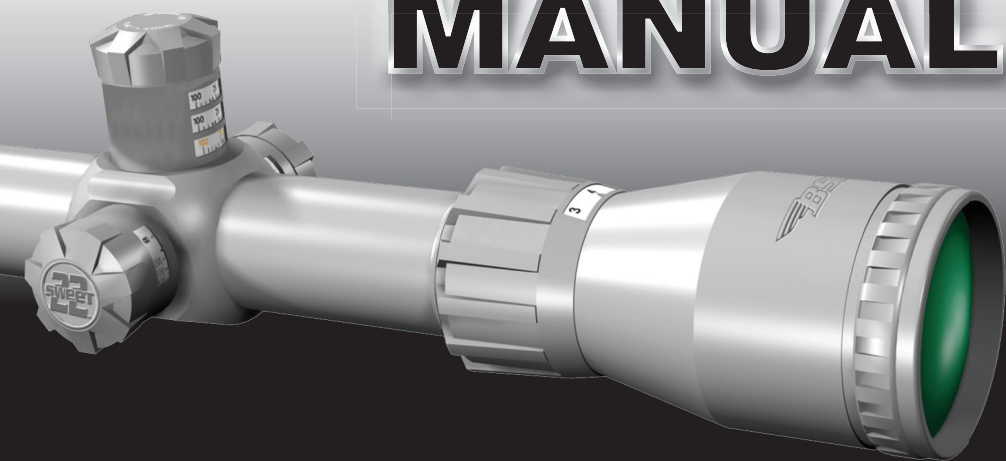




SPORT & RECREATIONAL OPTICS

# SWEET 22™ RIFLE SCOPE INSTRUCTION MANUAL



Sweet 22™ Scopes are designed for specific bullet weight compensation for .36gr., .38gr., and .40gr. ammunition.

The Sweet 22™ Rifle Scopes are designed for the serious hunter. The main features of the Sweet 22™ are their ability to compensate for bullet trajectory by specific grain weight. The elevation drum will compensate for .22cal grain weights of 36, 38, and 40.

The Windage and Elevation turrets have zero reset with “Allen” screw. Each model in the Sweet 22™ series have an adjustable side parallax setting of 7.5 to ∞. (With the exception of the model S22-618x40SP which is 10 to ∞)

Models available in the sweet series:

S22-27x32SP, S22-39x40SP, and S22-618x40SP.

Each Sweet 22™ model scope includes:

Hex Wrench, 3” Sun Shade and Micro Fiber Lens Cloth.

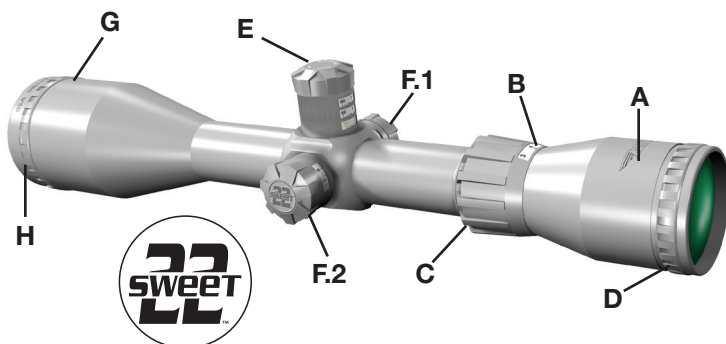
#### CONTENTS:

1. FOCUSING YOUR SCOPE
2. MOUNTING
3. PRE-ZEROING
4. ZEROING
5. BULLET COMPENSATION
6. PARALLAX CORRECTION
7. MAINTENANCE

**! CAUTION:** DIRECT VIEWING OF THE SUN CAN CAUSE PERMANENT EYE DAMAGE. DO NOT ATTEMPT TO VIEW THE SUN WITH EITHER THIS PRODUCT OR THE NAKED EYE.

### 1.) FOCUSING YOUR SCOPE

Sweet 22™ scopes are “fast focus” and the standard eye relief on the Sweet 22™ is 4”. The zoom ring has an inner drum with markings, and a fixed inner ring with a window cutout. Only the outer ring and markings will turn when adjusted. The window is always facing the shooter.



- KEY:
- A.) Ocular Bell
  - B.) Zoom Ring Window
  - C.) Zoom Ring
  - D.) Fast Focus
  - E.) Elevation Adjustment
  - F.1) Windage Adjustment
  - F.2) Side Parallax
  - G.) Objective Bell
  - H.) Objective End Ring

Hold the scope and look through the eye piece at a flat, featureless well lit area. The reticle should appear sharp and well defined. To make adjustments rotate the ocular bell focus in either direction. Look through the scope again. If the focus of the reticle has improved but is not perfect, continue to rotate in the same direction. If the condition has worsened you will need to rotate the bell in the opposite direction.

**! CAUTION:** BE SURE THAT THE FIREARM IS NOT LOADED.  
PRACTICE SAFE FIREARM HANDLING AT ALL TIMES.

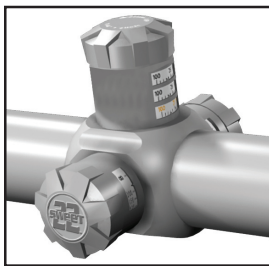
## 2.) MOUNTING

The Sweet 22™ scopes have a one-inch tube diameter. Depending on your rifle you will need to purchase the correct base diameter to insure fitment of mount and rail. Using a rest or gun vise is highly recommended. (One piece or two piece mounting rings can be used.)

- Separate the upper and lower halves of your ring(s).
- Install the lower half of your ring(s) on the rifle rail.
- Set the scope in the cradle.
- Replace the tops loosely (do not tighten).

Position the scope as far forward as possible and rotate the elevation turret to be vertical. Slowly pull the scope backward until your full FOV (field of view) is visible, check to make sure the reticle is aligned both vertically and horizontally with the bore axes of the firearm.

Once properly positioned, tighten the top halves of your ring(s) mount using a non-permanent thread lock.



**! CAUTION:** BE SURE THAT THE FIREARM IS NOT LOADED.  
PRACTICE SAFE FIREARM HANDLING AT ALL TIMES.

## 3.) PRE-ZEROING

Locate an appropriate location to fire your rifle and set up a target at a distance of 100 yards from your shooting location. You should use a comfortable gun rest to eliminate as much human error as possible. Make certain the rifle is empty with no cartridge in the chamber and the breech open. Rotate the parallax ring to 100 yards.



300 yards



200 yards



100 yards



75 yards



50 yards

**Manual:** Use the hex wrench supplied to loosen the three screws on each adjustment knob.

**For windage adjustment** turn clockwise to move the point of impact right, and counter clockwise to move the point of impact left.

**For the elevation adjustment** turn clockwise to lower the point of impact and counterclockwise to raise the point of impact. (See #5. Bullet Compensation)

**Using a boresighter:** Follow the instructions that came with your boresighter and install the boresighter in the muzzle of your rifle lining it up with the scope as close as possible.

Looking through the scope as though you were going to shoot you should see (2) two sets of crosshairs. One set is a plain crosshair (this is the one in the scope itself) and another set which is graduated or on a grid (this is the one in the boresighter). These crosshairs should line up with each other vertically, horizontally and in complete alignment. If the vertical and horizontal crosshairs are not parallel with each other, adjust the boresighter in the direction it needs to turn in order to achieve this.

Make sure the crosshairs cross or meet at precisely the same location. Proceed to adjust your scope right, left, up, or down until the cross-hairs match. **Remove the boresighter from the muzzle.**



**CAUTION:** BE SURE THAT THE FIREARM IS NOT LOADED.  
PRACTICE SAFE FIREARM HANDLING AT ALL TIMES.

#### 4.) ZEROING

The next step is to test ammunition. No two ammunitions will behave in the same manner when fired from the same rifle. This may be one of the most important steps in sighting in any firearm and is the one that is most frequently omitted. **DO NOT bypass this step.**

- Holding the crosshairs steady on the target, squeeze off a round.
- Repeat this two more times to get a three shot group.
- Retrieve your target and triangulate the shots to get an average point of impact. Measure from that POI to the bulls eye where you aimed.
- This measurement can now be adjusted with adjusting screws located on each turret knob.

- The arrows on the dial show which direction they will move the bullet.  
Turn the adjusting screws according to the MOA scale on the dial.

The Sweet 22™ is 1/4 MOA, that means one click will move the bullet 1/4" at 100 yards. (Note, if you zero at a different yardage, say 50 yards, one click will move the bullet only 1/8" at 50 yards.)

Once you have adjusted the windage and the elevation, you are now ready for another 3 shot group. Repeat this process until you are satisfied with the results.

**Note:** It is important to allow the barrel to cool down in between the three shot groups as heating of the barrel can cause bullet flight to vary. It is also recommended to swab the bore between shots with a dry patch to reduce buildup. DO NOT use any cleaning fluid or oil on the swab as this can affect bullet flight. If you are sighting in the firearm for hunting deer, you may want to adjust the elevation an inch or two above bulls eye at 100 yards. This will give your firearm extended range and still keep you in the kill zone at 100 yards and less. After zeroing use the hex wrench provided to remove the windage and elevation drums and reposition them so the that the ("0") lines up with the indicator line on the spindle. Any further windage and elevation adjustments can be made more precisely by calculating the amount of clicks from the zero point.

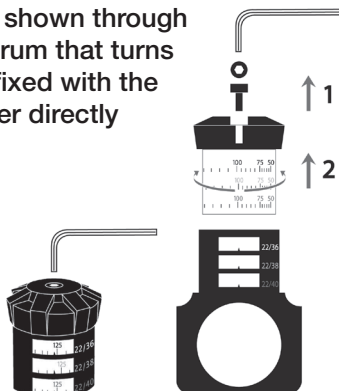
## 5.) BULLET COMPENSATION

The Sweet 22™ is designed using similar technology applied in the sniper trajectory compensation scopes. The elevation drum increments are precisely calculated to compensate for the elliptic drop of a Hornady or Remington .36gr., .38gr., and .40gr. ammunition. Once zeroed at 100 yards you can easily compensate the trajectory of the bullet at any given distance between 100 and 300 yards by turning the elevation drum to the desired distance.

The elevation turret has on outer fixed wall with two window cutouts. Compensation markings for the bullet weight are shown through these cutouts. The elevation turret has an inner drum that turns when adjusted. The outer portion of the turret is fixed with the window cutouts which will always face the shooter directly when the scope is mounted.

Windage turret has an inner drum with markings. Only inner drum turns when adjusted. Outer turret is fixed with a window cutout. Window is always facing shooter.

**SWEET 22™**  
**COMPENSATION DRUM**  
**.36gr., .38gr., and .40gr.**



---

## **6.) PARALLAX CORRECTION**

Parallax is a condition that occurs when the image of the target is not focused precisely by misalignment of shooter's eye on the reticle plane. This condition exists in all scopes and accounts for more enlarging of rifle group sizes than anything else. Parallax is visible as an apparent movement between the crosshairs and the target when a shooter moves their head and changes eye alignment in the scope. The higher the magnification the more visible this is.

The side parallax knob is located opposite the windage knob on the other side of the scope. The parallax has an inner drum with adjustment markings, and a fixed outer turret with a window cutout. Only the inner drum will move when the knob is turned.

Without touching the rifle, move your eye around behind the scope. Do the crosshairs appear to move on the target? If they do, the parallax is not set for the range of the target you are using. Your Sweet 22™ rifle scope has an adjustable parallax knob to correct this at all yardages.

If your crosshairs move to the right on the target's image when you move your head to the left, the image plane must be further away than the crosshairs. Pull the image plane in by turning the knob clockwise and the objective moves closer to you. In this set up, the image is essentially tied to the objective so moving the parallax knob 0.1 mm moves the image 0.1 mm. Adjust outward (counter-clockwise) to pull back.

## **7.) MAINTENANCE**

**DO NOT ATTEMPT TO DISSASSEMBLE OR CLEAN THE SCOPE INTERNALLY. IF THE SCOPE REQUIRES REPAIRS OR ADJUSTMENT, SEE WARRANTY CARD FOR INSTRUCTIONS.**

Start by brushing away dust and dirt particles from the lenses of the scope. Using the included lens cloth designed to clean optical surfaces brush dust or dirt particles away from the center of the lens towards the outside edges.

To remove minor smudges or fingerprints, start in the middle of the lens and using a circular motion clean towards the outside edges of the lens. If more aggressive cleaning is needed put a few drops of liquid lens cleaner on the cloth. Store the rifle scope in a moisture-free environment.

(Note: Not all cloth material like a handkerchief will remove smudges or fingerprints. Round fibers found in many cloth materials will tend to spread smudges and fingerprints. Use cleaning tools specifically designed for rifle scope cleaning).

## **BALLISTIC CHART FOR .36, .38, and .40 GRAIN WEIGHT AMMUNITION**

*BSA Sweet Series are different from any rifle scope on the market.*

*They are engineered for multiple grain weight  
bullet trajectory compensation by caliber.*

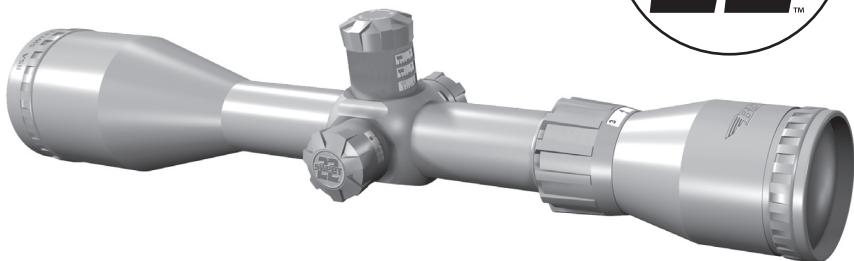
### **BALLISTICS TABLE FOR .22 CALIBER BULLETS**

Caliber	Weight	Bullet Style
0.22	40	Round nose solid
0.22	38	Copper plated HP
0.22	36	Copper plated HP

Caliber	Weight	Velocity					Energy			
		Muzzle	50 yds	100 yds	150 yds	175 yds	50 yds	100 yds	150 yds	175 yds
0.22	40	1260	1110	1010	939	910	109	91	78	74
0.22	38	1280	1123	1019	946	916	106	88	75	71
0.22	36	1255	1106	1007	937	908	98	81	70	66

Caliber	Weight	Trajectory in Inches			
		50	100	150	175
0.22	40	0	-5.6	-19.6	-30.3
0.22	38	0	-5.4	-19.1	-29.6
0.22	36	0	-5.6	-19.8	-30.5

First zero at 100 yards. Once the scope is zeroed, loosen the top elevation drum screw and rotate the drum until the 100 yards marking matches the zero marking (vertical line under drum). **Once this is done, the screw must be retightened.** After these simple steps you can easily compensate the trajectory of the bullet to any given distance between 100 and 300 yards by turning the elevation drum to the desired distance.





©2009 BSA Optics, Inc.  
Ft. Lauderdale, FL 33314 USA  
[bsaoptics.com](http://bsaoptics.com)  
Printed in China  
BSA Sweet 22 Manual-5.indd  
RD031609