

**Operator's and Maintainer's Manual
for the**

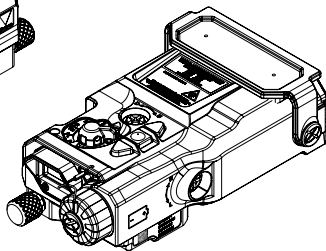
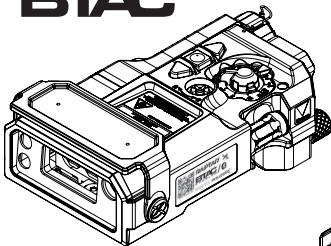
WILCOX[®]
RAPTAR X₃
TM

*Rapid Targeting & Ranging Module
- Enhanced*

PN: 68500G01 - High Power, Red Laser

CAGEC: 004F1

BTAC[®]



ERGOCTO[®] X₃
TM



OSHA LASER OPERATOR SAFETY REQUIREMENTS

Inside the United States, State and Federal OSHA require the operation of Class 3B laser products to occur only under a formalized laser safety program as defined in ANSI Z136.1 Compliance with OSHA requirements are the sole responsibility of the purchaser/user.

Many countries have similar safety of use requirements. Reference the International IEC 60825 part 14, User's Guide for Laser Safety, outside the US.

FEDERAL RESTRICTIONS ON CLASS 3B WEAPON SIGHTS

This product is in conformity with performance standards for laser products under 21 CFR 1040, except with respect to those characteristics authorized by FDA-XXXX-V-XXXX.

The following restrictions apply:

- The sale of this product is restricted to Federal, State, or local government law enforcement agencies only, through a direct purchase order and shall not be sold to individual personnel of these agencies or organizations.
- Immediately terminate laser emissions if optical aids (e.g., monocular, binoculars, weapon mounted optics, telescopes, etc.) are in use near the laser termination or its beam path. It is necessary and intended that the invisible beam emitted by this device be viewed by the user through night vision equipment.
- The purchasing organization must maintain a property log that lists the type and number of each device owned and the responsible party having control of these devices, and must maintain an active training program for its employees in the safe use of the laser system.
- Batteries shall be removed when the product is not intended to operate in order to prevent unauthorized use.

▲ WARNING ▲

You are required to thoroughly read all instructions and product safety information in the *RAPTAR Xe* Operator's Manual before using this product. **FAILURE TO COMPLY WITH PROPER INSTRUCTIONS COULD RESULT IN PROPERTY DAMAGE, INJURY, AND/OR DEATH.** Wilcox is not responsible for damages resulting from improper use and/or maintenance. Customers may obtain a copy of the Manual from the Wilcox website by scanning the QR code on the product.

This product contains technical data as defined in the International Traffic in Arms Regulations ITAR 22 CFR 120.10. Export of this material is restricted by the Arms Export Control Act 22 U.S.C. 2751 et seq. and may not be exported to foreign persons without prior written approval from the U.S. Department of State.

BLACK & WHITE - NO GRAY!™

SAFETY SUMMARY

S1. GENERAL SAFETY INSTRUCTIONS

WARNING and CAUTION statements have been strategically placed throughout the text to indicate operating or maintenance procedures, practices, or conditions considered essential to the protection of personnel (WARNING) or equipment and property (CAUTION). NOTES emphasize necessary and important data. WARNINGS, CAUTIONS, and NOTES appear throughout the text as applicable.

S2. WARNINGS, CAUTIONS, AND NOTES

Definitions for WARNINGS, CAUTIONS, and NOTES are as follows:

▲ WARNING ▲

Highlights an operation or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury to or death of personnel.

■ CAUTION ■

Highlights an essential operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in damage to or destruction of equipment or loss of mission effectiveness.

NOTE

Highlights an essential operating or maintenance procedure, condition, or statement.

S3. SAFETY PRECAUTIONS

▲ WARNING ▲

Laser Safety

- **The *RAPTAR Xe* features Class 3B laser products which emit visible and infrared (IR) laser radiation from the front end of the device when ranging (refer to Section 2.6 for technical data). Both visible and IR laser light can be dangerous if misused. Laser light reflected or refracted off mirrored surfaces may be equally harmful.**
 - **Never stare into a laser.**
 - **Never point lasers or range finder at someone's eyes.**
 - **Do not aim lasers at personnel or mirrored surfaces.**
 - **Never point the lasers at other persons as Class 3B lasers may cause skin irritation.**
 - **Do not look at a laser through telescopes, binoculars, scopes, image intensifiers, etc. as doing so increases radiation and can cause permanent injury.**
 - **Direct eye exposure to a laser may cause permanent eye damage, including blindness. Special glasses for filtering laser light must be used if protection from laser radiation is required.**
- **Prolonged activation of lasing and ranging equipment may increase the detection probability by hostile forces to the end user.**

▲ WARNING ▲

- If the system has been under solar loading conditions, the environmental sensor readings may become less accurate. Confirm the environmental data before finding the ballistic solution.
- The illuminating beam of the laser emitting from the *RAPTAR Xe* indicates the area of approximate round impact, provided the co-alignment and optic boresighting (BZO) procedures have been properly followed and attained. Be aware of the direction in which the *RAPTAR Xe* is pointed, as well as the direction of the intended target, prior to ranging or firing the round.
- Visible and infrared (IR) laser beams are more visible when used in smoke, fog, and rain, making them more easily detectable by onlookers or observers. When used in these environments, prolonged activation of the lasers should be avoided.
- Due to the high reflectivity of the nVisti[™] target, the IR laser should never be used in conjunction with an nVisti[™] target to perform alignments. Such usage could result in eyesight damage. Operate the *RAPTAR Xe* in the Visible Low Power Mode when performing this procedure.

▲ **WARNING** ▲

- **Make sure the weapon is CLEAR and on SAFE before installing the *RAPTAR Xe* on a weapon in accordance with the weapon's operator's manual and that the *RAPTAR Xe* is powered off with the lens cap on when performing any maintenance. Failure to do so can result in property damage, injury, and/or death.**
- **Operation without the Blue High Power Lockout Screw allows the *RAPTAR Xe* to function in High Power Mode. High Power Mode increases laser radiation which can cause injury.**

Usage Safety

- **For guidance on the proper use of lasers, refer to ANSI Z136.1, "Standard for Safe Use of Lasers", American National Standards Institute.**
- **Do not operate the device if laser covers are missing, if the unit is defective, or if the laser port cover or seal is damaged.**
- **Always make sure the primary battery is removed prior to mounting the *RAPTAR Xe* to or dismounting it from the primary weapon or when performing service.**
- **When mounting the *RAPTAR Xe* to a weapon or to a new rail position, it is necessary to properly co-align the *RAPTAR Xe* to the weapon and/or optic for aiming accuracy.**

▲ **WARNING** ▲

- **When handling a weapon fitted with a *RAPTAR Xe*, ALWAYS keep the muzzle pointed down range and clear of all personnel.**
- **You are required to thoroughly review and understand the operational and maintenance procedures outlined in this manual prior to operating the device.**
- **This device contains a Bluetooth interface which transmits radio frequencies that may be discoverable by enemy forces. To turn off the Bluetooth transmitter, refer to instructions in Section 3.8.2.**

Maintenance Safety

- **This device may emit laser radiation when the product body is opened. Do not open product body.**

Battery Safety

- **Lithium batteries should be handled in the following manner:**
 - **If the battery compartment becomes hot to touch and you hear a hissing sound (i.e., battery venting), IMMEDIATELY turn off the equipment. Wait until battery has cooled before removing it, then replace with a fresh battery.**
 - **DO NOT heat, puncture, disassemble, test for capacity, short circuit, attempt to recharge, or otherwise tamper with battery.**

▲ **WARNING** ▲

- **Batteries have a safety vent to prevent explosion. When they are venting gas, you may hear the sound of gas escaping. When safety vents have operated, batteries are fairly safe from bursting but will be hot and must be handled with care.**
- **DO NOT use batteries that look bulged or have burst. Turn these batteries in to your Property Disposal Office. Contact your Unit Safety Officer for help with bulged or burst batteries.**
- **DO NOT use water to extinguish lithium battery fire.**
- **Lithium batteries can explode or cause burns if disassembled, shorted, recharged, or exposed to fire or high temperatures. Handle with care.**
- **Do not store the *RAPTAR Xe* with battery installed.**
- **It is recommended that the battery be replaced and that the startup procedures for the *RAPTAR Xe* be conducted prior to each operation (see Section 4.2).**

■ **CAUTION** ■

Laser Safety

- The *RAPTAR Xe* G01 model features Class 3B lasers. Refer to Laser Safety Tables in Section S4 for eye safety specifications. **ALWAYS** turn off the *RAPTAR Xe* and replace lens covers when the unit is not in use. Follow all eye and skin safety guidelines for Class 3B lasers to avoid injury to the operator or others.
- **CAUTION** - Use of Controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- Follow proper safety precautions and procedures regarding use of target alignment material and optical devices during laser use. Refer to organizational procedures, instructions, and directives.

Usage Safety

- When opening or closing the battery compartment, make sure moisture is not allowed into the compartment.
- For proper targeting, it is recommended that the Visible Laser be used for boresighting the *RAPTAR Xe* to the weapon optic.
- When performing a Compass Calibration, make sure you slowly turn the device horizontally, vertically, and longitudinally for the minimum time required. Refer to Section 3.8.1 for specific calibration procedures.

■ **CAUTION** ■

Maintenance Safety

- The **RAPTAR X_e** contains no serviceable internal parts. Maintenance, adjustments, or attempted repairs to the **RAPTAR X_e** other than those expressly described in this Operator's and Maintainer's Manual will void the warranty and affect product performance. Notify your unit armorer if repairs outside the scope of this manual are required.

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NOTE
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Laser Safety

- It is recommended to mount the **RAPTAR X_e** to an integrated high quality specification rail system to optimize the designed performance of the system.
- It is recommended that the Low Power Visible Laser be used for coaligning the laser to the optic.
- The **RAPTAR X_e** contains no serviceable internal parts and is programmable only by a Wilcox Factory Technician. Adjustments or attempted repairs to the **RAPTAR X_e** other than those expressly described in this Operator's and Maintainer's Manual will void the warranty and could void the user's authority to operate the equipment.
- Ensure that the Mode Selection Knob is set to the "OFF" position when not in use to avoid inadvertent battery drain.

NOTE

- When the *RAPTAR Xe* is powered on, the integrated Bluetooth interface will automatically begin attempting to connect to paired third-party devices unless disabled in *RAPTAR Xe* Settings. These radio transmissions may be observed by non-paired devices.
- For best performance, Wilcox recommends mounting the *RAPTAR Xe* at the 12 O'Clock position, preferably to the top of the primary scope.
- When ranging in the Laser Range Finder (LRF) "Enhanced" configuration setting, responses may be slightly slower. Wait for a response before re-ranging.
- Bluetooth communication is not the most reliable means of data transmission. If an error message displays while downloading gun profiles, power cycle the *RAPTAR Xe* and redownload using the previously selected transmission option.
- When using the Kestrel 5700 with the *RAPTAR Xe*, it is recommended that the Kestrel has been updated to the latest software (tested with Kestrel firmware version 1.47).

Usage Safety

- This Operator's and Maintainer's Manual should always accompany the product and be transferred with it upon change of ownership.
- A Laser Boresight Kit is required for optimal zeroing of the weapon.

NOTE

- If the **Lens Cover** is not removed before the **RAPTAR X_e** is activated and the unit is configured for automatic display brightness, the display may be too dim to read. Refer to **Section 3.10** for instructions on changing display brightness.
- The **Adjust Mode** times out after five seconds of inactivity. Laser power settings are saved and persist through unit power cycling.
- If you wish to exit the **Ballistics Menu** at any point in this process, simply rotate the **Mode Selection Knob** out of the **Main Menu**.

Maintenance Safety

- Do not use harsh abrasives or chemicals such as acetone to clean the **RAPTAR X_e**. Any questions about appropriate chemicals should be directed to **Wilcox Customer Service**.

Battery Safety

- Make sure the **Mode Selection Knob** is set to the “OFF” position prior to changing batteries for user safety and when the unit is not in use to avoid inadvertent battery drain.
- Periodically inspect the **Battery Compartment O-ring**. If a **Battery Compartment Cap O-ring** becomes cut, nicked, or torn, replace the **O-ring** in accordance with instructions in **Section 4.3**.

S4. LASER RADIATION OUTPUT PARAMETERS**Table S4-1. RAPTAR Xe (G01) Product Performance Specifications**

	VIS Aim (G01 Model) Red Laser		IR Aim		IR Illuminator		LRF
	Low	High	Low	High	Low	High	
Wavelength [nm]	660		850		860		1550
Divergence [1/e] [mrad]	<5		<5		<25		0.8
Nominal Output Power [mW]*	<0.7	75	<0.7	30	<0.7	90	350 nJ/ Pulse

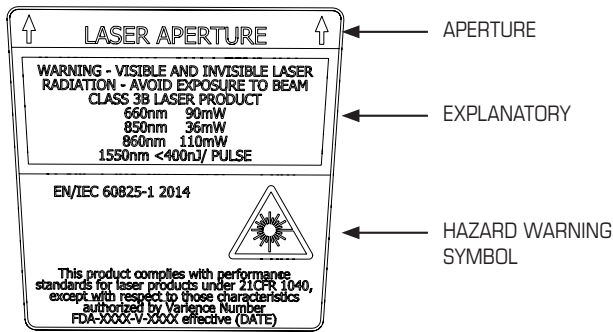
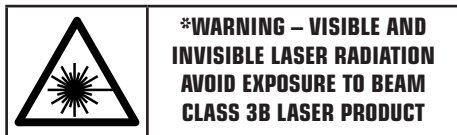
*Nominal Output Power is subject to +/-10% tolerance.

Table S4-2. RAPTAR Xe (G01) Laser Safety Specifications

	VIS Aim (G01 Model) Red Laser		IR Aim		IR Illuminator		LRF
	Low	High	Low	High	Low	High	
Wavelength [nm]	660		850		860		1550
Divergence [1/e] [mrad]	0.28		0.28		17		0.8
Maximum Output Power [mW]*	<0.7	90	<0.7	36	<0.7	110	<400 nJ/ Pulse
NSHD [m]	0	21	0	0	0	0	0
NOHD [m]	0	236	0	170	0	5	0
OD	0	2.0	0	1.7	0	2.2	0
NOHDe** [m]	0	1570	0	995	0	28	0
ODE**	0	2.0	0	1.6	0	2.0	0
Diode Power [mW]	110		50		150		
MPE [mW/cm ²]	2.600		1.995		2.089		

*This table is intended for laser safety guidance. Values in table exceed the set nominal values of the laser product.

**NOHDe and ODe are calculated using standard 7x50 Binoculars as the aided viewing optics.

S5. SYMBOLS**Figure S5-1. Laser Safety Label**

**OPERATOR'S AND MAINTAINER'S MANUAL
TO SOFTWARE VERSION CROSS-REFERENCE**

When utilizing any version of the *RAPTAR Xe*, it is critical to reference the correct version of the Operator's and Maintainer's Manual for the software version that you are using. The following table provides a cross-reference for tracking Operator's and Maintainer's Manual release revision numbers to software revision releases.

Manual Rev.	<i>RAPTAR Xe</i> Software Rev.
A-1	01.00
A-2	01.01, 01.02
A-3	02.01
A-4	02.02
A-5, A-6	02.03

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PREFACE

1. SCOPE. The purpose of this Operator's and Maintainer's Manual is to assist the Operator in the operation and maintenance of the ***Wilcox Rapid Targeting & Ranging Module - Enhanced (Wilcox RAPTAR Xe[™])***, hereby referred to as ***RAPTAR Xe***.

The information in this manual should not replace the experience of a trained operator. Keep this manual and all safety instructions for future use. The information must be provided to each product user.

2. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATION. Wilcox requests that all errors, omissions, and discrepancies be forwarded to: Marketing Department, Wilcox Industries Corp., One Wilcox Way, Newington, NH 03801. To submit feedback by e-mail, visit **www.wilcoxind.com/contactus**.

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SECTION 1

OVERVIEW

1.1 GENERAL SAFETY WARNINGS

The **RAPTAR Xe** should not be used by anyone unfamiliar with its operation.

This manual contains specific operating and maintenance instructions which the operator should become familiar with before actual field usage.

The Safety Warnings in this Operator's and Maintainer's Manual are intended to point out the dangers that are common in handling this type of equipment. **Failure to observe any of these warnings may result in serious physical injury, blindness, or death.** You must familiarize yourself with the entire contents of this manual before using the **RAPTAR Xe**. All general text, WARNINGS, CAUTIONS, and NOTES should be strictly followed.

This Operator's and Maintainer's Manual is intended to provide you with information relevant to the operation of the *RAPTAR Xe*.

It is the responsibility of the operator to read and thoroughly understand the handling and operating procedures for both the *RAPTAR Xe* and the weapon to which it is installed.

Laser Radiation Danger

Lasers built into the *RAPTAR Xe* emit visible and/or IR laser radiation from the front end of the device (see Sections S4 and 2.6 for technical data). Both visible and IR laser light can be dangerous if misused. **Direct eye exposure may cause permanent eye damage, including blindness.** Laser light reflected or refracted off mirrored surfaces may be equally harmful.

- Never stare into a laser beam.
- Never point a laser beam at someone's eyes.
- Do not point a laser beam at mirrored surfaces.
- Do not look at a laser beam through telescopes, binoculars, scopes, etc.

Note the laser radiation warning as displayed on the Laser Safety Label (see Figure S5-1).



Figure 1.1-1 *RAPTAR Xe* Identification Label

First Aid

Administer first aid in accordance with local procedures.

1.2 MODEL NUMBER AND EQUIPMENT NAME

68500G01 **RAPTAR Xe** Red Laser (High Power)

1.3 MANUFACTURER

Wilcox Industries Corp.
One Wilcox Way
Newington, NH 03801 USA

1.4 PURPOSE OF EQUIPMENT

The **RAPTAR Xe** is a modular, battery operated Laser Range Finder with integrated IR, visible red lasers, and ballistic computer used for target acquisition and engagement.

SECTION 2

INTRODUCTION

2.1 PRODUCT DESCRIPTION

The Wilcox *Rapid Targeting & Ranging Module - Enhanced (RAPTAR Xe)* is an enhanced compact, ruggedized, modular, repairable, expandable and lightweight combined package featuring a day/night Laser Range Finder (LRF), IR, and visible designating/aiming/flood lasers with an even more compact design than its predecessor - the Wilcox RAPTAR S. A lockout screw is available for preventing access to the high powered lasers and is stored in the case when not in use.

The *RAPTAR Xe* provides extremely accurate fire control solutions for long range target engagements using the Applied Ballistics Solver. It accounts for all contributing environmental variables including Coriolis, spin drift, and aerodynamic jump, and allows the operator to calibrate the software to match the rifle based upon observed impacts at long range.

An integrated Bluetooth interface provides connection with third party devices, including Android and iOS devices with a compatible BTAC App provided by Blueforce and the Kestrel 5700 weather meter for live data sharing and gun management. Refer to Section 3.17 for further details.

The **RAPTAR Xe** accommodates multiple caliber weapon and ballistic profiles, and can be handheld or mounted to a MIL-STD-1913 RIS/RAS Rail and STANAG-494 Rail. In the mounted arrangement, its low profile lies below the Front Sight Stanchion allowing for front sight use. This low profile also allows for use with rail-mounted optics and sighting devices, as desired. Optional Wilcox Interface Rail Kits are sold separately (contact Wilcox for more information).

Depending upon weapon configuration, the **RAPTAR Xe** may mount to the 9, 12, and 3 O'Clock positions on the MIL-STD-1913 rail using the included standard interface rail.

2.2 LIST OF *RAPTAR X_e* MAJOR COMPONENTS

1. *RAPTAR X_e*
2. Laser Safety Cover
3. Three Button Pressure Pad, 20", Single Cable
4. X_e Utility Tool
5. Storage Pouch
6. Operator's and Maintainer's Manual (Not Depicted)
7. Quick Reference (Not Depicted)

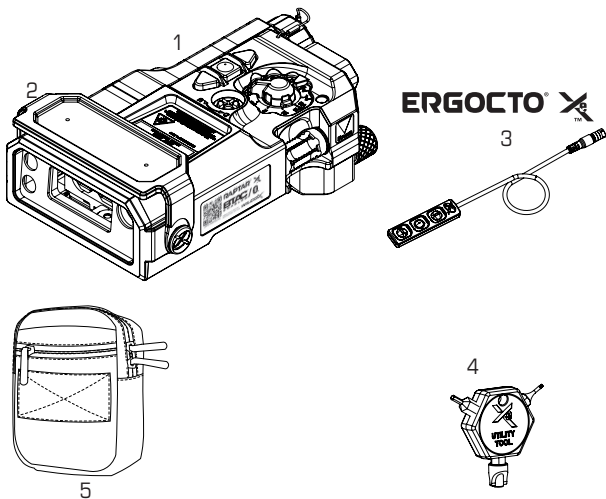


Figure 2.2-1 Major Component Identification

2.3 LIST OF *RAPTAR Xe* SUBCOMPONENTS AND FEATURES

COMPONENTS

- U-1. Control Panel
- U-2. Top Adjuster
- U-3. Mode Selection Knob
- U-4. High Power Lockout Screw
- U-5. OLED Display
- U-6. Control Activation Pad Port and Cap
- U-7. Battery Compartment
- U-8. Battery Orientation Marking
- U-9. Side Adjuster
- U-10. Laser Safety Label
- U-11. Visible Laser Pointer Port (Aperture)
- U-12. IR Laser Pointer Port (Aperture)
- U-13. Range Transmit Port (Aperture)
- U-14. Range Receive Port (Aperture)
- U-15. Variable IR Laser Illuminator
- U-16. Thumbnuts (2)
- U-17. Environmental Sensor
- U-18. Identification Labels
- U-19. IR Flood Focus Wheel

CLEANING KIT

- CK-1. Lens Pen
- CK-2. Cleaning Cloth

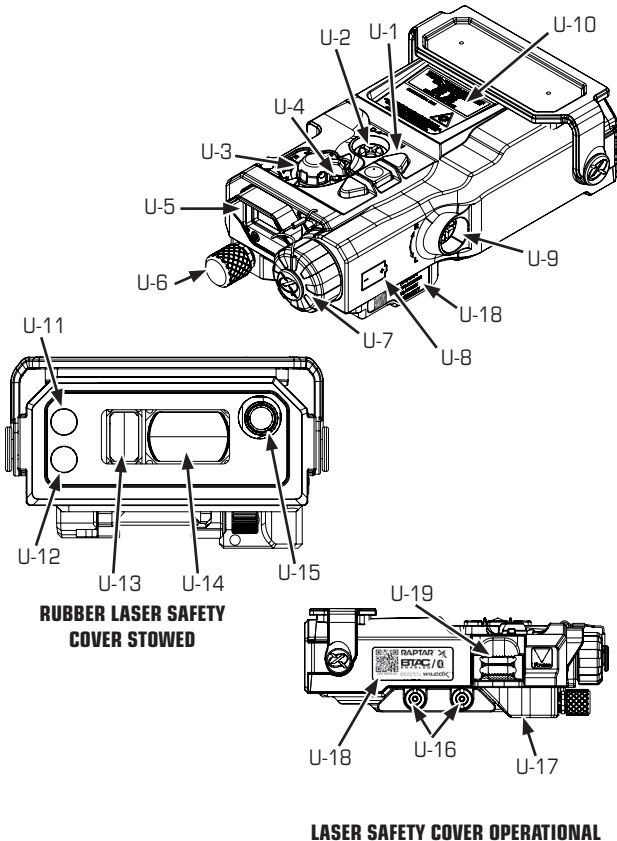


Figure 2.3-1 Subcomponent Identification - RAPTAR Xe

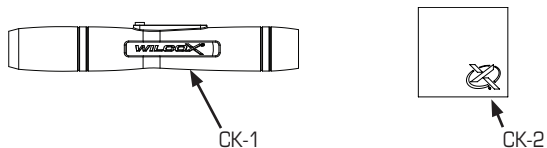


Figure 2.3-2 Cleaning Kit Identification - *RAPTAR Xe*

2.4 DESCRIPTION OF *RAPTAR Xe* MAJOR COMPONENTS

1. ***RAPTAR Xe*** The kit provides one *RAPTAR Xe* rapid targeting and ranging system.
2. **Laser Safety Cover** The *RAPTAR Xe* is provided with a flexible rubber plastic Laser Safety Cover for use according to operator preference to protect the lens from damage and debris.
3. **Three Button Pressure Pad - 20" Single Cable** A three-button Pressure Pad provides control of laser operations. An optional 12" cable configuration is available (refer to Appendix C, Table C-2).
4. **Xe Utility Tool** The Xe Utility Tool features a 5/64 Hex Key for installing and removing the blue Lockout Screw, a T5 Torx key for installing and removing the optional Rail Adapter Screws, and a piloted flathead screwdriver for use when torquing thumbnuts on the Picatinny Rail to prevent slipping and marring of the thumbnuts.

5. **Storage Pouch** The *RAPTAR Xe* Storage Pouch is provided to store the *RAPTAR Xe* when not in use.
6. **Operator's and Maintainer's Manual (Not Depicted)** The *RAPTAR Xe* Operator's and Maintainer's Manual outlines the use and maintenance of the *RAPTAR Xe*. This document is available for download from the Wilcox website by scanning the QR code on the device with a cell phone.
7. **Quick Reference (Not Depicted)** The *RAPTAR Xe* Quick Reference summarizes *RAPTAR Xe* operation. The Quick Reference shall not be considered a replacement to the safety information in this Operator's and Maintainer's Manual. This document is available for download from the Wilcox website by scanning the QR code on the device with a cell phone.

2.5 DESCRIPTION OF RAPTAR Xe SUBCOMPONENTS

U-1. Control Panel The *RAPTAR Xe* Control Panel menu and function buttons provide all of the user interface functions to the device as defined in Table 3.1-3, "Control Panel Button Options".

U-2. Top Adjuster The Top Adjuster allows for easy alignment of the *RAPTAR Xe* to the optic for elevation when the *RAPTAR Xe* is positioned at the 12 O'Clock position or windage if the *RAPTAR Xe* is positioned at the 3 or 9 O'Clock positions and maintains its setting until reset by the operator.

U-3. Mode Selection Knob A Mode Selection Knob allows the Operator to select from among the functional modes, as described in Table 3.1-4. When the Mode Selection Knob is set to a selected mode of operation, the Display indicates the selected operational mode.

U-4. High Power Lockout Screw The High Power Lockout Screw is a removable screw that prevents the Mode Selection Knob from rotating to the high power output mode positions to prevent mode access when it is in place.

U-5. Organic Light Emitting Diode (OLED) Display The OLED Display provides information output and features various brightness levels for day and night operation. Range distances appear in Meter or Yard increments as defined in the Settings Menu.

U-6. Three Button Pressure Pad Port and Cap The Three Button Pressure Pad Port accepts the connector of a Three Button Pressure Pad and features a threaded Port Cap to prevent water entry. The port is conveniently located behind and to the left of the display.

U-7. Battery Compartment The Battery Compartment allows the Operator to access the Battery. An O-ring sealed cover prevents entry of dirt and dust to the compartment when closed. The internal battery compartment houses one (1) CR123 battery (not included). Refer to Section 4.2 for instructions on replacing the battery in the *RAPTAR Xe*.

U-8. Battery Orientation Marking The Battery Orientation Marking defines which direction the *RAPTAR Xe* Battery should be inserted.

U-9. Side Adjuster The Side Adjuster allows for easy alignment of the *RAPTAR Xe* to the weapon and/or optic for windage when the *RAPTAR Xe* is positioned at the 12 O'Clock position or elevation if the *RAPTAR Xe* is positioned at the 3 or 9 O'Clock positions and maintains its setting until reset by the operator.

U-10. Laser Safety Label A Laser Safety Label identifies the laser specifications, laser output direction, and precautions for using the *RAPTAR Xe*.

U-11. Visible Laser Pointer Port (Aperture) The Visible Laser Pointer can be used as a coalignment aid in Low Power Mode and as a target designator in High or Low Power Mode. Refer to Section S4 for laser specifications.

U-12. IR Laser Pointer Port (Aperture) The IR Laser Pointer can be used as a coalignment aid in Low Power Mode and as a target designator in High or Low Power Mode. Refer to Section S4 for laser specifications.

U-13. Range Transmit Port (Aperture) The Range Transmit Port transmits a “send” signal for determining distance to target on the Laser Range Finder.

U-14. Range Receive Port (Aperture) The Range Receive Port receives a signal that is sent from the Range Transmit Port and reflected off of the target at distance, thereby determining distance to target on the Laser Range Finder.

U-15. Variable IR Flood Illuminator Port (Aperture) A Variable IR Flood Illuminator that can be used for targeting. The diameter of the illuminator can be adjusted from a flood to a spot by means of the IR Flood Focus Wheel. Refer to Table S4-2 for laser safety specifications.

U-16. Thumbnuts (2) Two Thumbnuts on the integrated Rail Mount Assembly enables mounting the **RAPTAR Xe** to the weapon using a torque specification of 30 in-lb (see Section 3.2).

U-17. Environmental Sensor The Environmental Sensor provides measurement of temperature, air pressure and humidity for use in calculating the ballistics solution of the **RAPTAR Xe**.

U-18. Identification Labels Product Identification Labels appear on the **RAPTAR Xe** identifies product and manufacturer information.

U-19. IR Flood Focus Wheel The IR Flood Focus Wheel adjusts the diameter of the IR Flood Illuminator, which can be adjusted from a flood to a spot.

CK-1. Lens Pen A Lens Pen is provided for removing loose dirt and debris from the lenses and display screen of the **RAPTAR Xe** after debris has first been gently blown away. DO NOT use the brush for cleaning the mechanical components. For cleaning instructions, refer to Section 4.1.

CK-2. Cleaning Cloth A microfiber Cleaning Cloth is provided for removing any remaining residue from the **RAPTAR Xe** lenses after they have been blown clean of dirt and dust. For cleaning instructions, refer to Section 4, Care and Maintenance.

2.6 TECHNICAL DATA

Table 2.6-1. Technical Data

WEIGHT AND DIMENSIONS	
Operational Weight (w battery and remote)	< 357 grams (12.6 oz)
Dimensions (w battery, rail, and remote)	< 5.25" D x < 3.1" W x < 1.965" H
Sight Plane Above the Rail	1.30"
ILLUMINATOR AND RANGE SPECIFICATIONS (At Ambient Temperature)	
RAPTAR Xe (GO1 - Red Laser): Visible Aiming Laser IR Aiming Laser IR Flood Illuminator Laser Laser Range Finder (LRF) Actual Range Capability	Red (660 nm) <0.7 mW Low to 90 mW Max High 850nm, <0.7 mW Low to 36 mW Max High 860nm, <0.7 mW Low to 110 mW Max High < 400 nJ/pulse 10 to 1500 Meters (0.5 m x 2.0 m Target)
TEMPERATURE SPECIFICATIONS	
Operating Temperature Range	-4° F (-20° C) to 140° F (60° C)
Storage Temperature Range	-40° F (-40° C) to 160° F (71° C)
ADDITIONAL SPECIFICATIONS	
Power Source	One (1) CR123 Lithium Battery (not included)
Battery Life	Over 7 Hrs. on Dual High IR Laser Only
Ranging Operations at 24°C	> 2000 Ranges
Color	Coyote Brown Matte Finish
Water Resistance	Waterproof to 1 Meter for 60 Minutes

SECTION 3

OPERATION

▼ **WARNING** ▲

Follow all safety precautions for laser safety and operation of the cover.

3.1 RAPTAR X_e MENU STRUCTURE

The Settings Submenu within the Main Menu provides the operator the ability to configure the **RAPTAR X_e** to the needs of the current situation. The menu is ordered to provide easy access to items needed more frequently at the top of the menu, while less used options are further down the menu.

To operate the menu, the **Laser/Up** and **Menu/Down** buttons scroll through the menu items. To select a menu item to display or for adjustment, press the **Fire/Range/Enter** button. To exit the Menu, rotate the Mode Selection Knob away from the Main Menu. Additionally, the **Fire/Range/Enter** button is used to select a parameter setting.

To Access RAPTAR Xe Menus:

- Step 1.)** Turn Mode Selection Knob to "M" (Main Menu)
- Step 2.)** Push the **Menu/Down** or **Laser/Up** buttons to select from the Menu Options.
- Step 3.)** Push the **Fire/Range/Enter** button to display the desired Submenu option.
- Step 4.)** Push the **Menu/Down** or **Laser/Up** buttons to select from the Menu Options.
- Step 5.)** Push the **Fire/Range/Enter** button to **Save**.

Table 3.1-1. Settings Menu Options

OPTION	DESCRIPTION
Battery	Displays the currently remaining battery percentage
Brightness	Display Brightness ("Persist" mode allows brightness adjustments to persist when power cycling) Auto [Default] (Levels M2 through M8 only. M1 must be manually selected.) "M1 I" (Dimmest) through "M8IIIIIIII" (Brightest) [Default] "Persist"/"Use Default" (Toggle Between Default or Persistent Operation as Set by the Operator or mid-level brightness when powered up)
LaserBlink	Selects the Laser ID (Blink) Pattern "No Blink OFF" [Default] "Fast Blink 1" , "Fast Blink 2" , "Slow Blink 3" , "Slow Blink 4" , "Fast Triple 5" , "Slow Double 6"
Range Gate	Selects the Range Gate "10" [Default] "0" to "1000" Meters in 10 Meter Increments
Ballistics	Set Ballistic Mode Bal:MRAD [Default] (or MOA or Inches, as Set by Output Options in the Ballistics Menu) - Elevation / Windage Holds Rng: Meters - Only Range in Meters Rng: Yards - Only Range in Yards
Bluetooth	Set Bluetooth On or Off Enable [Default] - Powers on the Bluetooth Board Disable - Powers off the Bluetooth Board for Stealth operation
CompassCal	Perform Compass Calibration
DisplayDir	Rotates Display for Left, Top, or Right Side Mounting Left - Left Side Mounting (9 O'Clock Position) Top - Top Rail Mounting (12 O'Clock Position) Right - Right Side Mounting (3 O'Clock Position)
ScreenSavr	Sets the Duration of Inactivity Before RAPTAR Xe Goes into Screen Saver Mode Off [Default] - Screen Saver Deactivated 1.5 Seconds to 10 Seconds - Duration to Screen Saver Activation (in 0.5 second increments). Pushing any Button Reactivates the RAPTAR Xe .
Self Test	Perform Unit Self Test Operations
Set Default	Set Factory Defaults
Event Log	Display events logged since the system was powered on
About...	Displays software version, hardware configuration
Depot Menu	Allows for power output through the Control Activation Pad Port Power Out - Enable or Disable [Default]
Exit	Allows the Operator to exit the Settings Menu

Table 3.1-2. Ballistic Menu Tree

OPTION	DESCRIPTION
Gun Select	<p>Allows the operator to choose from up to 30 custom user gun profiles and numerous additional preconfigured profiles and to change configuration settings (see Table 3.1-2b).</p> <p>UserGun01 UserGun02 ... UserGun30 Exit</p> <p>* ">" in front of a Gun Profile Name indicates the selected gun profile, while "*" indicates that the Gun Profile has been modified.</p>
Environmnt	<p>Allows the operator to review and manually adjust environmental variables. These include:</p> <p>TP - Air Temperature (C or F) PR - Air Pressure - (mbar or inHg) HM - Humidity (%) WS - Wind Speed (m/s or mph) WD - Wind Direction Exit</p>
Target	<p>Allows the operator to adjust determined target values, including:</p> <p>Rng - Range to Target Inc - Inclination DoF - Direction of Fire Lat - Latitude Exit</p>
Options	<p>Allows the operator to set the displayed format for Ballistic parameters.</p> <p>In - Input Units (English, Mixed [Default], or Metric) Out - Output Units (MILS [Default], Inches, or MOA) Exit</p>
ManageGuns	<p>Allows the operator to send or receive gun configurations between the RAPTAR Xe and Kestrel devices.</p> <p>Send All - RAPTAR Xe to the Kestrel Recv All - Kestrel to RAPTAR Xe Exit</p>

Table 3.1-2b. Gun Selection / Edit Screen Item Descriptions

OPTION	DESCRIPTION
MV	Muzzle Velocity
DC	Drag Curve Custom
BC	Ballistic Coefficient. Auto or provided by manufacturers.
BD	Bullet Diameter
BL	Bullet Length
BW	Bullet Weight (grams)
ZR	Zero Range (BZO)
BH	Bore Height. Measured from center of bore to center of optic.
ZH	Zero Height. Vertical difference between point of aim and point of impact.
ZO	Zero Offset. Horizontal difference between point of aim and point of impact.
RT	Rifle Twist
RTd	Rifle Twist Direction
MV-Temp	Holds the Muzzle Velocity to temp table.
Cal MV	Field expedient way to find MV when unknown.
Cal DSF	Drop Scale Factor. Same procedure as MV True but advanced for longer range shooting.
View DSF	View the Drop Scale Factor.
Clear DSF	Clear the Drop Scale Factor.
Reset Gun	Restores the program; setup numbers in the gun profile.
Exit	Returns to the Select Gun options screen.

Table 3.1-3. Control Panel Button Options







KEY		DESCRIPTION
	Laser/ Up	Activate the selected Laser. Scrolls up in menus.
	Fire/ Range/ Enter	Perform range operations. Display the ballistic solution. Operation within menus varies by menu option.
	Menu/ Down	Enter, select, or exit adjust modes. Scrolls down in menus.

Table 3.1-4. Mode Selection Options

KNOB POSITION	OLED DISPLAY	LOCKOUT AVAILABLE	MODE / FUNCTION DESCRIPTION
0	n/a	NO	Power Off
M	Main Menu	NO	Menu Access for Settings and Ballistics
R	RNG	NO	Range Only Mode
IR AL	AL I	NO	IR Aiming Laser (Low Power)
IR DL	DL I	NO	IR Aiming Laser and IR Illuminator Laser (Low Power)
IR AH *	AH I	YES	IR Aiming Laser (High Power)
IR IH *	IH I	YES	IR Illuminator Laser (High Power Flood)
IR DH *	DH I	YES	IR Aiming Laser and IR Illuminator Laser (High Power Flood)
VIS AH *	AL V	YES	Visible Aiming Laser (High Power)
VIS AL	AH V	NO	Visible Aiming Laser (Low Power)

*High Power Options Inaccessible when Blue Screw Lockout is in Place.

Table 3.1-5. Key Display Indicators

KEY	DESCRIPTION
	Battery Indicator: Four bars = 80%-100%, in 20% increments, with no bars indicating less than 20% power.
B 	Full Battery Indicator with Bluetooth Device Connected.
K 	Full Battery Indicator with Kestrel Bluetooth Connected and Streaming.

3.2 MOUNTING AND DISMOUNTING THE *RAPTAR Xe*

The *RAPTAR Xe* mounts to the 9, 12, and 3 O'Clock positions on the weapon rail using a MIL-STD-1913 Rail Mount by means of two (2) Thumbnuts and a rail grabber. When mounting, make sure the Thumbnuts are secured to 30 in-lb.

▲ **WARNING** ▲

Make sure that the weapon is CLEAR and on SAFE before installing the *RAPTAR Xe* on a weapon, in accordance with the weapon's Operator's Manual, the *RAPTAR Xe* is powered off, and the lens cap is on prior to installation. Failure to do so can result in property damage, injury, and/or death.

To Mount the *RAPTAR Xe* to the Primary Weapon:

- Step 1.)** Fully unthread the two Thumbnuts CCW to loosen the rail grabber.
- Step 2.)** Attach the *RAPTAR Xe* floating rail to the MIL-STD-1913 rail of the weapon.
- Step 3.)** Pivot the *RAPTAR Xe* down so that it sits flat on the weapon rail and the opposite rail grabber is positioned to engage.
- Step 4.)** Turn the Thumbnuts CW using the Xe Utility Tool, alternating between the Thumbnuts for even distribution. 30 in-lb is recommended. Attempt to remove the *RAPTAR Xe* from the rail by pulling to make sure it is securely attached. If not properly attached, retighten.

To Dismount the *RAPTAR Xe* from the Primary Weapon:

Carefully grasp the *RAPTAR Xe* then unthread the Thumbnuts CCW to allow the locking plate to slide, using caution not to release the Thumbnuts from the screw. Pivot the *RAPTAR Xe* away from the rail.

(1) TURN THUMBNUTS CCW TO LOOSEN WITH THE PILOTTED FLATHEAD SCREWDRIVER ON THE Xe UTILITY TOOL.

(2) ATTACH THE INSIDE OF THE FLOATING RAIL GRABBER TO THE OUTER EDGE OF THE RAIL.

(3) PIVOT *RAPTAR Xe* DOWN ONTO RAIL.

(4) RESECURE THUMBNUTS CW USING THE PILOTTED FLATHEAD SCREWDRIVER ON THE Xe UTILITY TOOL AND GENTLY PULL ON THE *RAPTAR Xe* TO MAKE SURE IT IS SECURELY ATTACHED.

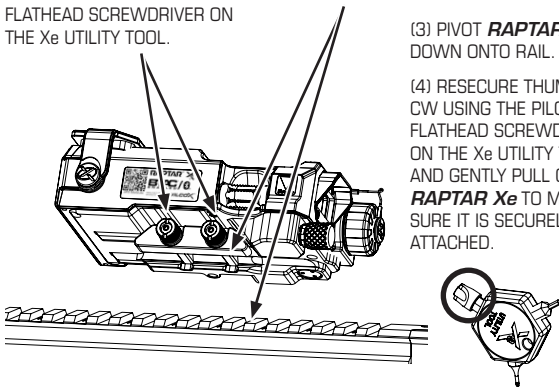


Figure 3.2-1 Mounting the *RAPTAR Xe* to the MIL-STD-1913 Rail (12 O'clock Mounting Depicted)

3.3 INSTALLING THE HIGH POWER BLUE LOCKOUT SCREW ON THE *RAPTAR Xe*

The blue High Power Lockout Screw prevents accidental operation of High Power Lasers when Low Power operation is intended when positioned in the Mode Selection Switch. To prevent accidental discharge of high power lasers, install the blue High Power Lockout Screw.

(1) PLACE THE MODE SELECTION SWITCH IN THE "OFF" POSITION.

(2) INSTALL THE BLUE HIGH POWER LOCKOUT SCREW USING THE 5/64" HEX KEY ON THE *Xe* UTILITY TOOL OR A 5/64" HEX KEY.

WHEN THE BLUE SCREW IS NOT IN USE, THREAD SCREW IN PLACE HERE TO PREVENT LOSS OF THE SCREW.

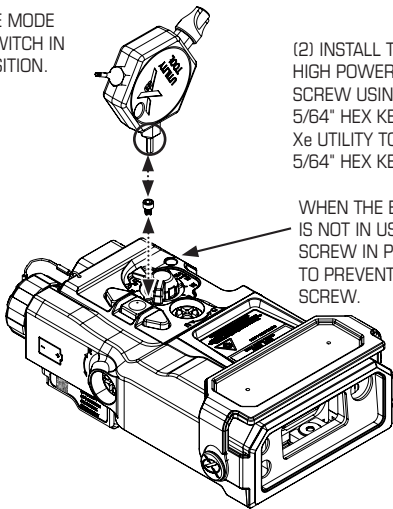
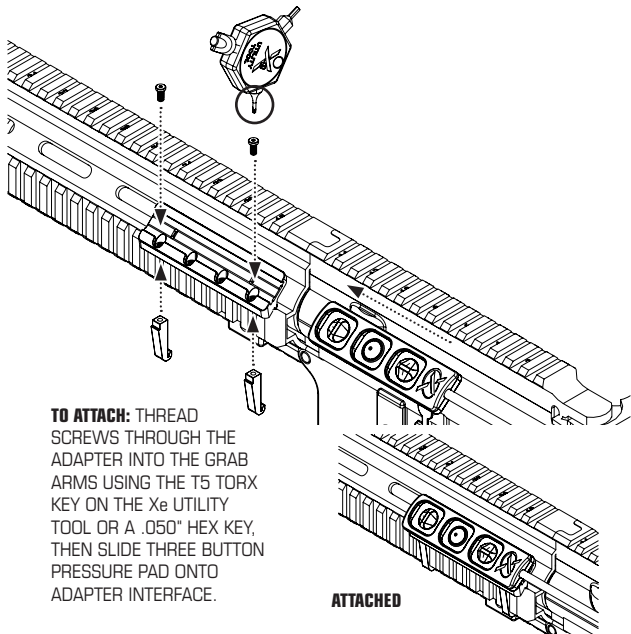


Figure 3.3-1 Installing the High Power Lockout Screw on the *RAPTAR Xe*

3.4 ATTACHING THE OPTIONAL RAIL ADAPTER TO THE WEAPON RAIL

An optional Rail Adapter is available to secure the Three Button Pressure Pad to the side rail for ease of access in operation. The adapter attaches to the rail for use in any of eight (8) orientations on the rail.



TO ATTACH: THREAD SCREWS THROUGH THE ADAPTER INTO THE GRAB ARMS USING THE T5 TORX KEY ON THE Xe UTILITY TOOL OR A .050" HEX KEY, THEN SLIDE THREE BUTTON PRESSURE PAD ONTO ADAPTER INTERFACE.

ATTACHED

Figure 3.4-1 Attaching the Optional Rail Adapter to the Weapon Rail

3.5 ATTACHING THE THREE BUTTON PRESSURE PAD TO THE *RAPTAR Xe*

The Three Button Pressure Pad allows operation of the selected lasers. It attaches to the Control Activation Pad Port on the *RAPTAR Xe* when in use.

TO ATTACH: UNTHREAD THE PORT CAP CCW AND REMOVE. INSERT THE THREE BUTTON PRESSURE PAD CONNECTOR INTO REMOTE CONNECTOR PORT AND PUSH UNTIL IT CLICKS.

TO DETACH: GRASP THE HEAD OF THE CONNECTOR AND PULL OUT. DO NOT PULL ON WIRES. REINSTALL THE PORT CAP.

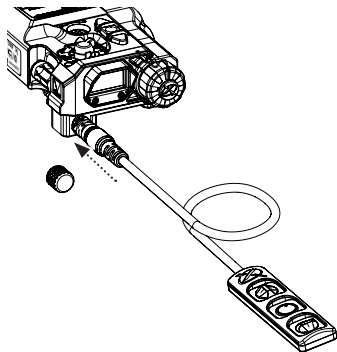


Figure 3.5-1 Attaching the Three Button Pressure Pad to the *RAPTAR Xe*

3.6 PERFORMING *RAPTAR Xe* SETUP

Prior to use of the *RAPTAR Xe*, it is recommended that a setup procedure is followed to make sure all configuration settings have been checked and verified. The following procedure outlines Wilcox's recommended setup steps.

NOTE

If you wish to exit the Ballistics Menu at any point in this process, simply turn the Mode Selection Knob out of the Main Menu.

To Set Up the *RAPTAR Xe*:

Step 1.) Power on the *RAPTAR Xe*. If the display brightness is too bright or dim, adjust the display brightness setting by accessing the Brightness option on the Settings Menu.

Step 2.) Check battery life and replace batteries if necessary.

Step 3.) Check the Bluetooth setting:

SETTINGS MENU > BLUETOOTH

Step 4.) Zero Weapon to Optic(s), if not already zeroed.

Step 5.) Set Latitude for Geographical Area:

BALLISTICS MENU > TARGET > (LAT)

Step 6.) Select Ballistics Ranging Option:

**SETTINGS MENU > BALLISTICS >
(BAL)/RNG:METERS/RNG YARDS)**

Step 7.) Select Gun Profile from the pre-loaded menu or select a User Gun and input Custom Gun Profile data manually. The (>) indicates this is the profile currently selected.

BALLISTICS MENU > GUN SELECT

Step 8.) Attach the **RAPTAR Xe** to the weapon platform and position of choice. 9, 12, and 3 O'Clock, or top of optic is acceptable.

Step 9.) Perform Compass Calibration (see section 3.8.1 "Compass Calibration on the **RAPTAR Xe**").

Step 10.) The **RAPTAR Xe** auto senses the outside air temperature (OAT), pressure, and humidity. These may be verified and manually adjusted using data from other sources such as a weather meter.

BALLISTICS MENU > ENVIRONMNT

Step 11.) Manually enter wind speed and direction. Alternatively, a Kestrel weather meter may be used to stream live wind and other environmental data. If using a Kestrel weather meter, make sure the Kestrel and **RAPTAR Xe** are connected.

BALLISTICS MENU > ENVIRONMNT

Step 12.) Co-Align system to Optic at BZO dialed, then at 100 m, 800 m, and 1000 m using Section 3.7 "Co-Aligning the **RAPTAR Xe** with a Weapon Optic".

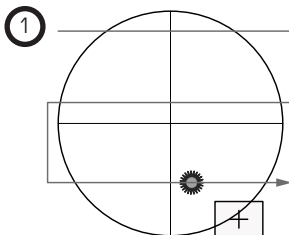
3.7 CO-ALIGNING THE *RAPTAR Xe* WITH A WEAPON OPTIC

NOTE

It is recommended that the Low Power Visible Laser be used for co-aligning the *RAPTAR Xe*.

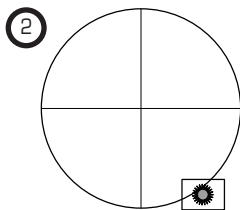
3.7.1 Co-Alignment Process

- Step 1.)** Make sure the *RAPTAR Xe* is securely mounted to the weapon and that the weapon is properly zeroed.
- Step 2.)** Place the target at approximately 100 meters.
- Step 3.)** Turn on the red laser pointer.



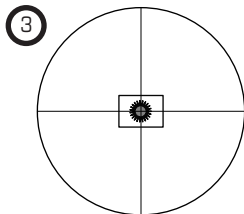
3.7.2 Coarse Alignment Process

- Step 1.)** Scan the weapon near the target until the laser spot is visible on the target.
- Step 2.)** Note the offset between the laser spot and the scope's markings.
- Step 3.)** Use the **RAPTAR Xe** Top and Side Adjustment Knobs to move the laser until it aligns with the scope's crosshairs.



3.7.3 Fine Alignment Process

- Step 1.)** Repeat steps 1-3 of the Coarse Alignment Process at a range of greater than 800 meters.



3.8 CALIBRATING THE *RAPTAR Xe*

The *RAPTAR Xe* is calibrated both for compass direction and orientation angle. Compass calibration is more accurate when performed while the *RAPTAR Xe* is mounted to the weapon in its fully configured form.

3.8.1 Compass Calibration of the *RAPTAR Xe*

Step 1.) Access the “**CompassCal**” option on the Settings Menu.

Step 2.) Slowly turn the weapon 360° horizontally, vertically, and longitudinally, as illustrated, for at least 25 seconds.



360° Horizontal



360° Vertical



360° Longitudinal

- If the procedure is performed in a weak magnetic field, or insufficiently rotated, the message “-2” will display to indicate a magnetic value at the end of a range, or an extreme magnetic value.
- If the procedure is performed in a strong magnetic field, the message “-5” will display to indicate the presence of a weak or strong magnetic field.
- If the procedure is performed in an excessively strong magnetic field, the message “-7” will display to indicate that the unit was not sufficiently rotated.

Step 3.) Push the **Fire/Range/Enter** button to stop calibration, then validate the calibration to known headings.

3.8.2 Turning OFF the Bluetooth Transmitter

- Step 1.)** Access the Settings Menu.
- Step 2.)** Use the **Laser/Up** and **Menu/Down** buttons to access the "Bluetooth" option.
- Step 3.)** Push the **Fire/Range/Enter** button to enter the "Bluetooth" menu.
- Step 4.)** Use the **Laser/Up** and **Menu/Down** buttons to select the menu option of your choice.
- Step 5.)** Press the **Fire/Range/Enter** button to disable the menu item.
- Step 6.)** Turn the **RAPTAR Xe** off then back on to update system settings.

3.9 LASER OPERATIONS

Laser operations are common between the various switch positions that operate lasers. Access the Settings Menu.

NOTE

The Adjust Mode times out after five seconds of inactivity. Laser power settings are saved and persist through unit power cycling.

- 1. Momentary On** Push the **Laser/Up** button once to turn on the selected laser momentarily. It will turn off when the button is released.
- 2. Laser On/Off** Push the **Laser/Up** button twice to turn on the selected laser and keep it on. The laser will remain on until the **Laser/Up** button is pressed again or the laser timeout expires.

- 3. Laser On Indication** In each laser switch position, the laser name abbreviation is shown (i.e., AL V). When the laser(s) is turned on, this indication is reverse colored to highlight the **On** state.
- 4. Eye Safety** Each laser is calibrated to appropriate eye safety levels. This is the maximum power the laser emits in **Lower Power Mode**, i.e., AL V.
- 5. High Power Lasers** To exceed the Lower Power laser limits, the Mode Selection Knob must be turned to the High Power position, i.e., AH V. A mechanical lock-out (Blue screw) is provided to prevent inadvertent knob rotation to a High Power laser position during training exercises. Once removed, the knob can be rotated to positions that operate lasers at maximum power.
- 6. Laser Timeout** During laser operation, an activity timer is running. After 5 minutes of inactivity, all lasers will be turned off. This timeout is not adjustable and cannot be disabled.
- 7. Dynamic Power Adjustment** With a laser turned on, the power output of that laser can be manually adjusted to suit the situation. In the **Low Power Mode** positions, there are four steps of power adjustment numbered 0 through 4 with step 4 being the highest power mode and equal to the calibrated eye safe value. When operating in **High Power Mode**, five additional steps are available above the eye safe limit numbered 5 through 9, with step 9 being the maximum laser calibration power level.

To adjust laser power for the currently selected lasers, push the **Menu/Down** button to enter **Adjust Mode**. To change the laser power, use the **Menu/Down** button to scroll down to the laser field and push the **Fire/Range/Enter** button. Next, push the **Laser/Up** button to increase laser power one step or push the **Menu/Down** button to decrease laser power one step. When the desired laser power is achieved, push the **Fire/Range/Enter** button to exit laser adjusting. Finally, push the **Menu/Down** button again to exit **Adjust Mode**.

3.10 ADJUSTING THE *RAPTAR Xe* DISPLAY BRIGHTNESS

The display brightness is set to **"Auto"** by default. If changed to **"M1 I"** (dimmiest) through **"M8IIIIIIII"** (brightest), the display will maintain a consistent brightness based on the set value. To adjust the display brightness setting, access the Brightness option on the Setting Menu. To maintain the brightness level after power cycling, "Persist" mode must be enabled.

3.11 PERFORMING A RAPTAR X_e SELF-TEST

3.11.1 RAPTAR X_e Self-Test

- Step 1.)** Access the Settings Menu.
- Step 2.)** Use the **Laser/Up** and **Menu/Down** buttons to access the "Self Test" option.
- Step 3.)** Push the **Fire/Range/Enter** button to enter the "Self Test" menu.
- Step 4.)** Push the **Fire/Range/Enter** button to stop the self-test or the **Laser/Up** button to run through the test sequence.
- Step 5.)** Push the **Laser/Up** button to sequence through all tests verifying the test results as they are completed.
- Step 6.)** If "Failed" appears on the display after "Self Test", follow battery replacement procedures and perform another "Self Test". If "Failed" is still present, contact Wilcox Customer Service.
- Step 7.)** Push the **Fire/Range/Enter** button to exit at any time.

3.12 ADJUSTING THE LASER INTENSITY FOR THE ACTIVE LASER POWER MODE

▲ **WARNING** ▲

Follow all safety precautions for laser safety and operation of the cover.

- Step 1.)** From any laser mode, push the **Laser/Up** button twice to turn on the selected laser(s).
- Step 2.)** Push the **Menu/Down** button to enable Adjust Mode.
- Step 3.)** Push the **Menu/Down** button to access the laser power setting for the selected laser (e.g., the Aiming Laser - Visible (AL V) when in the Visible Aiming Laser (V L) setting).
- Step 4.)** Push the **Fire/Range/Enter** button, then use the **Menu/Down** and **Laser/Up** buttons to adjust the value between 1 and 4 (Low Power Mode) or 1 and 9 (High Power Mode). Once the desired value is selected, push the **Fire/Range/Enter** button.
- Step 5.)** The menu display will automatically clear after 5 seconds, or you can push the **Menu/Down** button to Exit.
- Step 6.)** Push the **Laser/Up** button to turn the selected laser(s) off.

3.13 RANGING A TARGET (RANGE ONLY MODE)

- Step 1.)** To initiate a range, acquire a target and push the **Fire/Range/Enter** button. Hold to change ranging precision. Ranging starts on release of the **Fire/Range/Enter** button.

- Step 2.)** If one or more valid range is found, the values are displayed in the configured units (meters or yards).
- Step 3.)** If no valid range is found, **No Targets** is displayed.
- Step 4.)** If the range finder times out and doesn't respond, **RANGING TIMEOUT** may be displayed. If **RANGING TIMEOUT** is observed repeatedly, check battery level and replace as needed. Select desired **Laser / Range Mode** position (laser activation not required).

3.14 RANGING A TARGET (FULL BALLISTIC SOLUTION MODE)

- Step 1.)** To initiate ranging, acquire a target and push the **Fire/Range/Enter** button. Ranging starts on **RELEASE** of the range button.
- Step 2.)** Range Precision Modes include:
- Short **Fire/Range/Enter** button hold for **FAST** ranging with a 0.5 second measurement time.
 - Long **Fire/Range/Enter** button hold for **PRECISE** ranging with a 1.0 second measurement time.
- Step 3.)** If a range is found, the **BALLISTIC SOLUTION** display is shown. If no valid range is found, **No Targets** is displayed. If the range finder times out and doesn't respond, **RANGING TIMEOUT** may be displayed.
- Step 4.)** The **Laser/Up** button is used to turn the current laser on and off when not in the ballistic solution display.
- Step 5.)** To range another target simply push the **Fire/Range/Enter** button.

3.15 RANGE SCAN MODE

Step 1.) In the RNG (no laser) Ranging Position, operation of the **Laser/Up** button starts and stops repeated range measurements. Ranging measurements repeat at roughly one to two second intervals depending on range distances and whether ballistic solutions are being calculated or not. Note that this mode of operation greatly impacts battery life.

3.16 ADJUST MODE

- Step 1.)** While in the **BALLISTIC SOLUTIONS** display, several parameters may be adjusted. These include the following: Selection of which range value in a multi-range is used, adjustment of range length, adjustment of wind speed and directions, and selecting the laser power level.
- Step 2.)** The **Menu/Down** button is used to enter and/or exit Adjust Mode and select which parameter is being adjusted.
- Step 3.)** On entrance to Adjust Mode, the adjustable items are displayed with the currently selected parameter being highlighted.
- Step 4.)** Use the **Laser/Up** and **Menu/Down** buttons to select which item to adjust. Scroll down to exit Adjust Mode.
- Step 5.)** Once a parameter is selected using the **Fire/Range/Enter** button, use the **Laser/Up** and **Menu/Down** buttons to scroll through the options. Use the **Fire/Range/Enter** button to return to the Adjust Mode menu.
- Step 6.)** Note, the wind speed and directions settings will persist through additional ranging and power cycling.

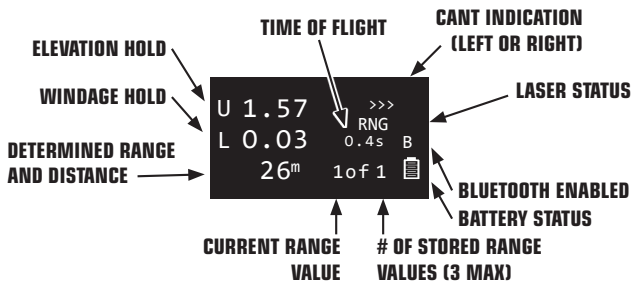


Figure 3.16-1 Ballistics Solution Display (Depicted for Left Mounting)

3.17 OPERATING THE *RAPTAR Xe* WITH THE KESTREL 5700 CONNECTED

3.17.1 Bluetooth Pairing of the *RAPTAR Xe* with the Kestrel 5700

- Step 1.)** Follow the Kestrel 5700 Operator's Manual for pairing with the *RAPTAR Xe*. During pairing, turn on the *RAPTAR Xe*. The Kestrel 5700 will display a list of devices to which it can pair. Select the *RAPTAR Xe* with the same serial number as displayed on the *RAPTAR Xe* label. Note: The Bluetooth connection may take 10 seconds or longer to pair.
- Step 2.)** When Bluetooth pairs, a "B" will first appear displayed above the battery icon to indicate Bluetooth is connected. A "K" will be displayed above the battery icon when the Kestrel is streaming data to the *RAPTAR Xe*.

3.17.2 Local Ballistics

- Step 1.)** With any other gun selected in the Gun Select Menu, the Kestrel streams environmental data, including wind speed, and direction to the *RAPTAR Xe*. The *RAPTAR Xe* performs the ballistic calculations using environmental data from the Kestrel.

3.16 DEPOT MENU

- Step 1.)** Access the Settings Menu.
- Step 2.)** Use the **Laser/Up** and **Menu/Down** buttons to access the "Depot Menu" option.
- Step 3.)** Push the **Fire/Range/Enter** button to enter the "Depot Menu".
- Step 4.)** Push the **Fire/Range/Enter** button to access Power Out.
- Step 5.)** Use the **Laser/Up** and **Menu/Down** buttons to select the menu option of your choice.
- Step 6.)** Push the **Fire/Range/Enter** button to select the menu option of your choice.

SECTION 4

CARE AND MAINTENANCE

4.1 CARE OF THE *RAPTAR Xe*

Dismount the *RAPTAR Xe* from the weapon rail and inspect the unit for dirt, rust, and corrosion. If the display or lenses are broken or cloudy, notify unit armorer.

Make sure the Battery Compartment Cap and O-ring are tightly sealed and that the area is free of sand and dirt particles. If a Battery Compartment Cap O-ring becomes cut, nicked, or torn, notify unit armorer.

Dirt and other residue, like exposure to salt water, may impede the mechanical operation of the *RAPTAR Xe*. Do not use high pressure air to blow away dirt or debris while cleaning. Flush exterior with fresh water to remove any debris. Gently blow any debris away from the lenses or display, then brush any residual dirt or dust free with the Lens Pen. This should be done on a regular basis.

After flushing and cleaning with water to remove debris, if further lens cleaning is necessary, use the clean Lens Cloth provided with a small amount of Isopropyl (Rubbing) Alcohol.

Always keep the Lens Covers and Battery Cap fully installed when not in use to prevent entry of foreign debris, protect the port from corrosion, and prevent scratching of the lenses.

4.2 INSTALLING AND REPLACING THE *RAPTAR Xe* BATTERY

- Step 1.)** Turn the Mode Selection Knob to the the "0" (OFF) position.
- Step 2.)** Open the Battery Compartment by pushing in and turning the Battery Cover CCW 1/4 turn. Make sure moisture will not be allowed into the compartment.
- Step 3.)** Remove the used CR123 battery and inspect the O-ring for damage and/or wear. Replace the O-ring, if necessary.
- Step 4.)** Make sure the Battery Compartment is clean and dry, then install a new CR123 battery, positive end first, as indicated by the Battery Orientation Indicator on the outside of the *RAPTAR Xe*.
- Step 5.)** Resecure the Battery Compartment Cover using caution not to pinch or damage the O-ring.
- Step 6.)** Discard the used battery in accordance with local and Federal regulations.

TO OPEN: PUSH IN AND TURN CCW 1/4 TURN.

TO RESECURE: ALIGN LOCKING MECHANISM THEN PUSH IN. TURN CW 1/4 TURN AND RELEASE.

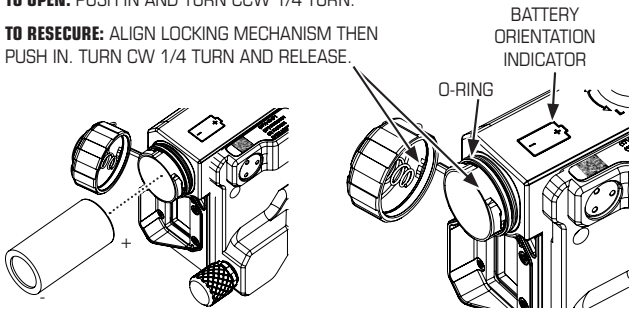


Figure 3.16-1 RAPTAR Xe Battery Orientation

4.3 INSPECTING AND REPLACING O-RINGS

The Battery Compartment of the **RAPTAR Xe** contains one (1) Buna O-ring that prevents dirt and water entry to the Battery Compartment.

Age and temperature can wear Buna rubber, so O-rings should be inspected periodically to maintain proper operation of the system. O-rings are highly pliable and stretchable and can be overstretched in the process of inspection. For this reason, it is strongly advised that they be replaced whenever they are removed, for proper sealing of the compartment.

O-ring replacements are available through Wilcox and should be purchased in advance of need for continued service.

Step 1.) Gently brush any debris away from the O-rings with the provided cleaning brush.

Step 2.) Inspect the O-rings for cracks, pinches, hardness, dryness, or tackiness of feel. If an O-ring exhibits any of these characteristics, replace it.

Step 3a.) If the **RAPTAR Xe** O-ring does not need replacement but requires lubrication, lubricate the exterior surface of the O-ring without removing it with a small amount of Silicone Grease.

- Step 3b.)** If replacement is required, gently remove the O-ring using a pick tool. Gently lubricate the **RAPTAR Xe** O-ring on both sides, with the thumb and index finger, using Silicone Grease. Gently replace the lubricated O-ring, using caution not to overstretch or damage.

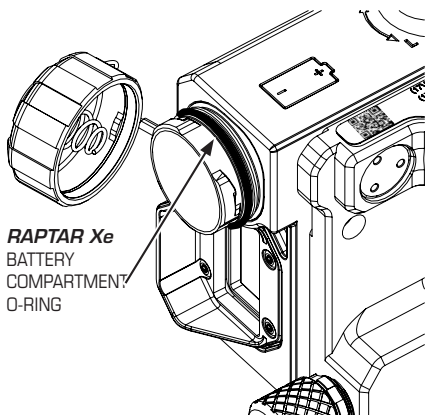


Figure 4.3-1 *RAPTAR Xe* Battery Cap

4.4 STORAGE

■ CAUTION ■

Do not store the *RAPTAR Xe* with battery installed.

Make sure cleaning instructions in Section 4.1 have been followed. When the *RAPTAR Xe* is dismantled for storage, place the Mode Selection Knob in the "OFF" position. Secure the laser cover to the *RAPTAR Xe* to prevent dust and dirt entry. Remove battery from the *RAPTAR Xe* and retain.

4.5 SHIPPING

Prior to shipping the *RAPTAR Xe*, follow cleaning and storage instructions as described in Sections 4.1 and 4.4. Package all components securely in a suitable shipping container, maintaining adequate separation between components.

APPENDIX A

WARRANTY STATEMENT

A.1 STANDARD LIMITED WARRANTY

Wilcox Industries Corp. ("WX") offers a limited warranty ("Limited Warranty") that its products will be free from defects in material and workmanship under proper usage for one (1) year from the date of original shipment from WX ("Warranty Period") if purchased through an authorized sale, provided that, the product and purchasing documents are returned to WX (at user's expense) and WX will have the option (in its sole discretion) to exchange or recondition the product (subject to WX's examination and confirmation that the product is defective), and return the product via preapproved carrier at user's expense. This Limited Warranty is void if the date of manufacture which is laser engraved on the product is defaced, modified, or altered. This Limited Warranty is only for products purchased directly from WX or an authorized reseller. Items purchased via ecommerce such as Ebay, Craigslist, Amazon, or any other online marketplaces are not eligible for the Limited Warranty.

The Limited Warranty does not include damage or defects arising from improper use, maintenance, repairs, installation or storage, abuse, misapplication, vandalism, negligence, neglect, normal wear and tear, or any other circumstances over which WX has no control.

WX MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED. WX SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE.

THE LIMITED WARRANTY IS YOUR SOLE AND EXCLUSIVE REMEDY FOR WARRANTY COVERAGE, WX CONDUCT, OR FOR ANY OTHER CLAIM OR CAUSE OF ACTION AGAINST WX. WX SHALL NOT BE RESPONSIBLE FOR ANY DAMAGES WHETHER DIRECT, INCIDENTAL, CONSEQUENTIAL OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, LABOR CHARGES, REPAIRING OTHER PRODUCTS, REPLACEMENTS, OR ANY DELAYS.

IN ADDITION, TO THE FULLEST EXTENT PERMISSIBLE BY LAW, WX SHALL NOT BE LIABLE FOR ANY INJURY OR DAMAGE TO PERSONS OR PROPERTY OF ANY KIND. IN NO EVENT SHALL WX BE LIABLE FOR DIRECT, SPECIAL, INDIRECT, PUNITIVE, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, FUTURE REVENUE, DATA, OR ANY OTHER LOSS, REGARDLESS OF WHETHER A CLAIM OR ACTION IS ASSERTED IN CONTRACT OR TORT, WHETHER OR NOT THE POSSIBILITY OF SUCH DAMAGES HAS BEEN DISCLOSED IN ADVANCE OR COULD HAVE BEEN REASONABLY FORESEEN.

NOTWITHSTANDING ANY OTHER AGREEMENT OR UNDERSTANDING BETWEEN THE PARTIES, THE PARTIES AGREE THAT ALL LIABILITY WITH RESPECT TO A CLAIM AGAINST WX IN CONNECTION WITH OR RELATED TO ANY PRODUCT PROVIDED BY WX SHALL BE LIMITED IN DURATION TO THE WARRANTY PERIOD AND SOLELY TO DIRECT DAMAGES, AND MAY BE SATISFIED BY REPAIR OR REPLACEMENT OF NONCONFORMING PRODUCT (AS DETERMINED BY WX IN ITS SOLE AND ABSOLUTE DISCRETION), AND IN NO EVENT SHALL THE AGGREGATE RECOVERY OF ANY KIND AGAINST WX EXCEED THE LESSER OF TWENTY THOUSAND DOLLARS (\$20,000 USD) OR THE PURCHASE PRICE OF THE PRODUCT.

A.2 WARRANTY CLAIM AND SERVICE INFORMATION

For warranty claim or service work, WX must be contacted in the United States at +1 603-431-1331 to assign a Return Merchandise Authorization (RMA)/Service Call Number (SC) prior to return shipment.

After an RMA/SC number is provided, WX will accept a package at the address below, clearly marked with the number assigned as follows:

Wilcox Industries Corp.
RMA/SC # _____
One Wilcox Way
Newington, NH 03801 USA

The **RAPTAR Xe** must be securely packaged, accompanied by purchasing information, a letter including sender's name, address, daytime phone number, date of manufacture, lot number, and a description of the problem or work to be performed.

APPENDIX B

ABBREVIATIONS

B.1 ABBREVIATIONS

ANSI	American National Standards Institute
BZO	Battlesight Zero
C	Celsius
CAGEC	Commercial and Government Entity Code
CCW	Counterclockwise
CFR	US Code of Federal Regulations
CW	Clockwise
D	Depth
F	Fahrenheit
H	Height
in-lb	Inch-Pounds
inHg	Inches of Mercury - Air Pressure
IR	Infrared
ITAR	International Trafficking in Arms Regulations
LRF	Laser Range Finder
m	Meters
m/s	Meters per Second
mbar	Millibars
mph	Miles Per Hour
mrاد	Milliradians
mW	Milliwatts

nJ	Nanojoules
nm	Nanometer
OAT	Outside Air Temperature
OLED	Organic Light Emitting Diode
OSHA	Occupational Safety & Health Administration
oz	Ounces
<i>RAPTAR Xe</i>	Rapid Targeting and Ranging Module - Enhanced
RAS	Rail Accessory System
RIS	Rail Integration System
W	Width

APPENDIX C

SPARE AND OPTIONAL PARTS

C.1 SPARE AND OPTIONAL PARTS LISTS

To order replacement and optional parts, contact the Wilcox marketing department at +1 603-431-1331. Please specify your product color when ordering.

NOTE

- **International (High Power and Low Power)** and **Domestic (Low Power)** orders for Combat Systems - Fire Control Systems and Laser Aiming Devices are packaged in a “Non-Berry”-compliant tactical pouch unless specified prior to ordering.
- **Domestic (High Power)** orders for Combat Systems - Fire Control Systems and Laser Aiming Devices are packaged in a “Berry”-compliant tactical pouch.

Note the repair type specified for the following replacement parts is identified as follows:

- **Field** – Can be changed out at the field level.
- **Armorer** – Can be changed out by the unit armorer.
- **Factory** – A change that occurs at the factory level only.

Table C-1. Spare Parts List

#	PART NO	DESCRIPTION	REPAIR TYPE	REFERENCE
C.1.1	65334G04	BATTERY CAP TETHER LINE WITH CRIMP SLEEVES	ARMORER	Page 47
C.1.2	65334G02	BATTERY CAP ASSEMBLY	FIELD	Page 9
C.1.3	F3398	WILCOX LENS PEN	FIELD	Page 10
C.1.4	65325G01	XE UTILITY TOOL	FIELD	Page 7
C.1.5	F1968	MICROFIBER OPTICAL CLEANING CLOTH	FIELD	Page 10
C.1.6*	F2509	POUCH - 7 X 5 X 2.25 COYOTE NON-BERRY COMPLIANT	FIELD	Page 7
	F2770	POUCH - 7 X 5 X 2.25 COYOTE BERRY COMPLIANT		
C.1.7	F2481	BLUE LOCKOUT SCREW	FIELD	Page 26
C.1.8	F3014	BATTERY COMPARTMENT O-RING	FIELD	Page 47
C.1.9	65341P25 & F3358	CAP CONNECTOR - FISCHER AND WASHER	FIELD	Page 9
C.1.10	68540G05	OVERMOLD - LASER COVER - RAPTAR XE	ARMORER	Page 7
C.1.11	68550P15 & F2105	MODE SELECTION KNOB AND SET SCREW	ARMORER	Page 9
C.1.12	68401G14	KEYPAD - 3 BUTTON - SINGLE CABLE 20"	ARMORER	Page 7

*For non-standard pouches, please specify when ordering.

Table C-2. Optional Parts List

PART NO	DESCRIPTION
68401G06	KEYPAD - 3 BUTTON - SINGLE CABLE 12"
68405G01	ERGOCTO XE - PICATINNY RAIL - ADAPTER

"Our Customer's Life Depends on It"™



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For troubleshooting service questions,
contact Wilcox between 8am and 5pm EST.