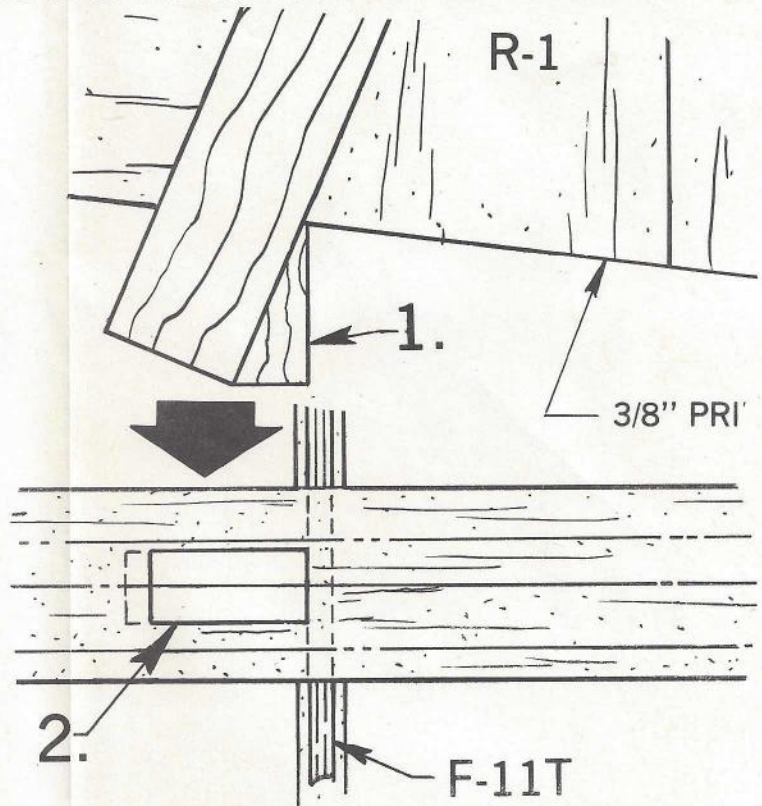


ADDENDUM TO THE BRAVO NEW TAIL PLAN SHEET

The callout on the modified fin plan saying "Brace the spruce stub to the top of Former F-11 with scrap wood" gave an incorrect impression to some builders that this should be done after the fin was glued on to the fuselage. To clarify the process, here are more complete instructions:

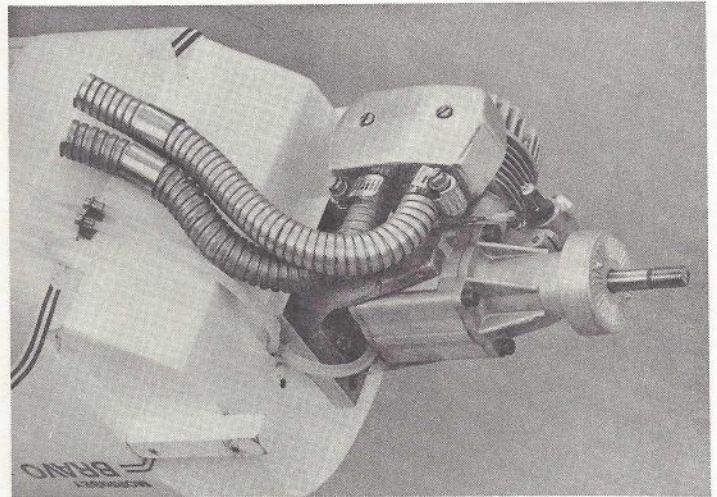
- 1.) Glue 3/8" hardwood scrap to the spruce stub as shown in the corrected drawing of this area as shown here. The back of this scrap piece will seat against the front face of Former F-11T.
- 2.) Cut out a larger hole in the 1/4" backbone than that shown on the 38" x 50" main assembly plan for the old design fin.
- 3.) Cover both the vertical tail fin and the fuselage separately before final assembly. For a doped covering, the base coats can also be applied before final assembly.
- 4.) Now proceed as directed in the paragraph "Gluing On The Fin" on the "Morrisey Bravo - Changes and Additions" plan. Since there will be some drippage of epoxy through the stub, pull a rag through the fuselage to protect the bottom covering. We minimized the drip problem by thickening the epoxy used in the stub hole (but not on the rest of the fin) with talcum powder or microballoons. This thickened epoxy will also fill any gaps around the stub hole in the backbone. The "nail" holes described in the "Gluing On The Fin" paragraph need not be all the way through the backbone, so they will not drip much on the bottom. A fine pin hole through the bottom of each hole is a good idea to prevent air lock, so that the "nail" holes will fill with glue, not a bubble.



BRAVO SUPER TIGRE 3000 INSTALLATION

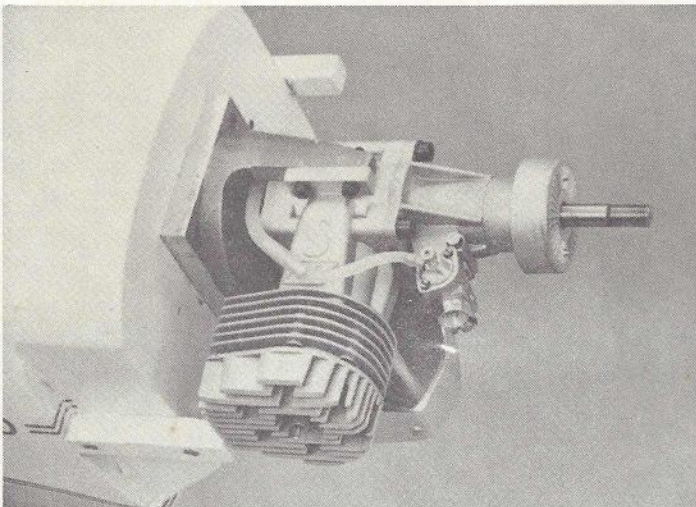
The Quadra 35X powered Bravo shown in the kit instruction book was a very lively aircraft. This glow-fueled engine had power to spare. We have recently mounted a Super-Tigre 3000 in the model. It does not quite come up to the power of the 35X but still provides excellent performance. A 1/2" thick square of aluminum was mounted on the firewall and secured by countersunk screws into the blind nuts originally used for the Quadra. A C.B. 90 mount was fitted to the 3000 and the combination screwed to aluminum plate. At first it was flown inverted but since this sometimes caused starting problems, the engine was changed to horizontal position, as shown in the photos. It was necessary to grind a little off some of the headfins to clear the cowl, but not enough to affect cooling. The glow plug top sticks through the cowl. A Tatone No. 13015 Upright Muffler proved ideal. The exhaust tubes were made from Tatone

No. 15236 5/8" metal conduit.



When making an initial installation of the S.T. 3000 or similar engine (when the 1/2" aluminum back plate would not be needed), select a long enough mount so that the firewall can be placed back away from the head. Cooling air flow will be better if the engine head is not right up against the firewall.

Remember that proper fuel flow requires that the tank be placed with its centerline about 1/4" below the needle valve body. An inverted engine requires a different tank location than a horizontal installation. We used a 32 oz. (B & B or U.S. Quadra) tank on the S.T. 3000 and cut out the Lite Ply fuselage top enough to recess the tank into the top of the nose for the horizontal mounting.



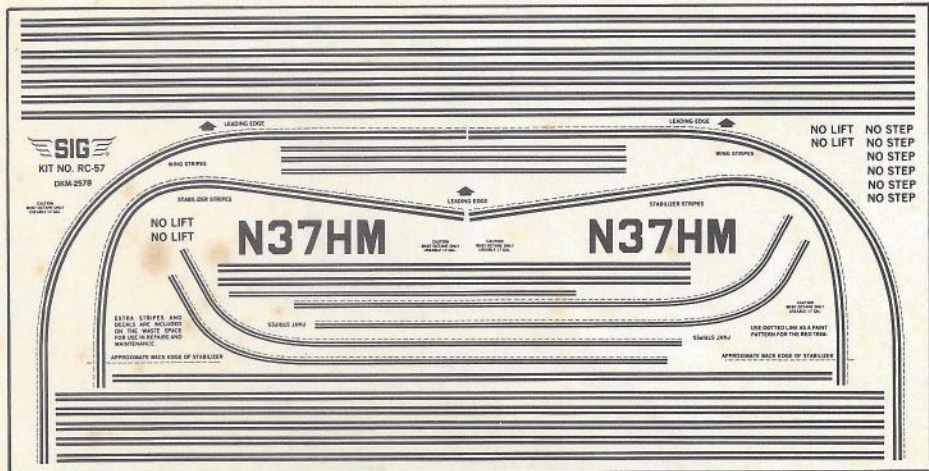
SIG MANUFACTURING CO., INC.



Montezuma, IA 50171

NEW COLOR SCHEME FOR MORRISEY BRAVO

The red, white and black markings on Bravo N37HM as seen on the front and back of Catalog 48 can now be easily reproduced with this new mylar pressure sensitive decal. The fuselage pin stripes and fin logo remain in the same places as shown on the plan so the decal sheet furnished in the kit (DKM-257) is used on the fuselage. Red is the trim color instead of the original silver. To do the new color markings on the wheel pants, stabilizer, and wing we are introducing DKM-257B, a one color (black) decal. Two of these are required because of the long pin striped sections. Extra pin stripes and decals are provided in the waste areas so that repairs and maintenance can be done on the model as needed. A layout sheet is included with the DKM-257B decal, showing the dimensions and positioning of the trim.



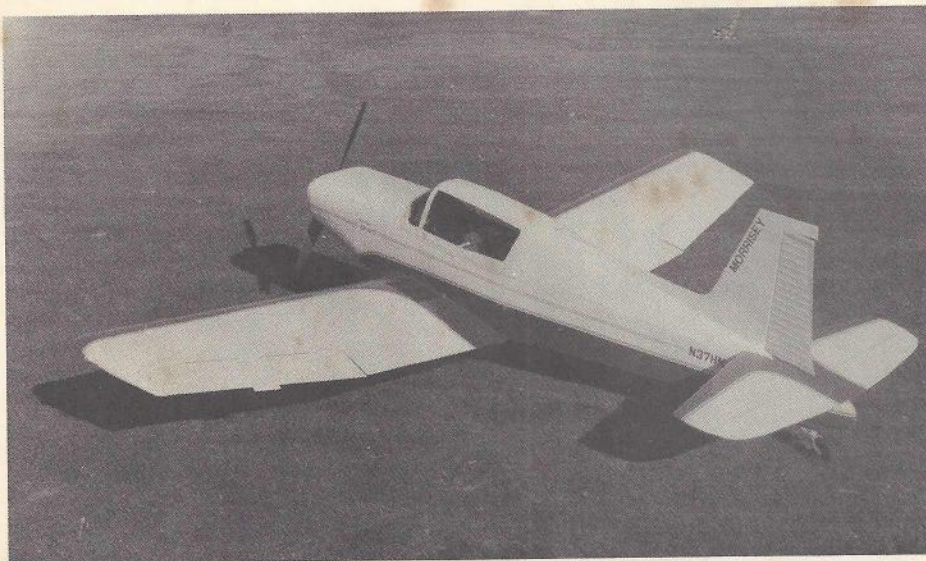
DKM-257 DECAL . . . \$4.95 EA. SHEET

(Included in Kit)

Red and black — 10" x 24" Sheet
1 Decal Sheet Required

DKM-257B DECAL . \$4.25 EA. SHEET

Black only - 12" x 24" Sheet
2 Decal Sheets Required
Includes color layout sheet



PP-257A \$5.50

12 3-1/2" x 5" color prints

Photo Pak color scheme as shown
on Catalog 48.

All prices subject to change without notice.

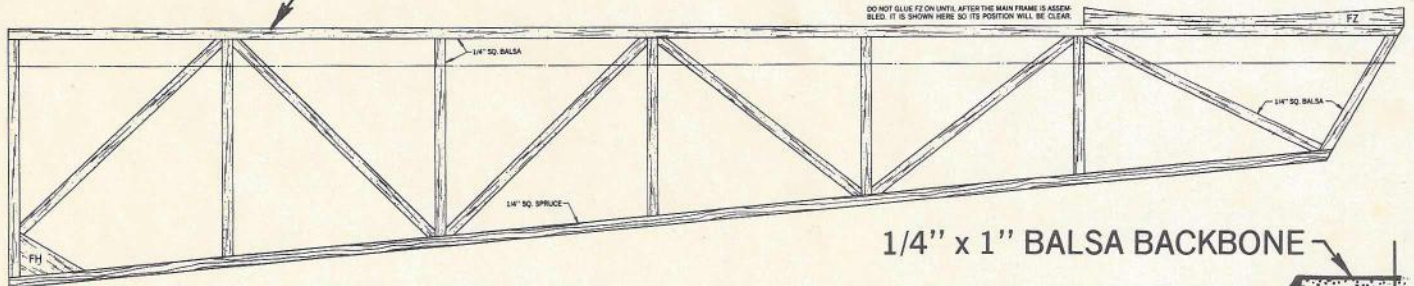
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MORRISEY BRAVO CHANGES AND ADDITIONS

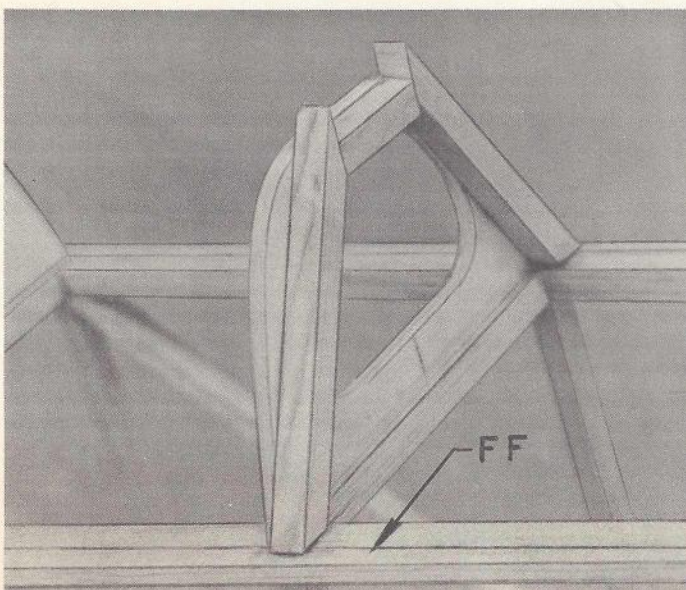
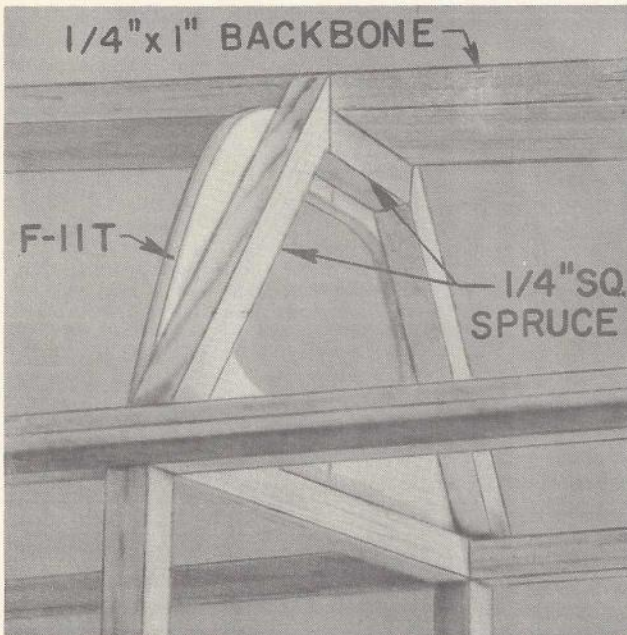
The directions on this sheet replace those on the full size plan and book for the parts covered here.

FUSELAGE CONSTRUCTION CHANGES

MAKE TOP OF REAR FRAME FROM 1/4" SQ. SPRUCE INSTEAD OF 1/4" SQ. BALSA.

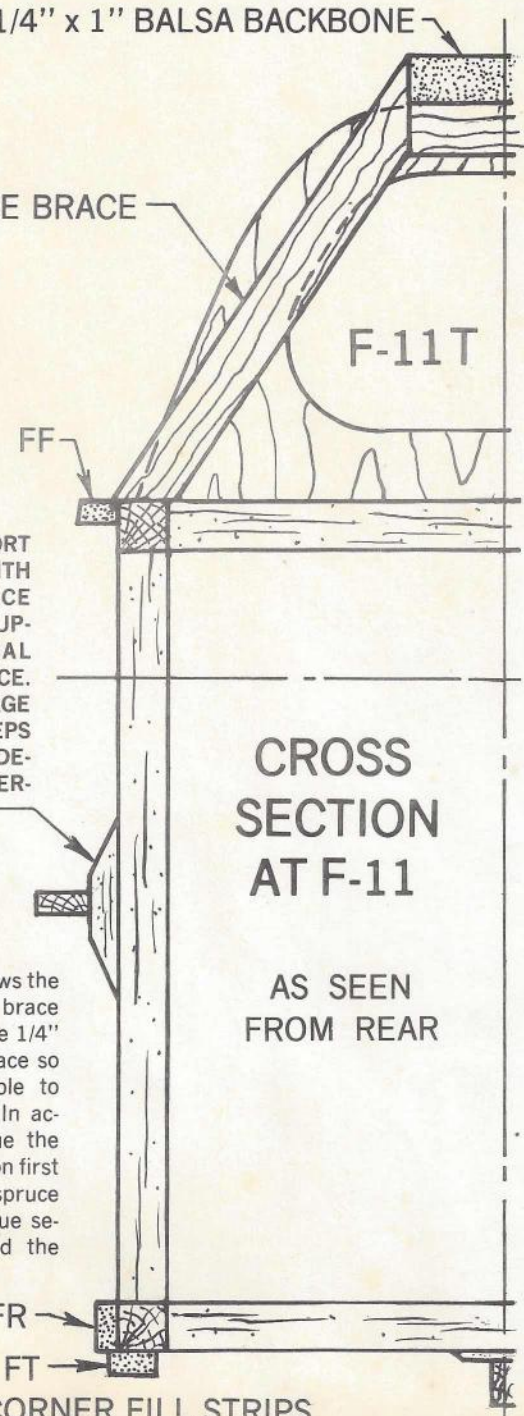


Reinforce the back of former F-11T with 1/4" sq. spruce braces as shown by the accompanying drawing.



1/4" SQ. SPRUCE BRACE

BE SURE AND SUPPORT THE STRINGERS WITH SCRAP EVERY PLACE THEY CROSS AN UPRIGHT, DIAGONAL BRACE OR CROSS PIECE. THIS HELPS FUSELAGE STRENGTH AND KEEPS STRINGERS FROM DEPRESSING FROM COVERING SHRINKAGE.



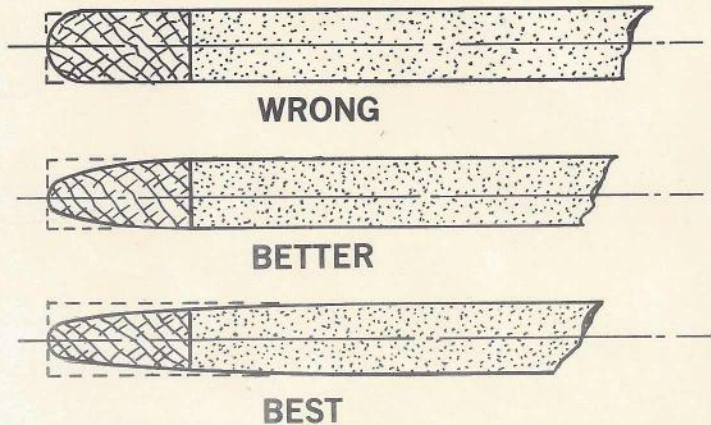
The photo at left shows the 1/4" sq. spruce brace structure without the 1/4" x 1" backbone in place so as to be better able to show this addition. In actual installation, glue the 1/4" x 1" backbone on first and fit the 1/4" sq. spruce pieces against it. Glue securely to F-11T and the fuselage frame.

The new and stronger fin was added to the kit from conclusions made during our own continuing flight test and demonstration program with three Bravos. The fin modification and the changes on this sheet were not made as a result of customer complaints.

FIN CROSS-SECTION

The leading edge of the fin has a fairly small radius. The accompanying cross-section drawing should be used as a guide in shaping and sanding.

FIN L.E. CROSS-SECTIONS



The cross-sections of the dorsal fin shown here should be used, not the one on page 25 below paragraph 138.



TYPICAL DORSAL FIN CROSS-SECTION

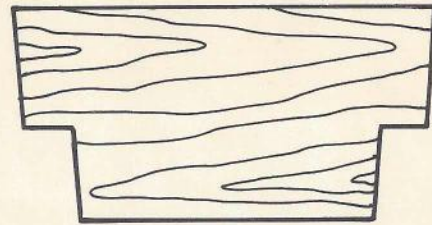
IT IS EASIER TO PRE-SHAPE THE PORTIONS OF THE BOTTOM PLANKING SHEET THAT ARE ON THE FIN BEFORE GLUING THE SHEETS TO THE FIN.



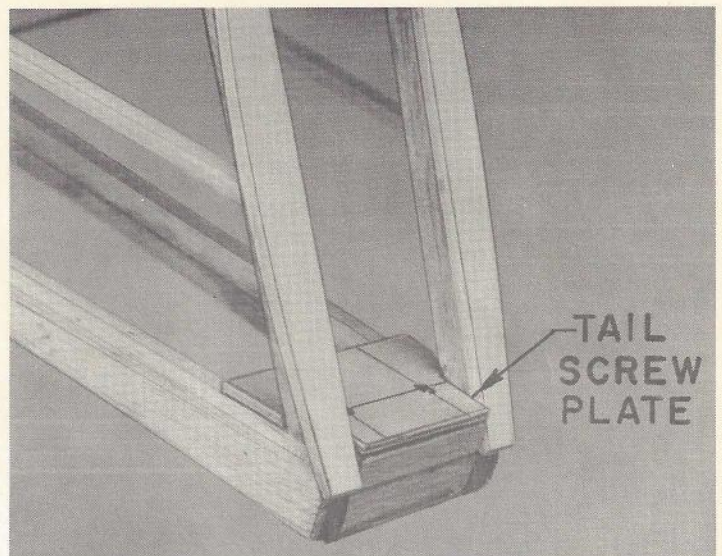
TYPICAL FIN BOTTOM CROSS-SECTION

TAIL SCREW PLATE CHANGE

On page 27, picture 89, we show in "a." a piece of 1/16" plywood being glued to the top rear crosspiece to serve as a plate for the heads of the 10-32 nylon stab screws. So as to better tie the end of the fuselage together we are supplying a larger piece of ply (the smaller one may also be still in the kit) so a larger plate can be used. An approximate pattern for this plate is shown here. Make sure it is securely glued to the 1/4" sq. main frame.



TAIL SCREW PLATE PATTERN CUT FROM 1/16" PLYWOOD



ABOUT THE NYLON STAB SCREWS

The nylon stabilizer attachment screws furnished are 10-32 x 1-1/4". If you loose or break them, DO NOT substitute 1" screws, since there will not be enough threads for safety. Get replacement 10-32 x 1-1/4" screws from Sig or cut off a longer screw to 1-1/4".

CANOPY CUTTING

There are guide lines on the canopy for cutting it out. However, we recommend cutting out the canopy oversize from the lines so as to allow for less trim should it be required for exact fit on a particular model.

O.S. GEMINI FT-160

At only 1.6 cu. inches, and a 4-stroke as well, the FT-160 might seem at first not to be enough power for so large a model. But the Bravo has an airfoil section with excellent characteristics and a reasonable wing loading of 30 to 32 ounces per square feet. It can fly on the wing instead of brute force power. Maxey Hester has been flying a Bravo using the Gemini with excellent results. Scale-like performance and loops made easily from level flight feature a pleasing combination. This engine will fit entirely within the Bravo cowl.



MORRISEY BRAVO CHANGES AND ADDITIONS

RUDDER PUSHROD

Replace the flexible tubing rudder pushrod shown on the main plan with a graphite arrowshaft pushrod. Run it through the same hole in the rear tail fairing block, enlarging as necessary to clear the movement. Go through the opening in Former F-11T and on to the servo in the cabin.

CANOPY PAINTING

To insure against the canopy warping on hot days, we recommend painting the framing on both sides, inside and out, at the same time. If the frame is carefully masked on the outside, the inside masking can be less precise and need not be perfectly aligned with the outside mask. Make a "T" handle, taped to the inside masked-off window area so that the canopy can be easily held and spray paint both sides at once. The same cautions and paint recommendations given in the Bravo book still apply. Use as little thinner in the paint as possible, preferably none.

GLUING ON THE FIN

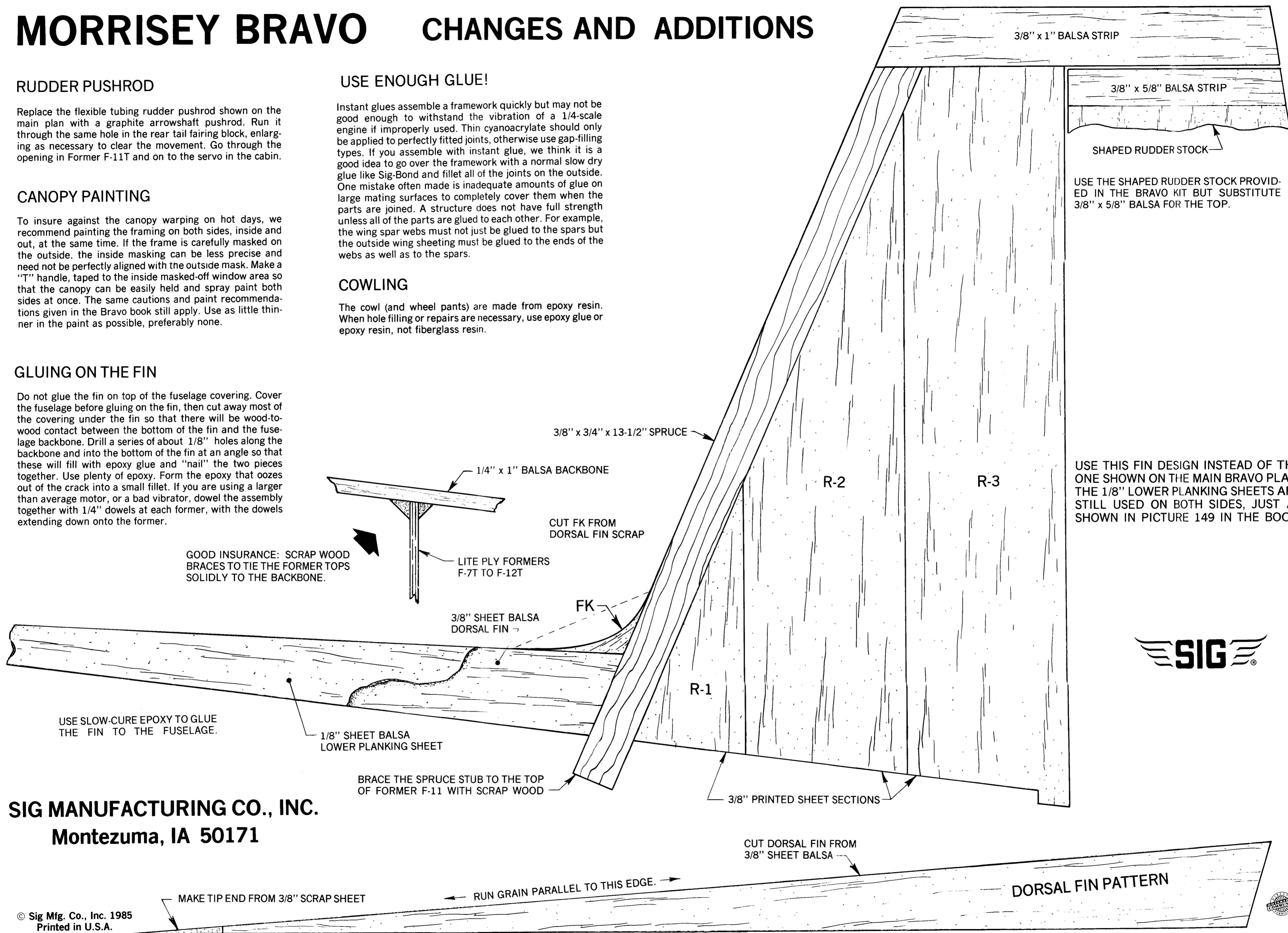
Do not glue the fin on top of the fuselage covering. Cover the fuselage before gluing on the fin, then cut away most of the covering under the fin so that there will be wood-to-wood contact between the bottom of the fin and the fuselage backbone. Drill a series of about 1/8" holes along the backbone and into the bottom of the fin at an angle so that these will fill with epoxy glue and "nail" the two pieces together. Use plenty of epoxy. Form the epoxy that oozes out of the crack into a small fillet. If you are using a larger than average motor, or a bad vibrator, dowel the assembly together with 1/4" dowels at each former, with the dowels extending down onto the former.

USE ENOUGH GLUE!

Instant glues assemble a framework quickly but may not be good enough to withstand the vibration of a 1/4-scale engine if improperly used. Thin cyanoacrylate should only be applied to perfectly fitted joints, otherwise use gap-filling types. If you assemble with instant glue, we think it is a good idea to go over the framework with a normal slow dry glue like Sig-Bond and fillet all of the joints on the outside. One mistake often made is inadequate amounts of glue on large mating surfaces to completely cover them when the parts are joined. A structure does not have full strength unless all of the parts are glued to each other. For example, the wing spar webs must not just be glued to the spars but the outside wing sheeting must be glued to the ends of the webs as well as to the spars.

COWLING

The cowl (and wheel pants) are made from epoxy resin. When hole filling or repairs are necessary, use epoxy glue or epoxy resin, not fiberglass resin.



USE THE SHAPED RUDDER STOCK PROVIDED IN THE BRAVO KIT BUT SUBSTITUTE 3/8" x 5/8" Balsa for the top.

USE THIS FIN DESIGN INSTEAD OF THE ONE SHOWN ON THE MAIN BRAVO PLAN. THE 1/8" LOWER PLANKING SHEETS ARE STILL USED ON BOTH SIDES, JUST AS SHOWN IN PICTURE 149 IN THE BOOK.



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