

## **Drive Shaft Oil Seal**

This is an experience I had – not necessarily a needed one at this stage, as Vmax spares are still readily available, but I want to share my experience just in case somebody will need it in future. I bought my bike second-hand – a Japanese UF model, imported, but was neglected since then. There were serious banking marks on the exhausts (replaced since then), and the racing foot pegs are higher for racing purposes in order to enhance banking/leaning angles.

Last year, whilst preparing my bike for the rally, I realized that the differential was filled with ATF (Automatic Transmission Fluid). This fluid is usually used in racing gearboxes and diffs - it reduces friction, and gives relatively good lubrication. I changed the oils to SAE 80/90 and thought it would be fine. As it triggered my mind, I then realized that there was a strange noise somewhere at the back - especially at high speed. I put the Max on it's centre stand and run it. The noise was dreadful! I used the screwdriver method (hold a screwdriver to your ear and determine the root of the noise) to track down the origin, and it sounded like the drive shaft splines and the differential but I couldn't really tell.

I disassembled everything and found enough "grease" on the drive shaft's splines, which diverted my attention to the differential. I disassembled and found the bearings were shot, especially, the wheel bearings. What I didn't realize at that stage, is that the Vmax's drive shaft's splines (unlike other bikes), are lubricated via two feeding holes in the spline-cup, which allows the oil from the differential to lubricate the splines.

Whilst washing all the parts, the "grease" on the drive shaft's splines, turned out to be ATF mixed with the fretted material particles from the splines. It formed a paste, which blocked the two oil-feeding holes, restricting and eventually blocked the oil flow and acted as a grinding paste. This worn the drive shaft's splines, as this was the softer material of the two splines. The splines on the differential's side had no sign of wear.



*Old shaft's splines*

The old seal on the driveshaft which blocked the differential oil to flow into the swing arm was actually sort of melted on the driveshaft. I tried to source a drive shaft – got two prices – R900 second-hand, and a new one for R1200. I ordered a new driveshaft from Yamaha (at a mere R458 at that stage!), presuming that the seal is an integral part of it, as I was unable to disassemble it. When the shaft arrived I realize that there was no oil seal. To order it would cost me R154 and another 3 weeks. I then decided to manufacture one myself as there is relatively little movement at that point.



*New shaft with seal & spacer*

I used Teflon, machined a disc with a groove on the inside and outside, to accommodate two o-rings. The ID o-ring fits onto the oil seal landing on the shaft and the outside o-ring fits on the differential's oil seal landing in the input spline-cup. I spaced the seal on the driveshaft with the use of an o-ring, to get a tight fit on the washer and circlip.



*New shaft assembly*

I replaced all the bearings on the differential according to the manual and filled it with SAE80/90 gear oil.

After that, I checked the oil level periodically, as I would order a new oil seal if necessary. It's been now 5000km later and the seal is still working perfectly - no oil lost.