Motolight

Caliper Mount Installation – One-piece mounting brackets

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.

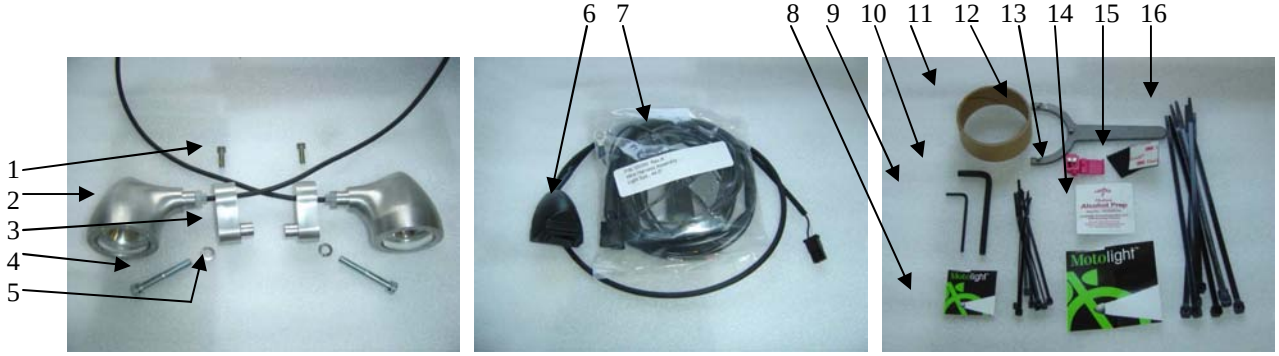
Tools you'll need. Torque wrench, sockets for caliper bolts, wrenches for motorcycle battery terminals and ground strap, pliers, side cutters, and a bubble or digital level for aiming.

Cautions:

1. Motolight® Caliper mounts are designed to be mounted on the brake caliper mounting boss. **Before removing the caliper bolt make certain you have the manufacturer's recommended torque settings for your make, model and year.**
2. Disconnect your battery. Never work on the electrical system of a motorcycle while the battery is connected. If you're not sure how, 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 new caliper bolts of proper grade and size.

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)	¼" x 20 x 5/8" stainless steel socket head cap screws
2	(2)	Housings, aluminum, assembled with lens, lamp and leads
3	(2)	Mounting blocks, aluminum, left and right
4	(2)	Caliper replacement bolts
5	(2)	Lock washers
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 Not Required for one-piece caliper mounts
10	(1)	3/16" hex wrench
11	(1)	Aiming tube (cardboard ring)
12	(1)	Pin wrench (for standard lamp retaining 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, long and short



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Step 2. Assembly of one-piece mounting bracket and light.

- Smear a *light* coating of silver anti-seize paste on the stem of the light housing that fits into the mounting block hole.
- Carefully slide the small black and white wires (near the connector) through the mounting block pinch slot so that the light housing stem will slide into the mounting block.
- Run the light wire through the mounting block and fully insert the stem of the light housing into the mounting block.
- Make sure that the white silicon plug extends through the back of the mounting block hole, around the light wire.
- Insert and lightly snug the ¼" x 20 x 5/8"socket head pinch screw. It will not be tightened until final aiming in Step 9.
- The bulb lead will exit directly to the rear of the mounting block, toward the center line of the bike when installed correctly. **The pictures show a left-side bracket assembly.**

Notes: When you mount the brackets on the bike, the pinch slots need to face down or to the rear. This will help avoid water collection. Now is the time to hold the brackets up to the bike and make sure that you have the left and right sides built this way. Always insure that your intended bracket mounting position will not touch or obstruct brake calipers, ABS sensors, or other bike components. There must also be clearance for full suspension compression. Watch for body panels and for trim or parts that move with the forks.

2.1 Important step: Confirm replacement bolt length.

Look on the bike, at the back of the caliper, where you see the caliper retainer bolt holes . Note where the tip of the original caliper bolts extend. Make a drawing, or take a digital picture, to use at reassembly. Count the threads! Now remove the appropriate caliper bolt. Remove one caliper bolt at a time, to provide a reference and to keep things aligned. **This step is the same for all caliper mounting bracket types.**

- With the Motolight® replacement bolt inserted in the assembled caliper bracket (including lock washer), compare the bolt length extending from the back side of the bracket (include spacer if required) to the stock bolt length.
- **They should be the same length**.
  If the replacement bolt is shorter than stock it may result in reduced holding force.
  If the replacement bolt is longer than stock, it may extend from the back of the caliper to interfere with wheel travel.
- **In either case STOP! They should not be used.**
  Do not attempt to use bolts from a local retail store.
  Most retail or hardware store fasteners with no markings are probably strength grade 3 or 5 and are not acceptable.
  Contact Motolight (800-567-8346) for the proper replacement bolts.

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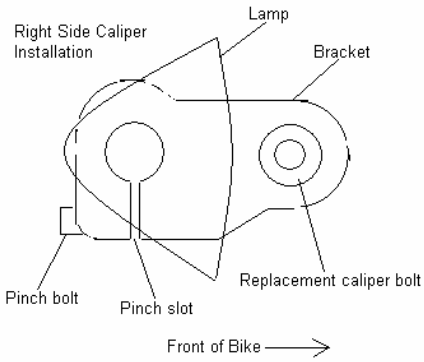
Step 3. Install the assembled brackets and lights on the bike.



- Position the light and bracket so that the pinch slot and ¼" x20 x 5/8"pinch bolt are pointed down and to the rear of the bike. The pinch slot on the bracket must face down or to the rear so water will not collect.
- You will need to rotate the lamp itself up or down by NO MORE THAN 90 degrees (maximum permitted rotation) to have access for the replacement caliper bolt.
- Start the threads of the replacement caliper bolt by hand. Use the Motolight® replacement caliper bolt and lock washer. Be sure the caliper and bolt threads are clean.
- Unless the motorcycle manufacturer's caliper service instructions say otherwise, do not use lubrication or thread sealer on caliper bolts, as this may affect the clamping torque.
- Tighten the replacement caliper bolt until the lock washer begins to compress.
- Look at the back of the brake caliper (where the bolt hole comes through) to double check the bolt length. Look through the wheel from the other side of the bike, or use a small mirror.
  If the replacement caliper bolt appears either too short, or too long, **STOP and call us.**
  If the tip of the replacement caliper bolt is at nearly the same position in the hole as was the stock bolt, (refer to the note or picture you made in step 2.1), then continue.
- Following the motorcycle manufacturer's instructions for caliper service, **torque the replacement bolt to the manufacturer's recommended settings**. Check again for any possible interference with the brake disk, wheel or caliper.
- **The replacement bolt tips at the back of the calipers must be completely clear of all moving parts.**
- **The Motolight® mounting bracket must not be permitted to contact the caliper at any time.**
- **Check these things absolutely and call us with any questions!**

Step 4. Rotate the light to level position. The lights leads can be routed and attached up along the brake lines to terminate near or in the headlight shell (this provides dry and simple access for connection to our harness). Do not wrap wires around the fork. Secure wires away from rotating components. Allow for fork compression.

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.

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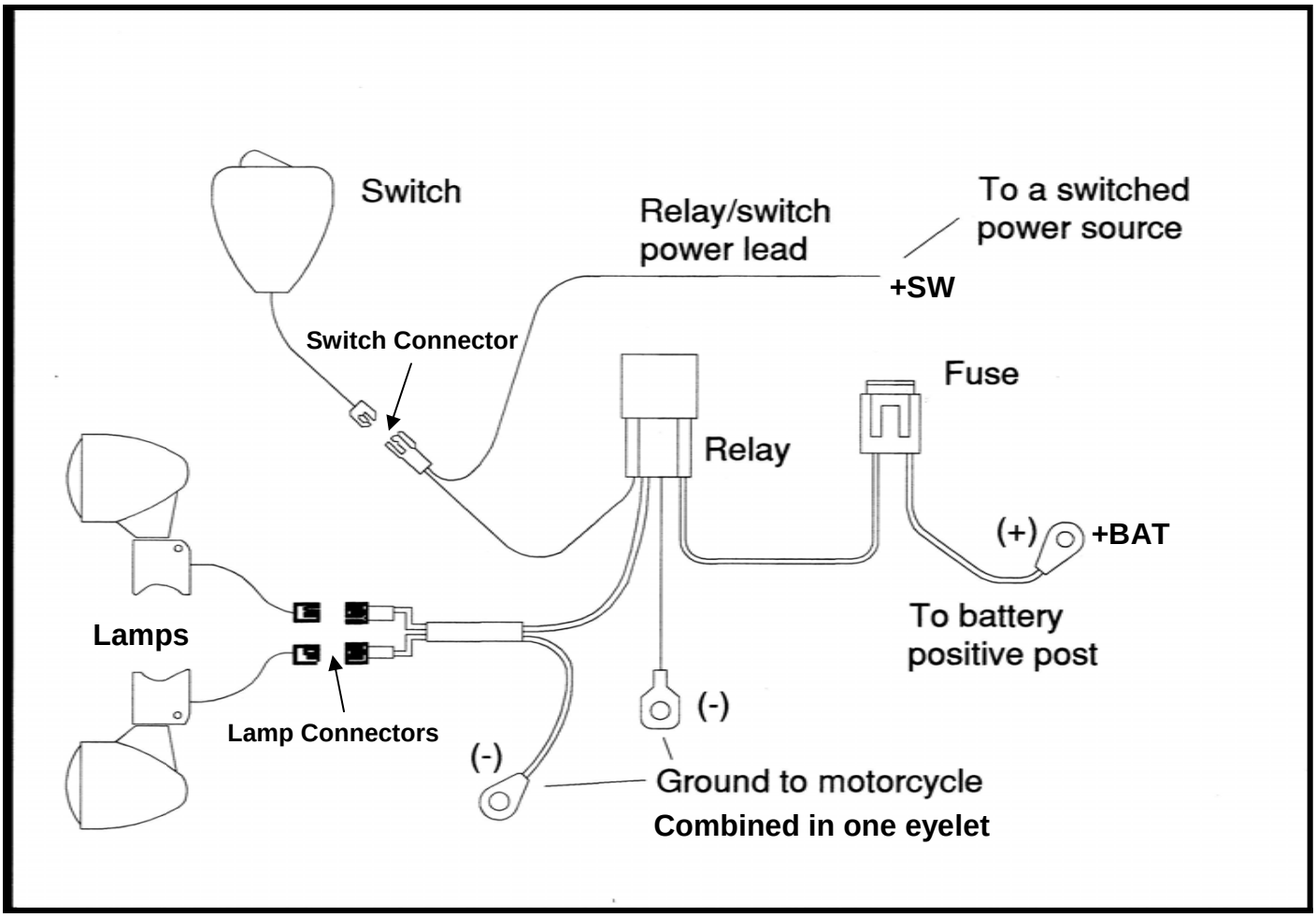
Motolight® wiring diagram. Note that the two ground leads shown in the diagram are combined in one eyelet to simplify the connection.



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5.1 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.

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 when the ignition switch is "on", and zero volts with the 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.

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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 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.

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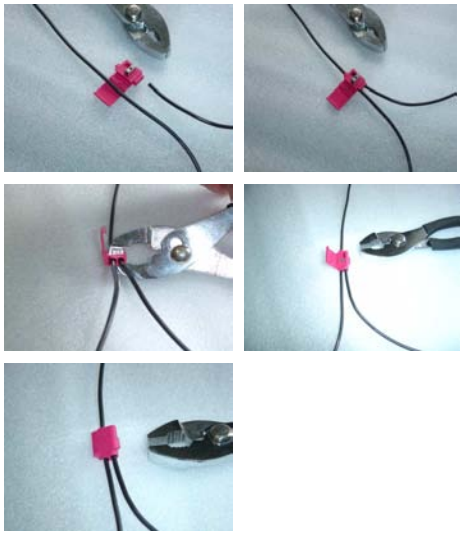
Motolight® Maintenance:

- 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!