Pump it up!

Stan Stephens on the nuances of two-stroke oil pumps.

Two-stroke oil pumps very rarely give any trouble but they are regularly blamed for oiling problems.

More often than not the problems are caused by wrongly adjusted cables, kinked pipes or blocked oil tank breathers etc. The pumps themselves are very simple, turn fairly slowly and with a constant supply of oil running through them they never wear.

The tips I am going to show here are applicable to all oil pumps, but the pump I am using as an example is on an RD500LC because it is an engine that I see a lot of. They have had their fair share of seizing problems over the years.

There are differences between makes and models, for instance when I show the check valves (non-return valves) on the RD500 pump, they are on the other ends of the oil pipes on the RG500, on the carbs. Also some machines, the RD/LC range, don't have check valves.

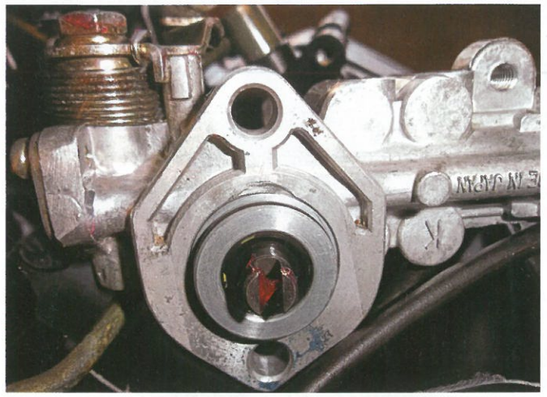
When the RD500 LC first came out we had to prepare them for production racing. The first thing we noticed upon stripping the engines was how dry they were inside, there was no excess oil anywhere. It was obvious Yamaha had kept the oil supply to a minimum, more than likely to pre-empt any smoky problems with the environmental brigade.

For racing the cure was simple: remove the pump and run on pre-mix. We ran many RD500s in racing and drag racing and in hill climb cars. We also built a Harris Yamaha with an RD500 LC full race engine for the late Geoff Johnson to race in the Formula 1 World Championships and he scored points, which we were proud of.

None of the race bikes gave any oiling problems or seizures and when stripped, the insides of the engines were nice and oily. Meanwhile, the road bikes were having seizure problems, particularly on the rear cylinders, because the race engines didn't have a problem it had to be the pump or the oil. I looked into the possibility of increasing the oil pump output but couldn't see any way of doing it. It was typical of the Japanese – they hadn't left any extra metal anywhere to increase the pump size. I got around the problem by adjusting the oil pump cable far richer than the maker's setting and using a race synthetic oil.

As the years went by and many of the engines came in for overhauls, I noticed they were always very dry inside and many had seizures on the rear cylinders. I always insisted that whenever I overhauled the engine I fitted a new oil pump and I didn't have any problems.

Fairly recently the oil pumps have become unavailable (thank you Yamaha). Once again I looked into increasing the pump output but I still couldn't come up with any bright ideas. What I started doing was to strip and clean the oil pump out, remove the check valves, clean them and



Here I line up the drive slot with the bolt holes.

Now line up the drive peg with the bolt holes.

replace the rubber oil pipes. Hey presto! No more problems. I think with the oil supply on the limit, it didn't take much to restrict the supply to a dangerous level.

So, what do you need to do? First, remove the oil pump. You will need a long series 5mm Allen key socket to undo the two screws. Cut off the oil pipes and remove the check-valves. Use a contact cleaner spray to blow through the valve each way and then do the same thing with WD40 spray. It is best to give them a blow through with an airline if you have one. Blow through each one and you should be able to blow one way but not the other.

I am sure that some of the pump's problem has been that if one or two of the check valves has been sticking shut the pump just sent it to the other cylinders. Another problem this cures is that sometimes the valves may stick open and the two-stroke oil runs through into the engine when left standing for long periods.

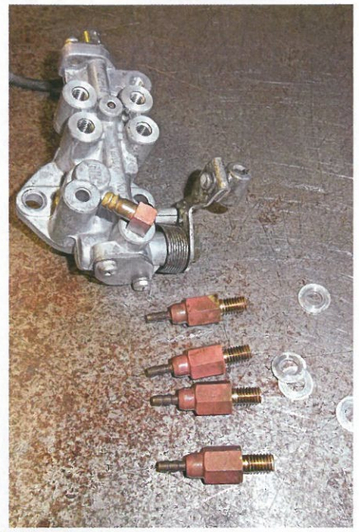
Tighten the check-valves back up but do not over-tighten them, they are only brass and have a hole through the middle. When refitting the pump, check that the small O-ring around the pump is fine or replace it and smear a little grease on it. As you can see in the photo, turn the engine over until the drive peg lines up with the bolt holes and then turn the pump over until the drive slot lines up with the bolt holes. Put a little grease onto the drive peg and refit the pump and the two 5mm Allen screws. Now remove the old oil pipes and clips from the inlet reed-block rubbers and take off the small round plastic cover holding the pipes in place.

Renew the oil pipes and clips with new ones and make sure that you route the oil pipes as smoothly as possible with no sharp bends, especially where they go through the round cover.

Adjust the pump a little richer than the standard setting and always use a good synthetic two-stroke oil. When you start the engine pull the oil pump cable so that the pump is pumping at maximum and the engine is only ticking over.

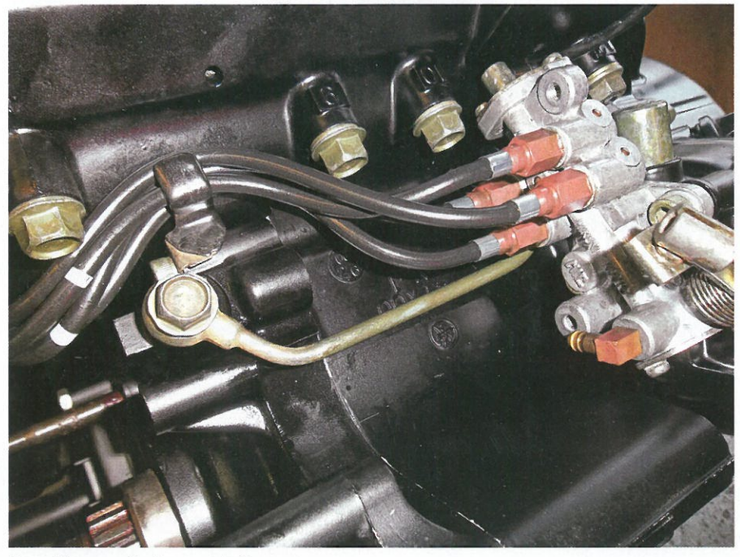
On the RD500 there is a little bleed pipe that you can remove to check it, while on other engines just remove a pipe and check there is oil coming through, it doesn't squirt out it just oozes out. That's it!

For those that want to know, the part number for the oil pipes is 90445055E5 and the part number for the clips is 9046802033. ***cmm***



Remove the check-valves.

A good blow-through with an aerosol.



Now fit new oil pipes and clips.