

CARE OF YOUR ASTRO-PHYSICS REFRACTOR

Astro-Physics refractors require little or no maintenance under normal use. The optics are collimated at the factory when the telescope is assembled. Due to the rugged construction of the tube assembly, the optics should remain in alignment and will not require further adjustment unless the telescope is subjected to a strong blow. Nevertheless, your refractor is a fine instrument and should be handled with care. You will be rewarded with years of observing pleasure.

Optical performance

When using the telescope at high power, it is important that the "seeing" be taken into account. Seeing refers to the steadiness of the air, not to the transparency (darkness or clarity) of the night. When the seeing is good, out-of-focus star images will be round and steady at high powers. When seeing is not good, out-of-focus stellar disks will bend, distort and dance around, or show shearing lines characteristic of rapidly moving atmospheric air. Under those conditions, high power observations may be impaired.

All optical glass, except for zero-expansion material, has a finite coefficient of expansion. When lenses are subject to large temperature fluctuations (such as being brought out into the cold night from a warm room), the lens figure will change drastically and the initial view through the instrument may be disappointing. Until the optics settle down, the figure will not be at optimum correction. The smaller 4 and 5 inch lenses generally settle down in 30 minutes. The 6 inch lenses may take up to an hour to fully settle down. If the temperature drops below freezing, it may take somewhat longer.

If you are transporting your scope to your favorite observing site, be aware of the possible temperature differences between your scope and observing site. For instance, if the weather at your home is 90 degrees Fahrenheit and you load your scope into your car trunk or an open truck (or other non-air-conditioned place) with the sun beating down on it, the temperatures will rise above 100 degrees F. If you drive to the cool mountains (temperatures in the 40's F.), your scope will be subjected to extreme temperature differentials and will take much longer to cool down. It would be much better in this circumstance for the scope to ride in the air-conditioned car with you.

Cold Weather

There are steps you can take to minimize thermal shock. Leaving the scope in an unheated garage, instead of the warm indoors, is a good example. You should leave the dewcap in place (retracted/reversed) for the 1st hour. This will act as insulation around the outside of the lens cell, thus assuring a more even cool down of the glass. *You do not want to carry a scope from a 70° house into a 0° winter night.*

We suggest that you leave your case outdoors while you are observing. This will assure that your scope and case will be about the same temperature at the end of the evening. If there is a lot of dew, you may wish to place it under an overhang, in your car or cover it to keep it dry. To prevent moisture from accumulating inside the case, keep the lid closed.

When taking the scope down, cover the lens with the dustcover while the lens is still cold. Place the tube assembly in the case while you are still outdoors. If you do this, the scope will warm up gradually in the case when you take it indoors. *Do not take the tube assembly indoors without the case. A tremendous dewing and moisture buildup will occur just as it does on eyeglasses when you step into the house on a cold day.* Alternatively, you can wrap the scope in a blanket so that it warms slowly and moisture does not condense.

Remember, thermal shock is to be avoided...whether it is hot to cold or cold to hot.

Dew

The formation of dew is slowed, but not prevented, by the dewcap of your instrument. As long as the air temperature is falling, the lens surface lags slightly behind and dew will not form. When the air temperature stabilizes, the lens eventually reaches dew point and will dew over.

If dewing is a problem at your location, we suggest the Kendrick Dew Remover System, which applies a slight amount of heat to the lens cell. This will prevent dew from forming. Turn it on at the beginning of your session to a low or mid-level setting and you will be observing long after others have been forced to close down for the night.

It is not advised to blast dew off with a hot hair dryer, or to wipe it with cloth. Hot blasts of air cause optical glass to rapidly expand and will ruin the lens's figure for the better part of the evening. In extreme cases, permanent damage to the glass can result. If dew must be removed by blowing air at the lens, use cool or very slightly warmed air (blow the air at the back of the hand to judge its temperature). Keep the dryer well away from the lens surface. In below zero degree conditions, it is not advisable to blow any warm air at the lens surface.

As in cold weather, at the end of your observing session, place the scope with the dustcover into the case prior to bringing it into the house or other warm environment. This will help to prevent the formation of dew or frost since the scope will return to room temperature at a slower rate inside a closed case.

Cleaning

Minimal cleaning of your optics is recommended. Under heavy dewing conditions, or in areas of airborne dust or pollutants, the front surface of the lens will acquire a layer of dust, pollen and water marks from dew. Normally, this will not degrade the image quality. Improper cleaning procedure will cause micro scratches on the front surface of your lens. A little bit of dirt is preferable to damaged optics. We recommend cleaning once a year or less if the scope is not used often. Note: A lens coating is not like a mirror coating that can be stripped and recoated. A lens coating becomes part of the glass and cannot be removed (only by refiguring the lens).

Lens Cleaning Formula

To make 16 oz. of solution:

3 parts distilled H₂O
1 part Isopropyl alcohol (90%+)
1 drop biodegradable dish soap (backpacking)

We recommend the following procedure, if you must clean:

1. Blow and brush the optic with an air bulb and camel hair brush before cleaning. You want to remove any loose particulate matter that may be stuck to the lens.
2. Combine the above ingredients and spray onto white Kleenex. Swipe the Kleenex across the optic applying only the weight of the Kleenex. Use a new sheet of Kleenex for each swipe. Be sure to use Kleenex with no additives and no color print.
3. If you have a stubborn spot, put saliva on a finger and rub the spot until it is gone. Once the spot is gone, be sure to remove the saliva using the above cleaning formula. Perform a last cleaning and blow off any "Kleenex dust".
4. It is not necessary to concern yourself with any lens streaking, though if you wish, you can do a couple swipes with acetone.
5. **Excessive cleaning is to be avoided.**

9-4-14