Kson®

A1200127MKII

Operating Guide

127mm f/9.5 2 Element Achromatic Refractor

PLEASE READ THE ENTIRE INSTRUCTIONS CAREFULLY BEFORE USE

WARNING : Never try to look at the Sun, even during a solar eclipse, when viewing through clouds, or when the just coming up or setting. Never point your telescope toward it without professional solar observing equipment firmly attached to the front of the objective lens and detach finding devices from the telescope or place a dust cover over them. Never use an eyepiece type solar filter. Permanent and irreversible eye damage may result. Never use your telescope to project an image of the Sun onto any surface. Internal heat build-up can damage your telescope and/or any accessories attached to it.

Congratulations on your purchase of the Kson A1200127MKII refractor! You've purchased a quality instrument. Regardless of whether your interests lie in observing nature, or celestial viewing we hope it adds many years of enjoyment to your observing!

Specifications (subject to change without notice)

Type	2 element achromatic refractor, fully multi-coated
Clear Aperture	127mm
Focal Length	1200mm
Focal Ratio	f/9.5
Resolution (visual)	0.91 arc seconds
Magnification	30x – 250x with standard Kson eyepieces
Max. Useful Magnification	300x (aperture x 2.24)
Field, Visual	Up to 1.4 with standard Kson eyepieces
Focuser	1.25" rack and pinion type
Tube	powder coated aluminum
Accessories	dew shield, mounting plate or rings, finder plate

Standard features of the optical tube assembly (OTA) include a dew shield, a 1.25" rack and pinion focuser and a vixen plate attached to the scope (type I with mounting plate) or rings (type II with 127mm Kson rings).

Recommended Accessories include a 1.25" diagonal (45 correct image degree for terrestrial viewing, 90 degrees for celestial viewing), a Kson 30mm red dot finder, Kson orthoscopic, plossl or kellner eyepieces, a Kson eyepiece case, and the custom handy nylon carry bag. Note that purchasers need to supply eyepieces, a diagonal and that the scope must be mounted in order to work.

Mounting your OTA - You can mount the telescope on any mount which features a vixen style clamp, including the Kson AZ Tracker, the Kson EQ4 and the Kson AZ4 manual mounts, or a Kson GOTO mount such as the MD or Kson advanced mounts. Heavier mounts provide for steadier views and settle the scope quicker after nudging the view. The AZ mounts do not require them to be aligned when being set up and are easier to operate for a beginner, but do not track an object across the sky as easily as EQ mounts. All manual Kson mounts come with slow motion controllers. Follow your mounts manual for instructions on attaching an optical tube. If attaching to a light, photographic tripod, such as the Kson KM-Mini, align the ¼" x20 mounting screw with the center hole on the mounting plate.

Operating Manual

1.1 Optical Assembly Tube

The OTA consists of several elements that work together. The objective cell (the top of the telescope), the tube itself, and the focuser (at the bottom). The objective cell houses carefully aligned glass elements which must not be tampered with. Collimation of your refractor has been preset and locked at the factory. Do not attempt to loosen any screws, or to replace the lens cell – this will cause misalignment. Rough handling and shock can also cause misalignment resulting in a telescope that will no longer focus correctly. The tube is powder coated and should not need any attention. The focuser moves in and out and adjusts the focus to what is needed to accommodate various eyepieces. The tension screws add resistance if using heavier eyepieces.

1.2 Plate Mount System

The mounting plate that is attached to the scope allows for some minor adjustments to balancing. The tube can be moved up or down before being clamped according to the need. For balancing beyond what is possible with the mounting plate, rings will be required.

1.3 Ring Mount System

The ring system allows for easy balancing. The large adjustment clamps can loosen the grip of the rings on the OTA and allow the OTA to be slid up and down to the best position, before being tightened again.

1.4 How to look after your telescope / cleaning

Avoid exposing your telescope to humid, dusty or harsh environments, and treat it with care. Avoid shock or rough handling.

After use, replace all the accessory caps and the dew cap to prevent dust from entering the telescope. Do not store the telescope in a humid environment and store it with silica which is checked regularly.

Avoid cleaning the lens unless absolutely necessary – improper cleaning will result in micro-scratches. Dust is generally a nuisance, but does not usually need to be cleaned. Fingerprints need to be removed.

To clean, use a squeeze bulb to blow off dust from the lens, never use compressed air cans as these contain liquid elements that may damage the lens. Then use a camel hair brush with the scope pointed down. Use pure distilled (not demineralized) water and moisten (not wet!) a very soft lint free cloth and lightly wipe away the stain using no pressure on the glass – never rub. Use a fresh applicator after each wipe. Do not apply cleaning solutions

or liquid directly to the glass. If a stain will not dissolve with the distilled water, you can make your own lens cleaning fluid using 3 parts distilled water, 1 part 90%+ isopropyl alcohol and one drop of PH neutral dishwashing soap.

The OTA tube is powder coated and can be cleaned with a car wax / cleaner.

1.5 Eyepieces

Kson eyepieces are well engineered, allow excellent light transmission and are affordable. They are available to provide a vast array of viewing experiences for your telescope. Please consult the table below to make a selection. You may obtain these from your local Kson dealer.

Kson® Eyepiece Specifications								With KSON A1200127MKII	
Product model	Elements	Focal length (mm)	Barrel Size	Apparent Field (°)	Coatings + blackened edge	Eye Relief (mm)	Field Stop Diameter (mm)	Magnification (x)	True Field
OR4.5 mm LE	4pieces2group	4.8	1.25"	49	M/C + edgs blackened	7	4.1	250	0. 20
OR7.5 mm LE	4pieces2group	7.7	1.25"	46	M/C + edgs blackened	9	6.2	156	0. 30
OR10.5 mm LE	4pieces2group	10.5	1.25"	46	M/C + edgs blackened	10	8.5	114	0. 40
OR16.8 mm	4pieces2group	16.8	1.25"	49	M/C + edgs blackened	16	14.3	71	0.69
OR24 mm	4pieces2group	24	1.25"	49	M/C + edgs blackened	20	20.4	50	0.98
PL7mm	4pieces2group	7	1.25"	49	M/C	5	6	171	0. 29
PL10mm	4pieces2group	10	1.25"	49	M/C	8	8.5	120	0. 41
PL25mm	4pieces2group	25	1.25"	48	M/C + edgs blackened	17	21	48	1. 00
PL32mm	4pieces2group	32	1.25"	47	M/C + edgs blackened	26	26.5	38	1.25
PL40mm	4pieces2group	40	1.25"	42	M/C + edgs blackened	34	29	30	1.40
KF10mm All Weather	3pieces2group	10.5	1.25"	50	M/C + edgs blackened	8	8.8	114	0. 44
KF14mm All Weather	3pieces2group	14	1.25"	52	M/C + edgs blackened	10.5	12.6	86	0.61
KF15mm Metal	3pieces2group	15	1.25"	50	M/C + edgs blackened	13	13	80	0.63
KF18mm All Weather	3pieces2group	18	1.25"	48	M/C + edgs blackened	10.5	15	67	0.72
KF25mm Metal	3pieces2group	25	1.25"	50	M/C + edgs blackened	24	21.7	48	1. 04
KF25mm Plastic	3pieces2group	25	1.25"	50	M/C + edgs blackened	24	21.7	48	1. 04
EKF10mm Metal	4pieces3group	10	1.25"	50	M/C	8	8.8	120	0. 42
EKF20mm Metal	4pieces3group	20	1.25"	46	M/C	14	16	60	0.77
EF26mm	5pieces3group	26	1.25"	46	M/C + edgs blackened	24	20.8	46	1. 00

1.6 Dew

Dew can be slowed (but not stopped) by your dew shield. When the lens reaches dew point, dew will form. If dewing is an issue for you, you can use a dew heater strap and a powered dew controller which can be obtained by your local astronomy retailer. Do not wipe the dew off with a cloth, as it may scratch the lens or cause water runs into your refractor. Do not blast the lens with hot air.

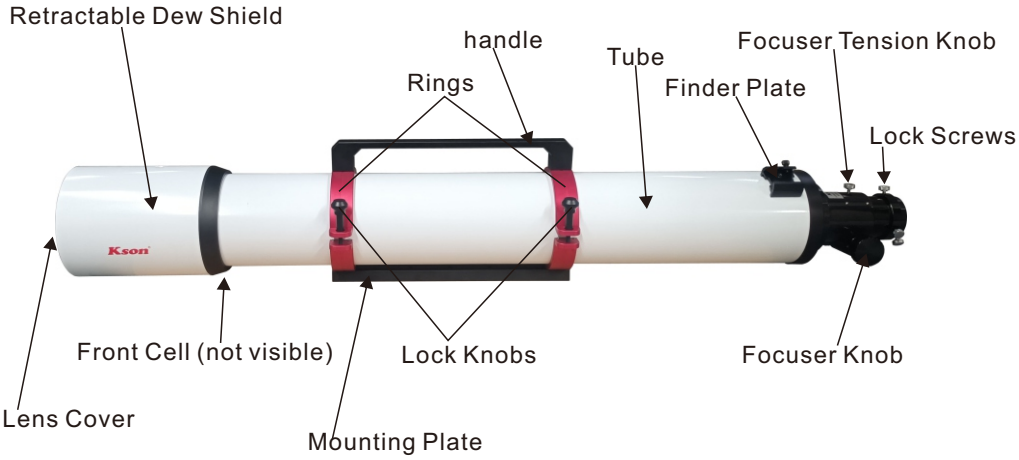
1.7 Optical Performance

Your telescope will operate best when several viewing conditions are met – firstly, 'seeing', the steadiness of the air, and 'transparency', darkness or clarity. It is wise to learn more about these conditions and to plan your viewing around good seeing or transparent conditions. It is a good idea to set up your equipment at least 30 minutes before the viewing session to allow the scope to acclimate to the local conditions.

1.8 Warranty

This Kson unit is warranted to be free of manufacturing or workmanship defects for 1 (one) year from the date of purchase, to the original owner. If your scope requires service, please call your dealer to discuss the defect, as returns are not accepted without prior authorization. The warranty excludes collimation issues, defects caused by mishandling, unauthorized modification or defects of a subjective nature. Scopes must be shipped back in the original packaging and return shipping and insurance is the purchasers responsibility.

KSON A1200127MKII OTA DIAGRAM



KSON RECOMMENDED ACCESSORIES

Kson 1.25” 45 Degree Correct Image Diagonal (Prism)

Kson 1.25” 90 Degree Mirror Diagonal (Celestial Viewing)

Orthoscopic Eyepieces

Orthoscopic Eyepieces

Plossl Eyepieces

Red Dot Finder

Kson 1.25” / 2” Eyepiece Case

495nm and UHC Filters

Handy Case (Various Sizes Available)

Additional Guidance and Information

Using eyepieces and a diagonal

To use an eyepiece, unscrew the thumb screws on the end of the focus tube to loosen the compression ring and remove the plastic endcap. Insert a diagonal, and re-tighten the thumbscrews to tighten the compression ring and hold the diagonal firmly. Do not overtighten. Loosen the thumb screws on the diagonal, and insert the desired eyepiece into the diagonal. Tighten the diagonal's thumb screws to hold the eyepiece in place.

Using and aligning a red dot finder

To use the red dot finder, attach the foot of the finder to the finder plate on the OTA. During the night, roughly align your scope to target the moon. Insert a diagonal and low powered eyepiece and then align the OTA so that the target is exactly in the middle when viewed with an eyepiece. Next, turn the red dot finder. A red dot should be visible when you view your target though it. If not, check that the battery is working and that the plastic slip between the battery and contacts initially supplied has been removed. Use the knobs on the finder to align the view so that the red dot is exactly in the middle of your target. Next, repeat the experience with a bright star to make the alignment even more precise. You will now be able to use your red dot finder to find targets in the sky, and when you return to your eyepiece, the view will be exactly aligned.

Focusing the telescope

In order to use the telescope, you need to use an appropriate diagonal and eyepiece. The diagonal needs to be inserted into the focuser, and the eyepiece, into the diagonal. The telescope is not designed to focus on objects that are close. Try a distant telephone pole, or similar. Make sure you use a low magnification eyepiece to start with, such as a 25mm eyepiece or 32mm eyepiece.

Slowly turn the focuser first one way, and then the other until the image is sharp. You will need to refocus if you change an eyepiece (unless it is 'parfocal') or as your telescope reaches outside operating temperature. A moon is a good first target.

Use as a Guider

Many enjoy using the 80400 as a guider as part of a larger setup. Your camera should come with a 1.25" extender which you may need to achieve focus. The larger 80mm aperture of the 80400 will allow for precise tracking.

Astrophotography

It is possible to take photographs of the moon and brighter objects using the Kson eyepiece adaptor. It is a clamp that attaches to an eyepiece, and then allows for the precise mounting of your smart phone. Fainter targets require longer exposure, and precise tracking, so we recommend using the Kson MD or similar tracking mount.

It is also possible, with additional accessories, to connect a camera directly for "prime focus" photography, however you are likely to need an adaptor/s to extend the focal length so that your camera can focus and turns your telescope into a "lens" which you can connect to your camera. You may wish to consult user forums dedicated to the pursuit of this hobby for more information.

Observing hints

Never observe through glass or indoors through a window. Household glass is optically imperfect and can result in distortions and unpleasant double images or worse.

Avoid looking over objects that produce heat (such as over a roof, or asphalt road). These create waves which create warm turbulent air that distort the views you could otherwise achieve.

Avoid viewing during poor viewing conditions such as poor seeing, or skies that are not transparent, fog, mist and so on. These vastly reduce the amount of detail that can be seen. No matter how good your eyepieces or the instrument, they will not perform at their best in adverse conditions.

If you are observing the moon or planets and there appear to be "currents" running through them, you likely have bad "seeing" due to turbulent air. If you see twinkling stars, then you have poor transparency – good transparency is indicated when the sky is inky black and stars look steady.

If you intend to sketch one day, it's best to learn to observe with both eyes open to avoid fatigue and allow for sketching while simultaneously observing.

If you are viewing a faint object, learn to use averted vision. As the center of your eye is not as sensitive to low levels of light as the outer eye, don't look directly at a faint object, look slightly to the side and the object will appear brighter.

About magnification

The more powerful your eyepiece (low focal length eyepieces give the most powerful magnifications), the steadier your mount needs to be, and the brighter your object will need to be. Powerful magnifications require close to perfect seeing conditions, rarely possible. 60x, 100x, 150x are typical observing ranges. Deep sky objects usually require low powered eyepieces, while planets require more powerful eyepieces.

Optional Filters

Achromatic telescopes naturally produce color fringing. To reduce this, some users add a yellow filter such as a Kson 495nm filter, which adds a general yellow tint, however greatly reduces any fringing and improves contrast.

Some objects benefit from other filters, such as a UHC filter. We recommend this as your first filter if you wish to explore nebulas. The Kson UHC filter is versatile, very effective and an inexpensive accessory.

Observing the moon

The Moon is a prime target for your first look because it is bright and easy to find. While you may be tempted to observe the moon when it is full during this time the moon is fully illuminated, the light is overpowering and views have little contrast.

One of the best times to observe the Moon is during its first or third quarter. Delightful long shadows reveal a wealth of detail on the lunar surface. At low powers you can see the entire lunar disk at once. Switch up to a higher magnification to focus on a smaller area.

A neutral density filter is recommended to reduce the glare of the moon and allow for more contrasty views.

If you are not using a sidereal drive, your telescope won't compensate for the Earth's rotation and the Moon will gradually to drift out of your field of view. This effect is more pronounced at high powers. You will need to manually adjust your tripod to keep the Moon centered. Use a smart phone app, or consult your local newspaper or a current astronomy magazine to find out when the Moon is visible.

The Kson Eklipse Ekcentrik GOTO mounts, once aligned, will track targets such as the moon and stars and increase your viewing pleasure and allow allow the observation of more challenging targets. See the mount's manual for details.

Observing planets

The same methods used to observe the Moon apply to viewing the planets. Keep in mind, at certain times, planets are closer to the earth and will appear larger, and may also be easier to see. You will also need to know when and where to look. Most astronomy publications tell where the planets can be found in the sky each month and as we mentioned previously, a smart phone app can help.

Kson Wratten filters are inexpensive and allow you to improve your viewing of planets.

You can see Venus to through its lunar -like phases. A #47 filter is recommended to cut down the intensity / brightness and reveal some detail.

Mars reveals a range of surface details and depending on your scope and viewing conditions, you may be able to see one or even both of its polar caps. A #12 Yellow filter brightens desert regions, darkens bluish and brownish features. A #21 orange filter increases contrast between light and dark features further, penetrates hazes and most clouds, and allows for limited detection of dust clouds. A #29 Red filter offers maximum contrast of surface features, enhances fine surface details, dust clouds boundaries, and polar cap

boundaries. A #38A blue or dark blue #W47 helps reveal atmospheric clouds, discrete white clouds, and limb hazes, equatorial cloud bands, polar cloud hoods, and darkens reddish features.

You may also try observing the cloud belts of Jupiter and the great Red Spot (if it is visible at the time you are observing).In addition, you will also be able to see the moons of Jupiter as they orbit this gas giant.

A very enjoyable and striking target is Saturn, with its beautiful ring system, is easily visible at moderate power. The rings are highlighted using a light green #57 filter.

Deep Sky Observing

Deep sky objects are simply those objects outside the boundaries of our solar system. They include star clusters, planetary nebulae, diffuse nebulae, double stars, and other galaxies outside our own Milky Way. You will need to know where to look in the sky for these objects, so use a mount with GOTO or a smart phone app to help you.

Once you start observing deep sky objects, there are a few things to remember. First, most deep sky objects have a large angular size. Therefore, low to moderate power is all you need to see them. Secondly, visually they are too faint to reveal color that you might have come across in glossy magazines. Finally, because of their low surface brightness, they should be observed from a dark sky location, not the city.

Sketching

After some time, many observers derive great enjoyment from sketching astronomical objects. A set of pencils or graphite of various types of hardness is recommended. Astronomy forums often have areas where you can get assistance with starting sketching and can provide you with free templates that you can use to start sketching.

Nightvision / Observing

It will take your eyes some time to adjust to the darkness outside. This process usually takes about 20 minutes and will continue to improve for another 25 minutes. When your eyes are adjusted, you will be able to improve the quality of your observations. In addition, you can train your eyes to see more detail over time. Avoid exposing your eyes to white light when trying to observe, or be near street lamps, house lighting and so on. It is best to use faint, red light to view star maps or to operate your mount if necessary. A good quality red-light headlamp is recommended. You should ensure that the headlamp uses a single button on/off red light and does not require you to cycle through several unwanted modes that may cycle through unwanted ‘modes’ that may even include white light that resets your night vision.

Thank you for your purchase and we wish you a wonderful time observing