CAUTION: To prevent damage to valves and pistons, do NOT rotate the crankshaft and/or camshaft(s) when removing timing chain(s) and installing cylinder heads. Because this is not a free-wheeling engine, if it has "jumped time," there will be damage to the valves and/or pistons, which will require the removal of the cylinder heads. The cam sprocket should be disassembled from the camshaft only when one of the components must be replaced.

1. Remove all necessary components to access the timing chains.
2. Rotate the engine to No. 1 TDC.
3. Assemble tools:
   - 1991 4.6L 2V V8: Refer to Figure 1. Install No. 6009 (511532) on flats of the camshaft to prevent accidental rotation of the camshafts.
   - All other applications: Refer to Figure 2. Install No. 6009 (511532) and Cam Positioning Tool No. 6020 (511555) into each camshaft end before removing (or installing) timing chain tensioners and chains—this prevents valve train damage.
4. Perform camshaft service as required.
5. Refer to the vehicle service manual for the correct camshaft-to-crankshaft timing procedure.

**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

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**Ford Camshaft Positioning Tool**

Application:
- 1991 – 2008 4.6L 2V Crown Victoria (V8), Grand Marquis
- 1997 – 1998 4.6L & 5.4L V8, 6.8L V10 Econoline
- 1997 – 2002 5.4L Expedition
- 1997 – 2004 4.6L F-150 (VIN 6)
- 1997 – 2010 4.6L F-150 (VIN W)
- 1997 – 1998 4.6L F-Series Truck
- 1997 – 2002 5.4L F-Series Truck
- 1997 – 2005 4.6L Mountaineer (VIN W)
- 1997 – 2002 4.6L Mustang (VIN W)
- 1996 – 2004 4.6L Mustang (VIN X)
- 2003 – 2004 4.6L Mustang (VIN Y)
- 1998 – 1999 5.4L Navigator

* The 1991 4.6L 2V V8 application does not require the use of tool No. 6020.