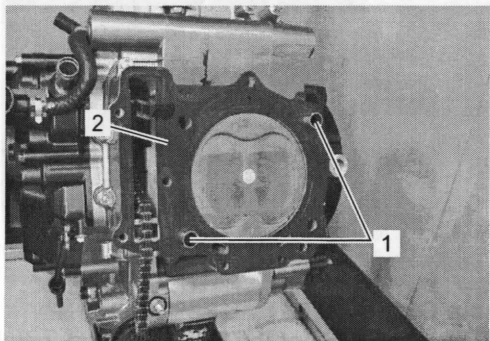
Rear cylinder

IE31J1140128-01

Cylinder Head Assembly

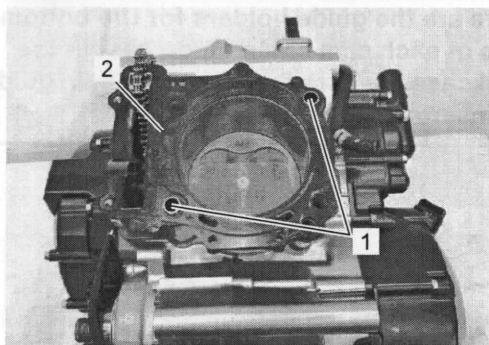
- 1) Install the dowel pins (1) and new cylinder head gaskets (2).

Front cylinder



IE31J1140129-01

Rear cylinder



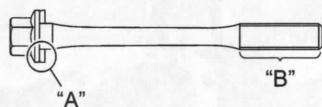
IE31J1140130-01

- 2) Place each cylinder head assembly on the respective cylinders.

NOTE

When installing the cylinder head assemblies, keep the cam chain taut.

- 3) Apply engine oil to the both side of the washers "A" and thread portion "B" of the bolts before installing the cylinder head bolts (M10).



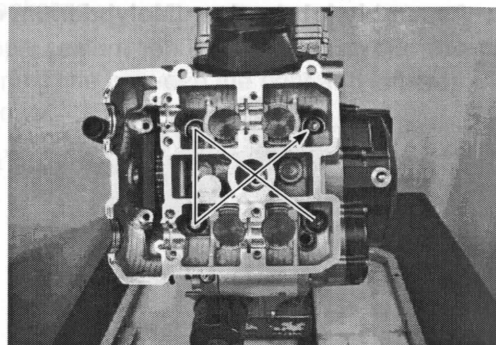
IE31J1140131-01

- 4) Tighten the cylinder head bolts (M10) to the specified two-step torque with a torque wrench sequentially and diagonally.

Tightening torque

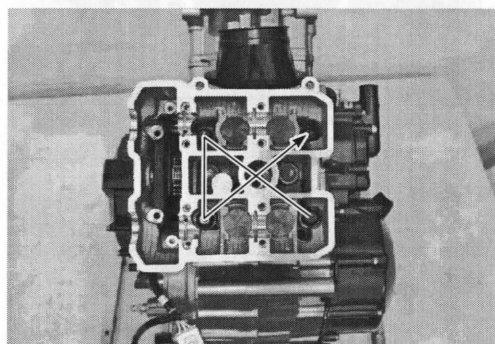
Cylinder head bolt (M10): 25 → 46 N·m (2.5 → 4.6 kgf-m, 18.0 → 33.5 lbf-ft)

Front cylinder head



IE31J1140132-01

Rear cylinder head



IE31J1140133-01

- 5) Tighten the cylinder head nuts (M8) (1), (M6) (2), cylinder head bolts (M6) (3) and cylinder nuts (4) to the specified torque.

Tightening torque

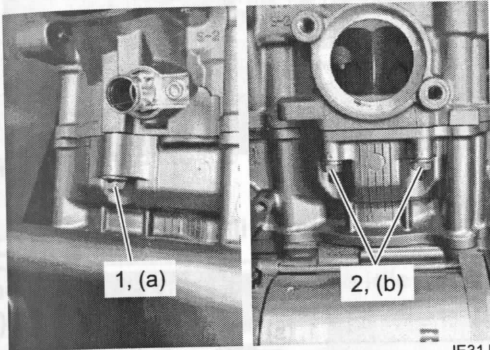
Cylinder head nut (M8) (a): 25 N·m (2.5 kgf-m, 18.0 lbf-ft)

Cylinder head nut (M6) (b): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

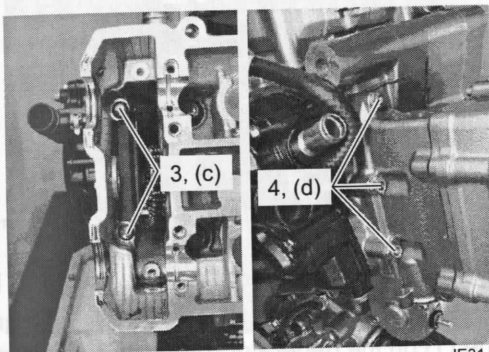
Cylinder head bolt (M6) (c): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

Cylinder nut (d): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

Front cylinder head

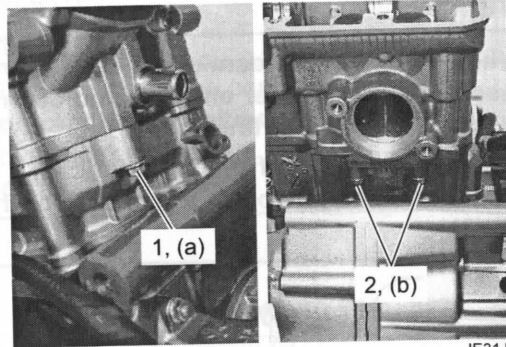


IE31J1140134-01

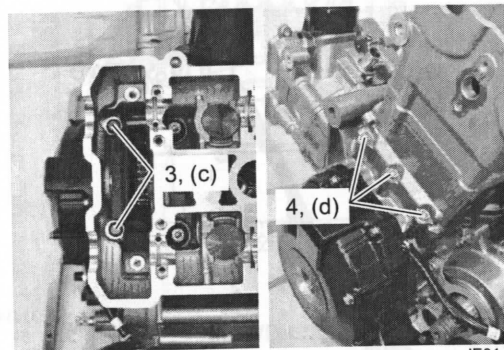


IE31J1140135-01

Rear cylinder head



IE31J1140136-01

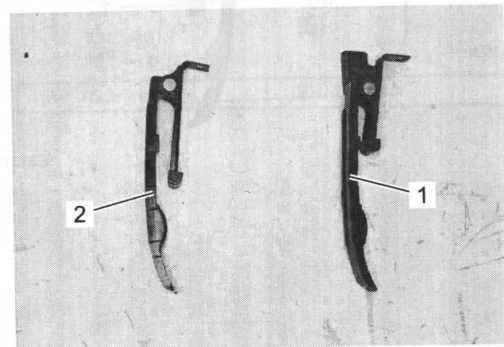


IE31J1140137-01

Cam Chain Tensioner

NOTE

Front cylinder cam chain tensioner (1) and rear cylinder cam chain tensioner (2) differ in shape.



IE31J1140138-01

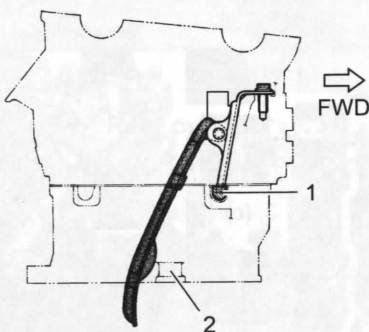
1D-34 Engine Mechanical:

- 1) Pull the cam chains upward and install each cam chain tensioner into the respective cylinder heads.

NOTE

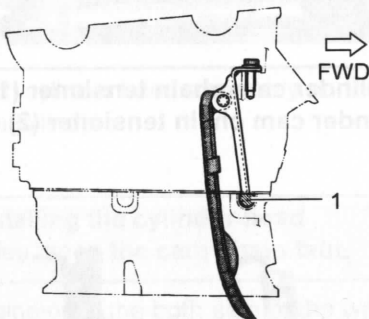
- When installing the cam chain tensioners, insert the their holder ends (1) into each guide cast on the cylinder.
- When installing the front cylinder cam chain tensioner, through it rear side of the rib (2).

Front cylinder side



IE31J1140139-01

Rear cylinder side



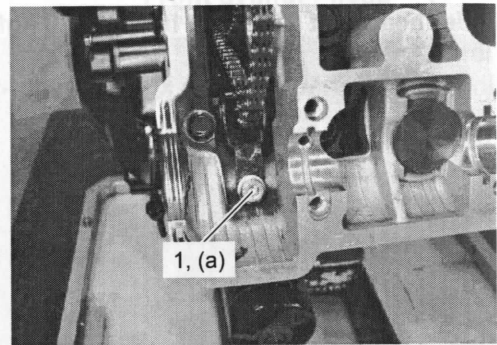
IE31J1140140-01

- 2) Tighten the cam chain tensioner mounting bolts (1) to the specified torque.

Tightening torque

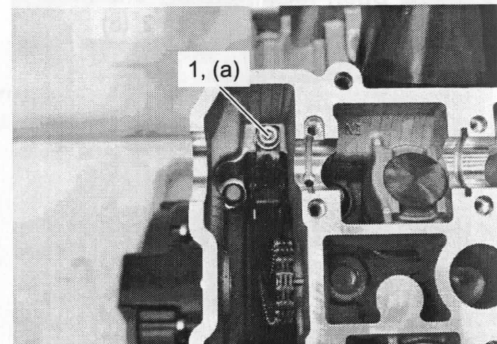
Cam chain tensioner mounting bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)

Front cylinder side



IE31J1140141-01

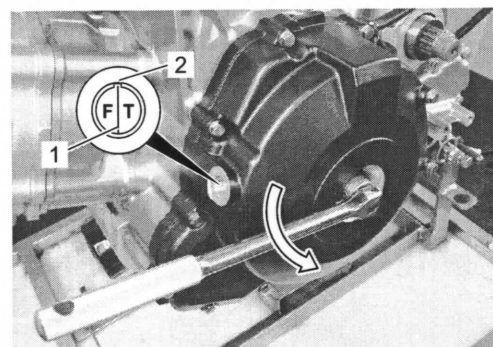
Rear cylinder side



IE31J1140142-01

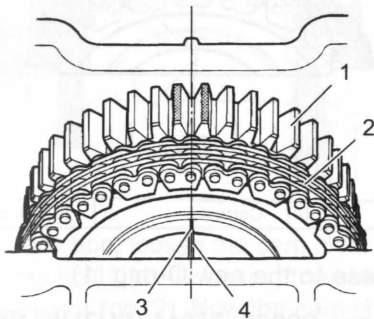
Front Cylinder Cam Drive Idle Gear / Sprocket No. 2

- 1) Turn the crankshaft counterclockwise and align "F | T" line (1) on the generator rotor with the index mark (2) of the valve timing inspection hole while keeping the cam chains pulled upward.



IE31J1140143-01

- 2) Install the cam drive idle gear/sprocket No. 2 (1) onto the front cylinder head and engage the cam chain (2) on it.
- 3) Align the engraved line (3) on the cam drive idle gear/sprocket No. 2 with the embossed line (4) on the cylinder head.

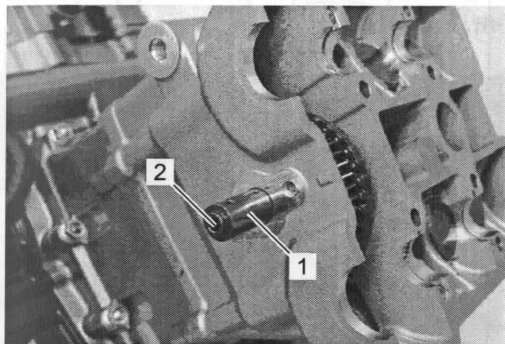


IE31J1140295-02

- 4) Apply engine oil to the idle shaft No. 2 (1) and install it.

NOTE

Face the convex part (2) of the idle shaft No. 2 (1) outside.

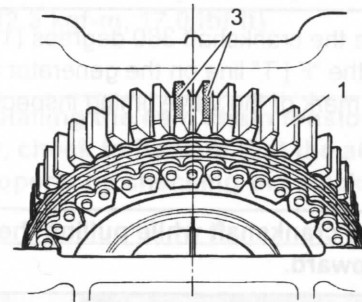


IE31J1140145-01

- 5) Check and correct the positions of the "F | T" line on the generator rotor and cam drive idle gear/sprocket No. 2 (1).

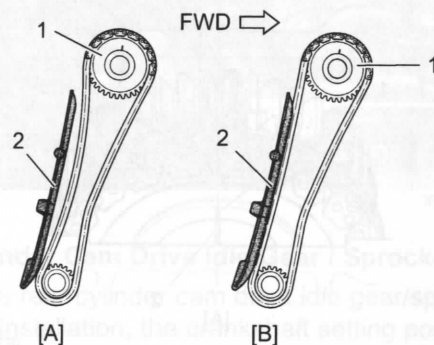
NOTICE

When checking the cam drive idle gear/sprocket No. 2 position, remove the cam chain slack at the cam chain guide (2) side by holding it by hand.



IE31J1140146-01

3. Paint



IE31J1140147-01

[A]: Incorrect

[B]: Correct

1D-36 Engine Mechanical:

- 6) If the engraved line (1) does not align the embossed line (2), remove the cam drive idle gear/sprocket No. 2.

NOTE

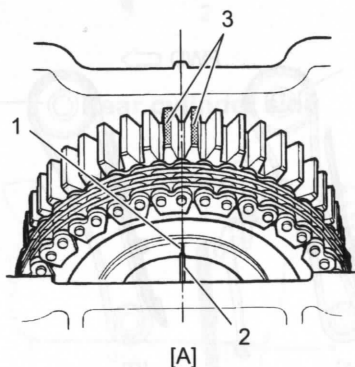
Due to special valve train mechanism, aligning of the three elements; the engraved line (1), embossed line (2) and the gear tooth root on the cam drive idle gear/sprocket No. 2; can occur once every other rotation of crankshaft.

- a) Rotate the crankshaft 360 degrees (1 turn) to bring the "F | T" line on the generator rotor to the index mark of the valve timing inspection hole again.

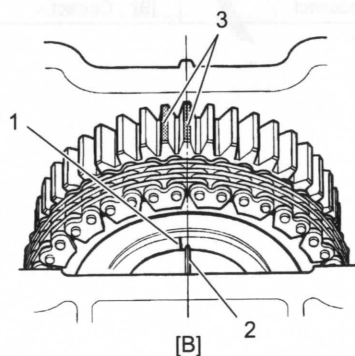
NOTICE

Rotate the crankshaft while pulling the cam chains upward.

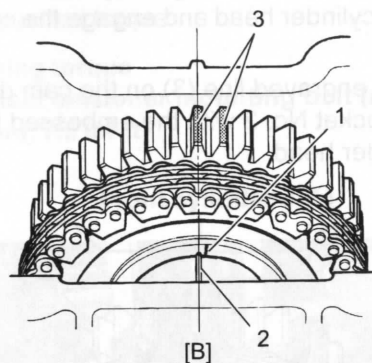
- b) Reinstall the cam drive idle gear/sprocket No. 2 to the correct position as shown.



IE31J1140094-01



IE31J1140095-01



IE31J1140096-01

3. Paint

[A]: Correct

[B]: Incorrect

- 7) Apply grease to the new O-ring (1).

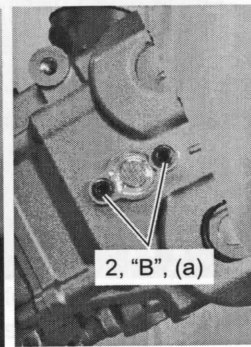
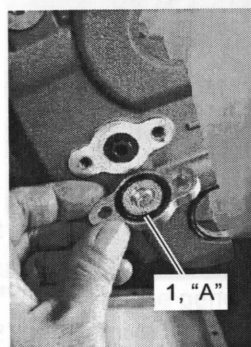
"A": Grease 99000-25011 (SUZUKI SUPER GREASE A)

- 8) Apply thread lock to the cylinder head cover No. 2 bolts (2) and tighten them to the specified torque.

"B": Thread lock cement 99000-32150 (THREAD LOCK CEMENT 1322D)

Tightening torque

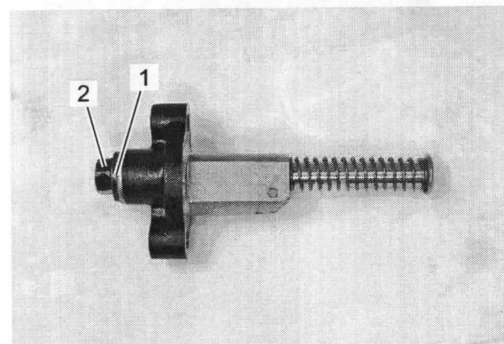
Cylinder head cover No. 2 bolt (a): 10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IE31J1140148-01

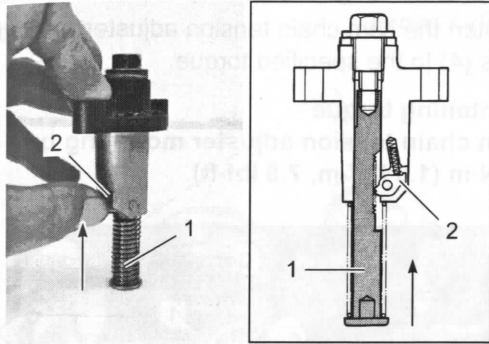
Front Cylinder Cam Chain Tension Adjuster

- 1) Install the new gasket (1) and tighten the cam chain tension adjuster cap bolt (2) fully.



IE31J1140149-02

- 2) Compress the cam chain tension adjuster rod (1) fully by releasing the ratchet (2).

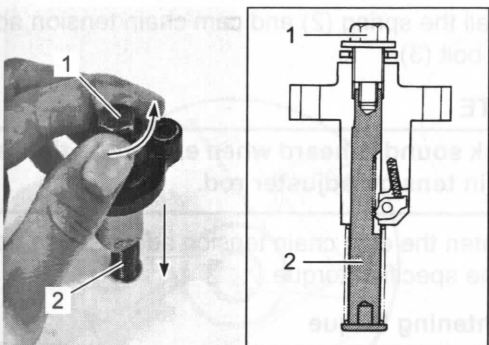


IE31J1140150-01

- 3) From this position, loosen the cam chain tension adjuster cap bolt (1) until locking the cam chain tension adjuster rod (2). Now the cam chain tension adjuster is ready to install.

NOTE

Loosen the cam chain tension adjuster cap bolt (1) while compressing the cam chain tension adjuster rod (2).

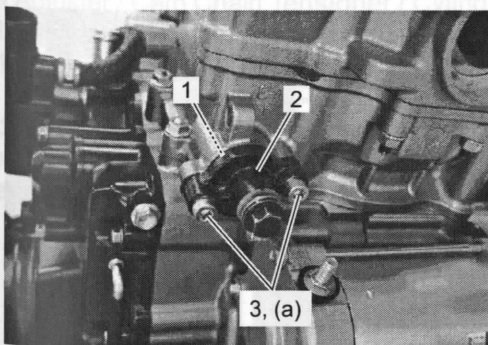


IE31J1140151-01

- 4) Install the new gasket (1) and cam chain tension adjuster (2).
5) Tighten the cam chain tension adjuster mounting bolts (3) to the specified torque.

Tightening torque

Cam chain tension adjuster mounting bolt (a):
10 N·m (1.0 kgf-m, 7.5 lbf-ft)



IE31J1140152-02

- 6) Release the cam chain tension adjuster by tightening the cap bolt (1).

NOTE

Click sound is heard when the cam chain tension adjuster rod is released.

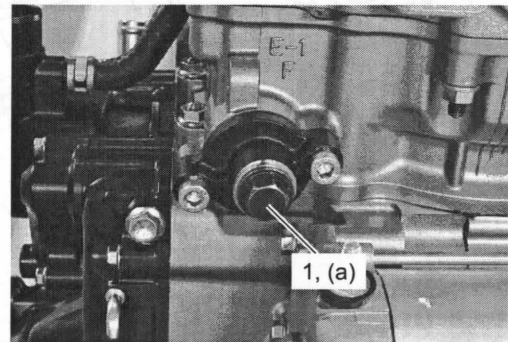
- 7) Tighten the cam chain tension adjuster cap bolt (1) to the specified torque.

Tightening torque

Cam chain tension adjuster cap bolt (Front) (a):
23 N·m (2.3 kgf-m, 17.0 lbf-ft)

NOTICE

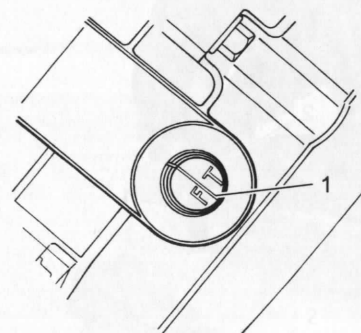
After installing the cam chain tension adjuster, check to be sure that the adjuster work properly by checking the slack of cam chain.



IE31J1140153-01

Rear Cylinder Cam Drive Idle Gear / Sprocket No. 2

- 1) For the rear cylinder cam drive idle gear/sprocket No. 2 installation, the crankshaft setting position (1) must be set at the same position (TDC of compression stroke) as the front one.



IE31J1140154-01

1D-38 Engine Mechanical:

- 2) Install the rear cylinder cam drive idle gear/sprocket No. 2 to the correct position. Refer to "Front Cylinder Cam Drive Idle Gear / Sprocket No. 2" (Page 1D-34).

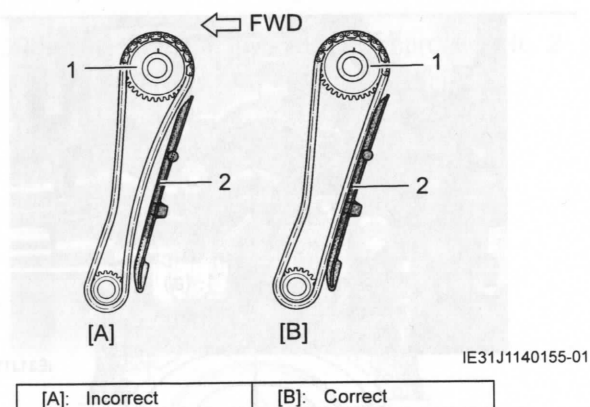
NOTE

The procedures are also the same as the front cylinder cam drive idle gear/sprocket No. 2 installation.

- 3) Check and correct the positions of the "F | T" line on the generator rotor and cam drive idle gear/sprocket No. 2 (1).

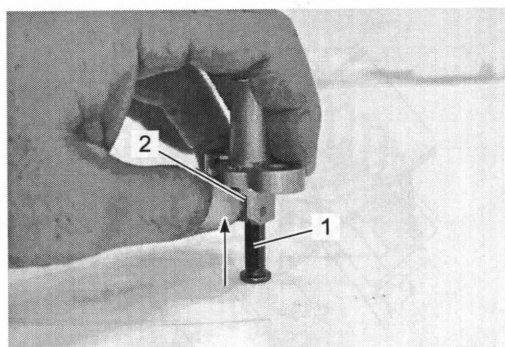
NOTICE

When checking the cam drive idle gear/sprocket No. 2 position, remove the cam chain slack at the cam chain guide (2) side by holding it by hand.



Rear Cylinder Cam Chain Tension Adjuster

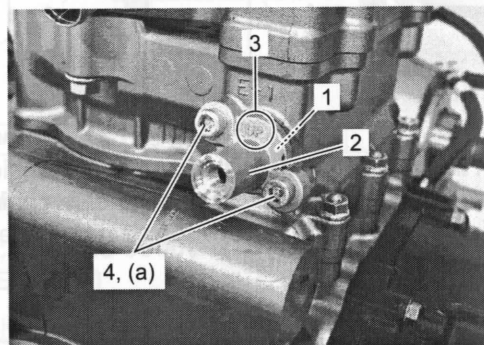
- 1) Compress the cam chain tension adjuster rod (1) by releasing the ratchet (2).



- 2) Install the new gasket (1).
- 3) Install the cam chain tension adjuster (2) with "UP" mark (3) faced to the top of cylinder head.
- 4) Tighten the cam chain tension adjuster mounting bolts (4) to the specified torque.

Tightening torque

Cam chain tension adjuster mounting bolt (a):
10 N·m (1.0 kgf-m, 7.5 lbf-ft)



- 5) Apply grease to the new O-ring (1) and install it.

"A": Grease 99000-25011 (SUZUKI SUPER GREASE A)

- 6) Install the spring (2) and cam chain tension adjuster cap bolt (3).

NOTE

Click sound is heard when extending the cam chain tension adjuster rod.

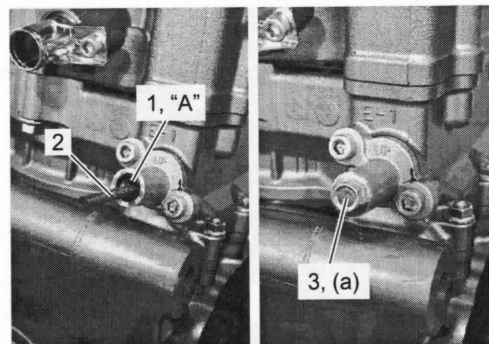
- 7) Tighten the cam chain tension adjuster cap bolt (3) to the specified torque.

Tightening torque

Cam chain tension adjuster cap bolt (Rear) (a):
7 N·m (0.7 kgf-m, 5.0 lbf-ft)

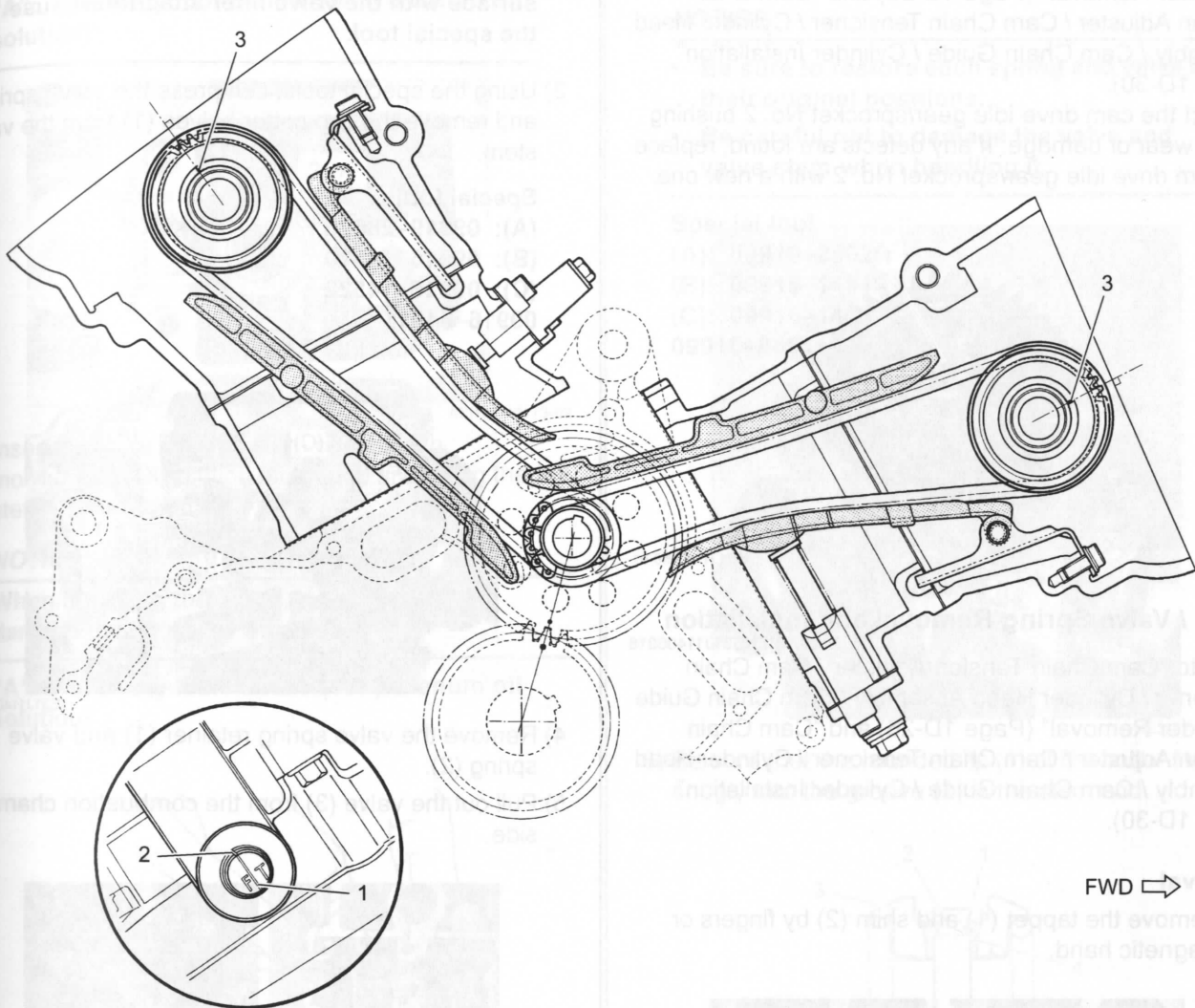
NOTICE

After installing the cam chain tension adjuster, check to be sure that the adjuster work properly by checking the slack of cam chain.



- 8) Rotate the generator rotor 720 degrees (2 turns) and align the "F | T" line (1) on the generator rotor with the index mark (2) of the valve timing inspection hole.
- 9) Recheck the positions of the engraved lines (3) on each cylinder cam drive idle gear/sprocket No. 2.

Front cylinder TDC of compression stroke

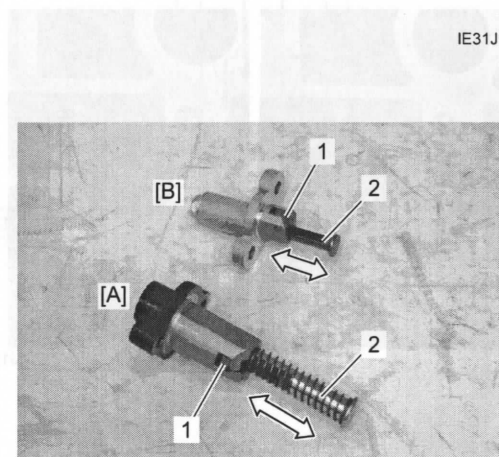


Cam Chain Tension Adjuster Inspection

BENE31J11406012

Refer to "Cam Chain Tension Adjuster / Cam Chain Tensioner / Cylinder Head Assembly / Cam Chain Guide / Cylinder Removal" (Page 1D-26) and "Cam Chain Tension Adjuster / Cam Chain Tensioner / Cylinder Head Assembly / Cam Chain Guide / Cylinder Installation" (Page 1D-30).

Unlock the ratchet (1), and move the push rod (2) in place to see if it slides smoothly. If any stickiness is noted or ratchet mechanism is faulty, replace the cam chain tension adjuster assembly with a new one.



IE31J1140159-01

IE31J1140167-01

[A]: Front cylinder cam chain tension adjuster

[B]: Rear cylinder cam chain tension adjuster