

How to replace or adjust the altitude clutch of the NexStar N11GPS

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What had happened ?

Well, the other night it was quite cold and hazy but after a long time without having been outside and using my telescope I thought I give my N11GPS a try. Seeing and transparency were really not very good so I actually spent most of the time watching the moon.

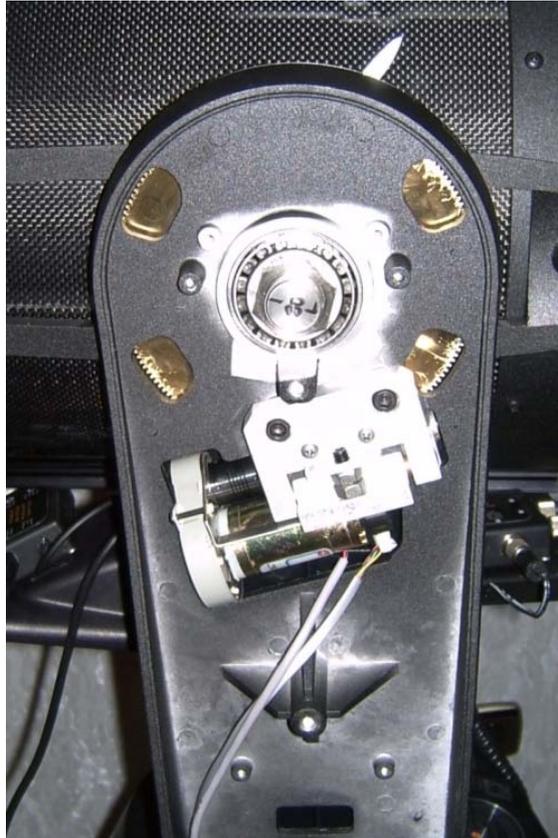
After braking down my setup outside and brining it into my house I reassembled everything on the tripod which is the mode how I store my telescope (covered by a dust cover). So I also had to engage the altitude clutch as usual and it happened – something broke and I could no longer lock the clutch.

Well, it was late and thus I decided to postpone the further investigations to the next day...

Disassembling the NexStar N11GPS to get access to the altitude clutch

Well, the bad news is that you have to remove the OTA from the fork to get access to the left fork arm where the altitude clutch is located and then disassemble this left OTA mount.

So first you have to remove the handle and the 2 covers from the left fork arm



You can see on this picture the large nut holding the bearing of the arm. You will have to remove this later in this process. First you remove the 8 small screws which attach the OTA to the frame of the fork arms (4 on each fork arm).

Next you loosen the 4 large screws in the bottom of the left fork arm such that you can gently widen the fork to be able to remove the OTA which is still clamped between the fork arms.



There is one index nose on each of the sides of the OTA – take care not to brake them. Very little power is needed to remove the OTA from the for mount !

Ok, once you have successfully removed the OTA you now see the fork arms like this.



This is the left fork arm with the clutch. To remove it OTA you now see the fork arms like this. To remove it the large nut at the outside of the fork arm needs to be removed. You can then remove the bearing and next separate the holder of the OTA from the fork completely.



This is a view of the holder after being removed from the fork.



The next few pictures show you the sequence and the parts to be removed to get access to the clutch. First the gear gets off.



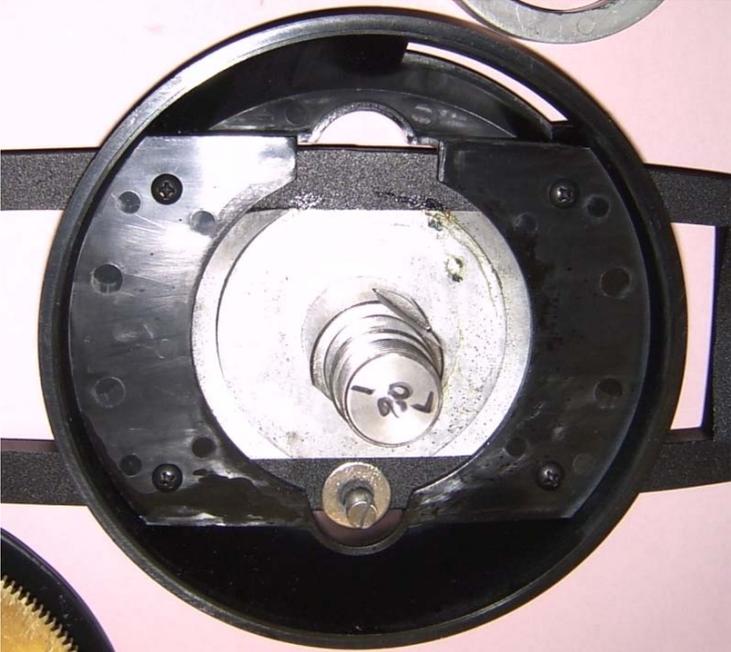
Then a black plastic cover has to be removed.



Now you see the clutch and also the broken part.



Next I removed the broken part from the arm.



Here are two more pictures of the broken part disassembled from the arm:



Well, now it was time to call my dealer. He was very responsive and helpful and I got the replacement part within 1 week. The telescope was still under warranty and so I did not have to pay for the part. Some dealers may request to have the broken telescope shipped to them for repair though. Isn't this an excellent service ?

Re-assembling and adjusting the altitude clutch

Well, first you have to disassemble the clutch. You take the aluminium handle and screw it of the threaded rod. It needs a bit of force because Celestron used some screw sealing lacquer. Therefore it is easier if you use an Allen key which you insert into and hold the threaded rod.



You can see some of this residual red lacquer on the picture below.



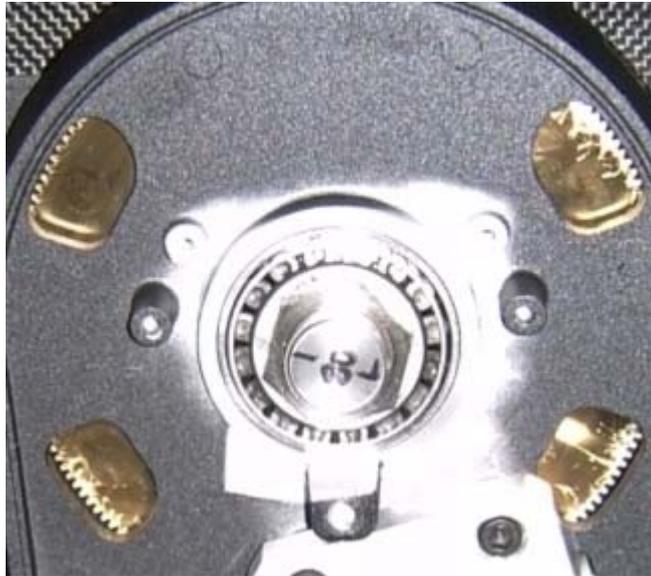
Then you also remove the 3 nuts from the threaded rod (also secured with the lacquer). You should now see the following parts in front of you ...



Now replace the broken clutch and reassemble the parts in the reverse sequence. Make sure you place the 3 nuts in about the same position as they were during disassembly. I thought it was a good idea to also apply some screw sealing lacquer. To adjust the proper tension of the clutch you can place the clutch on the black plastic disk with the drum inserted. Now you just need to turn the aluminium handle until you feel the clutch will clamp with medium power to be applied. This will result in an initial adjustment, to be followed with a final adjustment after the clutch has been assembled and mounted into the arm and before the OTA is attached. When making the final adjustment, check the tension of the clutch to be sure it is not so tight as to strain the clamp but not so loose that the tube bracket is able to move with a little pressure."



Another point of adjustment is the big nut which we had to remove to disassemble the fork arm. This nut clamps the tapered roller bearings. This type of bearing requires a certain "looseness" to operate correctly. I tightened the nut to the point, where the arm was still rotating freely with no discernable lateral movement of it possible. I also secured the nut with some screw sealing lacquer. The next picture shows the nut and underneath the bearings I am referring to.



Conclusion

This little documentation may also help those who suffer from a loose altitude clutch. As shown you have to disassemble the telescope to get access to the altitude clutch for a re-adjustment. Any feedback and hints for improvements of this document are very welcome.

Best regards

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