

--WINDSHIELD CENTER POST: MAKE THE CENTER POST USING THE BRASS RECTANGLE, 1/8 DIA. BRASS TUBING AND 1/32 SHEET STOCK. HINT: THE TUBING CAN BE BENT TO SHAPE USING FR-1 RIB AS A FORM. SLIGHTLY FLATTEN ONE END OF THE TUBING AND INSERT IT INTO THE RECTANGULAR PIECE AND SOLDER. FILE THE OTHER END OF THE RECTANGULAR PIECE TO THE ANGLE REQUIRED AND SOLDER A PIECE OF 1/4 BRASS 1/2 IN. LONG. DRILL NO.50 HOLES ON EITHER SIDE. SCREW THE ASSEMBLY TO THE FUSE WHERE THE WINDSHIELD STARTS. NOW FIND THE OTHER END BY SHORTING THE 1/8 TUBING. AFTER YOU HAVE IT TO SIZE, MAKE ANOTHER BRACKET AS ON THE BOTTOM AND SOLDER. ATTACH WITH TWO SCREWS TO F-CT.

WINDSHIELD: THIS IS A SNAP! OK, SOMEONE WILL MAKE ME EAT MY WORDS. (((THIS STUFF WILL SCRATCH SO PROTECT IT.))) CUT A HUNK 23" X 16". USE A STRAIGHT EDGE AN X-ACTO KNIFE. AT 11-1/2" STICK ON SOME WIDE MASKING TAPE. DRAW A CENTERLINE PERPENDICULAR TO THE LONG SIDE WHICH WE WILL CALL THE BOTTOM. AT THE BOTTOM WE WILL DRAW A LINE 4 DEGREES FROM THE BOTTOM USING THE CENTERLINE END AS REFERENCE POINT. CUT THAT PORTION OFF. FIND THE CENTERLINE OF F-AT AND F-BT, AND DRAW A LINE. USING MASKING TAPE SECURE THE WINDSHIELD TO THE FUSE WHERE SHOWN. DO NOT TRY TO FORM THE MATERIAL YET. FIND THE CENTER OF F-CT (AT THE TOP). LAY THE MATERIAL OVER F-CT USING THE CENTERLINES HOLD THE TOP IN PLACE. I DRILL SMALL HOLE ON EACH SIDE THROUGH THE MATERIAL AND INTO FR-1 RIB AND SECURE WITH SMALL NAILS. NEXT WITH A MARKING PEN MARK THE MATERIAL USING FR-1 RIB AS A PATTERN. DO NOT TRY TO FOLD IT OVER AT THE SIDES, JUST MARK THE TOP. NOW CAREFULLY REMOVE SOME MATERIAL. I USE TIN SNIPS FOR BIG HUNKS. DON'T GO UP TO THE LINE: STAY AT LEAST 3/8" AWAY. DO BOTH SIDES. NOW YOU CAN DRAPE SOME OVER THE SIDES, DON'T PUSH BUT GO GENTLY. MARK THE SIDES FROM THE OUTSIDE USING FR-1 AS A GUIDE. CLEAR OUT SOME MORE MATERIAL. LOOKING GOOD NOW HUH. HERE I USE A DREMEL TOOL WITH A 1/2 CARBIDE DRUM COLLETT, WORKING MY WAY IN. BUT NOT ALL THE WAY IN. OK NOW, CLAMP THE SIDES TO FR-2. LOOKING EVEN BETTER. USING MASKING TAPE SECURE MORE ON THE BOTTOM. FUN PART.

PLUG IN YOUR HEAT GUN. WHERE THE MATERIAL WRAPS AROUND FOR THE SIDES, GENTLY APPLY HEAT 10 TO 12 INCHES AWAY, KEEPING THE GUN MOVING AT ALL TIMES. FEEL IT WITH YOUR FINGERS DON'T WANT IT TO HOT OR IT WILL BLISTER. LET COOL FOR FIFTEEN MINUTES. NOW YOU CAN TRIM THE SIDES AT THE LONGERON. FINISH AT FR-1 TRIM AT F-CT AND SECURE WITH THREE NO. 1 SCREWS. WHEN YOU ARE PLEASED WITH THE BOTTOM, REMOVE IT FROM THE FUSE. --FLASHING WE NOW LAY YOUR MATERIAL ONTO YOUR REMAINING MATERIAL. WE WANT A PIECE ONE INCH WIDE FOLLOWING THE BOTTOM CONTOUR OF OUR WINDSHIELD, BUT IT MUST BE 3/8" MORE AT THE BOTTOM THUS 1-3/8". OK, CUT THAT PIECE OUT. RE-INSTALL THE WINDSHIELD. SAND THE FLASHING, BOTH SIDES. FUN PART AGAIN. MASKING TAPE THE FLASHING TO THE WINDSHIELD KEEPING THE 3/8" LIP. I KNOW IT RAISES THE BOTTOM. GET A PIECE OF WOOD SAY 3/4" x 2" x 8" BALSA MASK THE WINDSHIELD WITH ALUMINUM FOIL ABOVE THE FLASHING. TURN ON THE HEAT GUN AND HEAT UP THE FLASHING. DO BE CAREFUL, THAT PLASTIC IS EXPENSIVE. TAKE YOUR BOARD AND PUSH IN THE FLASHING WHERE THE WINDSHIELD MEETS THE FUSE. TRY ROOLING THE 8" LENGTH ALONG THE BOTTOM OF THE WINDSHIELD. WHEN IT COOLS DRILL HOLES 3/16 FROM THE EDGE FOR NO. 0 SCREWS APPROXIMATELY 2" APART. VERY CAREFULLY THIN S. G. THE FLASHING AND WINDSHIELD. REMOVE THE ASSEMBLY AND THIN S.G. THE SCREW HOLES IN THE FUSELAGE. THE SIDES OF THE WINDSHIELD ARE HELD IN PLACE WITH 1/32 PLY FLASHING AND NO.1 SCREWS. ON 1 TO 1, SCALE PLANES, YOU WILL FIND SOME WEATHER SEAL AT FR-1. WE DO THE SAME THING. FIND A PIECE OF #8 OR #10 HOUSE WIRE. CAREFULLY PULL OFF THE INSULATION. CUT IT RIGHT DOWN THE MIDDLE. JUST SLIDE IT INTO THE CUT OUT AT FR-1. A LITTLE HEAT, A LITTLE GLUE AND YOU HAVE THE REAL THING. YOU ARE A PRO.

--INSTRUMENT PANEL: HERE YOU WILL HAVE TO OBTAIN SOME GAGE REPRODUCTIONS OR DRAW SOME. ANY WAY, DRILL OUT THE HOLES IN THE PLY, AND THE FACE. USING A BROWN CRAYOLA WASHABLE MARKER, STAIN THE FACE. CAREFULLY S.G. PLASTIC TO THE REAR. POSITION GAGES AND S. G.. S.G. THE ASSEMBLY TO THE 1/4 BALSA PIECE F-BT2. S.G. THIS ASSEMBLY TO F-BT. TAKING THE PLASTIC CLOTH LAY IT OVER THE INSTRUMENT PANEL ASSEMBLY AND THE SHEETING GOING FROM F-AT TO F-BT. PIN IN POSITION MAINTAINING A 1/8" LIP AT THE INSTRUMENT PANEL. S.G. TO F-B2. USE WINDSHIELD TO TRIM. S.G. AT THE BOTTOM.

DOOR AND WINDOW: TRIAL FIT THE DOOR AND WINDOW. REMEMBER THAT THEY SHOULD OPEN AND CLOSE AFTER THE PLANE IS COVERED. WE LEAVE THIS TO THE VERY LAST. SHEET THEM AND FIT THEM ACCURATELY. CUT OUT WINDOW OPENING. CUT OUT WINDOW MATERIAL AND TRIAL FIT.

COVER THEM WITH COVERING. BY LEAVING OUT THE WINDOW, YOU CAN DRAW THE COVERING TO THE INSIDE OF THE ASSEMBLIES. AFTER COVERING, INSERT WINDOWS AND HOLD IN PLACE WITH 1/8 x 1/4 Balsa Windows Jams. YOU MAY FINISH THE JAMS AND HOLD THEM IN PLACE USING STRAIGHT PINS. VERY PROFESSIONAL.

SIDE WINDOWS: (((THIS IS TRICKY))) ON THE 1 TO 1 SCALE THE BOTTOM FLASHING WAS COVERED ALONG WITH THE SIDES. IF YOU DO THIS THE COVERING WILL GO STRAIGHT FROM THE TOP OF THE FLASHING TO THE INBOARD SIDE OF THE LONGERON. IN THIS EVENT IF YOU TRY AND SHRINK THE COVERING ANY MORE, IT WILL PULL AWAY THE TOP OF THE COVERING WHICH YOU MUST CUT AWAY SOMEWHERE AT THE LONGERON. AN OPTION IS TO JUST COVER THE FLASHING IT'S SELF AND HOLD IN PLACE WITH NO. 1 SCREWS. ANOTHER PROBLEM: THE TRUE PAINT SCHEME CALLS OUT FOR ANOTHER COLOR HALF WAY DOWN THE SIDE. WE DID THIS USING 21st CENTURY FABRIC. ALL WORKED OUT WELL EXCEPT FOR THE FLASHING. ATTACH THE FLASHING, APPLY THE SECOND COVERING. BRAIN STORM! AFTER, TACK COVERING SIDES AND FLASHING, CLAMP A PIECE OF WOOD TO THE LONGERON RIGHT NEXT TO THE FLASHING. NO HEAT CAN GET TO IT. GOOD LUCK !

BECAUSE THE WINDOW MATERIAL COMES IN ROLLS, THE MATERIAL HAS A NATURAL CURVE IN IT, IF IT IS LAID FLAT. IT JUST SO HAPPENS THAT THE 1 TO 1 SCALE HAS A CURVE IN ITS SIDE WINDOWS, LENGTHWISE ALSO. IT CURVES OUTWARDS, SO CUT YOUR MATERIAL TO CONFORM WITH THE CURVE. CAB-1, CAB-2, AND FS-4 HAVE FLASHING OVER THEM ALSO. CUT 1/32 PLY TO SHAPE WITH STRAIGHT EDGE AND X-ACTO KNIFE. GENTLY PLEASE. COVER INDIVIDUALLY. I USE Balsa RITE ON THE BACKS. INSTALL WINDOW JAMS SECURELY. MAKE TEMPLATES FOR BOTH WINDOWS. CUT OUT WINDOWS USING THE TEMPLATES. INSTALL WINDOWS AND HOLD IN PLACE WITH FLASHING. USE NO. 1 SCREWS TO HOLD FLASHING IN PLACE. YOU WILL NOTE THAT I AM PRETTY STINGY WITH THOSE NO. 1 SCREWS. TAKE GOOD CARE OF THEM. THEY ARE VERY EXPENSIVE.

WING NOTE: WE GOOFED! THE PLANS SHOW THE WING FOR A CITABRIA. THE DECATHLON WING IS SHORTER. WE HAVE CORRECTED IT ON THE DRAWING. YOU HAVE THE EXTRA RIB FOR THE CITABRIA, BUT NOT THE WING TIP. THE TIP SUPPLIED, IS FOR THE DECATHLON.

FOR THE FRONT SPARS MAKE FOUR ASSEMBLIES. THE SPARS ARE MADE BY LAMINATING ONE PIECE OF 1/4 x 1/2 x 66 Balsa AND ONE PIECE OF 1/4 x 1/2 x 66 SPRUCE. THE 66 INCH PIECES ARE MADE BY SPLICING A 48 INCH PIECE TO A 18 INCH PIECE. ((SEE THE PLANS)). REVERSE THE JOINTS IN ASSEMBLY SO THAT THE JOINTS ARE NOT ON TOP OF EACH OTHER. MAKE THE ASSEMBLY ON FLAT TABLE AND KEEP IT STRAIGHT AND FLAT. USING A RIB AS A GAGE, CHECK THE SPARS FOR WIDTH. YOU MAY WISH TO PLANE THE SPAR. IT'S EASIER THAN SANDING EACH RIB NOTCH.

SPAR: MAKE FOUR PIECES BY SPLICING TOGETHER A PIECE OF 1/4 x 1/2 x 48 Balsa WITH A PIECE OF 1/4 x 1/2 x 18 Balsa.

WING ASSEMBLY: SPRAY A LIGHT COAT OF 3M77 OVER THE PLANS. LAY A LAYER OF WAX PAPER OVER THE PLANS. SPRAY ANOTHER COAT OF 3M77 ON THE WAX PAPER OVER THE SPARS AND THE TRAILING EDGE. LOOKING AT THE PLANS FIND THE SHIMS CALLED FOR. BECAUSE OF UNDER CAMBER, THE REAR SPAR MUST BE RAISED 3/32" AT R-1R. BECAUSE OF WASHOUT THE TIPS OF THE WING PANEL MUST ALSO BE RAISED 9/32" AT R-2R. YOUR TABLE MUST BE (((FLAT!))) . STRETCH A STRING THE LENGTH, THE WIDTH AND FROM ONE CORNER TO IT'S OPPOSITE CORNER. PLACE AN EQUAL SIZE BLOCK UNDER EACH CORNER. USING A THIRD BLOCK OF THE SAME DIMENSION. SLIDE IT UNDER THE STRING FROM ONE CORNER TO THE OTHER. IF THE TABLE IS NOT STRAIGHT FIX IT NOW BEFORE STARTING YOUR WINGS. PLACE THE REAR SPAR W-2 ON THE PLAN AND SHIM AS CALLED FOR. MAKE ABSOLUTELY SURE THE SPAR IS STRAIGHT ON THE HORIZONTAL PLANE. SHIM UNDER EACH RIB TO ASSURE THAT THE SPAR WILL REMAIN STRAIGHT DURING ASSEMBLY.

PLACE THE BOTTOM FRONT SPAR W-2, W-3 ASSEMBLY OVER THE PLANS. PLACE THE REAR SPAR 1/4 x 1/2 x 66 ON THE PLANS.

((((((((((READ ALL BEFORE PROCEEDING)))))))))

-- CUT 1" OFF OF A FRONT SPAR.

--IMPORTANT NOTE: IN ASSEMBLY WE WISH FOR THE JOINTS TO BE CLOSE, BUT NOT TO TIGHT. BECAUSE OF WASHOUT THE NOTCHES AT THE FRONT SPAR WILL NOT BE A RIGHT ANGLE TO THE SPAR ASSEMBLY, THESE NOTCHES WILL HAVE TO BE SANDED LIGHTLY TO ALLOW FOR THE ANGLE.

--USE THE ONE INCH PIECE OF SPAR AS A GAGE AND CHECK EACH RIB NOTCH. LOCATE A POINT ON THE RIBS AND DRILL A HOLE IN EACH RIB FOR A SERVO CABLE.

-- STARTING AT R-1R (ROOT RIB) LAY IN THE RIBS. NOTE: DRILL R1-R NO.11 HOLES OVERSIZE FOR 10-32 BLIND NUTS.

-- FIND W-12 1/2 x 13/16 x 30 Balsa, CHECK CAREFULLY, THE HEIGHT. TRIM, IF NECESSARY AND S.G. TO BOTTOM REAR SPAR.

-- LAY IN THE FRONT AND REAR TOP SPARS. CHECK THE TOP OF THE SPARS TO MAKE SURE THEY ARE STRAIGHT.

--IMPORTANT NOTE: (((WASHOUT IS 2 DEGREES))) SEE THE PLANS. R-2R IS BLOCKED UP 9/16" AT THE REAR SPAR. $\text{SINE } 2 \text{ DEG} = .0348995 \times 12.875 = .44933$ $15/32 = .46875$ $15/32 + 3/32 = 9/16$

-- CUT THE SHEAR WEBS. NOTICE THAT THE FRONT SPAR WEBS DIFFER IN HEIGHT. NOTICE THAT WEBS ARE 1/8 LITE PLY AT THE CENTER SECTION. (((R-1R IS SET AT 2 DEG.))) FOR DIHEDRAL. STARTING AT R-1R S.G. FRONT SHEAR WEBS TO THE FRONT SPAR, CHECK SPAR OFTEN. KEEP THE RIBS PERPENDICULAR.

-- DO THE SAME FOR THE REAR SPAR.

-- DOUBLE CHECK THE WHOLE ASSEMBLY NOW. IT IS EASY TO FIX NOW, IMPOSSIBLE LATER ON.

-- LAY IN THE REMAINING SHEAR WEBS AND S.G.

-- BEVEL THE TOPS OF BOTH SPARS WITH A PLANE. 60 GRIT SAND PAPER ON A BLOCK WILL WORK WELL.

-- AS YOU MADE THE SPARS JOIN 1/2 x 1-1/2 x 48 Balsa AND 1/2 x 1-1/2 x 18 Balsa TO MAKE W-1.

-- PLACE A 1/4" SHIM UNDER THE LENGTH OF THE LEADING EDGE. PLACE W-1 ON TOP AND S.G W-1 TO THE FRONT OF THE RIBS.

-- USING A 3/4 " GAGE DRAW A LINE ON THE FRONT OF W-1 FROM ROOT RIB TO TIP.

-- LOOKING AT THE PLANS, FIND THE JOINT FOR THE SHEETING. TAKE A PIECE OF 3/32 x 4 x 48 Balsa SHEET AND BEVEL ON EDGE OF THE SHEET. BUTT THE SHEET BETWEEN THE RIB TOPS AND W-1 AND S.G. HOLD IN PLACE WITH STRAIGHT PIN. HINT: SPRAY THE SHEET WITH ACCELERATOR APPLY THICK SUPER GLUE TO THE TOPS OF THE RIBS AND SPARS AND PRESTO CONTACT GLUE. HINT: HOLDING THE SHEET OVER BOILING WATER WILL MAKE THE WOOD PLIABLE, THUS EASIER TO BEND OVER THE RIBS, THE WOOD WILL BE LESS LIABLE TO CRACK.

-- LAY IN THE REMAINDER OF THE LEADING EDGE SHEETING.

-- POSITION 3/32 x 3/4 x 30 BOTTOM TRAILING EDGE AND S.G TO THE RIB TRAILS.

-- DO THE SAME FOR THE TOP W-10.

-- CUT W-11 1/4 x 1 x 12 RIB STIFFENER TO SIZE. DRILLING LIGHTING HOLES IS NOT NECESSARY, BUT WILL SAVE WEIGHT.

-- S.G. THE TWO 1/4 x 1/2 Balsa CORNER STIFFENERS FOR RIBS AT AILERON.

-- MARK THE POSITION OF THE THREE HINGES AND NOTCH THE TOP OF THE REAR SPAR FOR THE HINGES. DO NOT GLUE THE HINGES AT THIS TIME.

-- S.G W-16 TO THE TOP OF THAT SPAR.

-- SLIP THE HINGES INTO THE SLOTS AND POSITION W-15. MARK THE POSITION OF THE HINGES AND NOTCH W-15.

-- PLACE THE AILERON BOTTOM W-10 OVER THE PLANS, BLOCK UP THE W-15 WITH 3/32 MATERIAL AND INSTALL THE R-5 RIBS. BEVEL THE LEADING EDGE OF THE R-5'S 45 DEG.. S.G.

-- MAKE THE R-4's OUT OF 1/4 Balsa AND S.G.

-- S.G. THE TOP W-10.

-- TRIM THE LEADING EDGE OF THE AILERON SO THAT WHEN THE HINGES ARE ATTACHED THE TRAILING EDGE OF THE AILERON FALLS IN LINE WITH THE WING TRAILING EDGE.

-- INSTALL THE ALUMINUM 7/8" DIA. TUBE. THE R-2 RIBS BETWEEN R-1 AND R-1 AND R1 MUST BE RELIEVED SO THAT THE TUBE CREATES THE DIHEDRAL ANGLE. SCUFF THE TUBE WITH NO. 60 GRIT SAND PAPER. S.G 1/4 SPRUCE PIECES TO RIBS AT THE TOP AND BOTTOM OF THE TUBE. GLUE THE TUBE TO THE RIBS USING EPOXY. BETWEEN TUBE AND SHEAR WEB FILL WITH SCRAP Balsa AND EPOXY.

INSTALL NO. 1 SCREW AS SHOWN. THIS WILL HOLD THE TUBE IN PLACE AND IS CRITICAL.

-- USING THE S.G. AND ACCELERATOR TRICK, SHEET THE TOP, 3/32 x 4 x 48 Balsa.

-- IF YOU LEAVE THE CAP STRIPS UNTIL LAST YOU WILL HAVE LESS HANGER RASH. TURN THE PANEL OVER AND SHEET THE BOTTOM.

-- CUT W-13 SERVO MOUNT PIECES TO SIZE AND S.G.

-- CUT A PIECE OF 1/4 SQUARE. Balsa TO SIZE AND S.G. THIS IS FOR COVERING THE COVERING AT THE SERVO OPENING.

-- TRIM W-14 TO SIZE, W-14 IS HELD IN PLACE WITH NO.1 SCREWS, SUPPLIED. ALLOW FOR COVERING MATERIAL WHEN TRIMMING.

-- CUT AND S.G. BOTTOM CAP TRIPS.

-- TOP CAP STRIPS.. STEAM A CAP STRIP. SPRAY ON ACCELERATOR. TACK GLUE AT THE FRONT SPAR, APPLY THICK S.G. TO RIB AND PUSH THE CAP DOWN WORKING FROM THE SPAR TO THE TRAILING EDGE. TRIM THE EXCESS.

-- S.G. FOUR S-6'S TO UNDERSIDE OF THE WING PANEL.

-- SAND THE TIP CAP STRIP AND FIT PLASTIC WING TIP. THE SHEETING WILL HAVE TO BE SANDED TO A STEP FOR THE TIP TO BE FLUSH.

-- WE MOUNT THE SERVOS RIGHT TO W-14. USE 2-56 RODS PROVIDED.

-- INSTALL CONTROL HORN WITH NO.1 SCREWS.

-- STRUTS:

PLEASE PAY VERY CLOSE ATTENTION TO ALL THE CONNECTIONS OF THE STRUTS. LARGE ENGINES AND VIOLENT MANEUVERS CREATE LOTS OF STRESS ON THE STRUTS. PRE TINN ALL SOLDER JOINTS. BETTER YET, HAVE THEM BRAZED.

-- INSTALL S-5 TO THE WING USING TWO WOOD SCREWS.

-- FABRICATE S-2, AND S-3 USING .032 BRASS.

TO ONE PIECE OF S 8 (1/2 x 3/4 x SPRUCE) S.C S 7 (1/4 x 1/2 x Balsa). THIS WILL BE THE FORWARD STRUT.

-- MAKE A CUT 1/32 x 1" LONG ON ONE END OF THE STRUT. SHAPE THE STRUT AS SHOWN ON THE PLANS.

-- MASK S-2 LEAVING 1" EXPOSED. SAND THIS AREA WITH #40 GRIT SAND PAPER. (THIS WILL GIVE THE BRASS SOME TOOTH).

-- APPLY THICK S.G TO S-2 AND INSERT IT INTO THE STRUT SLOT.

-- DRILL HOLES WHERE SHOWN IN THE ASSEMBLY AND INSERT NAILS, S.G ((NOT SUPPLIED))

-- AT FINAL ASSEMBLY, BLOCK UP THE WING. CHECK FOR 2 DEGREE DIHEDRAL AND ONE DEGREE INCIDENCE AT THE ROOT RIB.

--NOTE: A ROBERT INCIDENCE METER WILL NOT GIVE A PROPER READING.

-- MAKE A MEASUREMENT FOR THE STRUT AND CUT IT TO SIZE. DRILL 7/32 DIA. HOLE. AFTER ROUGHING UP THE 7/32 ID. BRASS TUBE, THICK SAG IT INTO THE STRUT. PIN WITH SMALL NAILS THE TUBE AND THE STRUT.

-- SHAPE THE REAR STRUT (1/2 x 3/4) SPRUCE AS SHOWN ON THE PLAN. TAP DRILL NO.43 AT ONE END. INSERT 4-40 BOLT.

-- HINT: CUT THE HEAD OFF OF A 4-40 BOLT, DE-BURR IT. CHUCK THE BOLT INTO A ELECTRIC DRILL AND RUN IT UP THE STRUT. REMOVE THE BOLT, THICK S.G. THE HOLE AND REINSERT THE BOLT.

-- SCREW 4-40 NUT AND ROD END ON THE BOLT.

-- AT FINAL ASSEMBLY DO AS WE DID IN STEP # ((KEEP IN MIND THAT THE REAR STRUT CONTROLS WASHOUT WHICH IS -1 DEG. AT THE LAST RIB.)) +1,-1=-2 TOTAL

-- LOCATE ON THE DRAWING THE POSITION OF THE JURY STRUT. INSTALL THE JURY STRUT BRACKETS. USING A SQUARE TRANSFER THOSE LOCATIONS TO THE STRUTS. IN THE MIDDLE OF THE STRUTS DRILL # 43 HOLES. TAP THE HOLES 4-40, AND RUN A 4-40 BOLT INTO THE HOLES AND S.G. ((YOU SHOULD PAINT THE STRUTS FIRST.)) SCREW ON 4-40 DU-BRO ROD END.

-- FIND 1/8 DIA. TUBING FOR THE CROSS BRACE MEASURE FROM ROD END TO ROD END AND CUT OVER SIZE. FLATTEN EACH END BY CRIMPING IN A VISE. USING THE ROD ENDS AS A DISTANCE DRILL EACH END WITH A # 33 HOLE. BOLT THE CROSS BRACE TO THE ROD ENDS.

-- MEASURE FROM THE JURY STRUT BRACKETS TO THE ROD ENDS, CUT 1/4 DIA. TUBE AND FLATTEN THE ENDS AS BEFORE. ON ONE END DRILL #33 HOLE FOR ROD END AND ON THE OTHER END DRILL #44 HOLE FOR 2-56 BOLT. BOLT THE STRUTS IN PLACE.

--TAIL FEATHER BRACING:

--COWL

OUR SUPPLIER OF FIBERGLASS PARTS INCREASED HIS PRICES BEYOND OUR ABILITY TO PRODUCE THE KIT USING HIS PARTS. WE HAVE PUT MANY HOURS INTO CHANGING OVER TO ABS PARTS. WE THANK LANIER R/C FOR THEIR HELP IN PRODUCING THIS FINE COWL, PANTS AND TIPS SO QUICKLY. WE FEEL THAT THESE PARTS ARE SUPERIOR TO FIBERGLASS, BUT THEY DO TAKE MORE TIME TO ASSEMBLE.

FOR THOSE WHO JUST DON'T WANT ABS PARTS WE CAN ORDER FIBER GLASS PARTS. CALL US.

--ON THE SIDE PIECES TRIM THE FLASHING TO 1/2" FRONT AND BACK. USING 2" TAPE ALIGN THE SIDES TO THE FUSE, TWO OR THREE PIECES OF TAPE IS FINE. USE A LINE ON THE FUSE APPROXIMATELY 3/4' FROM THE FIREWALL AS REFERENCE. ALIGN THE NOSE PIECE USING THE CURVES AT THE AIR SCOOP FOR REFERENCE. MAKE LOCATION MARKS ON THE PIECES.

--TRIM THE REAR OF THE SIDE PIECES TO 1/8" AND REASSEMBLE TO THE FUSE. CHECK THE TOP CENTERLINE OF THE SIDE PIECES. IF NECESSARY TRIM WITH A LONG 60 GRIT SANDING BLOCK. WHEN SATISFIED TAPE THE CENTERLINE.

--ALIGN THE NOSE PIECE AGAIN AND TAPE.

--CHECK THE BOTTOM CENTERLINE AND TRIM IF NECESSARY.

--REMOVE THE COWL AND TAPE THE INSIDE AT THE TOP AND BOTTOM CENTERLINES. THIS SHOULD MAKE THE COWL FAIRLY RIGID.

--TRIAL FIT THE COWL AGAIN TO THE FUSE.

WHEN SATISFIED MAKE ALIGNMENT MARKS ON THE ASSEMBLY AND DISASSEMBLE.

--ON THE INSIDE OF THE SIDE PIECES SAND 2" BACK OF THE TOP AND BOTTOM CENTERLINES USING 60 GRIT SAND PAPER.

--TAKE STRIPS PROVIDED AND SAND, USING 60 GRIT PAPER NOW DRAW A CENTER LINE ON THE STRIP. CUT THE STRIP LONG ENOUGH SO THAT YOU HAVE 1" EXTRA AT THE FRONT AND BACK OF A SIDE PIECE. USE THICK SUPER GLUE AND GLUE THE STRIPS TO THE SIDE PIECES. DO USE CLOTHES PIN CLAMPS.

--WHEN DRY TRIM REAR OF THE STRIP AND REASSEMBLE TO THE FUSE USING TAPE. REASSEMBLE WITH THE NOSE. CHECK AGAIN FOR ALIGNMENT.

--SPOT GLUE AT THE FRONT AND BACK OF THE SIDE PIECES, TOP AND BOTTOM. REMOVE FROM FUSE. REMOVE THE NOSE. THICK S.G. THE OTHER TOP SIDE PIECE TO THE STRIP. NOW DO THE BOTTOM.

--SAND THE INSIDE OF THE NOSE PIECE AND THE FLANGES OF THE SIDE PIECES. ALIGN AND SPOT GLUE. WHEN DRY THICK S.G. THE ASSEMBLY ONE SECTION AT A TIME.

--CUT FIBER GLASS INTO 3" STRIPS AND S.G. TO ALL OF THE SEAMS ON THE INSIDE OF THE COWL.

--CUT SCRAP PIECES OF ABS INTO SMALL PIECES AND PLACE IN A SMALL GLASS JAR. POUR A SMALL AMOUNT OF ACETONE IN THE JAR AND SET OVERNIGHT. IN THE MORNING YOU WILL FIND THE ABS DISSOLVED. WORK WITH THIS UNTIL IT IS ABOUT THE CONSISTENCY OF THICK PANCAKE BATTER.

--THIS MASS CAN NOW BE USED AS A FILLER. BE VERY CAREFUL WITH THAT ACETONE. THE MASS WILL ACTUALLY BE MELTING THE PARTS WHICH IN TURN WILL ACT AS A TRUE WELD.

--SAND PAPER ALL WITH 240 GRIT SAND PAPER AND PAINT.

--WHEN PAINTING REMEMBER TO SPRAY VERY FINE MIST COATS. YOU DON'T WANT THE PAINT TO RUIN THE COWL, SO SPRAY AND WAIT UNTIL VERY DRY AND PAINT AGAIN. FOUR COATS SHOULD PLEASE YOU.

-PANTS.

-REPEAT THE COWL PROCESS. SAND THE CENTERLINES AND SAND THE STRIP AND S.G. FILL AND SAND. THEN PAINT USING MIST COATS.

--NOTE: ALL VIBRATION OF THE ENGINE IS ((AMPLIFIED)) TO THE TAIL FEATHERS OF THE PLANE.

-- MAKE SIX BRACKETS FROM 1/32 BRASS. WHEN BENDING THE BRACKETS MAKE THE BENDS CLOSE UP TO THE BOLTS HOLES. THIS IS A MUST. OTHERWISE THE BRACKET WILL TEND TO STRAIGHTEN OUT THUS CHANGING THE LENGTH OF THE GUY WIRES, WHICH IN TURN WILL VIBRATE AND CAUSE DAMAGE TO THE BOLTS HOLES.

-- MAKE 2-1 CROSS BRACKET FROM 1/32 BRASS.

-- FIND THE LOCATIONS AT THE TAIL POST AND STAB SPAR AND DRILL #44 HOLES. BOLT THE BRACKETS USING 2-56 BOLTS AND NUTS. BE SURE TO S.G THE BOLTS AT FINAL ASSEMBLY.

-- FIND FOUR 2-56 RODS x 30" AND ATTACH 2-56 CLEVIS. ASSEMBLE TO ONE END OF A BRACKET. MEASURE TO THE OTHER BRACKET AND CUT OFF. SILVER SOLDER OR BRAZE ANOTHER 2-56 CLEVIS TO THE OTHER END OF THE ROD. USE 1/8" LENGTH OF FUEL TUBING AS CLEVIS KEEPER.

-- NOTE:

WHEN CHECKING MATERIALS DO NOT LOOK FOR EXACT SIZES. WE HAVE A TENDENCY TO OVER SIZE. WE FEE; THAT YOU CAN ALWAYS CUT SOME OFF, BUT CAN'T STRETCH A PIECE. WE WOULD APPRECIATE PICTURES. ALSO WE WOULD APPRECIATE YOUR INPUTS. PLEASE REMEMBER ALL ADDED COST AND ALL SAVINGS ARE PASSED ON TO YOU.

LARRY

W-1	L.E.	1/2 x 1-1/2 x 48	BALSA	2/K.
W-1A	L.E	1/2 x 1-1/2 x 36	BALSA	1/K.
W-2	SPAR	1/4 x 1/2 x 48	BALSA	8/K.
W-2A	SPAR	1/4 x 1/2 x 36	BALSA	4/K.
W-3	SPAR	1/4 x 1/2 x 48	SPRUCE	4/K.
W-3A	SPAR	1/4 x 1/2 x 36	SPRUCE	2/K.
W-4,W-9	SHEAR WEB	3/32 x 4 x 48	BALSA	3-1/2/K.
W-5	SHEETING	3/32 x 4 x 48	BALSA	4/K.
W-5A	SHEETING	3/32 X 4 x 36	BALSA	2/K.
W-6	SHEAR WEB	1/8 x 2-3/8 x 12	PLY	4/K.
W-7	SHEAR WEB	1/8 x 1-1/4 x 12	PLY	2/K.

W-8 SHEAR WEB $1/8 \times 1-1/8 \times 12$ PLY 2/K.
 W-10, W-17 T.E. $3/32 \times 3/4 \times 36$ BALSA 10/K.
 W-11 RIB STIFFENER $1/4 \times 1 \times 12$ PLY 2/K.
 W-12 T.E. $1/2 \times (0.80) \times 30$ BALSA (SPECIAL) 2/K.
 W 12 SER SUP $1/4 \times 1/2 \times 24$ SPRUCE 1/K.
 W-14 SER SUP $1/8 \times 3-1/2 \times 5-3/8$ PLY 2/K.
 W-15 AIL L.E. $1/2 \times 1-1/2 \times 30$ BALSA 2/K(SPECIAL) 2/K.
 W-16 WING T.E. $3/32 \times 1/2 \times 30$ BALSA 6/K.
 W-18 CAP-STRIP $3/32 \times 3/8 \times 36$ BALSA 20/K.
 CAP-STRIP $3/32 \times 1/4 \times 36$ BALSA 4/K.
 W-20 AL TUBING $7/8$ DIA. $\times 17"$ 2/K.
 W-21 GUSSET $1/4 \times 1/2 \times 12$ BALSA 1/K.
 2 DEGREE GAGE
 R-1, R1-R $1/8$ PLY 4 DIE CUTS/K.
 R-2 RIB $5/32$ BALSA 7 DIE CUTS/K.
 R-3 RIB $5/32$ BALSA 5 DIE CUT
 R 4 RIB $5/32$ BALSA 1 DIE CUTS /K.
 R-5 RIB PART OF R-3
 R-6 RIB AIL MAKE FROM SCRAP
 S-7 PART OF STRUT $1/4 \times 1/2 \times 42$ BALSA 2/K.
 S-8 STRUT $1/2 \times 3/4 \times 40$ SPRUCE 4/K
 $1/2$ TRI $\times 36$ 1/K.
 TAIL:
 $1/2$ SQ. $\times 48$ 11/K
 S-1 $1/2 \times 1-5/8 \times 8$ 1/K.
 S-2 $1/2 \times 4 \times 6$ 2/K.
 S-3 $1/2 \times 4 \times 6$ 2/K.
 S-4 $1/2$ SQ. $\times 1-1/2$ SPRUCE (HORN HOLD) 1/K.
 FIN 1 $1/2 \times 1 \ 3/8 \times 12$ 1/K.

FIN-2 1/2 x 1-3/8 x 11.5 1/K.
 RUD-1 1/2 x 3/4 x 1-1/2 SPRUCE 1/K.
 MISC:
 1/2 SQ. x 24 BALSA 1/K.
 1/4 x 1/2 x 16 SPRUCE 1/K.
 1/4 x 1-1/2 x 10 BALSA 1/K.
 FUSELAGE:
 GEAR: 1/K.....39 PC'S
 1" AL TUBING x 10" 1/K.
 B1 1/2 SQ. x 48 BALSA 14/K.
 B2 1/4 x 1/2 x 48 BALSA 10/K.
 S1 1/2 SQ. x 36 SPRUCE 1/K.
 FS-1 UPRIGHT 1/4 x 1/2 x 48 SPRUCE 2/K.
 FS-3 UPRIGHT 1/4 x 7/8 x 48 SPRUCE 2/K.

 FS-2 FS-4 1/2 x 7/8 x 36 BALSA 1/K.
 FS 5 FS FILL 1/8 x 7/8 x 32 1/K.
 B3 STRINGERS 1/4 SQ. x 48 BALSA 8/K.
 CAB-1 CABIN 1/4 x 2-1/4 x 16 4/K.
 CAB-2 CABIN 1/4 BALSA 4/K.
 SHEETING 1/8 x 4 x 48 4/K.
 SHEETING 1/8 x 4 x 24 1/K.
 F-A FIREWALL 1/4 x 12 x 12 PLY 2/K.
 FD-1, FD-2 SIDES 1/8 x 8-3/16 x 22 LITE PLY 4/K.
 FD-3 1/8 x 6-5/8 x 10-1/8 LIT PLY 1/K.
 FD-4, FD-5 1/8 x 7-1/2 x 10-1/8 LITE PLY 1/K.
 F-AB FORMER 1/4 x 1-3/4 x 10 BALSA 2/K.
 F-AT FORMER 1/4 x 2 x 10 BALSA 1/K;
 F BT FORMER 1/4 x 3 1/2 x 11 BALSA 1/K.

F-BT2 FORMER 1/4 x 3-1/2 x 11 BALSA 1/K.
 F-BT3 INST PNL. 1/32 x 3-1/4 x 11 PLY 1/K.
 F-B FORMER 1/4 x 2 x 11 BALSA 2/K.
 F-CT FORMER 1/4 x 2-3/4 x 10 BALSA 1/K.
 F-DT FORMER 1/4 x 2 x 10 BALSA 1/K.
 F-DB FORMER 1/4 x 2 x 10 BALSA 2/K.
 F-ET FORMER 1/4 x 2-1/2 x 9-3/8 BALSA 1/K.
 F-ED FORMER 1/4 x 3/4 x 10 BALSA 1/K.
 F-FT2 FORMER 1/4 x 2-1/2 x 9 BALSA 1/K.
 F-FT1 FORMER 1/8 x 6 x 9 PLY 1/K.
 FG-1 GEAR SUP 1/8 x 4-1/2 x 2-3/4 LIT PLY 2/K.
 FG-2 GEAR SUP 3/4 x 1-3/4 x 3-1/2 OAK 2/K.
 FG-3 GEAR SUP 1/4 x 3 x 8-5/16 PLY 1/K.
 F-HT FORMER 1/8 x 5 x 8 PLY 1/K.
 F-JT FORMER 1/8 x 4 x 6-1/2 PLY 1/K.
 F-KT FORMER 1/8 LITE PLY 1/K.
 FR-1 RIB 1/4 PLY 2/K.
 FR-2 RIB MADE FROM 1/4 x 3 x 42 BALSA 1/K.
 FR-3 CABIN FORMER 1/4 x 1-3/8 x 9-3/8 4/K.
 FS-10 TAIL 1/4 x 4 x 8 1/K.
 FS-12 T. WHEEL SUP 1/4 x 2-1/4 x 7-3/8 PLY 1/K.
 FS-11 SUPPORT 1/4 SQ. x 48 SPRUCE 1/K.
 FS-13 1/4 x 3-1/2 x 11-1/4 BALSA 2/k
 FS-14 1/4 x 4 x 10-3/8
 1/4 DOWEL x 12 1/K.
 PLASTIC CLOTH
 FE-1 1/4 x 4-1/2 x 5 PLY 2/K.
 FE-2 1/4 x 5 x 7 PLY 2/K.
 FE-3 1/4 x 4-1/2 x 6 PLY 2/K.
 FE-4, FE-5, 5/8 SQ. x 24 1/K.

F-AB

CABIN FLASHING 1/32 x 6 x 16 PLY 1/K.

CABIN FLASHING 1/32 x 1 x 17 PLY 2/K.

WINDOW JAMS 1/8 x 1/4 x 36 5/K.

SERVO COVER 1/32 x 3 1/2 x 4 PLY 1/K.

FIN-4 1/2 x 4 x 11 BALSA 1/K.

TAIL SHEET 1/4 x 4 x 7-1/2 1/K.

SER-1 1/4 x 1 x 3 BALSA 1/K.

SER-2 1/4 x 3-1/2 x 4-1/2 PLY 1/K.

TOP FORMER BRASE 1/4 x 3/4 x 15 BALSA 1/K.

MISC.

1/4 x 3-1/4 x 10-3/8 BALSA 1/K.

1/8 x 4 x 8 BALSA 1/K.

3/32 x 2-5/8 x 8-1/4 BALSA 1/K.

HARDWARE:

1 CLEVIS 2-56 6/KI SIG MFG 044

2 CLEVIS 2 56 SOLDER 4/KIT SIG MFG 313

3 HORN 2/KIT SIG MFG 099

4 HORN LARGE 2/KIT SIG MFG SH-365

5 HORN HOLD 2/KIT SIG MFG SH-366

#6 SCREW 4/KIT SIG MFG SH-312

7 CLEVIS 4-40 2/KIT DU-BRO 305

8 RODS 2-56 x 10 2/KIT SIG MFG SH-173

9 HINGE LG 6/KIT SIG MFG SH-364

10 SCREWS #2 35/KIT SIG MFG 093

11 BOLT 2-56 13/KIT SIG MFG 072

12 NUT 2-56 10/KIT SIG MFG 083

13 BOLT 8-32 4/KIT SIG MFG 082

14

15 BOLT 6-32 x 3/4 2/KIT SIG MFG 078
 16 NUT 6-32 2/KIT SIG MFG
 17 RODS 2-56 x 30 4/KIT DUBRO DU-173
 18 RODS 4-40 x 30 2/KIT DUBRO DU-145
 19 AXELS 1 SET DUBRO DU-249
 20 ROD END 3 SET DUBRO DU-302
 21 HINGE 7/KIT ROBART RB-310 GP 10
 22
 23 WHEEL COLLAR 2/KIT SIG MFG 347
 24 SCREW DRY WALL 1-1/2 12/KIT
 25 AL CHANEL 3/4" 4/KIT
 10-32 T-NUT 4/KIT
 10-32 BOLT 4/KIT
 #10 WASHER 4/KIT
 BRASS:
 26 7/32 DIA. x 36 7" 2/KIT KS-1148
 27 1/4 DIA. x 36 1/KIT KS-144
 28 1/32 x 1/4 x 12 1/KIT KS-240
 29 1/8 DIA. x 36 8" 2/KIT 6" 1/KIT KS-1145
 30 3/16 DIA. x 36 8" 1/KIT KS-1147
 31 1/32 x 2" x 2" 2/KIT KS-244
 32 1/16 x 3/4 1/KIT KS-3048
 33 CHANEL 3-1/2" 1/KIT KS-185
 34 CHANEL 1-1/4" 1/KIT KS-184
 35 5/32 x 5/16 x 12 RECT. 1/KIT KS-266
 36 1/4 ANGLE x 3 1/KIT KS-175
 37 1/2 SQ. x " SPRUCE 7/KIT
 38 1/2 SQ. x 1-3/4 SPRUCE 2/KIT
 39 1/2 x 3/4 x 1-1/2 SPRUCE 1/KIT
 49 1/4 x 3" DOWELL 3/KIT

41` 3/8 x 1-3/8 DOWELL 2/KIT

42` 1/8 x 1-1/2 x 1-1/2 PLY 2/KIT

43` 3" FUEL TUBING 1/KIT

44 10-32 BLIND NUT 2/KIT

45 10 32 1" BOLT 2/KIT

46 WASHER 2/KIT

47 4-40 x 1" BOLT 4/KIT

48 4-40 NUT 4/KIT

49 4-40 BOLT x 3/4" 4/KIT