

Installation Instructions for Harley Davidson Motorcycles

Read through entire instructions before starting the installation.

Protected under one or more of the following patents:

USA: 4,471,209

4,937,429

4,990,753

Canada 1,299,621

If you do not have the ability to install these grips then hire a professional mechanic to do the installation.

Hot Grips® can be installed on any Harley Davidson from 1982 to 2003 (and perhaps beyond the printing date of these instructions) motorcycle with 1" handlebar diameter and the standard Harley plastic throttle sleeve.

End weights or other need to open the ends: You may drill out the outboard ends of the grips for installation of end weights or other purpose, if you use a fine tooth hole saw and do not go larger than the handlebar's inside diameter. We have molded in a visual guide on the grip's ends, and we recommend 7/8" or at most 1" diameter and be sure to center drill carefully. DO NOT use a hacksaw or you will destroy the grip, because there are resistance wires molded into the grip outboard of the handlebar diameter.

Some Harley throttle sleeves are molded with raised plastic ribs or ridges to help hold the original Harley grip in place, and these will mate up with four (4) of our internal ribs by sliding our heated handgrip over the sleeve. HOWEVER, there are two axial ribs, which go circumferentially around the throttle sleeve as illustrated below, and they may have to be carefully removed with a knife or razor blade. They must be trimmed off with a file or razor knife until the Hot Grips slides over them. Do not force the Hot Grips over the ridges as the grip cannot stretch and will be damaged if forced on.

These Hot Grips® have a heat output of 8 watts on "low" and 15 watts on "high" per grip. As a pair they will consume 20 watts of electrical power on "low" and 30 watts on "high". They consume more than 8 x 2 on "low" because the resistor consumes a little.

Preparation: Remove old grips and any adhesive residue from the handlebars and throttle sleeve with solvent. Drill or puncture a small hole in the center of one of the Hot Grip® ends (unless there is already a hole molded into them) so air can escape when they are installed. There is a slight variation in handlebar diameters, so some may be loose, and some may be tight. Better to file a tight handlebar down until it fits than to force the Hot Grip® over it. DO NOT rely on a press fit since the grips will expand when heated up, and could become loose. They rely on epoxy bonding to remain secure.

Determine the operating range of your throttle twist action. Make reference marks where the throttle rotation starts and ends. This is to determine how many degrees of rotation you have, perhaps it is 60 or 90 degrees, and perhaps it is more or less. You now must determine where you want your heated grip's external lead wires to be throughout that operating throttle rotation. Mark on the throttle sleeve where the external wires should be

located when the throttle is closed or off. This mark will be used when you actually epoxy it in position. You need to visualize the path of the grip's external lead wires during throttle operation, to determine where there will be no interference with your other handlebar controls and switches. Roughen your plastic throttle sleeve with the edge of a file or coarse sandpaper. This aids in a stronger epoxy bond. Slide the Hot Grips with the larger inside diameter over the throttle sleeve (without epoxy) to check the fit. If tight, then adjust the diameter of the throttle sleeve as needed for a slip fit, using a file or rough sandpaper. DO NOT force the grip on if tight. (Don't hit it with a hammer or even with a block of wood, it isn't fragile, but it isn't indestructible either). Hand pressure cannot hurt it.

Determine the spacing you will need on the throttle sleeve so that there is no interference or friction with the throttle housing. We have made an attempt to limit the possibility of this by molding a specific inner grip length. Make a mark on the throttle sleeve for when you later use epoxy.

EPOXY: We recommend only slow curing (generally considered 6+ hours, or overnight) two-part epoxy because it is generally rated at 250 degrees F. The quicker curing epoxy is generally rated at 200 degrees F. DO NOT use other types of adhesives. DO NOT use silicone sealant, crazy glue, superglue, other cyanoacrylate adhesives, weatherstrip adhesives, or anything else. Just use two-part epoxy of the type we recommend. There are many brands out there, and some of them are DURO, DEVCON, POXY-WELD, JB WELD, Borden, etc. Out of the USA they may be called by another name. They are commonly available at auto parts stores, hardware stores, and is often found in hardware or automotive departments. (The reason we do not want you to use anything other than epoxy is because of the temperature these grips may reach in service, and because other types of adhesives rely on solvent evaporation, which may take a tremendous amount of time. Most other adhesives will soften with elevated temperatures, and you don't want these grips to loosen while riding.)

After you have pre-determined your grip's external lead wire orientation in relation to the throttle housing and throttle sleeve, then you can proceed to use the epoxy. Mix the epoxy per the manufacturer's instructions. It is important to mix in the correct ratio or the epoxy will be weakened. Use a long slender object such as a pencil to get the epoxy spread evenly on the exterior of the throttle sleeve on the motorcycle, BUT NOT INSIDE THE GRIP. The pencil can be rolled around the throttle sleeve to ensure the layer of epoxy is even or uniform thickness. **DO NOT PUT EPOXY IN THE GRIP INTERIOR**, instead allow the epoxy on the throttle sleeve to find it's way inside the grip as it is pushed on. The epoxy will mesh with the inside ribs, locking the grip in place once the epoxy cures.

While aligning the external lead wires where you want them, push the right grip on the throttle sleeve fully, and you should clear away epoxy as it is slid on if it builds up excessively as the grip moves fully into position. **IMPORTANT: DO NOT PULL THE GRIP OFF** at this point because otherwise epoxy will gum up the throttle action. Again make sure you have enough clearance so no friction or interference will exist with the throttle housing. This is extremely important, since once the epoxy cures, you won't be able to adjust later.

If you are in a hurry for it to cure, it is OK to quicken the cure by temporarily wiring the two grips in "parallel" as shown in our wiring diagram, and applying 12 volts using a car

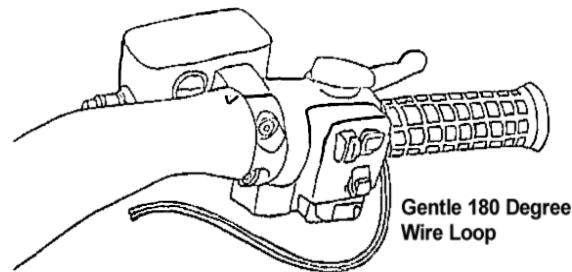
battery or battery charger capable of at least 3 amps. 45 minutes will do it, and **do not leave the grips heated unattended**. Caution: Heated curing epoxy can give off fumes so work with adequate ventilation or do the epoxy curing outdoors. Let it cool for another 15-20 minutes. That heat will have accelerated the cure from the normal 6-8 hours down to about an hour. If the epoxy hasn't cured you may need to give it heat again. If the second time doesn't cure it, then you probably mixed the epoxy in the wrong ratio, which prevents the epoxy from curing.

Do not test the epoxy bond while it is curing by twisting the grip. If you want to check if the epoxy had cured, check it at the area where a tiny amount of epoxy has squeezed out next to the inboard end of the grip. Wait until the epoxy is very hard.

Follow similar instructions above when installing the left clutch grip, although the installation is easier since there is no throttle movement to worry about.

If working in the cold, preheating the epoxy in a hot cup of water will soften the epoxy and make it easier to mix and to spread, and also preheating the handlebar end with a heat gun or hair dryer will help in the same way.

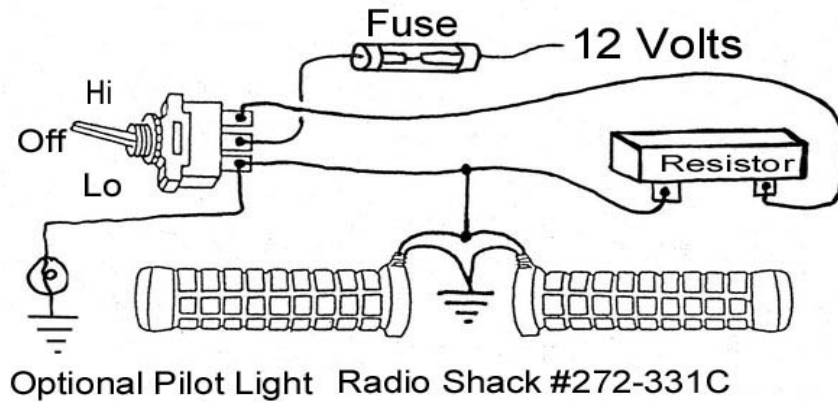
WIRING: The wires should be secured to the handlebars, however it is important to form a gentle 180-degree loop from the throttle side grip to the handlebar to minimize strain on the wires during throttle operation. The bigger the radius of the loop the longer the wire will last. 3" radius would be good.



IMPORTANT: Hot Grips® for this model are wired in "Parallel", meaning each grip gets 12 volts. Follow our wiring diagram, and be aware there is no polarity to the two external wires coming from each grip, neither positive nor negative. Your ground connection is important, so scrape the paint off immediately under the contact point you make. Ground shouldn't be to the handlebars some are rubber mounted and perhaps electrically isolated from your system.

For the Harley Davidson the two Hot Grips® must be wired in "parallel". Connect one of the two conductors from each grip to positive 12 volts coming off the switch as illustrated, and each remaining wire to ground.

Fuse not included



Hi-Off-Lo SWITCH: Locate a suitable site for your switch and drill a 1/2" or 13 mm hole in a safe convenient location that does not interfere with anything on the motorcycle.

RESISTOR: Mount the resistor securely in an area where it can give off some heat, since it warms up during "low" heat operation. Ideally mount it on a "pad" of silicone sealant on a metal area and mount it in open air. Secure it with plastic wire ties an/or plastic tape. The resistor may be located any distance away from the switch or grips, however do not leave the resistor dangling by it's lead wires, or they will eventually fail. You can use any extra lead wire from the grips to wire the resistor. Solder all connections as a precaution against copper oxidation in the future.

POWER SOURCE: Some Harley Davidson motorcycles came with an accessory electrical terminal, which you should use. Ask your motorcycle dealer's service department if in doubt. Often your owner's manual will include a wiring diagram, and may have information on where to obtain power for accessories.

FUSE: You should use a 3 or 4 amp fuse (not included). (The grips draw 2.5 amps on high). Wire into an accessory terminal if available or into a power lead that will not be left "hot" or energized when the ignition is shut off. Otherwise leaving the heated grips on while the engine is off will drain the battery as quickly as if you left your headlight on.

Solder all connections to prevent copper oxidation in the future. **DO NOT** use the crimp-on terminals if you want your connections to remain reliable. They tend to oxidize and corrode over time and create problems. Cover all exposed connections with vinyl electrical tape.

HEAT CONTROL: The Hot Grips® do not automatically regulate their heat output, and rely on the rider to adjust the heat by moving to "lo" or center-off switch position if the grips get too hot. The grips should not be left on when unattended as they may get too hot. In an unregulated electrical system the heat output may be greater than 8 watts on low and 15 watts on high per grip. These wattage figures assume a voltage regulator is in use.

IMPORTANT CAUTION: Be sure to check and correct for any interference with vehicle controls and proper throttle operation and throttle return before starting or operating motorcycle. End weights or other need to open the ends: You may drill out the outboard ends of the grips for installation of end weights or other purpose, if you use a fine tooth hole saw and do not go larger than

the handlebar's inside diameter. We have molded in a visual guide on the grip's ends, and we recommend 3/4" or at most 7/8" diameter and be sure to center drill carefully. DO NOT use a hacksaw or you will destroy the grip, because there are resistance wires molded into the grip outboard of the handlebar diameter.

REPLACEMENT PARTS: Resistor Replacement

We don't sell replacement resistors for HOT GRIPS® simply because the cost to process an order and ship the resistor would far exceed the actual value of the resistor.

Fortunately, acceptable substitutions are readily available. The actual resistor we supply with Hot Grips® is a custom-made 2.4-ohm resistor. That is not a standard value.

However, Radio Shack, among others has standard "power resistors" that can be wired to create an equivalent resistor. At Radio Shack, they have a 1 ohm / 10 watt resistor, part #271-131 (cost for two is \$1.69). Using two of these resistors wired in "series" would give you a 2 ohm resistor which is a more than acceptable substitution. Using these resistors would result in a slightly warmer "low" setting.

Also available at Radio Shack are 10 ohm / 10 watt resistors, part #271-132 (cost for two is \$1.69). You would need four of these resistors wired in "parallel" which would create a 2.5 ohm resistor. This is basically a perfect match for our stock resistor. In either case, the resistors should be supported and not allowed to "dangle" by their lead wires. Also, the resistors should be exposed to the outside air and not enclosed, mounted on a metal surface and not ever on plastic surfaces, because they get hot.

To find the resistors I have mentioned go to www.Radioshack.com. Click "parts, tools, & wire." Under the heading "component parts" - find and click "resistors". Under resistors click "Power Resistors".

Also, if for some reason Radio Shack is not convenient, almost any seller of electronic components would also have 1 and 10 ohm / 10 watt power resistors. These are standard values. (Resistors are often given a tolerance of 1, 5, 10 or 20%. In this application, any tolerance would be acceptable).

An acceptable Radio Shack switch is #275-131 for their "on-off-on" switch.

REPLACEMENT GRIPS: If you live in the 48 continental USA we can UPS ship you a replacement individual grip for \$53.00 each plus \$8.00 S&H. A complete packaged set is \$109.95 plus \$8.00 S&H. If you live in Canada, Hawaii, Puerto Rico, Alaska or Europe, email us for shipping quote. Specify whether you need the throttle side right grip, or the clutch side left grip.

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