



QUASOAR II

By NIEL LIPTAK

● Ah . . . the fact that you have gotten to the text portion of the Quasoar II's article illustrates two things: Number one, you have very good literary taste based on a very well educated design eye. And second, you are giving some thought to building a Quasoar II. Let's, for the moment, investigate further what you would encounter once you constructed a Quasoar II.

First of all, you would discover that constructing long thin wings isn't as hard as you've been told it was. And also, you would discover that there is something about soaring that is hard to describe, but involves the same challenge as flying a perfect pattern or turning a 1:20 in pylon.

After you have mastered the techniques of soaring with your Quasoar II, you decide to enter your first soaring contest. It seems that most contests are at least a 5 hour drive from anywhere, so you carefully outline a checklist. This is because if you forget those precious wing wires, you'd never make it back before the awards are passed out.

Well, you've made it through Phase One. All checked into the motel nearest the contest site. The eerie red glow of your battery charger, pumping up your radio system for tomorrow's conquest, creates an enlarged silhouette of the Quasoar II's fuselage. A few quick mental measurements of the silhouette and you realize that the span for your brainstorm would be in the neighborhood of 38 feet in full scale.

Oh, one more thing before you shove off to dreamland, and that is, what time to wake up. Let's see . . . the contest starts at 9:00 a.m., registration is at 8:00 a.m., and with breakfast and all . . . how about a wake-up call for 4:30 a.m., just to be on the safe side? After all, you're not nervous, and you can use the extra time to watch the Sermonet before you go to breakfast.

You finally get to the field. So what if you are the first one there; the C.D. is always looking for someone to help set up the winches. The registration line is starting to form, so you insert your body at the end of the line . . . which quickly becomes the middle.

Now you get down to business. The interrogation begins; first your name

and address, the registrar asks frequency, A.M.A. number and F.C.C. number . . . and then to name the sailplane . . . to which you reply at the top of your voice, "Quasoar II!"

Now to the hard part . . . wing span and wing loading. Let's see . . . 16 oz. to the pound divided by wing-span . . . or is that area, or maybe the square root of the elevator area?

Now that the registration is out of the way, you can retire to the pit area and assemble your machine. This is where the real fun begins. As you bolt the wing on, a spectator's eye is caught by your prowess in assembling your craft. He stops to engage in sincere conversation. After all, he too has an unending quest for knowledge. His first question is, "How do you get those things up?" To that you desperately search for one sentence to describe a Hi-Start, winch and hand tow.

Now the contest is about to begin . . . but not before the pilot's brief. This is where all pilots gather around the C.D. and discuss the weather, size of the landing zone, and the rotten breakfast they had that just may effect their second round of flying. The brief breaks up and you head back over to the pit area. You almost get back to your lawn chair when your name is blurted over the P.A. system. Oh no! This is it! Your palms begin to sweat as you get your transmitter out of impound and find a timer. Before you know it, your Quasoar II is firmly attached to the towline and you're on your way to your first official contest flight of your career. As the ring gracefully slides off the towhook, you nervously mutter "time." To that command, the distinctive click of the stop watch is clearly recognized.

You realize that to stay up for 10 minutes, lift is going to play a very vital role so with this in mind, you start the search.

No lift and about 9 minutes to go, your altitude is less than 100 feet, but wait! What was that? A wingtip moved. You start to circle. Perspiration slowly trickles down your forehead. Each circle you ascend a few more inches. Finally, you hear your timer say 8:30, a tingle of accomplishment races down

your spine as you prepare to descend upon the landing zone. Final looks good, and 10 seconds to go, 5 seconds, 3, 2, 1 as the spot comes up to caress the bottom of your Quasoar's fuselage. A perfect score, you're ecstatic with excitement. You skip tra la, tra la . . . into the spot to retrieve your ship before it falls prey to some poor unfor-

fortunate, who struggled for a 3 min. and 12 second flight.

Ah, but one perfect flight won't win you a contest. You need 2 more, count 'em. On your next attempt you launch into a boomer, so getting a max is no sweat. But on your third flight, that sinking spell hits you again. Now you know what it's like to be the Captain of the Titanic, you'll take anything. As a last attempt to stay aloft, you try to pick up some slope lift off of a discarded pack of cigarettes. You barely clear that barbed wire fence on the way to the spot but you make it, not a max, but not too bad. It should keep you in the top 50 anyway.

Your flights are over. Now to the awards. The presentation starts at third place, then to second place, and finally to first place. That's you, you've done it! You won first place! Boy, will the guys at work be proud of you. Just don't tell them you traveled 300 miles each way and spent about half a week's wages just to participate in group therapy for a bunch of toy airplane nuts. After all, they never tell you about their gold ball budget!

Well, there you have it. Maybe a little distorted in spots, but an idea of what the ole contest circuit is like. Hope you enjoyed it; now down to the serious stuff.

FUSELAGE

The fuselage, as you can see, is of fiberglass. This is available from Hartman Fiberglass R/C, Argenta, Ill. 62501, for a price of \$20.00. A very high quality of workmanship is displayed in all Hartman products, so I'm sure you won't be disappointed with the fuselage.

The fuselage comes in two halves and must be joined together. This is no major task, but requires the use of fiberglass tape (furnished) and resin. First of all, using masking tape, fasten the two halves together about every two inches or so around the entire circumference of the seam. Now mix some resin, about an ounce should be more than enough, and apply it on the seam. First do an exposed segment, then peel off the tape and apply it over the portion just resined, then do the segment previously covered by the tape. Continue this process all the way around until you are back where you started.

While the resin is setting up, sight down the seam and check to see if it's straight and true. If not, twist the fuselage until it is straight. Let the resin

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completely dry before removing tape.

You now need to lay fiberglass tape over the inside seam. If not already done, cut out the wing section of the fuselage in order to attain access to the inside of the fuselage. Now cut a length of tape that will reach the entire length of the bottom and lay it over the seam. Now mix up some resin and pour it over the seam, tilting the fuselage so the resin saturates the entire length of tape. Repeat this process on the top seam after bottom has dried. Insert right angle wire for butterfly tail pivot and mount securely.

The bulkheads are installed after the wing is complete. That way you can custom fit the wing to its mounting. More on that later.

The retractible wheel, shown as an option on the plans, was incorporated in the prototype. However, it is not used too much, since it does require a smooth field to insure against damage. But it looks neat and satisfies my weird taste.

WING

Ah yes . . . the wing, a very vital unit of the soaring bird. First of all, make the ribs as shown on the plans. You will have to go through this rib making process twice . . . once for each half. Even though the wing is in three pieces, it is built one half at a time. Here is how it's done:

Lay the bottom sheeting out for the entire wing half. Glue the bottom spar to the sheeting and cut out the air brake opening. Now lay the 3/32 balsa sheet over the air brake slot. Placement of the ribs is next. Remember, this is the entire half we are building. When you get to the joint half way out the panel, insert the brass tube. Insert the tubes full length and cut them in half after the ribs have dried. By using this method, you insure that the tip panel will line up perfectly with the center section.

Before the top sheeting is glued down, install all linkage for the spoiler/air brake. Also insert the spoiler back-up sheet as shown on plans. Oh yes, a word about the washout. You can go right ahead and build the tip panels on a flat board. Just before gluing on the top sheet, slide the washout shim into place. After the top sheeting has dried, the tip panel washout will hold it's shape and will not distort or flatten out.

Before the top sheeting is applied to the wing, take a razor saw and part the center section half from the tip panel by sawing the brass tube between the two plywood ribs. Now take the center section half and position the root end on the centerline of the opposite wing half plan. Block the completed panel 12 degrees and proceed to build the left panel onto the completed panel. Now follow the same sequence that you used on the first half. You should find that this system will be a fast and more

important, an accurate method of building a long, thin, 3-piece wing.

As shown on the plans, the spoilers are made of .030 brass sheet. The brass is K&S, and comes in a variety of sizes, including the size used for the spoilers and air brakes. Most good hobby shops carry it. This will eliminate the pain of cutting out the size you need from a large sheet.

The hinge for the spoiler is merely a thin strip of Monokote trim sheet which spans the length of the brass spoiler and airbrake. This works very well, since it seals the hinge line while it hinges.

The wing tip is made of balsa and is not too hard to shape. The curl up configuration was just to give the model a full scale appearance . . . and besides, it looks neat.

After the wing is completed, take a minute or fifteen to lay a strip of fiberglass tape on the center joint, top and bottom. Now you're ready to install the wing mounting hardware. First of all, construction alignment should be done with the wing positioned on the fuselage. This way you get a good fit-up of components. When you get the front turtle deck bulkhead secured, bolt the front fuselage bulkhead to it and use this system to locate the fuselage bulkhead. The trailing edge cleat is a must before you proceed to cover everything with the fiberglass turtledeck. Custom fit the turtledeck and glue into position. Now take the razor saw again and saw the canopy portion off of the center wing assembly. Now you should have a completed center section and a canopy with no frame under it.

Build a frame for the canopy. As you can see from the plans, the wing bolt serves two purposes; one to hold the wing on and two, to act as an aft hatch hold down. Clever, huh? You can install the rear fuselage bulkhead now.

Mix up some Epoxolite (Sig) and contour a smooth fillet on the corner created by the turtledeck and the wing. This fills in any voids that may have developed during construction.

TAIL

The butterfly tail is pretty much self explanatory from the plans, but let me emphasize the necessity to keep the control movement slop free. It should be your prime objective not to acquire any slop at all. It will really show up when you start flying.

The movement for the "V" tail is illustrated on the plans as a series of positions which applies to the rudder- vator that they are shown on. Start with a small amount of elevator control and work to what is shown on the plans.

The construction for the butterfly tail is very simple and should not present any problems at all.

FLYING

First of all, make sure you do not have any slop in your control linkage

and make *super* sure that your surfaces return to center every time.

Balancing the Quasoar with lead shot as shown on the plans worked out very well. The sequence used on the prototype, I believe, will be very helpful to you on this bird, as well as on future encounters. Install all the radio gear and complete everything with the exception of the ballast. Suspend the fuselage at the C.G. Now, stick a Dixie cup on the tip of the nose with masking tape. Start pouring the lead shot into the cup until the tail comes up and the fuselage is parallel to the ground line. Now pour the lead that you have in the Dixie cup into the nose of the Quasoar. Mix up some Hobby Poxo Formula II and pour it in the nose and let it soak through the lead shot. Lay a piece of glass cloth over the works and let dry. You may want to balance your ship just a little bit tail heavy and bring it to the C.G. with a few loose pieces of lead. This way you are free to move the C.G. around a little.

Ok, you have it all balanced out. Now charge up the "Raydoe" and head for the field. Make sure that left is left and right is right. With a butterfly tail the movement is just opposite of what it would be if you pictured the rudder- vators as ailerons. (*If you're still not sure, double check Le Gray's article in the June 1972 issue of MODEL BUILDER. wcn*) Give the Quasoar II a few good hard hand launches. Don't be afraid to really throw it. After you've gone through the initial testing, hook it to the towline, because you're going to need some altitude to find out anything else.

After the towline has dropped away, start to get the feel of it. Let it go hands off, see what it's doing, and correct accordingly. You'll find that the butterfly tail gives you a very positive turn. Also, don't let the speed get too slow, get the hang of flying a little faster than usual.

The spoilers/air brakes I am sure you'll find very valuable, and with some practice, you'll have the landings down to a science. Use the spoilers as you would throttle on a power plane. Don't jerk them all the way out and then retract them. Instead, gradually extend them as you need them and co-ordinate the use of elevator right along with the spoilers.

Well, there you have it. I hope I have made the construction clear to you. If not, contact me through MODEL BUILDER.

So, in the interest of soaring, I wish to leave you with the immortal words of Jonathon Livingston Seagull, who, after completing 287 consecutive loops, thus breaking his old record of 285, turned to his good friend Maynard Gull and said, "Squawk!" . . . because everybody knows seagulls can't talk.

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