Stefan shares his restoration experiences with us.....

STORY OF A MISSING THIRD GEAR

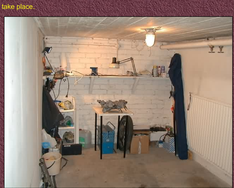
I purchased my T500 -69 in the spring of 1999. At that point of time the condition of the bike was everything else than good but I did not actually mind as the price was just right. One of the obvious problems was the missing third gear but the seller had an extra gearbox that he included in the deal so I thought that could be a nice project as the first winter would come. I had some of the most thrilling moments in a very long time when I could ride around on my boy hood dream in the town and do a few shorter trips. During those trips I was to discover many more problems and parts that was everything else than Suzuki original parts. A Honda gas tank, modified Honda front end, Honda front wheel, unknown origin for ignition system, 440 size on main jets... the list could be continued for ever.

Picture 1. My T500 as it looked when I bought it, is this a T500...

I did get the bike running in a quite nice condition during that first summer but then in the autumn I started considering the engine repair to get the gearbox clusters changed. Removing the engine went in a few hours but fitting it in the trunk of the car was a pain as it really weighs a lot! My brother in law helped me out and that was really needed, puh! Back home I did get a garage in January of 2000 and this was the start of splitting the engine. Before this I had done some porting on the barrels in our bedroom but I really felt that the time had come to move down stairs in the garage(many thanks to my understanding wife!) to start on the heavy part, splitting the engine with an old copy of a T500-II service manual as a help. Getting the dirt of the engine was not easy, many years of running had made it stone hard so this should have been done before removing it from the frame. Well it became cleaner but a lot of dirt was still to be found on the inside...

Picture 2. The bike as it looked after the first summer, somewhat more cafe look!

Picture 3. My garage where the surgery was to take place.



So several evenings down in the garage and many discussions on the T500 Fanatics site and Suzidiat message board made wiser and actually resulted in some progress with getting the rotor removed. Great thanks also to Greg Garner who gave me some really good hints on the problems I encountered! Some home made tools for keeping the crank from spinning came in handy when the clutch was removed. It turned out that Suzuki had added some bolts after writing the service manual so after several attempts I saw the engine cases split. Now what was to be found inside? Well a lot of dirt, broken parts, sign's of wear, pieces of the engine case that had broken but anyway I was a happy man to see that I had come this far.

Picture 4. The split and cleaned engine cases. Engine cleaner aerosol just made wonders.

Picture 5. One of the damages found on the engine case.

It all had started due to a broken third gear that just only made a lot of noise if it accidently was tried out and this was what the work would be concentrate on for a few evenings. I was surprised to find that the fourth and fifth gear was in pretty good shape while the third gear was very worn. After reading so much about problems with sloppy designs, lubricating problems and so on I had imagined that I would have found a totally worn out fifth gear. Well back to the third gear, there was an obvious reason for why it did not work and that was three worn parts. First I found that the dogs on the right side of the third driven gear wheel were worn in the edges, then I found the corresponding dogs on the third gear to be equally worn in the edges. After removing the gears I found out that the gear shifting cam had some damage just where it should operate the third gear in place. So which one that had caused the other damage was not so clear, it is the same story as first came the chicken and then the egg or first came the egg and then the... Well anyway this was what caused the third gear not to go in position.

Picture 6. Broken and worn dogs on third gear and third driven gear. In the foreground is the "new" parts that I was going to use as a replacement.

Picture 7. Broken gear shifting cam, just where the third driven gear should be pushed in place. In the background is the replacement part.

The broken parts were exchanged to the ones that I did get when I bought the bike so that part was not so tricky. Finding replacement oil seals and O-rings took some time but after a lot of searching this was solved over some e-mails. While I was at the work I also cleaned the crank, heads and pistons that turned out to be 72 mm from GPM! This size is almost too large for the T500 in my opinion and that can also be seen when taking a look down the barrels, transfer port wall becomes too thin and finally cracks!

Picture 8. Crank, heads and pistons after some cleaning up.

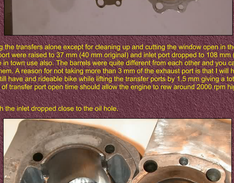
Picture 9. The broken transfer port wall with a bigger hole due to overbore.

The previous owners had made so much damage to this engine and more was to be found. I took a closer look at the head gaskets and found out that they were home made with holes much smaller around 66-68 mm in stead of 72 mm that would have been required. The pistons had hit the gasket pushing it up in the heads during high spoled running, to my luck they had made the gaskets of 1 mm plate in stead of 0,5 mm as my new ones are from Suzuki. I will have some 2 com less of burning space when fitting the new ones so I am awaiting some increase in power even just due to this.

Picture 10. The old home made head gaskets in the foreground and Suzuki original behind these by the pistons.

I ported the inlet and exhaust ports while leaving the transfers alone except for cleaning up and cutting the window open in the barrels to allow adding an extra base spacer in the future if more power is needed. Exhaust port were raised to 37 mm (40 mm original) and inlet port dropped to 108 mm (105 mm original). This should give a nice extra boost of power and allow the bike to be rideable in town use also. The barrels were quite different from each other and you can see from the picture that the 108 mm on inlet port came quite close to the oil hole on one of them. A reason for not taking more than 3 mm of the exhaust port is that I will have the opportunity to add an extra 1 mm base-spacer and an extra base gasket (0,5 mm) an still have and rideable bike while lifting the transfer ports by 1,5 mm giving a total of 7,5 degrees more transfer port open time (around 3 degreesmm). This extra 7,5 degrees of transfer port open time should allow the engine to rev around 2000 rpm higher and if it would turn 8500-9000 rpm without problems then that's good.

Picture 11. The ported and modified barrels with the inlet dropped close to the oil hole.



If I will get the engine put together and running without problems then I will take it down to the local Suzuki dealer in the summer when he arranges a dyno test day where everyone can have their bike tested for a few dollars. I'll keep you posted on the results from that test!

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Thanks Stefan for your story and great photos...