

Specter DR 6x/1.5x Dual-Field-of-View Optical Sight Operation Manual



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DESCRIPTION, DATA AND OPERATION

1.1 DESCRIPTION

The **Specter DR** Optical Sight is a fast, ambidextrous switching, dual 6x and 1.5x optical telescopic rifle sight which mounts on a MIL-STD-1913 rail. The optical sight consists of a single main housing that includes the dual field of view optics and the integral mount assembly. This design places all of the optics in a sealed, hardened optical housing protected from the environment. All mechanical adjustments of the sight are controlled by the elevation and azimuth zeroing mechanisms in the mount assembly.

The optical housing has a 42mm objective lens and an 7mm diameter exit pupil, which provides excellent vision in low light levels. It also provides for rapid target acquisition and identification at short, intermediate, and long ranges.

The sight incorporates LED's for red dot and reticle illumination under CQB or low light conditions.

The ballistically compensated reticle consists of a cross hair / centre dot with horizontal stadia lines for shooting at various ranges.

A Vertical Subtention Optical Rangefinder (VSOR) is incorporated within the field of view for additional ranging capability.

The exterior has a Cerakote Ceramic Coatings external finish.



Figure 3-1. Selected Overall Views

The mount has two levers which fasten the sight to the MIL-STD-1913 rail and allow the sight to be removed and reattached without the need to re-zero. The mount is adjustable for zero in both elevation and azimuth (windage).

The mount is designed to withstand rough usage in operation. Anti-backlash springs in the elevation and azimuth mechanisms permit flexibility and always return the sight to the zero position. A tension spring between the optical main body and the mount rail grabber removes vertical movement by applying tension to the two halves of the mount.

Movement between the optic and the mount is normal due to this spring.



Figure 3-2. Long Eye Relief

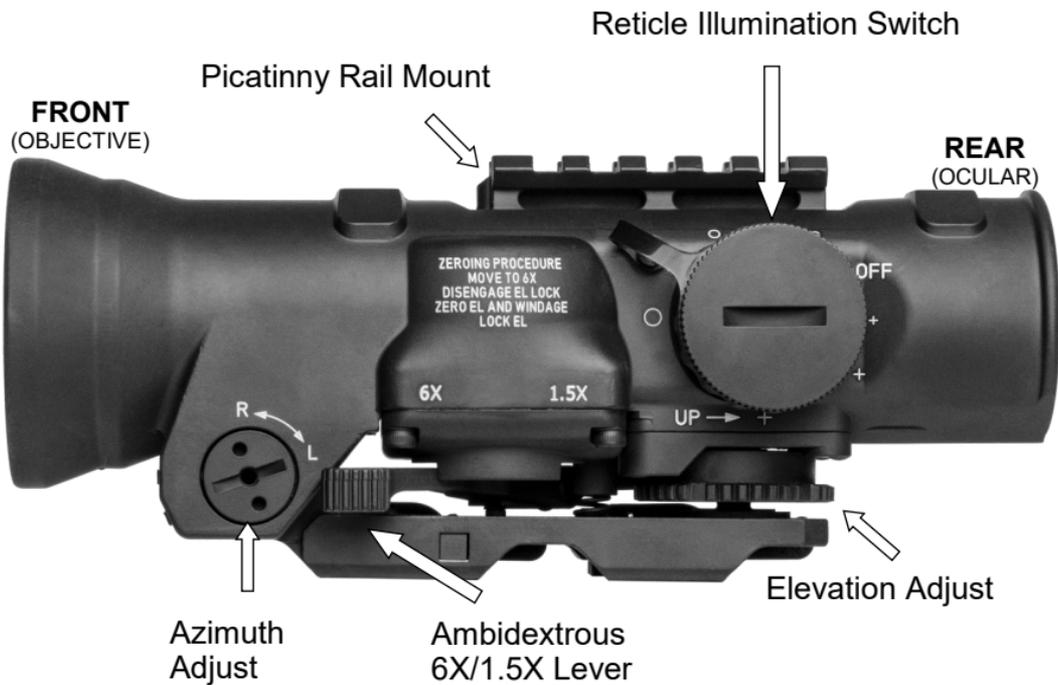


Figure 3-3. Left Side View And Selected Controls

1.2 TECHNICAL SPECIFICATIONS (Nominal)

Specification		
Fixed Magnifications	1.5x	6x
Field of View	16°	4°
Entrance Optic Diameter	42.4mm	
Exit Pupil	7.0mm	
Eye Relief	2.76 inches (70mm)	
Optical Axis Height	39mm	
Zeroing Range	±60 MOA	
Zeroing Click Size	½ MOA	
Mount Compatibility	MIL-STD-1913	
Mount Attachment	A.R.M.S. Levers	
Weight With Mount	709g	
Length, Width, Height	184mm x 63mm x 73mm	

Picatinny Top Rail	MIL-STD-1913
Aiming Point	1.5 MOA / 6 MOA Dot
Reticle Pattern	Ballistic compensated crosshair
Illumination	LED
Operating Temp	-40 to +65 °C
Storage Temp	-40 to +85 °C
Chemical	NBC & Cleaning
Salt Fog	>40 hrs. @ 5%
Battery Life Dot	CR2032 (1730 hrs #4 setting)
Battery Life Reticle	CR2032 (1208 hrs #4 setting)
Finish	Cerakote Ceramic Coatings

1.3 SPECTER DR CONTROLS

1.3.1 Changing The Battery

The battery cap sits on top of the Illumination Rotary Switch.

To change the battery, remove the battery cover using fingers, a coin or enclosed battery cap tool and rotate counter clockwise until the cover is removed.

Place a new CR2032 Lithium battery into the compartment with the “+” terminal facing out. (Figure 3-4)

The battery cap should be **tight** to ensure internal parts make contact.



Figure 3-4. Battery Replacement

1.3.2 Reticle Illumination Switch (Figure 3-5, 3-6)

Rotation of the knob illuminates the reticle to varying levels of brightness.

The illumination will turn off between settings.

Reference marks on the housing indicate the operating positions of the switch.

1. Counter Clockwise from off, illuminates the Red Dot with 5 intensity levels – 2 for Night Vision equipment use, and 3 for low light and day time use.
2. Clockwise from off, illuminates the drop reticle with 5 intensity levels – 2 for Night Vision equipment use, and 3 for low light use.

The red dot illumination will be noticeably brighter than the full reticle illumination. When in full reticle illumination mode, the illumination does not fully extend to the outer portion of the reticle.

NOTE: The Specter DR is designed for use with forward mounted night vision such as the AN/PVS-22

1.4 RETICLE ILLUMINATION MODES

The Specter DR provides two reticle modes:

1. A Red Dot at the centre of the crosshairs
2. A Range Estimating and Drop Compensation Reticle

Each reticle mode has multiple brightness settings and are set by the Illumination switch on the left side of the sight. (Figure 3-6)

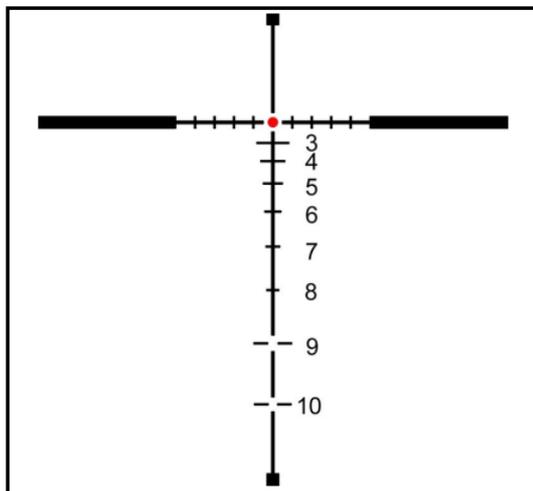


Figure 3-5. Illuminated Ballistic Reticle and Red Dot.

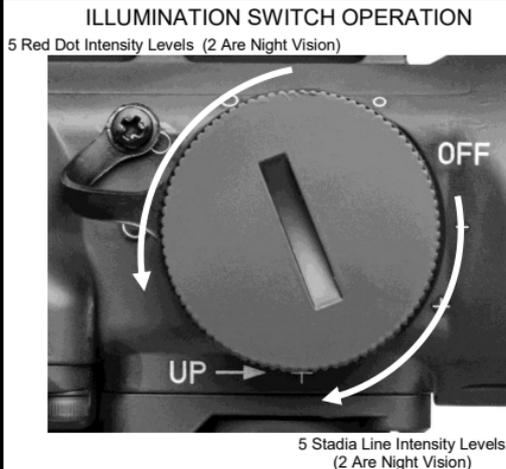
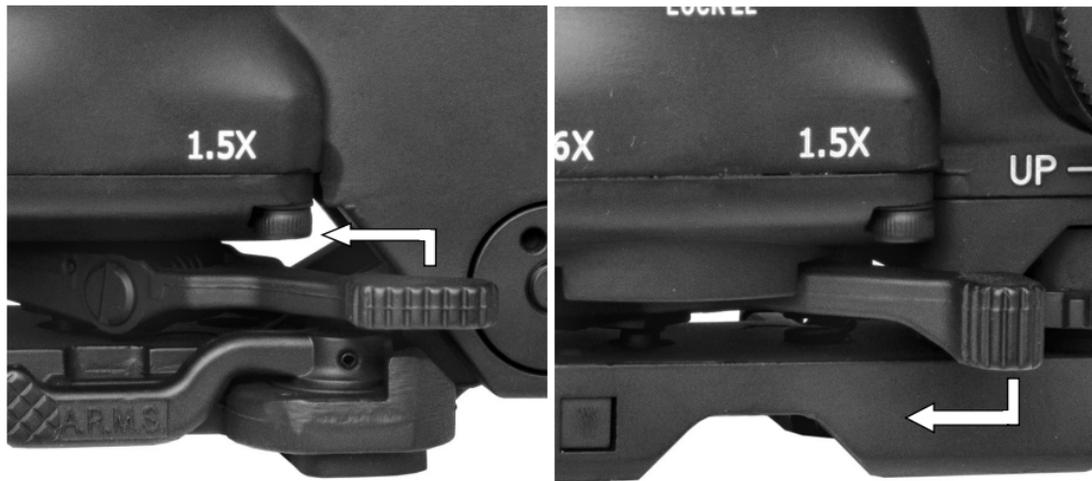


Figure 3-6. Rotate The Illumination Switch To Desired Reticle Brightness Setting.

1.5 6x/1.5x AMBIDEXTROUS LEVER OPERATION

To change magnification on the left side, flip the 6x/1.5x Switch Lever **DOWN** and forward (6x magnification), or down and backward (1x magnification). To change magnification on the right side, flip the 6x/1.5x Switch Lever **UP** and backward (6x magnification), or **UP** and forward (1.5x magnification). Sight zero and the eye relief are not affected.



NOTE: For silent operation, hold onto the lever and release it gently at its new position.

Figure 3-7. 6x/1.5x Switch Lever Operation

1.6 ADJUSTING EYE RELIEF

Set the magnification lever to the 6x setting. (Figure 3-7)

When viewing through the sight, proper eye relief causes the scene in the field of view to be a circular and sharp image. (Figure 3-8) It may be necessary to move the optical sight either backward or forward on the rifle in order to achieve the correct eye relief for the users natural shooting position. There is no adjustment for eye focus or parallax as they are pre-set at the factory for 300m (6x) and 105m (1.5x)

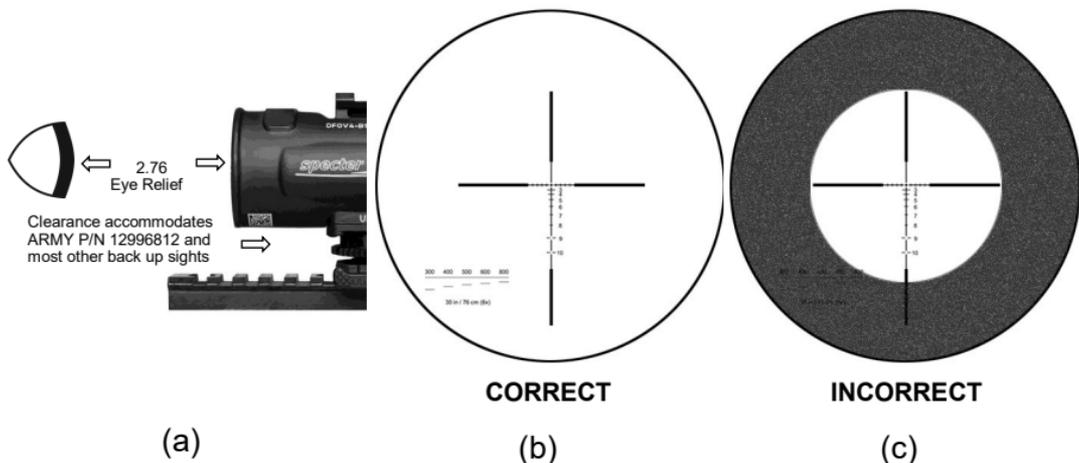


Figure 3-8. (a) Proper 2.76 inches (70mm) of eye relief distance from rearmost glass surface. (b) Image through sight is sharp and circular when eye is placed at or near the proper eye relief distance. (c) Image through sight when eye is too close, or too far from the optimal viewing distance.

1.7 INSTALLATION

Before installing the sight, make sure the rifle is unloaded and safe to handle.

Ensure that the sight is in 6x magnification mode. Assume the normal firing position. Loosen the mount levers until they are perpendicular to the body of the sight.
(Figure 3-9)

Place the sight on top of the rail (but not into a rail notch) and slide the sight along the rail to find the position where a full field of view is visible through the sight (approximately 2.76 inches (70mm) of eye relief) by a minimizing of the tunnel effect of the field of view. (Refer to Section 1.6) Note the position of the sight on the rail.

Once correct eye relief is set, drop the mount slot bar into the closest rail slot and **push the sight to the forward most position within the slot**. Tighten the mount levers in toward the sight body until they are parallel to the sight body. For extra mounting security, the mount provides slots to accommodate plastic or wire tie wraps so that the levers can be locked into their closed position.

The optical sight now has to be zeroed to align the point of aim with the point of impact of the bullet.

NOTE: A common mounting position is with the ocular end of the optic in line with the charging handle on the rifle.



To fully disengage the A.R.M.S levers, rotate them to a 90° position with respect to the sight body. Place sight onto rail as shown. Close levers to lock sight onto rail.

Figure 3-9. Levers Lock Sight To MIL-STD-1913 Rail

1.8 ZEROING

Zeroing should be performed in 6x Magnification at 100 meters.

It is recommended that the marksman fires three-round groups and make adjustments based upon the estimated geometric centre of those groups.

Azimuth zeroing adjustments are performed by placing a coin or fitted tool into the windage screw and rotating the screw clockwise or counter clockwise.

Azimuth zeroing uses the windage screw found at the front of the mount.

Rotate the front left windage screw clockwise to move the point of impact to the left, or counter clockwise to move to the right. Each click of the windage screw moves the point of impact by one-half MOA (approximately 1/2" at 100 yards). (Figure 3-10)



Figure 3-10. Azimuth & Elevation Zeroing Adjusts

Elevation zeroing uses the elevation dial at the bottom rear of the mount under the eyepiece. Unlock the zeroing lock (silver tab) by raising it up as far as it will go. **Be sure that the lock pin at the bottom of the zeroing lock is fully disengaged from the elevation dial to avoid damage.** (Figure 3-11) This lock should always be engaged (pushed down) when not zeroing.

Adjust the elevation dial as required. Each click of the elevation dial moves the point of impact by one-half MOA (approximately 1/2" at 100 yards). Turn the dial to the **Right** to **Raise** the point of impact, turn to the **Left** to **Lower** the point of impact.

The windage and elevation adjustments have been pre-set for you for an approximate zero by Armament Technology Inc.

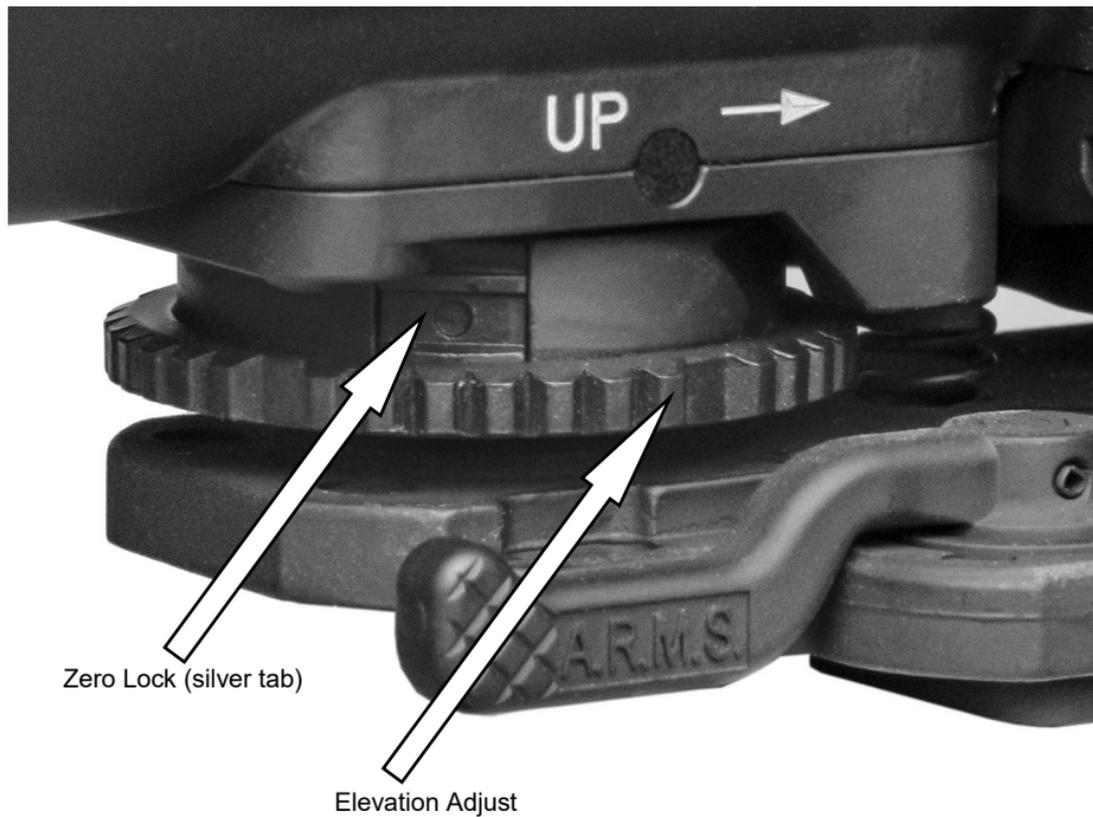


Figure 3-11. Elevation Zeroing Adjustment

RANGE IN METRES	MPI MOVEMENT IN mm PER CLICK OF ADJUSTMENT	APPROXIMATE MPI MOVEMENT IN INCHES PER CLICK OF ADJUSTMENT
	AZIMUTH or ELEVATION (½ MOA)	AZIMUTH or ELEVATION (½ MOA)
25	4	0.1
50	7	0.3
100	15	0.6
200	29	1.1
300	44	1.7
400	58	2.3
500	73	2.9
600	87	3.4
700	102	4.0
800	116	4.6

Table 4-1. MPI Movements For Each Click Of Sight Adjustment

1.9 TARGETING MODES

The Specter DR provides three ways of targeting for maximum flexibility:

1. **CQB** – 1x Magnification with a 6 MOA illuminated red dot.
2. **Long Range Red Dot** – 6x Magnification with a 1.5 MOA illuminated red dot.
3. **Long Range Crosshair** – 6x Magnification with an illuminated ballistically compensated and ranging reticle. (Figure 3-12)

NOTE: Cross hair does not illuminate across the entire reticle.

1.10 RETICLE & RANGING

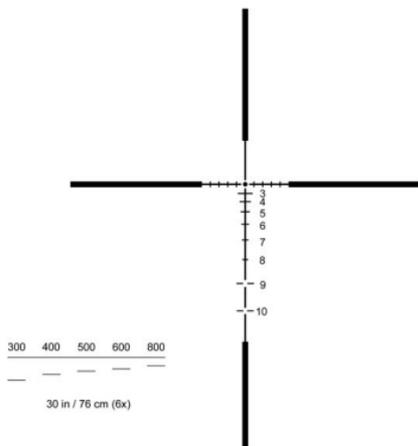


Figure 3-12. Reticle - Calibrated for 5.56 NATO 62 GR FMJ or 7.62 NATO 147 /168 GR

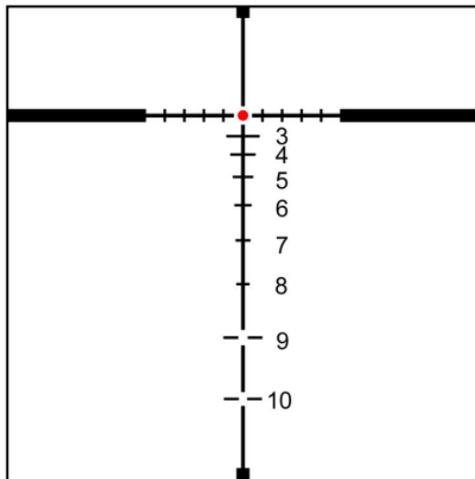


Figure 3-13. Reticle Detail (not to scale)

The reticle of the Specter DR provides the marksman with easily located aiming marks to designate the target at both short and long ranges.

For ranging capability in 6x, each stadia line represents 19 inches (48cm) of width at indicated ranges and the diameter of each circle represents 70 inches (178cm) of width.

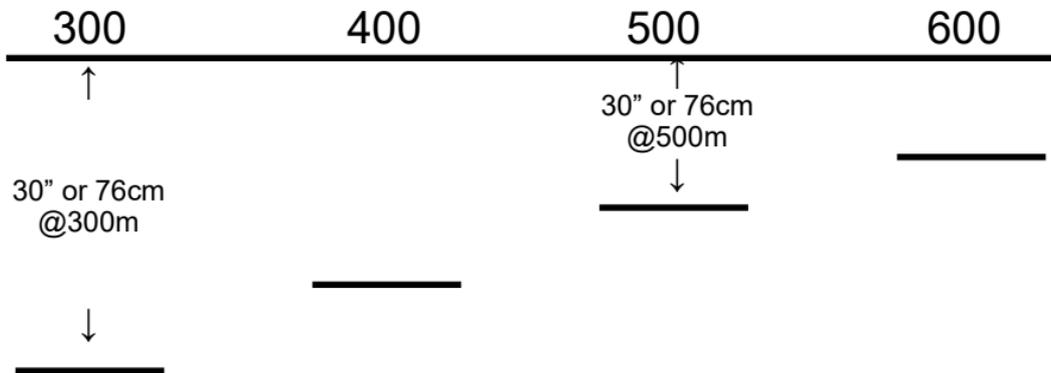


Figure 3-14. VSOR Rangefinder

1.11 USE OF THE VSOR RANGEFINDER

The Vertical Subtention Optical Rangefinder (VSOR) allows the marksman to estimate the distance to targets by matching the height of a known object within the field of view. The vertical distance for range estimation is 30 inches (76cm). By selecting the set of rangefinder lines that best fit a 30 inch (76 cm) object, the marksman may read the correct range at the top of the rangefinder. Once the range is known, the marksman may engage targets at that range by aiming from the appropriate ballistic aiming mark in the reticle.

MAINTENANCE

2.1 CARE & CLEANING

To clean the lenses, use lens paper or a clean optical quality cleaning cloth and wipe in a circular motion using light pressure.

Should these materials not be available, a clean cotton cloth moistened with alcohol will suffice.

Apply only a light downward pressure on the cleaning material.



DO NOT use fingers to clean lenses.

DO NOT immerse the Specter DR sight in solvents.

DO NOT use hot water to clean the sight.

If mud or hardened dirt are on or near the lens, flush with cold or warm water and gently wipe with a moistened tissue. Repeat this procedure if necessary.

2.2 AVAILABLE ACCESSORIES

ARD (Anti Reflection Device) - Black or FDE



Objective Adapter Ring -
Required for flip cover installation
if ARD is **NOT** used.



Figure 3-15. Proper ARD Alignment

Flip Covers - Solid Black or FDE, Tactical Clear and Amber See-through Covers.



Bikini Covers - Black or FDE



Adjustable A.R.M.S Levers



XOPTEK Mini Red Dot





Specter DR Optical Sight featuring an ambidextrous 1.5-6 lever and optional XOPTEK mini red dot.

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