



## Engine Vibration on 2006-2016 Hyundai 2.0 & 2.4L Engines

The AERA Technical Committee offers the following information on engine vibration for 2006-2016 Hyundai 2.0L & 2.4L engines. This information should be considered anytime the engine is being assembled or whenever an engine vibration exists.

Certain "Theta" engines require proper indexing of the timing marks of the oil pump module during assembly. If the oil pump module timing marks are improperly indexed, abnormal engine vibration may result. This module is also referred to as a BSM as it is a combination of the oil pump and balance shaft assembly. Not all 2.0 & 2.4L engines use the BSM assembly.

### Affected vehicles:

- 2006-2010 MY Sonata (NF) equipped with 2.4L engine
- 2011-2014 MY Sonata (YF) equipped with 2.0T or 2.4L engines
- 2015-later MY Sonata (LF) equipped with 2.0T or 2.4L engines
- 2010-2012 MY Santa Fe (CM) equipped with 2.4L engine
- 2013-later MY Santa Fe Sport (AN) equipped with 2.0T or 2.4L engines
- 2010-later MY Tucson (LM) equipped with 2.4L engine

Follow the steps below to properly time the BSM.

1. Prior to installing the lower oil pan, confirm the proper indexing of the Oil Pump Module timing marks.

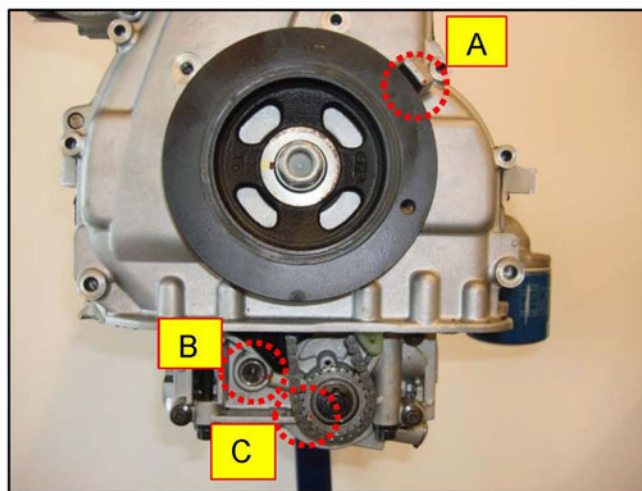
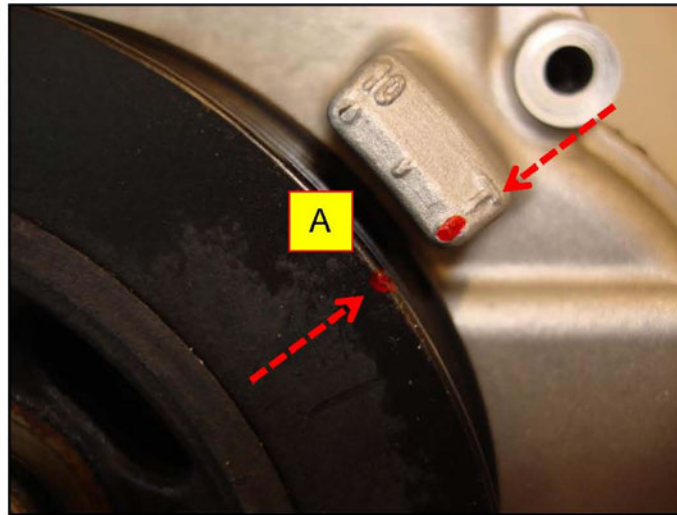


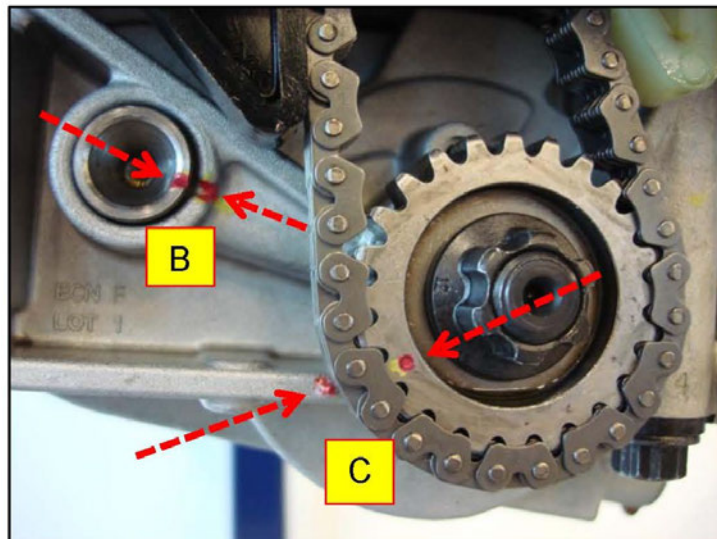
Figure 1.

Locate the timing marks for (A) crankshaft pulley and timing chain cover, (B) counter balance driven shaft and housing, (C) oil pump driven sprocket and housing as shown in Figure 1.



**Figure 2.**

2. Rotate the (A) crankshaft pulley until the notched mark on the pulley lines up with the 0°TDC sight mark "T" on the timing chain cover as shown in Figure 2. Marks are Red for visualization.



**Figure 3.**

3. Confirm that the (B) counter balance driven shaft and housing marks are lined up when the (C) oil pump driven sprocket and housing marks are lined up as shown in Figure 3.
4. If the (C) oil pump driven sprocket and housing marks are not lined up, then repeat Step 2 above by rotating the crankshaft pulley one complete turn clockwise.



5. Step 2 may need to be repeated up to 3 times until the marks for both (B) and (C) line up.

**NOTE:**

- The counter balance driven shaft (B) turns twice the crankshaft speed.
- The oil pump driven sprocket (C) returns to the same indexed position after 4 complete clockwise rotations of the crankshaft pulley (A).
- Reinstall the oil pump chain to the driven sprocket if all marks are not aligning properly.