

### VT No. 43-1059, 43-1060

**The V-Twin Cam Plate** for Twin Cam engines increase engine oil flow and volume by enlarging critical oil passages and oil pump reservoirs. Made from 7075 aluminum, the hard alloy increases the strength and hardness while maintaining tighter tolerances at operation temperature. The alloy allows elimination of the pinion shaft bushing.

Increased oil flow to the pinion shaft and connecting rod bearings optimized oil flow to the lifters, piston cooling jets, cam gears and or chain tensioners.

Pressure relief valve spring and designed for increased volume and pressure.

**Installation notice.** This installation should be done by experienced mechanic who has access to a factory service manual and all requires tools. This procedure requires use of specialty tools.

#### Caution

Incorrect installation can cause engine damage not covered under warranty. Failure to install all components correctly can cause engine seizure. Engine seizure may result in serious injury to the motorcycle, operator, passenger, and/or others.

**Important Notice:** Measure flywheel shaft run out. Excessive pinion shaft run out will cause cam plate and oil pump damage and or failure. Excessive pinion run out will void manufacturer's warranty.

1. Refer to proper manual engine section, reference sub assembly service and repair bottom end, for removal of cam plate, oil pump and cams.
  2. Inspect the pinion shaft for burrs, use a scotch pad or emery cloth to assure smoothness of shaft. Measure the pinion shaft and pinion shaft bore of cam plate, recommended clearance ( $\pm .005-.0025$ " )
  3. Inspect flywheels for pinion shaft run out. Recommends a maximum run out tolerance of .0025". If installation gear drive camshafts the run out tolerance is very important, it is advisable to be under the maximum tolerance.
  4. Clean cam chest and all mating surfaces, it is recommended to clean and flush oil tank, any residue/debris in oil tank will flow directly through the newly installed oil pump and cam plate, causing catastrophic damage not covered under warranty.
  5. Examine the cam chest and not the addition of boss on left hand side for the late 99A crankcase. The boss is designed to feed the B motor crank balance shaft chain tensioner. Note, 'A' motors with the boss will NOT have a through hole and 'B' motors will have a through hole including a screen.
  6. If the boss is present, install the proper factory O-ring into the groove of the boss on the engine case.
  7. If the boss is not present in the cam chest then it is required to install the supplied 1/16" pipe plug into the correct cam plate hole as shown in pictures. Use Loctite and torque plug to 55-60 in lbs. If the engine is an 'A' motor and the boss is present and is not through hole you can install the supplied 1/16" pipe plug for added security to prevent leakage. Tighten plug flush with cam plate face and make sure there isn't any interference with the boss. The use of the O-ring is still recommended.
  8. 43-1059 chain drive systems require tensioner pins, tensioner lower and fasteners. If using a gear drive cam system no pins or tower are used.
- 43-1060 if using gear drive cams the oil holes for hydraulic chain drives tensioners must be blocked off.
10. 43-1059, install new cam bearings into cam plate using the correct bearings for your model cam shafts. Install cam shafts and then installation the bearing retainer plate. Install bearings and cams using the proper tools and extreme pressure lube, according to appropriate manual.
  11. 43-1060 install camshafts into well lubed camshaft bores, lead with rear camshaft. Install spacer washers, front camshaft retaining and chain tensioners, for chain drive set up. If different thickness spacers are desired for alignment of chains or gears see your dealer for different thickness spacers.
  12. Apply engine lube to pinon shaft, oil pump gears, oil pump housings, oil pump sub seal, cam plate oil pump mating surface, cam plate oil passages, pinion shaft bore, camshaft bore, camshafts, spacer washers, chain tensions, scavenge port hole of engine case and apply engine lubricant to oil pump and cam plate bolts and underhead flanges.
  13. Bolt the complete oil pump to cam plate finger tight, with the pressure housing of the pump facing the cam plate. DO NOT use Loctite or any type of hardening compound on oil pump or cam plate bolts or O-rings, the compound will interfere with stack up tolerance. Grease can be used to hold O-rings in place and moly lube or engine oil should be used on all bolts and underhead flanges.
  14. Check oil pump oil O-rings for proper fit.
  15. Verify cam shaft lobes DO NOT interfere with engine case. Install new O-rings into proper location crankcase.
  16. Pre-lube scavenge port hole of engine case and rear pick up port of the oil pump, this connection is crucial to proper scavenging.