COULTER

CT-100

4¼" TELESCOPE SYSTEM

Coulter Optical Company

Congratulations on your choice of a CT-100 telescope. The CT-100 is a highly versatile telescope and is simple and easy to use. Several features that are designed into the CT-100 are first its versatility and ability to focus at any distance from 4' to infinity. Secondly, it is a structurally sound instrument made completely of aluminum. Thirdly, the CT-100 is compact and portable fitting completely in a small carrying case and weighs about 4.5 pounds.

Terminology:

Focusing housing: Anodized (black) housing on the top of the front housing which accepts the eyepiece.

Ways: Black anodized molded part attached to the housing which holds them on the slide (mounting bar).

Slide bar: 10" long aluminum bar with 2 knurled knobs, one on each end.

Porro-erecting prism (option): a device to make telescopic image right side up and left to right correct.

Eyepiece: 27mm comes with your CT-100. The eyepiece is helical focusing, that is, you fine focus by turning the eyepiece.

Set Up Procedure: (see figure 1)

Attach slide bar to any camera tripod (accepts standard 1/4-20 thread). Attach the two housings to the slide bar securing them with the knurled knobs. Insert erecting prism in focusing housing (if use is to be terrestrial). Insert eyepiece. Your CT-100 is now ready for use.

Astronomical Viewing: (see figure 2)

Astronomical viewing is accomplished with the CT-100 focused at infinity. The front and rear housings are placed about 6" apart. From this point focus is achieved by sliding the front housing until the best image is achieved then fine focus with the eyepiece. It is not necessary to use the erecting prism for astronomical viewing as all astronomical instruments give an inverted image. The prism used for erecting the image absorbs a great deal of light. This loss is not important during daylight but is crucial at night.

Terrestrial (day) Use: (see figure 3)

1. Viewing of distant objects with an erect image.
2. Mid-range viewing from 100' to 10'.
3. Close up and low power microscope viewing.

With erecting prism in place, move rear housing about 1/4" from the center of the slide bar. If no erecting prism is used, place rear housing 1 1/2" in on the slide bar. With erecting prism, separate front and rear housings about 1" and move front housing only while looking in eyepiece until as sharp a focus as possible is obtained. Lock front housing in this position with knurled knob and fine focus with eyepiece. Mid-range for close up viewing is achieved by adjusting the distance between the housings until focus is obtained at the distance desired.

Note: Separation may be quite extreme without the erecting prism.

Photographic Use:

Optional camera adapters are available to fit most 35mm through the lense cameras. These adapters may be used in two ways. The first involves removing the center barrel from the adapter and screwing the end portion into the T-ring. This will give you a wide un-magnified field of view. The second method is eyepiece projection whereby the eyepiece is inserted in the mid barrel of the camera adapter. You can obtain a highly magnified image with this set up. Using the camera adapter in conjunction with the erecting prism allows one to focus particularly close.

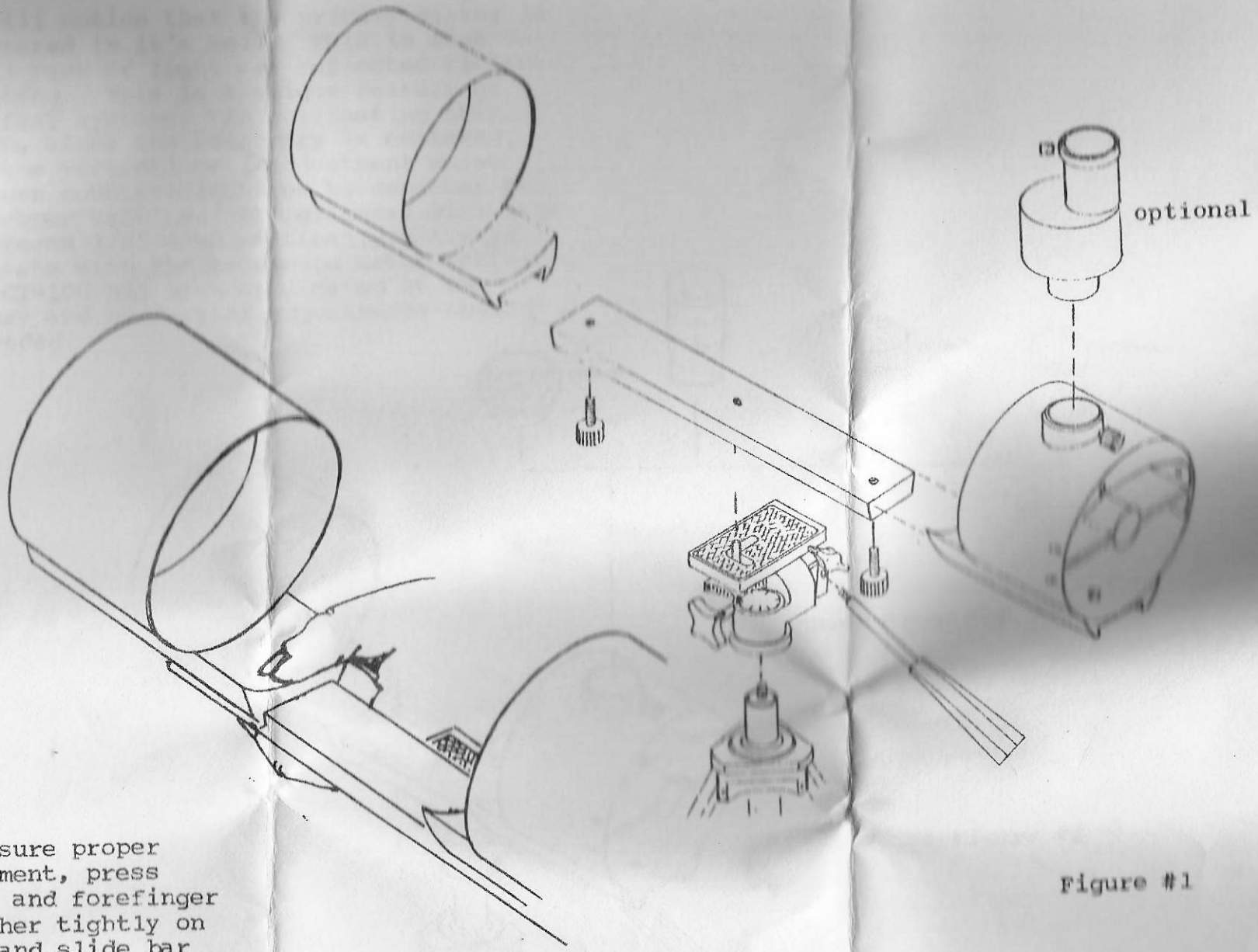
One is able to focus extremely close using a camera with the erecting prism. In some cases there will be a fuzzy dot in the center of the field. This tells you that you must either shift to a different eyepiece if eyepiece projection method is being used or move further out. If neither works, change set up to astronomical mode. Since spacings vary tremendously with different settings, slide one or both housings generously until sharp focus is obtained.

Note: Image obtained with eyepiece projection is very dim.

Exposure is best handled by a meter reading camera. Where objects are photographed at infinity down to 10' without eyepiece projection or using the erecting prism, the speed for prime focus will be f/12.

Note: Some cameras have a shutter that causes the whole instrument to move slightly resulting in blurred pictures. To correct, brace a hand on the outside of the frontal housing and grasp firmly.

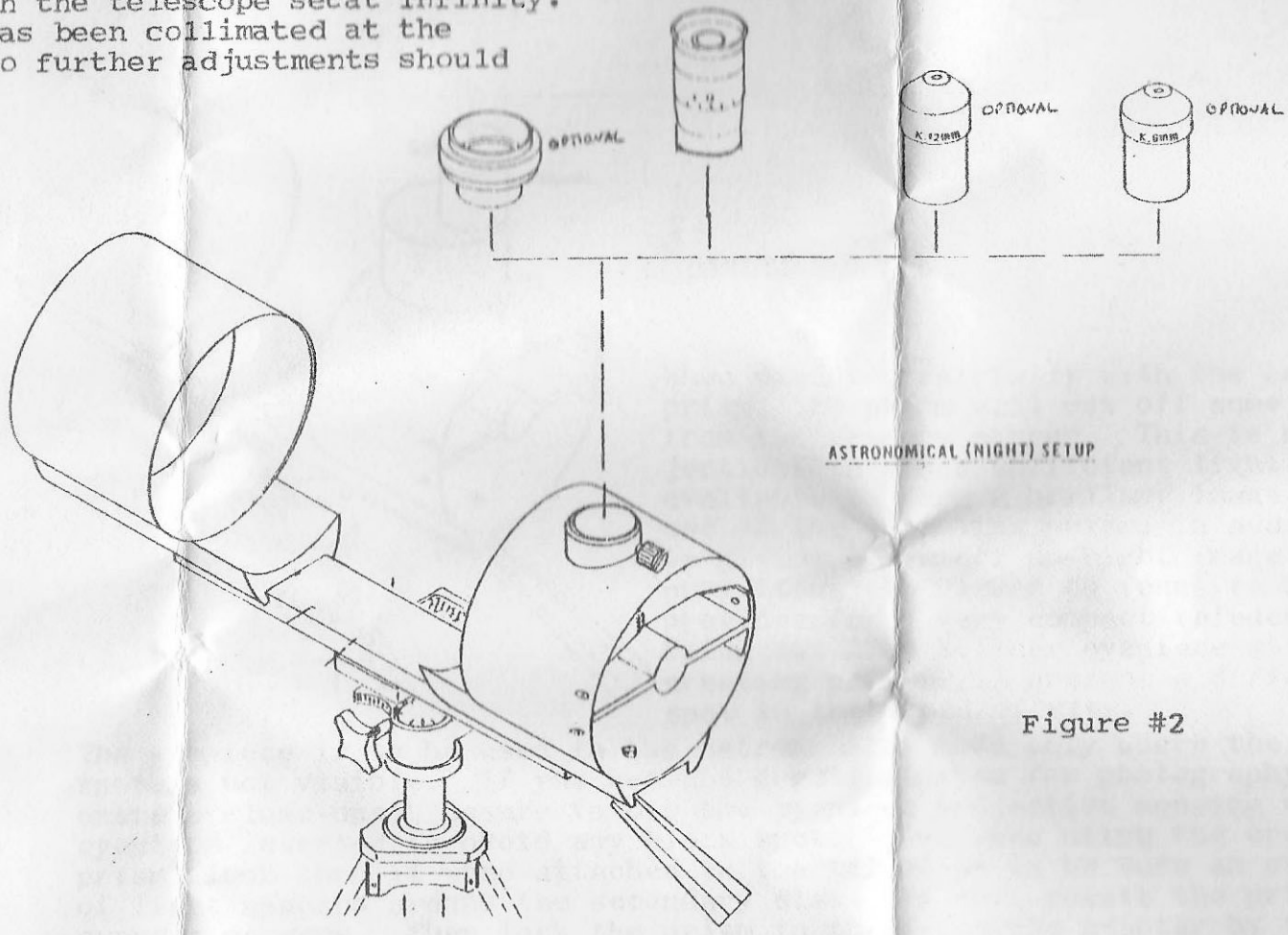
Note: The f/ratio of the primary mirror is f/4.



To insure proper alignment, press thumb and forefinger together tightly on ways and slide bar while tightening the large thumb screw.

Figure #1

You will notice that the primary mirror is decentered in it's cell. This is done so as all rays of light are reflected without vigneting. This is a unique feature of such fast systems. In collimating this system, after the secondary is centered, turn the vertical cell adjustment screw 1/4 turn counter-clockwise to decenter to the proper setting. The diagonal will look decentered 1/8" down vertically. Always collimate with the telescope setat infinity. Your CT-100 has been collimated at the factory and no further adjustments should be needed.

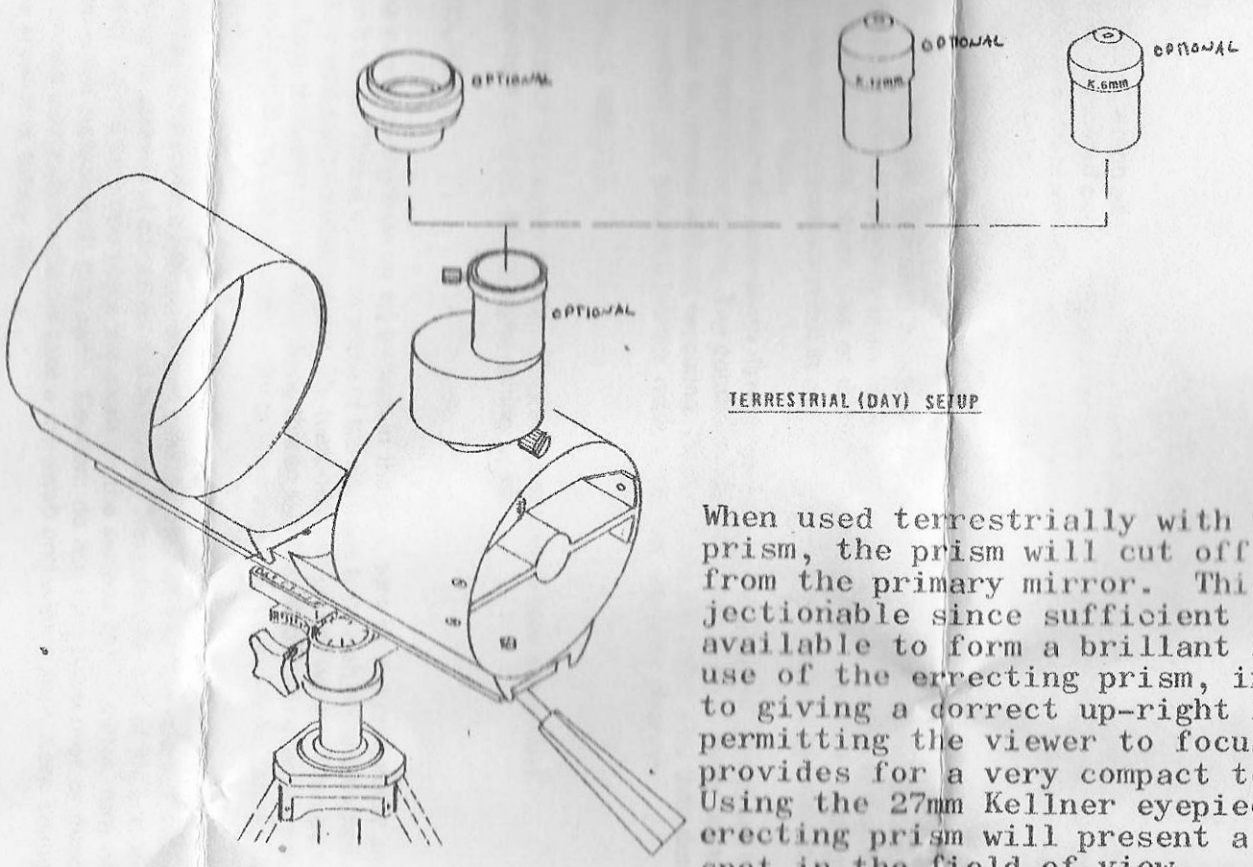


ASTRONOMICAL (NIGHT) SETUP

Figure #2

The camera adapter has two bodies. One is for eyepiece projection where the eyepiece is inserted in the housing and the other is for prime focus photography. Exchange the T-ring adapter from one housing to the other.

Figure #3



TERRESTRIAL (DAY) SETUP

When used terrestrially with the erecting prism, the prism will cut off some light from the primary mirror. This is not objectionable since sufficient light is still available to form a brillant image. The use of the errecting prism, in addition to giving a dorrect up-right image and permitting the viewer to focus to 5', provides for a very compact telescope. Using the 27mm Kellner eyepiece with the erecting prism will present a diffused black spot in the field of view.

The eyepiece is to be used in the astronomical mode only where the diffused spot is not visible. If you use the erecting prism for photography (for extreme close-ups), besure to use the eyepiece projection housing with an eyepiece inserted to avoid any black spot. Also when using the erecting prism, look thru it when attached to the telescope to be sure an even circle of light appears around the secondary disk. If not, rotate the prism until eveness appears. Then lock the prism in the telescope adapter by tightening it's thumbscrew.

COULTER OPTICAL COMPANY

CARE OF COULTER MIRRORS

Made of Pyrex, a high silica glass, one may expect the optical surface to last indefinitely. The aluminized and overcoated coating is the most delicate part of the mirror; however, with reasonable care and usage it can be expected to last up to ten years. Somewhat shorter life expectancy may be experienced in atmospheres containing corrosive salts and contaminates.

CARE OF COATING:

1. Do not touch the mirror with hands or any object unless cleaning as described later.
2. If very dusty remove by gently brushing with a camelhair brush. [Be sure the hair ends are not cut, but are of a natural taper. Use of cut hair produces fine sleeks on coating.]
3. Keep telescope capped when not in use. Store tube in a horizontal position to prevent settling of particles on surface.
4. When mirror becomes excessively dirty, clean as follows: Caution: Do not use laundered towels or cloths for wiping the mirror. The contaminates will cause residual water spots and a film that is impossible to remove without recoating. Do not clean any other way than described below. Any other method will produce inferior results. Do not use lens cleaners.

MATERIALS NEEDED:

1 lb. surgical or engravers cotton. [Engravers cotton is less expensive].
1 qt. Isopropyl alcohol, liquid dishwashing soap.

PROCEDURE:

With the mirror resting face up on a towel in the sink, turn on the cold water and play a stream of water on it's face. This will loosen some of the particles and wash off unattached dust. Dip a wad of cotton in a mild solution of detergent. [½ teaspoon to 1 pint of water]. Then gently swab the entire surface. Keep the water going while doing this so as it'll wash off the detergent solution as you clean. Very important: Do not let the surface dry or bead as water marks will be formed. Keep the stream of water going.

After swabbing the surface with detergent solution the mirror is now covered with a stream of water. Make ready three wads of cotton for the following: Next dip one half of the cotton swab into Isopropyl alcohol. At the time you place the swab on the surface of the mirror, turn off the water. Now swab the entire surface with this swab. Caution: do not turn swab over or dissolved skin oils will deposit on the mirror. Immediately take a dry swab and wipe gently. Keep changing cotton swabs until the surface is totally dry.

This method used for many years by us has shown itself to be the best.