

Mk3



Technical Manual

Mk3 BATTLE LIGHT

WHITE LIGHT LED 500 LUMENS / IR LED ILLUMINATOR

STEINER 
Nothing Escapes You

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SAFETY SUMMARY

This safety summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of safety and hazardous materials icons used within this technical manual. The Mk3 Battle Light illuminator is an eye-safe light emitting diode (LED) illuminator.

DEFINITION OF THE FOLLOWING ALERTS THROUGHOUT THIS MANUAL:

WARNING

Identifies a clear danger to the person doing that procedure.

CAUTION

Identifies risk of damage to the equipment.

NOTE

Used to highlight essential procedures, conditions, statements, or convey important instructional data to the user.

WARNING

Be sure the weapon is CLEAR and on SAFE before proceeding.

WARNING RISK OF DETECTION BY ENEMY

To reduce the risk of detection by an enemy using a Night Vision Device (NVD), avoid prolonged activation. The IR beam is more detectable when used in smoke, fog, and rain.

WARNING

DO NOT store the Mk3 Battle Light with the batteries installed.

WARNING

Ensure the Activation Mode Selector Switch is in the OFF position before inspecting the Exit Port Lens.

WARNING

If the Activation Selector Switch is not in the OFF position, the Mk3 Battle Light may be inadvertently activated by depressing the FIRE button or Remote Cable Switch.

CAUTION

To avoid permanent damage, use ONLY authorized cleaning supplies.

CAUTION

DO NOT remove the Remote Cable Switch by pulling on the cable. Remove by clasping the plug assembly and gently pull.

HOW TO USE THIS MANUAL

Usage

You must familiarize yourself with the entire manual before operating the equipment. Read the complete maintenance task before performing maintenance and follow all **WARNINGS, CAUTIONS** and **NOTES**.

Manual Overview

The manual contains sections for Operating and Maintaining the Mk3 Battle Light.

Appendix A Repair Parts

CHAPTER 1 – GENERAL INFORMATION

1.1 GENERAL INFORMATION

1.1.a Type of Manual:

Operator and Field Maintenance Manual.

1.1.b Equipment Name:

Mk3 Battle Light

1.1.c Purpose of Equipment:

To illuminate shadowed areas or targets using white light or the infrared (IR) LED illuminator for users equipped with a Night Vision Device (NVD).

1.2 REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS

If your equipment needs improvement, let us know. Mail your comments to Steiner Optik, 331 E. 8th, Greeley, CO 80631 or email: laserlightsinfo@steiner-optics.com

1.3 Steiner 3-Year Laser Device Warranty

On all laser devices, Steiner offers a 3-Year Limited Warranty from the date of purchase that covers all laser, optical and electronic components, materials and workmanship. All warranties are void if the serial number or manufacturer's labels affixed to the product have been removed, or if products have been abused, misused, modified, neglected or have been disassembled prior to return to the manufacturer.

1.4 CROSS REFERENCES

Common Name

Battery Cap
Shipping Case
Cotton Swab
Neoprene Jack Plug
O-Ring
Lens Covers
Paddle Switch
Battery
Technical Manual
Tape Fastener Loop
Tape Fastener Hook

Official Name

Battery Box Cover
Textile Bag
Disposable Applicator
Plug Assembly
Gasket
Exit Port Covers
Remote Cable Switch
CR 123A
Operator and Field Maintenance Manual
Fastener, Loop Tape
Fastener, Hook Tape

1.5 LIST OF ABBREVIATIONS

C	Celsius (Centigrade)	mm	Millimeter
CCW	Counter-clockwise	mrاد	Milliradians
cm	Centimeters	mW	Milliwatts
CTA	Common Table of Allowance	nm	Nanometers
CW	Clockwise	No	Number
EA	Each	NOHD	Nominal Ocular Hazard Distance
F	Fahrenheit	NSN	National Stock Number
HI	High	NVD	Night Vision Device
ILLUM	Illuminator	O.D.	Optical Density
in	Inches	OIR	Optical Instrument Reticle
IR	Infrared	Para	Paragraph
LBS	Laser Borelight System	PWR	Power
LED	Light Emitting Diode	QTY	Quantity
LO	Low	RAS	Rail Adapter System
m	Meter	RMA	Return Material Authorization
Max	Maximum	SR	Service Representative
Mfr	Manufacturer	TM	Technical Manual
Min	Minimum	VIS	Visible
MOM	Momentary		

CHAPTER 2 – EQUIPMENT DESCRIPTION

2.1 SYSTEM DESCRIPTION

The Mk3 Battle Light is a Class I device that features infrared (IR) light emitting diode (LED) illuminator for use with a NVD. The modes of operation include:

Off - not in operation,

LO IR - low power IR illuminator,

HI IR - high power IR illuminator,

LO VIS - low power white light,

HI VIS - high power white light, and

MOD - white light strobe at high power.

Figure 2-1 identifies the distinguishing parts of the Mk3 Battle Light. Table 2-1 provides performance specifications.

The Mk3 Battle Light may be weapon mounted using the Quick Release Mount.

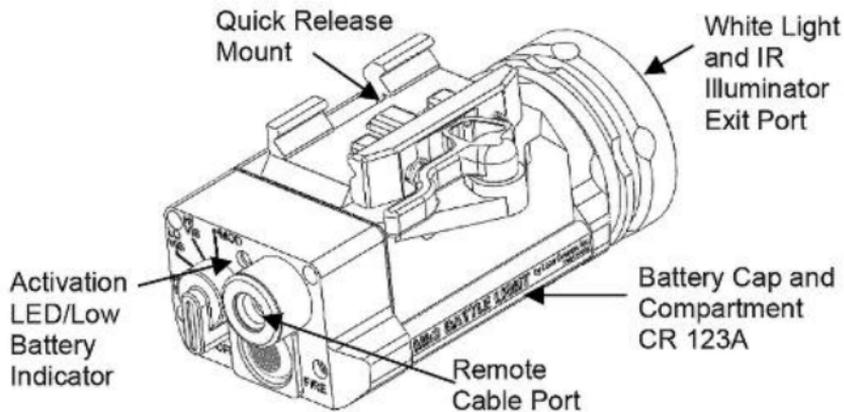


Figure 2-1 Mk3 Battle Light Features

2.2 GENERAL CHARACTERISTICS

Table 2.1 Weight, Dimensions, and Performance

WEIGHT

(with two batteries, CR 123A)	7.30 oz / 227.06 grams
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DIMENSIONS

Length	3.96 in. / 10.06 cm
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Width	2.19 in. / 5.56 cm
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Height	1.74 in. / 4.42 cm
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PERFORMANCE

White Light LED

Output Power	Low - 10 lumens High - 500 lumens Strobe - 8 Hz
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Divergence	10°
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Candelas	57,500
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Range	250 m
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Battery Life (CR 123A)	1.5 hours
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IR LED ILLUMINATOR

Wavelength	850 nm
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Output Power	Low - 150 mW High - 600 mW
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Divergence	8°
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Range	200 m
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Battery Life (CR 123A)	2.5 hours
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Temperature	-40° to +51°C
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2.3 DESCRIPTION OF MAJOR COMPONENTS

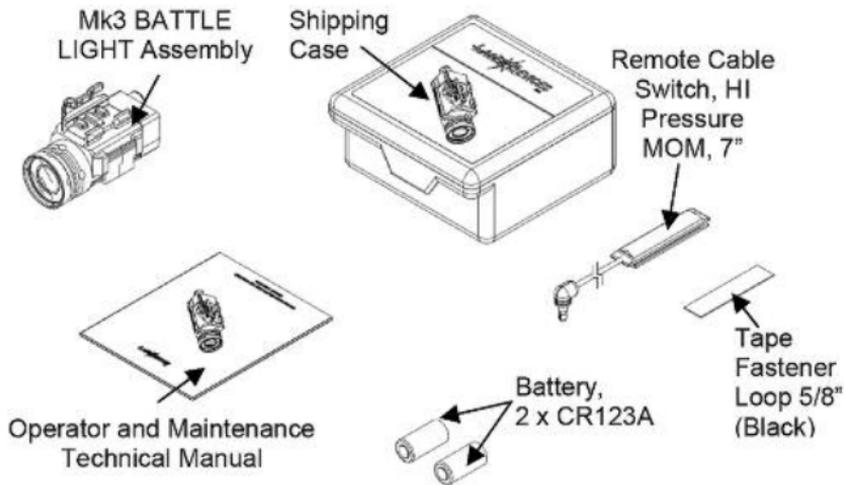


Figure 2-2 Major Components

2.1.b Mk3 Battle Light Assembly

The Mk3 Battle Light device provides a white light and an IR illuminator. The device is used for signaling, command and control and supplying supplemental white light and IR illumination.

2.1.c Shipping Case

The Mk3 Battle Light is provided in a plastic shipping box with foam insert.

2.1.d Remote Cable Switch

A 7", right angle, Remote Cable Switch activates the Mk3 Battle Light in a momentary (MOM) mode by depressing the pressure pad once.

Pressing the pressure pad twice in rapid succession will activate the device continuously for 5 minutes. Pressing the pressure pad again will return the device to momentary activation. The pressure pad provides a tactile (silent) click that indicates when the switch has been activated.

2.1.e Tape Fastener Loop

The Tape Fastener Loop is provided to secure the Remote Cable Switch to the weapon in a position convenient to the user. The Tape Fastener Hook is pre-attached by the manufacturer to the pressure pad switch and is used to secure the Remote Cable Switch to the weapon in a position convenient to the user.

2.1.f Battery

Two CR 123A (model dependent) batteries are used as a power supply for operating the Mk3 Battle Light. The use of high-quality batteries is recommended to achieve maximum runtime.

2.1.g Operator and Field Maintenance Manual

The Operator and Field Maintenance Manual provide safety information, equipment information, operating instructions, mounting procedures, and maintenance procedures.

NOTE

You must read the entire Operator and Field Maintenance Manual before operating the Mk3 Battle Light and follow all WARNINGS, CAUTIONS and NOTES.

CHAPTER III – SECTION I OPERATING INSTRUCTIONS

WARNING

IR ILLUMINATOR

WAVELENGTH: 850 nm

OUTPUT: 600 mW

WHITE LIGHT

OUTPUT: 500 lumens

- DO NOT stare into the laser beam.
- DO NOT look into the laser beam through binoculars or telescopes.
- DO NOT point the laser beam at mirror-like surfaces.
- DO NOT shine the laser beam into other individual's eyes.



3.2 Mk3 Battle Light CONTROLS AND INDICATORS

This section contains a description of the controls and adjustments for the Mk3 Battle Light.

3.2.a Battery Installation

WARNING

DO NOT store the Mk3 Battle Light with the battery installed.

To install, remove, and replace batteries, unclasp the battery lid by pressing on the top of the clasp. Remove and properly discard the spent batteries. Inspect the battery compartment for dirt, moisture and corrosion. Clean the battery compartment as needed (refer to Paragraph 4.3.c). Install the batteries as indicated by the markings located on the battery spacer inside the battery compartment (see Figure 3-1). Clasp the battery lid.

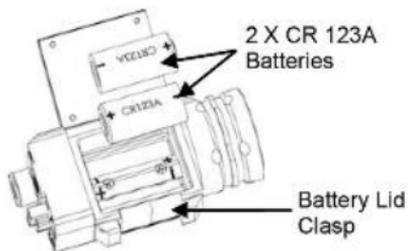


Figure 3-1 Battery Installation CR123A

3.2.b Activation Mode Selector Switch

NOTE

The Mk3 Battle Light will not operate if the rotary switch is not precisely aligned with the marked switch position.

In extreme cold temperatures the switch may offer more resistance.

The Activation Mode Selector Switch is located on the rear of the Mk3 Battle Light housing (see Figure 3-2). The switch is used to select between the various modes of operation. The Activation Mode Selector Switch has 6 positions. See Table 3-1.

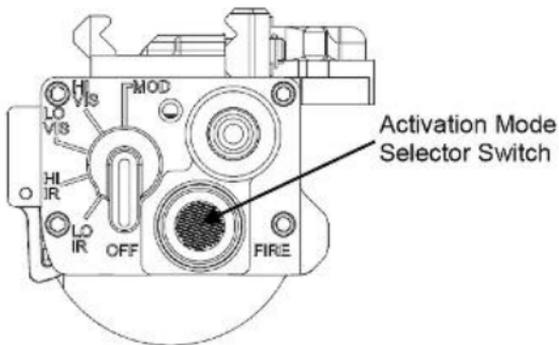


Figure 3-2 Activation Mode Selector Switch

Table 3-1 Activation Mode Selector Switch Functions

Switch Position	Activation Method	Use
OFF	OFF	Not in use or in storage.
LO IR	The IR illuminator is activated in low power when the Remote Cable Switch or FIRE button switch is depressed.	Used to illuminate the target area in low or no light conditions. Use with a NVD in close range applications.
HI IR	The IR illuminator is activated in high power when the Remote Cable Switch or FIRE button switch is depressed.	Used to illuminate the target area in low or no light conditions. Use with a NVD for long range applications.
LO VIS	The white light is activated in low power when the Remote Cable Switch or FIRE button switch is depressed.	Used to illuminate the target area in close range applications.
HI VIS	The white light is activated in high power when the Remote Cable Switch or FIRE button switch is depressed.	Used to illuminate the target area or shadowed areas.
MOD	The white light is activated in strobe mode at 8 Hz when the Remote Cable Switch or FIRE button switch is depressed.	Used for command and control.

3.2.c Integrated Momentary Activation Switch

The Integrated Momentary Activation Switch is located on the rear of the Mk3 Battle Light housing next to the word FIRE (see Figure 3-3). Firmly pressing and holding the switch activates the Mk3 Battle Light. When the switch is released, the Mk3 Battle Light turns OFF.

NOTE

Click sound is minimized by depressing the center of the switch.

Pressing the Integrated Momentary Activation Switch twice in rapid succession will activate the Mk3 Battle Light in a continuous ON mode for 5 minutes. Pressing the Integrated Momentary Activation Switch once again will return the device to the momentary mode.

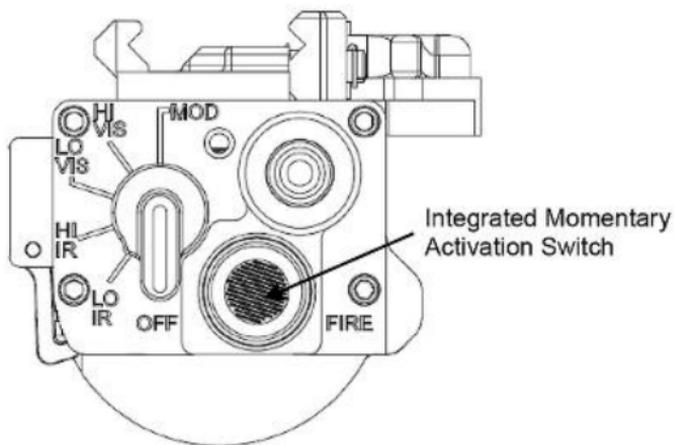


Figure 3-3 Integrated Momentary Activation Switch

3.2.d Low Battery Indicator

A green LED is located on the rear housing at the bottom right of the Activation Mode Selector Switch (see Figure 3-4). When blinking, the LED is a Low Battery Indicator.

When the LED indicator light blinks, it signifies a low battery condition. The batteries should be replaced as soon as possible.

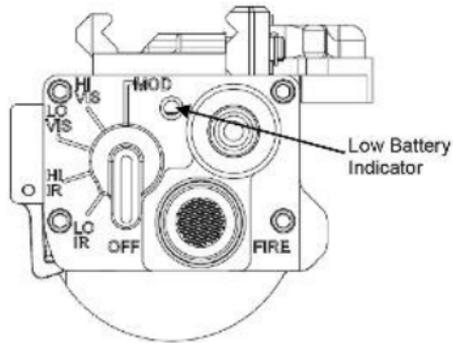


Figure 3-4 Activation LED/Low Battery Indicator

3.2.e Remote Cable Switch

CAUTION

DO NOT remove the Remote Cable Switch by pulling on the cable.

NOTE

When installing the Remote Cable Switch, gently twist the plug into the remote cable port.

The Mk3 Battle Light Activation Mode Selector Switch must be turned to a setting in order to use the Remote Cable Switch.

Mk3 Battle Light will not operate if the rotary switches are not precisely aligned with the marked switch position.

The Remote Cable Switch plugs into the back of the Mk3 Battle Light (see Figure 3-5). Depressing the Remote Cable Switch activates the Mk3 Battle Light in the mode selected by the Activation Mode Selector Switch. When the remote cable switch is released, the Mk3 Battle Light turns off.

In the Momentary Mode when the Remote Cable Switch has been pressed twice in rapid succession, Mk3 Battle Light will activate in a constant ON mode for 5 minutes unless the Remote Cable Switch is pressed once again to return the device to momentary activation.

When the Remote Cable Switch is installed into the Mk3 Battle Light, it automatically locks in place. To remove it, pull back on the plug's sleeve.

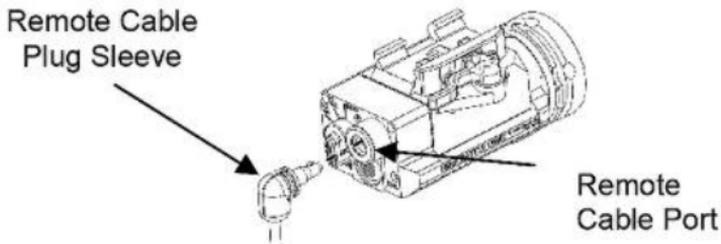


Figure 3-5 Installation of the Remote Cable Switch

CHAPTER III – SECTION II MOUNTING PROCEDURES

3.3 MOUNTING PROCEDURES

A Quick Release Mount is used to attach the Mk3 Battle Light to weapons equipped with a MIL-STD-1913 rail.

WARNING

Be sure the weapon is CLEAR and on SAFE before proceeding.

NOTE

The Mk3 Battle Light may be placed at any position (forward and aft) on the rail that is convenient for the user.

The Mk3 Battle Light may be mounted on the LEFT or RIGHT rail using the Quick Release Mount.

Open the Quick Release Mount lever so that it is perpendicular to the Mk3 Battle Light housing.

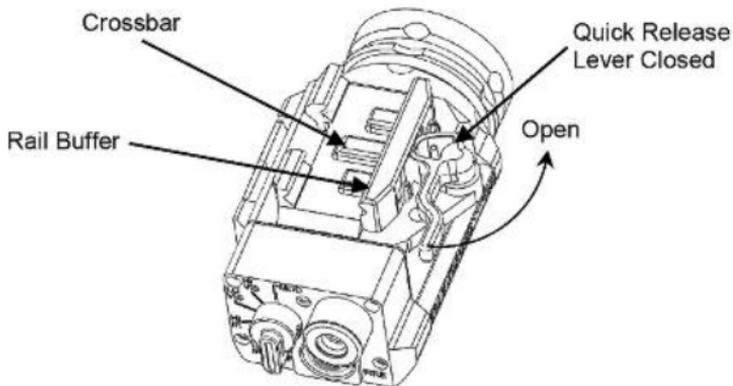


Figure 3-6 Quick Release Mount Configuration

Place the rail buffer against the right side of the MIL-STD-1913 rail and align the crossbar on the bottom of the mount with a slot on the rail. Push forward on the Mk3 Battle Light so that the crossbar contacts the front of the slot on the MIL-STD-1913 rail. Move the Quick Release Lever arm so that it is parallel with the body of the housing. See Figure 3-6.

Install the Remote Cable Switch in a convenient location.

CHAPTER IV – SECTION I PREVENTIVE MAINTENANCE CHECKS

4.1 GENERAL

Table 4-1 Preventive Maintenance Checks, has been provided so that you may keep your equipment in good operating condition.

NOTE

Perform functional tests in the order listed in Table 4-1. Operating Procedures are detailed in Chapter III, Section I.

Functional testing of the Mk3 Battle Light to ensure proper operation should be performed in a dark room or area away from light. Viewing of IR beam must be performed with a NVD, (AN/PVS-7 or AN/PVS-14).

4.1.a Warnings and Cautions

Always observe the WARNINGS and CAUTIONS appearing in the table.

4.1.b Explanation of Table Entries

1. Item Number

Numbers in this column are for reference. Item numbers also appear in the order that you must perform the checks and services listed.

2. Interval

This column tells you when you must do the procedure in the procedure column. BEFORE (B) PROCEDURES must be done before you operate or use the equipment. DURING (D) PROCEDURES must be done during the time you are operating or using the equipment. AFTER (A) PROCEDURES must be done immediately after you have operated or used the equipment.

3. Item to Check/Service

This column provides the item to be checked or serviced.

4. Procedure

This column gives the procedure you must do to check the item.

5. Not Fully Mission Capable If

Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission.

Be sure to observe all special information and notes that appear in your table.

Table 4-1 Preventive Maintenance Checks and Services

Item No.	Interval	Item to Check/Service	Procedure	Not Fully Mission Capable If:
WARNING: DO NOT STARE DIRECTLY INTO LIGHT BEAM				
1	B/D/A	Exterior	Check housing for separation between the front and rear section of the housing, missing screws, and switch knobs.	-A gap appears between the front and the rear section of the housing or missing switch knobs.
2	B/A	Exit Port Lens.	-Check for cracked, dirty or broken lenses or missing illuminator focusing adjustment.	-If lens cracked or missing or missing illuminator focusing knob.
3	B/D/A	Quick Release Mount.	-Check attachment to housing, broken, missing parts. Inspect rail buffer, crossbar and mount base for dirt and corrosion. If the illuminator is loose on the rail, move to a different position on the rail or move to a different rail on weapon, or replace the rail on weapon.	-Quick Release mount is loose, parts are missing or broken.
4	B/D/A	Remote Cable Port.	-Check for mud or dirt and clean as needed.	
5	B/A	Battery Compartment.	-Check for corrosion and for presence of spring.	-Contacts are corroded or broken.

Table 4-1 Preventive Maintenance Checks and Services

Item No.	Interval	Item to Check/Service	Procedure	Not Fully Mission Capable If:
6	B/A	Install Battery.	-Install a known good battery.	
7	B/A	Activation Mode Selector Switch and Integrated Momentary Activation Switch.	-Select LOW using the Activation Mode Selector Switch. Select FIRE and observe the beam spot on wall. Repeat for HI activation position.	-Activation Mode Selector Switch inoperative IR LED illuminator beam spot not visible.
8	A	Battery	-Remove battery.	

CHAPTER IV – SECTION II TROUBLESHOOTING

4.2 GENERAL

The purpose of troubleshooting is to systematically search and identify the source of a problem. The most frequent equipment malfunctions, probable causes and corrective actions for the Mk3 Battle Light are listed in Table 4-2. Perform the tests, inspections and corrective actions in the order they are listed. This manual does not list all malfunctions, tests, inspections, or corrective actions that may occur.

Table 4-1 Preventive Maintenance Checks and Services

Malfunction	Test / Inspection	Corrective Action	Ref. Para.
NOTE: Mk3 Battle Light WILL NOT OPERATE IF THE ROTARY SWITCH IS NOT PRECISELY ALIGNED			
1. Illuminator beam fails to come on or stay on.	a. Ensure Activation switch is on and Mode selector switch is in proper position. c. Verify battery installation. d. Inspect battery cap for damage or corrosion. e. Inspect battery contact spring in the battery compartment for damage or corrosion.	-Properly align switch. -Install new battery. -Notify Unit Maintenance. -Notify Unit Maintenance.	0, 3.2.a 3.2.a 5.3.a 5.3.a
2. Illuminator Beam has become weak (not as bright).	a. Verify that Exit Port Lens is not obscured by mud/dirt.. b. Verify Exit Port Lens is not scratched or pitted c. Verify battery installation.	-Clean illuminator Exit Port lens. -Notify Unit Maintenance. -Install new battery.	4.3.b 3.2.a
3. Low Battery Indicator Light remains on when new battery is installed.	a. Inspect battery compartment for corrosion. b. Inspect Battery Cap contact for corrosion.	-Clean battery compartment contacts. -Clean battery cap contact.	4.3.c 3.2.a
4. Remote Cable Switch inoperable, but Integrated Momentary Activation Switch functions.	a. Verify Remote Cable Switch plug is fully seated. b. Verify Remote Cable Port is free of mud/dirt. c. Inspect Remote Cable Plug contacts. d. Verify function of Remote Cable Switch.	-Reconnect plug. -Flush with water. -Clean as needed. -Notify Unit Maintenance.	3.2.e 4.3.f 4.3.f 5.3.a

CHAPTER IV – SECTION III OPERATOR MAINTENANCE

4.3 GENERAL

WARNING

DO NOT store the Mk3 Battle Light with the battery installed.

CAUTION

The use of gun cleaning agents that contain perchloroethylene or methylene chloride may permanently damage the Mk3 Battle Light system.

The Mk3 Battle Light is a rugged, compact illuminator device that is designed to operate in severe environments. The exterior housing is made of aircraft grade aluminum and the outer components are made of chemically resistant materials that will not be harmed by chemicals normally encountered. User maintenance is limited to the inspection and cleaning of the Mk3 Battle Light external surfaces, replacement of the battery before each use and removal of the battery after each use.

4.3.a External Cleaning

Clean the exterior of the Mk3 Battle Light by flushing with water and wiping with a clean, soft cloth. Cleaning should be done whenever the Mk3 Battle Light becomes dirty or after exposure to salt water.

4.3.b Exit Port Lens Cleaning

To clean the Exit Port Lens, wipe clean using a soft cloth or disposable applicator dampened with water.

4.3.c Battery Compartment

Before each use, inspect the battery and battery compartment for dirt, dust, or corrosion. If dirty, clean using a soft cloth or disposable applicator.

4.3.d Battery

Before each use, inspect the battery and battery compartment for dirt, dust or corrosion. If dirty, clean using a soft cloth or disposable applicator.

4.3.f Battery Removal and Replacement

Refer to Chapter III, Paragraph 3.2.a for Battery Installation procedures. No special tools or equipment are required to replace the battery.

4.3.f Remote Cable Port

Before each use, inspect the remote cable port for dirt, dust or corrosion. Thoroughly clean the receptacle by flushing with water then wipe with a soft cloth or disposable applicator.

4.4 REMOVAL AND REPLACEMENT OF PARTS

Maintenance is authorized for the removal and replacement of a limited number of assemblies. Special tools or equipment are not required for maintaining the Mk3 Battle Light.

4.4.a Remove and Install Battery

See Chapter III, Paragraph 3.2.a for procedures. Figure 4-1 depicts the removal and installation of the batteries. Type of battery to use is model dependent.

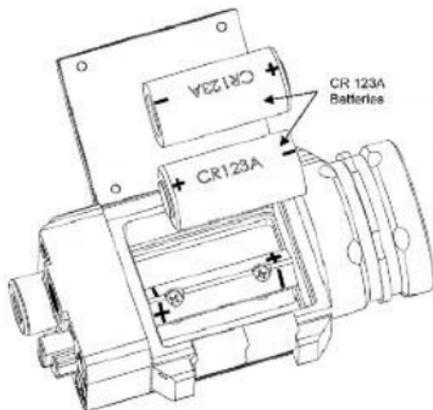


Figure 4-1 Battery Removal and Installation

CHAPTER V – SERVICE/PACKING AND UNPACKING

5.1 Steiner 3-Year Laser Device Warranty

On all laser devices, Steiner offers a 3-Year Limited Warranty from the date of purchase that covers all laser, optical and electronic components, materials and workmanship. All warranties are void if the serial number or manufacturer's labels affixed to the product have been removed, or if products have been abused, misused, modified, neglected or have been disassembled prior to return to the manufacturer.

5.2 Return Instructions

5.2.a If you require warranty or repair service please contact Steiner Optik, and we will determine the best way to fix your device. For more information, email laserlightsinfo@steiner-optics.com or call 888-288-7747.

5.2.b To assist Customer Service with determining if the item is repairable, please provide the following information:

1. Serial Number of the defective item
2. Thorough description of the malfunction, defect or damage
3. An explanation as to how the malfunction, defect or damage occurred, if known.

If the Customer Service determines that the item is under warranty or should be returned for repair, a Return Material Authorization (RMA) number will be provided.

5.2 Return Instructions

5.2.c When returning the Mk3 Battle Light for service or repair, the following procedures should be followed to prevent any additional damage:

1. Be sure that the Mk3 Battle Light is free of all contaminants such as dirt or any other foreign material.
2. Remove the battery.
3. Place the Exit Port Covers over each of the lenses.
4. Place the Mk3 Battle Light in the Shipping Case or Carrying Case if available. If the Shipping Case is not available, individually package each Mk3 Battle Light unit being returned in a suitable container.

5.2.d Place the Mk3 Battle Light and a copy of the test report or detailed description of the failure in a suitable packing/shipping container. Mark the package with the RMA number. Ship by the fastest, traceable, prepaid means to Steiner Optik.

APPENDIX A REPAIR PARTS

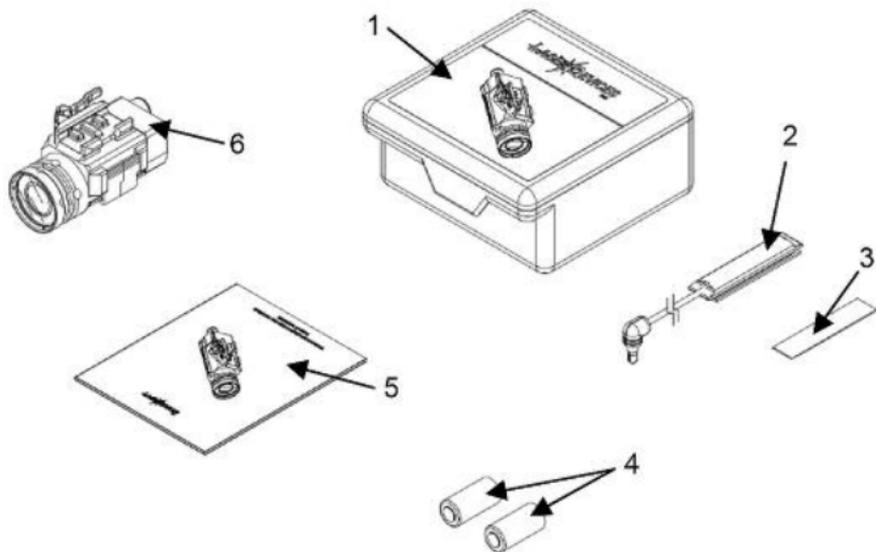


Figure 1 Repair Parts

Table A-1 Repair Parts List

Item No.	Description	QTY
1	Clear box and foam insert	1
2	Right Angle Remote Cable Switch, 7"	1
3	Loop Tape	1
4	3V CR 123A Battery	2
5	Technical Manual	1
6	Mk3 Battle Light Assembly	1



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