

Orion® SteadyPix™ Universal Camera Mount

#5228



**ORION**
TELESCOPES & BINOCULARS
Providing Exceptional Consumer Optical Products Since 1975

Customer Support (800) 676-1343

E-mail: support@telescope.com

Corporate Offices (831) 763-7000

P.O. Box 1815, Santa Cruz, CA 95061

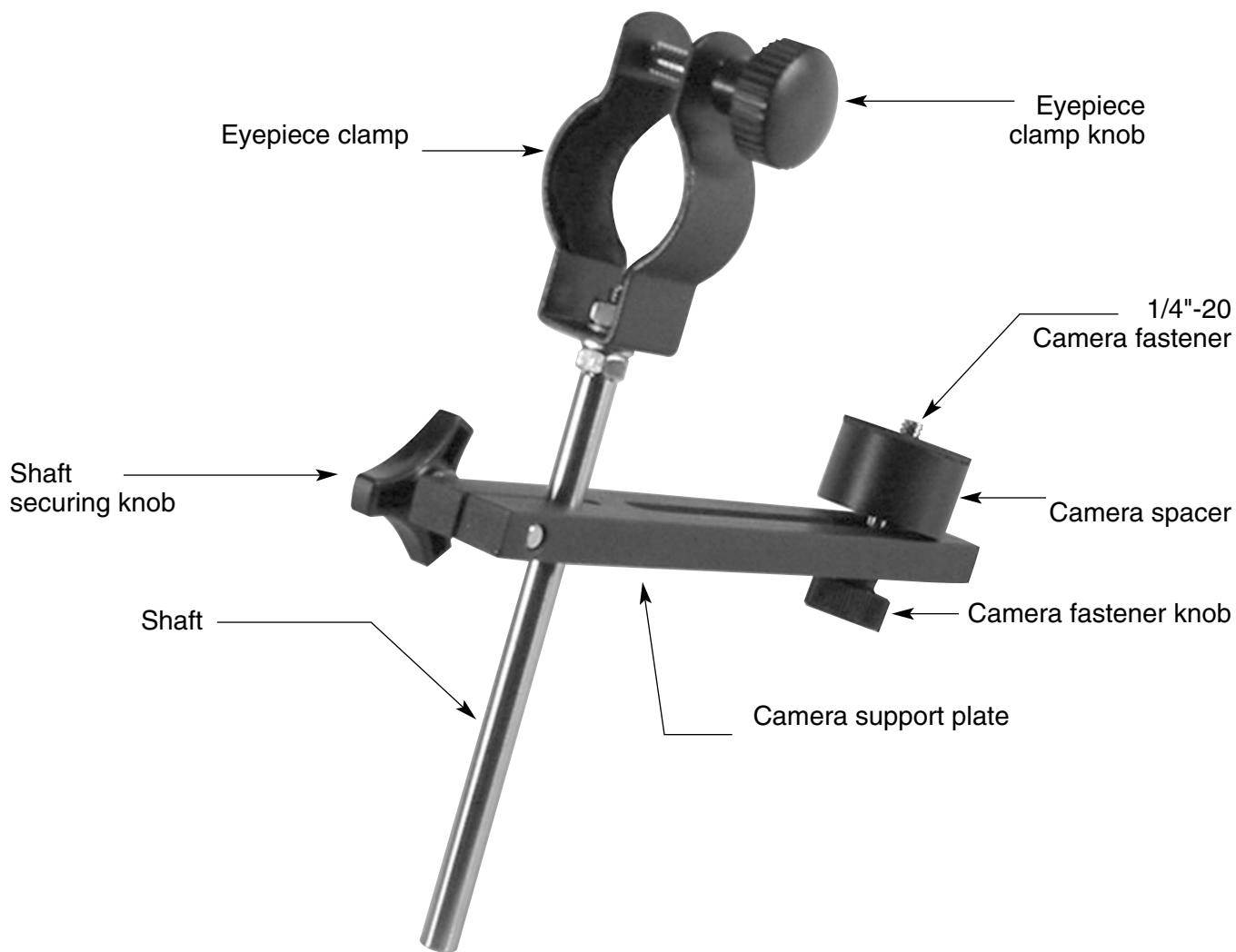


Figure 1. Fully assembled SteadyPix

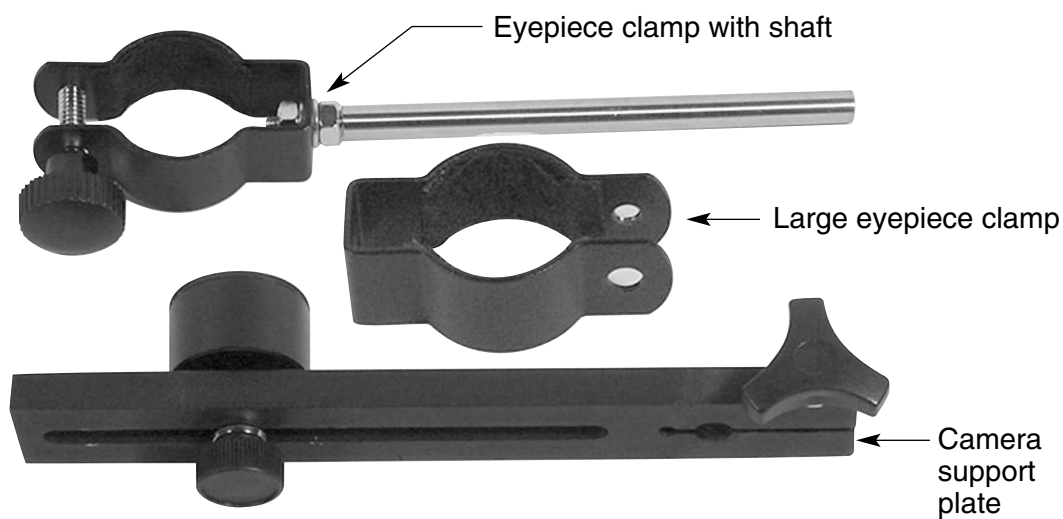


Figure 2. Parts of the SteadyPix as they arrive in the box.

Welcome to the exciting world of astrophotography. With the Orion SteadyPix universal camera mount, you can shoot your own pictures of celestial objects with just a telescope and camera. The SteadyPix is designed for use with today's digital cameras, as well as traditional 35mm SLR (single-lens reflex) cameras. By using the SteadyPix, you won't need all the difficult set-up and extra equipment that astrophotography normally requires.

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Parts List

- 1 Camera support plate, with camera spacer, 1/4"-20 camera fastener, and shaft securing knob.
- 1 Shaft with eyepiece clamp and eyepiece clamp knob.
- 1 Large eyepiece clamp.

Figure 2 shows the parts of your SteadyPix as they come straight from the box.

1. Assembly

Loosen the shaft securing knob (see Figure 1) on the camera support plate and insert the eyepiece clamp shaft into the hole. Make sure the eyepiece clamp and camera spacer are on the same side of the camera support plate, as shown in Figure 1. Tighten the knob just enough to hold the shaft in place for now. You will need to make further adjustments later once your camera and eyepiece are attached to the SteadyPix.

Your SteadyPix camera mount should now appear as it does in Figure 1.

2. About Afocal Photography

The SteadyPix lets you couple almost any camera to almost any telescope to do afocal photography. In the afocal method, the camera lens is aimed into the telescope eyepiece. SteadyPix is not designed for prime-focus photography, in which the telescope takes the place of the camera's own lens (which is removed).

While it is possible to take pictures by holding the camera up to the eyepiece by hand, small movements of the camera make it difficult to maintain perfect focus and to keep the image centered on the camera's film frame. SteadyPix eliminates those problems by locking the camera lens in position relative to the eyepiece. Such coupling also allows the camera to move in synchrony with the eyepiece if the telescope is motor driven.

To get the best pictures with the SteadyPix, we recommend using an eyepiece with a long (around 20mm) eye relief. The Orion Lanthanum series, for example, has very long eye relief. Long eye relief will allow the camera to see the whole field of view in the eyepiece. Some eyepieces, especially high-power designs, may not have enough eye relief to project the entire field of view into the camera lens, that is, even when the camera lens is right up against the eyepiece, the views will still be constricted.

3. Using the SteadyPix

A cautionary note: The SteadyPix was designed to be as light as possible. But since it attaches to your telescope by the eyepiece, the weight of your camera may cause it to rotate downward and potentially fall off the telescope if it is not secured adequately. Always make certain the eyepiece (and diagonal, if appropriate) is secured in the focuser with the appropriate thumbscrews.

Consider turning the whole camera and SteadyPix assembly so that it faces down (Figure 3). This will reduce the chance of the SteadyPix assembly rotating downward due to its weight.



Figure 3. By orienting the camera and SteadyPix assembly as shown you will bring the center of mass of the assembly as low as it can get. This will prevent the SteadyPix and camera from rotating downward.

To set up and use the SteadyPix:

1. If you examine the bottom of your digital or SLR camera, you will notice a threaded adapter that will accept the SteadyPix's 1/4"-20 camera fastener. Attach the camera to the SteadyPix by inserting the camera fastener into this adapter. Certain inexpensive cameras may not have this threaded socket and cannot be used with the SteadyPix. Figure 4 shows a camera about to be attached to the support plate. Figure 5 shows several different cameras attached to the SteadyPix. If the SteadyPix's 1/4"-20 camera fastener does not thread all the way into your camera's threaded adapter, use one or two washers to take up the extra space between the camera space and your camera. Now set the SteadyPix and camera assembly aside while you aim your telescope.
2. Locate the object you wish to photograph in your telescope. Before attaching the SteadyPix, focus the image in the telescope's eyepiece using the telescope's focuser.
3. Remove the eyepiece from the telescope.
4. Loosen the eyepiece clamp knob until the clamp is wide enough to fit around the barrel of the eyepiece. Then place the clamp over the eyepiece and tighten the eyepiece clamp knob until the SteadyPix is secure on the telescope. For some eyepiece designs, the barrel may be too large for you to fit the regular eyepiece clamp over the eyepiece. If this is the case then you should try using the larger clamp that came with your SteadyPix. (See Part 4. Changing the eyepiece clamp.)
5. Place the eyepiece back into the telescope with the SteadyPix and camera assembly attached.

6. Loosen the 1/4"-20 camera fastener knob, then slide the camera along the camera support plate towards the eyepiece. Loosen the shaft knob just a bit and adjust the camera support plate so that the eyepiece will line up with the camera lens. Do this by rotating the camera support plate around the eyepiece clamp shaft. Raise or lower the plate as well to match the level of the camera lens with the level of the eyepiece. The camera lens and eyepiece will likely need to get quite close to each other to work properly, but make sure they do not touch or else damage to the eyepiece or camera lens may occur. Figure 6 shows several cameras in position next to the eyepiece, on the telescope, and ready to shoot.
7. Look at the camera's viewscreen or viewfinder to see if the object is there. If not, some more adjustments may need to be made. Try bringing the camera lens closer to the eyepiece, or adjust the camera support plate by loosening the shaft knob and moving it left or right and up or down. Note that unless your eyepiece has long eye relief, the viewscreen or viewfinder may have a constricted view of the object you wish to photograph. Keep making minor adjustments until the image from the eyepiece takes up as much space in the viewscreen or viewfinder as it possibly can. Be sure to tighten the 1/4"-20 camera fastener knob and shaft knob when you are ready.

8. Focus the camera, and shoot the picture.

Some telescopes mounts, such as Dobsonian mounts, may move very easily if any pressure is put against the eyepiece. The act of placing the SteadyPix over the eyepiece and readying it for shooting may cause the telescope to move off of its target. You may find it easier to attach the eyepiece and camera to the SteadyPix in advance, then find the object you wish to photograph with a separate eyepiece with similar characteristics. Then replace that eyepiece with the SteadyPix, camera, and eyepiece assembly you have prepared in advance.



Figure 4. A camera about to be attached to the SteadyPix. The SteadyPix's 1/4"-20 camera fastener will thread easily into the camera's adapter.



Figure 5. Several different cameras attached to SteadyPix. Figure 5a shows a digital camera with its adapter in line with the camera's lens. 5b shows a digital camera that has its adapter off to one side of the camera lens. 5c shows a 35mm film camera attached to the SteadyPix.

You may find it handy to use a camera shutter release to take the picture, as this will result in minimal disturbances to the camera or telescope when snapping the photo. The movement of pressing the shutter button may be enough motion to lose the picture.

4. Changing the eyepiece clamp

Some eyepieces may have barrels that are too large for the regular eyepiece clamp to go around. For these eyepieces you should remove the regular eyepiece clamp and replace it with the large eyepiece clamp. You will need a crescent wrench to change clamps.

1. Remove the shaft from the camera support plate by loosening the shaft knob and sliding the shaft out of the camera support plate.
2. Hold the shaft securely in one hand and use the crescent wrench to turn the lower nut (the nut underneath the eyepiece clamp) clockwise until it is loose. Thread the nut clockwise a couple more turns.
3. Hold the upper nut securely between your finger and thumb so that it does not move. With your other hand, rotate the shaft clockwise until the upper nut comes loose from the threads of the shaft. Put the nut aside for the moment.
4. Remove the upper washer and the clamp from the shaft, leaving the lower nut and washer in place.
5. Put the shaft through the bottom of the large eyepiece clamp with the SteadyPix. Then place the upper washer on the shaft and thread the upper nut clockwise with your fingers onto the threaded portion of the shaft. If there is not enough exposed thread to hold the upper nut, remove the washer and clamp and turn the lower nut clockwise until it is about an 1/4" further down the threaded part of the shaft. Then replace the clamp and washer and start threading the upper nut onto the shaft again. Thread the upper nut as far as you can with your fingers (it will still be loose). You may also find it helps to hold the nut with your finger and thumb and turn the shaft counterclockwise to thread the upper nut.
6. Hold the shaft securely with one hand while turning the lower nut counter-clockwise with the crescent wrench until it is secure against the washer and eyepiece clamp.
7. Remove the eyepiece securing knob from the regular eyepiece clamp by turning it counter-clockwise until it is unthreaded from the top of the eyepiece clamp.



Figure 6. The same cameras in Figure 5, but with the SteadyPix attached to a telescope and ready to shoot. Note how the camera support plate must be adjusted for different camera designs.

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8. Push the threaded bolt of the eyepiece securing knob through the larger of the two holes on the top of the eyepiece clamp. Make sure it lines up with the smaller hole on the other side of the clamp. Thread the bolt into the smaller hole by turning it clockwise. Do not thread it more than a few turns.
 9. You are now ready to use the new clamp to secure eyepieces. Replace the shaft in the camera support plate as described in the assembly section (Part 1).

5. What to photograph with the SteadyPix

Now that you have assembled the SteadyPix, the only question remaining is “What do I want to photograph?” We have a few suggestions for you:

Terrestrial Photography

With literally millions of objects to photograph on earth, there are only a few hints we can give for using the SteadyPix for terrestrial photography. One is to consider using a telescope with an Alt/Az (short for altitude/azimuth) mount on a sturdy tripod. An Alt/Az mount will allow simple up/down, left/right motions of the telescope so that you can easily adjust and aim the camera. Equatorial mounts (mounts designed to track the movement of stars in the sky) are not recommended, as they will be needlessly heavy due to the counterweight, and their ability to track celestial objects is of no use when photographing an object like a bird’s nest. In fact it will likely get in the way. Dobsonian mounts will also have trouble with terrestrial photography since aiming a Dobsonian mounted telescope at something close to the horizon (where most terrestrial photography takes place) will mean it has to be very low to the ground and hard to use.

Remember that objects viewed through certain types of telescopes can be oriented backwards, upside-down, or both.

The Moon

The Moon is one of the easiest and most interesting targets to photograph. With its rocky, cratered surface there is a wealth of detail to be photographed with your camera and SteadyPix. The Moon is a very large target, so at higher magnifications you will only get a part of the surface in each picture. Use eyepieces that provide low powers (50x and below should work with most telescopes) if you wish to have the entire surface of the Moon in your field of view.

Try to avoid photographing the full moon since sunlight falling directly on lunar surface will mean there are very few shadows, so details will be harder to see. Instead, photograph the Moon when it is in one of its partial phases, when the angle of the sun provides many detailed shadows on its surface. You might also want to use an optional Moon filter that threads onto the bottom of the eyepiece to bring out more subtle features on the lunar surface.

The Bright Planets

Next to the Sun and the Moon, the planets Mars, Venus, Jupiter and Saturn are the brightest objects in the sky and make excellent targets for photography. Keep in mind that the planets don’t stay still like the stars, so to find them you should refer to Sky Calendar at our website (telescope.com), or to charts published monthly in *Astronomy*, *Sky & Telescope*, or other astronomy magazines.

To get the right amount of detail on the planets, eyepieces that give high powers (at least 75x or more) should be used when using the SteadyPix. Low powers will make it easier to find the planets, but they will not bring out any significant details on the planets to make them worth photographing. High powers must be used to get images of the famous details of the planets, such as the rings of Saturn or bands on Jupiter’s surface.

You might also consider using colored planetary filters that thread onto the bottom of the eyepiece (just like the Moon filter does). These colored filters bring out the subtle detail of the planets by filtering out various colors that reduce detail. Orion has several sets of colored filters available. Visit our website, telescope.com, for more information on colored planetary filters

Deep-Sky Objects

Since deep-sky objects are very faint, use only digital cameras to photograph them when using the SteadyPix. Film cameras require too much exposure time to get good results. A few bright deep-sky objects can be photographed effectively using your SteadyPix (such as the Orion Nebula). Other deep-sky objects may also be photographed for interesting pictures. Try experimenting with different deep-sky objects to see what kind of results you can obtain.



One-Year Limited Warranty

This Orion SteadyPix Universal Camera Mount is warranted against defects in materials or workmanship for a period of one year from the date of purchase. This warranty is for the benefit of the original retail purchaser only. During this warranty period Orion Telescopes & Binoculars will repair or replace, at Orion's option, any warranted instrument that proves to be defective, provided it is returned postage paid to: Orion Warranty Repair, 89 Hangar Way, Watsonville, CA 95076. If the product is not registered, proof of purchase (such as a copy of the original invoice) is required.

This warranty does not apply if, in Orion's judgment, the instrument has been abused, mishandled, or modified, nor does it apply to normal wear and tear. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. For further warranty service information, contact: Customer Service Department, Orion Telescopes & Binoculars, P. O. Box 1815, Santa Cruz, CA 95061; (800)676-1343.

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Post Office Box 1815, Santa Cruz, CA 95061

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