

# Troubleshooting the IRF90

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## Mechanically Bound:

First, remove the Focuser Motor Cover from the IRF90 body (3 screws). Inside you will see the back end of the focuser motor, and a gear that drives the focuser assembly.



With the IRF90 plugged in and powered up, try moving the focuser back and forth. This is most easily accomplished using the portable hand controller, which plugs into the “HC” port on the Electronic Focusing Accessory (EFA) box. If a hand controller is not available, the focuser can also be moved from a PC via software.

While moving the focuser back and forth, look for any movement in the gear located next to the focuser motor. If it moves even a small amount, this indicates that the electrical connections are working and the problem is most likely mechanical.

If it is too difficult to see motion in the gear, you can also try removing the black plastic cover from the back of the motor. This cover is held in place with two clips. Again, try to move the motor. You should see the glass encoder disk rotate a bit.



If you do not see any movement, then the problem is more likely electrical rather than mechanical.

If the problem appears to be mechanical and you do not see any obstructions around the focuser motor gearing, continue below.

Remove all equipment from the mounting surface of the IRF90. Typically the last adapter that connects to the rotating plate of the IRF90 will be attached with four screws.

Next, remove the IRF90 from the telescope. Normally it will be attached using three screws.

Flip the IRF90 over to look at the back end. There is a baffle tube that can be unscrewed and removed. Firmly press your fingers against the inside wall of this tube and try to twist the tube in the counter-clockwise direction. It should eventually start turning, and after 5 or 6 turns it should be possible to take the tube out.



The lip on the end of this tube provides the outer hardstop for the focuser. If the unit had been racked out the full amount (about 1.3 inches), it is possible that the focuser was bound up against this surface. Plug in the focuser and try moving it again, **in the inward direction only**. If it moves, then continue moving the focuser inward for some distance. Then, reinstall the baffle tube by screwing it back into place.

If the focuser still does not move, then locate a red gear inside the back end of the focuser.



Press your thumb against this gear, and try rolling it in either direction. It will require some force to back-drive the motor (and possibly overcome whatever is binding the focuser). If you are able to get it to move, then try moving with the motor again. If the focuser still cannot be moved, then it may be necessary to send it to PlaneWave Instruments for repair.

## Run-away Focus or Rotation on IRF90:

If you are experiencing inconsistent communication with your IRF90 where the focuser or rotator becomes unresponsive and runs-away when sent a move command, there may be a connector loose that requires tightening.

To check this connection please perform the following:

1. Rack out the focuser and you will see there is a curved panel that can be removed using 3 screws. Remove this panel.
2. Once the panel is removed, you can see a blue connector (circled in red in the photo below) on the back of the motor that controls the rotator.
3. If this plug is loose and only 3 of the 4 control wires are making contact this would explain the unresponsive, run-away movement.
4. Re-seat this connection and test for proper function of the focuser and rotator.

