



SWFA SS
12x32 BR
BINOCULAR
WITH **RETICLE**
MANUAL



SWFA SS 12x32 BR

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THE **SWFA SS 12x32 BR**

binocular is a compact roof prism design that combines light weight and excellent optical performance with an industry first adjustable ranging reticle.



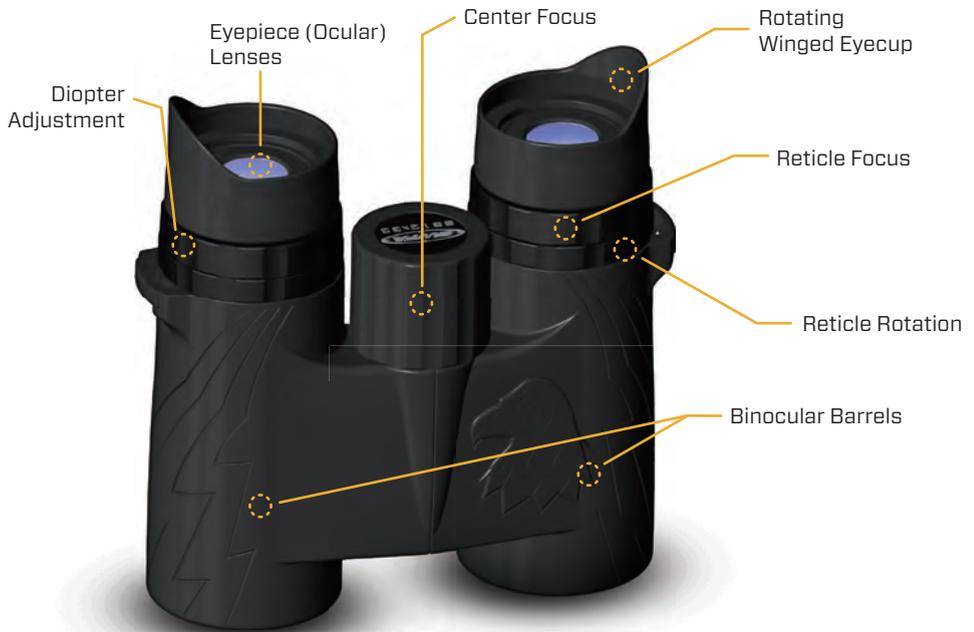
 *SWFA SS 12x32 BR Binocular
with Ranging Reticle*



NOTE: Avoid looking at any intense light source through binocular.
For example, looking directly at the sun can result in permanent damage to your eye.



FEATURES



EYECUP ADJUSTMENT

SWFA SS 12x32 binocular is equipped with adjustable rubber eyecups with integrated wings that block wind and stray light. Take care to not rotate the eyepiece and reticle adjustments underneath the eyecups



< *When using the binocular with eye or sunglasses, fold the eyecups down in order to see the entire Field of View (FOV).*

INTERPUPILLARY DISTANCE (IPD) ADJUSTMENT

The IPD setting of the binocular must match the distance between your eyes. To adjust the IPD, grasp the binocular with both hands and slowly rotate the binocular barrels inward or outward until you see a single round image without any “kidneybean” shading for either eye. In order to simplify the adjustment and make it consistent, choose a reasonably distant object to look at (more than 20 yards out)



and find a stable position with support for your elbows. Once you achieve a comfortable IPD setting, note the size of the gap between the two barrels, so that you can always return to your setting if someone else has been using the binocular or if the IPD setting shifted during transportation.



In order to set the binocular up for a clear and relaxing image, the eyepiece must be adjusted to compensate for the difference between the user's left and right eye. Note, that the difference between the eyes is individual for everyone. If there will be more than one user for the binocular, each user is likely to have a unique eyepiece setting.

The center wheel adjusts focus for both barrels of the binocular. In addition, there is a separate focus adjustment for the right eye, right underneath the rubber eyecup.

HOW TO PROPERLY SET UP THE FOCUS:

- 1** Close the right objective of the binocular using an objective cover. If the objective lens cover is not available, you can cover the objective with the palm of your hand or close the right eye. However, this will have a detrimental effect on the quality of the focus adjustment.
- 2** Keeping both eyes open (the right eye will not see anything, but keep it open), find a steady position, point the binocular at some not too distant target (~20 yards is ideal) and, using the center focusing knob, take your time and bring the target into perfect focus.



— Eyepiece Focus Setting Marks

— Eyepiece Focus Adjustment Ring



NOTE: Make sure that you give your eyes a chance to rest throughout the process. The eyepiece focus procedure is best done in the morning when your eyes are least tired. Doing it at the end of the day can be difficult especially if daytime activities involve a lot of computer use.

3 Now, open the right objective and cover the left objective lens. Making sure that you do not touch the center focusing knob, use the eyepiece focus ring underneath the eyecup to bring the image (that is now going to your right eye) into perfect focus. Eyepiece focus adjustment is very sensitive, so take your time and make sure it is done right. Remember to keep your both eyes open, although only the right eye is seeing the target.

4 Check that the focus adjustment was successful by looking at a variety of targets at different distances using either eye and both eyes together. Optimal focus position for the center focusing knob should be the same for both eyes. If it is not, go back to **Step 1**.

5 Record the location of the focus setting mark on the adjustment ring with respect to the “-/+” mark on the binocular body. You should not need to adjust it unless a different person used the binocular.



The SWFA SS 12x32 binocular is equipped with a milliradian (MRAD) based ranging reticle designed for quick and accurate range estimation as well as POI spotting and a variety of other applications.

Prior to using the reticle, its focus and orientation must be adjusted. The reticle is located in the left barrel of the binocular and the reticle focus and orientation adjustment rings are right underneath the rubber eyecup.

HOW TO BRING THE RETICLE INTO PROPER FOCUS:

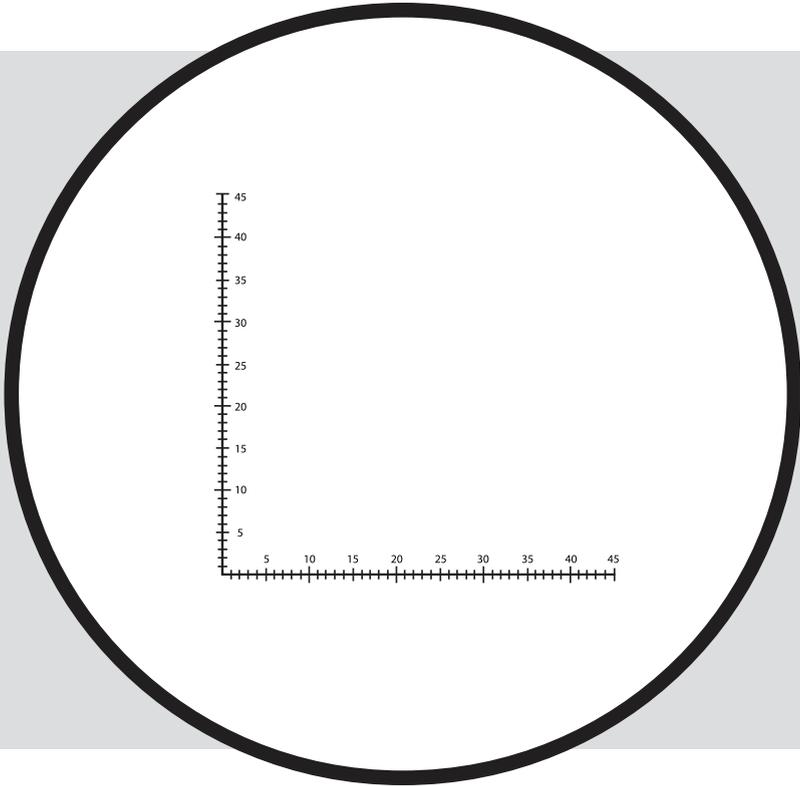
- 1** Set the center focusing knob to infinity position by rotating it counter clockwise until it stops.
- 2** Find something distant and featureless to look at (clear sky, for example) or, if that is not available, point the binocular at a light colored featureless wall within a few feet of the binocular. The wall will be de-focused, allowing your eye to concentrate on the reticle.
- 3** Cover the right objective lens and, looking with your left eye, use the reticle focus adjustment ring to optimize reticle sharpness. Make sure that you frequently look away to give the eye an opportunity to rest.

Once the reticle focus is optimized, consider the desired reticle orientation. The reticle orientation adjustment ring rotates the reticle within the Field of View (FOV) of the binocular. Use the adjustment ring to orient the reticle, so that the horizontal lines are level with the horizon. The optimal alignment of the reticle will be different for different IPDs.





- The reticle in the SWFA SS 12x32 binocular provides both horizontal and vertical hash marks for estimating range using either horizontal or vertical dimensions of objects of known size.
- The reticle is designed to remain unobtrusive during regular observation while being immediately available when needed.
- The maximum object size that can be measured with the reticle is 45 MRAD. The spacing between hash marks is 1 MRAD and the stadia are marked at 5 MRAD and 10 MRAD intervals with longer hash marks and numbers next to them.
- The length of the short hash marks is 1 MRAD and they are 1 MRAD apart from each other.
- The longer hash marks at marked 5 MRAD locations are 1.5 MRAD long.
- The hash marks at marked 10 MRAD locations are 2 MRAD long.





- > The strength of the milliradian (MRAD) based ranging system is the greatly simplified arithmetic based on multiplying by one thousand.
- > An object that is 1 yard tall, subtending 1 MRAD on the reticle scale is 1000 yards away from the observer:

$$\text{Target size (yards)} \times \text{Target size (mrad)} * 1000 = \text{Distance to target (yards)}$$
$$\text{(mrad)} * 1000 = \text{Distance to target (yards)}$$

- > Using the formula above, if this same 1 yard tall target subtends 10 MRAD on the reticle, it is 100 yards away.
- > In order for the arithmetic to remain simple, the target size and distance to targets must be expressed in the same units, most commonly in feet, yards or meters.
- > If the target size is expressed in inches and the distance to target in yards, a multiplier must be introduced that makes the arithmetic a lot less intuitive:

$$\text{Target size (inches)} \times \text{Target size (mrad)} * 27.78 = \text{Distance to target (yards)}$$

- > It is usually easier to first convert the target size into the same unit the range is expressed in. For example, if you know that the target is 18 inches tall, it can be expressed as 1.5 feet or 0.5 yards. A 0.5 yard target subtending 10 MRAD on the reticle is 50 yards away.

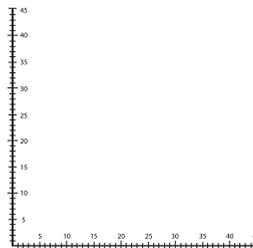
*Target size feet Target size mrad*1000=Distance to target feet*

*Target size (meters)Target size (mrad)*1000=Distance to target (meters)*



NOTE: As a general consideration, for most precise range estimation use the largest object of known size available and estimate how much of a reticle it subtends as accurately as possible.

Range estimation is a perishable skill and requires practice.





Cleaning and Maintenance

With reasonable care, the SWFA SS BR 12x32 binocular will give a lifetime of service.

When not in use, keep both ocular and objective lenses covered. Resist the temptation to obsessively clean the optical surfaces. Excessive and/or improper cleaning can damage the coatings on the lenses. If it is time to clean the optics, start by blowing off all particles using compressed

air. Never wipe the lenses with abrasive materials and never wipe the lenses dry. Use pre-moistened towelettes designed for lens cleaning or clean microfiber clothes and cleaning liquid. Regular paper, tissues and thick cloth usually have embedded sand which damages the lens surface.

In the field, if cleaning liquid is not available, breathe on the lens surface prior to wiping it.



THE 4-LIFE WARRANTY

Never Expires

Transferable, No Receipt Required

No Questions Asked

If We Cannot Repair It, We Will Replace It



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