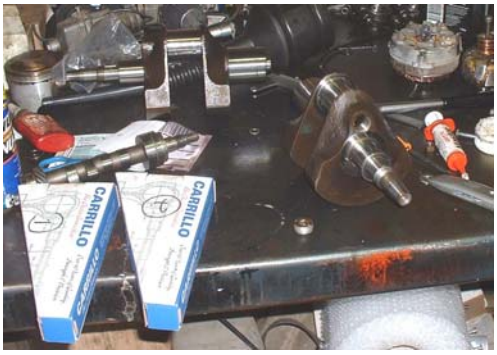
CHAPTER 8: CRANK, REAR MAIN, FLYWHEEL, SPROCKETS BACK IN

Posted on the Wildguzzi forum by Pete Roper: December 23, 2005:

Contents: Assembling the engine. Crank, rear main, flywheel, engine chest.



Pic 8-1:

Piles of Sh!t. Including two cranks. The one towards the front is the one we're using as it has simply been linished and then accurately set up with the non-standard rods I'm using here by Baz Jones at IME in Melbourne, (or his contacts.)

Pic 8-2:

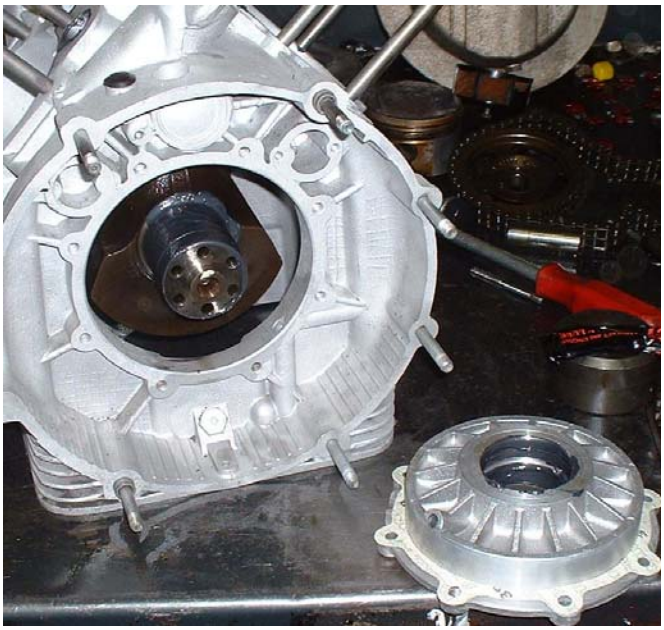
With the crank back in as shown before the rear journal can be smeared liberally with Moly paste, as can the bearing itself.

The rear main seal now has to be installed. I do it with a press and the Guzzi tool, (a bit of a joke really) before the rear main can be offered up top the case and crank. Note once again that the oil feed dowel MUST be installed and the gasket slipped over the spigot of the bearing carrier. I use a thin smear of Loctite 517, a 'Form a gasket' around the inside edge of the gasket itself. As always said you don't put this stuff on like mustard on a wiener, just the barest trace is enough! Note the use of a longer bolt to ensure that the flange is concentric with the case and in the right position. Once it's in I biff it in with a rubber mallet (gently!) until:

a) The flange doesn't want to move any more.

b) A couple of the bolts that retain it can be installed in their threads as shown.

c) The crank which can still be moved fore and aft in the front min can be pushed back and the seal lip carefully installed over the back of the crank.



After this, and only after this, you can use the two short bolts to wind the flange into the case. Note that the way to do this is to turn one until you feel the slightest resistance. Then do the other one until you feel the slightest resistance. Then go back to the first one and repeat. Yes, it's time consuming as you are *rocking* the journal forward on the crank but if you over-tighten you risk both breaking the bolt flanges and damaging the face of the bearing itself. Alternatively you can put the crankcase on its front face and press the bearing flange home. The reason I don't like this is because as you do it the lip of the seal may, "hang up" on the end of the crank and when pressed fully home you'll find the seal lip has torn. At this point one of the MOST important things is to ensure that the seal lip has slipped over the *tail* of the crank.

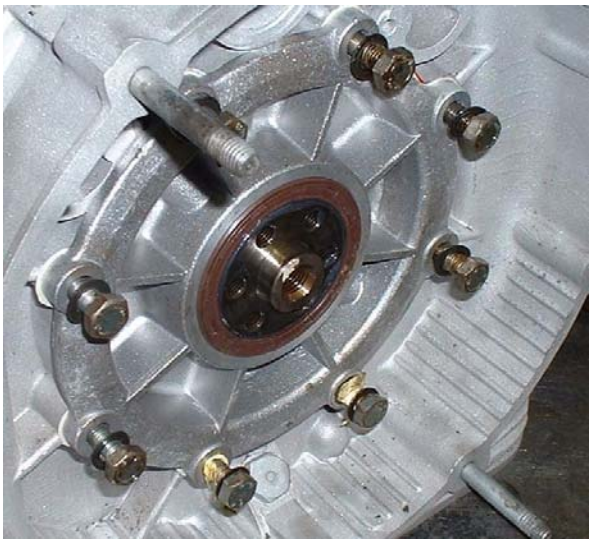
Pic 8-3:

Once the two bolts have been used to wind the flange into the case they, and the longer 'Locator' bolt can be removed again and all eight bolts given a dab of Loctite 243, have their washers installed and then be torqued down in a crosshatch pattern to the recommended spec.

Note in this pic the use of PTFE 'Plumbers' tape on the two bottom bolts. These two holes these bolts go into are not 'Blind', they actually go through to the inside of the crankcase. Putting the tape on them alleviates the danger of leaks from them when the engine is started.

Pic 8-4:

Torque 'em up carefully as I said before in a crosshatch pattern and make sure the crank will turn freely.

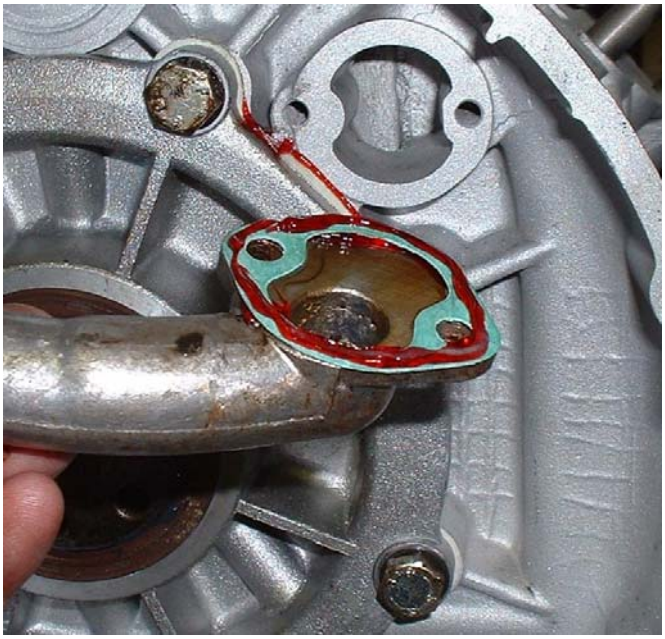


Pic 8-5:

Turn the engine through 180 degrees to look at the timing chest. Whoops! Supper time, gotta go!

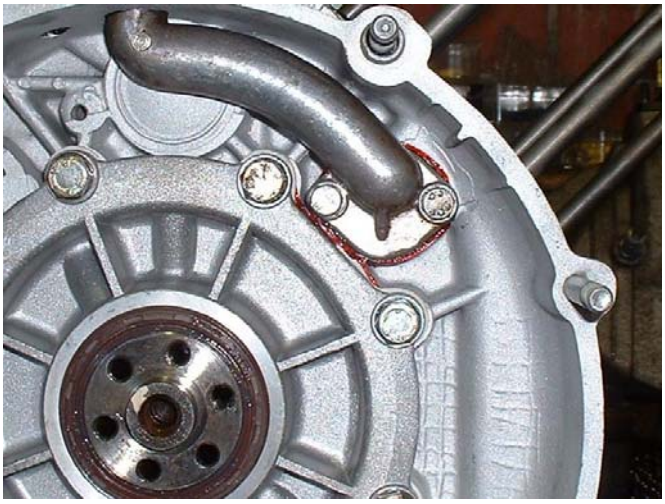
Pic 8-6:

If you haven't done so already now is a good time to re-install the breather pipe. I always use a bit of Loctite 517 on the gasket, as it's a bit leak prone.



Pic 8-7:

Once in place it pokes up through the top of the bell housing.



Pic 8-8:

The flywheel can now be installed.

If you have the chain and sprockets on the front of the engine (see pics 8-9 through to 8-11) simply align the timing marks and then bolt the flywheel on using either the arrow on the edge of the wheel pointing to the 'tit' bellow the LH cylinder in the bell housing.

If you have doubts about this, simply imagine you're looking through the inspection hole used for ignition timing in the side of the bell housing of the gearbox and line the wheel up so that the 'S' TDC mark is where it would be clearly visible.

To get the position wrong you'd have to be 60 degrees out! It's pretty obvious if it's that wrong!

Pic 8-9:

In the timing chest the sprockets can be slipped back onto their shafts. On the cam and crank sprockets are marks, a line on the cam sprocket and a small vaguely arrow shaped punch mark on the crank sprocket. These have to be aligned with one another as shown in the pic as the sprockets are slipped into place. To do this the crank has to be set up so that the crankpin is in the position it would be in if the rod were installed and the piston was at TDC. This is easy enough to identify if you either:

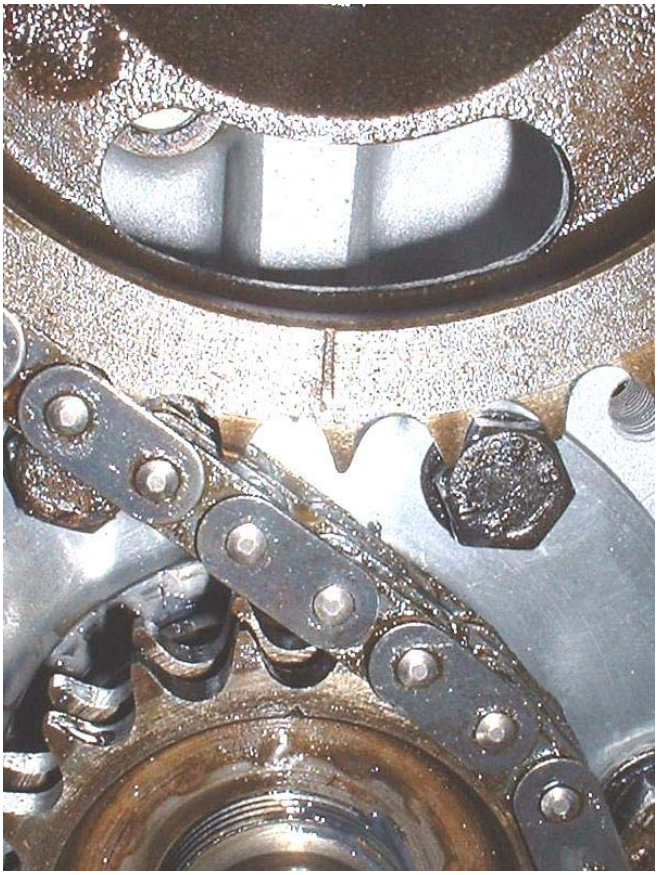
a) Have the flywheel installed so you can line the mark on it's edge (usually an arrow) with the little 'Tit' in the bell housing or

b) Simply look at the sprocket key in the front of the crank and point it towards the centreline of the left hand cylinder.

With the cam the locator peg should be placed at *about* 10.30 O'clock. The sprocket train can then be assembled by placing the chain over the cam sprocket. Hanging the oil pump sprocket in the bottom and then pushing the crank sprocket in from the left hand side (as viewed from the front of the motor.) The parks can then be matched up and the sprockets slid onto ther respective shafts.

Note that if a 'Valtech' type tensioner is being used it is easy to get the run of the chain down the right hand side hooked over the pin that the blade locates on by mistake. Just take care that this doesn't occur.

A bit of gentle fiddling may be required to get the cam and crank sprockets on their respective pins/pegs but the oil pump sprocket should simply slide on for now, as you install it's key later.



Pic 8-10:

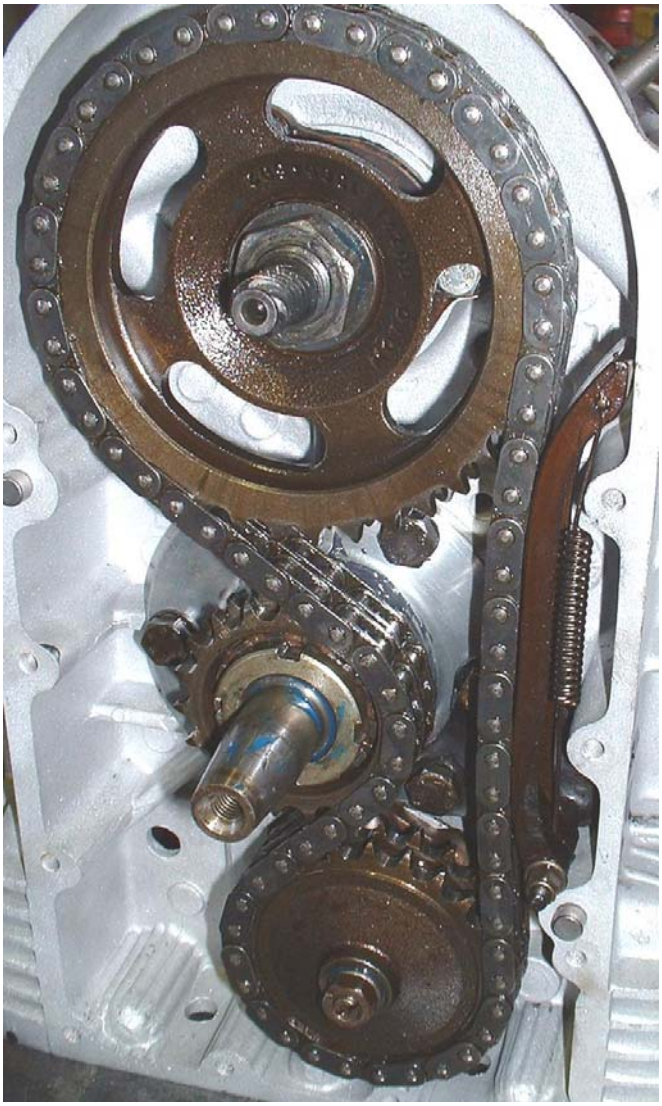
Using the flywheel to turn the crank you can now turn the motor until the slot for the key for the oil pump in the sprocket is *upwards* in relation to the shaft. Using a flat bladed screwdriver the shaft itself can now be turned so the keyway aligns with the sprocket slot and the key can be installed.

Note that clearances on the key and its keyway and slot are very fine. If you have the keyway and slot pointing up then any pressure exerted by the chain will tend to open the hole for the key rather than close it. It is very important to take your time getting things lined up very precisely as if you do the key will simply slip in easily. If you don't then you may be tempted to try biffing it in. If you do there is a very good chance that the hardened corner of the key will dig into the shaft of the drive gear in the pump and damage it. While pump shafts so damaged are usually recoverable with a dremmel tool and a bit of care it does require the removal of all the timing gear again to get at the pump, remove it, repair it and start again. Be warned! Once in place the key should be flush with the outside of the sprocket, not protruding.

Pic 8-11:

All the three shaft nuts can now be re-installed. Remember that the oil pump nut is NOT a *normal* 8 x 1.25mm nut but is an 8 x 1mm. You can see in this picture the tang of the lockwasher on the crank lined up with the peg-slot at 12O'clock. Remember it needs to be bent up to engage with the slot as an aide to it not coming undone in service.

Note also that the spring of the tensioner has been pushed *inside* the timing chest cover bolt bosses. Left to it's own devices the spring will it in a position where it is between the cover and the crankcase causing a large and irritating oil leak when the engine is started!



Pic 8-12:

The timing chest cover can now, after careful cleaning, have the tacho drive re-installed, (If fitted.) and the cover put back on the chest as we're all done in there.

Now is a good a time as any to re-install the oil pressure switch too. That's the black thing with a copper rod on top poking out jut behind the timing chest at about 1 O'clock!

Pic 8-13A

Pic 8-13B:

With the motor popped back on it's bell housing studs you can now see the crank in-situ. These two pics show how the crank has been drilled to remove weight as part of the balancing process (Carillos are substantially lighter than Guzzi rods).

In pic 8-13B you can see how the oil pick-up gallery has been enlarged to the oil pump at the customer's request. The galleries in the sump extension and sump itself have been similarly enlarged.