



Designed for Galloping Ghost or small digital proportional systems, the Li'l Pinto is capable of inside's, outside's, vertical eights, Immy's and inverted flying. For .09 to .15 engines.

AN RCM CONSTRUCTION FEATURE

Semi-Scale Temco 'Li'l Pinto'

by BRAD SHEPHERD

HAVING designed and built a few small racers, as well as a combination racer and stunt plane for Galloping Ghost, I was looking for something different and unusual to tackle and had been "toying" with the idea of using the T-33 jet as a subject, although this idea never did "gel." When I received a copy of the October 1967 issue of Sport Flying, there it was—an article on the Temco TT-1 jet trainer. My mind, feeble as it is, got into gear, and this model resulted. The basic layout of this plane is close to that of the racers and

stunt plane which proved so successful, and should give you many hours of flying satisfaction.

This is not one of those "puppy dog" planes ARF!! ARF!! (almost ready to fly) yet is not difficult for a modeler to build. It has only 3 basic formers in the fuselage, the 1/32 inch ply doubler has proven itself, and the "egg-crate" front-end is easy once the parts are cut out, making for a "stout" front-end assembly. The wing is the only part that could cause some difficulty, but using the jig leading edge and

exercising some care, even this is not too bad. After all . . . the bigger the challenge, the more satisfaction, and this is a modeler's project! If you do prefer to use a foam wing, I am sure Midwest's foam wing and stab kit could be made to fit and look respectable, although the area is somewhat smaller, resulting in higher wing loading. Installing the main gear in the wing would be a challenge, so if you go this way, I would appreciate hearing from you on the results via RCM.

This model did not fly right out of the shop window like another feller I know of who is a "bye-plane" nut, but fly it did, and was making low level passes on the test flight. Succeeding flights were made in 20-30 MPH winds which showed that this little plane has the ability to fly in weather usually reserved for its bigger brothers. The only change that was made to the prototype was to enlarge the rudder, a change which is reflected in the plans. The landings are pure joy as long as the "nut" on the end of the stick that protrudes from the little "box" goes easy. It doesn't slow down too fast, so allow for this on the downwind leg, or you will come in hot! I have done insides, outsides, vertical eights, Immy's and inverted flying with the Li'l Pinto. The rudder action is the same inverted as it is right side up, e.g., right is right, and left is left. It will not roll on rudder, so the addition of ailerons, if you are using a small digital rig will, or should, make this a good acrobatic plane with all the looks of a real jet on one of those low level, wide open passes. I would recommend using a .15 engine if a small digital system is employed.

The side mounted engine, decals, and cockpit details, all add to the scale — like realism of Brad's Li'l Pinto.



FUSELAGE CONSTRUCTION

Using two sheets of 3/32" x 3" x 36" Q-grain, lay out the basic fuselage sides. Using the engine thrust line, and the stab platform as a guide line, cut the basic sides out, recessing the section between the

RADIO CONTROL MODELER



Full side view of the Li'l Pinto evidences realism achieved by use of noes wheel door, wing mounted main gear, and jet exhaust.

firewall and the front bulkhead $\frac{1}{8}$ " to receive the landing gear mounting plate. Also, cut out the wing outline that is below the thrust line.

Now take some $\frac{1}{32}$ " ply, (you will need a 24" sheet for this) and lay one of the fuselage sides on it. Trace the outline on the plywood, then move the side up $\frac{1}{2}$ " to allow for the $\frac{1}{2}$ " triangle stock, and draw the bottom line again. Cut two doublers from the ply using the top outline just drawn. Now cut the aft top deck side piece from $\frac{3}{32}$ " sheet and glue in place on the basic side. When these are dry, glue the $\frac{1}{2}$ " triangular pieces on per the plan, making sure you have a right and left side. While these are drying, cut out the $\frac{1}{16}$ " ply bulkheads, $\frac{1}{8}$ " sheet balsa bulkhead, and the top deck formers "A" and "B," from $\frac{1}{16}$ " ply.

Using contact cement (I prefer Sig's) coat the inside of the fuselage sides to be covered by the doublers, and coat the doublers themselves when the contact cement is dry, carefully lay the doublers in place and press firmly on to the sides.

Using "Titebond" or epoxy, glue the forward and aft bulkheads in place. (I pin the sides to my bench upside down, and get everything square, then glue the bulkheads in place.) While this is drying, take some $\frac{1}{8}$ " ply and cut out the crutch and engine bearer doubler as well as the two firewall pieces. The hole in the crutch can be cut at a slight angle to receive the 2 oz. Debolt clunk tank. Epoxy the engine doubler and the tank to the crutch. While this is setting, cut out the $\frac{1}{8}$ " landing gear ply plate, which plate extends to the outside of the fuselage sides. Use the top view of the plan for the outline.

I used a BK $\frac{1}{8}$ " nose gear and modified it by putting a bolt through the spring, clamping it in a vise, and bending it to the shape shown on the plans. The leg is then bent to make the axle. If you bend your own nose gear, "rots o' ruck!" In any

case, bolt the nose gear to the plate with "J" bolts. Now go back and epoxy the two firewall sides on to the crutch, relieving the one side for the fuel tank feed line. If you use an Enya .099, or Cox .099, the tank will have to be put on the opposite side of the crutch from that shown on the plans. In addition, the engine bearer doubler will have to be located on the opposite side. Incidentally, I used an OS .10 on the original.

While you're waiting (unless ya wanna' go to bed) cut out a root rib, and a tip rib from $\frac{1}{32}$ " ply, or aluminum sheet; cut out 18 pieces of Q grain $\frac{1}{16}$ " balsa 1" wide, and 9" long; stack 9 of these together between the two rib templates, pin

or bolt together; set in a vise and carefully carve to the outlines around the templates. (Cut the notches for the spars with a zona saw, making sure you have a right and left set.) The wing is semi-symmetrical, not fully symmetrical, and it would be well to number the ribs as you take them out of the stack. Also mark the top of the ribs so you don't boo-boo and put one in upside down. Keep the right and left sets together with pins or masking tape, and lay them aside for a while. I have not found an easier way to make ribs for a symmetrical compound taper wing as yet.

Now take the fuselage and trim the $\frac{1}{2}$ " triangle strips at the rear so the sides can

Holding the Li'l Pinto is the lovely lady who has put up with Brad for the past nineteen years!



be pulled together. Glue the $\frac{1}{8}$ " balsa bulkhead in place, and pull the sides together at the rear, clamping with a clothes pin. It may be necessary to relieve the $\frac{1}{2}$ " triangle just behind the $\frac{1}{8}$ " balsa bulkhead in order to allow the sides to come together at the rear. To accomplish this, take your zona saw and cut almost completely through the triangle. When this has "set," glue $\frac{3}{32}$ " sheet to the bottom of the tail cone, crosswise to the fuselage, then glue $\frac{1}{8}$ " sheet to the bottom from the $\frac{1}{8}$ " balsa bulkhead to the forward ply bulkhead. Glue the block for the jet exhaust in place and epoxy the landing gear plate to the front end. Now put this aside to dry and we will start on the wing.

WING CONSTRUCTION

The wing is built in a semi-jig manner using the leading edge as the jig. Start by cutting 2 pieces of straight $\frac{1}{4}$ " sheet balsa $\frac{3}{4}$ " x $\frac{5}{8}$ " x 23" long. Now mark a line, with a ball point pen, the length of it $\frac{7}{16}$ " up from the wide end, and $\frac{5}{16}$ " up from the narrow end as a reference line for the $\frac{3}{32}$ " x $\frac{3}{32}$ " strip which will be used to rest the front end of the ribs on when building the wing panel. Now glue the $\frac{3}{32}$ " strip to the leading edge, and while this is drying, cut 4 pieces of $\frac{1}{16}$ " sheet, 23" long by 2" wide on one end, and $2\frac{3}{4}$ " wide on the other end for the leading edge sheeting. Since the trailing edge sheeting is $1\frac{1}{2}$ " wide, I used a 3" sheet of Q grain and sliced it in half.

Pin the leading edge and the bottom spar to the plan. Start with #1 rib, and using the dihedral angle template for the proper rib angle, glue it in place. Proceed to put the remaining ribs in place. Some slight trimming may be necessary at the leading edge of the ribs in order to make them fit properly. Glue the top spar on when all the ribs are in place, then slide a $\frac{1}{4}$ " square piece of balsa under the trailing edge of the ribs till it touches all the ribs. Eyeball the T.E. of the ribs for squareness. Pin in place, glue the top trailing edge sheet on and pin, glue the leading edge sheet in place, then glue the cap strips in place.

After this is dry, turn the wing over, pin down at the spar, and using the $\frac{1}{4}$ " square again to line up the trailing edge, glue the trailing edge sheet, leading edge sheet, and the capstrips in place. (I used clothes pins to hold the trailing edge together while drying.) Repeat this same procedure on the left wing panel using the simple layout drawing on the plans. When both panels are dry, sand the center section root ribs with a block to even up the spars, sheeting, etc. in preparation for gluing together.

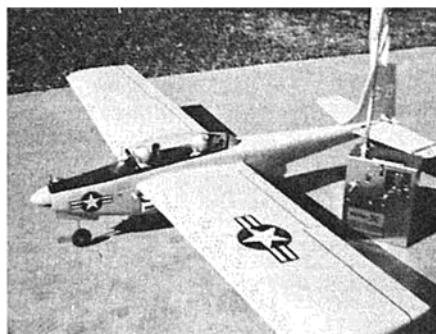
Block one tip up, (or both tips from the center, whichever you prefer) smear "Titebond" on the center section root rib, then put both halves together and check the alignment, making sure you do not glue a "twist" into the wing. Let set, and cut the dihedral braces from $\frac{1}{16}$ " ply while it is drying.

Using your zona saw, relieve the 4 center section ribs behind the spars to accept the main dihedral brace. "Titebond" the latter in place, relieving the center ribs $\frac{1}{16}$ " at the location of the trailing edge dihedral brace. Glue this in place when the wing has dried thoroughly. (Prefer-

ably overnight.) Trim the leading edge to receive the leading edge dihedral brace, and glue in place.

Cut out the $\frac{1}{8}$ " landing gear plate mounts and the piece of $\frac{3}{8}$ " x $\frac{3}{8}$ " motor mount stock. Make a $\frac{1}{8}$ " x $\frac{3}{4}$ " cut-out on the bottom of the 3 inside ribs on each panel to receive the leading gear plates. Glue the two plates in place with epoxy or Titebond. Glue the two $\frac{3}{8}$ " blocks on the top of the plates inside of rib #2, then cut out and glue in place a piece of $\frac{1}{16}$ " ply to fit in between the spars at rib #3 for the outboard landing gear support. When this assembly is dry, drill a $\frac{1}{8}$ " hole in the $\frac{3}{8}$ " block to receive the landing gear. Sheet the center section of the wing. Use $\frac{1}{16}$ " x $\frac{1}{4}$ " strips, glued flush with the front and back of the landing gear plate so the wing covering will be flush when doped on. Glue the tip blocks in place, and set the wing assembly aside to dry thoroughly.

Now go back to the fuselage and glue the top sheeting to the tail cone, cut two pieces of $\frac{1}{4}$ " sheet to shape for the sides of the fuel tank compartment and glue in place. Cut a piece of $\frac{1}{2}$ " sheet to shape for the top of the fuel tank compartment and hollow as necessary to clear the tank. Glue in place one each of top deck formers A and B to the front and rear of the radio



compartment, sanding the fuselage sides and blocks to get a good square fit. While this is drying, take some straight Q grain $\frac{1}{8}$ " sheet and cut out the tail surfaces and sand them smooth. (Glue the two pieces of the stabilizer together if you used 3" stock.)

Take the fuselage and drill 2- $\frac{3}{16}$ " holes for the wing hold down dowels. Glue these dowels in place. Sand the wing to shape, smoothing out the center section sheeting. Place the wing in the saddle, rubber banding it in place, and aligning it up straight with the fuselage. Cut out 2 sides of the "cabin" from $\frac{3}{32}$ " sheet according to the plans and glue $\frac{1}{2}$ " triangle stock to the sides, flush with the top (one right and one left again!!). While this is drying, take the other 2 plywood formers, top deck A and B, and using Saran wrap, or waxed paper against the existing formers, pin these in place. Take the two sides of the cabin, and sand each one until they fit flush with the top of the wing, and formers A and B. Glue in place. **MAKING SURE THE WING IS STRAIGHT BEFORE YOU DO SO!** When dry, glue the top $\frac{3}{32}$ " sheeting to the cabin sides, removing the pins that held the A and B formers in place before sheeting. You can now glue the horizontal stab in place, and lay the works aside to dry.

Bend the main landing gear struts to shape according to the outline on the plans. Cut the landing gear doors from $\frac{1}{16}$ " plywood, and the nose wheel doors from $\frac{1}{16}$ " plywood. If you use 2 Williams Brothers pilots (no, I don't own any stock in Williams) like I did, now would be a good time to paint them. The head rests can be fabricated at this time as well.

When the fuselage wing assembly has had time to dry, take it apart and sand the fuselage to shape, rounding off all the corners, and shaping the jet exhaust to final shape. When this is done, place the wing back on, and sand the cabin to shape to conform with the fuselage top.

Glue the vertical fin on, making sure it is square fore and aft, as well as upright. I use scrap balsa sheet to make 90° angles, and pin these to each side of the fin while drying. Glue the filler blocks in place when the fin is dry.

The entire structure is given 2 coats of dope, and when dry and sanded, the wing and fuselage are covered with Silron, (or silk if you prefer). The tail assembly is covered with lightweight silkspan.

After covering, the entire plane was given 5 coats of clear, sanding with fine paper between coats. The cutouts for the pilots are now made, the headrests are glued on, the inside of the cabin is painted green to simulate zinc chromate primer, and dull black for anti-glare. Glue the pilots in place, and cut a 12" Sig canopy to shape. When the canopy glue has dried, mask it off, and you are ready for the color dope. I used Sig White and Gray mixed in a 2 to 1 ratio: 2 pints white, and 1 pint gray. It only took 3 coats for a good finish, and this was topped off with 2 coats of clear. The anti-glare black was made by adding some talcum powder to black dope. Finishing Touch decals were applied to give it that "look." The main landing gear is installed using Midwest nylon $\frac{1}{8}$ " landing gear clamps and sheet metal screws. The aluminum cowl is held on with sheet metal screws also.

Install your radio gear at this time. I see no reason why one of the small digital rigs cannot be used on this model, although I used the MIN-X GG-1R system which weighs a mere 7 oz., so if you go to the larger heavier equipment the wing loading will go up too (natch). A few words on the Min-X GG-1R: I have flown escapements, single servos, multi-reed, and now single propo (I have my reed set up for sale) and I have never enjoyed flying as much as I have since I purchased this system. It is compact, light, and reliable; has suffered two hard crashes, and still works fine!

One little trick I use, and maybe some of you have already used it, is to run the rate trim lever about $\frac{3}{4}$ the way up (fast pulse) and get my mechanical neutral on the plane from that point. This gives a faster neutral, with more solid control. The pushrod for the rudder has to be in the inside hole for enough throw because of the now reduced throw at the actuator, but it also eliminates the "gallop" due to the faster rate. Whichever system you use, I hope you derive as much satisfaction and fun from this project as I have. Drop me a line c/o RCM, and let me know of your results!