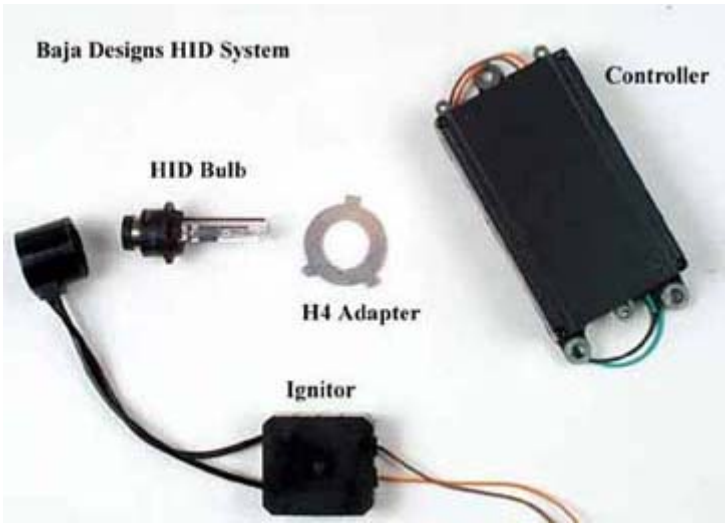
ST1100 HID HEADLAMP CONVERSION

HID lighting systems have become increasingly popular among the Long Distance Riding community within the last few years. The ability of HID lighting to cast light far down the road and to the sides is unequalled by any modern halogen lamp system. Obviously, this power comes at a price - until recently, HID light systems were very expensive indeed. While they are still not inexpensive, HID technology has advanced significantly in recent years and has helped reduce its price considerably.

Baja Designs has begun to market a H4 HID Conversion system that allows the ST1100 owner to convert his/her stock headlamp system to a full HID Lamp system using this kit below:



High-Intensity-Discharge System (Controller, Ignitor, Bulb, and Adaptor) -

The HID bulb uses an arc of light similar to high intensity stadium lighting. Unlike stadium lights, however, this new lighting system uses extremely high voltage (18-25 thousand volts) to initiate the arc so that no warm up time is required. It produces a light measuring 4100 deg. Kelvin compared to 2800 deg. Kelvin produced by a typical halogen filament lamp. The results are a daylight white/blue light that produces more than 3 times the amount of lumens as compared to halogen light, while consuming only about 50 watts of power. Once the bulb is up to full brightness (about 1 second), the controller then provides a steady 90 volts to maintain the arc.

What's the difference like seeing with HID instead of stock lighting? Well, the difference (improvement) is literally night and day. I don't have the proper photo equipment and cameras necessary to take pictures at night to try to show you the difference myself, but here is a photo from Sylvania (Osram) web site that is amazingly close to what I see after installing HID. So while you may think this image below is marketing hype, trust me, it is not. This is exactly the difference HID lighting makes:

Take a good look at the fence posts on the right under halogen. Now look how much more vivid and discernable they are under HID! And check this out: look closely further down the road at the yellow warning sign that says "curves ahead". Now see it under the HID lamp.... just look at how much further *past* this sign you can see under HID, vice halogen!!

Other benefits:

HID bulbs do not use a filament like halogen bulb, rather, it creates light by zapping an arc between two electrodes. This arc excites gases, igniting metallic salts. The product of this reaction is intense white light. HID has power consumption of 3.5 amps constant draw compared to approximately 10 amps drawn from a standard halogen light bulb.

HID bulb life is an average of 3000 hours compared to the halogen's 750 hour life, and is not effected by vibrations or rough road conditions. HID headlights produce a color temperature of 4300 Kelvin versus 2800 Kelvin from a standard halogen bulb. For comparison, the earths sun has a color value of 5200 Kelvin.


Click picture for larger view.

While not a requirement for installation, I decided to remove the upper fairing for two reasons: 1) accessibility to the headlamp for HID bulb adapter modification and installation, and 2) to ease my search for the optimal placement of the hefty Baja Designs HID ballast-controller.

As you can see from the photograph to the left, the ballast fit nicely around the ICM module (for non-ABS models), in the area located beneath the headlight

adjustment knob. Obviously, you can place the ballast wherever you see fit on your ST1100. [**Note**: ABS-model STs will **not** be able to use this particular placement due to another ABS module residing there.]

Here on the right is a closer view of the ballast as it resides next to the left mirror bracket. In this photo, the ballast is temporarily held in place with a zip tie, however the final orientation of the ballast is tilted forward approximately 30 degrees to avoid striking the left pocket fairing (not shown).

Click picture for larger view.

For clarification purposes, the large black-loomed wire below the ballast is for the FIAMM horn (located beneath the ballast near radiator). The white connector dangling to the left of the ballast is the power lead for the left PIAA driving lamp.

This photo to the left shows the optimal placement of the ignitor on the ST1100: directly on the "shelf" above the lamp housing itself. Due to the extremely high voltages used, the ignitor **MUST** be within 6 inches of the HID bulb in order to perform correctly!!

Click picture for larger view.

Also seen in this photo is my "power strip" used to supply power to the PIAA relay and to the relay controlling the HID ignitor. This photo plainly shows the black-loomed cables that provide power to the various components. Looming wires should be considered mandatory for this modification.

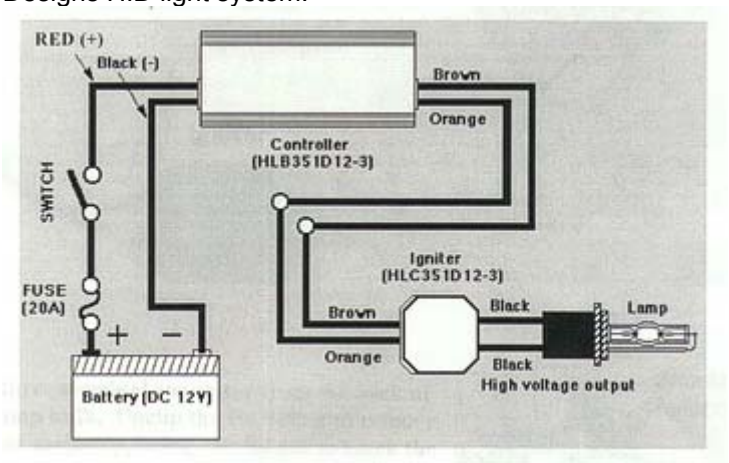
Lastly, here is a photo of the final orientation of the ballast after the upper fairing and dash has been re-installed. Note how the ballast now tilts forward to avoid striking the dash fairing. Even though the ballast is already a pretty tight fit at this point, it is also held in place by two large zip-ties at the other end of the

ballast (covered in this photo).

Note a short piece of bicycle inner tube between the fairing and ballast body that serves to prevent chaffing damage.

Click picture for larger view.

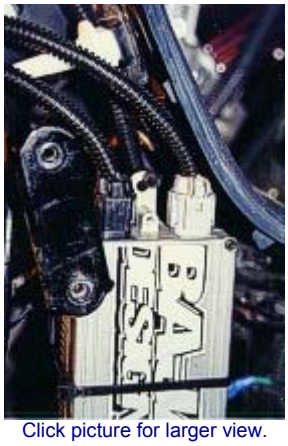
There are several different methods you can chose to wire the HID system for your ST1100. The instructions that come with the HID kit are more than adequate for the job. You can wire the system such that the HIDs light up with your normal headlights, or, you can wire it such that you control the HID system through a switched relay, just as we do for the PIAAs. Below is the wiring diagram that comes with the Baja Designs HID light system:



As you can see, it's pretty much a straight-forward wiring job. If you want to lengthen the cable in order to mount the ballast towards the rear of the bike, Baja Designs provides an extra 4 feet of cabling that you can splice into the existing circuit. Ensure you practice sound engineering techniques and loom your cabling to prevent potential damage by chaffed wires. [**NOTE:** you are allowed to lengthen the power leads from the battery to the ballast, or lengthen the power leads from ballast to the ignitor, but you can **NOT** alter the length of the lead from ignitor to HID bulb!]

Here is a good view of the power leads emerging from the ballast. I had temporarily re-installed the headlight assembly to ensure there was plenty of cable length to reach the power bar and the ignitor. The ignitor **MUST** be mounted within six inches of the bulb because of the high-voltage leads which connect it to the HID bulb.

Click picture for larger view.



Click picture for larger view.

Here is just another good close-up of the ballast wiring, showing the plastic loom around the incoming/outgoing power leads. Looming is essential when dealing with such high-voltage cables.

The photo to the right is a little hard to see, but merits careful study. You are standing in front of the bike looking straight down behind the ST1100 headlamp assembly just as you might when changing a bulb. Here we see the ignitor (large silver module at bottom right) super-velcro-ed in place. Look closely and you will see the 6" spiral-black high-voltage leads that send an enormous amount of voltage down to the HID bulb.

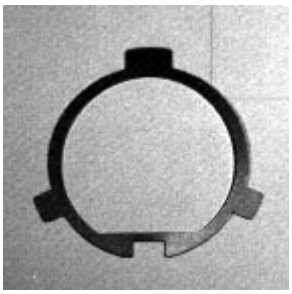
Click picture for larger view.

This may well be the most critical part to this HID conversion: the H4 Adapter Ring.

Baja Designs provides you with a steel H4 adapter ring that is a precision fit for the Osram HID bulb. Unfortunately, the ST1100 does not use a standard H4 bulb, but uses the special Honda variant where the "tangs" are spaced unevenly. For many years, the ST1100 community made use of the H4 bulb mod to get around this problem. However, you will NOT be able to use this technique for your HID light system!

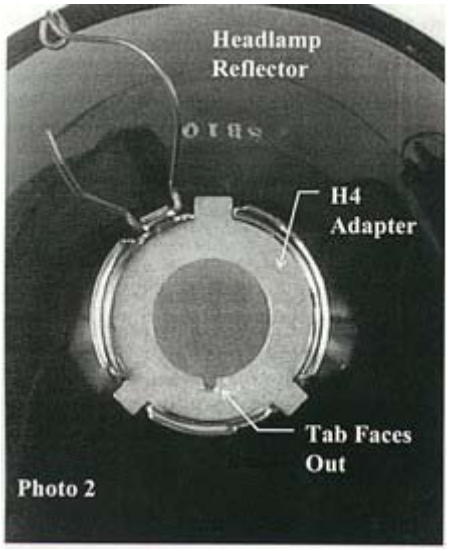
Fortunately, a few years ago Sport Touring Accessories (STA) began marketing steel adapter rings that fit over the standard H4 bulb. After snipping off the two lower tangs from the H4 bulb, the STA's H4 adapter ring slips over the H4 bulb housing and then fits the Honda stock headlamp system perfectly! Bottom line: you can **not** use the Baja Design H4 adapter rings in the Honda headlamp housing without modifying it and using the STA H4 adapter rings under it.

Here is a photo of the Sport Touring Accessories H4 Adapter Ring:



THEREFORE...

IN ADDITION TO THE BAJA DESIGNS H4 ADAPTER RING, YOU MUST USE THESE SPORT TOURING H4 ADAPTER RINGS TOGETHER TO INSTALL AND PROPERLY AIM YOUR HID SYSTEM!!!



This above picture shows the Baja Design H4 Adapter ring sitting in a typical H4 housing. For the ST1100, the Sport Touring H4 Adapter ring **MUST RESIDE UNDERNEATH** this Baja Design H4 Adapter ring.

Thus, the order of installation into your ST1100 headlight assembly is:

1. Sport Touring Accessories H4 Adapter Ring
2. Baja Designs H4 Adapter Ring (with lower two tangs cut off)
3. Osram HID bulb.

Components:

- Ballast: approx 3.0"W x 4.2"H x 1.5"D, 15-watts consumption
- Igniter: 1.8"W x 1.8"H x 1.2"D
- HID Bulb: Osram DR2 XENARC® P32d-3, 35-watt consumption

- Input voltage: 9 - 16 VDC
- Ignition Current: (steady state): 3.4 A nominal
- 24kV peak max
- 18kV peak min >500 nsec. (at 10kV pulse width)
- Lamp frequency: 150 Hz, nominal

HID H4 Conversion Kit:

Baja Designs
7558 Trade St.
San Diego, CA. 92121
(800) 422-5292
Fax: (858) 578-9077
Email: bajades@bajadesigns.com

Sport Touring Accessories H4 Adapter Ring:

Sport Touring Accessories H4 Adapter Rings
HC 72 Box 1, Tapoco, NC 28771
Phone (800) 889-5550 Fax (828) 498-2231

Cost: $12/pair