



motorcyclemetal.com

What Others Will Not Tell You about Motorcycle & Harley HID Lighting

Heat Cautions

Reasons for Overheated Headlights:

- How hot a headlight gets, depends of course on bulb, headlight design, and running conditions. If it's 100 degrees out and your sitting in traffic with your 100 watt bulb burning and your engine smoking hot, your bulb could overheat. Some makes of bulbs tend to overheat more than others. Some bike designs get hotter than others. If you want to run a very high watt bulb, then you must be aware of the extra heat, and take precautions to avoid having a heat problem. On some models, this might mean turning your light off when not moving in a traffic-jam, or providing more ventilation for the bulb. Or using something like a 55/100 watt bulb instead of a 90/100.

Increasing Your Halogen Bulb Wattage:

- If you want to run higher than stock wattage bulbs, you **MUST** reconfigure your wiring or you risk burning up your bike's stock wiring, destroying lighting switches, or blowing fuses. Even with stock wattage bulbs, switches can burn out early due to the high current flowing through them.

How to Avoid Headlight Overheating Problems:

- Heat can sometimes be a real problem with high watt bulbs, on some bikes. Heat can build up around the back of the bulb area on bikes without much ventilation in the headlight area, especially when the bike is not moving. Check the airflow around the back of your headlights, make sure those rubber boots around bulb sockets aren't getting too hot. If you can re-route wires, vents, or shielding to increase airflow, do so. Be careful not to melt anything. High watt bulbs put more light. But high watt bulbs create more heat than stock bulbs.
- Beware of cheap high wattage bulbs. Often the light thrown is not properly patterned and due to the light scatter, these bulbs will not put more light where you need it.
- Avoid having a bulb over 55 watts burning when sitting in traffic. If your bike has an ON/OFF switch, turn your headlight off at times if you don't need it sitting in traffic. Look carefully at your bike's headlight design and decide if the headlight is well cooled. Ask other riders of your model about their experience with headlight heat problems. Check your headlight plug and rubber boot to find out just how hot they're getting. If you see any signs of heat cracking or burning on the rubber boot around the bulb, then you have a heat problem.

Better Stock Wattage Bulbs:

- Be aware that many bulb makers are now labeling bulbs with 55/60 watts that they say output the equivalent of 90/100 or more. Some of these bulbs do in fact put out more light, but many do not, they are just marketing hype. Also, many bulbs now advertise HID type light, or a cooler white color. Many of these bulbs actually put out less light due to the blue coating on the bulbs filtering out much of the light output. If you want the most light output, stay with a clear glass bulb from a major bulb maker.

Dual H4 Headlights:

- If your bike has dual H4 headlights, and *you do not want* to install HID lighting for increased lighting, you should **not** install higher than 55/100 watt bulbs maximum. Remember that two high watt bulbs draws a lot of electricity and your bike might not be able to keep your battery charged. Particularly if you are using other accessories like heated clothing. Around town, riding would definitely run your battery down with two high watt bulbs.

Passing Lamps for More Light:

- More lighting is often better handled by passing lamps except in the case of HID. Hid puts out so much usable light, a halogen bulb is not noticeable when used in conjunction. You can use your passing lamps for daytime running with a modulator and in darkness the triangulation of headlight(s) and auxiliary lights makes your bike more noticeable to oncoming cars (the modulator has a light sensor that turns off the flashing when it get dark) or you can switch it off manually. Your HID lighting is not needed in the daytime with this method of only using your passing lamps. A Modulator during daytime use your passing lamps is another great tool in our toolbox to help keep us alive.

About Modulators:

- Basically a modulator pulses your beam at about 4 times a second. It goes from about 18% to 100% power each flash, according to US DOT requirements. It has been determined that this frequency is the best for getting attention from drivers, and does not shorten bulb life on halogen light bulbs.
- The Light Sensor turns off the flashing when it get dark. You wouldn't want your beam flashing after dark, and neither does the law. You can adjust the level at which the modulator turns off by the positioning of the light sensor. The Light Sensor complies with the law, but most riders realize when it's getting too dark for the modulator and turn the modulator off manually.

The main thing is that cars will notice you coming. You will get less cars pulling out in front of you because they can't help but see you. It's true, they really don't see us on a bike. People also report they get less deer problems.

There are times when you don't want the passing lamps flashing; like sitting in stop and go traffic, or behind a car at the lights. You don't want to annoy anyone.

As modulators become more and more common on the streets, there is less annoyance from car drivers, as they realize why we use them.

Relay Information

What Is A Relay And Why Do We Need One:

- A relay is a remote controlled switch. It allows a high current to be safely passed directly from battery to component, while using the switch to trigger the relay.

Why The Heck Does A Bike Need Relays:

- Normally on a bike, the current powering your headlight, horns, accessories, and auxiliary lighting goes through a maze of undersized wires, through tiny handlebar switch contacts, and through far too many connections. As a result, when the power reaches your headlight bulb (for example), the voltage has dropped significantly. (An easy example to visualize this concept is to utilize the word pressure and replace it for the meaning of electrical power) Voltage is electrical pressure. The electrical energy has lost some pressure. More pressure forces more light from an H4 bulb. It makes a horn much louder, and it makes your heated clothing keep you warm much better.

Voltage Drop And Light Output:

- Near a bulb's working design Voltage, a drop of only a half of a Volt results in your stock halogen bulb producing much less light. Many bikes have shown a 1 or even 2 Volt drop at the bulb. And this is on a new or like new bike. After utilizing the supplied relay with our HID kit, you will have a drop of ~.1 Volt. That's 1/10th of a Volt in case you miss the decimal. There is always going to be some Voltage drop, and this is about the minimum possible.

Bike Headlight Information:

- Headlight switches are usually a weak part of a bike's electrical system. Even with a stock 55/60 watt bulb, headlight switches and connectors can break down early in a bike's life. This is because ALL of the electricity that goes to your headlight bulb is passing through those little switch contacts in your handlebar switch units.
- If you look closely at these wires going and coming from your lighting control switches, you will find that they are of very small gauge in order to bundle many wires into a small sized packet leading up to the handlebars. These small wires are marginal at best when new at carrying all the current to your headlights, and they just get worse with age.
- After installing my HID headlight kit, those wires and switch contacts will be delivering a mere 1.8 watts of power to switch a relay, instead of the 55 or 60 watts to power your old stock halogen headlight bulb. Without relays, all the power leading through your headlight switches does not come directly from the battery. It usually goes through a maze of relays and switches and junctions to get to the headlight bulb. This creates a voltage drop, even on a new bike.

- Take your VOM and do some tests. Measure the voltage at your headlight bulb while it's ON and the bike is running. Now measure your battery's voltage. Preferably do this after running the bike and it's warmed up so your battery has been replenished from startup. Compare your battery's voltage and the bulb's. The difference is what is lost in the system.
- After installing one of my HID headlight kits, you will be getting very close to the battery's voltage at that ballast **using the relay**. Even if your ballast voltage is close to battery voltage, do you really want all that current running through your handlebar on/off switch? Without relays your bike is losing lots of electricity due to the wire sizes and connections in the circuits leading to the headlight. The lost electricity becomes heat in the bike's wires and connectors.
- Your stock halogen headlight bulb(s) are designed to run at battery Voltage, and the less Voltage they run at, the poorer their light output. At too low a Voltage, the tungsten filament is not fully re-deposited, making the bulb glass become dark.
- Even on a brand new bike, you will notice a difference using our HID kit using relays. So why wait until your new bike's switches start to wear out? Upgrade to our HID Kit now. In addition, if you own a classic bike with a low output generator or alternator, you won't be draining a lot more electricity out of your battery, but making better use of what you are drawing out. ½ the power draw with 3 X the light output.

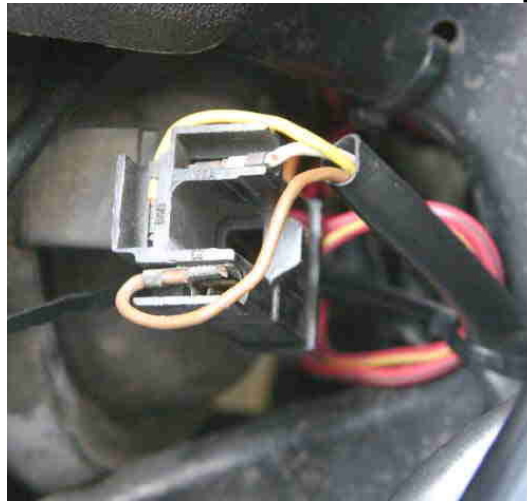
Increased Safety Is One Reason To Want More Headlight Output:

- I mean the safety of being more visible to other traffic. Seeing things like deer at night while riding is another good reason to want more headlight output. Not breaking down on the side of the road because your headlight switch melted is another good reason for a HID Kit.
- Because bikes usually only have one headlight, it's even more important than on a car, to have a headlight that really puts out lots of light. Dual headlight bikes put out much more light of course, but they need even more help to keep their switches from melting due to the increased current flowing with two bulbs on at all times.
- Car headlights are always run by relays. Bike manufacturers save money by not putting relays on the headlight circuits of most bikes. Perhaps they think that switches last long enough and bikes don't last long anyway, but I like everything on my bike to last as long as possible and run at peak efficiency. I like a bright headlight, and I do not want my switches burning out some cold dark night in the middle of nowhere.
- It's amazing that so many riders spend loads of money on expensive pipes, fancy windshields, and all sorts of other unnecessary additions to their bikes, but neglect one of it's most basic and important systems - the headlight system. If you want to go fast and see far down the road at night, or travel long distances with increased peace of mind, spend a little bit of money and put a HID kit with relays on your headlight. You won't regret it, I guarantee it. See and be seen!

Do It Yourself, If You Have a Halogen READ THIS!:

- Factory H4 sockets are often open at the back like above. Please tape over it well, and tie it up carefully where it won't get moved or bumped by the steering parts of the bike. If one of the hot terminals touches your frame or fairing frame, you can have a real problem!
- When doing any electrical work, always insulate and protect all live wires well!

Here is a bike's H4 socket with the Kit's H4 male coupler plugged into it.



Here the unit of socket and plug has been taped over and tie-wrapped



Why a Fuseholder Connector is Necessary:

- The reason a connector is needed, is that the fuseholder is made with molded in leads of a large 3mm (12 AWG) wire, and must connect to the kits' main hot lead. Having a large wire on a fuseholder is a very good thing to make sure that the fuse is the first thing to blow instead of wiring. The fuse is sized for the main wiring of the Kit at either 15, 20, or 30 Amps, depending on the Kit. Heavy duty Kits for fuseboxes use a 30A fuse, all in the same rugged waterproof fuseholder.



Grounds:

- Another really big electrical problem on bikes is poor grounding. That is why my HID Kits have their own ground going right back to the battery. It takes a bit of extra wire but ensures a great ground connection without attaching a ground to the bike's frame somewhere and hoping that it is a good ground.
- I would suggest that you check, clean and reattach all the bike's main grounding points while installing a HID Kit. It's always a good idea to make sure all your grounds are well connected. Sometimes installing a kit may disturb other ground wires and create a problem. Be careful and thorough while you go about installing a HID Kit, to make sure you don't have a problem later.

Previous Owners and Other Notes:

- Be careful what the last guy who owned your bike did to it. Many amateur wiring jobs done in the past turn out to be a problem later on. The reason is often poor quality terminals and crimps.
- Take the time to check all your bike's wiring while installing a kit. Any obviously amateur splices or connections should be fixed properly. Even on a brand new bike, do not assume that everything is as it should be from the factory. Dealers have been known to do some poor wiring as well, since they are primarily mechanics, and not electrical technicians in many cases. If you notice any strange smell, noise, or visual clue on the bike at any time, do not continue to drive the bike until you have found your problem. Usually a vehicle gives plenty of warning before a problem actually happens. The smell of burning electrical parts is distinctive and requires immediate action. Be careful and seek help if you get in too deep.



Motorcycle Metal

Howard G. Messner
5490 SW 42nd St.
Davie, FL 33314
toll free: 1-866-899-5962
local: 1-954-449-6173

howard@motorcyclemetal.com
http://www.motorcyclemetal.com