

PLEASE study these instructions carefully before installing your new Performer RPM Camshaft Kit for Harley-Davidson® Twin Cam® Engines. If you have any questions or problems, do not hesitate to contact our **Technical Hotline at: 1-800-416-8628**, from 7am-5pm, Monday-Friday, Pacific Standard Time, or via e-mail at: **Edelbrock@Edelbrock.com**.

• **Description:**

The Edelbrock Performer RPM Camshaft Kit for Harley-Davidson Twin Cam engines is designed to improve peak horsepower yet retain a broad torque range and improved rideability from 2800-6000+ RPM. Used in the Edelbrock Performer RPM Power Package, these cams have supported over 100hp at the wheels on a 95" Twin Cam. They are intended to be used with Edelbrock heads, modified stock heads, or other aftermarket heads that have higher air flow capability as well as the proper valve springs and valve geometry. The Performer RPM Camshaft Kit should not be used with stock (OEM) cylinder heads. Adjustable pushrods are also required for the use of this camshaft kit.

The specifications of this cam set are as follows:

	<u>Intake</u>	<u>Exhaust</u>
Duration @ .053" Lift:	246°	254°
Gross Lift:	.619"	.619"
TDC Lift:	.188"	.193"
Open/Close:	20°/46°	52°/22°

• **Kit Contents:**

<u>Qty.</u>	<u>Description</u>
1	Front Camshaft
1	Rear Camshaft

• **Special Tools and Additional Parts Required:**

The following is a list of parts and special tools required to perform the following camshaft installation on 1999 and later Twin Cam® engines. (**Note:** *The following are Harley Davidson® part numbers, unless otherwise noted. These may be acquired through Harley Davidson parts suppliers.*)

1. Part # HD 42313 - Chain Tensioner Unloader
2. Part # HD 41184 - Sprocket Locking Tool
3. Part # HD 33443 - Oil Pump Alignment Tool
4. Part # HD 43644 - Camshaft Bearing Remover & Installer
5. Part # HD 8990A - Front Camshaft Ball Bearing
6. Part # HD 8983 - Rear Bearing Assembly and Race
7. Part # HD 25533-99A - Sprocket Fastener Kit
8. Adjustable Pushrods (*Edelbrock # 1738 Recommended*)
9. A Hydraulic Press

Before Beginning the Installation Procedure, Please Read the Following:

NOTE: *Due to the amount of special tools and expertise required, we highly recommend that a qualified mechanic or dealer should perform the following procedures which are covered in the Harley-Davidson Service Manual. If you are performing this procedure yourself, and/or are not an experienced mechanic, be sure to have the factory service manual for your particular motorcycle on hand. Multiple steps listed here are covered in greater detail in the Harley-Davidson Service manual. Remember, if you do not feel confident performing the installation, see a mechanic.*

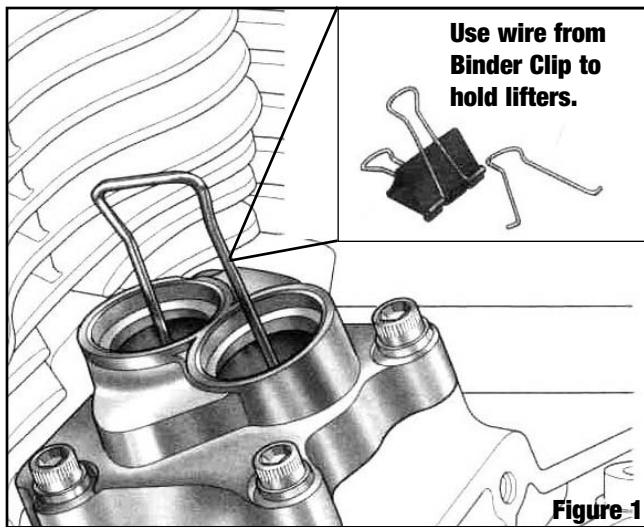
NOTE: *The Performer RPM Camshaft Kit should not be used with stock (OEM) cylinder heads. The cams are intended to be used with Edelbrock heads. Modified stock heads, or other aftermarket heads can also be used (with higher air flow capability than stock as well as the proper valve springs and valve geometry).*

TIP: *Remember, keep sets of bolts separated by the location they were removed from. This will provide easier re-assembly, and ensure all bolts will return to their proper location.*

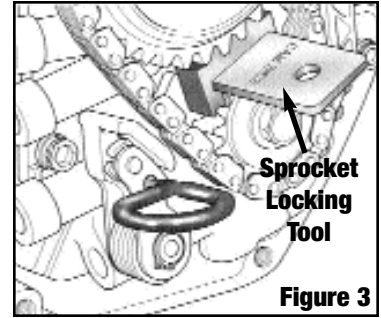
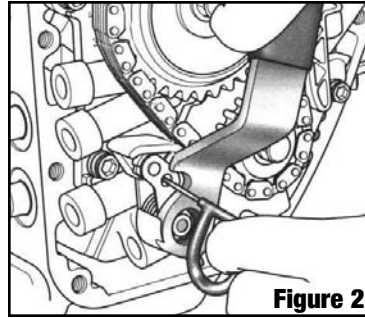
CAUTION: *Oil will drain from the engine during this installation. Remember, whenever working around oil or gasoline, to keep flame, spark, and any other sources of ignition away from the work area. Keep a drain pan under the work area to capture any oil spilled during the installation.*

INSTALLATION PROCEDURE

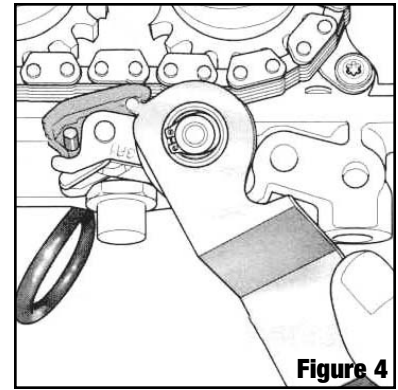
1. Disconnect the battery, and remove the fuel tank.
2. On engines with the oil tank above the engine, drain the engine oil.
3. Remove the front exhaust pipe to clear the Cam Housing Cover.
4. Remove the Rocker Covers and remove the four 5/16" bolts and the two 1/4" bolts holding the rocker arms in place. With the rocker arms removed, remove the stock pushrods.
5. Remove the push rod tube retaining clips and push rod tubes.
6. At this point, you may remove the lifter covers and take the lifters out, or you can make a lifter holding tool from a binder clip as shown in **Figure 1**.



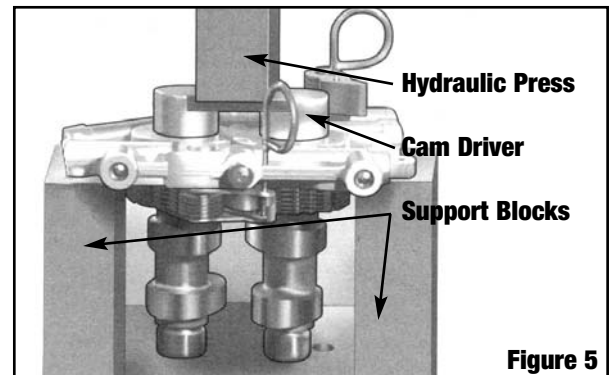
7. On pre-2000 models with a cam position sensor, you may want to remove the inspection cover, unplug the wires, and remove the sensor at this time to ease installation later on.
8. Remove the cam housing cover keeping the bolts in a separate cup. (**Note:** Oil will run out of the cam housing.)
9. Mark your timing chain with a paint pen or marker in order to keep the proper direction facing out.
10. Using the Chain Tensioner Unloader Tool, unload pressure on the outside chain tensioner, and pin it in place with the retaining pin (**See Figure 2**).
11. With the Sprocket Locking Tool in place, remove both sprocket retaining bolts (**See Figure 3**).
12. Remove chain and sprockets. Remove the chain guide.
13. Keeping your bolts separated, you are now ready to remove the bolts holding the oil pump and cam support plate assembly.



14. With all bolts removed, remove the cam support plate and camshaft assembly. (**Note:** Be careful the oil pump rotors do not fall out. Remove support plate with care, and make sure the oil pump rotors are still in place after removal. If the rotors fall out, see your Factory Service Manual for assembly procedures.)
15. After removing the cam support plate, clean it thoroughly, and using the Chain Tensioner Unloader, retract the Secondary Cam Chain Tensioner, and pin it in place (**See Figure 4**). Mark the Secondary Cam Chain with a paint pen or marker to note which direction is facing out. Keeping the bolts separate, you can now remove the four #20 Torx screws holding the Cam Bearing Retaining Plate.



16. Place the Cam Support Plate/Camshaft assembly into a press. Using the the Camshaft/Bearing Remover and Installer, along with the proper support blocks, press the cams & bearings out of the support plate (**See Figure 5**). (**Tip:** Lightly heating the support plate around the bearing area can help ease the cams out of the support plate.)



17. Retain the snap ring from the front camshaft. Set the snap ring and cam chain aside. Now is a good time to inspect the chain tensioners for wear. See the factory service manual for acceptable wear limits.
18. Using the the Camshaft/Bearing Remover and Installer and proper support blocks (**See Figure 6**), press the new cam bearings into the cam support plate. (**Note: Make sure the front cam bearing is installed letter-side up, facing the cam. Warming the support plate, and freezing the bearings can reduce the force needed to press the bearings into the support plate.**) You will now be able to slip the rear bearing o-ring over the rear cam. Slide the thrust washer over the cam and over the o-ring to center the washer over the cam. Now carefully press the rear bearing race onto the rear cam, centering it over the thrust washer.

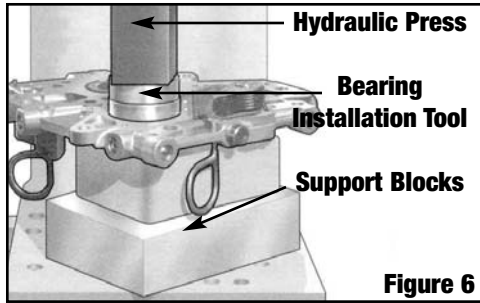


Figure 6

19. Identify the markings on the sprockets of the Performer RPM cams. Using a paint pen or marker, mark the location of these markings on the opposite side of the sprockets on the Performer RPM camshafts (**See Figure 7-A**). With the cam chain facing the proper direction (*marked previously in Step 15*), and the camshafts aligned with the markings in the proper position, use the Camshaft/Bearing Remover and Installer to press the front camshaft into the bearings in the support plate while supporting the rear camshaft (**See Figure 7-B**). Make sure to keep the rear camshaft parallel to the front camshaft while pressing down on the front camshaft. (**Note: DO NOT FORCE the cams into the bearings. The front camshaft should press into the bearing smoothly and not bind. While pressing the front camshaft into the bearing, the rear camshaft should slide easily into the rear bearing.)**

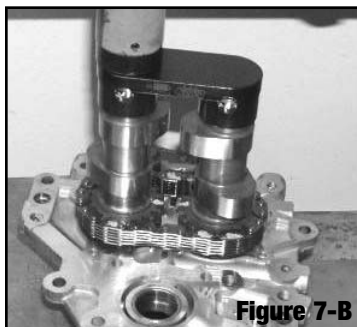
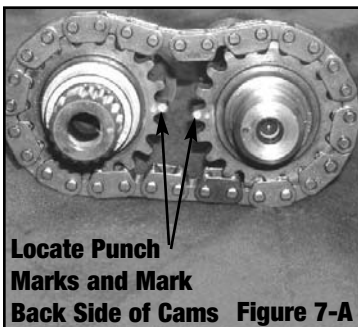
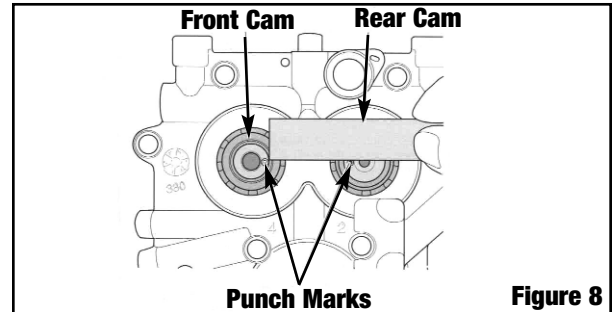


Figure 7-B

20. Verify the camshaft alignment using a straight-edge (**See Figure 8**). Re-install the snap ring onto the front camshaft, and check the camshaft alignment again. Re-install the Cam Bearing Retaining Plate, making sure the threads of the Torx bolts are clean, using a drop of blue Loctite on the threads of each bolt. Torque the Torx bolts to 20-30 inch lbs. (**CAUTION: Bolts can break easily, torque only to the recommended torque value.**)



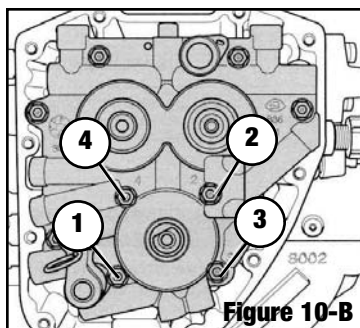
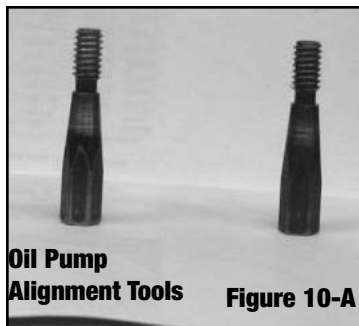
21. With the lifters held back, replace the cam support cover/camshaft assembly making sure all o-rings, seals, and oil pump parts are in place. The assembly should slide straight in and line up smoothly onto the cover locating pins on the cam cover sealing surface. Install two cam cover bolts. **HAND-TIGHTEN ONLY.**

22. Turn the splined end of the rear camshaft by hand to make sure the assembly spins freely. If you feel the cams interfering or rubbing on anything, remove the cam/cover assembly and check for interference with the engine case (**See Figure 9, grind the area shown, only if necessary**). If the clearance is sufficient, you may install the remaining cover bolts except for the four (4) bolts surrounding the oil pump assembly, tightening to 90-120 inch lbs. as shown in service manual.



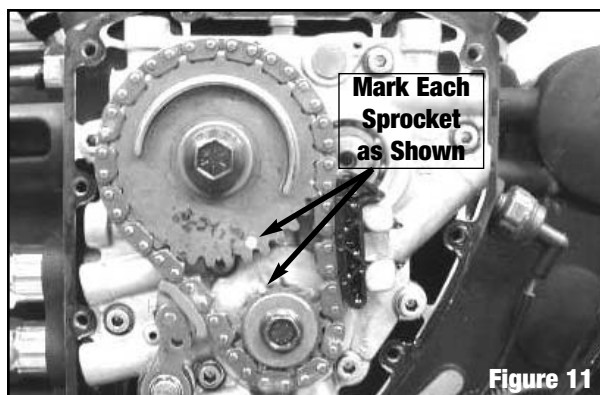
Figure 9

23. Install the oil pump alignment tools (**See Figure 10-A**) into the # 3 & 4 holes in the cam support cover, **HAND TIGHT ONLY** (**See Figure 10-B**). While rotating the engine slowly, snug down the oil pump alignment pins. Install bolts into the # 1 & 2 holes in the cam cover and tighten to 90-100 inch lbs. Remove the alignment tools and install the bolts into the # 3 & 4 holes, tighten to 90-100 inch lbs. (**Note:** While rotating engine, make sure oil comes out of the cam support cover. This will indicate the oil pump is properly installed.) You may now re-install the chain guide.

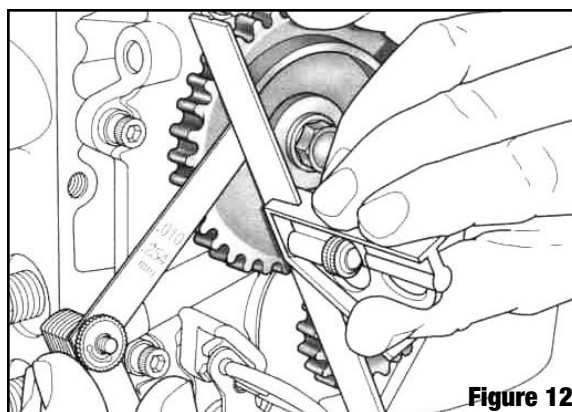


24. Install the crank and cam sprockets. Rotate the engine and sprocket as needed in order to line up the punch marks on the sprockets. Remember to install the cam sprocket spacer behind the cam sprocket. Leave the timing chain off at this time and do not yet remove the tensioner retaining pins.

(**Note:** The crank sprocket bolt and washer will cover up the punch mark. Use a paint pen or marker to mark its location on the tooth of the sprocket above the punch mark. **See Figure 11.**)



25. Check that the sprockets are flush with each other using a straight edge. They should be flush within .010", as specified in your factory service manual (**See Figure 12**).

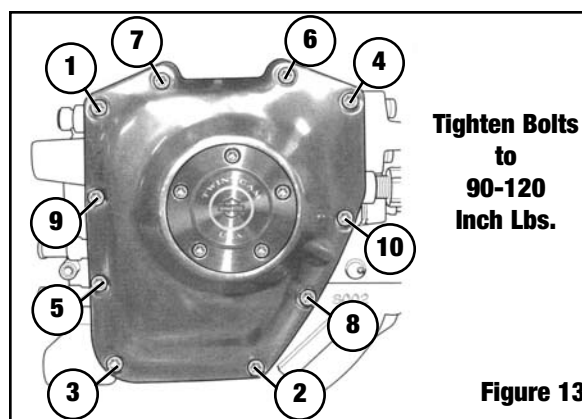


26. Now remove the sprockets. You may now install the chain guide and re-install the timing chain, facing the proper direction as indicated by marking the chain during removal. Using new sprocket bolts, with a drop of red Loctite on each bolt, re-install the chain and sprocket assembly. Make sure the punch marks are still aligned, and insert the Sprocket Locking Tool to prevent rotation of the sprockets while tightening the sprocket bolts. Tighten both sprocket bolts to 15 ft/lbs. Loosen both bolts one full revolution, then tighten the cam sprocket to 34 ft/lbs, and the crank sprocket to 24 ft/lbs.

27. You may now remove the chain tensioner retaining pins. Using the Chain Tensioner Unloader, take tension off of the retaining pin holding the lower tensioner, and slowly let the tensioner back onto the chain. Carefully using a screwdriver, reach behind the upper tensioner, take tension off the pin, remove the pin, and slowly let the tensioner back down onto the chain.

(**Note:** DO NOT remove pins without first relieving tension. The force exerted by the tensioner as it hits the chain can damage both the tensioner as well as the chain.)

28. Re-install the cam housing cover (**See Figure 13**).



29. You are now ready to install and adjust the pushrods. Begin by making sure the pushrods are clean, and adjusted to their shortest length possible. The shorter pushrods are for the intake valves and the longer pushrods are for the exhaust.
30. Insert the pushrods for one cylinder (one intake, one exhaust) into their proper locations on the rear cylinder. Do not install the pushrod tubes at this time. Rotate the engine until the lifters for the rear cam are on the base circle of the camshaft (lowest point). Install the rocker arm assembly for the rear cylinder, making sure the ball of each pushrod is in the cup of its corresponding rocker arm. Snug the rocker arm bolts to 18 ft/lbs.
31. Adjust the pushrods out until all free play is taken up between the rocker arms and lifters. This is zero lash. Do not adjust beyond this point.
32. Use a paint pen or marker and mark this point on the pushrods. (**See Figure 14**). Extend the pushrods 3-1/2 turns (18 flats on the adjusting hex). Remove the rocker assembly and remove the pushrods. Make sure to keep the pushrods in order and at their current adjustment.
33. Using new o-rings, install the pushrod tubes. Do not extend the pushrod tubes at this time. Insert the pushrods back into their proper location. Re-install the rocker arms, tightening the bolts to 18-22 ft/lbs. Install the breather plates, tightening the 1/4" bolts to 90-100 inch lbs. You may now extend the pushrod tubes and lock into place with the pushrod tube clips.
34. Coat the rocker arms in clean engine oil. Install the rocker cover (**Note: You may need to grind the rocker cover for clearance, especially if using roller rockers, see Figure 15**).
35. Wait at least 20 minutes to let the lifters bleed down, then repeat the pushrod adjustment covered in steps 29 through 34 on the front cylinder.



Please fill out and return your warranty card. Be sure to write the part number in the "Part # ____" space. Thank you.

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