Motolight

Strap and Post Installation

You should allow about two to three hours for installation. We suggest you use a well-lighted space for installation. PLEASE READ ALL THE INSTRUCTIONS. Some mechanical knowledge is necessary. If you have any problems call your selling dealer or Motolight® at 800-567-8346, 513-474-7530 or send us an email.

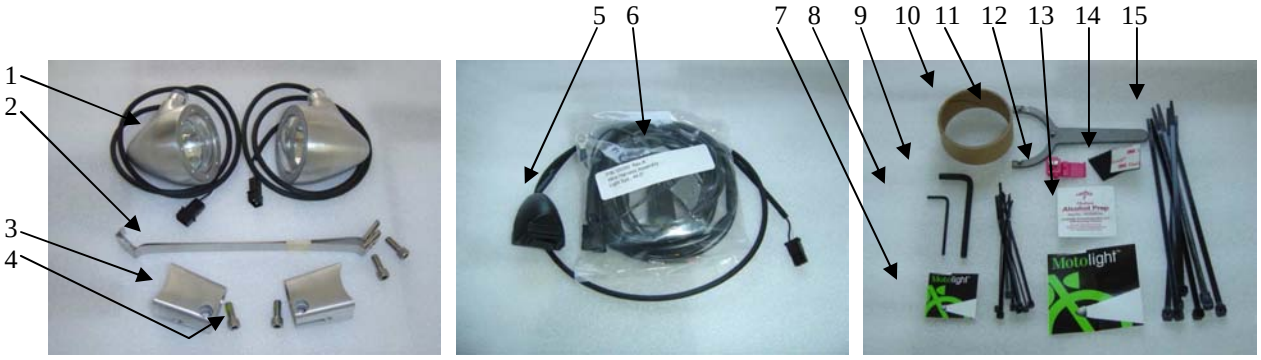
Tools you'll need: Wrenches for motorcycle battery terminals and ground strap, pliers, side cutters, and a bubble or digital level for aiming. A 3/16" T-handle hex wrench may be handy as well.

Cautions:

1. Motolight® strap and post mounts are designed to be mounted on a front fork tube. **Never** use the fork tube bearing surface where normal sliding fork action will contact the strap or post. **Be sure** to allow for complete fork compression, and for clearance to all body components when the forks are fully compressed. We are not responsible for damage to the kit or to the motorcycle resulting from an improperly done installation.
2. Disconnect your battery. Never work on the electrical system of a motorcycle while the battery is connected. If you are not sure how to proceed, check your owner's manual, or consider having your dealer install the lights.
3. Motolights®, like any light, get hot when operating. Do not touch any part of the housing when the Motolights® are in operation and for at least 15 minutes after they have been turned off.
4. If you are transferring your Motolights® to another bike or have obtained the lights secondhand, it is very important that you contact us at 800-567-8346 or 513-474-7530 for correct strap sizing.

Step 1. Unpack the Motolight® system. Take this chance to familiarize yourself with everything. Below is the list of included items:

Item #	Quantity	Description
1	(2)	Housings, aluminum, assembled with lens, lamp & 33" leads
2	(2)	Mounting straps, stainless steel
3	(2)	Mounting posts, aluminum, left and right
4	(4)	¼" x 20 x 5/8" stainless steel socket head cap screws
5	(1)	Motolight switch housing with rocker switch and 40" wire lead
6	(1)	Motolight black wiring harness with relay and 20 amp fuse
7	(2)	Motolight decals (1 helmet size, 1 regular)
8	N/R	3/32" hex wrench **N**ot **R**equired for strap and post mounts
9	(1)	3/16" hex wrench
10	(1)	Aiming tube (cardboard ring)
11	(1)	Pin wrench (for standard lamp retaining rings). Not required for grooved/knurled rings.
12	(1)	Scotchlok™ quick-tap wire connector
13	(1)	Rubbing alcohol cleaning pad (square white envelope)
14	(2)	1" X 1" Dual Lock™ adhesive-backed pads
15	(15)	Cable ties, long and short



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Step 2. Confirm mounting location and strap length

Check both forks at your planned mounting location to confirm that:

- The fork tubes are the same circumference on both sides
- The lights can be mounted at the same height above the ground on both sides (no casting differences on forks, side to side)
- The straps in your kit are correctly sized for your location.


- Wrap a 1”-wide strip of paper around the fork tube where the lights will be mounted. Check each side separately.
- Mark where the end overlaps. Make an arrow pointing back around the fork to the end of the paper .
- Measure the distance to the mark. This is your nominal strap length. Measure to 1/16” for a proper strap fit.

Step 3. Install the straps and posts on the fork tubes (left side shown).


- Thread the mounting strap around the fork tube, bending it in a gradual curve to fit the fork tube surface.
- Overlap the ends. Note that the end with the captive nut lies against the fork tube, and the U-shaped formed end is placed on top of the nut. They need to be on the outside of the tube, away from the wheel, where you can reach them.

- It **IS** possible to get the U-shaped end to latch over the captive nut, and hold there. Bend the U-shaped end a teeny bit to better hook on to the nut, and **have patience**! This step requires a bit of finger strength and dexterity.

- Place one 1/4”x20 cap head screw in the inner hole in the mounting post. Make sure you have the correct post. There are left and right sides. Fit the 3/16” hex wrench into the screw head. (Here is where the T-handled 3/16” hex wrench may help. Our rally installers use them. It **IS** possible to use the wrench from the kit. Carry it with you for field repairs.)

- Note that the post has to have the pinch slot facing rearward, and that the pinch bolt head (which fits in the counter bore) must face up. The picture illustrates a left-side post installation.
- Carefully line up the post (with the tip of the 1/4”x20 screw protruding) and the nut (just feel for the line-up without exerting any inward pressure at first).
- Quickly press the screw into the nut while at the same time rotating the hex wrench clockwise (“righty-tighty”) to engage the nut threads. If you are quick, you can get it the first time. If you do not engage the threads within a couple of turns (maintain inward pressure), remove the wrench, post and screw, re-hook the strap around the fork, and try again. It may take several tries. Do not despair. Think positive thoughts.


- Before tightening the post, align it so that the lights will point directly ahead. The center hole in the post should be parallel to the front axle. Tighten the 1/4”x20 cap screw in the post. You will feel the strap being drawn into the back of the post as torque

increases. **Do not** use gorilla force and over tighten. It is possible to break things. **If the post will not move, it is tight enough.**

Be sure that the second post is at the same height as the first before you tighten the cap screw. Stand in front of the bike and confirm that the two sides are evenly placed.

Step 4. Install the lights into the mounting posts and route the wires.

- Apply a *light* smear of silver anti-seize paste to the stems where the light housings insert into the mounting posts.
- Route the light wires through the pinch slots in the posts, being careful of the machined edges on the slots. Use a dull plastic or wood tool (popsicle stick) to help seat the wires, if needed.
- Slide the light housings into the posts, gently feeding the wire through the slot. The lights should face forward. The shoulders on the light stems may not seat against the posts without pressure, since the sealing washer on the inner end of the stem needs to be compressed during final aiming in step 9.
- Insert and thread one 1/4”x20 cap head screw into the pinch bolt hole in each mounting post. Do not tighten them at this time. The lights need to be able to rotate for aiming. (Note: If the mounting post is correctly installed, the recessed counter-bore in the post will be facing up. The cap screw head will also be facing up with the head recessed once final aiming is completed in step 9.)
- Run the light wires without strain. Leave bit of a loop directly behind the mounting post so water traveling down the wire will not run directly into the pinch slot, but will drip off the wire behind the mounting post. Wire should not be loose enough to catch in rotating or sliding parts. Route the light wires along brake lines, securing with tie wraps. If you use alternative routing, be sure to allow for suspension compression (brake lines are already routed for this). The connectors should be behind the headlight shell, or near the steering head, for no-strain connection to the Motolight® main harness (installed in Step 5).

Step 5. Install the harness.

FIRST MAKE SURE THE BATTERY IS DISCONNECTED.

Look over the wiring diagram that details the harness. Since every bike is different, we'll give you a list of guidelines to permit you to find the best routing for your machine. The goals are to protect the harness from heat and mechanical damage, to have the connection points easily accessible for service, and to achieve a durable installation with a neat and uncluttered appearance.

5.1 The Motolight® harness is designed as a stand-alone control and power supply system. It is not intended for headlight circuit hookup. When you turn the ignition on, the switched power lead (marked “+SW” and tapped into an ignition-activated hot wire) energizes the relay. The Motolights® can now be switched on using the Motolight® switch. When you turn the bike ignition off the Motolights® will also go off. The power for the lights is drawn directly from the motorcycle battery, via the fuse and relay built into the harness.

5.2 Routing the harness:

- Start under the seat area and run the light connector lead forward toward the headlight.
- Stay “up” in the bike (under the tank or near the top—not under the engine or near exhaust).
- Don't let any part of the wiring rest against any part of the exhaust system or it will melt.
- Route the harness so that the relay and fuse are accessible and protected under the seat,
- Insure that the two light connectors are secured behind the headlight, away from fork and suspension moving parts and with enough length to reach the light lead connectors without strain.
- Let the light connectors protrude 2-3 inches past the last tie-wrap to permit easy connection to the lights.
- Once all connections are made and tested, neatly bundle and secure the wiring.

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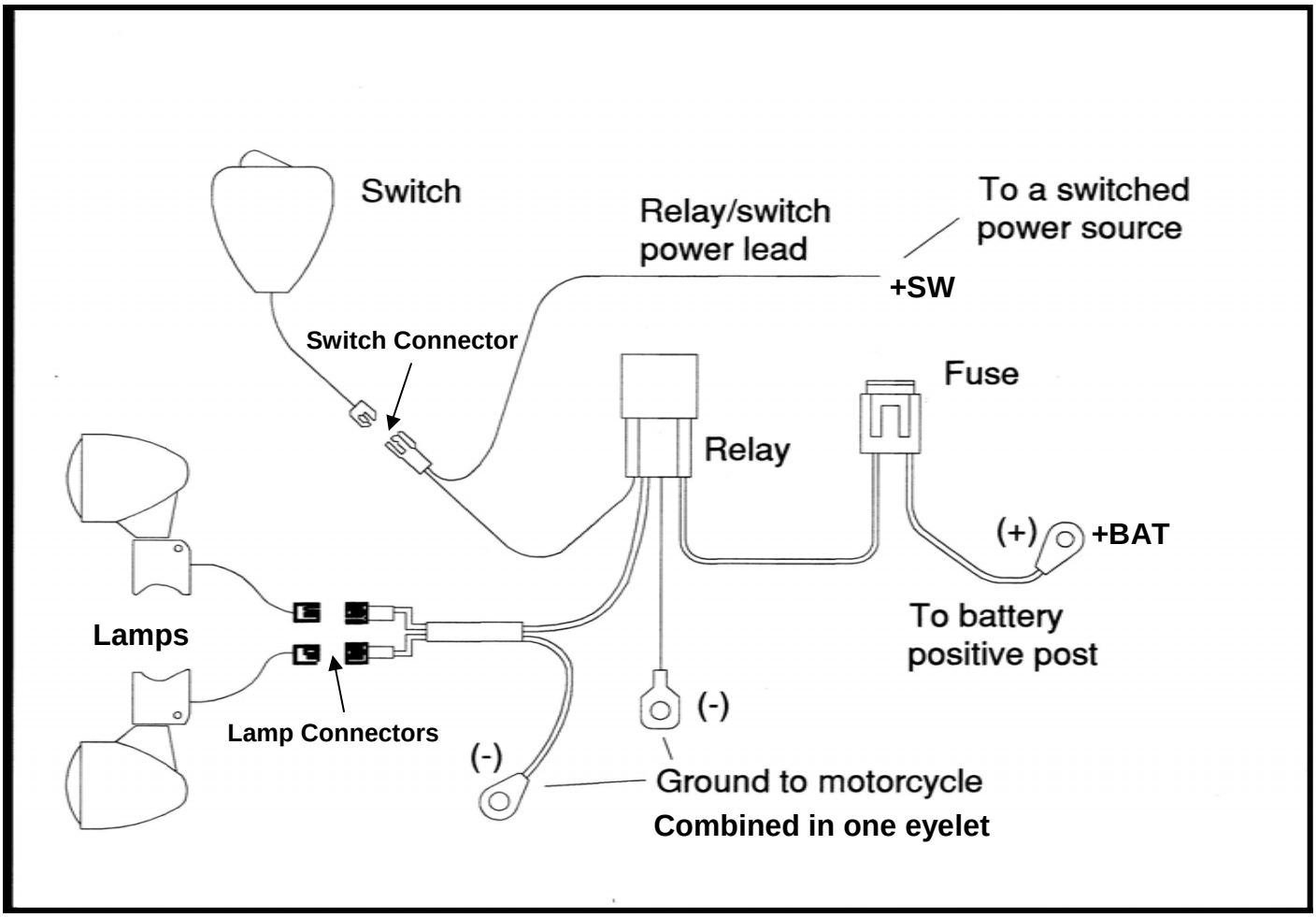
Motolight® wiring diagram. Note that the two ground leads shown in the diagram are combined in one eyelet to simplify the connection.



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- Do not allow the wiring or components to rub or to be pinched by turning forks, suspension travel or seat compression.

5.3 Tap the relay power lead (marked "+SW") into an ignition-key-switched power source.

- Locate a running lamp, tail lamp or accessory circuit for this connection.
- Do not use engine control, ABS, brake or other critical circuits.
- BMWs (including CANbus models) generally have small parking lamp bulbs in the headlight assembly that are "on" with the ignition. **Do not** use tail light circuits on CANbus BMWs.

- Some Hondas (and other makes) have a switched accessory lead behind the side cover.
- The circuit must provide 12 volts with ignition switch is "on", and zero volts with ignition switch "off".

- Use the Scotchlok™ electrical tap to connect the "+SW" wire to the ignition-switched bike circuit. The Scotchlok™ is provided for convenience. Other secure connection methods (ie: solder and shrink tubing) may be used if preferred.
- If in doubt, confer with your dealer for an appropriate location. The Motolight® relay coil draws very little current during operation.

5.4 Attach the Motolight® power feed eyelet (marked "+BAT").

- First, be sure that the bike battery's negative cable is disconnected and insulated away from the battery.
- Then, connect the "+BAT" eyelet directly to the "+" battery terminal.
- Secure the "+" battery terminal before proceeding.

5.5 Attach the Motolight® ground eyelet.

- The ground eyelet has three black wires connected together at this point.
- The easiest place to attach is at the battery negative terminal, or you can follow the bike negative/ground cable from the battery to where it attaches on the motorcycle chassis, and attach the Motolight® ground eyelet there.
- Secure the fasteners at the battery negative terminal.

5.6 Route the switch wire then click the switch wire connector into the main harness mating socket.

- The switch socket is on the "+SW" wire between the bike connection and the Motolight® relay.
- Guidelines for switch wire routing:

  1) Do not allow the switch wire to rub or to be pinched by turning forks, suspension travel or seat compression.

  2) Do not allow the switch wire to be pulled tight by turning forks. It can be unplugged, which will prevent the Motolights® from operating.

  3) Find a location where the switch housing will not touch as the forks are turned.

  4) The switch location needs a smooth, flat surface for good adhesion.

  5) The switch can be mounted on bodywork, on flat frame members or on the fairing.

5.7 Check that the three wire connectors (lights and switch) are plugged in.

- The Motolight® connectors for the light leads and for the switch lead are "keyed" terminals that click together when properly aligned.
- Note that two corners on each connector have notches, which must be lined up with the mating socket.

- As with any electrical plug, do not direct water spray at the connectors when washing the bike.
- You can wrap them with electrical tape, but do not use adhesives or other sealants. The connectors need to be able to come apart for service. If light connections are made behind the headlight, weather exposure during normal riding should not be a concern.

5.7. Here is a checklist for complete installation of the harness.

A. Main harness run away from exhaust, with connectors, fuse and relay accessible

B. Relay switch power ("+SW") wire is quick-tap connected into an appropriate switched hot lead (12V) and not to a ground, engine control, ABS circuit or brake light. Do not use tail lights on BMW CANbus bikes.

C. Main power lead ("+BAT") is secured to "+" positive battery terminal.

D. Ground eyelet (three wires) is secured to negative battery terminal (or equivalent).

E. Two light wire connectors clicked into the main harness, generally behind or in the headlight shell.

F. One switch wire connector clicked into the main harness.

Step 6. Mount the switch at the location determined in step 5.6.

- Be sure that the wire will easily reach after it is routed and secured.
- Clean the mounting spot with some soap and warm water. Let dry.
- Lightly wipe the spot with the alcohol swab. Let dry.
- Align and snap the Dual Lock pads together.
- Peel off one Dual Lock backing and press it firmly to the bottom of the switch housing.
- Peel off the second Dual Lock backing, carefully position the switch, and press it on the cleaned spot.
- Rotate the forks slowly lock to lock and check for interference with the switch or wiring.

Step 7. Turn on your ignition and test the Motolights® before you replace bodywork, seats, etc. If they don't come on, go through the checklist in Step 5.7.

Step 8. Tie-wrap the harness to the frame after everything is hooked up and checked for clearance. Do not tie wiring to fuel lines or to any moving parts or linkages.

Step 9. Aim the lights.

- The bike should be off the center stand with the driver in the saddle. You will need someone's help.
- If required, loosen the pinch screw on the mounting post until the light will rotate by hand.
- Fit the cardboard aiming tube over the front of the Motolight® lens to get a flat vertical surface.
- Hold a level against the front of the aiming tube and rotate the light until it is aiming very slightly downward (87 degrees on a digital level, just breaking the bubble on a hand level).
- You can also rely on the old method of aiming lights at night against a wall (back about 20 feet). The bright center of the Motolight® beam on the wall should be the same, or a slightly smaller, distance above the ground than the height of the lamp lens above the ground.
- Press the light into the mounting post so the light housing touches the mounting post face (compress the gasket).
- Tighten the pinch screw. Re-check the aim, and adjust if needed.

Final Roadworthy Test

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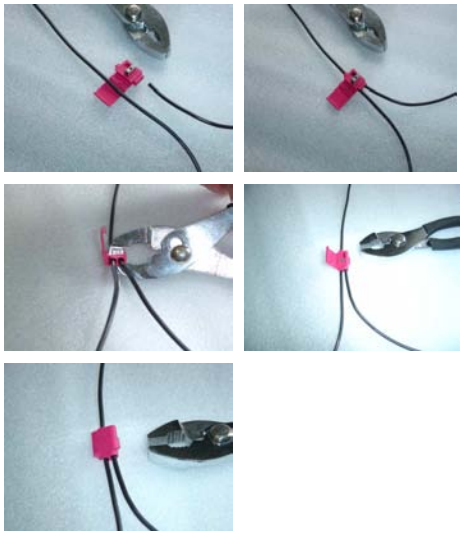
Motolight® Maintenance:

- Inspect your Motolight® riding lights when you perform your bike manufacturer's pre-ride check list.
- Use Mother's or any high quality aluminum polish to return the shine to your polished Motolights®.
- For brushed finish use Formula 409 and a "scrubbie" pad.
- For black powder coat use WD-40.
- Never spray high-pressure water directly at any switch, connector, fuse or relay when washing the bike.
- If the bulb burns out, replacing it is a simple operation.
- When a bulb is changed, or as needed, the inside of the lens can be cleaned by using some WD-40 and a "scrubbie" pad.
- Call us for your replacement bulbs.

Subtopic: Using a Scotchlok™ electrical quick-tap

- The quick-tap provides a durable electrical connection for low-voltage, low-current applications.
- The quick-tap has an open groove down the hinge side, and a close-ended passage on the other side.
- The source wire (the motorcycle switched power source) goes in the open groove.
- The Motolight switch lead ("+SW") inserts in the close-ended passage. Make sure it bottoms out.
- Snap the narrow cover closed to seal the open groove and to retain the source wire.
- Using pliers, press the metal comb flush with the plastic housing. The metal comb has slots that straddle the two inserted wires. The comb pushes through the insulation and makes electrical contact with the conductors of both wires at the same time.
- Inspect the quick tap and make sure the comb is in place .
- Lightly tug on both wires to make sure they are secure.
- Snap the wide cover closed to cover the body of the quick-tap.
- Secure the wire harness to prevent strain or excess vibration at the quick-tap.



Motolight® is always available at www.Motolight.com
or by calling 800-567-8346

Installations are available at our shop in Cincinnati, Ohio.
Call for an appointment.

See you on the road!