

## Model #203 "HW" Hot Grips®

**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**

**Read through entire instructions before starting installation. If you can not 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's® resistance measures approximately 2.4 ohms. You can temporarily wire them in series and test on a 12 volt car battery or battery charger of minimum 3 amps if you desire. Do not leave them unattended, and do not heat them up for more than a few minutes, because without the heat sink effect available from the metal handelbars, the grips may be damaged.

Hot Grips® model "HW" (hidden wire) is designed for installation on Ski Doo or Arctic Cat snowmobiles fitted originally with handlebar heaters with wires that are fed through the inside of the handlebars. It must have a thumb-throttle, not a twist throttle.

On model "HW" Hot Grips® the black lead wires are protected from damage by being located inside the hollow handlebars. They are for SKI-DOO and ARCTIC CAT snowmobiles that already have the original equipment hole in the handlebars for their original handlebar heaters. We do not recommend drilling a new hole in the handlebars as it may weaken it.

1. Remove original grips on the snowmobile, and clean the old adhesive off the handlebar surface. Use a coarse file or coarse sandpaper to roughen and clean the handlebar.
2. Remove existing cartridge heaters ( or foil circuits on the handlebars) and the original wiring that fed through the handlebars for those heaters. Do not use the original wires, though you may use the old wiring to "fish" the new Hot Grips® wiring through the handlebars.
3. Expose the original existing wire lead holes on the handlebar (generally near the center of the steering column.) The original existing wire lead holes were used by the snowmobile manufacturer to feed wire to the original grip heater devices.
4. Insert a "fish-wire" through the existing hole and feed it out through the open end of the handlebar. Secure the "fish-wire" to the black Hot Grips® lead wires and pull them through the existing hole. This step may take a little patience to ensure the black lead wires don't catch on the inside of the hole. Repeat the operation for the other side of the handlebars.

5. Epoxy the grips in position as outlined further in the instructions. **IMPORTANT: DO NOT** drill an "air-escape" hole in the model "HW" grip's ends or damage will result. There is no need for the air escape hole since the air can exit where the wires come out.

Some electrical systems cannot handle the power requirements of heated grips and the headlights at the same time. The model "HW" Hot Grips® will produce 8 watts on low and 15 watts on high for each grip. The ceramic resistor consumes a small amount of wattage, so the entire kit will draw 1.66 amps on low and 2.5 amps on high.

Some handlebars are slightly oversize and generally it is unwise to try and force the Hot Grips® on. Better to file down the oversize handlebar until the grip can go on without force.

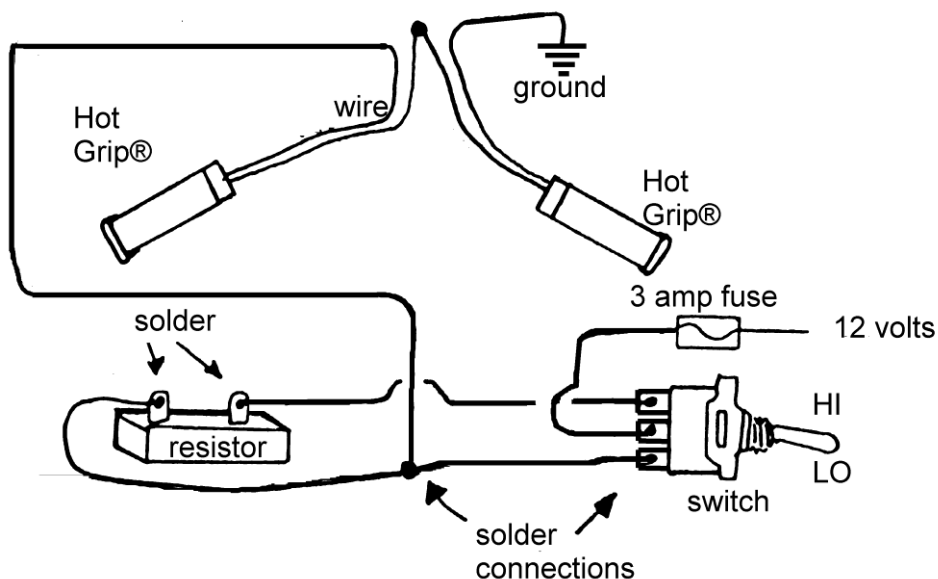
**EPOXY INSTALLATION ONLY:** Obtain a two-part slow-curing epoxy, such as Duro, Devcon, Borden, JB Weld, PoxoWeld, etc. Make sure it is **not** the quick cure type, such as a 5-minute epoxy. We need the slow cure (6-8 hours +) because generally these epoxies are good for service up to 250 degrees F., whereas the 5-minute quick cure type epoxies are generally good for only 200 degrees. **Do not** use any other method to install. We have tested everything else, and they don't hold up under the stress and strain, torque loads and heat that is present. (**Do not** use silicone seal, crazy glue, gasket cement, weatherstrip adhesive, etc. None of them will hold reliably under severe riding conditions!) Check that the grip will slide onto the handlebar without effort. It is normal to find you have a loose fit, to have the small gap filled with the epoxy. If it is not a loose fit, do not force the grip on. Your handlebar diameter isn't .875" and must be filed down until the grip fits on without excessive force. Some metric handlebars we have seen are up to .020" diameter oversize.

A full length pencil is helpful as a tool to spread the mixed epoxy inside the grip interior, and on the handlebar. Use a very light coat, and push the grip on 75% and remove, then redistribute the epoxy with the pencil and remove any excess quantity. Then install grip 100%, and again remove any excess epoxy. Be sure the grips do not interfere with any of the handlebar controls or the thumb-throttle lever. If there is interference, use a new single-edge razor blade to trim the grip as necessary, using care not to cut near the black lead wires that exit the grip. Allow to fully cure per the epoxy's instructions, or you may quicken the cure by temporarily wiring the grips in "series" per the diagram below, and wiring them to a 12v. car battery, or battery charger with a minimum of 3 amps charge rating. The epoxy will set up firm in about 30-45 minutes. Allow grips to cool off, and test epoxy for hardness where it oozed out of the grip. **Do not** twist the grip to test the epoxy as it is curing, as this will compromise and weaken it.

**SWITCH AND RESISTOR:** The switch can be located at any convenient practical location for your left hand that doesn't interfere with safe vehicle 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 action.) Drill a

13mm or 1/2" hole to install switch. The ceramic-resistor may be remotely mounted from the switch, using any length wires you need. Mount it securely on a metal area 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 preferably with plastic wire-ties. Squeezing out a "pad" of silicone sealant under the resistor is helpful in cushioning it against vibration and shock. Resistor may be located any distance from the switch. Use black wire left over from the grip's installation to connect and do not leave the resistor dangling by the wires or they'll fail.

**WIRING:** There is no polarity to the wires on each grip, i.e. no positive or negative. Follow the wiring illustration next page. A good ground is **important** so be sure to scrape the paint off the "ground connection" as even a layer of paint will create a problem. Ground should be to the engine or frame, not the handlebars, since some of them are rubber mounted and may reduce the good ground connection. Some machines use a wire or "common-wire ground" instead of "frame-ground". Check with your snowmobile dealer. The grips must be wired in "series", with one grip being connected to the other. One grip's remaining wire connects to ground, and the other to the switch.



**SKI-DOO:** Some Ski-Doo snowmobiles don't use a "chassis-ground" for the grips. Instead, locate a yellow wire and a yellow with black-stripe wire at the sled's Regulator or Regulator-Rectifier. Use the yellow wire as your power positive wire, and the yellow with black-stripe as your 'ground-substitute' wire. Do not ground to chassis or engine except on older Ski-Doo's that do not have the yellow and yellow with black-stripe wires. Improper wiring will result in the Hot Grips® not working and/or dim lights. If in doubt contact your Ski-Doo dealer's service manager.

**Power Source:** Use the vehicle's accessory terminal if available, one that will not have voltage when the engine is off. (Otherwise your battery will be drained if the grips were left on, just as if you left your headlight on.) If your electrical system uses fuses for protection, then use a 3 or 4 amp fuse. On non-battery systems, generally if they don't use fuses in the system for other electrical uses, then a fuse isn't necessary for the Hot Grips®. Some sled's do not have enough electrical power to run both the headlights and heated grips. Ask your dealer's service department if in doubt. In such a rare case, you would have to turn off the headlight during daylight hours when the heated grips are on. (Check with your local laws) For safety you should not use the heated grips in the dark if it causes your headlights to dim appreciably. Solder all connections. Do not be tempted to use the plastic 3M® scotch-lok connectors for splicing into wires, as they are often sized incorrectly, will make poor electrical contact and eventually oxidize and corrode. Cover all connections and exposed switch and resistor terminals with electrical tape.

**HEAT CONTROL:** The heated grips do not have automatic temperature regulation. They rely on the rider to adjust the heat to "high", "off", or "low" as needed. The grips should not be left energized unattended as they might become too hot. On "low" the ceramic resistor will heat up, which is normal, because it creates a voltage drop for the grips.

**CAUTION:** IMPORTANT to check for interference with vehicle controls, levers, and throttle operation before starting or operating vehicle. Correct any interference condition before starting engine.

**LIMITED WARRANTY:** Guaranteed against defects in materials and workmanship. Grips should be checked prior to installation, as they cannot be removed without damage. We do 100% testing at the factory before packaging grips. Installing them without epoxy will very quickly DESTROY them, because the black lead wires will be pulled out when the grips heat up, expand, and rotate on handlebars.

### **Radio Shack Resistor Replacement**

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](http://www.Radioshack.com). Click "parts, tools, & wire." Under the heading "component parts" - find and click "resistors".

Under resistors click "Power Resistors". Here's a link for the resistors:

<http://www.radioshack.com/category.asp?catalog%5Fname=CTLG&category%5Fname=CTLG%5F011%5F002%5F014%5F004&Page=1> 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).