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Service Information Bulletin

SUBJECT	DATE
Camshaft Timing	January 2013

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0081	DD Platform	Camshaft Timing Verification	Changed description of tools. Improved graphic.
		Timing the Camshafts with the Gear Train Installed	Changed description of tools.



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2 Camshaft Timing Verification

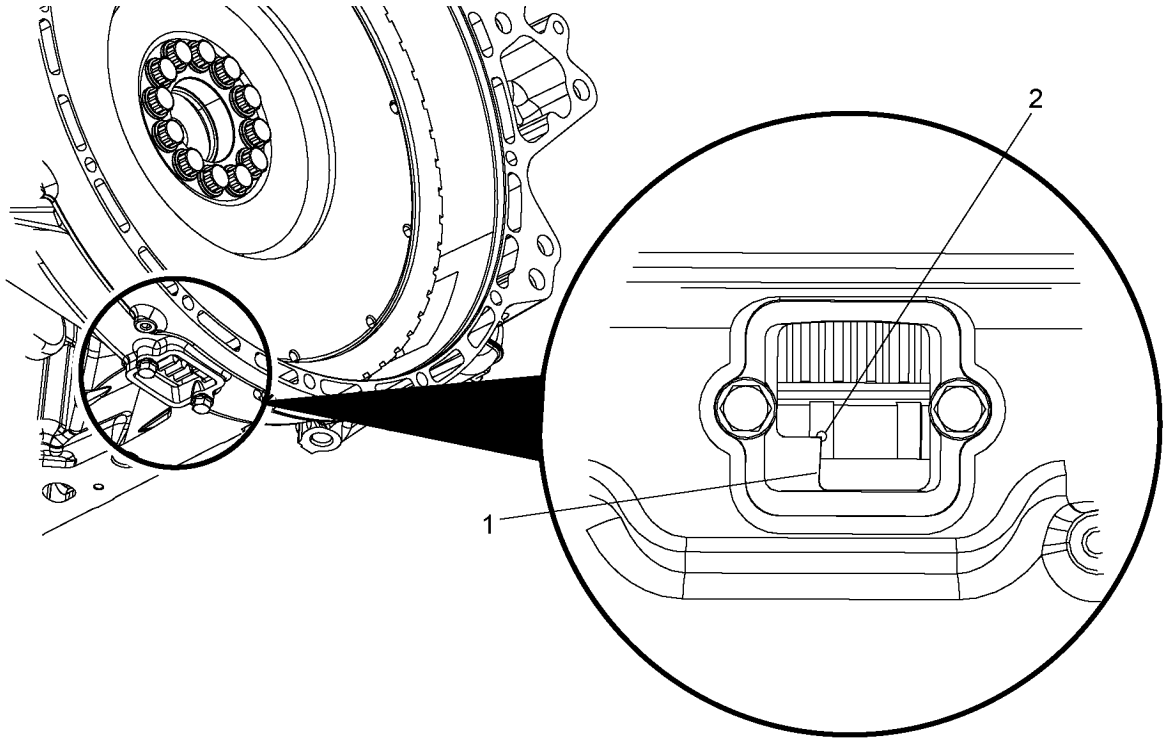
Verify the camshaft timing as follows:

Table 1.

Service Tools Used in the Procedure		
Tool Number	Tool Name	Engine
J-46392 or W904589046300	Engine Barring Tool	DD Platform
W470589001500	Top Dead Center Locating Pin	DD Platform
W470589034000	Camshaft Timing Tool	EPA07 DD13*
W470589114000	Camshaft Timing Tool	All Years DD13
W470589054000	Camshaft Timing Tool	EPA07 DD15
W470589104000	Camshaft Timing Tool	All Years DD15 & DD16

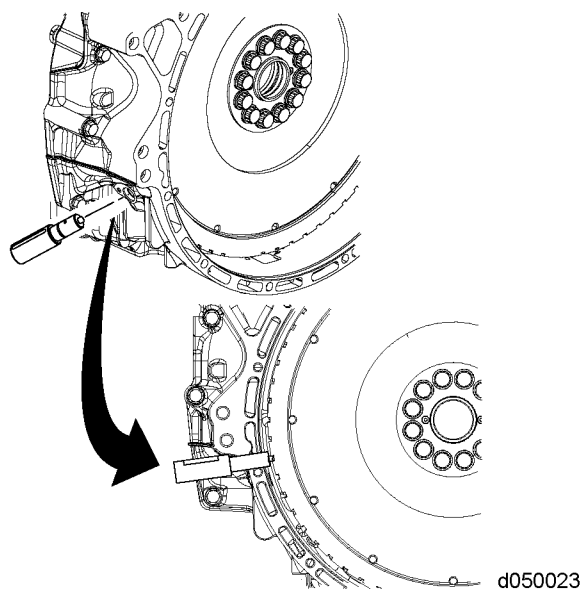
* Can be used on EPA10 with modification (refer to tool letter 10 TL-9)

1. Remove the rocker cover. Refer to section "Removal of the Rocker Cover".
2. Bar the engine to Top Dead Center (TDC) with engine barring tool (J-46392 or W904589046300) on cylinder No.1 with the No. 6 valve in overlap. The dot (2) that is located inside the flywheel tone ring is aligned with the edge of the pointer (1).

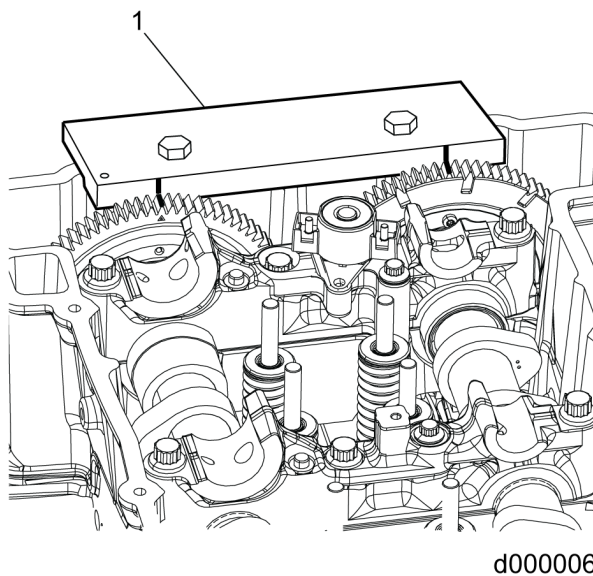


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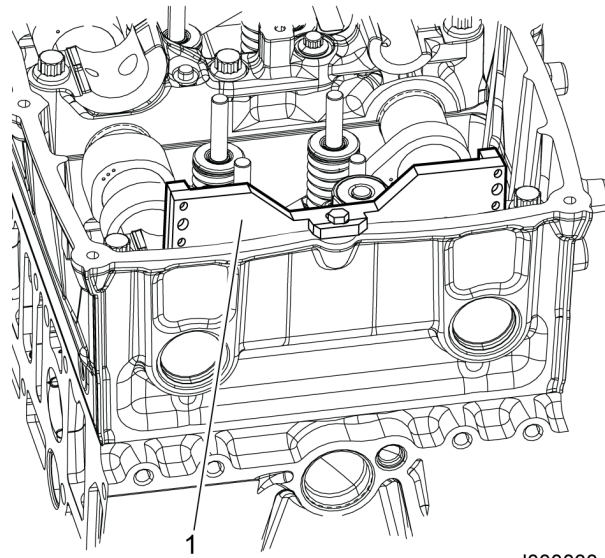
3. Locate the mark on the camshaft and mark the top of the corresponding gear tooth with a light colored paint pen.
4. Remove the Crankshaft Position (CKP) sensor from the flywheel housing. Refer to section "Removal of the Crankshaft Position Sensor".
5. Install the flywheel TDC locating pin (W470589001500), through the crankshaft position sensor hole in the flywheel housing and engage into the flywheel notch.



6. Install the rear camshaft timing tool (1) onto the camshaft housing.



7. Install the front camshaft timing tool (1) into the grooves cut into the cams and hold it onto the camshaft housing with a bolt.



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8. Verify that the marks on the gear teeth match the marks on the timing tool. If the marks do not match, research the root cause of incorrect camshaft timing.

3 Timing the Camshafts with the Gear Train Installed

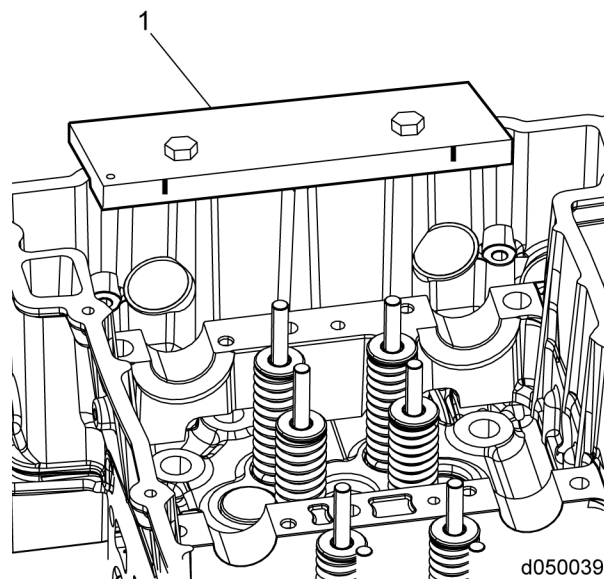
Time as follows:

Table 2.

Service Tools Used in the Procedure		
Tool Number	Tool Name	Engine
W470589001500	Top Dead Center Locating Pin	DD Platform
W470589034000	Camshaft Timing Tool	EPA07 DD13*
W470589114000	Camshaft Timing Tool	All Years DD13
W470589054000	Camshaft Timing Tool	EPA07 DD15
W470589104000	DD15 Camshaft Timing Tool	All Years DD15/16

*Can be used on EPA10 with modification (refer to tool letter 10 TL-9)

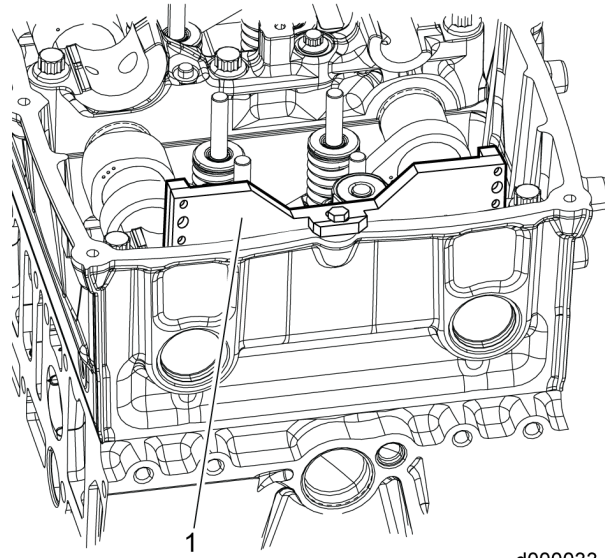
1. Bar the crankshaft over to Top Dead Center (TDC) cylinder no. 1 and lock with TDC locking pin through the crankshaft position sensor hole.
2. Install the rear camshaft timing tool (1) onto the rear of the camshaft housing.



3. Locate the mark on the camshafts and mark the top of the corresponding gear tooth with a light colored paint pin.
4. Lubricate the camshafts and camshaft housing journals with clean engine oil.

NOTE: The intake camshaft has the tone wheel and must be installed on the intake side of the engine.

5. Install the camshafts into the camshaft housing in their respective locations lining up the marked cam gear teeth with the mark on the timing plate.
6. Install the front camshaft timing tool (1) into the grooves cut into the camshafts to verify correct cam timing. Any resistance felt while installing or removing could indicate the camshafts being out of time. Install a bolt into the tool to hold it into place.



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