

FORD 2V/4V Modular V8 Camshaft Gear Set #10254

Thank you for choosing COMP Cams[®] products; we are proud to be your manufacturer of choice. Please read this instruction sheet carefully before beginning installation, and also take a moment to review the included limited warranty information. Contact us toll free at 1.800.999.0853 or at <u>www.compcams.com</u> under Tech Support with any questions.



Ford Modular (4.6L & 5.4L) 2V Camshafts and Cam Gear Installation Notice: Ford used two different engine assembly plants, **Romeo** and **Windsor**, which incorporated two different camshaft configurations for the 2V Modular Engines. Before installing COMP

Cams[®] camshafts or an adjustable timing gear set, it is very important to check the original factory camshafts to determine which plant your engine came from.

All of the **Romeo Engine Plant engines** (used in most '99 and up car applications, all car engines before '99 & all Modular engines before '96) used camshafts with separate, bolt-on cam gears and spacers (**OEM Part #s**: Gear RH = F8AE-6256-AA, Gear LH = F8AE-6256-BA, Spacer = F3AZ-6265-A (2 spacers total, 1 on each side). These parts can easily be taken off the factory cams and reused on any COMP Cams[®] 2V modular cam set.

All of the **Windsor Engine Plant engines** (*Most truck engines after 1996 and some Mustangs after '98*) came with gears that are permanently pressed onto the factory camshafts and cannot be removed. These Windsor plant engines ALWAYS require the use of **one** OEM part #F3AZ-6265-A spacer behind **each** of the cam gears (2 spacers total, 1 on each side).



ITEM	QTY	PART #	DESCRIPTION
1	2	CMP10254HL	Sprocket Hub
2	1	CMP10254LL	Driver Side Sprocket
3	1	CMP10254RL	Passenger Side Sprocket
4	2	CMP10254N	Adjustment Insert
5	2	CMP10254WS	Wave Spring
6	8	BLT1171	M6x1x6mm Button Head Cap Screw

Installation Instructions

Please ensure that you have received all necessary components before beginning installation. **NOTE: All torque specs are for dry bolts.**

Step-by-step instructions for the timing sprocket removal and installation procedure can be found in the factory FORD service manual.

- 1. Begin by removing the necessary components from the front of the engine in order to gain access to the Engine Front Cover.
- 2. Remove the necessary components to gain access to and remove the Valve Covers.
- 3. Position the crankshaft with the keyway at the 12 o'clock position.



Figure 1- Rotate the engine until the crankshaft keyway is at the 12 o'clock position

- 4. Remove the timing chain tensioner bolts from both timing chains
 - a. Remove the bolts.
 - b. Remove the timing chain tensioners.
 - c. Remove the timing chain tensioner arms.
- 5. Remove the Left-Hand (LH) and the Right-Hand (RH) timing chains and the crankshaft sprocket.
 - a. Remove the RH timing chain from the camshaft sprocket.
 - b. Remove the RH timing chain from the crankshaft sprocket.
 - c. Remove the LH timing chain from the camshaft sprocket.
 - d. Remove the LH timing chain from the crankshaft sprocket.

6. Most factory timing chains have either a lighter or darker link than the rest of the chain on either end to use as a timing mark. If the 2 off-color links are not visible, follow the instructions below:



Figure 2 - Position timing chain into 2 parallel lines (*picture representative of some 4-Valve timing chains*)

- a. Stretch each chain until the loop forms two parallel lines.
- b. Clean the face of each link at both ends of the line.
- c. Mark the cleaned links with a paint pen to use as timing marks.



Figure 3 – Mark links on either end with a paint pen (picture representative of some 4-Valve timing chains)



Figure 4 - Mark links on either end with a paint pen (picture representative of some 2-Valve timing chains)

7. Take your new 10254 cam sprockets and slightly loosen the 4 retaining bolts on the face of each sprocket.



Figure 5 - Loosen the 4 retaining screws

- 7. Place the new sprockets on camshafts. A part number (P/N) is etched on the face of each sprocket.
 - a. P/N 10254R is placed on the passenger side exhaust camshaft of 4-vavle engines and on the passenger side camshaft of 2-valve engines.
 - b. P/N 10254L is placed on the driver side exhaust camshaft of 4-valve engines and on the driver side camshaft of 2-valve engines.
- 8. Once the new sprockets are placed on the camshafts, ensure that the internal timing mark is pointing at 0°.
 - a. Rotate the 10254R sprocket until the outer timing dot is approximately at 11 o'clock.
 - b. Rotate the 10254L sprocket until the outer timing dot is approximately at 12 o'clock.



Figure 6 - Sprocket 10254L (Driver Side) shown installed with the timing dot pointing up at the 12 o'clock position

- 9. Ensure that the crankshaft is in position so that the number one cylinder is at top dead center (TDC).
- 10. Install the timing chain guides. Torque the bolts to 89 lb-in.
- 11. Position the driver side timing chain on the crankshaft sprocket. Align the center of the marked link, with the mark on the crankshaft sprocket.
- 12. Install the other end of the driver side timing chain on the 10254L sprocket. Align the center of the marked link, with the timing mark on the new sprocket.



Figure 7 - Align the timing dot near the outer edge of the sprocket with the marked link on the timing chain

- 13. Position and install the driver side timing chain tensioner assembly. Torque the bolts to 18 lb-ft.
- 14. Position the passenger side timing chain on the crankshaft sprocket. Align the center of the marked link with the timing mark on the crankshaft sprocket.
- 15. Install the other end of the passenger side timing chain on the 10254R sprocket. Align the center of the marked link with the timing mark on the new sprocket.
- 16. Position and install the passenger side timing chain tensioner assembly. Torque the bolts to 18 lb-ft.

REMINDER BEFORE PROCEDING: It is extremely important to adjust BOTH camshafts when setting the mechanical timing. If you adjust the left camshaft to 4° advanced, the right camshaft must also be adjusted to 4° advanced. Failure to do so may result in severe engine damage.

TIMING ADJUSTMENT

- 17. If the valve springs are still installed, the camshaft may have rotated due to spring load, and depending on how loose the cam sprocket bolts are, may have moved the cam gears to full advance or retard. To adjust cam timing, follow the procedure below:
 - a. Slightly loosen the (4) M6 retaining bolts around the center of the cam sprocket.



Figure 8 - Slightly loosen the 4 retaining bolts

- b. Slightly loosen the M12 bolt at the center of the cam sprocket.
- c. Place a 6mm hex key in the eccentric adjuster and rotate it counterclockwise to advance the camshaft timing or clockwise to retard the camshaft timing. Use the pointer in the timing window to line up with the desired timing mark.



Figure 9 - Use a 6mm hex key adjust the mechanical timing of the camshaft (Clockwise to Retard, Counter-clockwise to Advance)



d. While holding the hex key in position, temporarily tighten the center bolt enough to prevent the sprocket from rotating against the spring pressure.

Figure 10 - Tighten the center bolt while holding the hex key in position to prevent the sprocket from rotating

NOTE: COMP Cams strongly recommends that you degree the left and right camshafts in order to verify that the chains are installed correctly before proceeding.

- e. One at a time, torque each M6 bolt to 120 in-lbs with red Loctite.
- f. Once all 4 M6 bolts have been torqued with Loctite, torque the center bolt in 2 steps:
 - i. Tighten the bolt to 30 lb-ft.
 - ii. Tighten the bolt an additional 90°, or a $\frac{1}{4}$ turn.

NOTE: You should always check piston to valve clearance when using an adjustable timing set before attempting to start the engine after adjustable cam sprocket installation.

18. Once all bolts have been torqued, the engine front cover, valve covers, and any additional components that were removed to provide access for cam sprocket installation may be reinstalled.



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