

VALVE TIMING (Continued)

directly from the thirty tooth sprocket on the idler sprocket assembly. A fixed chain guide and a hydraulic oil damped tensioner are used to maintain tension in each secondary chain system. The hydraulic tensioners for the secondary chain systems are fed pressurized oil from oil reservoir pockets in the block. Each tensioner also has a mechanical ratchet system that limits chain slack if the tensioner piston bleeds down after engine shut down. The tensioner arms and guides also utilize nylon wear faces for low friction and long wear. The secondary timing chains receive lubrication from a small orifice in the tensioners. This orifice is protected from clogging by a fine mesh screen which is located on the back of the hydraulic tensioners.

STANDARD PROCEDURE**STANDARD PROCEDURE - ENGINE TIMING - VERIFICATION**

CAUTION: The 4.7L is a non free-wheeling design engine. Therefore, correct engine timing is critical.

NOTE: Components referred to as left hand or right hand are as viewed from the drivers position inside the vehicle.

NOTE: The blue link plates on the chains and the dots on the camshaft drive sprockets may not line up during the timing verification procedure. The blue link plates are lined up with the sprocket dots only when re-timing the complete timing drive. Once the timing drive is rotated blue link-to-dot alignment is no longer valid.

Engine base timing can be verified by the following procedure:

(1) Remove the cylinder head covers (Refer to 9 - ENGINE,CYLINDER HEAD,CYLINDER HEAD COVER(S) - REMOVAL).

(2) Using a mirror, locate the TDC arrow on the front cover (Fig. 109). Rotate the crankshaft until the mark on the crankshaft damper is aligned with the TDC arrow on the front cover. The engine is now at TDC.

(3) Note the location of the V8 mark stamped into the camshaft drive gears (Fig. 110). If the V8 mark on each camshaft drive gear is at the twelve o'clock position, the engine is at TDC (cylinder #1) on the exhaust stroke. If the V8 mark on each gear is at the six o'clock position, the engine is at TDC (cylinder #1) on the compression stroke.

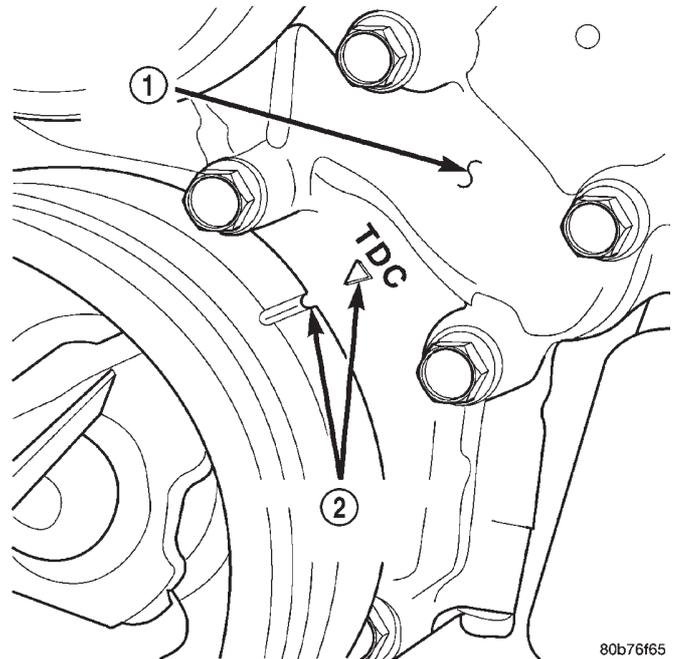


Fig. 109 Engine Top Dead Center (TDC) Indicator Mark

- 1 - TIMING CHAIN COVER
2 - CRANKSHAFT TIMING MARKS

(4) If both of the camshaft drive gears are off in the same or opposite directions, the primary chain or both secondary chains are at fault. Refer to Timing Chain and Sprockets procedure in this section.

(5) If only one of the camshaft drive gears is off and the other is correct, the problem is confined to one secondary chain. Refer to Single camshaft timing, in this procedure.

(6) If both camshaft drive gear V8 marks are at the twelve o'clock or the six o'clock position the engine base timing is correct. Reinstall the cylinder head covers.

SINGLE CAMSHAFT TIMING

NOTE: to adjust the timing on one camshaft, perform the following procedure.

(1) Using Chain Tensioner Wedge, special tool 8350, stabilize the secondary chain drive (Fig. 111). For reference purposes, mark the chain-to-sprocket position (Fig. 111).

(2) Remove the camshaft drive gear retaining bolt.

(3) Carefully remove the camshaft drive gear from the camshaft.

(4) Re-index the camshaft drive gear in the chain until the V8 mark is at the same position as the V8 mark on the opposite camshaft drive gear.