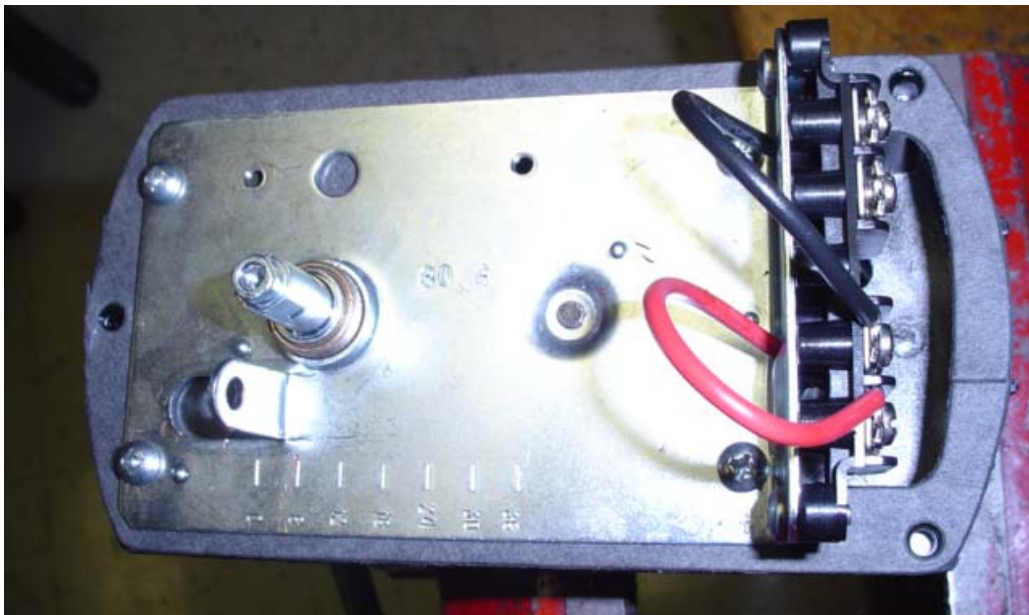


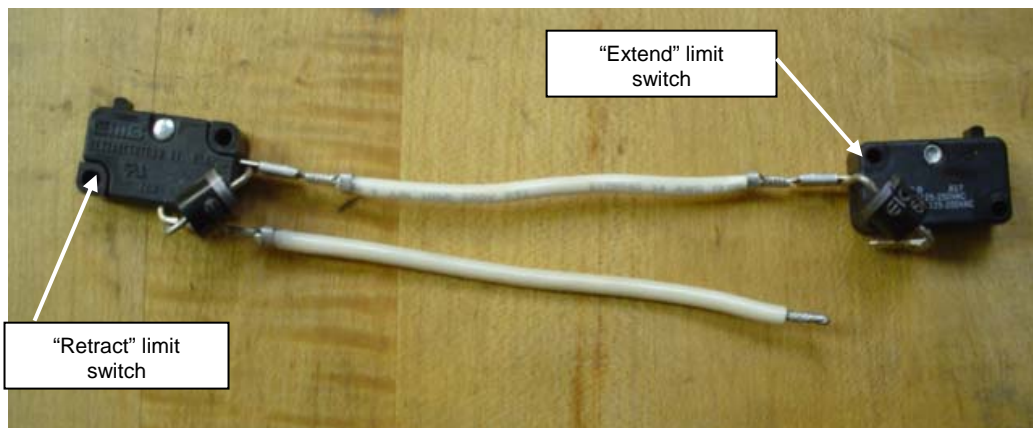
## Instructions for Limit Switch Retrofit

*Follow directions below to add limit switch functionality to your Venture actuator. Your components and installation may vary slightly depending upon your original configuration, but concepts shown here should still apply. This procedure is meant to be performed either on a gearbox that has been removed from its actuator tube, or on a fully-assembled actuator that is almost fully retracted.*

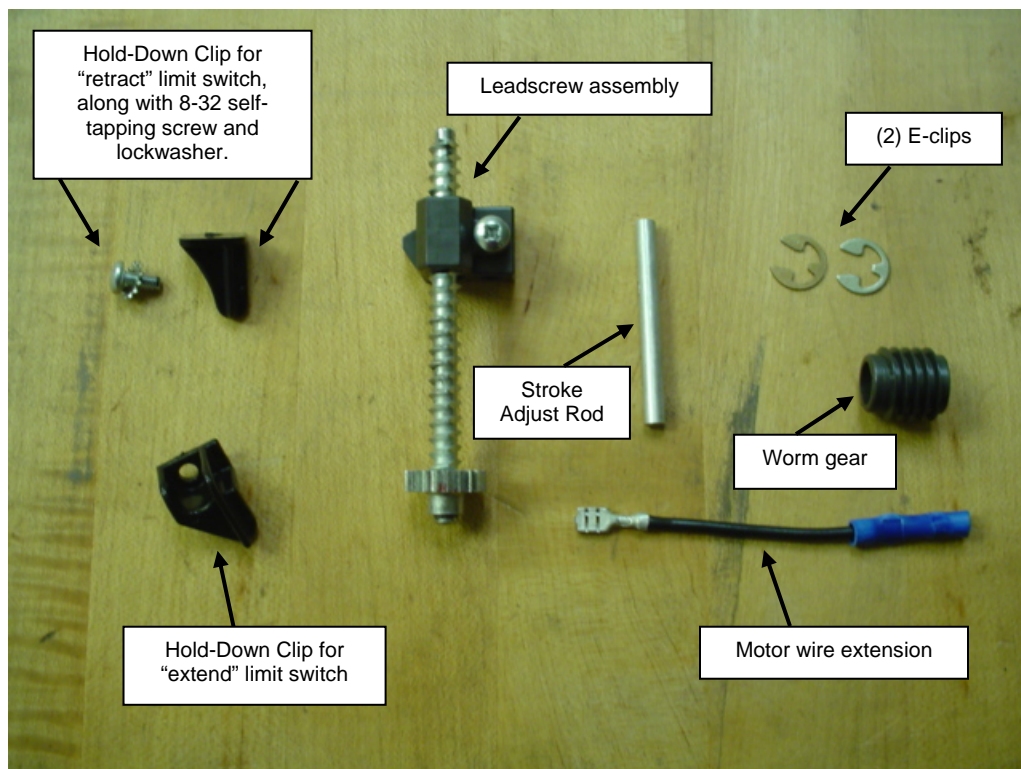
1. After removing lid of your gearbox, your unit should look similar to picture below, with the two motor wires attached to the terminal strip.



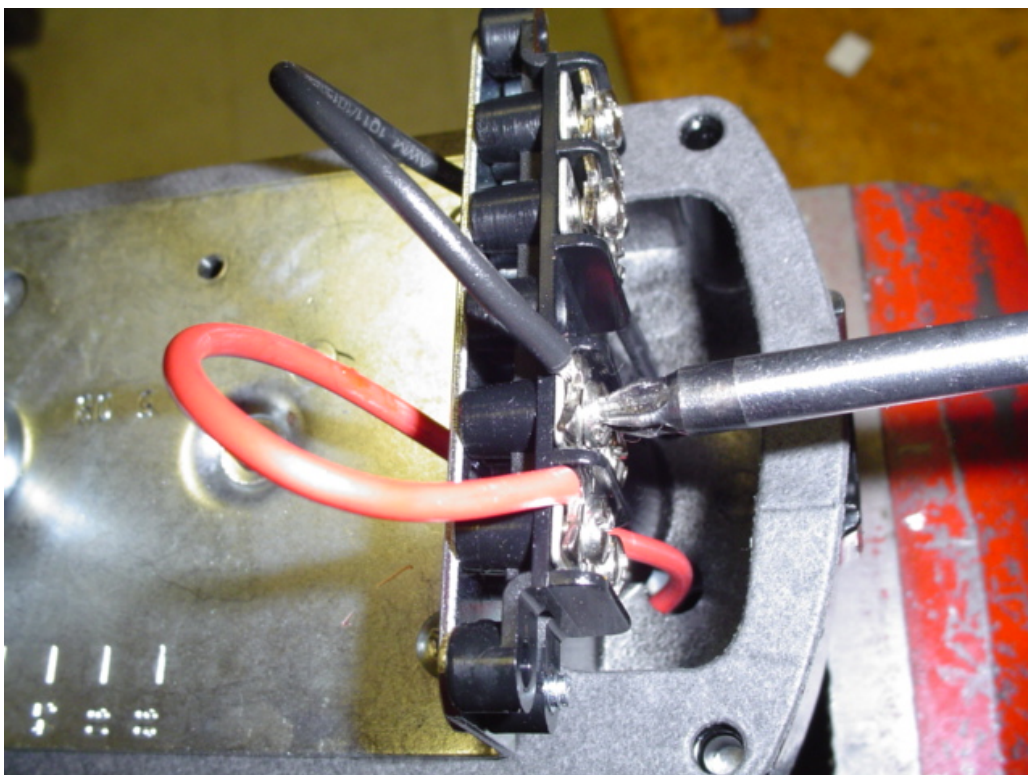
2. Your retrofit kit should include a limit switch assembly as shown in the following photo:



3. Your kit should also include the following components (or similar items, depending on your configuration) necessary to complete the installation:

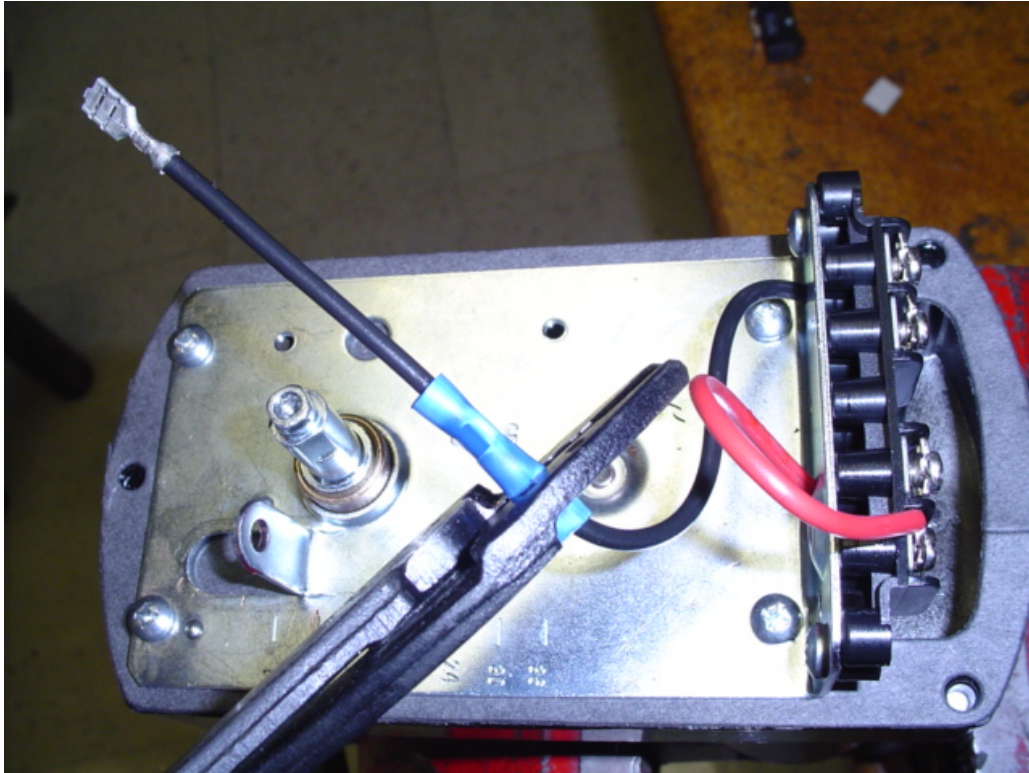


4. First, loosen clamp screw on terminal strip that is holding down the black motor wire as shown below.  
*Note: These instructions are written for an acme-screw actuator. If you have a ballscrew actuator, you would be dealing with the red wire, not the black wire.*

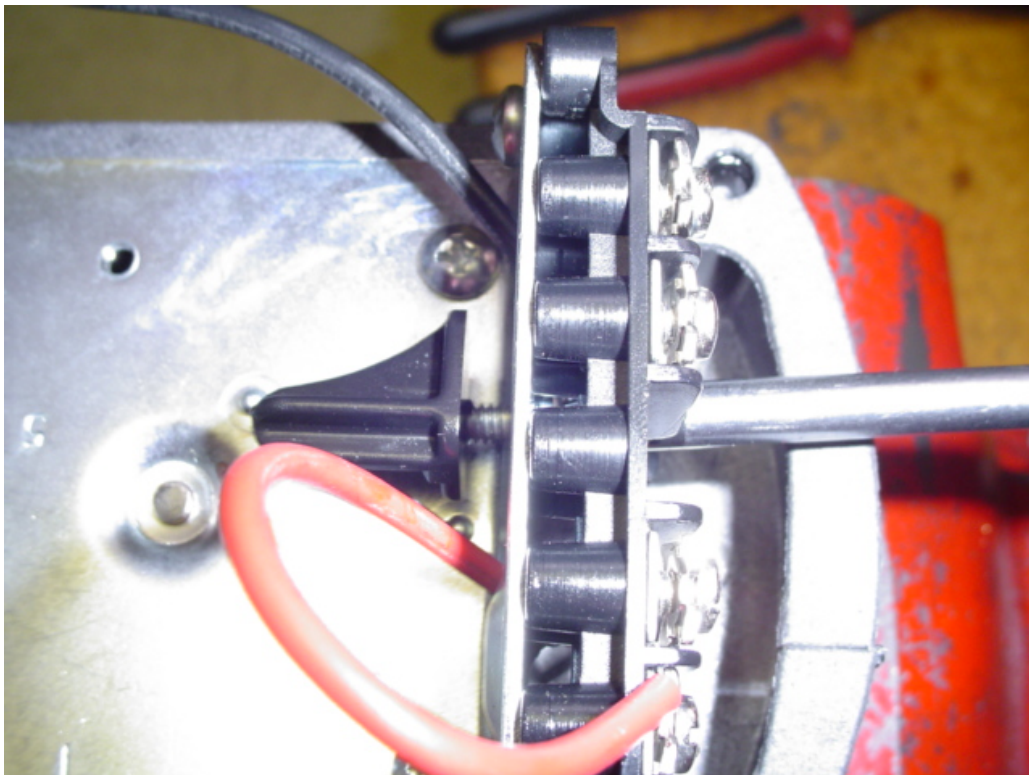




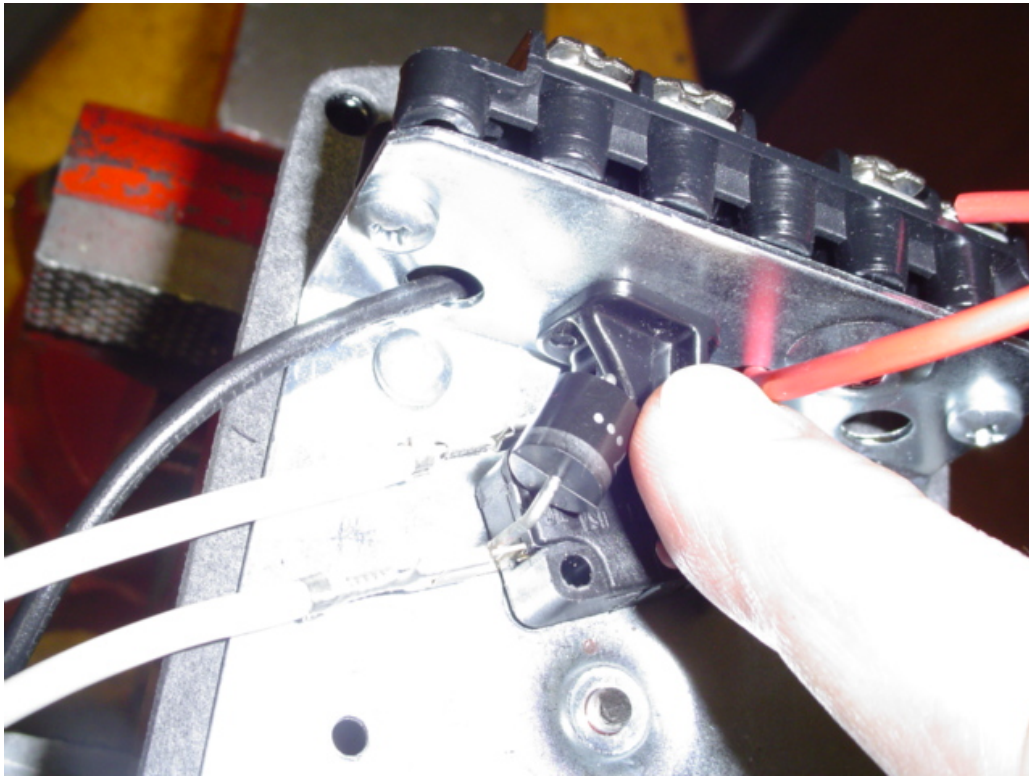
5. Next, take the motor wire extension and crimp it onto the exposed end of the black motor wire, as shown below.



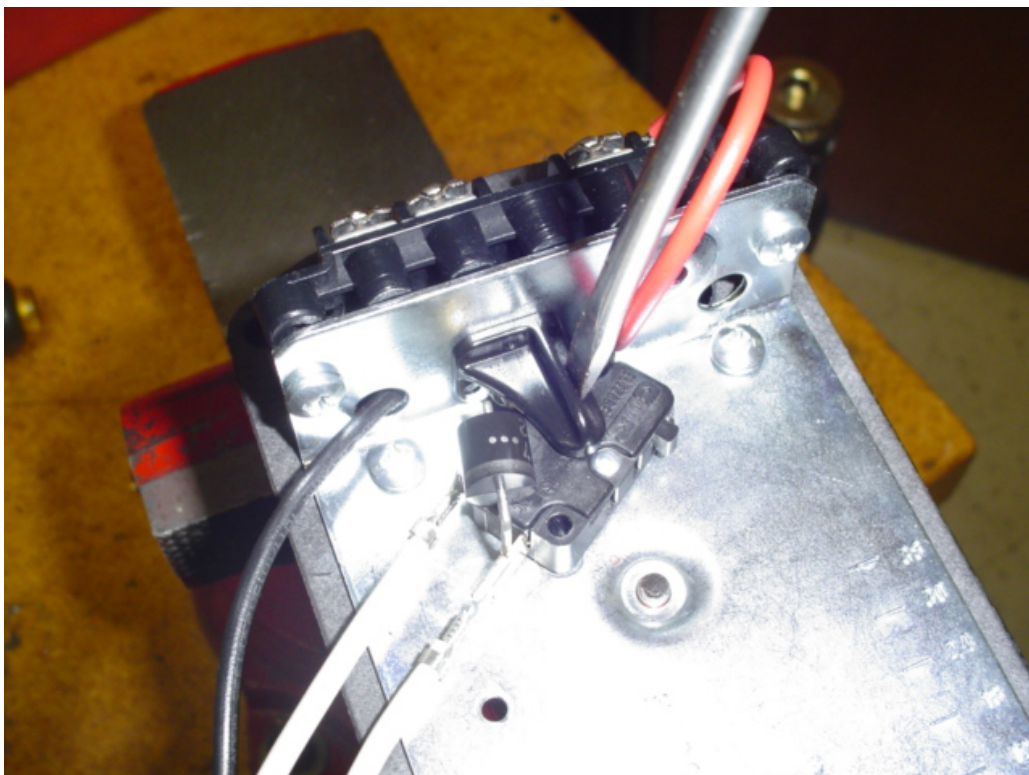
6. Insert the 8-32 screw (with lockwasher) through the screw hole in the plate and begin to thread it into the Hold-Down Clip for the “retract” limit switch, as shown below.



7. Slip the “retract” limit switch under the clip and position the holes of the switch body onto the raised locating nibs of the gearplate. Hold the switch in position and the clip down onto the switch as shown below while tightening the 8-32 screw until tight. (Be careful not to overtighten, as this could strip the threads that are being cut into the plastic clip.)

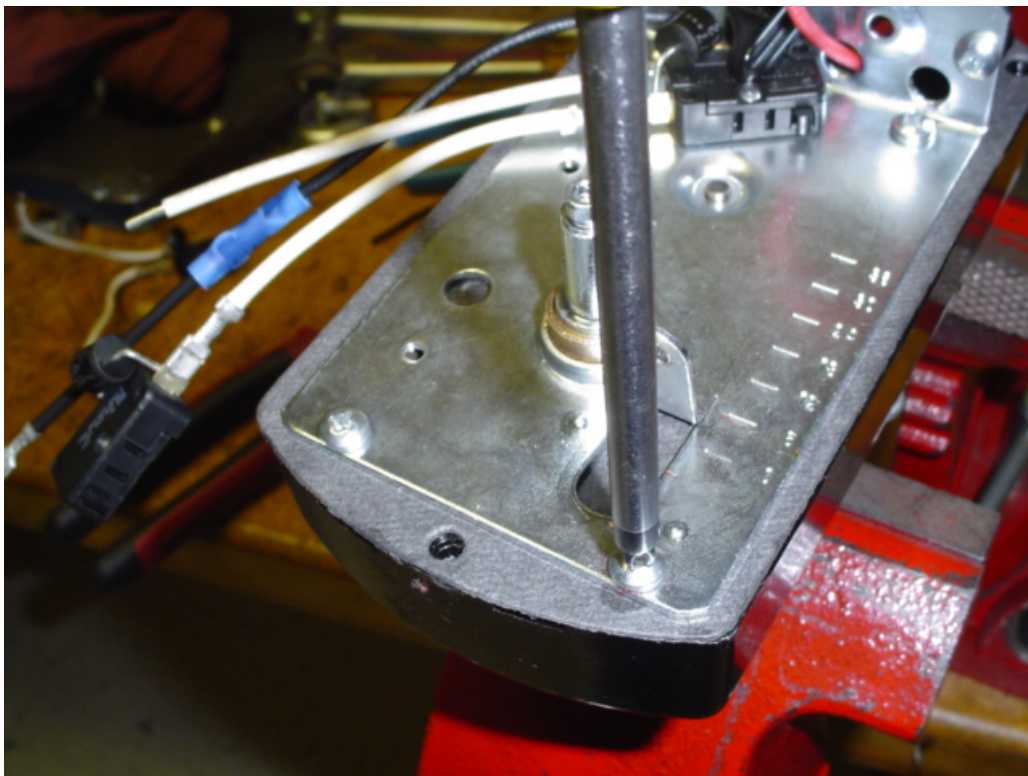


8. If clip is not holding down tightly onto the limit switch after tightening the screw (limit switch does not feel secure), take a flat bladed screwdriver and tap down onto right side of clip to swivel the edge of the clip down tightly onto switch, as shown below:





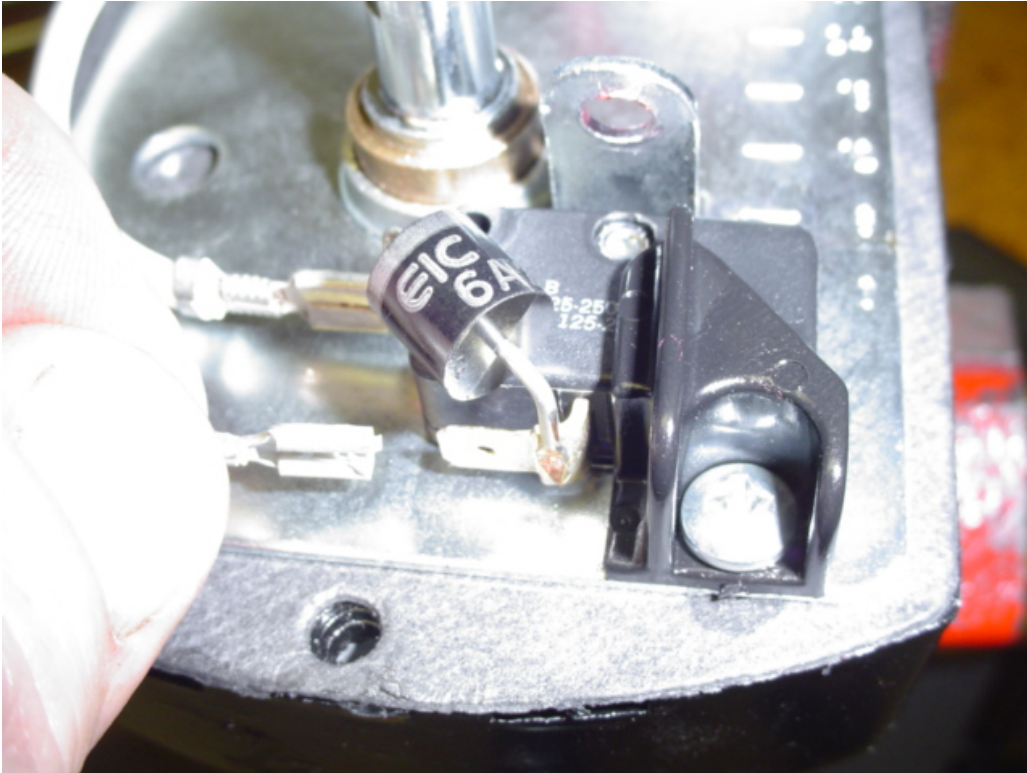
9. Temporarily remove gearplate screw as shown below. It will be used to secure the other clip at this location in the next step.



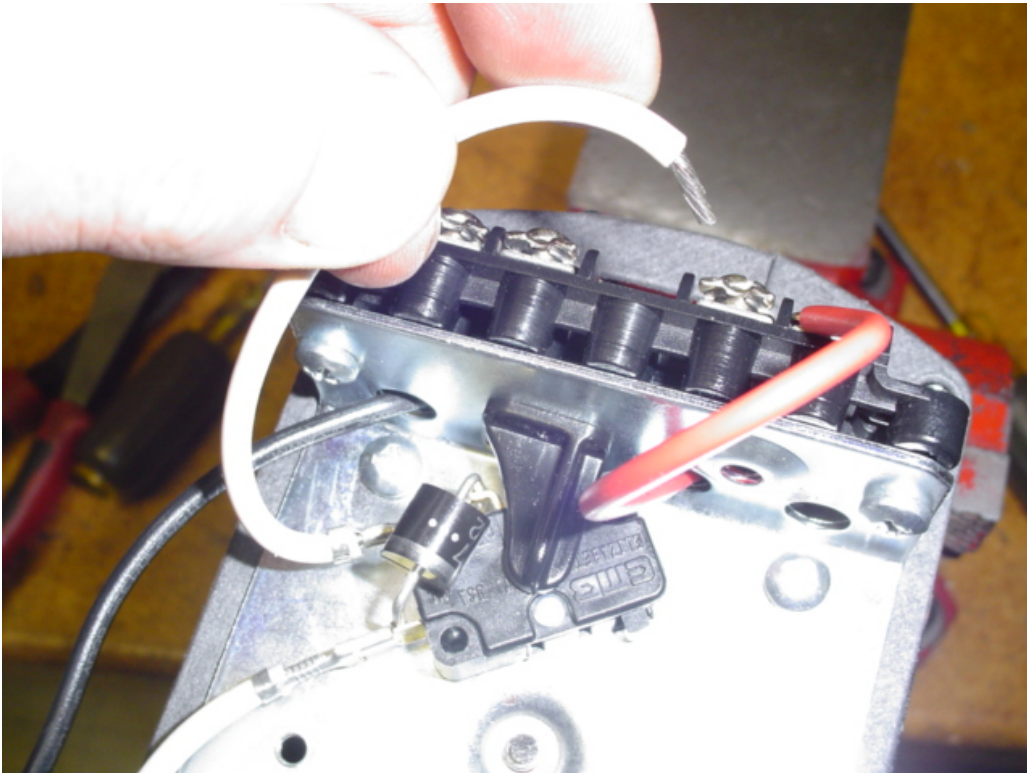
10. Insert screw into Hold-Down Clip for “extend” limit switch and start screw into hole as shown below. Take “extend” limit switch and slip it under the clip, with the holes in the switch body positioned over the raised nibs on the gearplate. Tighten screw fully so that clip secures limit switch.



11. Take spade connector of black Motor Wire Extension and press it fully on to spade terminal of “extend” limit switch as shown below.

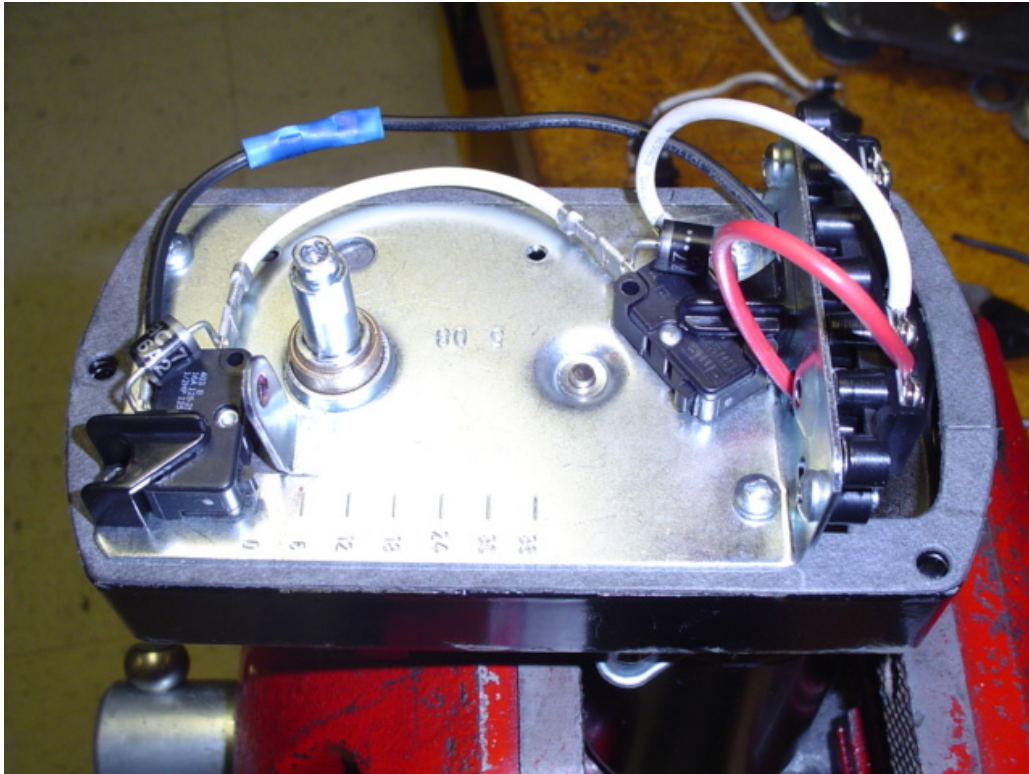


12. Take short white wire from “retract” limit switch and slip it under previously loosened motor wire clamp on terminal strip as shown below. Tighten screw/clamp down onto wire, being careful not to leave any strands un-clamped and loose to where they could short out on adjacent terminal.

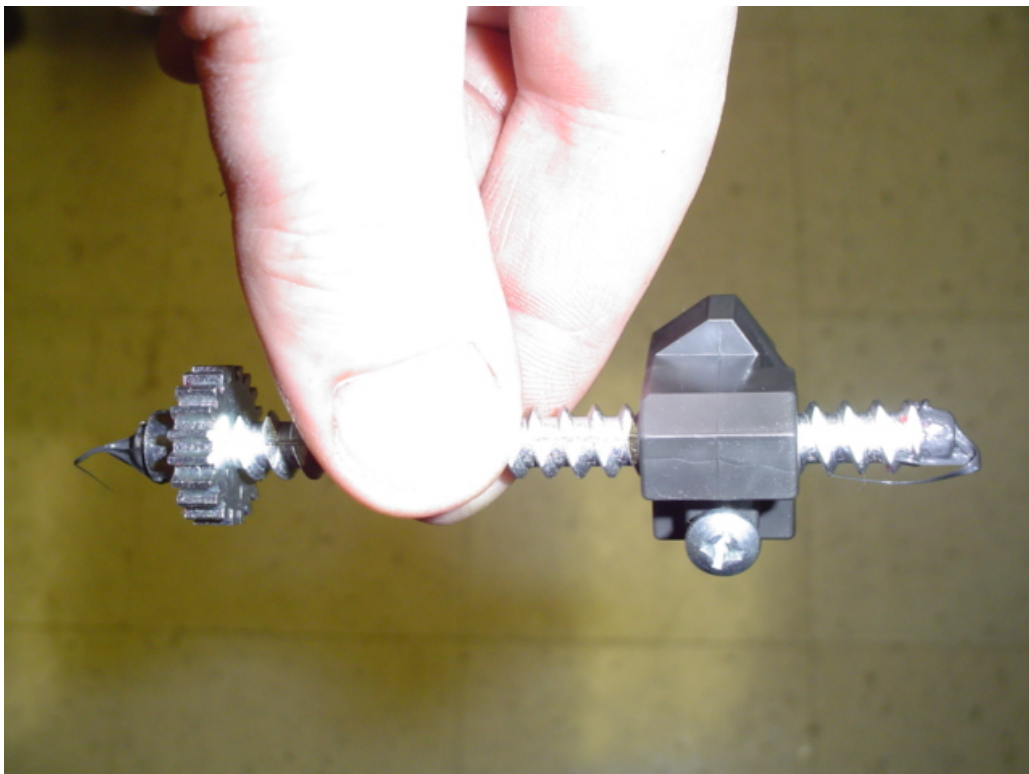




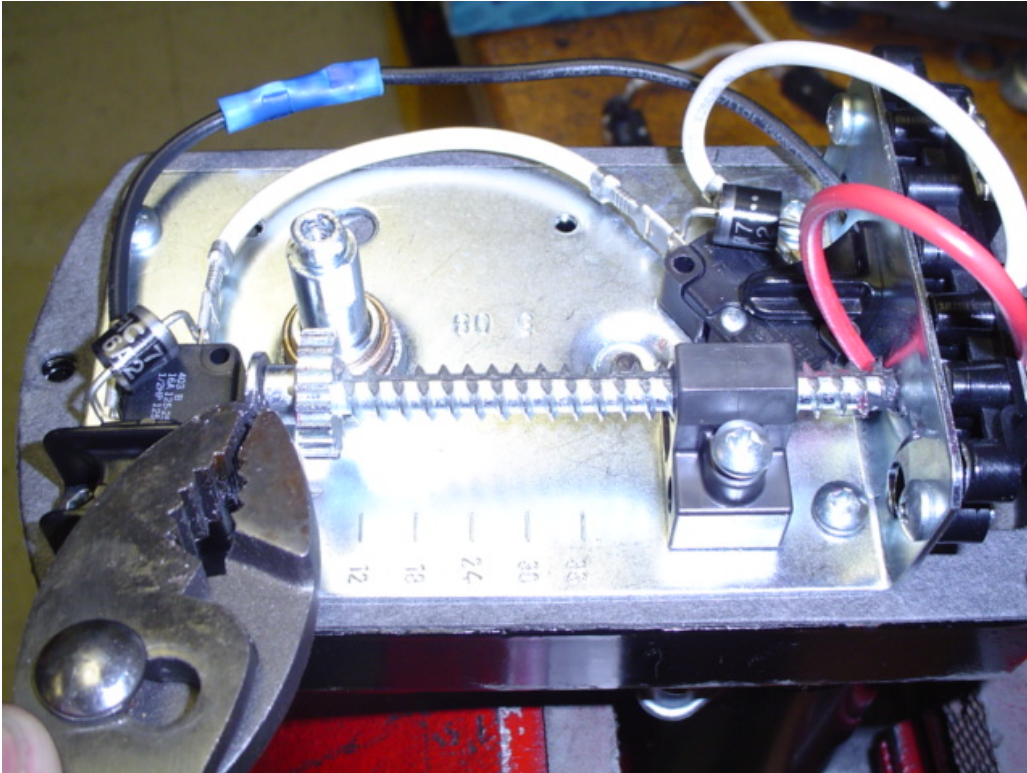
13. The limit switch wiring should look similar to photo below at this point in the process.



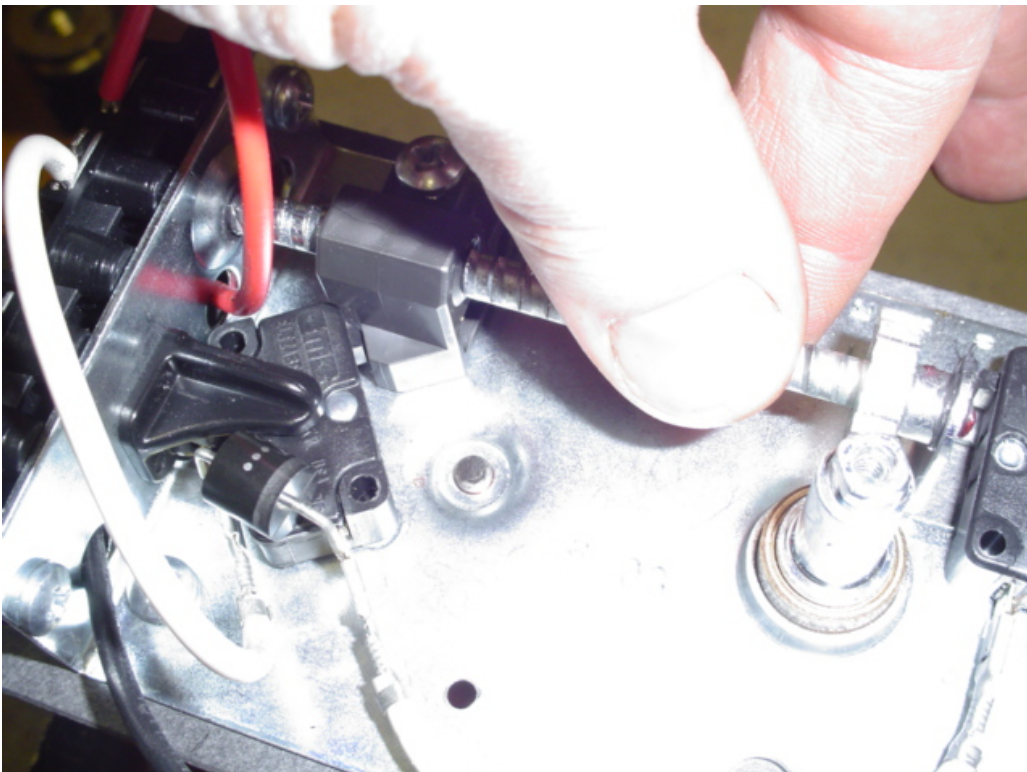
14. Pick up Leadscrew Assembly and dip both ends into some grease as shown below.



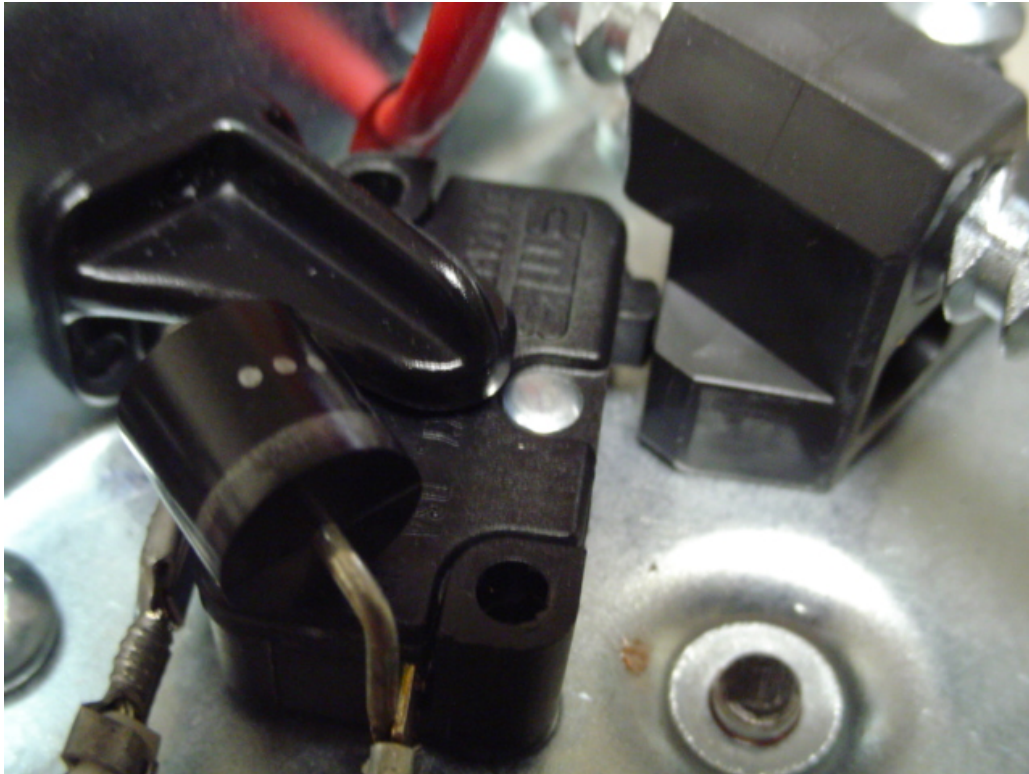
15. Insert the non-gear-end into the hole on the gearplate, while holding the other end in line with the hole on the bent-up tab. Use pliers to bend tab against Leadscrew, with end of Leadscrew going into hole on tab. Use a gentle clockwise twisting motion of the pliers to bend the tab into final position. Tab should be bent to the point that it allows little or no back-and-forth motion of the Leadscrew. *Note: The bending of this tab may be more easily accomplished if the extend limit switch is not yet in position (step 10).*



16. Gently rotate the Leadscrew with your fingers until it just touches the button on the “retract” limit switch as shown in the next two photos.



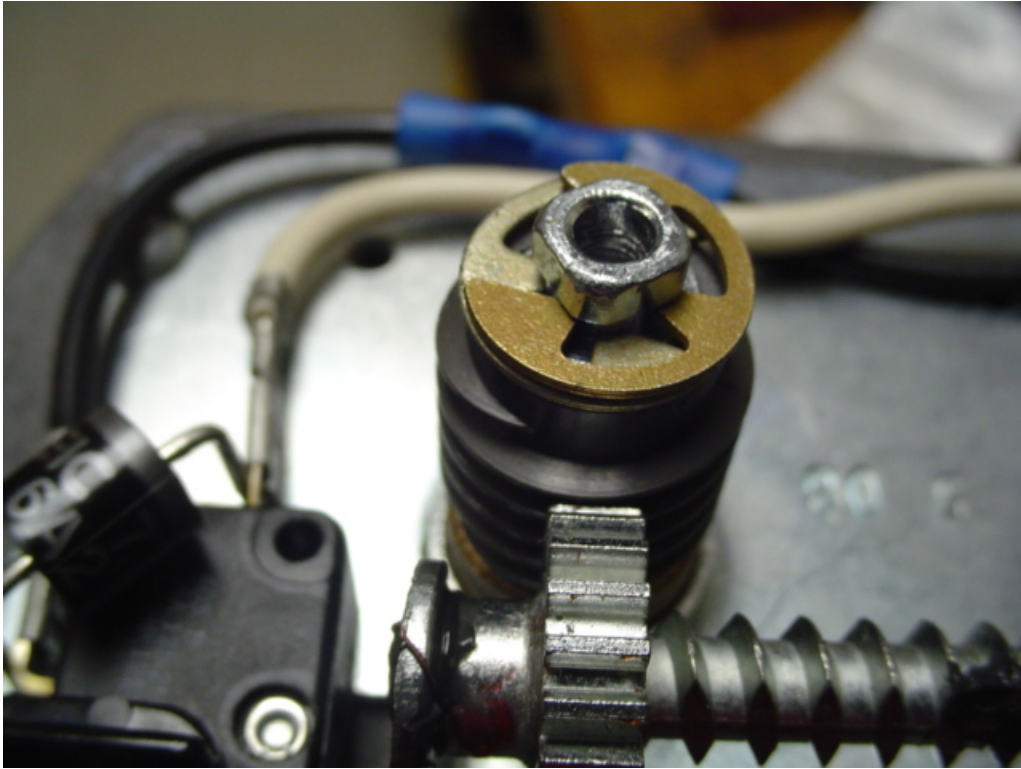




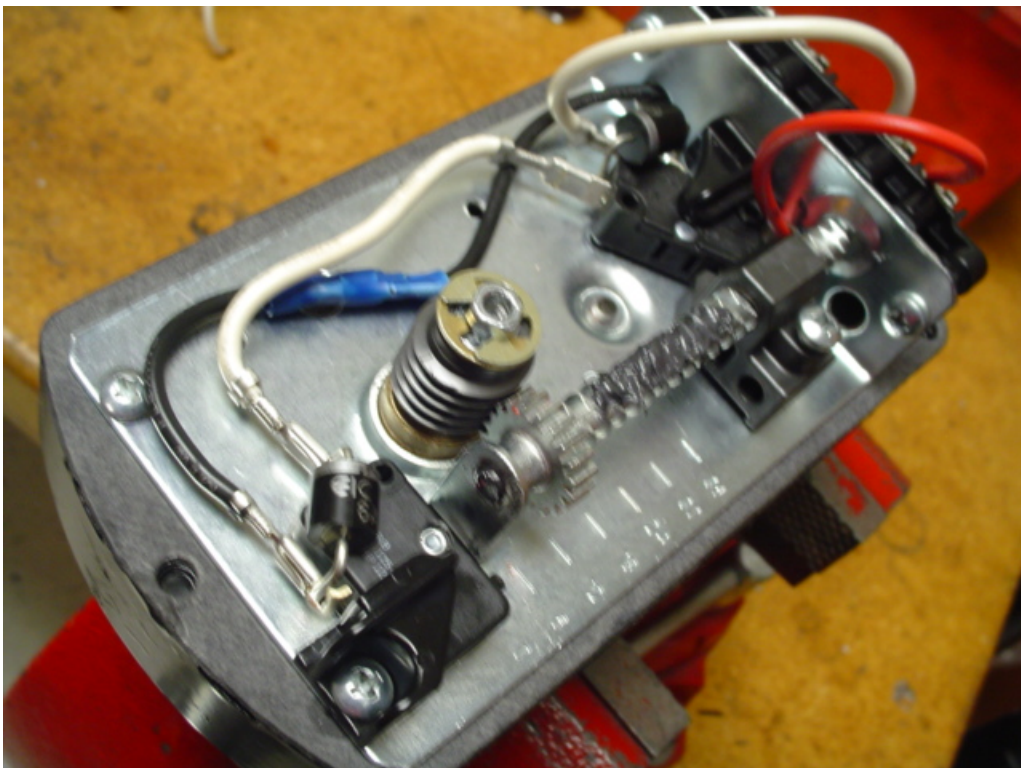
17. Take Worm Gear and slide it down onto the Output Shaft of the gearbox. It will engage the Leadscrew gear as you do this, and will turn the Leadscrew a bit as you push down. *Note: The Worm Gear will only install one way. One end of the Worm Gear has flats on the ID to mate with the flats at the top of the shaft.*



18. Pick up one of the E-clips and snap it into the groove just below the square at the top of the gearbox shaft. Take the other E-clip and similarly install it on top of the first E-clip to secure Worm Gear onto shaft as shown below.



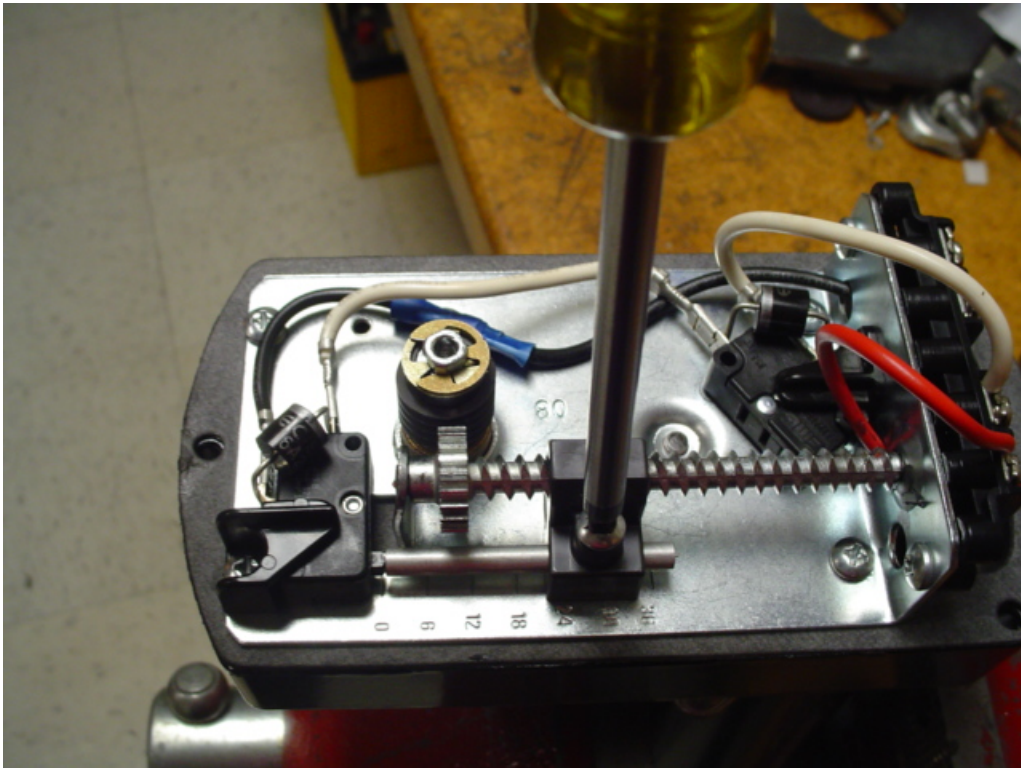
19. Wipe a bit of grease onto the exposed threads of the Leadscrew. Tuck any wires so that they are inside the perimeter of the gearbox (so that lid will not pinch them when re-installed) and your retrofit is complete and ready to set the stroke of your actuator. Depending upon your particular configuration, your unit should now look similar to the photo below.





### Setting the stroke of your actuator

1. If gearbox is not yet attached to actuator tube, do so now. Actuator tube should be almost fully retracted.
2. Extend actuator under power a short distance until Leadscrew Nut has come completely off of “retract” limit switch button.
3. Retract actuator under power until “retract” limit switch shuts actuator down.
  - a. If actuator “bottoms out” before limit switch shuts power off, immediately shut off power and manually extend (unscrew) Inner Tube a couple turns. Re-extend actuator under power, then re-retract under power until limit switch shuts it down (without bottoming it out).
4. After actuator shuts off, screw Inner Tube in manually until it bottoms out, then back it off 1 turn.
5. Now extend actuator under power, shutting it off manually when it reaches your desired stroke or extension point.
6. Insert Stroke Adjust Rod into hole in Leadscrew Nut and slide it to where it just touches the button on the “extend” limit switch as shown in the photo below. Tighten screw onto the rod.



7. Retract actuator under power a bit, then extend under power until “extend” limit switch shuts the actuator down. Check the extension (stroke) of your actuator and adjust the Stroke Adjust Rod in or out if necessary until your proper setting is achieved.
  - a. Fully extended measurement minus fully retracted measurement is your full-stroke. Adjust rod away from “extend” limit switch to increase stroke, towards it to decrease stroke. *Beware that it takes very little movement of the Stroke Adjust Rod to change the stroke quite a bit. Trial-and-error will be involved. A good hint is to rotate Stroke Adjust Rod to a new point before re-tightening screw, or screw will tend to find previous indentation. It is best to just lightly tighten screw onto rod until final setting is achieved.*
  - b. Numbers stamped onto gearplate may or may not coincide with a rough stroke measurement of your actuator, depending on your configuration. These numbers are for Venture internal use only.