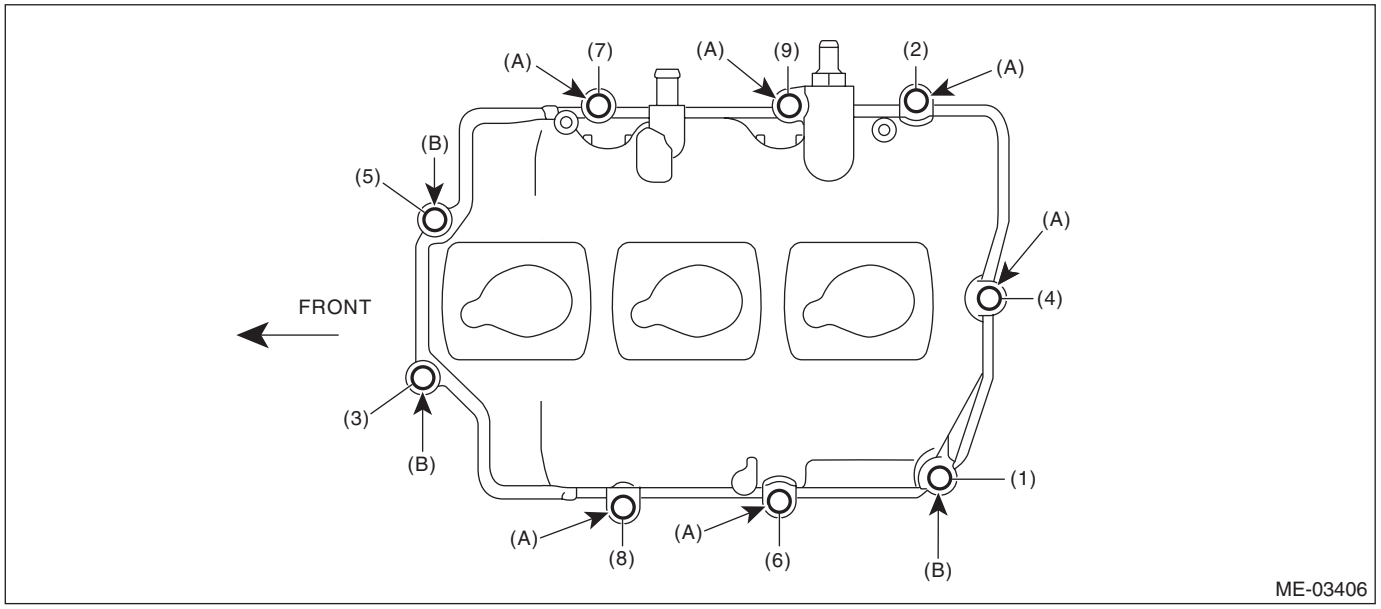
18.Camshaft

A: REMOVAL

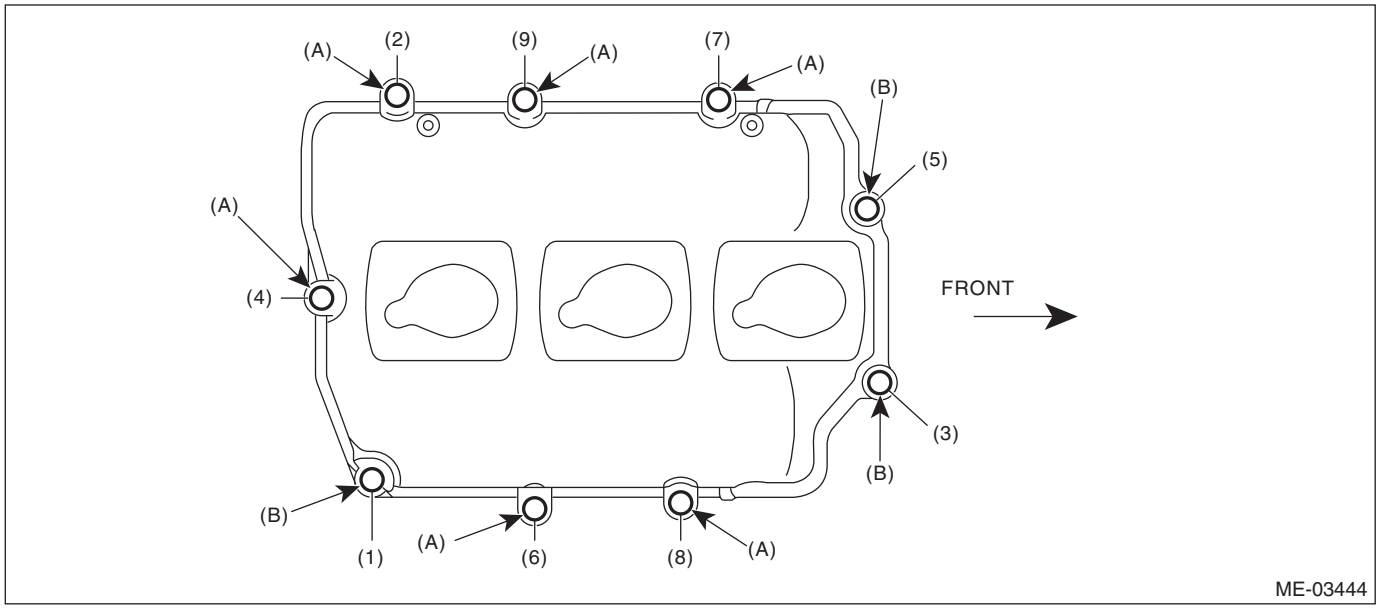
1) Remove the engine unit from vehicle. <Ref. to ME(H6DO)-36, REMOVAL, Engine Assembly.>
2) Remove the crank pulley. <Ref. to ME(H6DO)-47, REMOVAL, Crank Pulley.>
3) Remove the chain cover. <Ref. to ME(H6DO)-48, REMOVAL, Chain Cover.>
4) Remove the timing chain assembly. <Ref. to ME(H6DO)-54, REMOVAL, Timing Chain Assembly.>
5) Remove the cam sprocket. <Ref. to ME(H6DO)-73, REMOVAL, Cam Sprocket.>
6) Remove the crank sprocket. <Ref. to ME(H6DO)-74, REMOVAL, Crank Sprocket.>
7) Remove the exhaust oil flow control solenoid valve. <Ref. to FU(H6DO)-31, REMOVAL, Oil Flow Control Solenoid Valve.>
8) Remove the camshaft position sensor. <Ref. to FU(H6DO)-23, REMOVAL, Camshaft Position Sensor.>
9) Loosen the rocker cover bolt in the numerical order as shown in the figure, and then remove the rocker cover.

- LH side



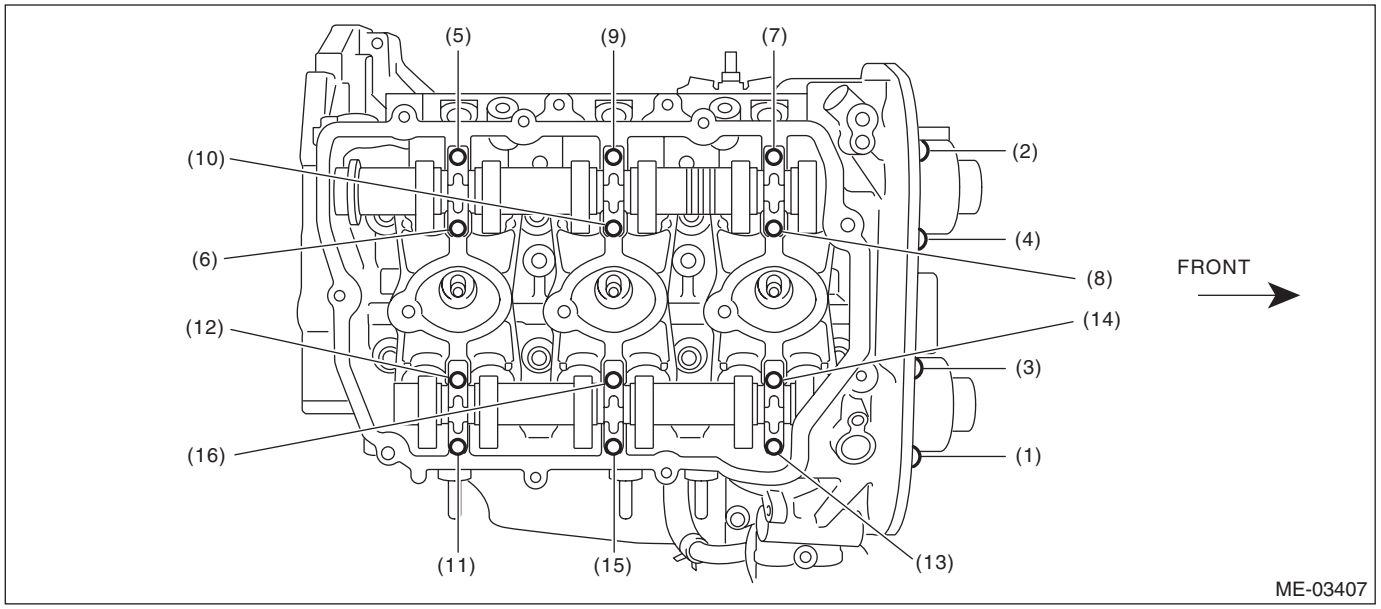
(A) M6 × 37
(B) M6 × 23

- RH side



(A) M6 × 37 (B) M6 × 23

10) Loosen the camshaft cap bolts equally, a little at a time in numerical sequence shown in the figure.



11) Remove the camshaft caps and camshaft (RH).

NOTE:
Arrange camshaft caps in order so that they can be installed in their original positions.

12) Similarly, remove the camshafts (LH) and related parts.

B: INSTALLATION

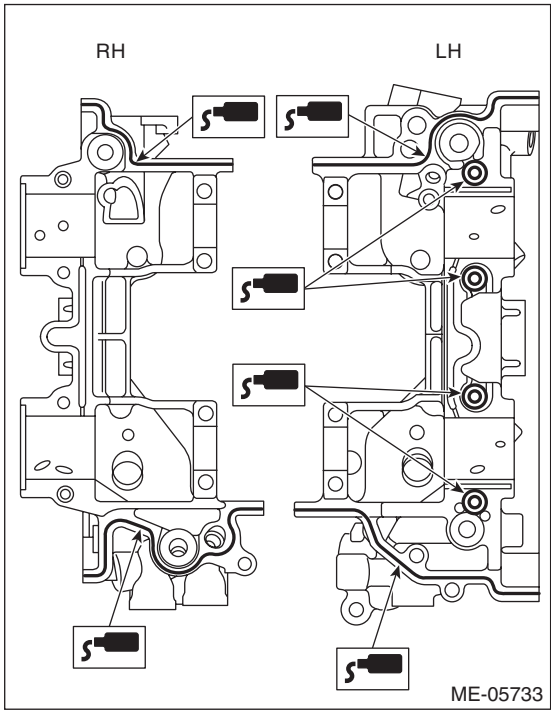
1) Apply engine oil to camshaft journals, and install the camshaft.
2) Install the camshaft cap.
   (1) Apply liquid gasket sparingly to back side of front camshaft cap as shown in the figure.

CAUTION:
Do not apply liquid gasket excessively. Applying excessively may cause excess gasket to flow toward camshaft journal, resulting in engine seizure.

NOTE:
Install within 5 min. after applying liquid gasket.

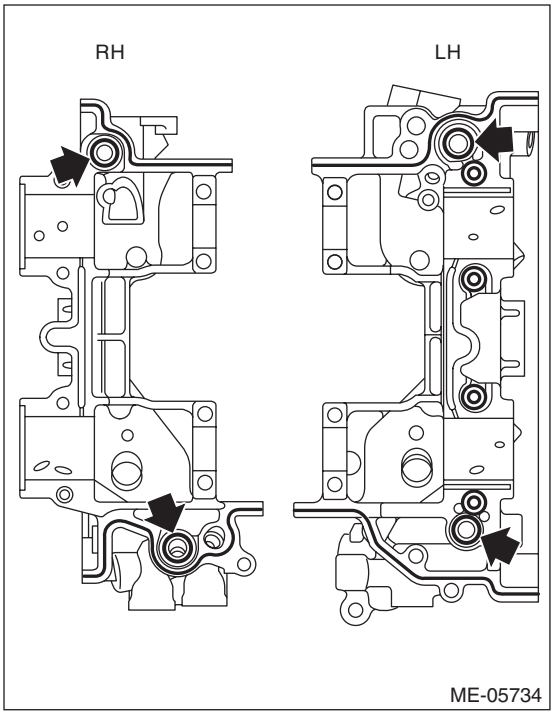
Liquid gasket:
THREE BOND 1217G (Part No. K0877Y0100) or equivalent

Applying liquid gasket diameter:
2.0±0.5 mm (0.079±0.020 in)



(2) Install O-rings to the front camshaft cap.

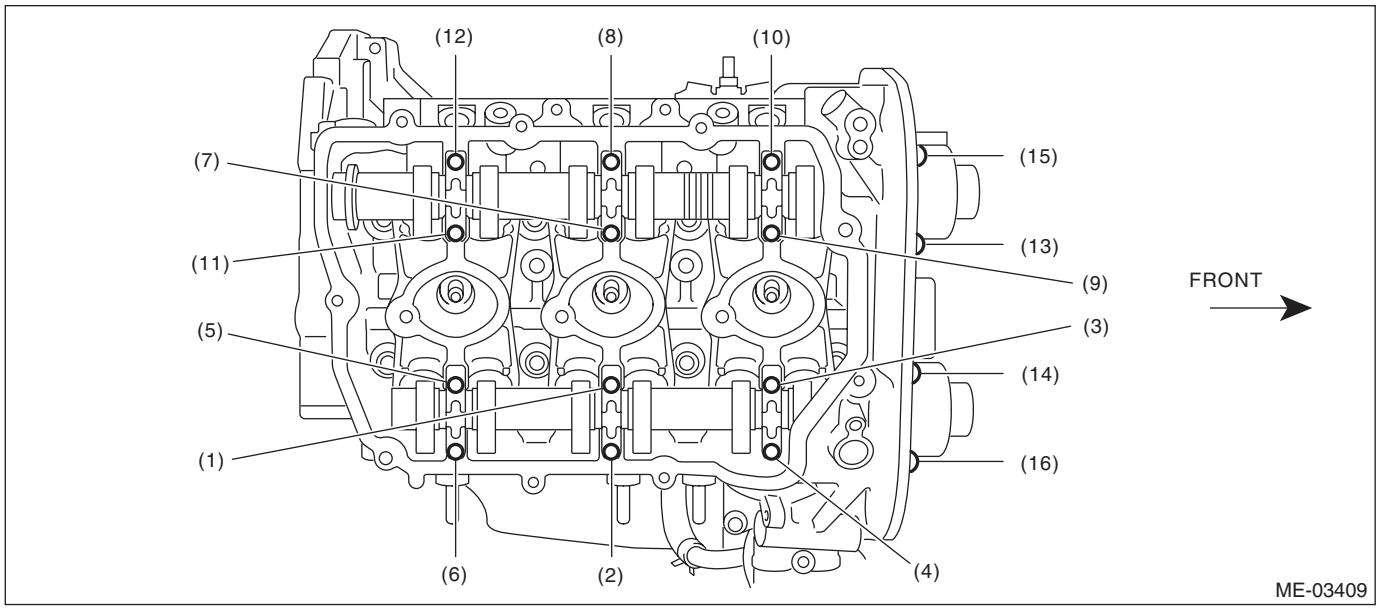
NOTE:
Use new O-rings.



(3) Apply engine oil to cap bearing surface, and install the cap to camshaft.

(4) Tighten the camshaft cap bolts in the numerical order as shown in the figure.

Tightening torque:
(1) — (12): 16 N·m (1.6 kgf-m, 12 ft-lb)
(13) — (16): 9.75 N·m (1.0 kgf-m, 7.2 ft-lb)



3) Install the rocker cover.
(1) Install the rocker cover gasket to the rocker cover.

NOTE:
Use a new rocker cover gasket.

(2) Apply liquid gasket sparingly to the mating surface of cylinder head and rocker cover as shown in the figure.

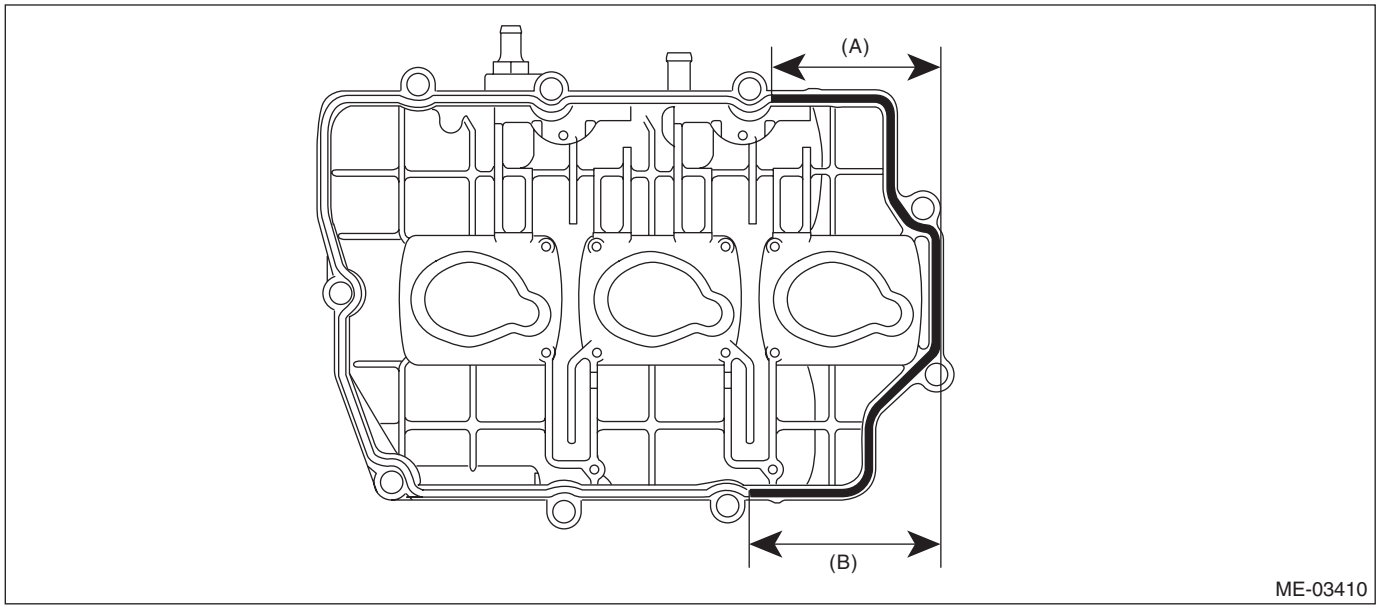
CAUTION:
Do not apply liquid gasket excessively. Applying excessively may cause excess gasket to flow toward camshaft journal, resulting in engine seizure.

NOTE:
Install within 5 min. after applying liquid gasket.

Liquid gasket:
THREE BOND 1217G (Part No. K0877Y0100) or equivalent

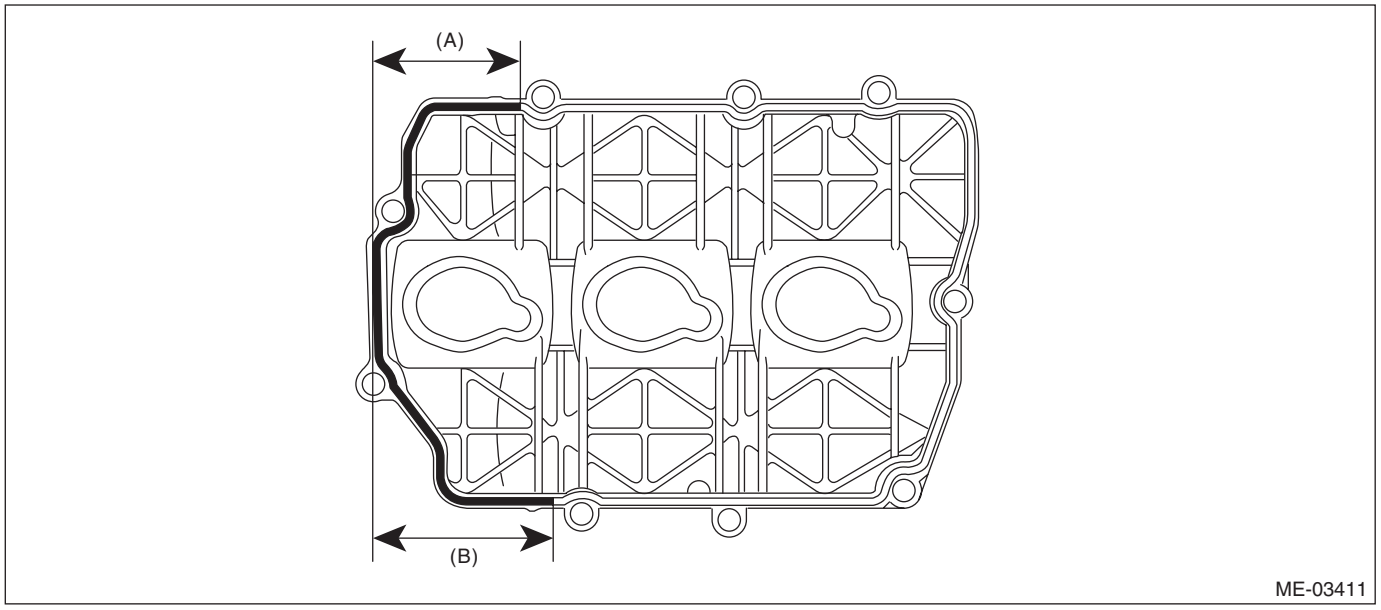
Applying liquid gasket diameter:
3.5±0.5 mm (0.138±0.020 in)

- LH side



(A) 90 mm (3.543 in) or more (B) 105 mm (4.134 in) or more

- RH side

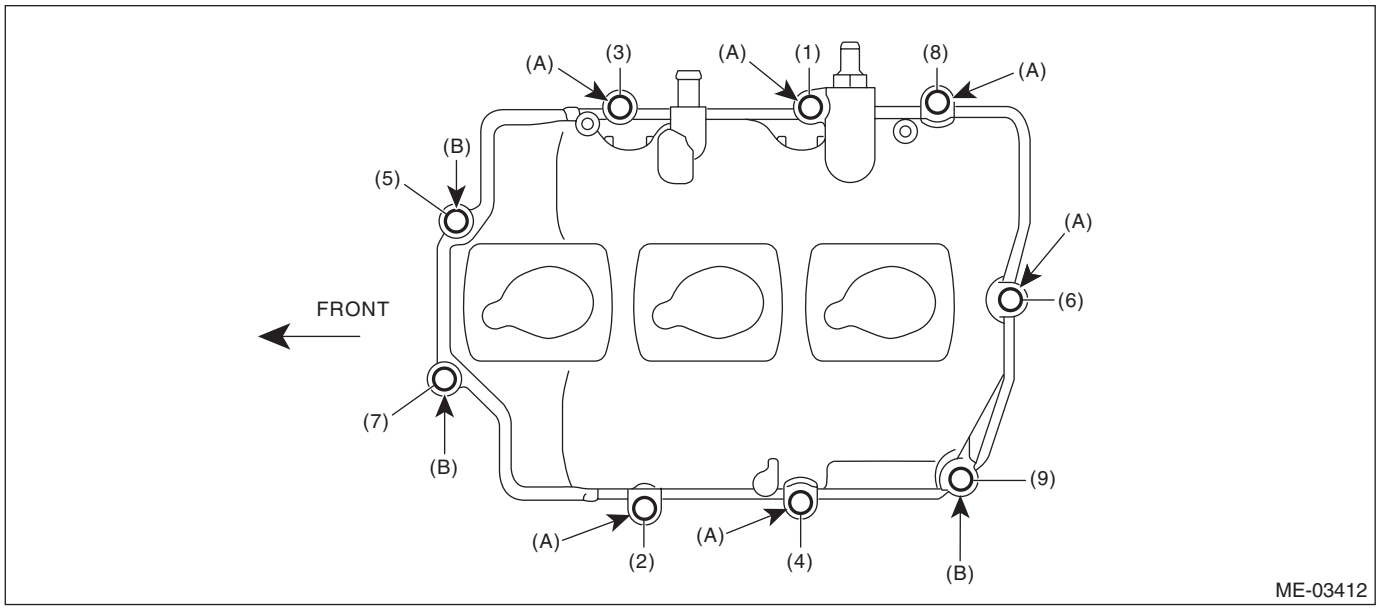


(A) 80 mm (3.150 in) or more (B) 100 mm (3.937 in) or more

(3) Tighten the rocker cover bolts in the numerical order as shown in the figure.

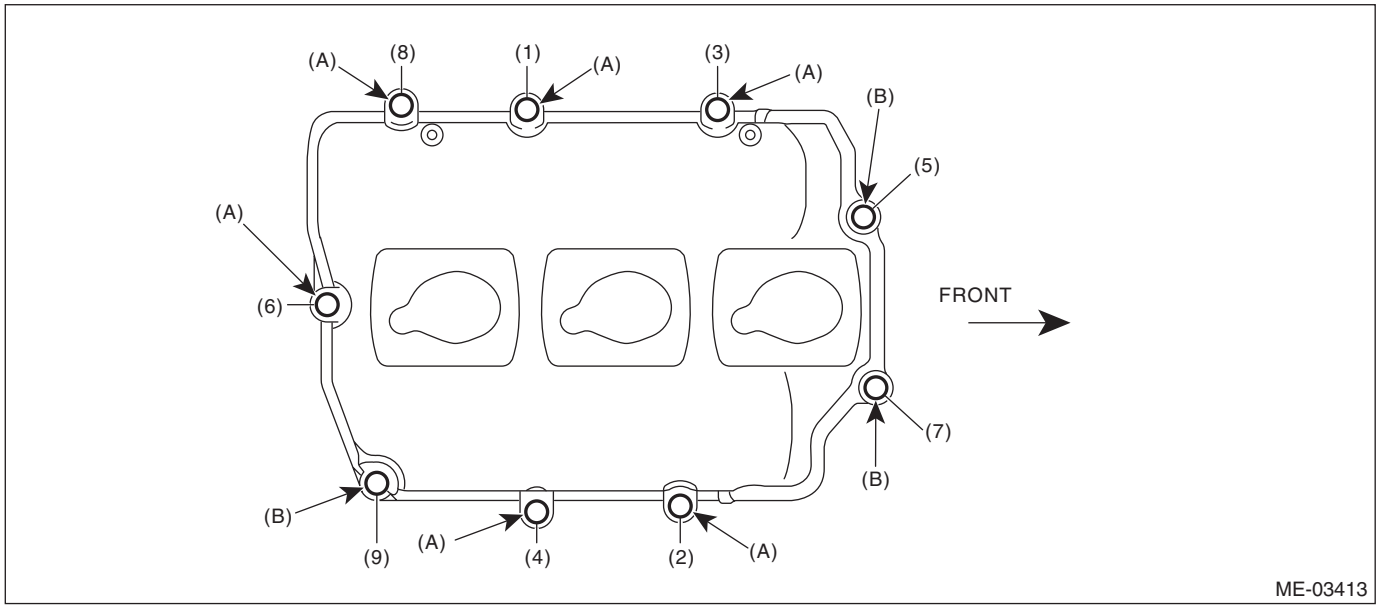
Tightening torque:
6.4 N·m (0.7 kgf-m, 4.7 ft-lb)

- LH side



(A) M6 × 37 (B) M6 × 23

- RH side

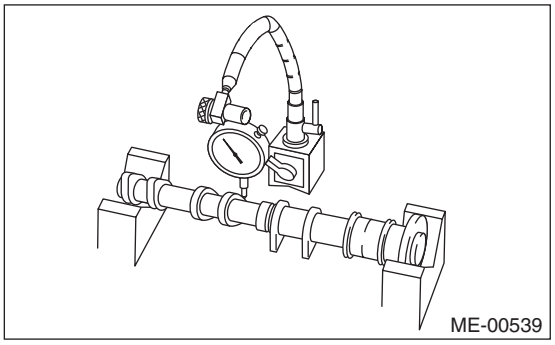


(A) M6 × 37 (B) M6 × 23

4) Install the crank sprocket. <Ref. to ME(H6DO)-74, INSTALLATION, Crank Sprocket.>
5) Install the cam sprocket. <Ref. to ME(H6DO)-73, INSTALLATION, Cam Sprocket.>
6) Install the timing chain assembly. <Ref. to ME(H6DO)-60, INSTALLATION, Timing Chain Assembly.>
7) Install the chain cover. <Ref. to ME(H6DO)-49, INSTALLATION, Chain Cover.>
8) Install the crank pulley. <Ref. to ME(H6DO)-47, INSTALLATION, Crank Pulley.>
9) Install the engine unit to vehicle. <Ref. to ME(H6DO)-40, INSTALLATION, Engine Assembly.>

C: INSPECTION

1) Measure the bend of camshaft. Repair or replace if bended.



2) Check the journal for damage and wear. Replace if faulty.
3) Check the cutout portion used for camshaft sensor for damage. Replace if faulty.
4) Measure the outside diameter of camshaft journal. If the journal diameter is not within specification, check the oil clearance.

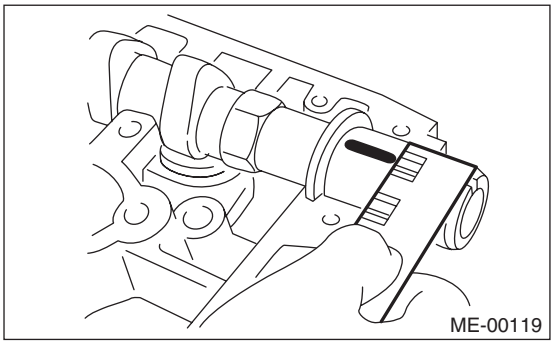
	Camshaft journal	
	Front	Except for front
Standard mm (in)	37.946 — 37.963 (1.4939 — 1.4946)	25.946 — 25.963 (1.0215 — 1.0222)

5) Measurement of the camshaft journal oil clearance:
(1) Clean the bearing caps and camshaft journals.
(2) Place the camshafts on cylinder head. (Without installing the valve rocker.)
(3) Place a plastigauge across each camshaft journal.
(4) Install the bearing cap.

NOTE:
Do not turn the camshaft.

(5) Remove the bearing caps.
(6) Measure the widest point of the plastigauge on each journal. If oil clearance exceeds the standard, replace the camshaft. If necessary, replace the camshaft caps and cylinder head as a set.

Standard:
0.037 — 0.072 mm (0.0015 — 0.0028 in)



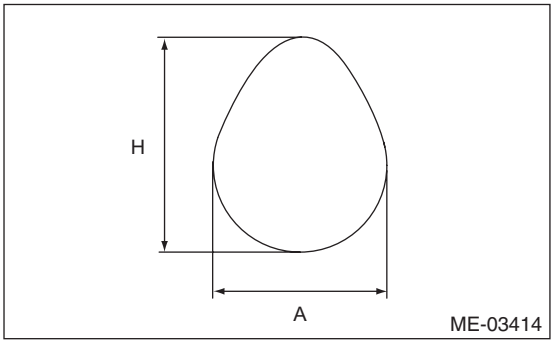
(7) Completely remove the plastigauge.

6) Check the cam face condition; remove the minor faults by grinding with oil stone. Measure the cam height H. If it exceeds the standard or offset wear occurs, replace it.

Cam height H:

Standard:
Intake:
45.90 — 46.00 mm (1.8071 — 1.8110 in)
Exhaust:
44.65 — 44.75 mm (1.7579 — 1.7618 in)

Cam base circle diameter A:
Intake:
36.0 mm (1.4173 in)
Exhaust:
36.0 mm (1.4173 in)



7) Measure the thrust clearance of camshaft with dial gauge. If the clearance exceeds the standard or offset wear occurs, replace the caps and cylinder head as a set. If necessary, replace the camshaft.

Standard:
Intake
0.075 — 0.135 mm (0.0030 — 0.0053 in)
Exhaust
0.075 — 0.135 mm (0.0030 — 0.0053 in)