

Installation Instructions for **Ergo grips** or Model 401 **with 2 bushings**

HOT GRIPS® Manufactured under one or more of the following Patents: **Canada 1,299,621 USA: 4,471,209 4,937,429 4,990,753**

Your ATV or motorcycle must have the proper engine alternator to power the heated grips. The grips are a total of 30 watts at 12 volts, or 2.5 amps of electrical current if measured at a nominal 12 vdc. THESE MODELS MUST BE WIRED IN "SERIES" AS SHOWN IN DIAGRAM.

IMPORTANT: These Hot Grips® are for any motorcycle with .875" (22.22 mm) handlebars and a twist throttle that can accept a grip with the overall length of 5.20" and internal bore length of 4.90". To pre-check the resistance each grip is between 2.2 and 2.6 ohms. You may temporarily wire the two grips in series and test with 12v.- follow the wiring diagram supplied in "SERIES".

Read through entire instructions before starting installation. If you cannot comfortably install this product, hire a professional mechanic to do it.

If you want to pre-test the grips, use a V.O.M. and check that each Hot Grip® resistance measures in the range of 2.2 to 2.5 ohms. You can temporarily wire them in series (see wiring diagram) and test on a 12 volt car battery or battery charger of minimum 3 amps if you desire.

Hot Grips® are designed to run with engines that have sufficient alternator output to satisfy both the headlight and the heated grips. If your engine alternator cannot maintain the voltage when all required electrical loads are drawing from the system, then you will not get satisfactory heat.

Determine how you will align the grips on the handlebars, taking into consideration the safety control levers, and any other items that the grips may interfere with. Check for clearance with your thumb-throttle if you are installing on an ATV. If the large inboard rubber flange interferes with full throttle movement, then correct it by trimming the large rubber flange. A new single edge razor blade works well for this. Do not cut within 1/2" of the lead wires.

Two 7/8" x 1" bushings are included so this kit can be fit to either: an ATV with 7/8" handlebars and thumb throttle in which case you need to use one bushing on each side. An ATV with 1" handlebars and thumb throttle in which you can throw away the bushings. an ATV with 7/8" handlebars and twist throttle in which you need one bushing on left side. A motorcycle with 7/8" handlebars in which you need one bushing on the left side.

BUSHINGS: The bushings are slit lengthwise to allow for slight variations in handlebar diameter, some of the metric bars are not exactly 7/8". If you have a twist throttle be sure to install epoxy only on the first half of the throttle tube and **NONE** in the interior of the grip to avoid pushing any epoxy inadvertently inside the throttle mechanism. If you get epoxy in there you will be an unhappy camper. Be very careful not to force epoxy into the throttle and not to introduce epoxy between the throttle tube and the handlebar. As you install the grip, use a small flat screwdriver to remove excess epoxy as the grip pushes it toward the inside. You don't want any of the epoxy to get on the throttle housing, or it would prevent throttle action. The two bushings are supplied just in case the application requires them, such as an ATV with 7/8" handlebars with a thumb operated throttle. On a 7/8" motorcycle with a twist throttle you'd only use one of them on the clutch side. the bushing has an edge on one end so you can only put it on full length and it then stops. You can do all the epoxy work at one time. Put a very thin amount of epoxy on the inside of the bushing if the bushing is needed, so as to not artificially expand it more than necessary. You still want the grip to be able to slide over it. After the bushing is put on the handlebar (the epoxy does not have to have cured, you can do it right away) then epoxy the outside of the bushing, and then a small amount inside of the grip, and install the grip per the rest of the instructions.

SWITCH AND RESISTOR: The switch can be located at any convenient practical location that you can reach with your left hand that doesn't interfere with safe machine operation. (Note that the orientation of the wires in our wiring illustration to the "Hi-Lo" switch plate is correct because of the switch's internal pivot action.) Drill a 13mm or 1/2" hole to install switch. The resistor may be remotely mounted from the switch, using any length wires you need. Mount it securely on a metal area such as a metal frame tube where there will be air moving around the resistor to dissipate heat. It will warm up during "low heat" operation. It is not in use during "off" or "high". The resistor should be secured with nylon wire ties or other means on a metal surface in air flow. Do not mount it in your housing as an oven effect will take place and cause damage.

WIRING: There is no polarity to the wires on each grip, i.e. no positive or negative. Follow the wiring illustration. A good ground is important so be sure to scrape the paint off the "ground connection" as a layer of paint may create a problem. Ground should be to the engine or frame, not the handlebars, since some of them are rubber-mounted and may affect a good ground connection. Similarly the steering head bearing grease may interfere with a ground connection. Some machines use a wire or "common-wire ground" instead of "frame-ground". The grips must be wired in "series", as shown.

Do NOT Expose to Oils/Solvents: These grips are manufactured out of a synthetic rubber that will not crack from sun exposure. Synthetic rubber is manufactured as a petroleum by-product and oils are used as "modifiers". Do NOT expose grips to oils or solvents or the "rubber" will be "modified irreversibly" and ruined. Example, if you treat the palms of your leather gloves with MINK OIL it will slowly rub itself into the grips and chemically alter the rubber so that it will become gummy, sticky, and wear quickly because of degraded physical properties.

TOGGLE SWITCH: The diagram switch wiring is correct, the toggle switch sends power to the upper terminal when the switch is moved to "Lo". When the switch is moved up to "Hi" the power is sent to the bottom terminal, thus bypassing the Resistor. There is a pivot mechanism inside the toggle switch which you cannot see, and that is why moving the switch to "LO" sends the power up to the top terminal.

END WEIGHTS: or other need to open the ends: If the model you have purchased is not supplied with open ends, and you need to open them, you may bore out the outboard ends of the grips for installation of end weights or other purpose. Use a fine tooth hole saw and do not go larger than the handlebar's inside diameter. We recommend at most 7/8"(22 mm) 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. A Dremel® tool can be used with a very coarse abrasive stone wheel or cylinder. These Hot Grips® have a heat output of 7 watts on "low" and 15 watts on "high" per grip. As a pair they will consume 18 watts of electrical power on "low" and 30 watts on "high. They consume more than 7 x 2 on "low" because the resistor consumes some electrical current.

PREPARATION: Remove old grips and any adhesive residue from the handlebars with solvent or compressed air. Do NOT rely on a press fit since the grips will expand when heated up, and could become loose, and thus unsafe. **The grips rely on 2-part slow-cure high temperature epoxy bonding to remain secure.**

WIRING: The wires should be carefully secured to the handlebars. Use the cable ties supplied with the ATV or additional ties. On the throttle side, make sure that the lead wires form a gentle loop with a radius of about 3" so there is no stress on the wires as you move through the throttle range of motion. Also, make sure the wires are not hitting anything as you move them through the range of motion of the throttle. Make sure the wires do not interfere with the brake lever in your plan before epoxying the grips on.

EPOXY: Dry fit the grips FIRST and determine where to position the wire exiting the throttle grip prior to permanently installing the grips. Hot Grips® recommend only slow curing (generally considered 6+ hours, or overnight) two-part epoxy because it is generally rated at 250 degrees F (120 degrees C.). The quicker curing epoxy is generally rated at 200 degrees F (94 degrees C.). DO NOT use other types of adhesives. DO NOT use silicone sealant, crazy glue, superglue, other cyanoacrylate adhesives, weatherstrip adhesives, or anything else. Only use two-part epoxy of the type recommended. There are many brands available, (ex: DURO, DEVCON, POXY-WELD, JB WELD, BORDEN.) They are commonly available at auto parts stores, hardware stores, and is often found in Big Box store hardware or automotive departments. The reason Hot Grips® Mfg., Inc. does 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 very long time to cure. Most other adhesives will soften and creep 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, 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 handlebar, BUT NOT INSIDE THE GRIP. The pencil can be rolled around the handlebar or throttle tube to ensure the layer of epoxy is even or uniform thickness.

DO NOT PUT EPOXY IN THE GRIP INTERIOR unless it is being placed over one of our split bushings, instead allow the epoxy on the handlebar to find it's way inside the grip as it is pushed on. The reason? You don't want to gum up your throttle mechanism from the outboard end inward. 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 grip on the handlebar fully, and you should clear away epoxy as it is slid on if it builds up excessively as the grip moves fully into position. Again make sure you have clearance for your levers and throttle movement so no interference will exist. This is extremely important, since once the epoxy cures, you won't be able to adjust later. Never pull the throttle side grip off after you have started pushing it on an epoxy covered tube, or when reintroducing the grip to the throttle tube you risk getting epoxy under the throttle tube, which will ruin your day. Never force a grip on with a hammer, instead file any interfering ribs off the throttle tube so the grip is an easy slip fit. You want a slip fit so the epoxy isn't squeezed off when installing. If you are in a hurry for it to cure, it is OK to quicken the cure by temporarily wiring the two grips in "series" as shown in our wiring diagram, putting the switch on "LOW" and applying 12 volts using a car battery or a battery charger capable of at least 3 amps. 45 minutes will do it, but **do not leave the grips heated and unattended.** Let it cool for another 15-20 minutes. The 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 has 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. Repeat for installing the other grip.

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. In some cases you will have to improvise a mounting area. Generally an area with access from the left hand is most appropriate.

RESISTOR: Mount the resistor securely in an area where it can give off some heat, since it warms up during "low" heat operation. Not on plastic as it may damage lower temperature plastics. Mount it on a "pad" of silicone sealant on a metal area and mount it in open air. Secure it with plastic wire ties. The resistor may be located any distance away from the switch or grips, however do not leave the resistor dangling by its lead wires, or they will eventually fail. You can use any extra lead wire from the grips to wire the resistor. Properly solder (with a clean soldering tip) all connections as a precaution against copper oxidation in the future. Be sure no interference exists during full range of handlebar motion. Use care in locating the lead wires to avoid wear.

FUSE: If your machine uses fuses, we recommend fitting a 4, or 5, or 6 amp fuse as a precaution against any of your wiring shorting out. A fuse and fuse holder is NOT supplied. Often your electrical fuse area may contain a spare fuse location for accessories. If not, Radio Shack stores can supply you with one.

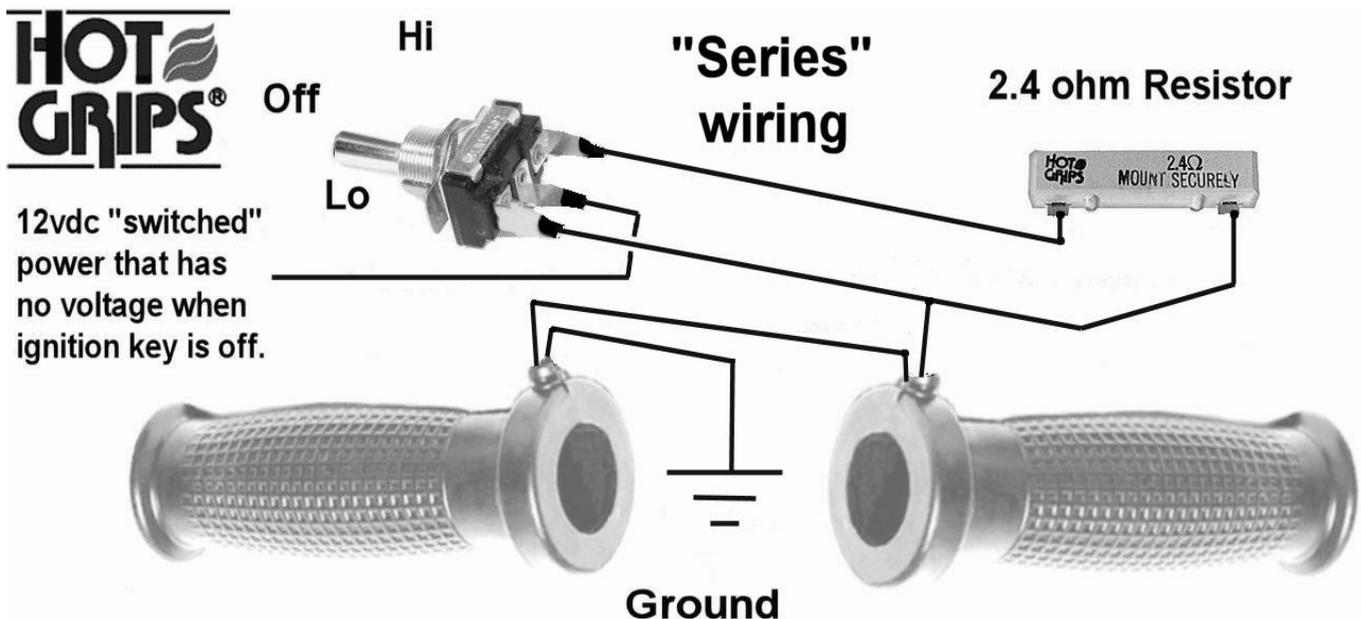
POWER SOURCE: Many motorcycles come with an accessory electrical terminal. Ask your dealer's service department if in doubt. Often your owner's manual will include information on where to obtain power for accessories. In any case you will want a power source that does not remain "On" (The grips normally will draw 2.5 to 3 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. **DO NOT** use any crimp-on terminals if you want your connections to remain reliable. Do **NOT** use the always on-hand blue 3M Scotch-Lok squeeze-on connector as they will be trouble down the road. They tend to oxidize and corrode over time and create problems. Solder your connections for reliability, or you will have mystery problems later. Wrap 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 (ATV with no battery), 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.

Be sure to check and correct for any interference with vehicle controls and proper throttle operation and throttle return before starting or operating your motorcycle .

Other Models, troubleshooting tips, support all available at the following website:

www.hotgrips.com The grips below must be wired in "series" as shown:



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