



J2 TECHNICAL ARTICLE

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Thanks Eric Davidson for the
article -----

by

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HOW TO STOP THE OIL LEAKAGE FROM THE CAMSHAFT ONTO THE DYNAMO (A summary of magazine article - from where I don't know)

The system: Starting at the bottom of the engine and working up to our problem: There is a bevel gear driven from the front of the crankshaft. This bevel gear is held in position by a key to the bottom of the dynamo armature. At the top of the dynamo is a fork & plate which is also keyed to the armature of the dynamo. A second fork & plate carries the motion on upward. This second fork and plate are keyed to the short shaft which is supported by two roller bearings and has a bevel gear keyed to the top end to drive the camshaft.

The problem: Is when oil leaks past the oil seals in the drain gally and down onto the dynamo! This can be caused by various reasons. Most of these reasons are due to wear! According to the shop manual by Blower is to replace the worn parts but that is not as simple in todays age.

The solution: To overcome the causes for the oil leak, WEAR AND/OR MISALIGNMENT!

1. Remove the valve cover, even better remove the engine first!
2. Remove the complete drive unit- armature up!
3. While the dynamo is off, have it overhauled as needed.
4. Send the upper shaft to a reliable machine shop with the following instructions:
 - a. machined to round condition
 - b. hard-chrome to an outside diameter of 0.635 inch
 - c. grind back to 0.6253 ± 0.0001 These dimensions are critical!
5. Purchase two Torrington roller bearings with in reference numbers are HJ142216 and IR101416
6. Purchase a replacement lip seal

Note: Toulmin Motors and others are said to have conversion kits!?

The Re-assembly: Go slow and carefully!

1. Have a bar made of mild steel so when using a suitable sleeve, it will fit through the housing in the cylinder head. have one end of the bar ground to a point (centered). This becomes one of the alignment tools and a key to proper alignment.
2. Check the fit of the fork on top of the dynamo and the fork on the bottom of the upper shaft. The keys do not fix the forks in proper position, they just guides the forks into proper location in the shaft for timing purposes. The correct way to check fit is:
 - a. remove all traces of dirt and oil
 - b. smear a little engineer's blue on the side of the fork.
 - c. without the key push the fork into position, twist 1/2 turn and remove.

(Continued on back side)

The re-assembly part 2 item c. continued-----

- the blue film should be even. If there are large areas of 'white' metal (not covered with film) it will be necessary to lap the fork onto the shaft using fine grinding paste and plenty of oil.
- d. Re-check using engineering blue and lap more until obtained perfect fit.
 - e. remove all paste and blue
 - f. attach fork with new woodruff key
3. Check the fit of the bottom bevel gear the same way and obtain correct fit if needed.
 4. Mount dynamo in position and bolt tight.
 5. Check mesh of gears by rocking fork/ There should be just a slight detectable amount of free play or backlash. You may find it necessary to add shims under dynamo to achieve proper backlash.
 6. When proper position is found remove dynamo once more and measure thickness of all shims and replace with one shim of the correct thickness. (The fewer the shims the better)
 7. It is very unlikely, but to get proper backlash, it may be necessary to reshim the crankshaft bevel gear.
 8. Mount dynamo again and check for dynamo alignment by fitting new bearings into housing with oil seal in proper position.
 - a. Replace cylinder head without the bevel gear on camshaft.
 - b. insert bar made in step #1 through roller bearings and housing. If the dynamo is aligned correctly, the point on the end of the bar will be dead-center on the dynamo armature.
 9. If the dynamo is forward or to the rear of the bar, it will be necessary to remove the front main bearing housing and replace the gasket with a thicker or thinner gasket. This is not the usual problem. The problem is normally the point is to the right or left of the armature. If so, loosen the front main bearing housing and turn until armature and bar are aligned. Note, it is unlikely that you will have to remove the locator pegs from the housing but if you do, don't forget to re-peg with a new suitable size peg.
 10. Now remove the cylinder head again and re-assemble the bevel gear on the camshaft, mount the head again without jointing and recheck the alignment: Remove the head and install the upper verticle drive shaft.
 11. Measure the gap between the drain housing and the head with a feeler gauge and install proper thickness of shims.
 12. Replace the camshaft and check endplay (end float) of the shaft (about 0.003 inch) and check the mesh of the gears. It should be the same as #5 above. Grinding the thrust washer can give proper mess if it is too tight. Most likely all will be okay here.
 13. remove the head again and fit on the fork on the bottom of the upper verticle shaft. Checking the same way as you did the other fork.
 14. Replace the head now using jointing coumpound that torque.
 15. Fit the camshaft in and refit the coupling ring. Fit the camsha for proper timing.
 16. Complete assembly of the engine and forget about oil leaks on the dynamo for the life of the engine.

If there was no wear to the shaft then the fix is simpler by replacement of the bearings and seal but you would not know if alignment is coorrect.