



# INSTRUCTIONS

-J00041

REV. 02-10-03

Kit Number 25628-89

## EVOLUTION XL BOLT-IN HYDRAULIC CAM SET

### General

This kit is designed for use on the 1986-1990 Sportster V2 Evolution 883, 1100 and 1200cc engines.

### Camshaft Specifications

Intake open	28° BTDC
Intake closed	48° ABDC
Intake duration	256°
Exhaust open	52° BBDC
Exhaust closed	24° ATDC
All data taken at .053 lift	
Lift at cam .300	

### CAUTION

Harley-Davidson motorcycles equipped with Screamin' Eagle high performance engine parts may not be used on public roads, and in some cases must be restricted to closed course competition because these parts may impair the vehicles emission system performance and/or increase its noise level. Installation of Screamin' Eagle parts could also void any new vehicle warranty. Engine related performance parts are intended for THE EXPERIENCED RIDER ONLY.

### WARNING

A Service Manual is required to install this kit. The rider's safety depends upon the correct installation of this kit. If the procedure is not within your capabilities or you do not have the correct tools, have your Harley-Davidson dealer perform the installation. Improper installation of this kit could result in death or serious injury.

### Required Gaskets

Installation of this kit will require the following gaskets available from an authorized Harley-Davidson dealer:

1	17032-86A	Gasket kit, top overhaul
1	25263-86	Camgear cover gasket

### NOTE

To properly install the kit, you must have a Service Manual that covers the V2 Evolution 883, 1100 and 1200cc engines. Service Manuals covering the Evolution engines are available at an authorized Harley-Davidson dealer.

### Camshaft Installation

Camshaft installation requires the removal of the rocker shafts, rocker arms, tappet guides, tappets and gear case cover. The cams in this kit may be used with the stock hydraulic tappets.

Follow the Service Manual procedures to perform the following:

### NOTE

All washers and fasteners used in the Evolution engine are hardened. They must not be mixed or replaced with unhardened parts. Do not reuse cover seals.

1. Remove top and middle sections of rocker box. Remove gaskets and discard.
2. Rotate the crankshaft so both valves are closed on the cylinder being worked on.
3. Remove the 5/16 in. rocker arm retaining bolt at the pushrod end.
4. Remove the rocker arm shafts by tapping them out with a hammer and soft metal punch.

### CAUTION

Mark rocker arm shafts for reassembly in their original positions. Valve train components must be reinstalled in their original positions during reassembly, or damage will occur.

5. Remove rocker arms and mark them so they will be reassembled in their original locations.
6. Remove the pushrods and pushrod tubes and mark their location and orientation top to bottom.
7. Remove tappet guides and tappets. Remove pushrods and pushrod covers if not already removed.
8. Rotate crankshaft so both valves are closed on the next cylinder and repeat Steps 3 through 7.
9. Remove ignition components from gear cover and the two bolts that retain the oil filter housing.
10. Remove the gear cover screws and gear cover.

### NOTE

It is not necessary to remove the pinion gear, oil pump gear or oil pump.

11. See Figure 1. Rotate engine to align timing marks. Cams are numbered 1 to 4 from the rear exhaust (1) to the front exhaust(4). Remove camshaft (2). One at a time remove camshaft 1, 3 and 4 and replace with the appropriate camshaft from this kit. Be careful to maintain timing mark alignment. Install camshaft 2 from this kit last. Carefully check alignment of all timing marks.

12. Following Service Manual instructions, assemble gearcase cover and check that minimum camshaft end play is present. After final assembly, torque cover screws to 80-110 in.-lbs.
13. Install tappet guides and tappets using new O-rings. Be sure tappets are fully oiled.
14. Install ignition components.
15. Rotate engine crankshaft so either cylinder has both valves closed. Install rocker arms, pushrods and pushrod covers at the cylinder where the valves are closed. Tighten bolts alternately in small increments to allow oil in tappets to bleed off and to avoid damaging pushrods. Consult Service Manual for proper torque specifications. Wait ten minutes; then repeat procedure at second cylinder.

**NOTE**

*These cams were designed to replace stock cams and maintain sufficient valve to piston clearance. However, it is advisable to check all engines for valve spring coil bind at full lift and piston to valve clearance.*

*We recommend that this inspection or any subsequent piston modification be done by a Harley-Davidson dealer or experienced machine shop. Put clay, about 1/8 in. thick on piston, in area where valve would contact pistons. Assemble the heads and valve train and turn the engine by hand. The heads are then removed and the clay measured at its thinnest point. If not at least .080 in. thick, then notches should be cut into the piston crown to obtain that dimension. The depth of the notches must not exceed 0.135 in. It is strongly recommended that this practice be followed.*

## Improving Engine Output

To enhance the horsepower increase of this kit, see an authorized Harley-Davidson dealer for the latest Parts & Accessories catalog that includes the complete line of Screamin' Eagle performance parts.

### Ignition Timing

Stock ignition timing is recommended. Use Screamin' Eagle ignition modules for greater RPM range.

**CAUTION**

**Screamin' Eagle modules will allow the engine to rev to 8000 RPM, which is well above design parameters. It is imperative that the rider use the tachometer and avoid harmful over-revving. An adjustable rev limiter is recommended. See a Harley-Davidson dealer for rev limiter information.**

### Exhaust Systems

A free flowing exhaust system, such as Harley-Davidson slip-on mufflers, will give additional horsepower. See a Harley-Davidson dealer for an exhaust system recommendation.

### Carburetor Jetting

If using a stock carb, a larger main jet may be required on engines modified with this kit.

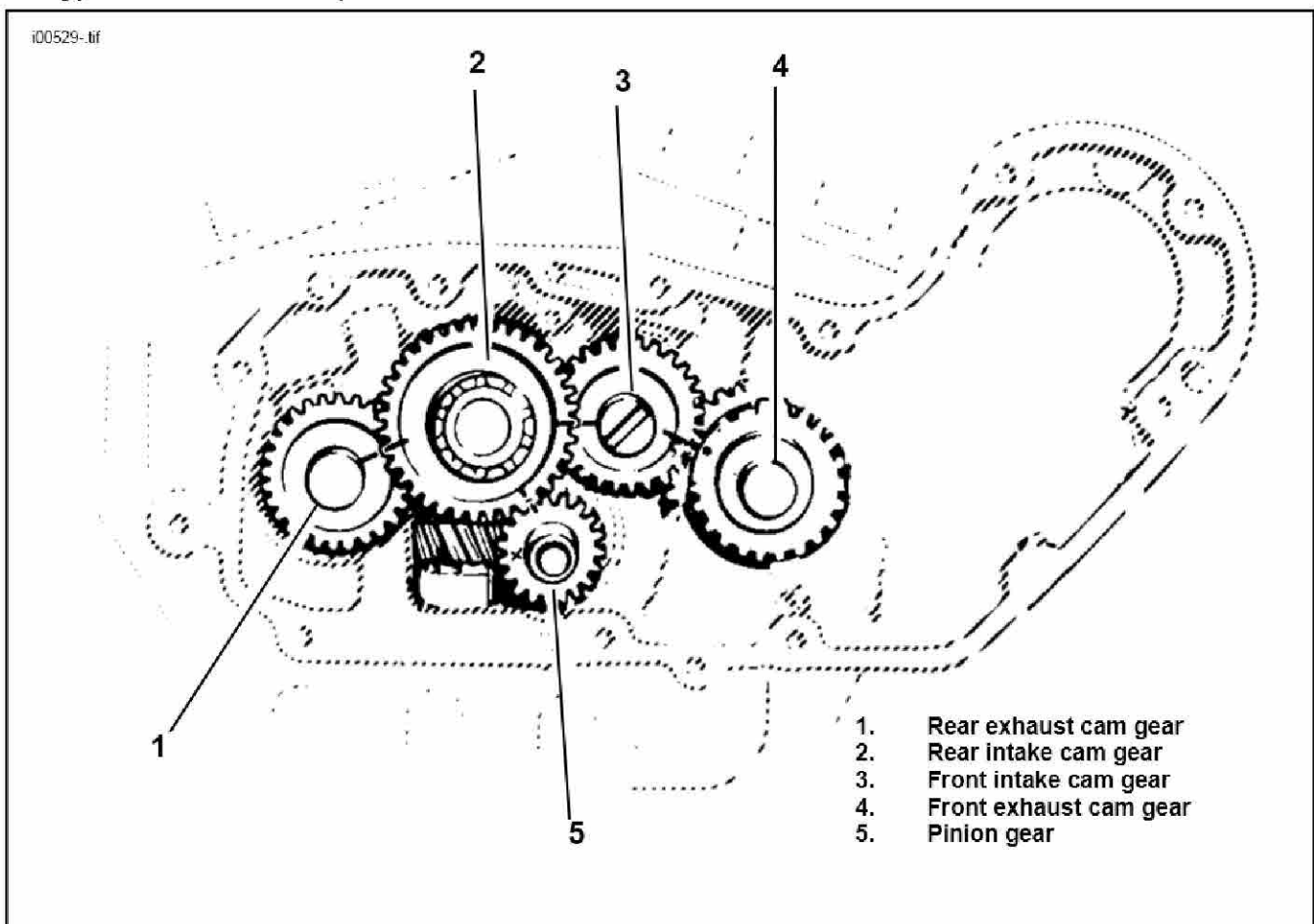


Figure 1. Timing mark alignment