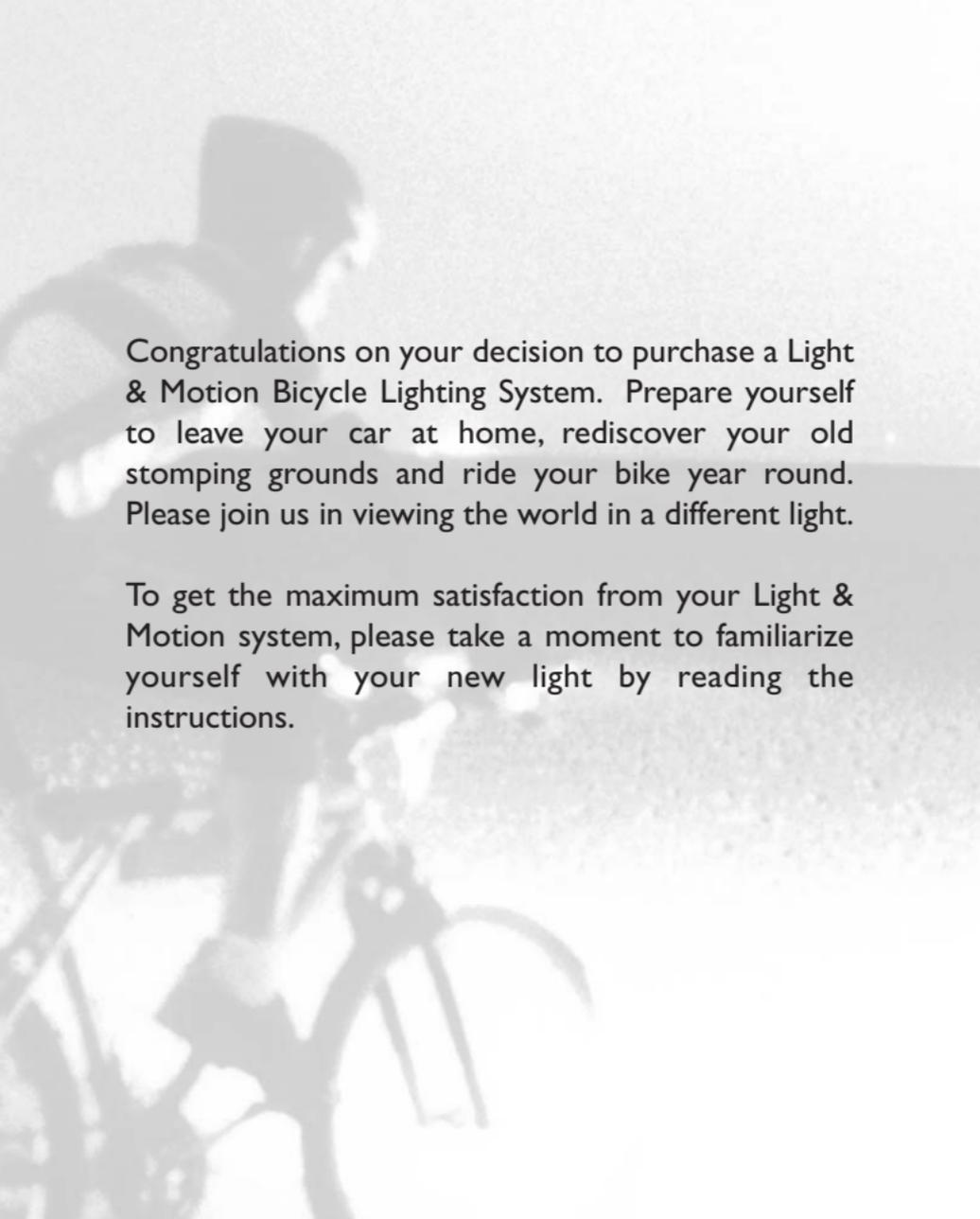




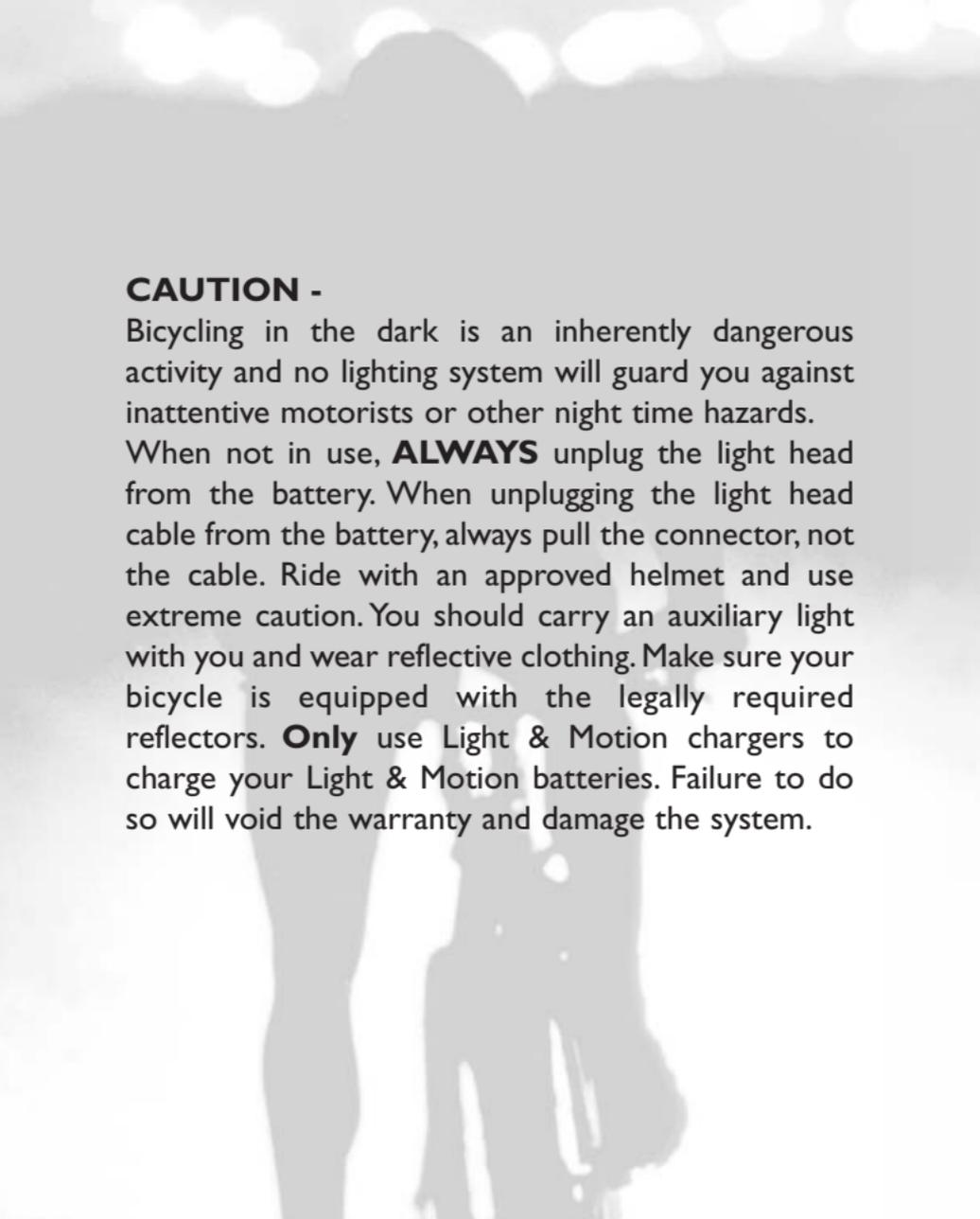
LIGHT & MOTION

2005 Bike Light Owner's Manual



Congratulations on your decision to purchase a Light & Motion Bicycle Lighting System. Prepare yourself to leave your car at home, rediscover your old stomping grounds and ride your bike year round. Please join us in viewing the world in a different light.

To get the maximum satisfaction from your Light & Motion system, please take a moment to familiarize yourself with your new light by reading the instructions.



CAUTION -

Bicycling in the dark is an inherently dangerous activity and no lighting system will guard you against inattentive motorists or other night time hazards.

When not in use, **ALWAYS** unplug the light head from the battery. When unplugging the light head cable from the battery, always pull the connector, not the cable. Ride with an approved helmet and use extreme caution. You should carry an auxiliary light with you and wear reflective clothing. Make sure your bicycle is equipped with the legally required reflectors. **Only** use Light & Motion chargers to charge your Light & Motion batteries. Failure to do so will void the warranty and damage the system.

Warranty

Light & Motion offers a 30 day warranty on all lamps and a 90 day warranty on all batteries. All other facets of Light & Motion systems carry a one year warranty against manufacturer defects.

Returning Products for Warranty Evaluation, or Repair:

Should your system malfunction for any reason, contact the Light & Motion service department at (831) 645-1538 to schedule service and receive an RMA number to return your light to us. Please make sure to unplug the battery from the light before shipping. All warranty and repair product should be returned with proof of purchase to:

Light & Motion
300 Cannery Row
Monterey, CA 93940

In the UK contact your local bicycle dealer for warranty instructions.

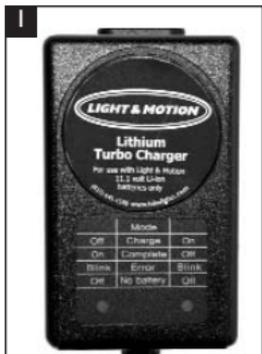
Table of Contents

Warranty and repair information	4
ARC Li-ion parts identification	6
ARC NiMH parts identification	8
Solo Logic Li-ion and NiMH parts identification	10
Commuter parts identification	12
Vega parts identification	14
Charging your battery using the Turbo Charger	15
Charging the 7.2v NiMH battery using the trickle charger	19
Installation of light head and battery	20
Bar mounted light break-away disk replacement	22
Installing the strap on the 7.2v NiMH and Li-ion battery	23
Installing the strap on the 10.8v NiMH and 11.1v Ultra battery mount ...	23
Installing battery on frame	25
Attaching the light head to the battery	26
Mounting the light head to the Cabeza mount	27
Mounting the Cabeza light head	28
ARC and ARC Li-ion HID light operation	29
ARC NiMH low battery warning and discharge protection	30
ARC HID run times	31
Solo Logic Mv light operation	32
Solo Logic run times	33
Commuter light operation	34
Commuter light run times	34
Vega LED light operation	35
Vega run times	35
Charging the Vega	36
Lamp replacement	37

Light & Motion ARC Li-ion and Li-ion Ultra HID system parts identification

Please verify the contents of your Light & Motion lighting system.

1. Lithium ion Turbo Charger
2. 11.1v Li-ion battery
3. 11.1v Ultra Li-ion battery
4. ARC Li-ion HID light w/ bar mount
5. Handle bar mount w/ spacers
6. Cabeza helmet mount
7. Slimline battery mount (6 amp/hr. Ultra battery ONLY)
8. Hook and loop bomber strap
9. Spare break-away disks (2)



Light & Motion ARC NiMH HID system parts identification

1. NiMH Turbo Charger
2. 10.8v NiMH Slimline battery
3. ARC HID light w/ bar mount
4. Handle bar mount w/ spacers
5. Cabeza helmet mount
6. Slimline battery frame mount with bomber strap
7. Spare break-away disks (2)

Light & Motion Solo Logic Li-ion and NiMH Mv system parts identification

A) Solo Logic Li-ion

1. Solo Logic Mv light w/“Lefty” wing mount
2. Handle bar mount w/ spacers
3. Cabeza helmet mount
4. Hook and loop bomber strap
5. Li-ion Turbo Charger
6. 11.1v Lithium ion (4Amp/hr) Battery

B) Solo Logic Mv NiMH

1. Solo Logic Mv light w/“Lefty” wing mount
2. Handle bar mount w/ spacers
3. Cabeza helmet mount
4. Hook and loop bomber strap
7. Trickle Charger
8. NiMH Turbo Charger (Optional w/ Logic Mv)
9. 7.2v NiMH battery

1



2



3



4



5



6



7



8



9



Light & Motion Commuter parts identification

1. Trickle Charger
2. 7.2v NiMH battery
3. Commuter light w/ bar mount
4. Handle bar mount w/ spacers
5. Hook and loop bomber strap
6. Spare break-away disks (2)



Light & Motion Vega LED system parts identification

1. Vega wall charger
2. Vega light w/ bar mount
3. Handle bar mount w/ spacers
4. Spare break-away disks (2)



Charging your battery using the Turbo Charger™

The Light & Motion Turbo Charger is a universal input system that will work on any wall voltage from 90-260 volts. Depending on the outlet style you may require an adapter to plug the charger into the wall outlet.

Charging the battery using the **Li-ion Turbo Charger**.

Always fully charge your battery before its first use. Batteries are shipped partially charged and must be fully charged to achieve the proper run time.

- 1) Begin by plugging the power cord into the charger and then into the appropriate wall socket.
- 2) Attach the battery to the Li-ion Turbo Charger by aligning the arrow on the socket from the charger with the red dot or arrow on the Ultra Li-ion battery.
- 3) Once the battery is attached to the Li-ion Turbo Charger, a yellow LED will illuminate on the left side of the charger indicating the battery is receiving a charge.

4) After approximately 2 hrs and 45 min. both the yellow and the green LED lights will be illuminated, this indicates the battery is 80% charged.

5) After an additional 2 hrs the battery will be fully charged and only the green LED on the left side will be illuminated.

Two flashing LED lights indicate an error. If this happens remove the battery and unplug the Turbo Charger from the wall and wait about 5 minutes. Then try to charge the system again.

The Li-ion Turbo Charger will charge a fully depleted battery in approximately 4.5 hours.

The Li-ion Turbo Charger will automatically shut off so the battery may be left on the charger indefinitely, without harming the battery.

Note: The Li-ion Turbo Charger is **ONLY** compatible with the Li-ion and Ultra Li-ion batteries.

Charging the battery using the **NiMH Turbo Charger**.

Always fully charge your battery before its first use. Batteries are shipped partially charged and must be fully charged to achieve the proper run time.

Note: NiMH batteries require approximately 5-10 charge and discharge cycles to reach full capacity. Until the battery reaches full capacity your run times may be less than stated.

- 1) Begin by plugging the power cord into the charger and then into the appropriate wall socket.
- 2) Attach the battery to the NiMH Turbo Charger by aligning the arrow on the socket from the charger with the yellow dot (7.2v NiMH) or arrow on the (10.8V NiMH) battery.
- 3) Once the battery is attached to the charger, a yellow LED will illuminate on the right side of the charger indicating the battery is receiving a charge.
- 4) After the battery has received a full charge, a green LED will illuminate on the left side of the charger indicating the battery is fully charged.

Two flashing LED lights indicate an error. If this happens, please remove the battery and unplug the Turbo Charger from the wall and wait about 5 minutes. Then try to charge the system again.

The NiMH Turbo Charger will charge a fully depleted battery in approximately 3.5 hours. Leaving the battery on for approximately 1 additional hour will “top off” the battery for highest capacity.

The NiMH Turbo Charger is designed to fully maintain the battery’s capacity throughout it’s life cycle. The battery can be left connected to the charger indefinitely to keep the battery fully charged and ready for use.

NOTE: The NiMH Turbo Charger uses a DT/dt charging algorithm and is most efficient if the ambient temperature is between 65-80 degrees Fahrenheit. Extreme heat will cause the temperature sensor to give a false “charge complete” reading and will lead to decreased capacity in the battery.

Hint: Always store your battery in a cool dry place and fully recharge it before every ride. Never leave your battery in a discharged state and always fully recharge it after 60-90 days of storage.

Charging the 7.2v NiMH battery using the trickle charger

Always fully charge your battery before its first use. Batteries are shipped partially charged and must be fully charged to achieve the proper run time.

Note: NiMH batteries require approximately 5-10 charge and discharge cycles to reach full capacity. Until the battery reaches full capacity your run times may be less than stated. The 7.2v trickle charger operates only on the specified wall voltage and should be used to charge the 7.2v battery pack only.

1) After plugging the charger into a wall socket, insert the keyed charger plug into the socket on the top of the battery by aligning the raised arrows with the yellow dot on the battery.

Charge time for a fully discharged battery is approximately 14 hours. The battery will become warm to the touch when fully charged. For partially discharged batteries the charge time is approximately proportional to the run time (i.e. 1 hour run time would require a 7 hour charge). To prolong battery life, do not charge over 24 hours.

Hint: A timer attached to the wall socket will help prevent over charging the battery if left on the trickle charger.

Installation of light head and battery

Installing light head assembly

Your Light & Motion Light head comes pre-assembled with the bar style mount attached to the light head.

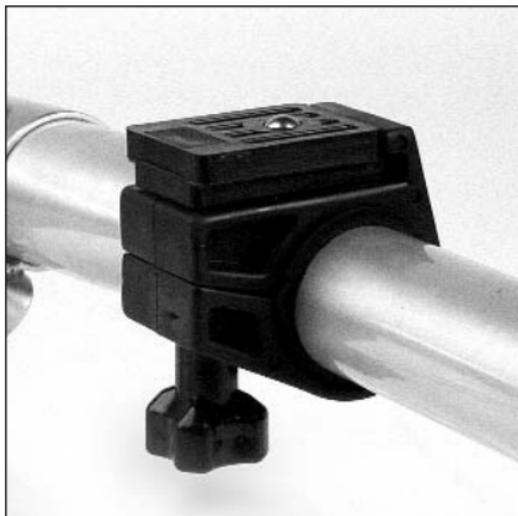
1) Determine the best location for your handle bar mount as it relates to your specific brake/shifter bar layout. Ideally, the bar mount should be attached to the right and as close to the stem as possible.

2) After determining which bar spacer(s) to use (it may be necessary to cut spacers), orient the bar mount with the opening facing rear and the Light & Motion logo facing forward. Securely tighten with the thumb screw.

3) The light head is then secured to the bar mount by a ball detent. Slide the base of the light head onto the bar mount until it seats securely.

4) Once flush to front of mount, it will “lock” into place.

5) To remove press down on the front edge of the light head mount and press backwards.



Bar mounted light break-away disk replacement

The multiple adjustability of the bar mount and light head allow it to resist varying degrees of impact. If the light head receives a hard enough impact, it is designed to break away from the mount, thus protecting the main components.

If broken, remove the Phillips head screw from the underside of the bar mount and replace the break away disc (2 additional disks are included). Align the track on the disc with the cut out on the light head and secure using the supplied Phillips head screw.

Contact Light & Motion for additional replacement parts.
831-645-1538 or www.bikelights.com



Installing the strap on the 7.2v NiMH and 11.1v Li-ion battery

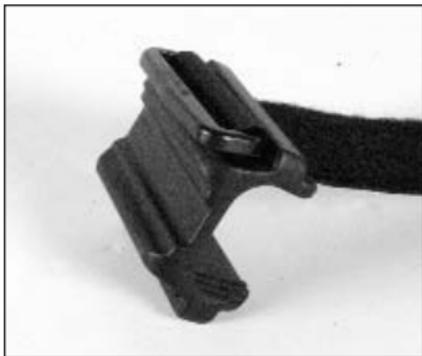
Before mounting the battery to the frame you will need to first attach the supplied hook and loop strap to the battery.

- 1) Feed the strap through the slot on the side of the battery with the hook side facing outward.
- 2) Pull the strap until the sewn end with the buckle is above and about even with slot on the battery.
- 3) Now feed the loose end through the second slot.



Installing strap on the 10.8v NiMH and 11.1v Ultra battery mount

Before mounting the 10.8v NiMH, or 11.1v Ultra Li-ion battery to the frame you will need to first attach the supplied hook and loop strap to the battery mount. Feed the strap through the slot on the side of the battery mount with the hook side facing outward. Pull the strap until the sewn end of the buckle is about even with slot on the mount. Wrap the strap around the bottom of the battery and through the second slot. The battery assembly is now ready to be mounted to your frame, or seat post.



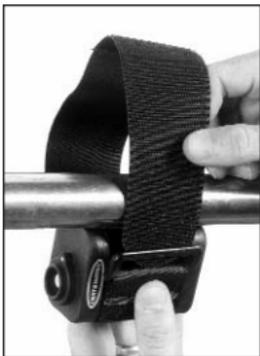
Installing battery on frame

1) Press the side of the battery with the groove against the frame tube, or seat post.

2) Hold the battery between your thumb and fingers with the buckle oriented flush against the side of the battery near the top. Wrap the strap around the frame tube.

3) Once the strap is around the frame tube, pull the strap tight and affix to the back side. (Note: It is very important to squeeze the buckle against the battery with your thumb to keep it from sliding.)

4) If you are mounting the battery on a tube with cables, always run the strap on the inside against the frame). When in the correct position, the strap should reach all the way around the bottom of the battery.



Attaching the light head to the battery

Plug the light head cable into the socket on top of the battery by aligning the arrow on the cable with the arrow, or colored (red, or yellow) dot on the top of the battery. You may choose to loosely coil the excess cable around the frame. Make sure the cable has enough slack to move freely when your handlebar is turned in the furthest position (running the cable first over the handlebar, then back to the battery), this will keep the cable from being pulled out of the light head in a crash.



Mounting the light head to the Cabeza mount

- 1) Remove the Phillips head screw from the bottom of the handlebar mount
- 2) Remove both the small and large break-away disc.
- 3) The optional Cabeza mount comes fully assembled. Remove the Phillips head screw from the Cabeza mount.
- 4) Align the track on the disk with the cut out on the light head.
- 5) Insert the Phillips head screw back through the hole in the bottom of the base plate and tighten with screw driver.



Mounting Cabeza Light Head

The Cabeza mount is designed to be mounted on any standard, vented bicycle helmet. Position the base of the light head on top of the helmet, in the middle and slightly forward of center. Slide the hook and loop strap down through the proper vent, back up through the opposing vent and through the slot in the base of the light head. Pull the strap tight and slide it back down the vent and affix it to the “loop” side of the strap (inside the helmet). Plug the light head cable into the top of the battery by aligning the arrow on the cable with the dot or arrow on the battery. The battery pack is designed to be carried without the bomber strap in a jersey pocket or hydration pack. **Hint:** Running the power cord through one of the back vents of your helmet before connecting it to your battery will keep the cord from sliding from side to side. **CAUTION! - NEVER** attach a Cabeza (helmet) mounted light to a frame mounted battery.



ARC and ARC Li-ion HID light operation

The Light & Motion ARC HID lights all have one switch on the back of the head that controls power. Pushing it quickly twice turns the light on; the light starts in the 13w high mode. The light takes approximately 20 seconds to come to full strength; the green LED will be on. Pushing the button again causes the light output to be reduced to 10w. The green LED on the back of the light head will then go into a slow flash mode. To turn the light off you must press and hold the button for 3 seconds.

ARC Li-ion Battery Discharge Protection:

The ARC Li-ion HID incorporates a battery discharge protection circuit. If the battery becomes discharged, the light head will automatically go into an ultra-low mode and the light will dim significantly. The green LED will also begin to flash very rapidly for one minute. After exactly one minute the light head will then automatically shut down. If the light head shuts down, it can not be restarted until the battery is recharged.

ARC NiMH low battery warning and discharge protection

The ARC NiMH HID also incorporates a low battery warning mode. If the battery capacity drops below a certain threshold, or becomes discharged, the light head will automatically go into the lowest power setting and the LED will begin to flash quickly. This signifies you have approximately 15 minutes of battery power left. If the battery is continued to be discharged, the light head will automatically go into an ultra-low mode and the light will dim significantly. The green LED will also begin to flash very rapidly for one minute. The light will then automatically shut down to preserve the battery. If the light head shuts down it can't be restarted until the battery is recharged.

Note: The HID lamp used in the ARC emits a weak electromagnetic field and will interfere with some wireless cycle computers and heart rate monitors.

Hint: If the ARC HID fails to light on the first try, either unplug the light from the battery, or press and hold the start button for 3 seconds. Then wait 10 seconds to clear the memory before following the starting procedure again.

ARC HID Run Times

Power Level	High	Low
Watts	13.5	10
Burn Time 10.8v NiMH	3:00	3:30
Burn Time 11.1v Li-ion	3:00	4:00
Burn Time 11.1v Li-ion Ultra	4:50	6:05

Solo Logic Mv light operation

The Light & Motion Solo Logic Mv light has one switch on the top of the head that controls power. Pushing it quickly twice turns the light on. The light turns on in the 13w mode; pushing the button again causes the light output to be reduced in 1/3 increments (10w and 7w respectively). The green LED on the top of the light head displays output levels. To turn the light off you must press and hold the button for 3 seconds. The Solo Logic MV incorporates a “soft” start feature which allows the user to plug a freshly charged battery into the light head without reducing the bulbs life.

The Solo Logic Mv incorporates a Low Battery Warning Mode.

If the battery capacity drops below a certain threshold, or becomes discharged, the light head will automatically go into the lowest power setting and the LED will begin to blink. This signifies you have approximately 15 minutes of battery power left. While in this mode the light output can be adjusted as normal, but will significantly reduce run time. If the battery continues to be discharged, the light head will automatically go into the lowest power setting and the light will begin to pulse. The green LED will flash very rapidly for one minute. The light head will automatically shut down to preserve the battery. If the light head shuts down it can't be restarted until the battery is recharged.

Solo Logic Mv Run Times

Power Level	High	Med	Low
Watts	13	10	7
Burn Time 7.2v NiMH	2:00	2:50	4:00
Burn Time 10.8v NiMH	2:55	4:05	5:45
Burn Time 11.1v Li-ion	3:05	4:20	6:15
Burn Time 11.1v Li-ion Ultra	5:10	6:30	10:20

Note: When using the Lithium-Ion battery the Low Battery Warning time will be extended to between 15-40 minutes and the period before auto shut off will decrease to 30 seconds.

Commuter Light Operation

The Light & Motion Commuter light has one switch on the top of the head that controls power. Pushing it once turns the light on; pushing it again turns it off

Hint: The light head pans horizontally on the bar mount. With use the attachment point may loosen up. Occasionally check attachment point for tightness using a Phillips head screw driver.

Note: ALWAYS shut off a light at the first sign of dimming or yellowing. Failure to do so may significantly reduce the life of the battery.

NEVER plug a warm, freshly charged battery into a Commuter light head. **ALWAYS** wait at least 10 minutes for the battery to cool before starting the light; this will prolong both the battery and the lamp life.

Commuter Run Times

Power Level

Watts 10

Burn Time 2:00

Vega™ LED Light Operation

The Light & Motion Vega LED light has one switch located at the rear of the light. To turn the light on, push it quickly twice. The light turns on in the 4w mode; pushing the button again causes the light output to be reduced in 1/3 increments (2w and 1w respectively.) Pushing the button again in the low mode causes the Vega to go into the flash mode. Pushing the button again will bring the light back up to the 4w mode. To turn the light off you must push and hold the button for 3 seconds.

Vega Run Times

Power Level	High	Med	Low	Flash
Watts	4	2	1	2
Burn Time	2:00	4:00	8:00	24:00+



Charging the Vega

The Vega comes with its own proprietary Light & Motion universal input charger which will work with any wall current from 90-260v. **WARNING:** Using any other charger will void the warranty and could be extremely dangerous. To charge the Vega, plug the charger pack into the appropriate wall socket, then remove the charger port plug from the bottom of the light. Insert the male jack into the charger port until it stops. The green LED will blink when the battery is receiving a charge. After approx. 2 hours the green LED will glow steadily indicating the battery is fully charged. The Vega can be left on the charger indefinitely without harming the battery.



Lamp replacement

ARC HID Lamp

All lamp replacements for ARC systems must be performed by the Light & Motion service department. The front bezel is not designed to be rotated or removed. Tampering or removing the front bezel will void the warranty. If for any reason the front bezel is removed or the glass port breaks, **DO NOT TOUCH** the exposed lamp. Immediately unplug the light head from the battery to minimize the risk of electric shock. Return the light head to Light & Motion for repair. If the lamp should fail, contact the Light & Motion service department to schedule lamp replacement.

All Light & Motion ARC HID bicycle lighting systems use Solarc™ Technology.

Solo Logic 13w Halogen Lamp

To obtain replacement lamps contact your local Light & Motion Authorized Dealer. Disconnect the light head from the battery and allow lamps to cool before removing. Orient the light head facing upward and remove the bezel by rotating it counterclockwise. To remove the lamp from the socket, grasp firmly with your thumb and index finger and pull straight out. Replace lamp by aligning pins and pressing the new lamp gently into the socket until it reaches the base. Re-install the bezel

by turning clockwise until tight. You can then turn the bezel counter-clockwise until the desired beam pattern is achieved.

Commuter Halogen Lamp

Disconnect the light head from the battery and allow lamps to cool before removing. Orient the light head facing upward and remove the bezel by rotating it counterclockwise. To remove the lamp from the socket, grasp firmly with your thumb and index finger and pull straight out. Replace lamp by aligning pins and pressing the new lamp gently into the socket until it reaches the base. Re-install the bezel by turning clockwise until tight. Do not over tighten.

Note: It is extremely important to **ONLY** use Light & Motion approved replacement bulbs. Failure to do so will damage the light and void the warranty.

Vega LED

The LED used in the Vega is extremely durable and should last for the lifetime of the light. The LED and batteries are not designed to be removed or replaced. All service work on the Vega system must be performed by the Light & Motion service department. See the warranty section of these instructions for information on contacting us with service questions. The front bezel is not designed to be rotated or removed. Tampering or removing the front bezel will void the warranty.



Light & Motion
300 Cannery Row • Monterey, CA 93940, USA
831-645-1538 • www.bikelights.com

905-0246-A