CARE OF YOUR ASTRO-PHYSICS TELESCOPE

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 Considerations

Atmospheric seeing: When observing at high power, consider the steadiness of the atmosphere, known as "seeing." Seeing is different from transparency—the darkness or clarity of the night sky. In good seeing, out-of-focus star images appear round and steady at high magnification. In poor seeing, they may bend, distort, dance, or show shearing lines caused by rapidly moving air. Under these conditions, high-power observations may be impaired.

Thermal stabilization: All optical glass except zero-expansion material has a finite coefficient of expansion. Large temperature changes—such as moving the telescope from a warm room into the cold night—can temporarily alter the lens figure and make the initial view disappointing. Optical performance will not reach its best correction until the lens has stabilized. Four- and five-inch lenses generally require about 30 minutes; six- and seven-inch lenses may require up to an hour. Stabilization can take longer when temperatures fall below freezing.

Transporting the telescope: Consider the temperature difference between the telescope and your observing site. For example, if the temperature at home is 90°F and the telescope rides in a car trunk, open truck, or other non-air-conditioned space exposed to direct sun, it may heat to well above 100°F. Taking it from those conditions to mountain temperatures in the 40s°F subjects the telescope to an extreme temperature change and greatly increases the time required to cool. In this situation, transport the telescope in the air-conditioned passenger compartment instead.

Cold Weather Recommendations

Minimize thermal shock: Store the telescope in an unheated garage rather than a warm indoor space whenever possible. During the first hour of cooling, leave the dew shield in place in its retracted or reversed position; it will insulate the outside of the lens cell and help the glass cool more evenly. Avoid moving the telescope directly from a 70°F house into below-freezing conditions.

We suggest that you leave your case outdoors while you are observing. This will assure you're 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, or your car or cover it to keep it dry. To prevent moisture from accumulating inside the case, keep the lid closed.

Before bringing the telescope into a warm room: Cover the cold lens with the dust cover and place the tube assembly in its case. Keep the telescope in the closed case indoors so it warms gradually. Do not bring the uncovered tube assembly directly into a warm room; the sudden temperature change can cause heavy condensation, much like eyeglasses fogging when you enter a warm house on a cold day. If the case is unavailable, wrap the telescope in a blanket so it warms slowly and moisture does not condense.

Managing Dew

How dew forms: The dew shield slows—but does not prevent—dew formation. While the air temperature is falling, the lens surface usually remains slightly warmer, so dew is less likely to form. Once the air temperature stabilizes, however, the lens can cool to the dew point and begin to collect moisture.

Preventing dew: If dew is common at your observing site, use a dew-control system with a controller and heating strap to gently warm the lens cell. Switch it on at the start of the observing session and use a low or medium setting. This helps keep dew from forming and allows you to observe longer.

Removing dew safely: Never blast the lens with a hot hair dryer or wipe it with cloth. A burst of hot air can make the optical glass expand rapidly, degrading the lens figure for much of the evening and, in extreme cases, causing permanent damage. If you must remove dew with moving air, use cool or only slightly warmed air; test the temperature against the back of your hand first. Keep the dryer well away from the lens surface. In below-zero conditions, do not direct warm air at the lens.

At the end of the session: Before bringing the telescope into a house or other warm environment, install the dust cover and place the telescope in its case. Keep the case closed so the telescope returns to room temperature gradually, reducing the risk of dew or frost.

Cleaning Your Telescope Optics

Clean only when necessary: Minimal cleaning is best. With prolonged exposure to heavy dew, airborne dust, or pollutants, the front surface of the lens may accumulate dust, pollen, and water marks. This buildup normally does not degrade image quality, but improper cleaning can cause micro-scratches. A slightly dirty lens is preferable to damaged optics.

Cleaning frequency: Clean the lens no more than once a year, and less often if the telescope is used infrequently. Important: Unlike a mirror coating, a lens coating cannot be stripped and reapplied. It becomes part of the glass and can be removed only by refiguring the lens.

Recommended cleaner: Use Purosol Optical Cleaner, an enzyme-based solution that breaks the molecular bonds holding dust, dirt, oils, and salt crystals to the surface. It also leaves an anti-static barrier that repels dust. After cleaning with Purosol, you may finish with isopropyl alcohol to remove any streaks.

Alternative cleaning solution: If Purosol is unavailable and the lens must be cleaned, prepare the following mixture:

3 parts distilled water
1 part isopropyl alcohol (90% or higher)
1 drop biodegradable dish soap (available from backpacking stores)

Cleaning procedure: If cleaning is necessary, follow these steps:

1. **Remove loose particles.** Before applying cleaner, use an air bulb and camel-hair brush to blow and brush away any particulate matter on the lens. Do not use “Dust Off”–type products; the propellant may damage the optic if it sprays onto the surface.

2. **Apply the cleaner gently.** Use Purosol or the cleaning solution above. Spray it onto an Opto-Wipe, Kimwipe, or plain white Kleenex without additives or color. Draw the wipe across the optic using only the weight of the wipe. Use a fresh wipe for every pass and repeat several times.

3. **Treat stubborn spots.** If a spot remains, place saliva on a finger and gently rub the area until the spot is gone. Then remove all saliva with the cleaning solution above. Perform one final cleaning and blow away any “Kleenex dust.”

4. **Address streaks only if desired.** Minor lens streaking is not a concern. If you prefer, make one or two final passes with isopropyl alcohol.

5. **Avoid overcleaning.** Clean the lens only when necessary.