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## 10x50 Standard Binoculars



**Code: 36497**

## Operating Instructions

# Operating Instructions

This binocular has been manufactured to the highest quality standards and thoroughly checked to ensure that it is in perfect condition. Follow the care instructions and the binocular will give years of trouble free service and enjoyment.

## WARNING

**Never look directly at or near the sun as this can cause permanent eye damage.**

## FOCUSSING

This binocular is equipped with a centre focus wheel, which adjusts both left and right optics. In addition, there is a separate focussing ring at the base of the right eyepiece which allows the user to compensate for any differences between the left and right eyes.

The  $\pm$  scale on this eyepiece ring is called the dioptre correction.

The binocular has a central hinge so that the optics can be adjusted to suit the exact distance between your eyes. To achieve the optimum performance, open or close the binocular so you can see one image.

Next, focus on an object through the left eyepiece only with your right eye shut (or the right eyepiece covered) using the centre focus wheel.

When the image is sharp, look through the right eyepiece with your left eye shut (or the left eyepiece covered) and rotate the right eyepiece ring until the image is sharp. Making note of the dioptre ring setting will avoid having to go through the focussing procedure each time you use the binocular.

## USING SPECTACLES

If you wear spectacles, you can obtain a full field of view by turning the twist eyecups down to the lowest position, then set the right dioptre correction ring to zero as your prescription lenses correct any optical imbalance.

## CARE INSTRUCTIONS

Your binocular will give many years of satisfactory service if treated with care. Try to protect it from dust and extremes of temperature and moisture.

**Lens cleaning:** Carefully remove any particles of sand or dust on the outer lenses with a blower or brush, then clean the lenses with suitable lens cleaner and a soft cloth.

Do not drop or knock the binocular or attempt to dismantle it as the optical alignment will be affected causing a double image. This is not covered by the warranty and can only be rectified by suitably qualified technicians using special optical alignment equipment.

## 12 MONTH WARRANTY

This high quality binocular you have chosen has been manufactured and assembled with care to the most exacting specification.

Any faults due to material or manufacturing defects will be rectified or parts replaced without charge for a period of 12 months from date of purchase.

Excluded parts: lanyard, eyecups, carrying strap, rainguards and case.

In case of complaint, please return this slip with the instrument to the address on the back of these instructions.

*This guarantee does not affect your Statutory Rights.*

Model: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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## GLOSSARY

### OBJECTIVE LENS

The larger, or front lenses. The Objective Lens Diameter is the size of the outer (front) lens in millimetres. A x35 binocular has a 35mm objective lens. This helps determine how much light enters the binocular, although image brightness still depends on the size of the exit pupil. Doubling the size of the objectives quadruples the light gathering capacity of the binoculars; for example, a 7x50 binocular has twice the light gathering capability of a 7x35 binocular and four times the light gathering ability of a 7x25 binocular (all else remaining equal).

### MAGNIFICATION

Also called "Power", this number reflects how many times the image is magnified. For example, through a 10x binocular the image will appear 10 times larger than with an unaided eye, an 8x will magnify only 8 times. With 8x power, an object 800 feet away will appear as if it was only 100 feet away.

Higher magnifications require a large objective lens in order to maintain adequate light transmission (see calculations under Exit Pupil). They also exaggerate and magnify hand tremor, so can be difficult to hold steady.

### PRISM TYPE (ROOF OR PORRO)

Erecting prisms are used in all binoculars to correct for inverted (upside down) images. Two types of prisms are common - porro or roof.

In general, porro prisms yield greater contrast, but many roof prisms have a phase-shift coating, which can provide similar contrast. Porro prisms are available in two standard types: BK-7 and BaK-4. The glass density of BaK-4 provides superior performance. One modification of the Porro design is the Reverse Porro Prism, commonly used in compact binoculars to reduce overall size. Porro prisms set objectives further apart and may offer superior stereo imaging.

Roof prisms are lighter in weight, more compact, and often more expensive. The barrel appears to be a straight tube. BaK-4 and roof prisms have a perfectly round exit pupil, whereas BK-7 prisms show a grey area on the outer fringe of the circle.

### BAK4 Glass Prism

A binocular prism design that produces a perfectly round exit pupil and ensures greater light gathering power for clear images without any vignetting (where the image's brightness is less at the edge compared to the centre).

### COLLIMATION

How all the lenses and prisms line up inside the barrels. To work effectively, they need to be in just the right place and be parallel. High quality mechanical construction will ensure that the lenses and prism blocks maintain their correct alignment and provide years of comfortable viewing without headaches or eyestrain. This is what needs repairing when binoculars have been 'knocked out of alignment'.

## EXIT PUPIL

Measured in mm, this is the diameter of the beam of light leaving the binocular eyepiece, and determines how much light the eyes receive. Larger exit pupils provide brighter images. To calculate Exit Pupil, divide the objective size by the power. For example, the exit pupil of a 7x42 binocular is 42 divided by 7, or 6mm. Since the pupil of the human eye can shrink to a diameter of 2mm to 4mm on a sunny day, this specification is of greater import for use in low light.

## EYE RELIEF

Measured in mm, it is the actual distance your eyes could be from the surface of the eyepiece, and still see the full image. Long Eye Relief allows users who wear glasses, where the eye is further away from the eyepiece, to see the entire field of view. Can be accommodated by twist down or fold down eyecups.

## FIELD OF VIEW

Is the width of the area (in degrees) that can be seen at a given distance (usually measured at 1000 metres). Also explained as the size of the circle of image you see when looking through the binocular. A large field of view permits you to see a large area at one time, and enables you to follow a moving subject with ease. Generally, the higher the magnification the smaller the field of view.

## DEPTH OF FIELD

This refers to how much of the view is in focus at any one time. A good depth of field will mean less re-focussing between objects at different distances away. This can help to prevent eyestrain, and makes following moving objects easier, as well as making the binocular always appear 'ready' for use. Higher magnification generally decreases depth of field.

## CLOSE FOCUS

For those interested in insects or plants, close focus is very useful. It would usually refer to distances less than 3 metres. The downside of close focus is that depth of field can be compromised to achieve it.

## DIOPTRIC ADJUSTMENT

As most people have a difference in the sight of each eye, most binoculars have a mechanism that helps allow for this - effectively creating individual focus for each eye. Older models have the dioptre incorporated into one eyepiece, but equipment that is more modern will have it separate from there so it can be adjusted and 'locked'.

