THIS UN-EDITED ARTICLE HAS BEEN INDEPENDENTLY WRITTEN BY MATTHEW MORROW FROM VIRGINA, USA. OUR THANKS GO TO MATTHEW FOR ALLOWING US TO INCLUDE THIS WITHIN OUR TECHNICAL NOTES.

2006 US Market Electra X Performance Upgrade
Using Hitchcock's Performance Kit and Goldy-Style Muffler

This document is intended to help any RE Bullet Electra X owners that are considering upgrading their stock configuration.

After reviewing three vendors who offered performance upgrade kits I selected Hitchcocks (http://www.hitchcocksmotorcycles.com/).

I have only good things to say about their products, service and technical support. They have a commitment to detail and attention to the customer that is a welcome rarity. The 190% exchange rate, though very painful, was worth it. The quality of the components is what I expected, and I expected it to be good! One example is the mounting design of the Goldy-style muffler. There is another version available which only has one mounting bracket, and that is long and near the very rear of the muffler. As a result it is not stable design and stress factures are almost certain. The Hitchcock's version has two stout mounting points and is mounted up fairly close to the frame.

These are only notes. They are not intended to be step-by-step procedures. So let's begin with the removal process:

Airbox:
Removal is fairly straightforward. Here is the only noteworthy aspect: One bolt remains on the rear (blind) side of the airbox to the frame. Remove the battery *and* the battery holder (watch out for the wires and plug connector resting on top of the battery assembly) – two 13mm bolts. Now you can see the one remaining bolt. Remove it. Note that the battery is grounded here. I used a nut and bolt of my own and utilized the same mounting point. Replace the battery assembly. I added a piece of old rubber car floormat as a pad under the battery.

Hoses:
With the help of several forum participants I have detailed the many hoses as follows:

A. PAV - (I removed this component)
A.1 Braided line from PAV to exhaust port
Injects the fresh air into the exhaust stream to aid in the burning of unburnt gases
I have removed it and plugged the inlet using the Hitchcock's PAV plug.
A.2 Small line from carb intake manifold to PAV.

I believe this provides the vacuum to operate the PAV reed valve.
I have removed it as the carb and manifold are both being replaced.
A.3 Large hose goes back to airbox (see C.1 below). This is the source for the air for A.1 above.

B. Catch-Canister:
General description: 3 hoses go into the base of this can: 1 small, 1 medium and 1 large. On the side of the can and at the top is another hose fitting for a medium sized hose.
B.1 The large hose is the crankcase breather hose and goes into the middle of the crankcase behind the cylinder (actually it is routed through the oil tank on the Electra X, and the oil tank is within the crankcase).
B.2 The medium hose goes to what is called the timing chest or timing case: the "horn" on the right side of the engine where I the points are located on pre-electronic ignition units.
B.3 The small hose goes into the primary case on the left side of the engine. It is another breather hose.
B.4 I believe that the hose fitting at the top of the canister connects the medium-sized hose to the airbox (see C.2 below). I assume that this got pulled off as I was removing the airbox - so I am uncertain. The purpose as described in Pete's manual is to return the gases, sans goop, into the intake tract.

The main crankcase breather blows into the canister, as does the primary case breather; the hose to the timing case is for the purpose of draining goop back into circulation.

C. Airbox - (I removed this component)
Note that both air hoses are on the outer edges of the airbox (in the "clean air" zone). One is near the bottom and one is near the top.
C.1 The large hose at the top goes to the PAV unit - A.3 above.
C.2 I think that the medium hose at the bottom goes to the canister (B.4 above).

After technical input from forum participants I decided to utilize the OEM canister primarily for the superior one way valve in the main crank breather hose. I also left the primary case breather attached to the OEM canister. I did, however, disconnect the timing case return host (plugging it at the timing case), and routed it over the chain to drain freely. This is for two reasons: it is prone to plugging up, and the acids in the residual goop can be harmful to the internal engine components. After 1,000 enthusiastic miles it is all working well.

Carb:
Removed carb and disconnected throttle cable at the carb. Removed throttle cable at housing. Greased new throttle cable at both ends. I taped the throttle-end of original cable to the carb end of the new cable; and fished it through the headlight nacelle, under the gas tank and finally to the carb area. Installed carb per instructions supplied by Hitchcock’s. There are two screw-on intake

bell-mouths. I used the aluminum one. Note that you will need about 4 additional inches of fuel line. I added a fuel filter as well. Carb tuning information is detailed below in the Tuning section. I have not oiled my filter – but intend to at a later date.

PAV:
Removed this unit and hoses. Plugged the inlet and used plumbers tape on the threads (although I'm sure it'll burn up!)

Throttle, choke and cables:
I did not take notes on each step of this process while I was doing it. However I will document the noteworthy aspects of it here:
The throttle cable should be routed already (per carb steps above). Grease the choke cable at both ends. After installation, you might have to tighten-up the lever holding screw. See pictures below for more routing information. I routed the choke cable through the headlight nacelle, down and out through the opposite side at the lower part of the front of the gas tank. From there I did not route it up and under the gas tank tunnel. That was too cramped. I simply routed it underneath the tank and over the engine. I mounted the choke lever on the right handle bar, towards the driver for off (running position) and towards the front wheel for on (warming position).

Follow-up notes: 1) I have subsequently rerouted the throttle cable slightly – it follows the same route as the choke cable. That is, instead of going directly up and under the gas tank from the front, I route it to the outside-left of the front of the gas tank. Then it goes up and under the tank from there. (See photo of chock cable). 2) I also pressure lubed the throttle, choke and clutch cables with 5w fork oil. Also re-greased throttle, choke lever, clutch lever and exposed cable ends.

To attach the cables inside the carb:
Remove carb cap (2 screws). Remove slide from carb.

Choke cable: Remove choke gate from inside the slide. Thread the choke cable end through the spring and brass fitting, compressing the spring, down through the hole in the choke gate, bringing it back up in its slot to seat it.

Follow-up note: When you turn the fuel petcock off, also engage the choke. This prepares it for the next cold start, but more importantly, it relieves the pressure on its return spring.

Throttle cable: Remove needle from slide. Insert cable through carb cap. Insert it through the main spring. Compress the main spring. Insert the cable end into the slide through the needle hole and slide it forward into the slot (out of the needle hole) and pull it up to seat it. Replace needle with clip into the needle hole in the slide. Allow spring down into slide to rest on top of needle clip – making sure that the needle and clip are seated properly (not crooked). You might notice that the throttle cable actually touches the needle clip despite the butterfly-shaped groove formed into the clip; this is apparently not a problem.

Replace the choke gate back into the slide, and the slide back into the carb. Button it back up. Ensure that you have full and unimpeded movement of both cables. Mine were binding slightly which required some moving of the cables. Also, I determined that my needle was not properly seated and was going into the main jet at an angle. I had to pull it out and do it all over again.

Exhaust:

Not much to note here. You might want to have a new exhaust gasket on hand. It was simply to remove the existing unit and install the new unit. I determined that the steel insert within the Hitchcock's exhaust pipe header was actually larger than my exhaust port (by less than 5/100 of a centimeter). I used a black permanent marker to coat the outside edge of the steel insert, then Dremel-tooled it down to "erase" the marker. That was enough to let it fit in. I actually used the grinder just slightly a bit past the insert and onto the chrome pipe itself. Hitchcock's was willing to send a smaller insert if it had been necessary; theirs is 1.75 inches OD. If your exhaust port ID is smaller (or your stock exhaust pipe's OD is smaller) then you might ask them to send a pipe with a smaller insert. I did not utilize the baffle insert.

Tuning:

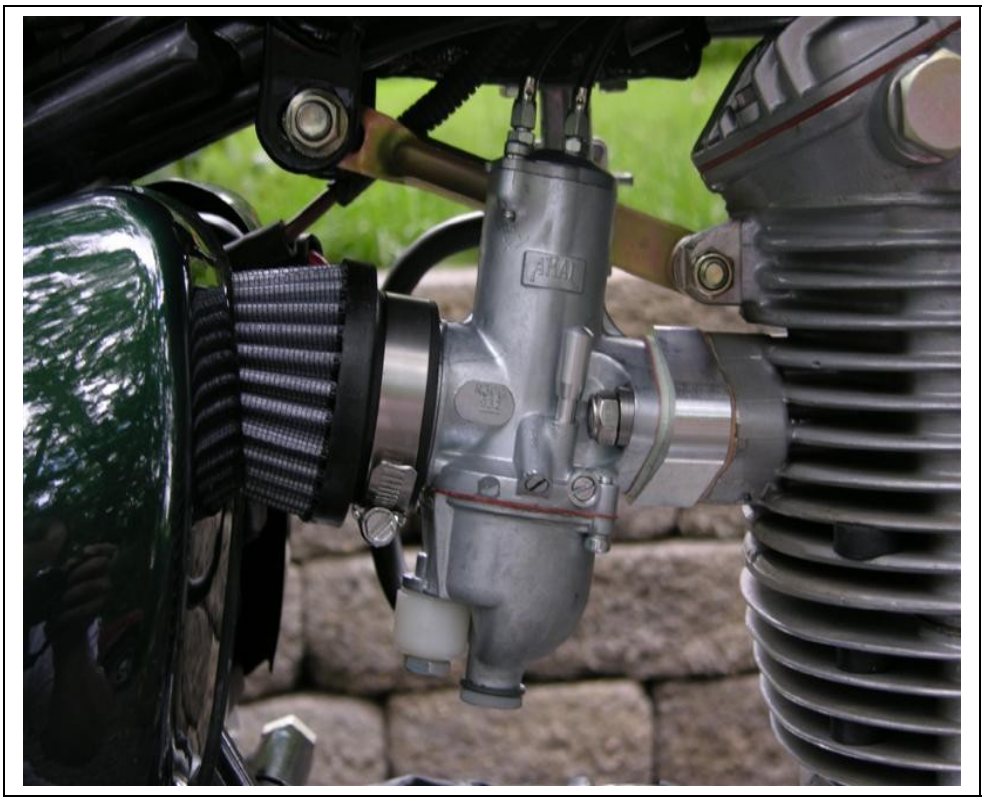
Follow-up note: As an illustration of how much influence the idle circuit has on the overall mixture I share this experience: After adjusting my valves for the first time, I noticed that the bike seemed to be running rich. A lot of burbling and afterburning (POPs) in the muffler. Spark plug was darker than normal: black but not fouled. Hmmm… This went on for one tank full, whereupon my gas mileage drop from the low 70's to 64mpg! Yep, it was running rich. I puzzled over it during the day trying to figure out if the valve adjustment might have had anything to do with it; or if the needle had gotten cock-eyed or something. On my way home it occurred to me: In the past couple of weeks I had made several ineffective stoplight adjustments to lower the idle speed. Guess what: I had been adjusting the idle mixture screw by accident! I had to go back to my original setting of 1 1/8 turns (backed out). From there I attempted to refine the idle according to the Amal instructions. However, between 1 and 1/8 to 1 and 1/16 turns, no adjustments would further increase the idle speed. This confirms that I originally got it set-up in the 'sweet spot'.

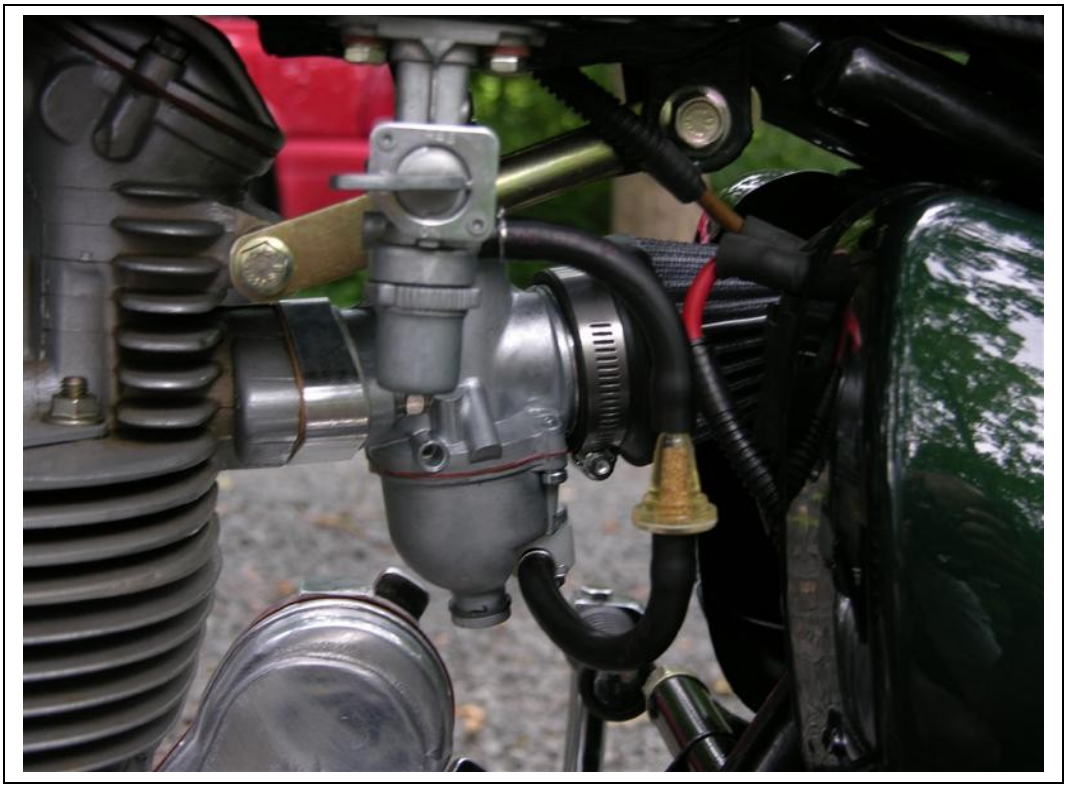
Do a first adjustment on the throttle cable: Adjust it so that it has just enough slack that the cable sheath ends can move within their fittings, but cannot pull out. Carb needle is in the middle (2nd) groove. In accordance with the Amal procedures I backed the air/fuel mixture screw out 1.5 turns. (Heads-up: My final setting is 1 1/8 turns). First warm your bike up by driving gently. It will probably have some poor performing throttle ranges – but ignore them if it can be driven without too much fuss. Next I ran the bike at full wide open to ensure the main jet was spot on – it was - although it was not running spot on at other throttle positions. Next I adjusted the idle IAW the Amal procedures. As noted above, I ended up with the air/fuel mixture screw at 1 1/8 turns. It is difficult to tell what the idle speed screw is currently set to. After the idle is set you should adjust the slack in the throttle cable: ensure that the carb slide is fully seated (actually, it is now seated against the idle speed adjuster screw); expand the cable adjuster until you see the slide start to move (up); now back it off till it returns to seated and just a bit further. Make sure that there is some slack, but not enough that the cable ends can come out of their fittings. I did not utilize the exhaust baffle insert and I did not oil my air filter. Both of these would likely affect the overall tune. At this point I can offer no more tips because mine is running great. Hope your experience is the same!

Follow-up note: As I left for work each morning, the mixture was lean just off idle in 1st and 2nd gear. It would misfire (or 'spit') with lean symptoms that are typical of today's EPA-impacted systems. I'd adjusted the idle mixture as rich as it would go (at about 1 and 1/16 turns out), and determined that a richer throttle valve cutaway was in order. I don't know the number, but I just specified to Hitchcock's that I wanted it one step richer than the stock throttle valve cutaway that is provided with the Amal MK1 (which is the one they sell as part of their performance kit for the Electra X). Comparing the two cutaways butting up against each other the new (richer) one is about 3/32" shallower. The change was spot-on. The mixture is just right and I can continue to exit the neighborhood with as little noise as possible!

The bike:

The carb:





The exhaust:

Cables and levers:

Below is the choke cable. It does not run up through the tunnel. After this photo was taken, I also routed the throttle cable this way: