

It's more than just a "Quickie"!



SAM'S PLACE

Mods That I Have Made

It's a nice design, but... The Q-200 is a great little plane, but of course you can hardly build a plane without making some changes. One thing is for certain, the Quickie Aircraft Company (QAC) didn't last too long and their design never had a chance to mature. After flying, it immediately became apparent there was a need to make some modifications. Other problems demanded attention after flying lots of hours. I am listing some of the more important changes I made and why I made them.

Please keep in mind that these are my opinions only. Other builders may have something that works better. Maybe QAC had a reason for their design that is not readily apparent to me. Anyway, if you do any of these and something goes wrong, don't sue me. They just worked for me.



Les Hildebrand's easy access.

Electrical System The electrical schematic, as depicted in the plans, is a cruel joke. Almost no advice is given on designing and building a safe and reliable electrical system for the Q-200. It's especially important that your system is reliable, since you must use an electric transfer pump to move fuel from the main tank to the header.

Fortunately, there is help in the persona and writings of Bob Nuckolls and his [AeroElectric Connection](#). Bob has put together the soup-to-nuts bible on homebuilt electrical systems. [Buy it now!](#) It includes everything you need to know, from what size and type of wire to use all the way through wiring a complex glass cockpit panel and everything in between. I can't emphasize enough how import his book is, and certainly will be the best \$35 you spent in your project.

As if his book isn't enough, Bob gives [free on-line help](#).. You can post questions to this e-mail group and you will get excellent advice back, often from Bob himself. It's best if you have already purchased your own copy of the AeroElectric Connection before posting questions, since many replies will refer you to sections of the book.

Q-200 Engine Mount Bolt Plates. The plans call for aluminium. Aluminium is too soft and the first ones I had deformed. The thrust of the engine tries to pull the bolt heads through the plate. Make them out of steel.

Fuel Capacity For a cross country aircraft to be useful you need lots of fuel. I have a 16-1/2 gallon main and a 6-1/5 gallon header tank. This gives me three hours of flying time, plus an hour in reserve. The Q-200 plans call for a reduced size header tank so you can have access to the engine mount bolts on the aft side of the firewall. By getting a little creative with the shape of the header tank I was able to retain a larger fuel capacity. This translates to more reserve fuel and more peace of mind.

Fuel Cap Do not use the plastic bottle cap, as supplied by QAC, for a fuel filler cap! The area on the fuselage outside the fuel filler door is low pressure. If the fuel filler cap leaks air, that low pressure enters the mail fuel tank and starves the engine of fuel. This has happened to a couple of guys and it introduced a large pucker factor about 300 feet off the runway. Make a more positive sealing system and make sure it won't break. Here is a photo of mine, which I copied from Jim Doyle. It is simple, cheap, reliable, proven, and parts are avilable at any hardware store. [Fuel filler cap](#).

In general, the QAC fuel system plumbing is amateurish. I reccomend embedding threaded aluminium hard points in the tanks and doing away the floxed-in aluminium tubing. You are better off going to aircraft quality fittings. Use 3/8" fittings, instead of the 1/4" as called out in the plans.

Landing gear axles. Again, the plans called for aluminium. Make a couple of hard landings and they are bent. Make them out of steel, using the same wall thickness.

LaRue Brakes. Acutally, it is a modification to the brake mounting system. Named after Bob Larue, the guy that first installed them on his Q-bird. called for aluminium. The original mounts were cantankerous and led to uneven braking and severe chattering. This system works a lot better. See it here [LaRue brake mount](#).

Tailspring As soon as guys started completing airplanes, back in the 80's, guys started breaking tailsprings. (Comment from Gene Sheehan: "If guys wouldn't prang their airplanes on landings, they wouldn't break tail springs) I heard about this problem through the grapevine and beefed mine up. I added a couple of extra wraps of BID and UNI. Since this increased the outside diameter of the spring, I also enlarged the tail wheel fitting. This worked well for over an estimated 1,000 landings.

Finally, it broke (which led to making the next two mods). The replacement spring was designed by John tenHave and made by an Australian sailboat spar maker. I think it is quite good. Some post mortems have been performed on the original QAC fiberglass springs and there is much left to be desired. The Aussies have done a better job of engineering and I am quite pleased with it. If you want one of these, send me an e-mail and I'll get you in touch with them.

Differential Braking. Original plans called for a single master cylinder driving the brakes. A couple of the guys installed differential braking in their Q-200s and it looked to me like a "nice to have" mod. Sure, it was easy to install (just add a second brake cylinder and lever) and was nice for turning tight corners, but I didn't really think I needed it. That is, until my tail spring finally broke. You see, when you lose tail steering you have no directional control, an undesirable condition. If I had differential braking I might have been able to keep the aircraft on the runway. This leads us to the next mod.

Rudder/tailspring isolation If you build to QAC plans, and you break the tail spring, you lose rudder control. I thought it wouldn't happen to me, but it finally did.

The modification was pretty simple. There is a coupling on the rudder cables where the fuselage splits (original plans). I simply made a new fitting and added a second cable which now connects to the rudder bellcrank as well as the tail wheel bellcrank. Now, even if the tail spring should break I will still have rudder control. This can also be done using an intermediate bellcrank, as part of the Jim-Bob 6-pack.

Gall Wheel Alignment. The wheel alignment is established by the axle hole through the wheel pants. In the plans, QAC has you install the wheel pants on to the canard, before the canard is mounting on the aircraft. This aircraft has a gross weight of 1,100 lbs. When all that weight is placed on the canard, the wheels splay out and the alignment changes. Drilling the holes should really be accomplished AFTER everything is together. Here is a link to David Gall's extensive essay on the matter. [David Gall essay on wheel alignment](#)

The Continental 0-200. The 0-200 isn't really a mod, but since it is not the original Revmaster equipped Q-2, I just wanted to express my opinion. Keep in mind this is what has worked for me.

I do a lot of cross country flying. I regularly fly over the Ozarks, I've flown over the Rockies a couple of times, and the Appalachians. Landing speed on my aircraft is somewhere around 80 mph so an off-field landing would be very bad news. Reliability is the most important feature of any engine. I see a variety of engines

going into Q-craft and all of them are touted to be greatest thing since sliced bread. That may well be, but I'm sticking with the O-200, thank you.

Sure, the Continental costs more, but it is a proven design and parts are available for it all over the country. It is also easy to find mechanics that know a lot about it.

Are you going to use a Continental O-200? Here is a nice web site about the engine and some key areas to watch out for. [O-200 goodies.](#)

Speed Brake. QAC option. I think it's nice to have.

Reflexor. An aerodynamic trim device that raises or lowers the ailerons. I wouldn't fly without it.

Roll Trim. The roll trim changes through the flight regime. I added an in-light adjustable turnbuckle to the left elevator torque tube. It works great.

2-into-1 Exhaust The 4-into-1 system is a real maintenance pain in the arse. This system makes it a lot easier to change a leaky exhaust gasket.

Aluminium Instrument Panel This simplified return electrical grounds. I didn't like the idea of a wood/glass panel to begin with. Then, I saw QAC's aircraft and noticed THEY had an aluminium one. Mine is .055".

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