TT411: Big Twin Oil Carry Over Diagnostics

May 28, 2009

Engine

APPLIES TO	SYMPTOMS
2007-2009 Twin Cam Models	• Excessive Oil Consumption • Fluid or Oil Leaks

Engine Oil Carry-Over into the Air Cleaner

Here are some diagnostic tips to help you isolate root cause on Twin Cam models:

1. Interview the customer for oil consumption levels and carry-over condition details and document them.
   a. Gain an understanding of when/what condition does the issue occur.
   b. Ask questions about riding style/habits (customer tend to work throttle at stop light - 2 up riding - bike loaded - accessories - around town/ Freeway riding etc.).
2. Test ride and verify.
3. Note all modifications; exhaust type, air cleaner type, and all engine modification including tuning type and or calibration.
4. Verify oil level and CONDITON.
   a. If oil level near or above full lower oil level to add mark and re-test ride motorcycle to verify if condition still exists.
   b. If condition still exists return engine oil level to appropriate level and proceed with next steps.
5. On carbureted motorcycles fuel standoff can be misinterpreted as oil carry-over or dilute the oil, contributing to carryover, fresh oil of the proper amount is critical.
   a. If any doubt about fuel versus oil standoff, may be advisable to observe the amount of fuel standoff with the air cleaner element removed. View at a steady throttle position.
6. Do not drill the breather bolt. But be certain drill passages are clear. Verify correct breather bolts installed both PNA and or O.E. style air cleaners
7. Blow back through the breather tubes with low pressure (7 psi max.) to test umbrella operation.
8. Oil pressure test (Hot) at idle and 2,000 rpm. Document readings.

NOTE

If the tapered plug seems to be hard to remove skip steps 9 & 10 to avoid crankcase damage.

9. To verify if the lower end may be wet sumping, get the motorcycle up to operating temperature, shut it off, and remove drill passage plug below the cam cover.
   a. Normal amount of oil removed from bottom end should be 6 to 12 ozs (Hot).
   b. Upon final installation of drill passage plug, apply Teflon sealant to plug and torque to 120-144 in-lbs.
   c. If more than the normal 6-12 ounces is found, try to determine if it is a plugged sump port from flywheel compartment to oil pump.
      1) Temporarily reinstall the plug until snug
      2) Remove the CKP sensor and pour ½ quart of oil thru hole
      3) Remove the plug from underneath the engine and verify how much oil comes out and how fast
      4) If the oil trickles out of the hole at a slow rate there may be a restriction in the oil passage from the left case to the right causing a wet sump issue
10. On earlier style Twin Cam engines verify proper routing of oil lines pinches in vent line. Change the hose(s) in question if bike is a repeat leaker.
11. Time to check compression. Turn over motor 5 to 7 revolutions max to achieve proper results. Improper primary and cam to cam timing can cause the issue. Generally you will see a discrepancy in compression from cylinder to cylinder or low/high compression on both cylinders.
12. Perform a leakdown test. Compression and leakdown must be documented. "We checked and it was OK" is not a good enough answer. We also recommend you check both a hot and cold engine.
13. If you have not located the issue at this point, verify you have documented all your results form these tests and contact Technical Service for further instructions.