

**DAIHATSU**  
**TYPE CB**  
**ENGINE**

[CB-23, CB-61 & CB-80]

**4**

**SECTION 4**  
**IN-VEHICLE SERVICE**

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WM-04001

## IN-VEHICLE SERVICE

### INSTRUCTIONS ON SERVICE OPERATIONS

1. This section only describes the removal/installation procedure for those parts which can be removed/installed while the engine is still mounted on the vehicle. As for the overhaul or inspection for the removed parts, see the section under "Engine Overhaul."
2. With regard to those operations for the timing belt, camshaft, crankshaft oil seal, camshaft oil seal and cylinder head gasket, previous to the operations, make sure to set the piston No.1 to the top dead center under the compression stroke.

**NOTE:**

The top dead center under the compression stroke of the cylinder No.1 can be confirmed by removing the oil filler cap and observing the top mark of the camshaft.

WM-04002

### TIMING BELT & WATER PUMP

#### REMOVAL

1. Drain engine coolant.
2. Remove the air cleaner and hose (CB-61 & CB-80 engines only)
3. Remove the engine mounting bracket. Prior to this operation, support the oil pan with a jack.

**NOTE:**

Be very careful not to deform the oil pan.

Extreme care must be exercised not to damage the oil drain plug.

The deformation of the oil pan will cause engine seizure.

4. Remove the V-belt.
5. Remove the water pump pulley.
6. Remove the crankshaft pulley.  
When the crankshaft pulley is slackened, lock the ring gear, using a screwdriver or the like.  
(On Type CB-80 engine, the space is very limited for this operation. Hence, it is advisable to use a screwdriver whose end is bent at a right angle for this operation.)

7. Remove the bracket (surge tank & cylinder head cover). (CB-80 engine only)
8. Remove the resistive cords. (CB-80 engine only)
9. Remove the cylinder head cover. (CB-80 engine only)
10. Remove the timing belt upper cover.
11. Remove the timing belt lower cover.
12. Remove the timing belt tensioner.  
Before the timing belt tensioner is removed, align the punch marks of the crankshaft and camshaft timing belt pulleys with the indicator marks, respectively, thus setting the piston No.1 to the top dead center under the compression stroke.

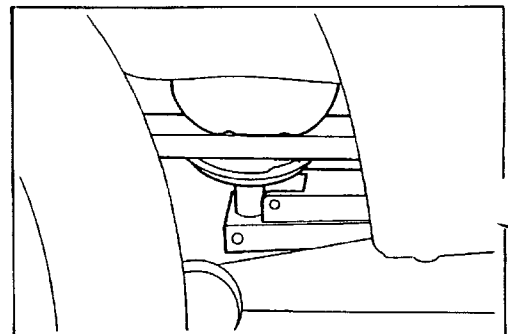


Fig. 4-1

WM-04003

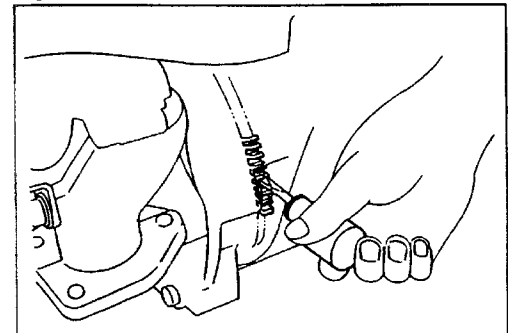


Fig. 4-2

WM-04004

(CB-23 & CB-61 engines)

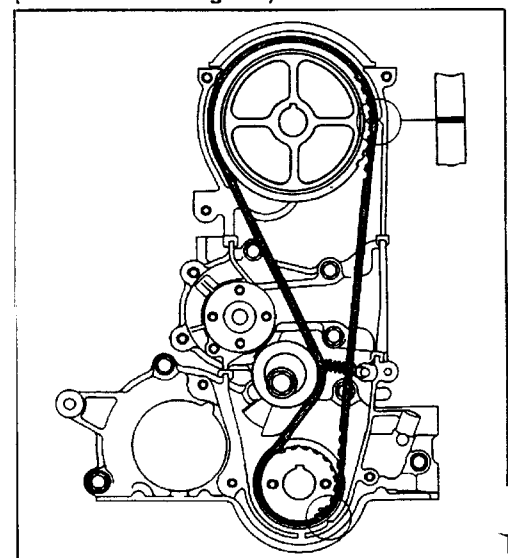


Fig. 4-3

WM-04005

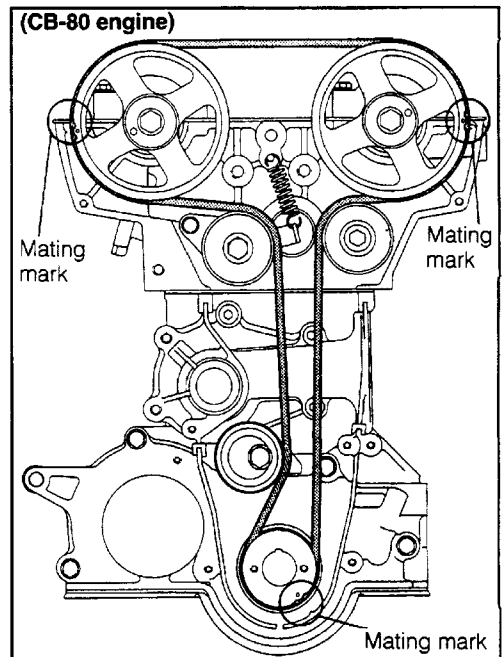


Fig. 4-4

WM-04006

13. Remove the crankshaft timing belt pulley flange.
14. Remove the timing belt.  
Prior to the timing belt removal, put a mark which shows the normal rotating direction at the back surface of the timing belt, using chalk or the like.

**NOTE:**

- ① When removing the timing belt, never use a tool such as a screwdriver.
- ② Make sure not to bend the belt sharply to form a small radius. Such practice will cut the belt cord.
- ③ Never permit oils or water to get to the belt, for such matter would shorten the life of the belt.

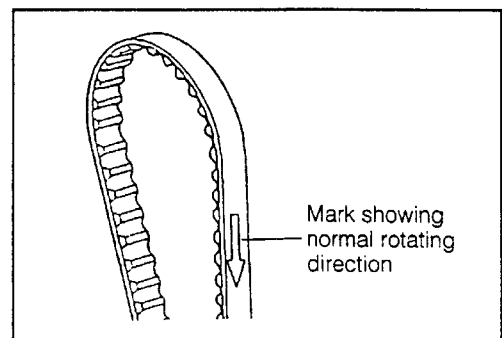


Fig. 4-5

WM-04007

- Remove the water pump.

WM-04008

**INSTALLATION**

1. Install the water pump.

**NOTE:**

Be sure to replace the gasket with a new one.

2. Installation of timing belt tensioner
  - (1) With the timing belt tensioner set to the lowest position, temporarily tighten the attaching bolt (two attaching bolts in case of CB-80 engine) of the timing belt tensioner.  
(This tightening must be made to such an extent that the tensioner can not be moved when the tension spring is attached.)

(CB-23 & CB-61 engines)

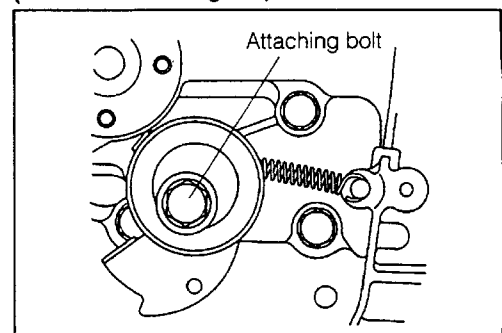


Fig. 4-6

WM-04009

## IN-VEHICLE SERVICE

- (2) Install the tension spring. Ensure that the tension spring are positively hooked at its both ends and will not be detached.

3. Install the timing belt.

**NOTE:**

- ① Make sure not to bend the belt sharply to form a small radius. Such practice will cut the belt cord.
- ② Never permit oils or water to get to the belt, for such matter would shorten the life of the belt.
- ③ When installing the belt, never try to pry the belt with a screwdriver or the like.
- ④ When turning the engine with the belt installed, the rotation should be made at the crankshaft side.
- ⑤ If the belt is reused, install the belt in such a way that the belt is turned in the same direction as indicated by the arrow mark which was put at the belt's back surface during the belt removal.

- (1) Ensure that the mating marks of the crankshaft and camshaft timing belt pulleys are aligned with the indicator marks, respectively.

(CB-80 engine)

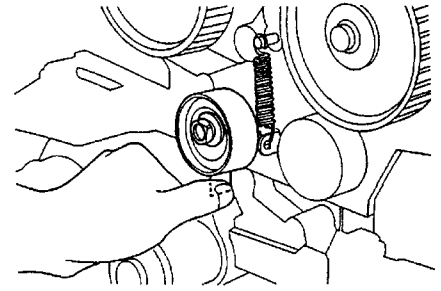


Fig. 4-7

WM-04010

(CB-80 engine)

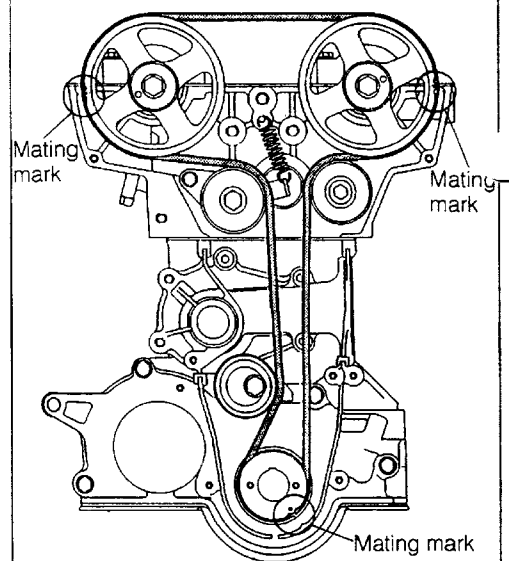


Fig. 4-8

WM-04011

(CB-23 & CB-61 engines)

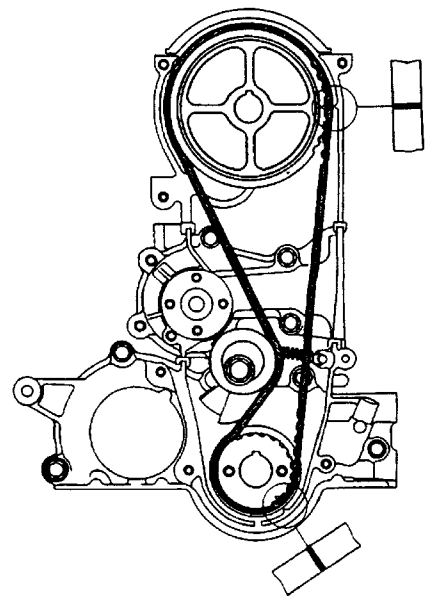


Fig. 4-9

WM-04012

(CB-80 Engine only)

- (2) Install the timing belt in such a way that the part number of the timing belt can be seen properly, as viewed toward the cylinder head side, and comes between the timing marks of the camshaft pulley. Also, make sure that the three mating marks at the back surface of the belt are aligned with the mating marks on the camshaft and crankshaft timing belt pulleys, respectively. Ensure that the belt is not slackened, especially at the tension side (exhaust side) of the belt.

**NOTE:**

If the three mating marks at the back surface of the belt are erased, the belt should be installed in such a way that the belt is not slackened at the tension side (exhaust side).

- (3) Ensure that the mating marks of the timing belt pulleys are aligned with the mating marks on the belt, respectively.
- (4) Slacken the attaching bolts of the tensioner which were tightened temporarily in the previous step. Ensure that the timing belt tension is provided by the tension spring.

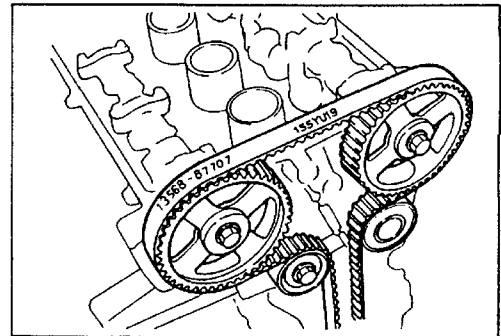
- (5) Turn the crankshaft slightly in the normal rotating direction (clockwise), thus applying tension to the timing belt between the intake camshaft timing belt pulley and the exhaust camshaft timing belt pulley and between the exhaust camshaft timing belt pulley and the crankshaft timing belt pulley.

- (6) Tighten the timing belt tensioner temporarily.

- (7) Turn the crankshaft about two turns in the normal rotating direction, until the mating mark on the cylinder head is aligned with the recessed timing mark on the camshaft.

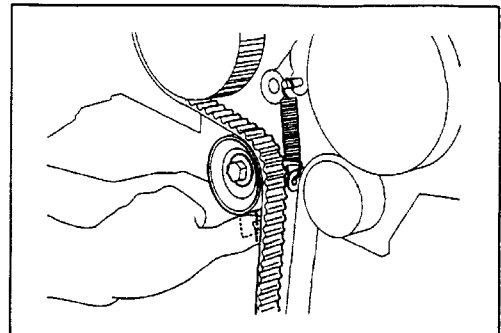
**NOTE:**

Never make a reverse turn, even if it is the slightest one, during this operation.



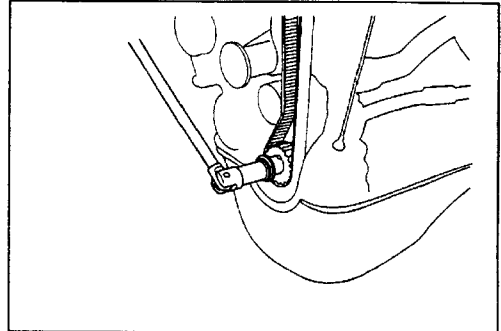
**Fig. 4-10**

WM-04013



**Fig. 4-11**

WM-04014



**Fig. 4-12**

WM-04015

WM-04016

## IN-VEHICLE SERVICE

- (8) Ensure that the tension spring force is being applied to the tensioner, by slackening the bolts of the timing belt tensioner. WM-0401

- (9) Tighten the bolts of the timing belt tensioner.

**Tightening Torque:**

(CB-23 & CB-61 engines)

1.9 - 3.1 kg-m (14 - 22 ft-lb)

(CB-80 engine)

M10 bolt 3.0 - 4.5 kg-m (22 - 33 ft-lb)

M6 bolt 0.6 - 0.9 kg-m (5 - 7 ft-lb)

- (10) Align the ignition timing marks at the flywheel by turning the crankshaft one turn.

Push the belt between the camshaft timing belt pulleys with a force of 3 kg (6.6 lb). Check to see if the deflection meets the specification.

**Specified Deflection: About 5 mm (0.197 inch)**  
(with a force of 3 kg (6.6 lb) applied)

4. Install the crankshaft timing belt pulley flange.

**NOTE:**

Be sure to install the crankshaft timing belt pulley flange in the correct direction.

5. Install the cylinder head cover. (CB-23 & CB-61 engines)
6. Install the resistive cords. (CB-23 & CB-61 engines)
7. Install the air cleaner assembly. (CB-23 engine only)
8. Install the intake pipe. (CB-61 engine only)
9. Install the surge tank. (CB-61 engine only)
10. Install the timing belt lower cover.
11. Install the timing belt upper cover.

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12. Install the crankshaft pulley.

When the crankshaft pulley is tightened, lock the ring gear, using a screwdriver or the like.

(On Type CB-80 engine, the space is very limited for this operation. Hence, it is advisable to use a screwdriver whose end is bent at a right angle for this operation.)

**Tightening Torque: 9.0 - 10.0 kg-m (65 - 72 ft-lb)**

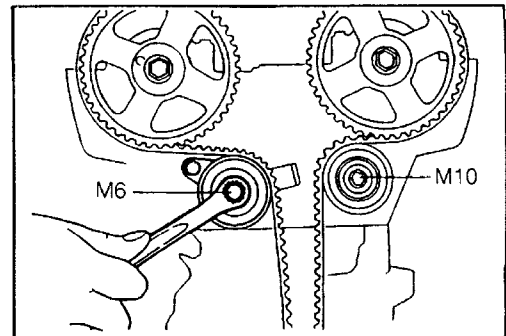


Fig. 4-13

WM-04018

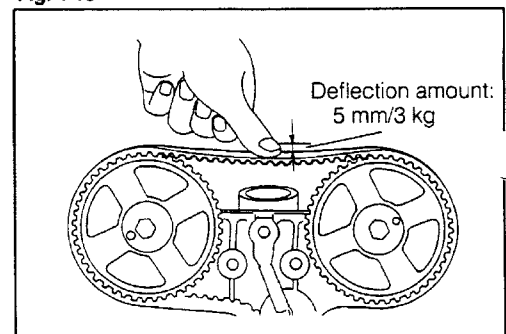


Fig. 4-14

WM-04018A

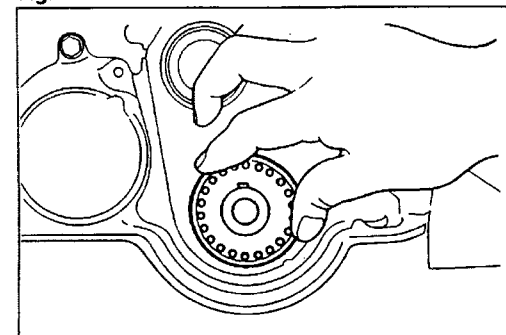


Fig. 4-15

WM-040

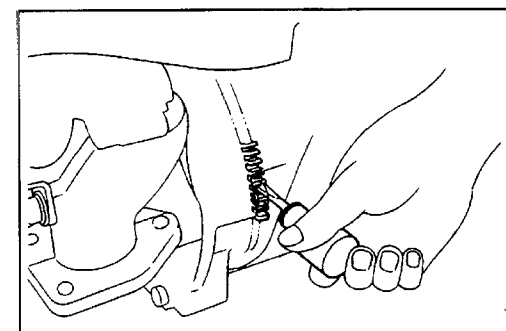


Fig. 4-16

WM-04021

13. Install the cylinder head cover. (CB-80 engine only)
14. Install the bracket (surge tank & cylinder head cover). (CB-80 engine only)
15. Install the water pump pulley.
16. Install the V-belt.
17. Install the engine mounting bracket. Remove the jack supporting the oil pan.
18. Install the air cleaner and hose. (CB-61 & CB-80 engines only)
19. Fill cooling water.

WM-04022

## CRANKSHAFT OIL SEAL

### REMOVAL

1. After the operations up to the timing belt removal in the section under "Removal of Timing Belt & Water Pump" have been completed, proceed to this operation of "Crankshaft Oil Seal Removal."

Remove the crankshaft timing belt pulley.

#### NOTE:

If any difficulty should be encountered in removing the crankshaft timing belt pulley, screw-in bolts into the threaded holes provided in the side of the pulley.

3. Remove the crankshaft timing belt pulley flange.
4. Remove the woodruff key.
5. Removal of crankshaft oil seal

Remove the oil seal, using the following SST.

SST: 09223-87702-000

- (1) With the oil seal remover & replacer ① placed against the oil seal, drive a drift into the oil seal so as to make a hole.
- (2) Thread a tapping screw into the thus-produced hole in the oil seal.
- (3) Screw the puller ④ so as to remove the oil seal.

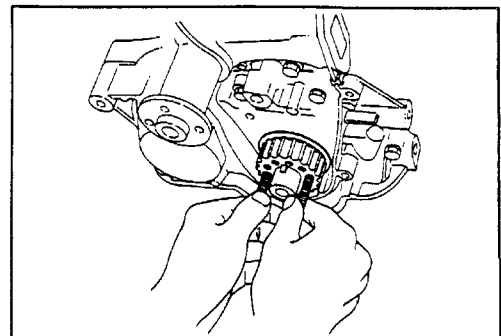


Fig. 4-17

WM-04023

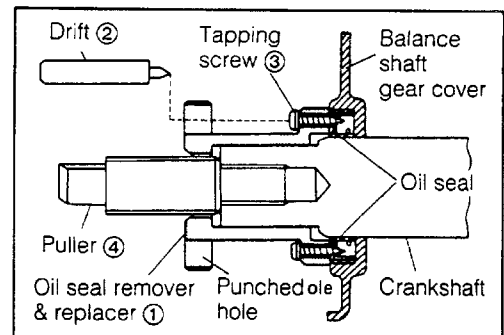


Fig. 4-18

WM-04024

### INSTALLATION

1. Install the new crankshaft oil seal.  
SST: 09223-87702-000

- (1) Apply engine oil to the lip section of the oil seal.
- (2) Place the oil seal remover & replacer ① against the oil seal.
- (3) Place the crankshaft attaching bolt (2) against the remover & replacer ①. Then, proceed to install the oil seal into position by turning the crankshaft attaching bolt ②.

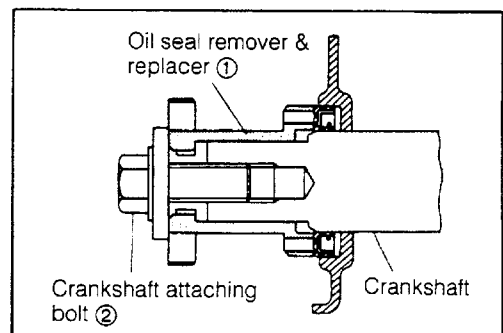


Fig. 4-19

WM-04025