

INSTALLATION INSTRUCTIONS

INDIGO ELECTRONICS AT-4 FORWARD ADJUSTING COLLAR LOCK ATOMIC 4

TOOLS REQUIRED FOR INSTALLATION

**1/2" SOCKET WRENCH (preferred)
or 1/2" COMBINATION WRENCH
5/32" ALLEN WRENCHES – INCL.**

Shifting the Atomic 4 reversing gear into the Forward position can often be problematic. If the amount of force required is very low, it is quite possible that the Forward clutch will slip causing the propeller shaft to turn slower than the Atomic 4 crankshaft is turning. On the other hand, if an extreme amount of force is required, it is not only physically demanding but the shifting mechanism can be damaged. In a worst-case scenario, it may not be possible to achieve full engagement and reach the "detent" position.

The adjustment of the Forward engagement can be adjusted by rotating the Forward reversing gear adjusting collar in one direction or the other. As built, all Atomic 4s have a notched adjusting collar for setting up the Forward clutch in the reversing gear. That original collar has 15 notches and it is not uncommon for it to be nearly impossible to get the reversing gear adjusted for easy operation when engaging Forward. The very latest Atomic 4s have a collar with 21 notches in an effort to provide finer adjustment of the Forward clutch.

This kit provides a means to readily make an adjustment that is twice as fine as what is currently available. The "as built" means of locking the adjusting collar in position is via a retaining pin which is screwed in such that its tip engages in one of the notches in the collar. The lock in this kit allows the collar to be adjusted 1/2 notch either CW or CCW from the

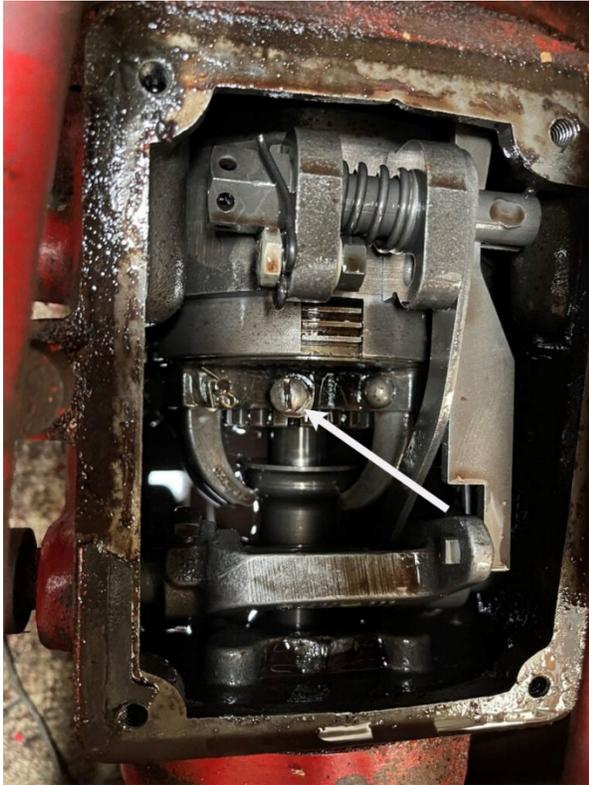
as found position to achieve optimal engagement force when putting the engine in Forward. **FOR FULL NOTCH ADJUSTMENT, REVERT TO THE ORIGINAL RETAINING PIN.**

The instructions that follow walk you through the installation of this new locking mechanism.

NOTE: All components in this kit, except for the special stud, are magnetic and can be retrieved from within the reversing gear with a magnet should anything be dropped.

1. Turn off the main battery switch and place the engine shifting lever in the Neutral position.
2. Identify the reversing gear access cover on the aft end of the A4 (forward end if you have a V-Drive). It is about 5 x 6 inches and is almost in a horizontal plane just behind the engine block. It is held on with 4 hex head cap screws.
3. Loosen and remove the four 5/16" hex head cap screws that hold access cover in place with a 1/2" wrench. A new gasket is supplied in this kit so it is OK if the original one tears. Try to recover all of the pieces it is tears to keep from contaminating the oil system
4. Below is an image of the reversing gear with the access cover removed. The forward adjusting collar retaining pin can be seen near the middle of the image where the arrow is pointing. It will most likely be necessary to rotate the assembly into which the retaining pin is screwed as it does not necessarily stay at the topmost position. With the engine in neutral, this can be readily accomplished by pulling on one of the three engaging fingers and rotating the assembly.

Continue rotating until the retaining pin is on the very top.



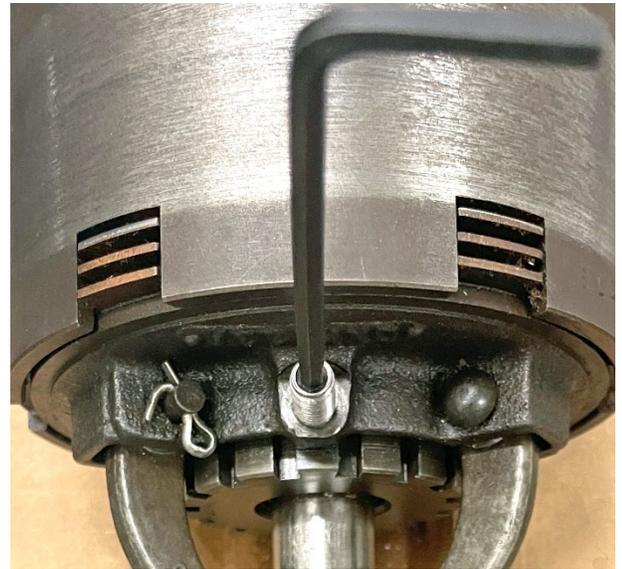
5. The retaining pin has a screwdriver slot in it but you will most likely need to loosen it with a 1/2" wrench. Turn the pin CCW to loosen it. There should be a lock washer under the head of the retaining pin. Carefully unscrew the retaining pin completely and be sure to catch the lock washer as the pin comes out of its tapped hole.



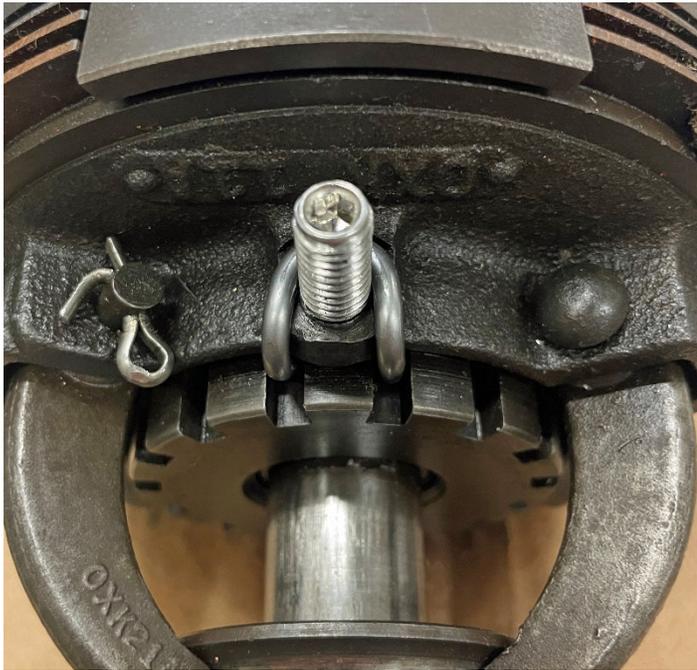
6. Once the original retaining pin is removed, you can readily rotate the Forward adjusting collar CW for more engaging force or CCW for less

engaging force. Decide which course of action you need (harder or looser) and rotate the adjusting collar 1/2 notch. After making the adjustment, proceed to the shift lever and see if the amount of force required to engage Forward feels improved. If satisfied, proceed to step 7. (If there is no change, the problem may lie with the shifter and associated cable and you will want to investigate both of them).

7. Insert the special stud supplied in the kit. Notice that the Allen wrench is "stuck" in the hex hole of the stud. It is temporarily held in that position with a dab of Silicon sealant to facilitate installation of the stud. Align the 1/4-20 threads on the end of the stud with the 1/4-20 tapped hole in the reversing gear and screw it securely into position, turning the wrench CW. The image below shows the installed stud and the Forward adjusting collar in the 1/2 notch position. Remove the Allen wrench from the stud by wiggling and pulling it out. Put the short leg of the other Allen wrench (shorter wrench provided) into the stud and fully seat the stud.



- Next, land the actual locking piece on the just installed stud. The two “legs” of the lock should straddle the area between notches but may not “fall” into an all the way down position. You may have to slightly re-position the adjusting collar. The legs have a slight taper on the inside of each leg to facilitate downward positioning.



- Next, land the black flat washer on the stud and push the washer and lock down into the fully seated position using a ½” socket wrench. Once seated, install the silver lock washer.



- Next, thread the Self-Locking nut onto the stud. You will be able to screw it down with your fingers until the threads of the stud engage the nylon element in the nut. At that point, a ratchet with a ½” socket is the best way to screw the nut down farther.



11. Before fully tightening the nut, it is best, if at all possible, to push in against the leg to the right with a screwdriver as you fully tighten the nut as shown to the right. The reason for this is that the lock sometimes wants to rotate as a result of the torque being applied by the washers under the nut. Fully tighten the nut. If a screwdriver cannot be utilized, the installation will still be acceptable. The lock may just rotate slightly



INSTALLATION COMPLETE

12. Now is the time to test the effort required to engage the Forward clutch in the reversing gear. If it is found to be satisfactory, re-install the reversing gear access cover with the new gasket supplied in the kit and give your Atomic 4 a full operational test to assure a satisfactory adjustment.

13. **If it is found that what you actually needed was a full notch change, remove this ½ Half Notch kit and reinstall the original Retaining Pin. It may be necessary to utilize a small screwdriver to lift the lock out of its seated position. Please note, the original Retaining Pin has very little clearance when screwed into a notch so it is absolutely critical that the pin be perfectly aligned with the notch when installing it. Screw the Retaining Pin in with you fingers until it starts to engage its lock washer, then fully tighten**

with a wrench. If you try to force it into position with a wrench, you will break the piece into which it is threaded.

14. During the development of this product, I came across an incredible smartphone App ... a Strobe Tachometer. It is an excellent tool for checking out your installed tachometer and also allowing you to verify that your forward clutch is not slipping when going forward at high RPM.

Just Google **Strobe tachometer (RPM meter) 4+ - App Store** and it will point you to the iphone App at the App Store.

The App itself is free but as installed the flashing light is not very bright. For a small fee, about \$5, the light will come on in full brightness ... highly recommended,

1/2 Notch Lock
Parts List

<u>Part No.</u>	<u>Quantity</u>	<u>Description</u>
1	1	Access Cover Gasket
2	1	Special Stud with Long Allen Wrench inserted
3	1	Short Allen Wrench – Final Tightening
4	1	5/16" Flat Washer
5	1	5/16" Lock Washer
6	1	5/16" Self-Locking Nut
7	1	Custom Lock

