saxon

Traveller Scope

70mm Grab and Go Telescope
Instruction Manual
SKU# 219201

Saxon Traveller Scope Features

CAUTION!

- Never use your telescope to look directly at the sun. Permanent eye damage will result. Use a proper solar filter for viewing the sun. When observing the sun, place a dust cap over your finderscope to protect it from exposure. Never use an eyepiece-type solar filter and never use your telescope to project sunlight onto another surface, the internal heat build-up will damage the telescope optical elements.

Operating your telescope

Setting up your telescope

Remove the tripod, telescope and accessories from the box.

1. Set the tripod upright and pull the tripod legs outward until each leg is fully extended.
2. You can adjust tripod height by releasing tripod leg clamps and lock the clamps at your desired height.
3. You may adjust the tripod height further by turning the central column locking knob anti-clockwise and pull the tripod head upwards. Hold the tripod head and lock the central column locking knob at your desired height by turning it clockwise.
4. Attaching the telescope to the tripod using the scope locking knob.
5. Attaching the erect prism diagonal to the focuser drawtube.
6. Attaching the eyepiece to the erect prism diagonal.
7. Attaching the finderscope to the telescope.

Adjusting your telescope

1. You may adjust the telescope upwards or downwards by the altitude adjustment. Hold and loosen the altitude adjustment anti-clockwise, lock the altitude adjustment at the desired position by turning clockwise.
2. You may adjust the telescope left or right by the alt-azimuth adjustment. Loose the alt-azimuth adjustment anti-clockwise, lock the altitude adjustment at the desired position by turning clockwise.

Finderscope alignment

These fixed magnification scopes mounted on the optical tube are veryuseful accessories. When they are correctly aligned with the telescope,objects can be quickly located and brought to the centre of the field.Alignment is best done outdoors in day light when it's easier to locateobjects. If it is necessary to refocus your finderscope, sight on an objectthat is at least 500 meters away. Twist the end of the finderscopeuntil focus is reached (Fig.1).

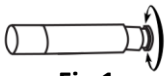


Fig.1

1. Choose a distant object that is at least 500 meters awayand point the main telescope at the object. Adjust thetelescope so that the object is in the centre of the viewin your eyepiece.
2. Check the finderscope to see if the object centered in themain telescope view is centered on the crosshairs.
3. Use the three alignment screws to centre the finderscopecrosshairs on the object (Fig.2).

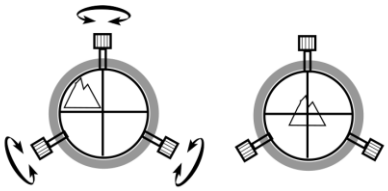


Fig.2

Focusing your telescope

To focus your telescope, simply turn the focuser knob. Turning the focuser knob anti-clockwise allows you to focus an object is closer than the object you are currently observe. Turning the focuser knob clockwise allows you to focus an object that is further than the object you are currently observed.

Understand your telescope more

Calculating the magnification (power)

The magnification produced by a telescope is determined by the focal length of the eyepiece that is used with it. To determine a magnification for your telescope, divide its focal length by the focal length of the eyepieces you are going to use. For example, a 10mm focal length eyepiece will give 40X magnification with a 400mm focal length telescope.

$$\text{Magnification} = \frac{\text{Focal length of the telescope}}{\text{Focal length of the eyepiece}} = \frac{400\text{mm}}{10\text{mm}} = 40\text{x}$$

When you are looking at astronomical objects, you are looking through a column of air that reaches to the edge of space and that column seldom stays still. Similarly, when viewing over land you are often looking through heat waves radiating from the ground, house, buildings, etc. Your telescope may be able to give very high magnification but what you end up magnifying is all the turbulence between the telescope and the subject. A good rule of thumb is that the usable magnification of a telescope is about 2X per mm of aperture under good conditions.

Calculating the field of view

The size of the view that you see through your telescope is called the true (or actual) field of view and it is determined by the design of the eyepiece. Every eyepiece has a value, called the apparent field of view, which is supplied by the manufacturer. Field of view is usually measured in degrees and/or arc-minutes (there are 60 arc-minutes in a degree). The true field of view produced by your telescope is calculated by dividing the eyepiece's apparent field of view by the magnification that you previously calculated for the combination. Using the figures in the previous magnification example, if your 10mm eyepiece has an apparent field of view of 52 degrees, then the true field of view is 1.3 degrees or 78 arc-minutes.

$$\text{True Field of View} = \frac{\text{Apparent Field of View}}{\text{Magnification}}$$

To put this in perspective, the moon is about 0.5° or 30 arc-minutes in diameter, so this combination would be fine for viewing the whole moon with a little room to spare. Remember, too much magnification and too small a field of view can make it very hard to find things. It is usually best to start at a lower magnification with its wider field and then increase the magnification when you have found what you are looking for. First find the moon then look at the shadows in the craters!

Calculating the exit pupil

The Exit Pupil is the diameter (in mm) of the narrowest point of the cone of light leaving your telescope. Knowing this value for a telescope-eyepiece combination tells you whether your eye is receiving all of the light that your primary lens or mirror is providing. The average person has a fully dilated pupil diameter of about 7mm. This value varies a bit from person to person, is less until your eyes become fully dark adapted and decreases as you get older. To determine an exit pupil, you divide the diameter of the primary of your telescope (in mm) by the magnification.

$$\text{Exit Pupil} = \frac{\text{Diameter of Primary mirror in mm}}{\text{Magnification}}$$

For example, a 200mm f/5 telescope with a 40mm eyepiece produces a magnification of 25x and an exit pupil of 8mm. This combination can probably be used by a young person but would not be of much value to a senior citizen. The same telescope used with a 32mm eyepiece gives a magnification of about 31x and an exit pupil of 6.4mm which should be fine for most dark adapted eyes. In contrast, a 200mm f/10 telescope with the 40mm eyepiece gives a magnification of 50x and an exit pupil of 4mm, which is fine for everyone.

Observing the Sky

1. Sky conditions

Sky conditions are usually defined by two atmospheric characteristics, seeing, or the steadiness of the air, and transparency, light scattering due to the amount of water vapour and particulate material in the air. When you observe the Moon and the planets, and they appear as though water is running over them, you probably have bad "seeing" because you are observing through turbulent air. In conditions of good "seeing", the stars appear steady, without twinkling, when you look at them with unassisted eyes (without a telescope). Ideal "transparency" is when the sky is inky black and the air is unpolluted.

2. Selecting an observing site

Travel to the best site that is reasonably accessible. It should be away from city lights, and upwind from any source of air pollution. Always choose as high an elevation as possible; this will get you above some of the lights and pollution and will ensure that you aren't in any ground fog. Sometimes low fog banks help to block light pollution if you get above them. Try to have a dark, unobstructed view of the horizon, especially the southern horizon if you are in the Northern Hemisphere and vice versa. However, remember that the darkest sky is usually at the "Zenith", directly above your head. It is the shortest path through the atmosphere. Do not try to observe any object when the light path passes near any protrusion on the ground. Even extremely light winds can cause major air turbulence as they flow over the top of a building or wall. If you try to observe on any structure, or even a sidewalk, movements you make may cause the telescope to vibrate. Pavement and concrete can also radiate stored heat which will affect observing.

Observing through a window is not recommended because the window glass will distort images considerably. And an open window can be even worse, because warmer indoor air will escape out the window, causing turbulence which also affects images. Astronomy is an outdoor activity.

3. Choosing the best time to observe

The best conditions will have still air, and obviously, a clear view of the sky. It is not necessary that the sky be cloud-free. Often broken cloud conditions provide excellent seeing. Do not view immediately after sunset. After the sun goes down, the Earth is still cooling, causing air turbulence. As the night goes on, not only will seeing improve, but air pollution and ground lights will often diminish. Some of the best observing time is often in the early morning hours. Objects are best observed as they cross the meridian, which is an imaginary line that runs through the Zenith, due North-South. This is the point at which objects reach their highest points in the sky. Observing at this time reduces bad atmospheric effects. When observing near the horizon, you look through lots of atmosphere, complete with turbulence, dust particles and increased light pollution.

4. Cooling the telescope

Telescopes require at least 10 to 30 minutes cooling down to outside air temperature. However this may take longer if there is a big difference between the temperature of the telescope and the outside air. This minimizes heat wave distortion inside telescope tube (tube currents). Allow a longer cooling time for larger optics. If you are using an equatorial mount, use this time for polar alignment.

5. Using your eyes

Do not expose your eye to anything except red light for 30 minutes prior to observing. This allows your pupils to expand to their maximum diameter and biochemical light adaptation to occur. It is important to observe with both eyes open. This avoids fatigue at the eyepiece, allows you to check against reference material, and is a good habit to develop if you sketch at the eyepiece. If you find this too distracting, cover the unused eye with your hand or an eye patch. Use averted vision on faint objects: The center of your eye is the least sensitive to low light levels. When viewing a faint object, don't look directly at it. Instead, look slightly to the side, and the object will appear brighter.

Australian Astronomical Society

Victoria
Mornington Peninsula Astronomical Society
Astronomical Society of Victoria
Astronomical Society of Melbourne
Ballarat Astronomical Society
Bendigo District Astronomical Society
Latrobe Valley Astronomical Society
The Astronomical Society of East Gippsland
Oasis Stargazers Club MilduraInc
Snake Valley Astronomical Society
Astronomical Society of Geelong

South Australia
Astronomical Society of South Australia

Tasmania
Astronomical Society of Tasmania Inc.

Queensland
Southern Astronomical Society (QLD) Inc
Astronomical Association of Queensland
Brisbane Astronomical Society
South East Queensland Astronomical Society
Townsville Astronomy Group
Mt. Isa Astronomy Group
Bundaberg Astronomical Society

Western Australia
Astronomical Society of WA

New South Wales & ACT
Astronomical Society of NSW
Sydney Northwest Astronomy Group
Western Sydney Amateur Astronomical
Northern Sydney Astronomical Society
Sutherland Astronomical Society
Redlands Astronomical Society
Astronomical Society of Coonabarabran
Macarthur Astronomical Society
Shoalhaven Astronomers
Wollongong Amateur Astronomy Club
Port Macquarie Astronomical Association
Central West Astronomical Society Inc
Canberra Astronomical Society
Astronomical Society of AlburyWodonga
Centaurus Astronomical Society
Grafton Astronomical Society
Coffs Harbour Astronomical Society Inc
Illawarra Astronomical Society
Hawkesbury Astronomical Association

Northern Territory
Darwin Astronomy Group
Gove Amateur Astronomers
Alice Springs Astronomical Society

Australian Birding Society

Australia Wide
Birdlife Australia
Birdline Australia

Victoria
The Field Naturalists Club of Victoria (FNCV)
Birding in the Echuca District
Connecting Country
Friends of the Helmeted Honeyeater
Geelong Field Naturalists Club Inc.
Victorian Wader Study Group
Aviculural Society of Australia

Tasmania
Avicultural Society of Tasmania
North West Bird Club

Queensland
Birdwatchers of Hervey Bay
Toowoomba Bird Observers
Birds Queensland
North Queensland Bird Clubs & Societies
Queensland Wader Study Group
Tweed Bird Observers
Birding South Queensland
Birds Australia Southern Queensland

New South Wales & ACT
Cumberland Bird Observers' Club
The Australian Bird Study Association
Blue Mountains Bird Observers
Dubbo Field Naturalist & Conversation Society
Far South Coast Birdwatchers
Hastings Birdwatchers
Hunter Bird Observers Club
Illawarra Birders Inc
Illawarra Bird Observers Club
Manning Great Lakes Birdwatchers Inc
Canberra Birds

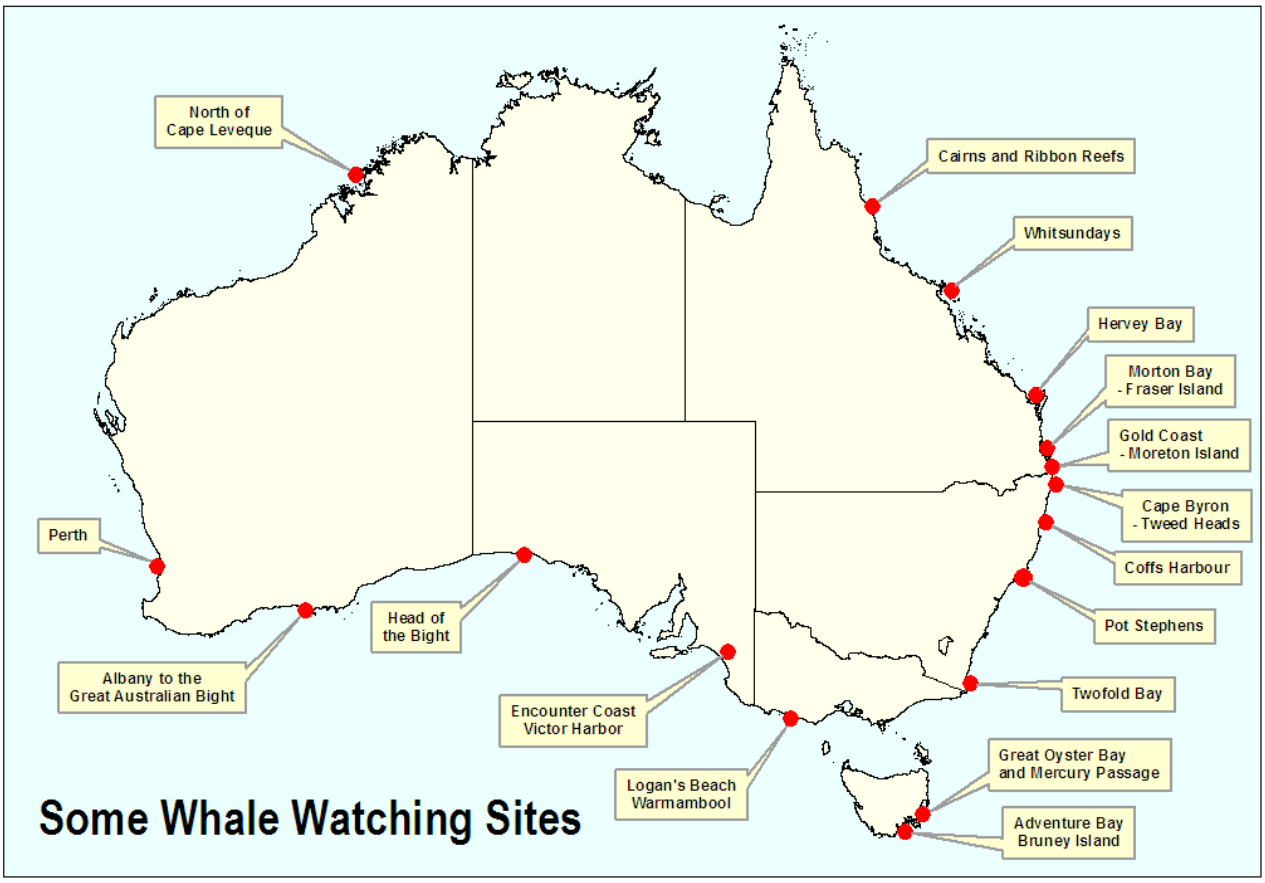
South Australia
Birds SA
Birdlife South East SA
Fleurieu Birdwatchers Inc
Port Augusta Bird Group
Adelaide Bird Club

Northern Territory
NT Field Naturalists' Club

Western Australia
Native Arc Inc
Birding Western Australia

Australian Whale watching Site

Australia is fortunate to have a number of great whale watching sites. There are numerous whale watching operations around Australia that offer excellent opportunities to see animals in the wild. There are also many land-based sites where whales and dolphins come within metres of the coastline. Land-based whale and dolphin watching is an inexpensive way of seeing these magnificent animals in their natural environments.



Remember – keep a safe distance

Do not disturb!

What is the basic rule when near whales and dolphins? Remain quiet and do not try to feed or touch them.

- Be alert and watch for whales at all times.
- When in a vessel, do not approach closer than 100m to any whale.
- Approach whales from parallel to and slightly to the rear - not from directly behind or head-on.
- When leaving, move off at a slow speed to the outer limit of the caution zone from the closest animal before increasing speed.
- Keep a lookout and avoid disturbance to mother whales and their calves.
- If there is a sudden change in whale behavior, move away immediately at a slow steady pace.
- Do not get into the water if you see a whale or dolphin. If you're already in the water do not disturb, chase or block the path of a whale and if possible, return to your vessel or the shore.

Credit to Australian Government Department of the environment and energy.

Saxon Traveller Scope Specification

Specifications	
Optical Design	Refractor
Aperture (mm)	70mm (2.7 inch)
Focal Length	400mm
Focal Ratio	F/5.7
Eyepiece #1	20mm (20x magnification)
Eyepiece #2	10mm (40x magnification)
Finderscope	5x24 straight through
Maximum Practical Magnification	165x
Minimum Practical Magnification	10x
Limiting Stellar Magnitude	11.7
Resolution	1.99 arch
Warranty	5-Years limited warranty

What's included in the box

1x Saxon 70mm Traveller Scope
1x 5x24 Finderscope
1x 20mm Eyepiece
1x 10mm Eyepiece
1x Backpack
1x User Manual
1x Star & Moon Chart
1x Gift box

You can also obtain the e-Manual from our website at

www.saxon.com.au

We recommend the following accessories for your telescope

Saxon 1.25” 2x Short-Focus Barlow Lens

The saxon 1.25” 2x Short-Focus Barlow Lens doubles the magnification of your eyepiece and offering crystal clear image.

Being our most popular barlow lens due to its excellent quality, value for money and usefulness on nearly every model of telescopes.

SKU# 530002

Saxon 1.25” Moon Filter

The saxon 1.25” Moon Filter help reduce glare and increase the contrast of the moon, thus you would be able to enjoy looking at the craters of our beautiful Moon.

SKU# 643004

Saxon 1.25” Plossl Eyepieces

The saxon Plossl eyepieces are a class on its own. With edge-to-edge blackened optics, this Plossl eyepiece features a 4-element design that delivers clear, high contrast images while minimising spherical aberration and distortion.

Featuring a 4-element design, this Plossl eyepiece ensures maximum light transition, minimises spherical aberration, distortion, astigmatism and off-axis colour. The edge-to-edge blackened optics provides excellent contrast across the 50° apparent field of view.

Available in:

6.3mm	**10mm**	**12.5mm**	**15mm**	**20mm**	**25mm**	**30mm**	**40mm**
63x	**40x**	**32x**	**26x**	**20x**	**16x**	**13x**	**10x**
#510163	**#510110**	**#510012**	**#510015**	**#510020**	**#510125**	**#510030**	**#510040**

Saxon Traveller Binoculars

Travellers and general observers alike will appreciate the ergonomic and durable **saxon Traveller Binoculars**.

Perfect to use indoors and outdoors, this compact, porro prism pair of binoculars comes with fully multi-coated optics and smooth central-focusing.

These binoculars are housed in a sturdy, non-slip rubber grip which means it will survive the bumps and knocks from being in your bag or during everyday use.

Available in:

8x25 Traveller	**10x25 Traveller**	**8-20x25 Traveller**	**10-30x25 Traveller**
#140008	**#140009**	**#143022**	**#143023**

Taking photo? We got you covered!

Saxon 1.25” Variable-Projection Camera Adapter

The saxon 1.25” Variable-Projection Camera Adapter allows you to take photography with your DSLR camera (a t-mount must be applied to your brand of DSLR camera).

This adapter can be used for either prime focus (without eyepiece) or with an eyepiece. Prime focus can also be achieved with the threaded-in separable unit.

SKU# 644001

Saxon T-mount for various camera brands

The T-mount is a standard lens mount for cameras. Different camera brands have different thread on its camera body.

Kindly contact us if you are unsure of which T-mount to be purchased.

Available in:

Canon	**Nikon**	**Minolta/Sony**	**Pentax**
#640001	**#640002**	**#640003**	**#640004**

Saxon 1.25” Universal Digital Camera Bracket Adapter

The saxon 1.25” Variable-Projection Camera Adapter is an exceptional convenient instrument to couple almost any brands of compact digital cameras.

This adapter can be attach to spotting scope, telescopes and monocular for photographic use in no need of additional setup attachments.

SKU# 644010

Saxon 1.25” Colour Filters

The saxon 1.25” colour filters allow you to see and photograph fine details of the object by applying the right colour filters.

Available in:

No.8 Light Yellow #643208	**No.12 Yellow #643212**	**No.21 Orange #643221**	**No.23A Light Red #643223**	**No.25A Red #643225**	**No.56 Light Green #643256**	**No.58 Green #643258**	**No.80A Blue #643280**	**No.82A Light Blue #643282**

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