

# eCortina v2 – Electric Bicycle Hot Rod



*By Roy Prince, SBEEA*

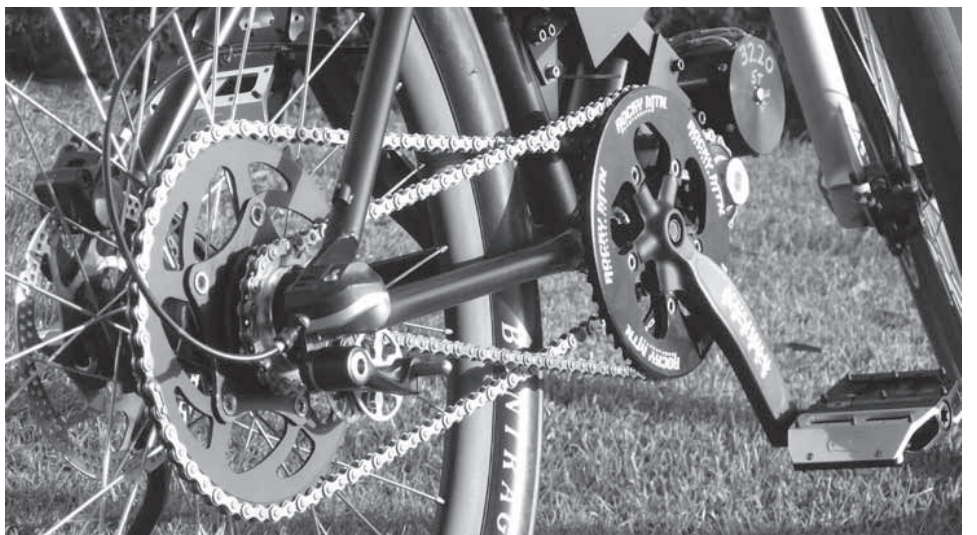
Commercial electric bikes look like warmed over beach cruisers. While there are a few notable exceptions, all are power and speed compromised.

The eCortina is a small lightweight yet powerful cool looking electric motorbike. For my design criteria, motorcycles are too large and heavy (250#’s +/-) to be considered good material for electric power. I started looking seriously at bicycles for the rolling chassis. Down hill racing bicycles are sturdy machines, designed to take a lot of abuse and hit speeds of 50 mph. Down hill bicycles meet my design needs.

I want an eBike hot rod. My first electric bike, the eCortina v1, started me on my way. I was honing my eBike building skills. The small motor got hot when pushed and I was burning out controllers right and left. But the v1 went more than 35mph and took me about 15 miles with some pedaling. I was hooked.

The eCortina v2 is a hot rod geared to reach 45mph! The motor, controller, electronics and batteries are from the radio control hobby biz and are high performance yet light and compact. The v2 can lift the front wheel almost at will.

The frame, wheels and bicycle components  
*continued next page*





were originally a Cortina Triton DS hard-tail bike for downhill racing. Most frames these days are aluminum with tube sections that make it difficult to clamp a motor to, the Cortina frame is CrMo steel with a round section down tube — easy to weld if necessary and easy to clamp to.

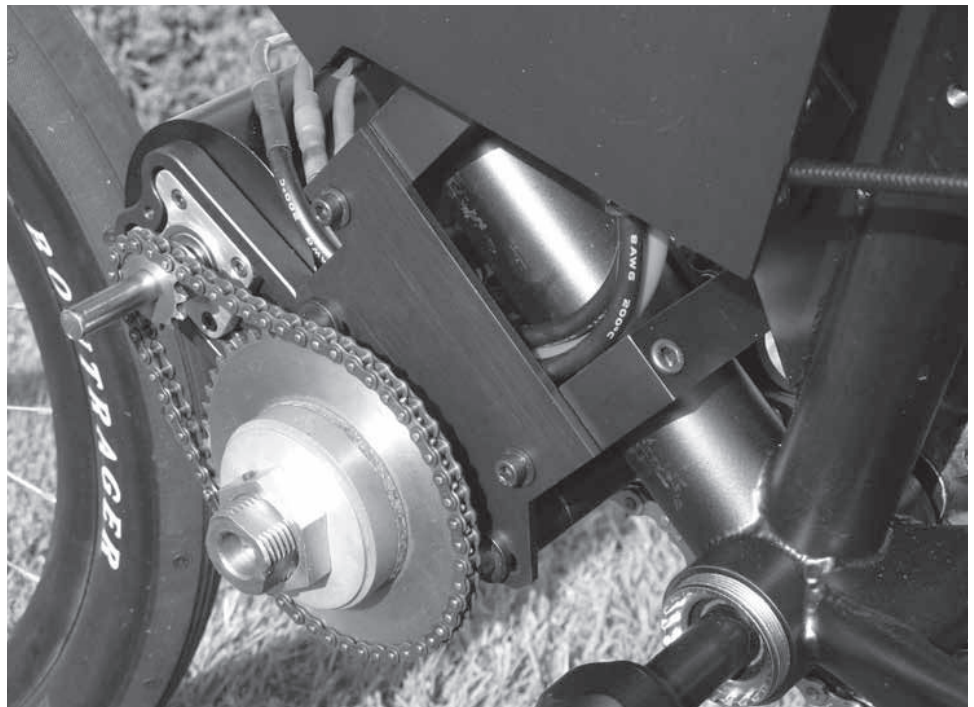
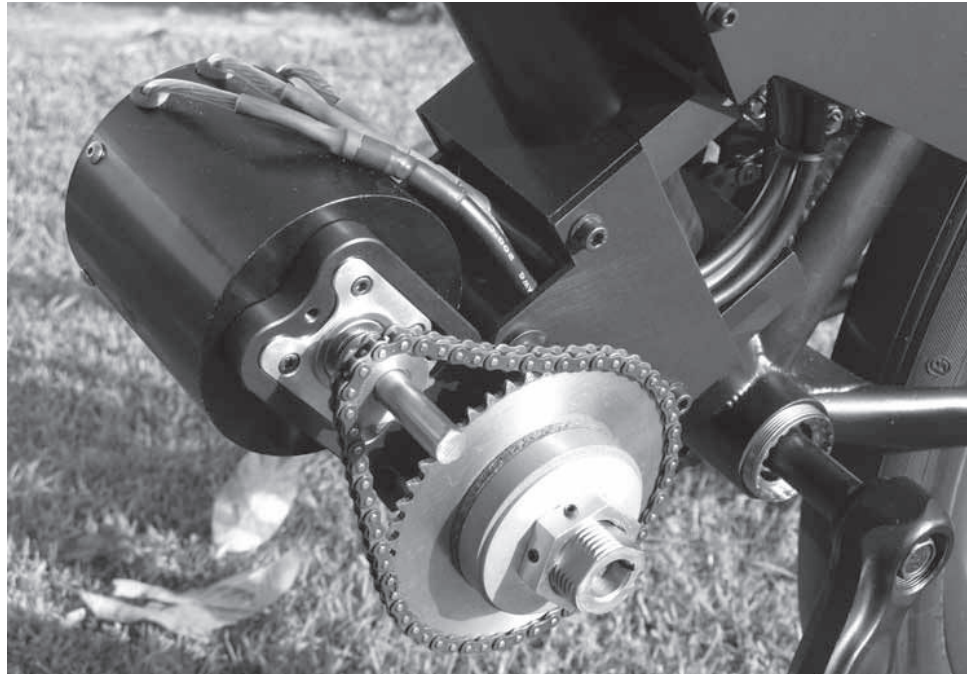
Most RC motors are pretty high revving and Astroflight 3220, used in the eCortina, is no exception. Gear reduction is required. A primary industrial chain reduction of 3.75:1 and a secondary bicycle chain reduction of 3.13:1 give a final reduction of 11.72:1. The drive is through a torque-limiter to keep the power under control. The bike has a Shimano Nexux 3 speed rear hub to optimize gearing.

The machine can be human powered — though at just under 60 pounds — it's not really designed to be pedal powered alone, but the 3-speed hub makes this possible. Or one can run on electric power alone, but best is a human/electric hybrid with a combination of electric power augmented by pedaling.

The batteries are LiPo (lithium polymer), typical for RC use. Each pack has a nominal voltage of 24v-5Ah. I have two sets of two packs in parallel — making 24v-10Ah each. The two parallel packs are then put in series to make a 48v-10Ah battery.

I am delighted with the look and performance of eCortina v2. It's reliable, fast and a blast to ride.

*Roy Prince designs and builds high performance quality electric bicycles.*



## For Your Information...

**Magnussen's Toyota of Palo Alto** reports that 35 new test vehicles of the exciting Tesla-powered Toyota RAV4EV are currently plying the streets of the San Francisco Bay Area by selected customers in very non-descript vehicles! The 2012 Toyota RAV4EV vehicles powered by Tesla will be available for evaluation drives later this year and they are taking deposits of \$500 starting immediately. These

are fully refundable until an order is actually placed (with specifics like radio, color selection, option packages etc.) Only a very limited number of this new vehicle will be produced. Contact Dich Tran at the following email address if you're interested. [DichTran@toyotapaloalto.com](mailto:DichTran@toyotapaloalto.com)

