

Balance Shaft Caution on 2004-2012 GM 3.5 & 3.7L DOHC Engines

The AERA Technical Committee offers the following information cautioning technicians performing balance shaft service on 2004-2012 GM 3.5 & 3.7L DOHC engines. The balance shafts in these engines install from the rear of the block and generally are serviced after the engine has been removed from the vehicle.

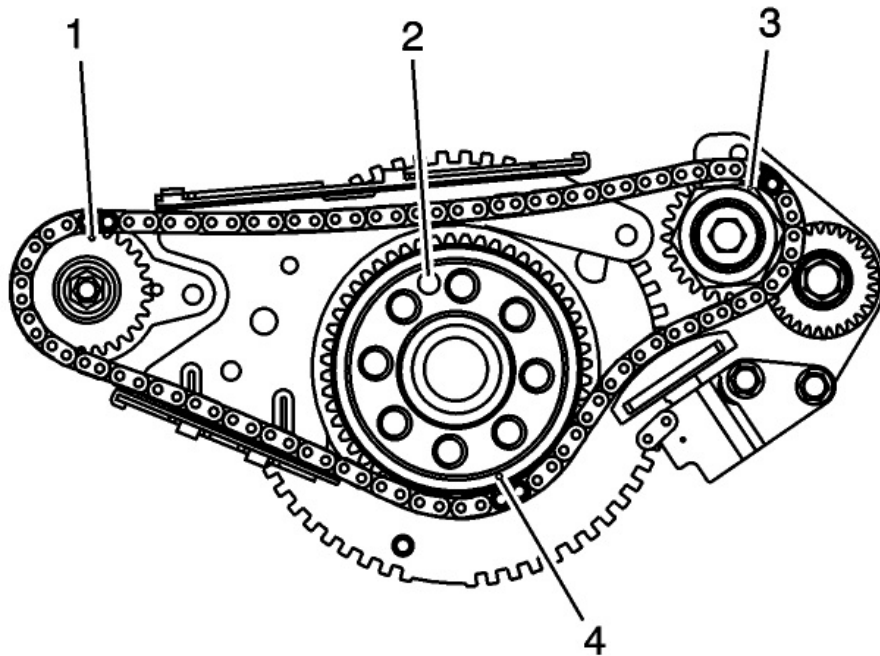
The caution expressed involves the disassembly process and observing the components prior to removing any bolts. The timing gears located on the end of the balance shafts are not keyed to the shafts and removing the timing gear will most certainly affect the proper gear timing. The timing gears are not available individually and are sold as part of the each balance shaft assembly. The gears do have timing marks as shown in the Figure 1 below.

The assemblies should be removed as units after removing the chain tensioner and balance shaft retaining bolts (two for right side and one for left side). As a note, these are a one use bolt and should be replaced anytime they are removed. Torque the new bolts to 106 IN/LBS (12 Nm) after installing the balance shaft assemblies. The timing chain should have 3 discolored links used to correctly time the assemblies during re-assembly.



Figure 1. Balance Shaft Gear Timing Mark

Refer to the illustration in Figure 2 and steps below to correctly assemble the balance shafts while noting it will take eleven crankshaft revolutions to realign the links with the timing gear marks.



1. Left Hand Balance Shaft Sprocket at 12 O'Clock
2. Crankshaft Dowel is at 11:30 & Sprocket Mark at 4:30
3. Right Hand Balance Shaft Sprocket at 2:30 O'Clock
4. Crankshaft Sprocket Mark Should be at 4:30 O'Clock

Make sure the 3 timing marks on the sprockets line up with a dark link on the chain

Figure 2. Timing Chain Installation

- Rotate the crankshaft until the left hand balance shaft sprocket timing mark (1) is at 12:00 position.
- The right hand balance shaft sprocket timing mark (3) should be at 2:30 position.
- The crankshaft dowel pin hole (2) is at 11:30, and the crankshaft sprocket mark (4) should be at 4:30 position.
- Make sure the 3 timing marks on the sprockets line up with a dark link on the chain.
- Every 11 crankshaft rotations, 3 of the 5 dark links on the chain will line up with the timing marks.
- Install the timing chain tensioner and torque the mounting bolts to 89 IN/LBS (10 Nm)