

Harley-Davidson FL 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.

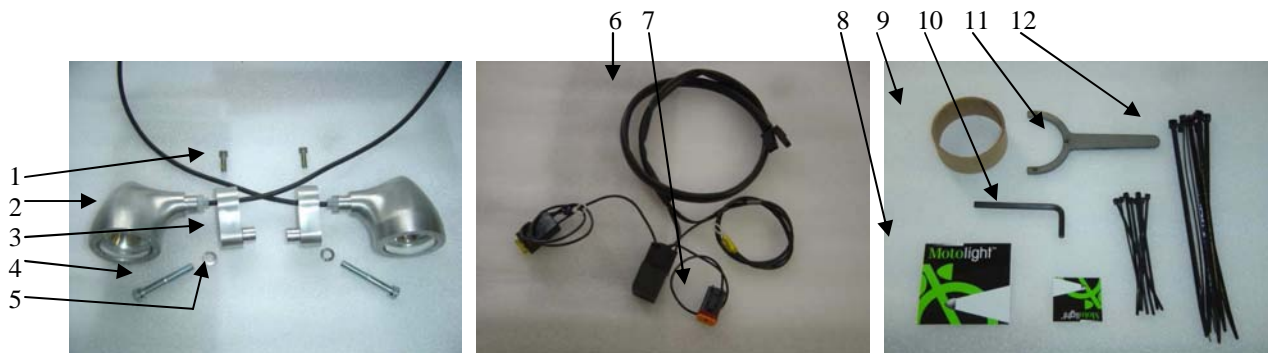
Tools you'll need. Torque wrench, sockets for caliper bolts, wrenches for motorcycle battery terminals and ground strap, side cutters, and a bubble or digital level for aiming.

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 wiring harness with relay and 20 amp fuse
7	incl.	Special Harley auxiliary plug connector in wiring harness (included)
8	(2)	Motolight decals (1 helmet size, 1 regular)
9	(1)	Aiming tube (cardboard ring)
10	(1)	3/16" hex wrench
11	(1)	Pin wrench (for standard lamp retaining rings-not required for knurled/grooved rings)
12	(15)	Cable ties, long and short



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.

This step is the same for all caliper mount brackets.

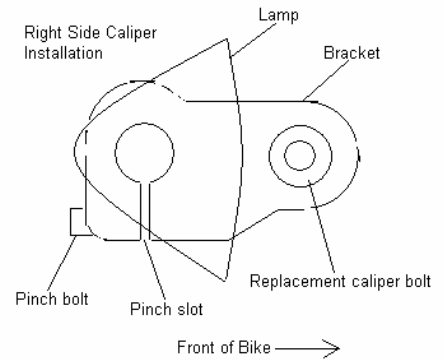
Look on the bike, at the back of the caliper, where you see the caliper retainer bolt holes. Note where the tip of the original caliper bolts extend. Make a drawing, or take a digital picture, to use at reassembly. Count the threads! Now remove the appropriate caliper bolt. Remove one caliper bolt at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

- 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.**



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

- Position the light and bracket so that the pinch slot and 1/4" x 20 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 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 power supply system. It is not intended for headlight circuit hookup. When you turn the ignition on, the Harley dash-mounted auxiliary switch sends 12 volts to a 4-pin accessory plug under the battery. The Motolight® harness has a matching connector that permits the Harley auxiliary switch to control the Motolight® relay. The relay controls the power to the lights. 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 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 Connect the Motolight® relay control plug to the Harley accessory connector.

- Locate the four-pin Harley accessory plug in the bike harness under the battery.
 - Verify that the dash-mounted Harley auxiliary switch is not being used.
 - Check that the Harley connector is clean and that the pins are not bent.
 - Seat the Motolight® relay control plug in the Harley accessory socket.
 - The bike circuit must provide 12 volts when both the ignition and the dash-mounted auxiliary switch are “on”, and zero volts if either is “off”.
 - If any of the other circuits (other than the dash-mounted aux switch) are in use, and there is already a plug in the Harley accessory socket, Motolight® has a “Y”-adapter to allow the dash switch to be used. Contact us for information.
 - If in doubt, confer with your dealer for the accessory plug location.
- Note: 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 Check that the two light wire connectors are plugged in.

- The Motolight® connectors for the light leads 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.**

- Main harness** run away from exhaust, with connectors, fuse and relay accessible
- Relay control power** connector on Motolight® harness is plugged into the Harley FL accessory plug.
- Main power lead** (“+BAT”) is secured to “+” positive battery terminal.
- Ground eyelet** (three wires) is secured to negative battery terminal (or equivalent).
- Two light wire connectors** clicked into the main harness, generally behind or in the headlight shell.

Step 6. Turn on your ignition and accessory switch 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 7. 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 8. 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.
- Tighten the pinch screw.

Final Roadworthy Test

1. Are the caliper bolts tightened to manufacturers recommended torque settings?
2. Are the caliper bolts and light brackets clear of all wheel and brake components?
3. Are the lamp housings tight in the mounting bracket? Check to make sure the pinch screws are tight.
4. Are cables secured out of the way of any moving parts, hands or feet?
5. Do the lights operate only when the ignition and Harley FL auxiliary switch are on?
6. If everything checks out you're ready to go! Safe riding!
7. After several rides, recheck the lights for tightness.

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.
- 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.

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!