September 24, 2007

SLOWING DOWN THE JMI MOTOFOCUS 125

The Motofocus 125 is an electric focuser designed for the Meade ETX-125. It's a very well built compact design that takes very little space and allows the scope to operate in polar alignment since no extra space is taken up between the bottom of the scope and the bottom of the forks. The DC motor is no bigger than the tip of my finger including multiple gears in an incredibly compact package.

The Motofocus comes with 2 speeds, fast and less fast. The slow speed is still too fast for careful final adjustment. So with the help of my friend Paul, we took the control box apart and determined the resistance required to reduce the speed of the motor to it's slowest. A 10 ohm resistance will reduce the speed of the motor by about half and that's the best that can be done, anything less than 10 ohms and the motor doesn't function.

To do the mod., we put the resistance in series with the motor power supply. We used a small 3-pin toggle switch so that the resistance could be put in series with the motor power supply or bypassed depending on the position of the toggle. This way the slow-slow speed can be activated or not.

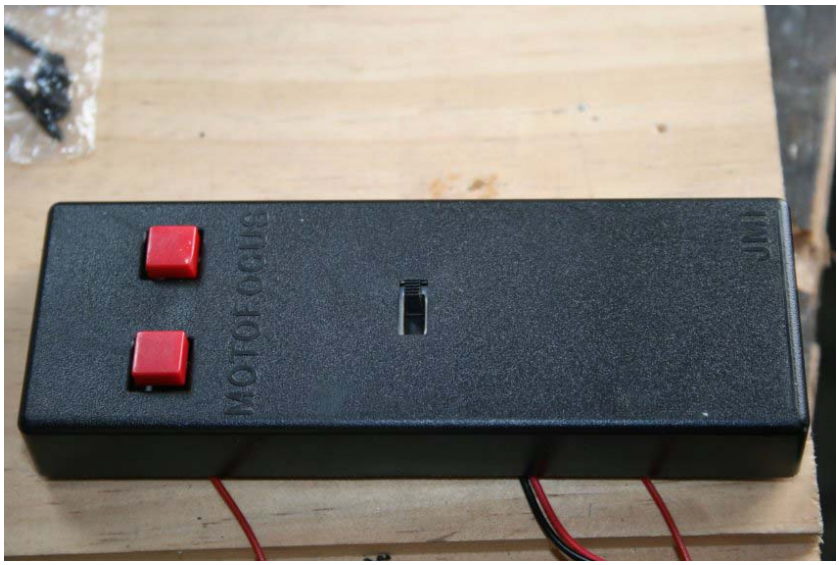

Photo 1. Motofocus prior to the mod.

Open the Motofocus electronics case and install two wires on points A and B (see photo 2). On your Motofocus you will see that point A and B are actually connected by a small connecting wire or jumper, remove the jumper and solder the wires on to points A and B as shown in photo 2. *Photo 2 shows the connecting wire between points A and B already removed.*

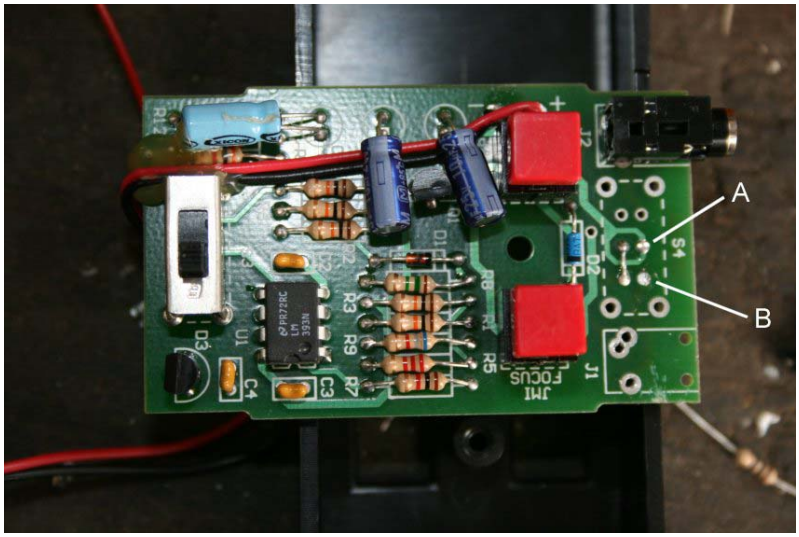

Photo 2. Connection points for the resistance on the circuit board

In Photo 3 the wires are attached to points A and B of the circuit board and connected to the toggle switch and the 10-ohm resistance. Pins C and D of the switch are connected together and we used a part of the resistance wire to achieve that. Pins D and E are connected via the resistance and when the toggle switch is in the position that connects D to E and then the resistance will be in series with the motor power supply reducing the speed (see Figure 1 for an electric circuit).

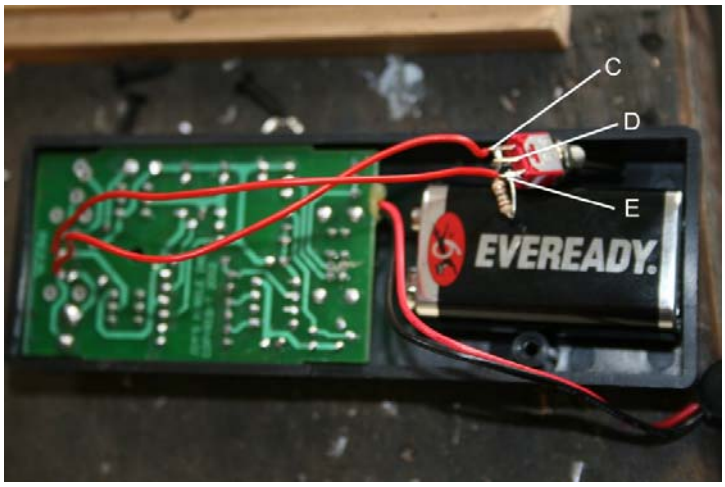

Photo 3. Connecting the resistance and toggle switch

Photo 4. Close-up of connection details of the toggle switch

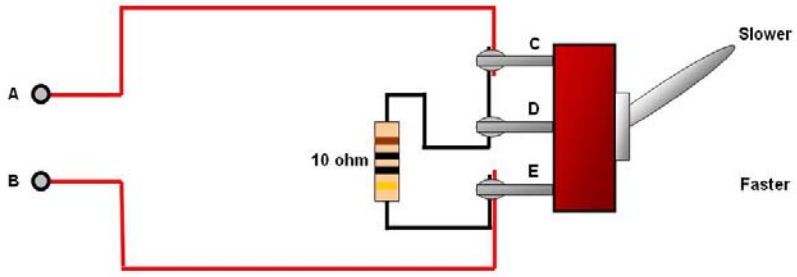

Figure 1. Electric circuit for the 10 Ω resistance

The toggle switch is a snug fit between the case and the battery.

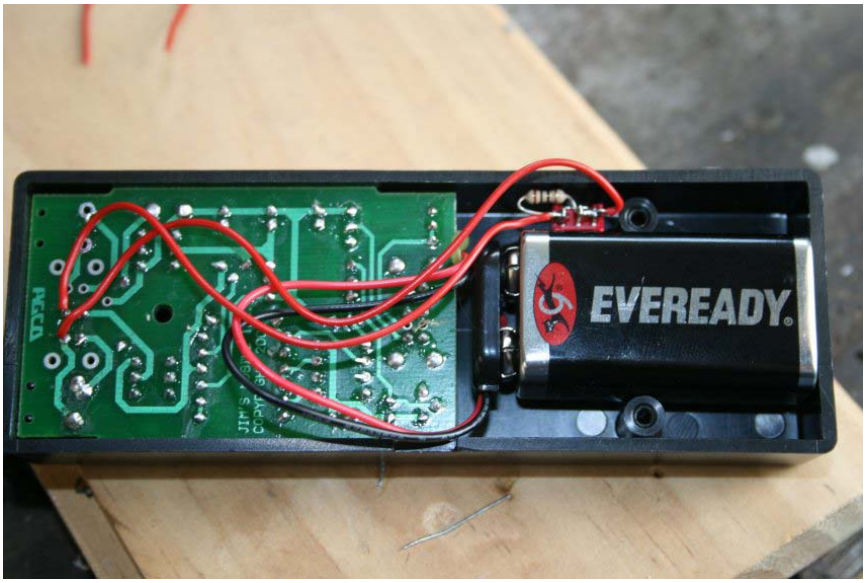

Photo 5. The toggle switch and resistance installed in the case

Photo 6. Motofocus after the mod

And that's it, thanks very much to Paul Gardiner for his help.

If we wanted to slow down the Motofocus further, we would have to make the drive pulley a little smaller or the driven pulley larger or both.

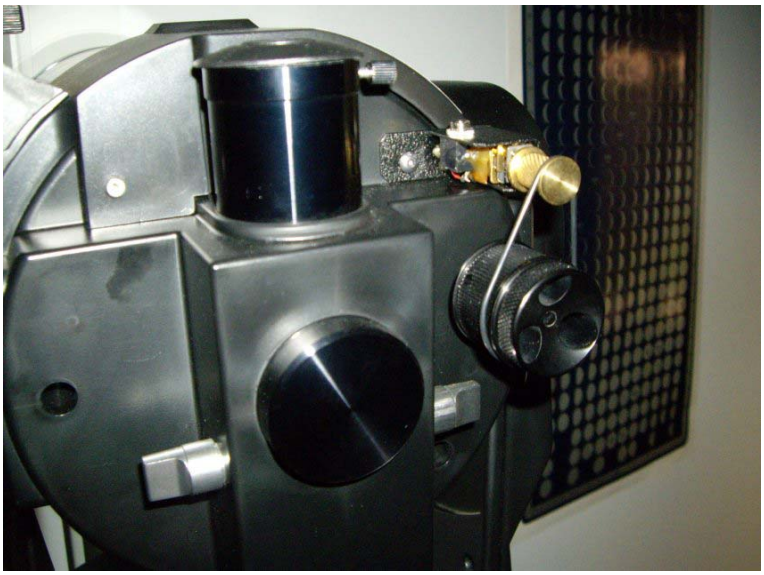

Photo 7. Motofocus on the scope

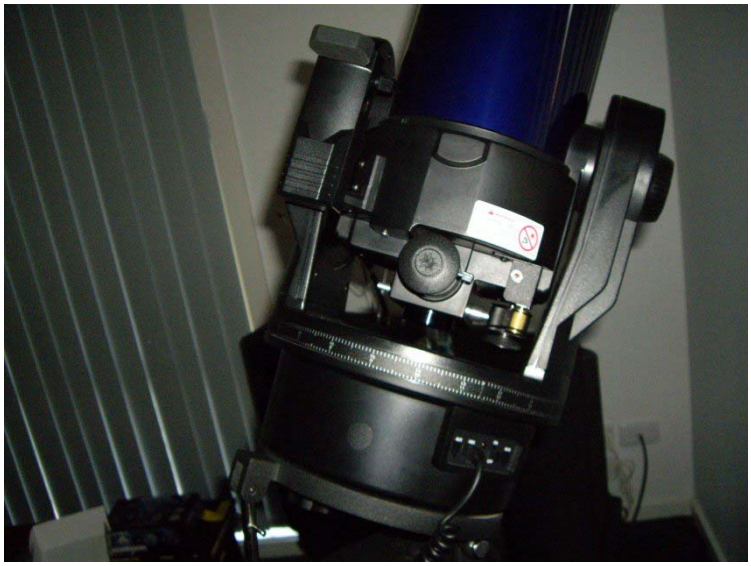

Photo 8. Motofocus on the scope in polar alignment configuration

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