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creators of MAXA BEAM SEARCHLIGHTS

Operation and Maintenance of Legacy Maxa Beam Searchlight Battery Systems

Handheld Maxa Beam Searchlights are powered by rechargeable battery packs that attach to the underside of the searchlight.

The standard Operation Manual covers the use of Peak Beam's current MBP-1308 Lithium Iron Phosphate ($LiFePO_4$) batteries. The Operation Manual is available for download at http://www.peakbeam.com/downloads/.

This document covers operation and maintenance of older battery chemistries including MBP-1207 NiCad Battery Systems, MBP-1307 Lithium Ion Battery Systems and MBP-1310 Lithium Iron Phosphate Battery Systems.

If you have a technical question not covered in this document, please contact Peak Beam's Technical Support Department and we will be happy to assist you: 1-610-353-8505 / techsupport@peakbeam.com.

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General Safety Warnings

ANSI Risk Group 3. Warning.
Visible and infrared radiation emitted from this searchlight.
Permanent eye damage can result. Avoid direct exposure to the beam.

- **Do not look directly into the searchlight beam.** Exposure of the eye to either the direct searchlight beam or a beam reflected from a flat mirror-like surface can cause permanent eye injury to the unprotected eye. Follow the same precaution even when an Infrared Filter is installed on the searchlight.
    - **Nominal Ocular Hazard Distance (NOHD), Visible Light:** 10 meters
    - **NOHD, Infrared Light:** 30 meters for exposures greater than 10 seconds
- **Do not operate searchlight if the front lens is damaged or removed.** Ultraviolet injury to skin and cornea can occur if the searchlight is operated with a damaged front lens or if the lens is removed.
- **Do not allow the concentrated beam of light to be focused on flammable materials at close distances for prolonged periods of time.**
- **Do not operate light in an explosive environment.**
- **Do not touch lamp connections during operation** as high voltage is present.
- **Do not touch the quartz envelope of the lamp.** If the lamp is accidentally touched, clean with alcohol or the solution supplied in the replacement lamp kit.
- **Always wear protective eyewear, long sleeves, and gloves if removing the front lens cover.** The lamp is under positive pressure and should be handled with care.
- **Always disconnect searchlight from power cord when not in use, when placed in storage or when being transported** to prevent accidental activation.
- **Maxa Beam Batteries are for use with Maxa Beam Searchlights only.** They should never be used with any other device.

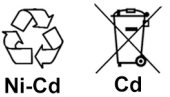
MBP-1207 Nickel Cadmium (NiCad) Batteries

The MBP-1207 NiCad Battery is rated at 1000 cycles and can be conditioned for optimum performance on the MBP-5200 or MBP-5600 Series charger. As with all Nickel-based batteries, this battery should not be stored in a discharged condition and may be permanently damaged if excessively discharged.

Maxa Beam searchlights have protective circuitry incorporated in their design to prevent excessive discharging of batteries. This protective circuitry can be overridden if the situation warrants risking damage to the batteries by pressing and holding down the red power button. This emergency override procedure may yield several minutes of remaining battery power.

MBP-1207 7Ah NiCad Battery			
Run Time	55 minutes *(high)*	90 minutes *(default)*	135 minutes *(low)*
Charge Time	18 hours	2.5 hours	
Compatible Chargers	MBP-3100 Series Trickle Chargers	MBP-4000 Series Chargers MBP-5200 Series Smart Charters MBP-5600 Series Smart Chargers	
Life Cycles	1,000		
Dimensions	5 x 7.25 x 3.5 inches		
Weight	5.5 lbs.		

Battery Safety Warnings:



- Do not expose to fire or open flame.
- Do not puncture, deform, incinerate or heat above 85°C (185°F).
- Do not open or disassemble. Batteries are sealed in a waterproof case with no user-serviceable components. Do not attempt to use a battery that has a damaged case; please contact the factory about our re-casing service.
- Battery must be recycled or disposed of properly. Do no dispose in fire or landfill.
- A Safety Data Sheet (SDS) for this battery is available upon request.

Battery Transport:

Sealed Nickel Cadmium batteries are considered to be "dry cell" batteries and are not subjected to dangerous goods regulation for the purpose of transportation by the U.S. Department of Transportation (DOT), the International Civil Aviation Administration (ICAO), the International Air Transport Association (IATA) or the International Maritime Dangerous Good regulations (IMDG).

International air transport is not restricted provided that, as stated in IATA special provision A123, batteries and battery powered devices/equipment being transported by air are protected from short-circuiting.

Battery Charging:

To maintain peak battery run time, always discharge the NiCad Battery fully before recharging with a MBP-3110 Trickle Charger or conducting a *fast charge* on a MBP-5200 or MBP-5600 Charger. Battery may be recharged at any state of charge if conducting a *conditioning charge* on a MBP-5200 or MBP-5600 Series Charger.

Charging with MBP-3110 Trickle Chargers:

The MBP-3110 Plug-In Trickle Charger is designed to charge the MBP-1207 NiCad Battery only. Do not use this charger to charge a Lithium-based Maxa Beam battery or any other device. This charger may be used with either a 110V or 220V AC power input supply.

1. Set input supply voltage switch to the appropriate voltage (110V or 220V).
2. Plug wall adapter into an outlet and connect its output connector to the NiCad battery.
1. The battery will recharge in approximately 18 hours. **Do not leave battery connected to Trickle Charger for more than 48 hours as this may cause permanent battery damage.**

Charging with MBP-4000 Series Chargers:

MBP-4000 Series Smart Chargers such as the MBP-4200 AC Charger/Power Supply were discontinued in 2001. Please consult the Operation Manual that shipped with your charger for operation and troubleshooting information. Please contact Peak Beam Systems, Inc. if you need any additional support.

Charging with MBP-5200 and MBP-5600 Series Chargers:

MBP-5200 and MBP-5600 Series Multi-Voltage Chargers are designed to charge MBP-1207 NiCad Batteries only. For mobile and vertically mounted applications, always use the safety strap to secure the battery or battery and searchlight to the charger. These chargers can accept input voltages of 11-36VDC or 100-240VAC 50/60Hz depending on which Maxa Beam adapters are used with them.

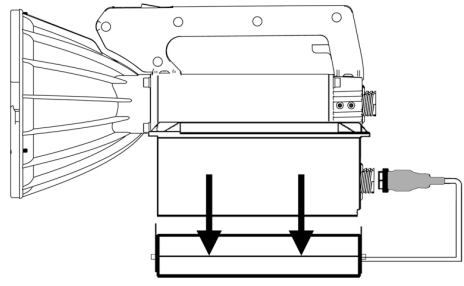
NiCad Batteries can be charged with either a slow 18 hour trickle charge or a fast 2.5 hour charge. An optional conditioning cycle discharges the battery fully before charging it. **The NiCad Battery may be left connected to the MBP-5200 or MBP-5600 charger for prolonged periods of time without damaging battery** and the charge level will be maintained.

The **MBP-5600** Charger also acts as a power supply and can directly power the light from an 11-36VDC or 100-240VAC 50/60Hz source. The MBP-5600 will automatically stop charging the battery if an attached searchlight is turned on. When light is turned off charging will resume.

CAUTION: Do not attempt to charge two batteries at the same time with one charger. Make sure that you do not have one battery resting on top of the charger while a second battery is connected to the pigtail as this may damage the charger.

Lower Battery onto Charger

DO NOT SLIDE IN HORIZONTALLY!



1. Plug the charger into external power, ensuring that proper adapter is being used to match local voltage. The **RED** indicator light will turn on.
2. For a slow 18 hour trickle charge, lower the battery, with or without searchlight, onto the charger. *Do not slide battery in horizontally.* Indicator light **FLASHES AMBER** during trickle charge then turns solid **GREEN** when charged.
3. For a fast 2.5 hour charge, lower battery onto charger tray and connect the charger's pigtail to the battery. Indicator light will turn solid **AMBER** during fast charge then turn solid **GREEN** when battery is charged.
4. For a conditioning charge cycle, lower battery onto charger tray, connect pigtail and press the green recessed button on the charger. Indicator light will **FLASH GREEN** as battery is discharged, turn solid **AMBER** during charging, then turn solid **GREEN** when charged. The charger will become very warm during this cycle, which may take up to 24 hours.
5. If the indicator light turns **RED** when a battery is connected to or on top of the charger, the searchlight power cord or the internal battery circuit is open. A **FLASHING RED** indicator light signifies a fault. Consult the Troubleshooting section of this guide.
6. To directly power the light *(MBP-5600 Chargers Only),* connect the female end of the light's power cord to the male connector on the light. Connect male end of the power cord to the female receptacle on the body of the MBP-5600 unit.

Note: If using an MBP-5200 or MBP-5600 series charger in an environment where salt water can splash onto the charger, wipe charger thoroughly to remove any pooled water and wipe the battery's charging contacts dry before attempting to charge the battery.

MBP-1307 Lithium-Ion Batteries

The MBP-1307 Li-Ion Battery is rated at 500 cycles and features a five-level LED fuel gauge. The Li-Ion Battery is compatible with all Maxa Beam Searchlights.

MBP-1307 6.6Ah Li-Ion Battery			
Run Time	60 minutes *(high)*	110 minutes *(default)*	135 minutes *(low)*
Charge Time	3 hours		
Life Cycles	500		
Dimensions	5 x 7.25 x 2.75 inches		
Weight	2.5 lbs.		
Compatible Charging Adapters	MBP-5003: 3A 100-240VAC Adapter MBP-5230: 10-29VDC Vehicle Adapter MBP-5010: 10A 100-240VAC Adapter MBA-7406: NATO Slave Adapter MBP-5630: 10-29VDC Vehicle Adapter MBP-4000S: 100-240VAC Power Supply MBP-7110: 12VDC Vehicle Adapter		

Battery Safety Warnings:

- Do not expose to fire or open flame.
- Do not puncture, deform, incinerate or heat above 85°C (185°F).
- Do not open or disassemble. Batteries are sealed in a waterproof case with no user-serviceable components. Do not attempt to use a battery that has a damaged case; please contact the factory about our re-casing service.
- Do not dispose in fire. Disposal must be conducted in accordance with applicable local, state, or national regulations. Batteries contain recyclable materials; recycling is encouraged over disposal.
- A Safety Data Sheet (SDS) for this battery is available upon request.

Battery Storage and Transport:

Always disconnect battery from the searchlight before storing or transporting. If storing battery for long periods of time, recharge once every three months. Store in a cool, dry location not subject to frequent temperature fluctuations. Elevated temperatures can result in reduced battery service life.

All Lithium Ion batteries are classified as Class 9 Dangerous Goods for air, sea and surface transport and must be packaged and transported according to applicable regulations. However, small batteries such as the MBP-1307 Li-Ion Battery are not subject to certain provisions of the regulations (e.g. Class 9 labeling and UN specification packaging).

Batteries must be identified as “UN 3480, Lithium Ion batteries” or “UN 3481, Lithium Ion batteries, packed with equipment.” For air shipments, batteries must be packed and marked according to IATA/ICAO PI 965 Sec II (batteries only) or PI 966 Sec II (with equipment).

Defective, damaged, or recalled Lithium Ion Batteries are forbidden for air transport.

Battery Charging:

Use only approved Peak Beam chargers. Improperly charging a battery may reduce service life and, in extreme cases, may cause the product to flame or leak.

1. Locate Li-Ion battery and compatible charging adapter. (See table on page 6.)
2. Plug the female end of the power adapter into the male connector on the battery. *All connections are keyed; never force connections.*
3. Connect the power adapter to the appropriate power source. The battery's bottom LED indicator will light, signifying that power is connected.
4. The battery will begin to charge automatically and the charge will complete in approximately 3 hours. When charge is complete the fuel gauge lights will turn off.

MBP-1310 Lithium Iron Phosphate ($LiFePO_4$) Batteries

The MBP-1310 10Ah Lithium Iron Phosphate ($LiFePO_4$) Battery is compatible with all Maxa Beam Searchlights, however, the LiFePO4 battery's connected differs from the connectors on older Maxa Beam batteries. Therefore, a $LiFePO_4$-specific power cord (signified with "-L" suffix) must be used to connect this battery to a searchlight.

MBP-1310 10Ah Lithium Iron Phosphate Battery			
Run Time	90 minutes *(high)*	135 minutes *(default)*	170 minutes *(low)*
Charge Time	120 minutes		180 minutes
Compatible Chargers	MBP-3205: 100-240VAC Charger MBP-3230: 12VDC Charger MBP-4312: 12VDC Power Inverter		MBP-3200: 1st Gen. AC/DC $LiFePO_4$ Charger
Life Cycles	2,500		
Capacity	10 Amp-hours / 120 Watt-hours		
Dimensions	5 x 7.25 x 3.5 inches		
Weight	3.5 lbs.		

Battery Safety Warnings:

- Do not expose to fire or open flame.
- Do not puncture, deform, incinerate or heat above 85°C (185°F).
- Do not open or disassemble. Batteries are sealed in a waterproof case with no user-serviceable components. Do not attempt to use a battery that has a damaged case; please contact the factory about our re-casing service.
- Do not dispose in fire. Disposal must be conducted in accordance with applicable local, state, or national regulations. Batteries contain recyclable materials; recycling is encouraged over disposal.
- A Safety Data Sheet (SDS) for this battery is available upon request.

Battery Storage and Transport:

Always disconnect battery from the searchlight before storing or transporting. If storing battery for long periods of time, recharge once every six months. Do not store batteries above 60°C (140°F) or below -20°C (-4°F). Store in a cool, dry location not subject to frequent temperature fluctuations. Elevated temperatures can result in reduced battery service life.

The MBP-1310 10Ah LiFePO4 Battery is classified as Class 9 Dangerous Goods for air, sea and surface transport and must be packaged and transported according to applicable regulations. Batteries must be identified as "UN 3480, Lithium Ion batteries" or "UN 3481, Lithium Ion batteries, packed with equipment." For air shipments, batteries must be packed and marked according to IATA/ICAO PI965 Section 1A (batteries only) or PI966 Sec I (with equipment).

Defective, damaged, or recalled Lithium Ion Batteries are forbidden for air transport.

Battery Charging:

Use only approved Peak Beam chargers. Improperly charging a battery may reduce service life and, in extreme cases, may cause the product to flame or leak.

Charging with MBP-3200 1st Generation AC/DC $LiFePO_4$ Chargers:

1. Locate Battery and MBP-3200 AC/DC Charger. Connect charger's 110-240VAC Power Adapter or 12VDC Vehicle Adapter. Connect adapter to appropriate input power source.
2. Connect the charger's pigtail to battery. **Battery will automatically begin to charge.** Charger LED will turn **FLASH GREEN** during charge and turn **SOLID GREEN** when charge is complete.
3. **Do not leave battery connected to charger for longer than 24 hours.**

Charging with MBP-3205 or MBP-3230 Chargers:

1. **To charge battery from a 100-240VAC Power Source,** locate the MBP-3205 AC Charger. Connect charger's power cord to a 100-240VAC power source. Connect charger to battery.
2. **To charge battery from a 12VDC Vehicle,** locate the MBP-3230 DC Charger. Connect charger's 12V cigarette lighter plug to vehicle's 12V receptacle. Connect charger to battery.
3. **Battery will automatically begin to charge.** Charger's LED will turn **RED** during charging and will turn **GREEN** when charge is complete. The MBP-3205 AC Charger's LED may pulse green during final charge stage.
4. **Do not leave battery connected to charger for longer than 24 hours.**

Charging with MBP-4312 12VDC Inverter:

1. Locate the MBP-3205 AC Charger. Connect charger's power cord to a 100-240VAC power source. Connect charger to battery.
2. Locate the MBP-4312 Inverter. Connect inverter's 12V cigarette lighter plug to a vehicle's 12V receptacle. Plug charger into inverter's 110V outlet.
3. Turn Inverter's toggle power switch to the on positon. Battery will automatically begin to charge. Charger's Charger's LED will turn **RED** during charging and will turn **GREEN** when charge is complete. The MBP-3205 AC Charger's LED may pulse green during final charge stage.
4. **Do not leave battery connected to charger for longer than 24 hours.**

Troubleshooting

Symptom	Probable Cause	Remedy
Searchlights, All		
Searchlight ignites but then flashes repeatedly or turns off after 1-2 seconds	Low/Dead Battery OR Low Input Voltage	Charge Battery OR Check Power Source
	If Battery/Input Voltage are OK, Bad Lamp	Replace Lamp
	For Gen. 2* Searchlights only, Failed Ignition Circuit	Call Factory for an RMA #
Searchlight ignites but turns off when switched to high beam	Low Battery OR Low Input Voltage	Charge Battery OR Check Power Source
Nothing happens when power button is pressed	No Power	Check Power Source and Cable
Searchlight turns on but motorized focus will not work	Spot/Flood Limits not set correctly	Adjust Spot/Flood Limits *(p. 7)* or Restore Factory Settings *(p. 8)*
	If Restore Settings does not resolve issue, Defective Servo or Switch/Controller	Call Factory for an RMA #
Searchlight turns on but high/strobe and focus will not work	Defective Switch/Controller	Call Factory for an RMA #
Searchlight beam will not focus to the full flood position	Flood Limit not set correctly OR Lamp is not fully seated in socket	Reprogram Flood Limit *(p. 7)* OR Reseat Lamp *(p. 14-15)*
Searchlight turns on but will not change power level	Supply Voltage is too high	Ensure Supply Voltage is within correct range *(p. 18)*
MBP-1207 NiCad Batteries		
Battery hot and will not run searchlight	Internal thermal circuit breaker in battery is tripped	Disconnect battery from searchlight; Allow to cool until breaker auto resets
Battery runs light for shorter and shorter duration	Battery has developed memory	Discharge battery until light turns off & then recharge; Repeat cycle until no improvement in run time is observed OR Run a conditioning cycle on 5200 or 5600 Series Charger OR Return battery to Factory for evaluation
MBP-5200 & MBP-5600 Series Chargers		
Indicator does not light	No power OR Reversed polarity	Check power source OR Check fuse in vehicle power adapter
Indicator flashes red with no battery connected	Incorrect Voltage	Check power source OR Check fuse in vehicle power adapter
Indicator flashes red when a battery is connected	Battery is shorted OR Battery has bad cells OR Battery is too hot or cold	Try another Battery OR Bad Charger
Indicator alternates between red and amber when battery is connected	Insufficient Power	Check Line Voltage if using AC adapter; Try different AC adapter OR Make sure socket is clean on DC Vehicle Adapter
Indicator stays red when a battery is connected or set on top	Battery is bad OR has overheated	If battery is warm, allow to cool and try again

**Gen. 2 searchlights were sold prior to 2005. The searchlight's generation is indicated by a "G2" (for Gen. 2) or "G3" (for the current Gen. 3) in the serial number.*

Indicator stays red when battery set on top & turns amber when pigtail connected	Dirty trickle charge contacts OR battery is turned in the wrong direction	Clean contacts OR Turn Battery around
Indicator turns solid amber instead of flashing amber when battery is set on top without its tail connected	Defective Charger	Call Factory for an RMA #
The fast charge cycle ends before battery is fully charged	Battery is out of balance OR Over-discharged	Allow Battery to slow charge for one cycle (place battery on top & do not connect pigtail) and wait for flashing amber indicator to turn solid green (takes about 14 hours)
MBP-5600 Series Chargers Only		
The indicator flashes red when powered up with something connected to the searchlight power jack	Something other than a searchlight is connected OR Red button is pressed on light OR Shorted light or coil cord	Only power Maxa Beam searchlights with MBP-5600 OR Allow MBP-5600 to power up before pressing power button OR Try another light and/or cord
Searchlight occasionally strobes or blinks once when starting if it is cold	Normal	Contact Factory if this happens consistently or if this is a problem for your application
Searchlight jack is out-putting 20 volts	Normal	Output will instantly drop to 13V when light is turned on
Searchlight continuously strobes and the indicator light does not go out when attempting to turn on searchlight	Defective MBP-5600	Call Factory for an RMA #; Do not attempt to use with a searchlight until MBP-5600 is repaired
MBP-1307 Lithium Ion Battery Systems		
Battery hot and will not run searchlight	Internal thermal circuit breaker in battery is tripped	Allow to cool until breaker auto resets
Light turns off during high beam use when battery's charge is <40%	Internal thermal circuit breaker in battery is tripped	Wait for internal breaker to auto reset
Light will not turn on when battery is connected to charging adapter	Battery cannot power light when connected to charging adapter	Disconnect charging adapter
MBP-4312 12VDC Power Inverter (MBP-1307 Li-Ion Battery)		
Error LED turns solid red	Low Input Voltage	Check Power Source; toggle power switch to clear error and reset
Error LED turns solid red and buzzer sounds for 1 minute	Input Voltage below 10VDC threshold	Check Power Source; toggle power switch to clear error and reset
Error LED flashes red	High Input Voltage or Overload	Check Power Source; toggle power switch to clear error and reset
Error LED flashes red and buzzer sounds for 1 minute	Overheating	Allow to cool; toggle power switch to clear error and reset
MBP-1310 Lithium Iron Phosphate ($LiFePO_4$) Battery Systems		
Battery will not run Searchlight	Battery discharged OR short circuited	Connect battery to charger
Power cord will not connect to battery	Older-style cord is being used	Utilize a $LiFePO_4$-specific power cord to connect to the battery; older cords are not compatible
Charger's LED does not light *(all charger models)*	No Power OR Defective Charger	Check Power Source OR Call Factory for an RMA #
Charger's LED Flashes Red *(MBP-3200 Only)*	No Power OR Blown Fuse in Adapter	Check Power Source OR Replace fuse in plug with new 3AG 15A fuse.

Warranty and Repairs

Warranty

Peak Beam Systems, Inc. warrants that for a period of 12 months from the date of purchase that its products (except as listed below) shall be free of defects in materials and workmanship under normal use and that Peak Beam Systems, Inc. shall, at its option, repair or replace any defective product upon the prepaid return of the product to its factory. In the case of any lamp, light bulb or other form of light source and the battery, the warranty period shall be 90 days.

The warranty only applies to defects in materials and workmanship and not to damage incurred in shipping or handling, damage due to abuse, misuse, alteration or improper application of the equipment. Damage incurred in return shipping and handling due to improper packaging is not covered.

In order to be eligible for coverage under the warranty, the equipment must have the original Peak Beam Systems, Inc. label with a legible serial number attached. Removal of any portion of the factory-affixed labels on any product will result in the voiding of any written or implied warranty.

The foregoing warranty is in lieu of any and all other warranties whether expressed or implied. This warranty contains the entire warranty. Peak Beam Systems, Inc. authorizes no other person or organization to modify this warranty or to assume for it any other warranty or liability concerning its products. The remedies of the buyer set forth hereon are exclusive and the liability of Peak Beam Systems, Inc. whether arising out of contract, negligence, strict tort, any warranty or otherwise shall not, except as expressly provided, exceed the price of the goods upon which such liability is based.

In no event shall Peak Beam Systems, Inc. be liable for direct, indirect or consequential damages, loss of anticipated profits, loss of time or any other losses incurred by the buyer in connection with the purchase, installation, operation or failure of operation of the product.

Returns to the Factory

All factory returns must have a Return Material Authorization (RMA) number. Peak Beam Systems is not responsible for items returned without an authorization number. All warranty returns without an RMA number will be returned at the customer's expense. RMA numbers can be obtained by calling 1-610-353-8505 or e-mailing techsupport@peakbeam.com. Please provide the following information:

- Serial number(s) of unit(s) to be returned
- Date and location of purchase (if known)
- For service returns, a description of the problem
- Method of payment for non-warranty service

Products returned by the customer to Peak Beam Systems must be sent freight prepaid.

Out-of-warranty repairs must be prepaid unless other arrangements have been made. Non-U.S. warranty repairs and out-of-warranty repairs will be returned to the customer by the customer's choice of freight carrier with the freight charges paid by the customer.

Domestic warranty repairs will be returned freight prepaid by Peak Beam Systems, Inc.'s choice of freight carrier with the freight charges paid by Peak Beam Systems. The customer will pay any additional freight costs for special handling or expedited freight.

Returns of non-defective goods will only be accepted from the original buyer within 90 days of sale and must be in "like new" condition. These returns are subject to a minimum restocking charge of 20% plus freight out and must be returned freight prepaid. Custom equipment is not returnable.