INJECTION TIMING DEVICE ASSEMBLY

Preceding Work: Removal of vacuum pump

1. Cylinder Head Cover
2. Bolt: 10 N·m (89 lb-in)
3. Gasket: Replace
4. Fuel Injection Pump
5. Seal: Replace
6. Screw Plug: 30 N·m (22 lb-ft)
7. Oil Pan
8. Locking Pin
9. Injection Timing Device
10. Washer
11. Bolt (Left-Hand Thread): 46 N·m (34 lb-ft)
12. Camshaft Sprocket
13. Washer
14. 12-Sided Stretch Bolt: Check, 25 N·m (18 lb-ft) + 90°
15. Timing Chain
16. Seal
17. Chain Tensioner: 80 N·m (59 lb-ft)
Tools Required
116 589 02 34 00 Threaded Bolt
116 589 20 33 00 Sliding Hammer
601 589 00 08 00 Flange
601 589 05 21 00 Locking Screw
667 589 04 63 00 Retaining Plate

Removal & Installation Procedure
1. Remove the bolts (2) and then remove the cylinder head cover (1) and gasket (3).

Installation Notice

| Tightening Torque | 10 N•m (89 lb-in) |

Replace the gasket.
Rotate the engine 1 revolution by hand and check TDC marking of the crankshaft and camshaft.

2. Loosen the camshaft sprocket bolt (14).

Installation Notice

| Tightening Torque | 25 N•m (18 lb-ft) + 90° |

Do not remove the bolt.
If max. length of bolt exceeds 53.6 mm, replace it.

3. Loosen the bolt (11) (left-hand thread).

Installation Notice

| Tightening Torque | 46 N•m (34 lb-ft) |

Do not remove the bolt.
4. Position the no.1 cylinder at ATDC 15°.
   **Notice:** Do not rotate the engine with camshaft sprocket bolt or opposite direction of the engine rotation.

5. Remove the plug (6) and seal (5) from the fuel injection pump and collect oil in a suitable vessel.
   **Installation Notice**
   
<table>
<thead>
<tr>
<th>Tightening Torque</th>
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<td>30 N·m (22 lb-ft)</td>
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   Replace the seal.

6. Install the locking screw 601 589 05 21 00 (18) into the injection pump.
   **Notice:** Before tightening the bolts for the injection timing device and the camshaft sprocket, always remove the locking screw 601 589 05 21 00 from the injection pump and reinstall the plug.

7. Place alignment marks (arrow) on the timing chain (12) and camshaft sprocket (15).
8. Remove the chain tensioner (17).

**Installation Notice**

| Tightening Torque | 80 N•m (59 lb-ft) |

Replace the seal (16).

9. Pull out the 12-sided stretch bolt (14) and washer and remove the camshaft sprocket (12).

10. Pull out the bolt (11) and washer (10).

**Notice**: Be careful that the bolt is left-hand thread.

11. Using special tool (Sliding Hammer 116 589 20 33 00 - 24, Threaded bolt 116 589 02 34 00 - 25), remove the locking pin (8).
12. Push back the timing chain with retaining plate 667 589 04 63 00 (26) and remove the injection timing device (9).

13. Installation should follow the removal procedure in the reverse order.

14. After assembling the engine, check start of delivery and adjust if necessary.