Motolight

Fender Mount 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.

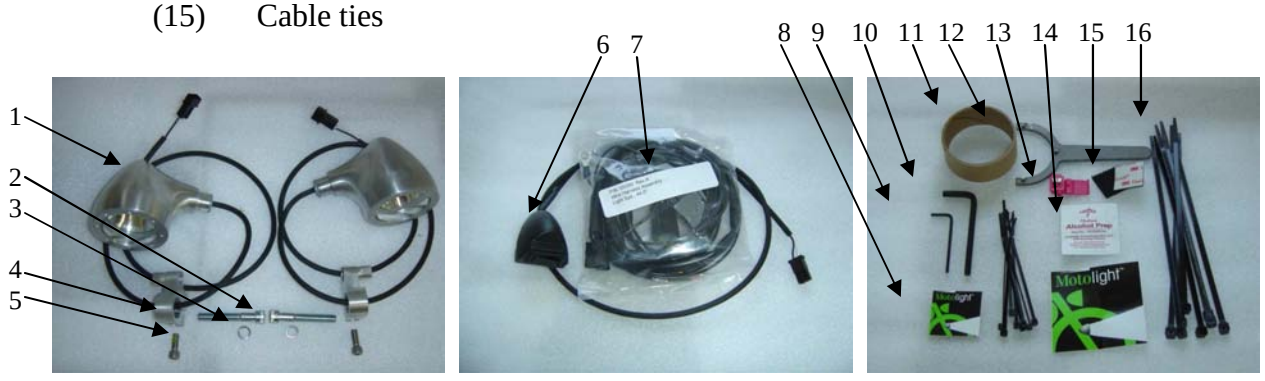
Tools you'll need: Stock fender bolt fastening torque, a torque wrench, wrench or socket to fit fender mounting bolts, wrenches for motorcycle battery terminals and ground strap, pliers, side cutters, and a bubble or digital level for aiming. Get the stock fender bolt torque from the service manual or from your dealer.

Cautions:

1. Motolight® fender mounts are designed to be installed at existing fender and fork trim bolt locations. The securing threads should be part of a fork metal boss, or a nut that bears against the metal boss. Watch for plastic in the bolt clamp stack-up. **Never** use locations where normal suspension action will permit contact with the light assembly. **Be sure** to allow for wheel rotation, and for clearance to all components when the suspension is fully compressed and when the forks are turned. 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)	Fender mounting bolts for applicable models
3	(2)	Lock washers for fender mounting bolts
4	(2)	Fender mounting brackets, assembled on light wires.
5	(2)	1/4” x 12 x 5/8” stainless steel socket head cap screws
6	(1)	Motolight switch housing with rocker switch and 40” wire lead
7	(1)	Motolight black wiring harness with relay and 20 amp fuse
8	(2)	Motolight decals (1 helmet size, 1 regular)
9	N/R	3/32” hex wrench **N**ot **R**equired for strap and post mounts
10	(1)	3/16” hex wrench
11	(1)	Aiming tube (cardboard ring)
12	(1)	Pin wrench (for standard lamp retaining rings). Not required for grooved/knurled rings.
13	(1)	Scotchlok™ quick-tap wire connector
14	(1)	Rubbing alcohol cleaning pad (square white envelope)
15	(2)	1” X 1” Dual Lock™ adhesive-backed pads
16	(15)	Cable ties



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Step 2. Confirm mounting location

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

- The fender bolts or bosses are the same on both sides of the bike
- The lights can be mounted at the same height above the ground on both sides (no casting differences on forks, side to side)
- There is no deformable plastic in the bolt sandwich. If the original application used a "shoulder" bolt to avoid squeezing plastic, you may need to obtain one from a specialty fastener supplier.
- Hold the lights and brackets up to the bike and determine if there will be any interference with suspension or body components during use.

Step 3. IMPORTANT: Confirm the replacement bolt length!

- Remove the fender mounting bolt behind the fork tube. The fender mounting bracket has to extend back toward the bike so that the pinch slot and pinch bolt aim backward. This helps avoid water collection. If the front fender bolt is used, the mounting bracket will be aimed the wrong direction.
- **Confirm the replacement bolt length.**
  1) Insert the replacement bolt and lock washer all the way into the fender mount bracket.
  2) Lay the stock fender bolt along side the replacement bolt where it protrudes from the back of the fender mount bracket.
  3) **They should be the same length!**

- If the replacement bolt is **too short, it may not securely hold** the Motolights® or the stock bike components.
  Do not use a bolt that is too short!
- If the replacement bolt is **longer than the stock** bolt, it may extend far enough to **interfere with wheel or suspension** components when they are in motion.
  Do not use a bolt that is too long if there is a possibility that it will interfere with any use or operation of the motorcycle!
- **If there is ANY question about the suitability of the replacement fender mounting bolt, call Motolight® at 800-567-8346 before you install the lights.**

Step 4. Install the fender brackets and lights on the motorcycle

- Smear a *light* coating of silver anti-seize paste on the stem of the light that fits into the fender mounting bracket hole.
- Seat the stem of the light into the fender mounting bracket, gently feeding the wire through the rubber grommet in the bracket.
- Insert and thread the 1/4" x 20 cap head screw into the fender mounting bracket. Do not tighten it until final aiming in step 9.
- Insert the *correct length* replacement fender bolt and lock washer into the fender mounting bracket. The head of the bolt be recessed in the bracket.

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- Insert the bolt, bracket and light assembly into the fender mounting hole on the bike. Hand start the bolt into the fender mounting threaded boss, or on to the stock nut removed in step 3.
- Align the fender mounting bracket with the pinch slot facing toward the ground or to the rear of the bike. This prevents water collection.
- Torque the replacement fender bolt to the motorcycle manufacturer's stock torque specification as shown in the service literature or as obtained from the motorcycle dealer.
- Turn the lights to point straight ahead. The pinch screws will be tightened after final aiming (step 9).

Step 4. Route the wires.

- Run the light wiring along stock brake lines.
- Use wire ties to secure the leads to the brake lines.
- Run wires without excess tension or strain.
- Allow for suspension flexing and fork turning.
- Do not allow slack that may contact rotating parts.
- Avoid any rub or pinch spots to avoid damaging the wiring.
- Light connectors should be placed behind or in the headlight shell. Leave enough length for easy connection to the main harness (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.
- Do not allow the wiring or components to rub or to be pinched by turning forks, suspension travel or seat compression.

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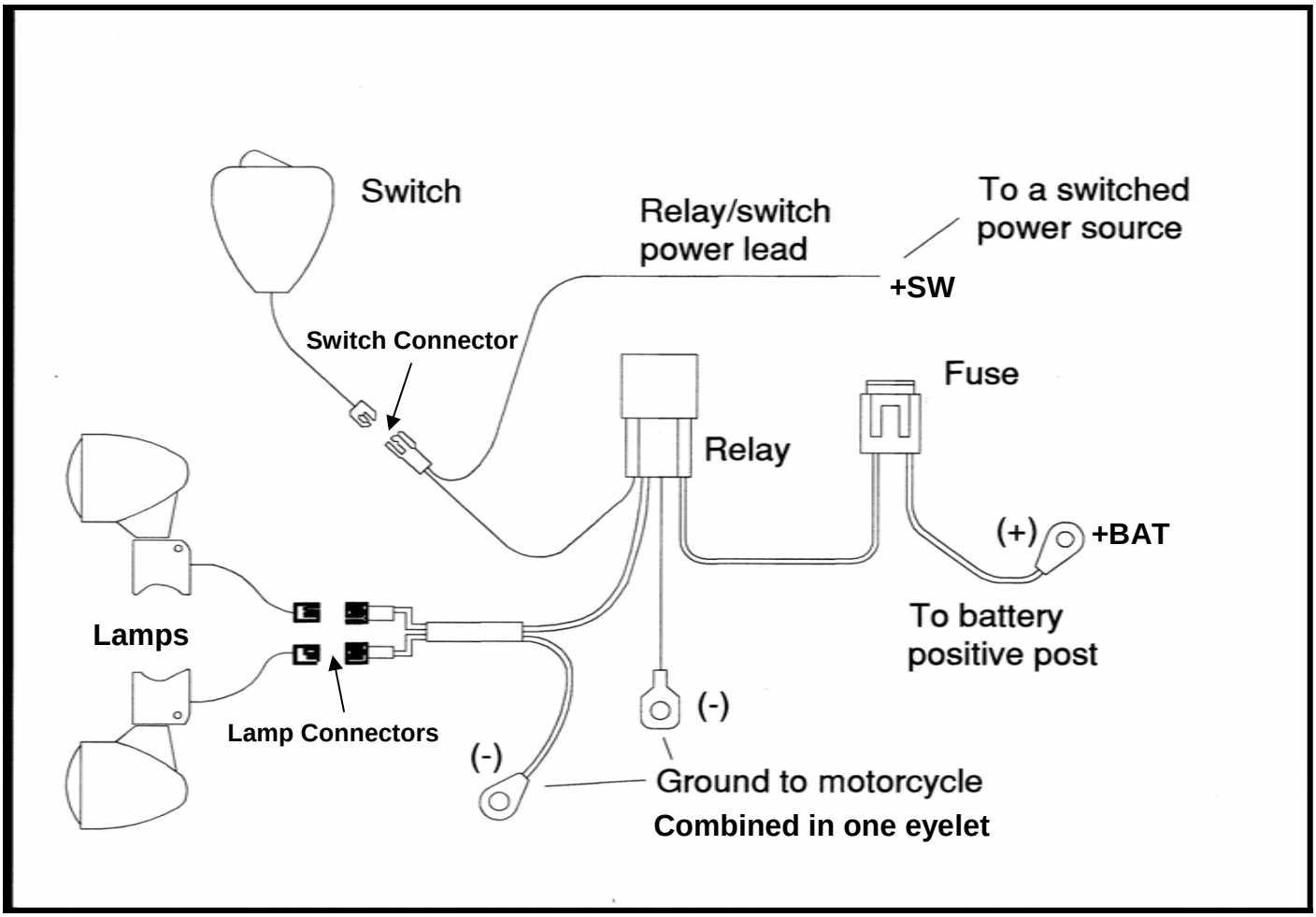
Motolight® wiring diagram. Note that the two ground leads shown in the diagram are combined in one eyelet to simplify the connection.



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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 fender bracket 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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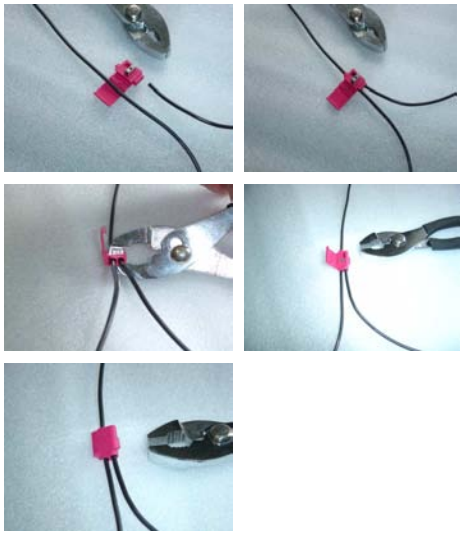
Motolight® Maintenance:

- 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!