



8. Pulsar/Atom Alignment process in brief

1. Null the rig

Using hardstops, move through eye to zero Interaxial

- Open hard stops to allow for max travel
- Use front knob to align far target
- Use back knob to align near target (you will notice far target go out of alignment)
- Repeat this process until front and back targets are aligned.

Using 9/64 allen key, slightly loosen alignment module (post 2011)

- Loosen the two locking allen bolts on the camera-left side of the alignment module. Do not remove.

Center all adjustment dials so plate is approximately halfway between all travel points.

- Center the Pitch and the Roll
- Open Z-Axis about half way: approx. equal to the lift of the Teflon pads

2. Ensure lenses are equidistant to mirror.

- You will have adjusted these during the mounting process.
- Reflected eye: Mount as close to mirror as possible, but w/out impeding travel of alignment module
- Through eye: ensure that convergence adjustments do not hit box.
- Look through mirror and check that lenses appear to be the same size. If they are not, continue adjusting.
- Loosen through eye and move slowly along dovetail until images through mirror appear to be the same size
- *This adjustment is critical with prime lenses, but less so with zooms as you will match zoom scale later.

3. Adjust mirror for pitch

- Unlock mirror
- Using 3/32 allen key, unlock two side locking screws. Loosen only slightly as to not lose the screw.
- Note that the screw is one of 3 visible from the side: use screw closest to back.
- Adjust mirror: set lens at wide so near and far targets are visible simultaneously.
- Carefully access adjustment screw through top of mirror box.
- Watching monitor, choose a far target with good horizontal details.
- With 5/32 allen key, carefully adjust mirror pitch until far targets are aligned.
- This is your beginning point.
- Lock the mirror and continue adjusting using Z and Pitch
- Continue to near target.





4. Adjust Height.

Focus on near target (can be at close convergence or nearer)

- Use Pitch to align near target
- Use Z to align far target.
- Repeat process until front and back targets appear aligned
- *If you reach the end of travel before either axis is aligned, readjust your mirror and begin again.

5. Adjust Rotation

- Adjust using roll knob.
- Check sides of frame for misalignment indicators.
- Once rotation is corrected, re-check verticals and make corrections as necessary.

6. Check Far target; Repeat

- If out of alignment, repeat steps 3 and 4 until you are satisfied with your vertical alignments.
- When complete, proceed to User Calibration to align horizontals using Hand Control
- Once alignment is complete, lock alignment module. Tighten screws a little at a time so as to keep alignment true.



9. User Calibration -- Horizontal Alignment

Start the User Calibration process to align your horizontals.

- 1. Using your hands, move the hard stops so the Direct camera can travel to negative interaxial, while converged on infinity.
- 2. Lock the hard stops
- 3. After locking the hard stops, Initialize the rig.

Initiate User Calibration Setting Process

4. On the THC, hold the **infinity**  button down 2 seconds

- LED starts blinking, and AI no longer tracks convergence
- Use Interaxial slider to move camera horizontally -- for objects very close to mirror box
- Use Convergence knob to set an angle -- for objects at infinity

5. Re-Set your NULL point

- a. Using the interaxial slider on the THC, set interaxial near 0.
- b. Using the convergence knob, converge on the farthest point you can identify.
- c. looking through the mirror at the lenses, adjust your interaxial to overlap them as closely as possible.
This brings your interaxial as close to zero as visually possible.
- d. Once lenses are overlapped, look at a monitor and converge at the farthest point.
- e. Using the interaxial control, converge on a near target (you will notice your far target go out of alignment)
 - Repeat d. and e. until images overlap, indicating horizontal alignment

6. When images are aligned, hit infinity  button to lock User Calibration settings.

User Calibration settings are stored in memory and are saved between reboots.

To enable and disable these constants, press infinity button

To clear constants, hold infinity button for 10 seconds.