PRE-CONSTRUCTION NOTE

THE WIZARD IS RELATIVELY EASY TO BUILD. PAY CAREFUL ATTENTION TO, AND FOLLOW THE NOTES STEP BY STEP EXACTLY AS THEY APPEAR ON THE PLANS. EXAMINE DRAWINGS BEFORE STARTING CONSTRUCTION. IF ANY DIE CUT PARTS STICK IN SHEET THEY MAY BE EASILY REMVVED BY SANDING BACK OF SHEET. FOR MAXIMUM STRENGTH, ALL PARTS SHOULD BE LIGHTLY COATED WITH CEMENT (WHICH IS ALLOWED TO DRY) AND THEN A SECOND COAT OF CEMENT IS APPLIED WHEN PARTS ARE ACTUALLY JOINED TOGETHER. THIS IS KNOWN AS PRE-GLUING AND INSURES MAXIMUM STRENGTH. THE WIZARD AS BUILT IN THE STEP-BY-STEP INSTRUCTIONS IN THIS PLAN IS FOR MULTI-CHANNEL RADIO ONLY. IF WIZARD IS BEING BUILT FOR SINGLE CHANNEL RADIO, SPORT FREE FLIGHT, OR CONTROL LINE, CHANGES MUST BE MADE AS CONSTRUCTION PROGRESSES. ENGINE SIZE RECOMMENDED FOR MULTI-CHANNEL IS .29 TO .45 (.29 SHOWN ON PLANS) WITH THROTTLE CONTROL. ENGINE SIZE RECOMMENDED FOR SINGLE CHANNEL RADIO IS .15 TO .29. ENGINE SIZE RECOMMENDED FOR SPORT FREE FLIGHT IS .19 TO .29. ENGINE SIZE RECOMMENDED FOR CONTROL LINE FLYING IS .29 TO .60. ENGINE MOUNTS ON PLAN ARE SET UP FOR A .29 ENGINE. IF OTHER MOUNTS ARE USED IT MAY BE NECESSARY TO MOVE MOUNTS. NOTCHES IN F1, FA & FA1, AND LANDING GEAR BULKHEAD ARE CHANGED ACCORDINGLY. CHANGES MUST BE MADE IN FUSELAGE STEP 1 & STEP 2 IN FUSELAGE STEP 3: OMIT F9A UNLESS MODEL IS BEING BUILT FOR MULTI-CHANNEL RADIO. IN FUSELAGE STEP 3: INSTALL NON-SWIVEL TAIL SKID (SEE DETAIL NOTE) ON ALL MODELS EXCEPT FOR MULTI-CHANNEL RADIO. IN FUSELAGE STEP 4: OMIT SERVO MOUNTS, F8, AND F9 FROM ALL MODELS EXCEPT MULTI-CHANNEL RADIO. OMIT BATTERY DOOR AND SCRAP PLYWOOD NUT PLATE FOR FREE FLIGHT AND CNTROL LINE ONLY. COVER BATTERY DOOR SECTION WITH 1/16 SHEET AS DESCRIBED. IN FUSELAGE STEP 5: OMIT F8, F9, AND RADIO PLUG BOX (B1, B2 AND B3) FROM ALL EXCEPT MULTI-CHANNEL RADIO. IN LOWER WING STEP 1: OMIT W21, W17A, W17B, W32 AND W25 ON ALL MODELS EXCEPT MULTI-CHANNEL RADIO. IN LOWER WING STEP 2: USE REGULAR CAP STRIP ON W17. INSTRUCTION FOR INSTALLATION OF PARTS THAT ARE TO BE OMITTED CAN BE CROSSED OUT WITH PENCIL TO PREVENT INSTALLATION WHEN CONSTRUCTION IS BEING MADE.

LANDING GEAR ASSEMBLY DETAIL

CEMENT PLYWOOD F2A TO F2 WITH THE PRINTED PART NUMBERS ON OUTSIDE. BULKHEADS ARE FLUSH ON BOTTOM AND SIDES. DRILL 1/4" HOLES AT PUNCH MARKS IN F2A. SLIP LANDING GEAR LUGS PROVIDED, OVER MAIN LANDING GEAR (WITH AXLES) AND INSERT LUGS INTO HOLES IN F2A. ADD LOCKWASHERS AND TIGHTEN SECURELY WITH NUTS PROVIDED. BE CERTAIN THAT APEX (POINT) OF LANDING GEAR IS UNDER TOP LUGS SO THAT MODEL WILL REST HORIZONTALLY ON GROUND. CEMENT PLYWOOD F2H SECURELY TO F2A, FLUSH WITH BOTTOM. CEMENT BALSA PARTS F2J ON EITHER SIDE OF LANDING GEAR, FLUSH WITH SIDES AS SHOWN. DRILL 1/8 HOLES THROUGH PUNCH MARKS IN F2H AND INSTALL AUXILIARY LANDING GEAR IN SAME MANNER AS FRONT LANDING GEAR, BEING CERTAIN THAT STRUTS ARE ALIGNED CORRECTLY OVER, AND IN LINE WITH, MAIN LANDING GEAR STRUTS. BIND WITH SOFT WIRE AS SHOWN AND SOLDER ENTIRE STRUT LENGTH SECURELY. PLACE DROP OF SOLDER ON REAR OF LANDING GEAR LUGS TO PREVENT NUTS FROM LOOSENING. ASSEMBLY IS NOW READY TO BE INSTALLED AS DESCRIBED IN STEP 2.

FUSELAGE CONSTRUCTION

STEP 1

PREPARE FOR FUSELAGE ASSEMBLY. MAKE ONE LEFT AND ONE RIGHT SIDE BY CEMENTING A, B, C, AND D TOGETHER ON FLAT SURFACE AS SHOWN. COMPLETE UNIT BY CEMENTING E AND F IN PLACE FLUSH WITH FRONT AND TOP AS INDICATED BY DASHED LINES. RIGHT SIDE IS SHOWN IN SKETCH - E AND F CEMENTED TO OPPOSITE SIDE FOR LEFT HAND. CEMENT FA TO FA1, FLUSH AT REAR. CEMENT BULKHEAD HALF F3 TO F3A. CEMENT BULKHEAD HALVES F5 TO F5 TOGETHER. CEMENT F6 TO REAR OF F6B SO THAT NOTCHES AND SIDES ARE FLUSH AS SHOWN. CEMENT F9A TO FRONT OF F9, FLUSH ON BOTTOM. ASSEMBLE PLYWOOD BULKHEAD F2 AND LANDING GEAR AS DESCRIBED IN DETAIL NOTE. ALLOW ALL PARTS TO DRY THOROUGHLY BEFORE REMOVING FROM FLAT SURFACE.

STEP 2

CEMENT THE FOLLOWING BULKHEADS AND THEIR RESPECTIVE BOTTOM DOUBLERS AS SHOWN, INTO NOTCHES BETWEEN FUSELAGE SIDES: F3 (UPPER HOLE ON LEFT SIDE AS SHOWN) F4, F5, F6, F7, F7A, F8, F9. CUT LENGTHS OF 3/16 SQ. STRIP TO FIT AGAINST SIDES BETWEEN TOP AND BOTTOM SECTIONS OF BULKHEADS F6, F7 AND F8, AND CEMENT IN PLACE. INSERT REAR OF FA ASSEMBLY INTO NOTCHES IN BULKHEAD F3. LANDING GEAR AND F2 BULKHEAD SLIPS OVER FA ASSEMBLY UNTIL IT RESTS AGAINST REAR OF LONG NOTCHES. SIDES FIT INTO NOTCHES FOR SAME IN FRONT OF INNER SIDES. CEMENT F1 INTO NOTCH IN FA. WET OUTSIDE OF FUSELAGE SIDES FOR EASIER BENDING THEN PULL SIDES TOGETHER CEMENTING THEM TO FA & FA1 AND BULKHEADS F2 AND F1. HOLD WITH RUBBER BANDS AND PINS UNTIL DRY. USE TWO COATS OF CEMENT. CEMENT SMALL BULKHEAD SECTIONS F2B, F2C AND F2D TO FRONT OF F2 AND FLUSH WITH F2 AS SHOWN IN SKETCH TO PROVIDE SEAT FOR REAR OF MOTOR MOUNTS. CEMENT TRIANGULAR PARTS ST4 TO ST2, FLUSH WITH SIDES AND BOTTOM. CUT A 4" LENGTH OF 1/4" DOWEL AND CEMENT SECURELY TO TOP OF ST2 FLUSH WITH REAR. CEMENT ST3 TO TOP OF DOWEL. ST1 IS CEMENTED TO ST2, FLUSH WITH TOP OF ST3. THIS COMPLETE LEFT HAND STRUT SHOWN IN SKETCH. MAKE RIGHT HAND STRUT IN SAME MANNER REVERSING POSITION OF ST3 AND ST4 ON ST2. CONSTRUCT REAR LEFT AND RIGHT HAND STRUTS IN SAME MANNER AS FRONT STRUTS. (LEFT HAND SHOWN IN SKETCH) LENGTH OF STRUTS IS 2-7/8". ALLOW UNITS TO DRY THOROUGHLY THEN ROUND OFF FROM ST1 (FRONT) & ST5 (REAR) TO TOP AS SHOWN IN CROSS SECTION DRAWING ABOVE. SINCE STRUTS ARE INSTALLED IN FUSELAGE ON ANGLE TURNED FROM VERTICAL, TOP OF STRUTS MUST BE TRIMMED OFF AS SHOWN IN DRAWING ABOVE SO THAT FLAT CENTER SECTION OF WING RESTS EVENLY ON TOP OF STRUTS.

STEP 3

PREPARE CARVED NYSE BLOCK FOR INSTALLATION BY NOTCHING OUT REAR TO CLEAR LANDING GEAR AND LUGS. NOTCH OUT TOP TO CLEAR NUT PLATE SHOWN IN MOTOR MOUNT DETAILS, AS SHOWN IN MOTOR MOUNT DETAIL. PREPARE MOTOR MOUNTS FOR INSTALLATION AS SHOWN IN DETAIL THEN SLIDE INTO LONG NOTCHES FOR SAME IN FA AND FA1 UNTIL THEY SEAT AGAINST AND INTO NOTCHES IN F2. AT THE SAME TIME CEMENT NOSE BLOCK IN PLACE. MOTOR MOUNTS REST ON NOSE BLOCK AS SHOWN IN SKETCH ABOVE. APPLY SEVERAL HEAVY COATS OF CEMENT AROUND MOTOR MOUNT INSERTS AND OUTSIDE FOR MAXIMUM STRENGTH. INSTALL A VECO T29D 6 OUNCE CLUNK TYPE TANK AS SHOWN. BE CERTAIN THAT FEEDLINE IS AT SAME LEVEL AS NEEDLE VALVE WHEN VIEWED FROM SIDE) BY CEMENTING TANK SUPPORT G1 3/4" FORWARD OF F3 AS SHOWN IN SIDE VIEW. SLIP TANK IN PLACE, CURVED TUBE FACING UP. G2 IS JAMMED AND CEMENTED BETWEEN F3 AND REAR OF TANK. CEMENT BULKHEAD SECTIONS F2E, F2F AND F2G TO FORM A COMPLETE BULKHEAD AROUND TANK (AS SHOWN) DIRECTLY ABOVE F2. APPLY A HEAVY COAT OF CEMENT AROUND ALL POINTS WHERE TANK CONTACTS FRAMEWORK. CEMENT THE TOP THREE 3/16 SQ. STRINGERS BETWEEN BULKHEAD F1 AND F3. LOWER TWO STRINGERS ON EITHER SIDE ARE 3/16 SQUARE. BOTTOM STRINGER EXTENDS TO FRONT AS SHOWN. CEMENT 3/16 SQUARE STRINGERS INTO NOTCHES BETWEEN BULKHEADS F5 AND F8. NOTE THAT TOP CENTER STRINGER IS OMITTED BETWEEN F5 AND F6. BOTTOM 3/16 SQUARE STRINGERS ARE CEMENTED INTO NOTCHES ON BOTH SIDES OF BULKHEADS FROM F2 TO F3. INSTALL REAR STRINGERS FROM F5 TO F9, AS SHOWN. INSTALL TAIL WHEEL STRUT FROM 1/16 WIRE USING PATTERN PROVIDED. NOTE THAT LAST BEND IS MADE AFTER STRUT IS INSERTED IN BONNER NYLON TAIL WHEEL BRACKET (NOT PROVIDED IN KIT). INSTALL AND CEMENT PLYWOOD PART T INTO BRACKET FOLLOWING STEP BY STEP DETAILS AS SHOWN. HOLES IN BRACKET ARE CONTINUED THROUGH PLYWOOD AND UNIT IS BOLTED TOGETHER WITH 2/56 MACHINE SCREWS AND NUTS (NOT SUPPLIED IN KIT). ASSEMBLY IS SECURELY CEMENTED INTO NOTCH IN REAR FUSELAGE SIDES AS SHOWN. SIDES ARE NOTCHED TO CLEAR NUTS. USE THREE HEAVY COATS OF CEMENT WITH EXTRA COAT AND OUTSIDE INSTALLATION TO SECURE MAXIMUM STRENGTH. ALLOW TO DRY BETWEEN COATS. APPLY WING STRUTS AS SHOWN AND DESCRIBED IN DETAIL NOTE. FRONT STRUTS ARE CEMENTED INTO FUSELAGE DIRECTLY TO SIDE SKINS AGAINST REAR OF F5. USE HEAVY COATS OF CEMENT. REAR STRUTS ARE CEMENTED TO TOP OF F5 (ST5'S FACE OUTWARDS). MAXIMUM STRENGTH MUST BE OBTAINED BY USING THREE HEAVY COATS OF CEMENT ON ENTIRE INSTALLATION, ALLOWING CEMENT TO DRY THOROUGHLY BETWEEN COATS. 3/16 SQUARE STRINGERS ARE CUT TO LENGTH AND CEMENTED BETWEEN STRUTS INTO NOTCH IN F4, FLUSH WITH TOP OF SIDES. CUT TWO PIECES OF 1/4" DOWEL TO 5-1/4" AND ROUND OFF ENDS. DOWEL IS INSERTED THROUGH HOLES MADE IN FUSELAGE AT EXACT LOCATIONS SHOWN ON SIDE VIEW. SECURE WITH THREE HEAVY COATS OF CEMENT. F5C IS CEMENTED BETWEEN REAR STRUTS AGAINST FRONT OF F5 AND FLUSH WITH BOTTOM OF SAME.

STEP 4

SKETCH SHOWS BOTTOM OF FUSELAGE VIEWED FROM REAR. PREPARE SERVO MOUNTS (SEE DETAIL NOTE) AND CEMENT ACROSS FUSELAGE TO REAR OF F5 AND TO FRONT OF F6, RESTING ON TOP OF 3/16" SQUARE STRINGERS AS SHOWN. PREPARE SERVO SHELF MOUNT F8 FOR INSTALLATION BY DRILLING 1/32 HOLES AT PUNCH MARKS AND INSTALLING NUT PLATES (SEE NUT PLATE DETAIL) DIRECTLY UNDER HOLES. CEMENT IN PLACE BY INSERTING FRONT PROTRUSIONS INTO NOTCHES IN F4. REAR RESTS ON F4 AS SHOWN. DRILL 3/32 HOLES IN P1 AT PUNCH MARKS AND CEMENT TO REAR OF F3 AGAINST BOTTOM OF FB'S. CEMENT THE TWO F3C'S TOGETHER AND CEMENT IN PLACE ACROSS FUSELAGE INTO NOTCHES IN FRONT STRUTS. CEMENT TOGETHER TWO SHEETS OF 1/8 X 3 X 3" BALSA FOR BOTTOM DOOR COVERING. ALLOW TO DRY. ON FLAT SURFACE THEN CUT OFF A 3-11/16" LENGTH FOR BATTERY DOOR. DOOR FITS BETWEEN SIDE SKINS. NOTCH FRONT TO CLEAR LANDING GEAR STRUTS. REAR OF DOOR ENDS OVER JOINT BETWEEN F3C'S. HINGE FRONT OF DOOR WITH CLOTH TAPE AS SHOWN IN DETAIL. CUT A PIECE OF SCRAP PLYWOOD TO FIT OPENING BETWEEN F3 AND F3C'S. MAKE NUT PLATE (SEE DETAILS) AND INSTALL NUT PLATE IN CENTER OF PLYWOOD PIECE. CEMENT UNIT SECURELY IN PLACE FLUSH WITH BULKHEADS AS SHOWN. LOCATE AND DRILL HOLE IN BATTERY DOOR FOR MACHINE SCREW WHICH IS SCREWED INTO NUT PLATE TO HOLD DOOR SHUT.

STEP 5

CEMENT PLYWOOD MOUNT P BETWEEN REAR STRUTS AGAINST FRONT OF F5 AS SHOWN. HOLES IN P ARE CENTERED OVER HOLES IN F5. CEMENT P2 IN PLACE BY INSERTING IT DOWN INTO NOTCHES FOR SAME IN FRONT STRUTS. THIS POINT NEEDS MUST BE INSTALLED AS SHOWN AND DESCRIBED IN DETAIL NOTE. ASSEMBLE RADIO-PLUG-BOX BY CEMENTING BOTH B3'S BETWEEN B1 AND B2 AS SHOWN, SECURELY CEMENT UNIT OVER HOLE IN FC. CEMENT ASSEMBLY SECURELY BETWEEN FUSELAGE SIDES AGAINST REAR OF BATTERY DOOR. REAR IS AT CENTER OF F4. TOP OF PLUG BOX IS CEMENTED TO FB. CEMENT FD BETWEEN SIDES AGAINST REAR OF F5. REAR RESTS ON, AND IS FLUSH WITH, REAR OF F5C. CEMENT BOTTOM SKIN (ASSEMBLED SHEETS FROM WHICH BATTERY DOOR WAS CUT) TO BOTTOM OF FUSELAGE AGAINST REAR OF F4. NOTE CUT OUT FOR BRAKE-PUSH-ROD AT REAR OF FUSELAGE. SKIN SHOULD BE MOISTENED WITH WATER TO ALLOW BENDING. USE CEMENT GENEROUSLY ON ALL CONTACTING FRAMEWORK AND HOLD IN PLACE WITH PINS UNTIL THOROUGHLY DRY. USING PATTERN PROVIDED ON PLANS, CUT TWO EACH OF FRONT COWL SKINS, COCKPIT SKINS, AND REAR SKINS FROM 3/32 BALSA SHEET. USE PATTERNS. CHAMFER EDGES SLIGHTLY TO INSURE TIGHT SEAMS AT JOINTS. GLUE SKINS SO THAT THEY WILL BEND EASILY TO SHAPE. CEMENT SKINS SECURELY ON ALL FRAMEWORK. CEMENT SKINS IN PLACE AS SHOWN. CEMENT SEAMS OVER CENTER STRINGER TO PROVIDE CEMENTING SURFACE FOR BOTH SKIN HALVES. HOLD SKINS IN PLACE WITH PINS UNTIL DRY. CUT TWO 3/32 SCRAP BALSA FILLER PIECES TO BOTTOM OF STRUTS AS SHOWN. SHAPE TO CONFORM WITH CURVE OF SKINS SO THAT STRUTS APPEAR TO BE COMING OUT OF CURVED COWL SECTION. WHEN SKINS HAVE DRIED THOROUGHLY REMOVE PINS. BUILD REMOVABLE COWL SECTION AS DESCRIBED AND SHOWN IN DETAIL NOTE AND INSTALL IN FUSELAGE. ENTIRE FUSELAGE IS NOW SANDED SMOOTH, ROUNDING LOWER CORNERS, SKINS SHOULD BLEND INTO ONE ANOTHER TO APPEAR AS ONE UNBROKEN SURFACE. TRIM OUT EXPOSED PORTION OF 3/16 SQ. STRINGERS SHOWING IN COCKPIT.

MOTOR MOUNT NOTE

MAKE TWO MOTOR MOUNT NUT PLATES AS DESCRIBED IN DETAIL NOTE. LOCATE AND DRILL 1/8 HOLES FOR MOTOR MOUNTING BOLTS IN MOTOR MOUNTS. PRESS NUT PLATES FIRMLY AGAINST, (PRONGS SINKING INTO) BOTTOM OF MOTOR MOUNTS DIRECTLY UNDER HOLES. NUT PLATES SHOWN IN NOTE ARE FOR .29 ENGINE ONLY. FOR OTHER ENGINE SIZES LOCATION OF HOLES IN NUT PLATES AND MOTOR MOUNTS WILL CHANGE TO SUIT. SECURE WITH TWO HEAVY COATS OF CEMENT BEING CAREFUL TO KEEP CEMENT OUT OF HOLES. INSTALL MOTOR MOUNTS AS DESCRIBED IN STEP 3.

WING STRUT DETAIL NOTE

USE CEMENT GENEROUSLY THROUGHOUT ASSEMBLY OF STRUTS. ASSEMBLE FRONT LEFT HAND STRUT BY PRESSING AND CEMENTING ST1, ST4 TO ST2, FLUSH WITH SIDES AND BOTTOM. CUT A 4" LENGTH OF 1/4" DOWEL AND CEMENT SECURELY TO TOP OF ST2 FLUSH WITH REAR. CEMENT ST3 TO TOP OF DOWEL. ST1 IS CEMENTED TO ST2, FLUSH WITH TOP OF ST3. THIS COMPLETE LEFT HAND STRUT SHOWN IN SKETCH. MAKE RIGHT HAND STRUT IN SAME MANNER REVERSING POSITION OF ST3 AND ST4 ON ST2. CONSTRUCT REAR LEFT AND RIGHT HAND STRUTS IN SAME MANNER AS FRONT STRUTS. (LEFT HAND SHOWN IN SKETCH) LENGTH OF STRUTS IS 2-7/8". ALLOW UNITS TO DRY THOROUGHLY THEN ROUND OFF FROM ST1 (FRONT) & ST5 (REAR) TO TOP AS SHOWN IN CROSS SECTION DRAWING ABOVE. SINCE STRUTS ARE INSTALLED IN FUSELAGE ON ANGLE TURNED FROM VERTICAL, TOP OF STRUTS MUST BE TRIMMED OFF AS SHOWN IN DRAWING ABOVE SO THAT FLAT CENTER SECTION OF WING RESTS EVENLY ON TOP OF STRUTS.

REMOVABLE COWL CONSTRUCTION DETAIL

DO NOT CEMENT ANY PARTS TO FUSELAGE SINCE ONE IS REMOVABLE. FIT SECURELY TO F3 FLUSH WITH TOP OF SAME (WHICH ALLOWS FOR 3/32 SHEET COVERING). PIN F5A TO F5 IN SAME MANNER, 3/32 BELOW TOP AS SHOWN. THIS ALLOWS SHEET COVERING TO BE FLUSH WITH TOP OF F5 WHEN FRAMEWORK IS COVERED. CUT TWO SIDE LENGTHS OF 3/16 SQ. STRINGERS TO FIT SNUGLY BETWEEN FRONT AND REAR STRUTS. CEMENT F4A AND F5B FLUSH WITH ENDS, ALLOW TO DRY. PLACE IN FUSELAGE BETWEEN STRUTS AS SHOWN. CEMENT THE THREE 3/16 SQ. STRINGERS INTO NOTCHES ACROSS ENTIRE LENGTH FROM F3B TO F5A WHICH COMPLETES COWL FRAMEWORK. WHEN DRY REMOVE PINS FROM BULKHEADS F3C AND F5A TO ALLOW COWL SECTION TO BE REMOVED. USING PATTERNS PROVIDED, CUT TWO SKINS FROM 3/32 BALSA SHEET AS NOTED ON PATTERN. CHAMFER EDGES SLIGHTLY FOR TIGHT SEAM. WET OUTER SKINS AND CEMENT IN PLACE, JOINING HALVES OVER CENTER STRINGER. HOLD IN PLACE WITH PINS UNTIL DRY. WHEN DRY REMOVE PINS AND CHECK FIT IN FUSELAGE. INSTALL AND SAND AS DESCRIBED IN STEP 4.

FUSELAGE MULTI-CHANNEL CONTROL DETAIL

Bonner Duramite Multi-Servos are recommended. Bolt elevator, rudder and motor servos in place as shown with 4/40 screws and lockwashers (not provided) and bolt Fahn stock-clip-plate from scrap plywood. Install control horns and clevises (not provided) in place as shown. Cement elevator and rudder pushrod guide tubes between F4 and F5 with two heavy coats of cement. Mount switch on scrap plywood with screws (not provided). Locate and make hole in fuselage side for switch lever (see side view) and cement unit securely in place with two heavy coats of cement. Drill two small holes through F8 at front approximately 1/4" apart in same manner as front struts. (left hand shown in sketch) Length of dowel is 2-7/8". Allow units to dry thoroughly then round off from ST1 (front) & ST5 (rear) to top as shown in cross section drawing above. Since struts are installed in fuselage on angle turned from vertical, top of struts must be trimmed off as shown in drawing above so that flat center section of wing rests evenly on top of struts.

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By tieing knots in end of cord, cord must be shorter than the servo wires so that when plug is detached forcibly, cord will break instead of servo wires. The five sockets shown are mounted in position with 2/56 machine screws, lockwashers and nuts (not provided) after socket holes have been located as described in multi-radio wiring details. Make rudder, elevator-throttle and motor control-rods as shown and described in detail note. Install motor control-rod by inserting through holes in front bulkheads, rear is attached to plastic servo adjustment lug. K & B .29S engine (or similar type) which is used especially for radio-throttle-control is installed. Hook-up is made after wizard is completed and painted as described in final assembly. Insert elevator-rudder and rudder control-rods in fuselage and attach fronts to plastic servo adjustment lugs as shown. Rear ends are engaged in horns as shown. After tail assembly and tail wheel have been installed.

REAR SKINS

MAKE TWO FROM 3/32 BALSA. CEMENT IN PLACE AS SHOWN AND DESCRIBED IN FUSELAGE STEP 5.

RUDDER CONSTRUCTION DETAIL

CEMENT R TO R1. CEMENT PLYWOOD R3'S TOGETHER, WHEN DRY CEMENT TO BOTTOM OF R2 AS SHOWN. SAND UNITS TO DRY THOROUGHLY BEFORE REMOVING FROM FLAT SURFACE. LIGHTLY CEMENT ASSEMBLIES TOGETHER AND SAND TO STREAMLINE CROSS SECTION SHOWN, ON FULL SIZE DRAWING (SIDE VIEW). IF WIZARD IS BEING BUILT AS FREE FLIGHT, CEMENT PARTS TOGETHER PERMANENTLY ON FLAT SURFACE. IF WIZARD IS BEING BUILT FOR CONTROL LINE FLYING, CEMENT R2 IN PLACE AT ANGLE, 3/4" TO OUTSIDE OF CIRCLE FLOWN TO KEEP LINES TAUT. FOR RADIO CONTROL (MULTI & SINGLE CHANNEL), LOCATE AND DRILL 3/32 HOLES TO MOUNT BONNER NYLON CRANK (CONTROL HORN) AT LOCATION SHOWN ON FULL SIZE DRAWING. BOLT IN PLACE WITH 2/56 MACHINE SCREWS AND NUTS. (CRANK AND SCREWS NOT PROVIDED IN KIT) MAKE TAIL WHEEL STRAP (SEE DETAIL) AND MOUNT WITH 2-56 MACHINE SCREW AND NUT AT LOCATION SHOWN. ASSEMBLE UNITS WITH CLOTH HINGES PROVIDED AS DESCRIBED IN DETAIL NOTE.

REMOVABLE COWL SKINS

MAKE TWO FROM 3/32 BALSA. CEMENT IN PLACE AS SHOWN AND DESCRIBED IN REMOVABLE COWL CONSTRUCTION DETAIL.

FRONT COWL SKIN

MAKE TWO FROM 3/32 BALSA. CEMENT IN PLACE AS SHOWN AND DESCRIBED IN FUSELAGE STEP 3.

TAIL FILLET

MAKE ONE FROM 1/16 BALSA. INSTALL AS DESCRIBED IN TAIL SURFACE INSTALLATION NOTE.

COCKPIT SKIN

MAKE TWO FROM 3/32 BALSA. CEMENT IN PLACE AS SHOWN AND DESCRIBED IN FUSELAGE STEP #5.

TAIL SURFACE INSTALLATION

ASSEMBLE COMPLETED TAIL SURFACES BY INSERTING BOTTOM OF RUDDER INTO SLOT IN STABILIZER. NOTCHES FIT INTO NOTCHES AS SHOWN. USE TWO COATS OF CEMENT GENEROUSLY ON THESE JOINTS. CEMENT STABILIZER IN PLACE VERTICAL TO STABILIZER. ALLOW TO DRY THOROUGHLY. REMOVABLE TAIL SURFACE IS CEMENTED TO REAR OF FUSELAGE. CENTER POINT OF LEADING EDGE IS IN CENTER OF AND AGAINST F6. RUDDER IS DIRECTLY IN LINE WITH REAR OF FUSELAGE. USE TWO HEAVY COATS OF CEMENT ON INSTALLATION AND ALLOW TO DRY THOROUGHLY. AS SHOWN IN PATTERN, CHAMFER EDGES SLIGHTLY FOR TIGHT SEAM. WET OUTER SKINS AND CEMENT IN PLACE, JOINING HALVES OVER CENTER STRINGER. HOLD IN PLACE WITH PINS UNTIL DRY. WHEN DRY REMOVE PINS AND CHECK FIT IN FUSELAGE. INSTALL AND SAND AS DESCRIBED IN STEP 4.

SERVO MOTOR MOUNT NOTE

SERVO MOUNTS ARE INSTALLED IN FUSELAGE STEP 4. OMIT UNLESS MULTI-CHANNEL IS USED. DRILL HOLES AT LOCATION SHOWN ON FULL SIZE DRAWING ABOVE AND INSTALL NUT PLATES ON BOTTOM. CEMENT SECURELY IN PLACE WITH TWO HEAVY COATS OF CEMENT.

NON-SWIVEL TAIL SKID NOTE

TAIL WHEEL INSTALLATION SHOWN ABOVE IS USED FOR ALL TYPE MODELS EXCEPT MULTI-CHANNEL. TAIL SKID IS BENT FROM 3/16 DIA. MUSIC WIRE TO EXACT SHAPE SHOWN ABOVE. DOTTED LINES INDICATE OUTLINE OF TAIL SKID MOUNT WHICH IS MADE FROM 1/8 SCRAP PLYWOOD, AND SHOWS LOCATION OF TAIL SKID ON SAME. DRILL 1/16 DIA. HOLES THROUGH MOUNT AT POINTS INDICATED. SLIP BENT WIRE TAIL SKID THROUGH REAR HOLE AND ENGAGE FRONT SPUR INTO FRONT HOLE. SECURE WITH TWO HEAVY COATS OF CEMENT WRAPPING WITH HEAVY THREAD AS SHOWN ABOVE. APPLY AN ADDITIONAL HEAVY COAT OF CEMENT AND INSTALL IN STEP 3, AGAINST REAR OF F9 ON BOTTOM OF FUSELAGE. USE THREE HEAVY COATS OF CEMENT ON INSTALLATION AND ALLOW TO DRY THOROUGHLY.

RADIO SWIVEL TAIL WHEEL NOTE

TAIL WHEEL ASSEMBLY IS INSTALLED IN FUSELAGE STEP 3. IT IS USED FOR MULTI-RADIO MODELS ONLY. BEND 1/16 WIRE STRUT USING PATTERN ABOVE. MAKE TAIL WHEEL ASSEMBLY AND INSTALL AS DESCRIBED IN STEP 3, USING .032 BRASS SHEET (NOT PROVIDED) OR TIN CAN. MAKE TAIL WHEEL STRAP USING PATTERN PROVIDED, SECURELY BOLT TO RUDDER, ENGAGING TOP OF TAIL WHEEL STRUT AS SHOWN. RUDDER AND TAIL WHEEL NOW MOVE AS ONE UNIT. CUT REAR TAIL WHEEL BRAKE-ROD TO LENGTH USING PATTERN ON OPPOSITE SIDE OF PLAN. SHARPEN ONE END AS SHOWN. BEND WIRE LOOP AS SHOWN ABOVE FROM 1/32 WIRE. BEND AND SOLDER SECURELY TO MAIN TAIL WHEEL STRUT IN POSITION SHOWN. INSERT REAR TAIL WHEEL ROD THROUGH LOOP, AND COUPLE TO MAIN ROD USING STERL-X SMALL TUBING AS SHOWN. INSTALL TAIL WHEEL AS DESCRIBED IN FINAL ASSEMBLY NOTE. WHEN ELEVATOR ROD MOVES TO RAISE RAISING ELEVATORS, ROD MOVES INTO TAIL WHEEL FOR BRAKING ACTION.

NUT PLATE MOUNT NOTE

FULL SIZE DRAWINGS ABOVE SHOW HOW NUT PLATES ARE MADE, CUT FROM .032 BRASS (OR SHEET FROM TIN CAN). DRILL HOLES AT LOCATIONS SHOWN AND BEND UP CORNER SPURS TO HELP ANCHOR NUT PLATE SECURELY. SOLDER NUTS IN PLACE DIRECTLY UNDER HOLES. MOTOR MOUNT NUT PLATES MAY VARY WITH ENGINE. MAKE TWO AND INSTALL AS DESCRIBED IN MOTOR MOUNT NOTE. MAKE FOUR MOTOR AND AILERON SERVO NUT PLATES IN SAME MANNER. OMIT UNLESS MODEL IS FOR MULTI RADIO. CEMENT TWO NUT PLATES TO BOTTOM OF F8 AS DESCRIBED IN FUSELAGE STEP 4 AND TWO TO THE TOP OF W26 AS DESCRIBED IN WING CONSTRUCTION STEP 1, MAKE TWO ELEVATOR AND RUDDER SERVO NUT PLATES AND CEMENT IN PLACE TO BOTTOM OF MOUNTS AS DESCRIBED IN DETAIL NOTE. OMIT UNLESS MODEL IS FOR MULTI RADIO. MAKE SINGLE BATTERY DOOR NUT PLATE AND INSTALL ON SCRAP PLYWOOD AS DESCRIBED IN FUSELAGE STEP 4. OMIT UNLESS MODEL IS FOR MULTI OR SINGLE RADIO.

STEP 6 FINAL ASSEMBLY & PAINT NOTE

SAND CARVED HEADREST TO SMOOTH SHAPE SHOWN AND CEMENT TO REAR OF SOCKPIT. SAND STRUTS TO STREAMLINE CROSS SECTION SHOWN ON SIDE VIEW. TOP AND BOTTOM OF STRUTS ARE FLAT. SAND FOR FLIGHT AND CONTROL LINE MODELS, COWL MAY BE PERMANENTLY CEMENTED TO FUSELAGE AS ON CONTROL LINE MODELS ONLY, LOWER WING IS SECURELY CEMENTED IN PLACE AS DESCRIBED IN CONTROL LINE INSTALLATION NOTE. ON OTHER TYPE MODELS, LOWER WING IS SECURELY LASHED IN PLACE, WITH FRESH STRANDS OF 1/8 OR 1/4 FLAT RUBBER (SEE WING PLAN) WHICH ARE TIGHTLY BOUND AROUND WING AND PROTRUDING ENDS CUT OFF AND DISCARDED. TOP WING IS SECURED IN SAME MANNER AROUND DOWELS PROTRUDING FROM WING STRUTS AS SHOWN. CHECK TO SEE THAT WINGS ARE EVENLY SPACED AND ARE IN PROPER ALIGNMENT AS SHOWN ON THREE VIEW DRAWING. WHEN VIEWED FROM SIDE, FRONT AND REAR, BOUND WINGS MUST BE INSPECTED BEFORE EVERY FLIGHT TO BE CERTAIN THAT THEY ARE LASHED IN PLACE FIRMLY AND HAVE NOT LOOSENED POSITIONS. FOR MULTI-CHANNEL RADIO, SPORT FREE FLIGHT AND CONTROL LINE FLYING, SEE SPECIAL NOTE. IF YOU DO NOT WRITE AND TELL US ON WHAT FREQUENCY YOU ARE FLYING YOUR RADIO CONTROL WIZARD, AND YOUR COMMENTS ON THE MODEL, WE WILL SEND YOU FREE DECALS. GOOD LUCK!!! GOOD FLYING!

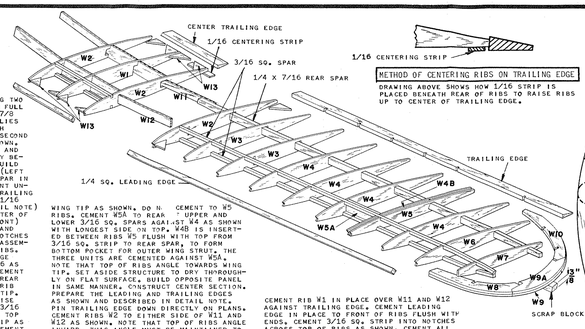
Removable cowl section remains removable only for multi or single radio models. Hold in place with cross section shown on side view. Top and bottom of fuselage are flat for flight and control line models, cowl may be permanently cemented to fuselage as on control line models only, lower wing is securely cemented in place as described in control line installation note. On other type models, lower wing is securely lashed in place, with fresh strands of 1/8 or 1/4 flat rubber (see wing plan) which are tightly bound around wing and protruding ends cut off and discarded. Top wing is secured in same manner around dowels protruding from wing struts as shown. Check to see that wings are evenly spaced and are in proper alignment as shown on three view drawing. When viewed from side, front and rear, bound wings must be inspected before every flight to be certain that they are lashed in place firmly and have not loosened positions. For multi-channel radio, sport free flight and control line flying, see special note. If you do not write and tell us on what frequency you are flying your radio control wizard, and your comments on the model, we will send you free decals. GOOD LUCK!!! GOOD FLYING!

MULTI-CHANNEL RADIO WIRING DETAIL

Main components in pictorial wiring diagram above shown installation in Citizenship 8 channel radio receiver and Bonner Duramite Multi-Servos, units are not in their exact position having been installed in fuselage multi-channel control detail. Drawing is intended to show wiring hook up in simplified manner for clarity and easy to follow installation. Note that there are two separate radio receiver connections, one for each side of radio receiver to show its wiring hook-up. The two plugs have been hooked in all circuits so that all units are removable at any time. Circuit requires six minature seven prong plugs and sockets which are supplied by Citizen-Ship Corp., 820 E. 64th St., Indianapolis, Ind., and other radio equipment suppliers. See your dealer. We have noted that on some pl

TOP WING CONSTRUCTION

STEP 1



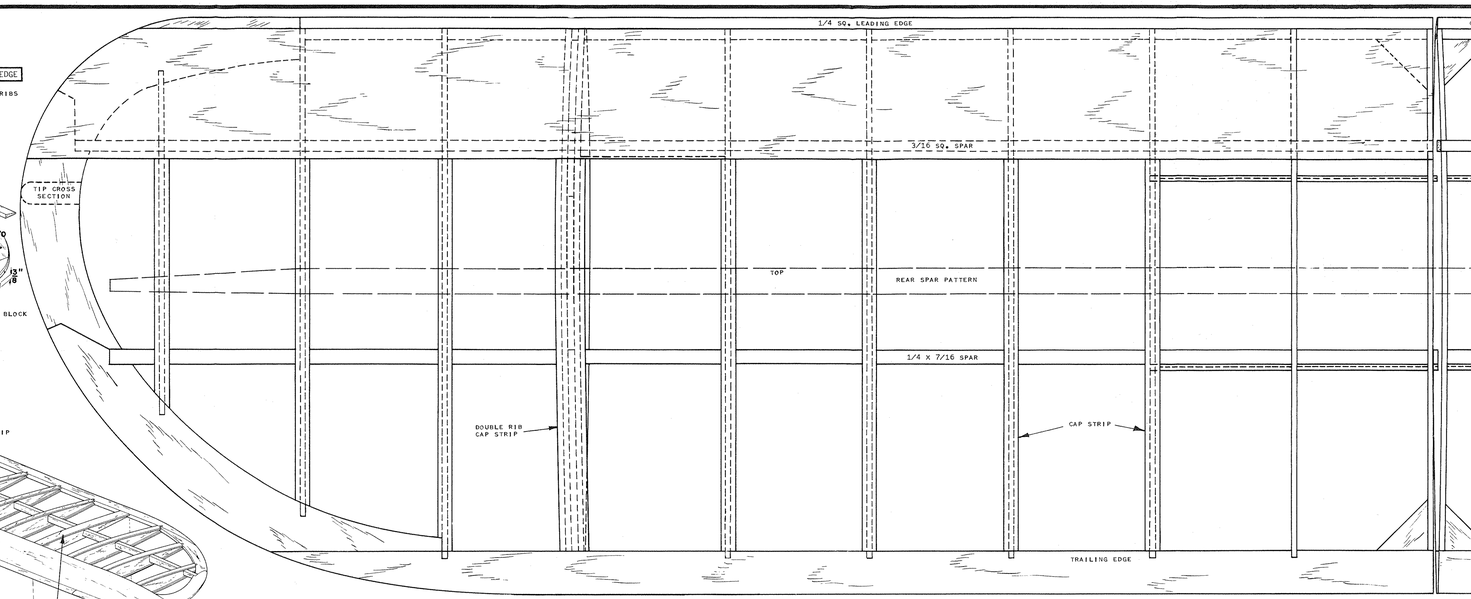
PREPARE TO ASSEMBLE WING BY CUTTING TWO REAR SPARS TO EXACT SHAPE GIVEN IN FULL SIZE PATTERN FROM 1/4 X 7/16 X 23-7/8 BALSA. PREPARE TWO WING TIP ASSEMBLIES BY CEMENTING W8, W9 AND W10 TO EACH OTHER DIRECTLY OVER PLANS. CEMENT SECOND LAYER OF W8 AND W9A IN PLACE AS SHOWN. MAKE TWO ASSEMBLIES, ONE EACH LEFT AND RIGHT HAND. ALLOW TO DRY THOROUGHLY BEFORE REMOVING FROM FLAT SURFACE. BUILD WING ON PLAN. ASSEMBLE WING PANEL (LEFT SHOWN) BY SLIDING RIBS ONTO REAR SPAR IN NUMERICAL ORDER SHOWN. DO NOT CEMENT UNTIL WING FRAME IS COMPLETED. PIN TRAILING EDGE DOWN ON PLAN. PLACE STRIP OF 1/16 BALSA UNDER REAR OF RIBS (SEE DETAIL NOTE) TO RAISE TO PROPER POSITION IN CENTER OF TRAILING EDGE (WHEN VIEWED FROM FRONT) TO ALLOW FOR SKIN COVERING ON TOP AND BOTTOM. INSERT REAR OF RIBS INTO NOTCHES FOR SAME IN TRAILING EDGE, LINING ASSEMBLY UP ON PLAN. DO NOT CEMENT W5 RIBS. CEMENT 1/4 SQ. X 19-7/8 LEADING EDGE STRIP TO FRONT OF RIB FROM W2 TO W6 AS SHOWN. DO NOT CEMENT TO W5 RIBS. CEMENT FRONT END OF WING TIP AGAINST W6, REAR AGAINST RIB W4, NOTE THAT REAR OF RIB W6 AND RIB W7 FIT INTO NOTCHES IN TIP. PLACE 3" BLOCK UNDER WING TIP TO RAISE IT 3/16" FROM FLAT SURFACE. CEMENT 3/16 SQ. STRIP INTO NOTCHES FOR SAME IN TOP OF RIBS FROM W2 TO NOTCH IN WING TIP AS SHOWN. DO NOT CEMENT TO W5 RIBS. CEMENT TRIANGULAR GUSSETS W13 INTO CORNERS AT FRONT AND REAR OF W2 AS SHOWN. CHECK WING FOR SQUARENESS AND ALLOW TO DRY THOROUGHLY BEFORE REMOVING FROM FLAT SURFACE. FRAME IS NOW TURNED OVER AND BOTTOM 3/16 SQ. STRIP IS INSTALLED FROM W2 TO

WING TIP AS SHOWN. DO N[OT] CEMENT TO W5 RIBS. CEMENT W5A TO REAR [OF] UPPER AND LOWER 3/16 SQ. SPARS AGAINST W4 AS SHOWN WITH LONGEST SIDE ON TOP. W4B IS INSERTED BETWEEN RIBS W5 FLUSH WITH TOP FROM 3/16 SQ. STRIP TO REAR SPAR, TO FORM BOTTOM POCKET FOR OUTER WING STRUT. THE THREE UNITS ARE CEMENTED AGAINST W5A. NOTE THAT TOP OF RIBS ANGLE TOWARDS WING TIP. SET ASIDE STRUCTURE TO DRY THOROUGHLY ON FLAT SURFACE. BUILD OPPOSITE PANEL IN SAME MANNER. CONSTRUCT CENTER SECTION. PREPARE THE LEADING AND TRAILING EDGES AS SHOWN AND DESCRIBED IN DETAIL NOTE. PIN TRAILING EDGE DOWN DIRECTLY ON PLANS. CEMENT RIBS W2 TO EITHER SIDE OF W11 AND W12 AS SHOWN, NOTE THAT TOP OF RIBS ANGLE INWARD. THIS ANGLE MUST BE MAINTAINED TO INSURE PROPER DIHEDRAL ANGLE WHEN COMPLETE WING FRAME IS ASSEMBLED. CEMENT REAR OF RIBS TO FRONT OF TRAILING EDGE (CENTER SAME WITH 1/16" SHIM) FLUSH WITH EDGES. PIN RIBS DOWN ON PLAN TO INSURE SQUARENESS OF CENTER SECTION ASSEMBLY.

CEMENT RIB W1 IN PLACE OVER W11 AND W12 AGAINST TRAILING EDGE. CEMENT LEADING EDGE IN PLACE TO FRONT OF RIBS FLUSH WITH ENDS. CEMENT 3/16 SQ. STRIP INTO NOTCHES ACROSS TOP OF RIBS AS SHOWN. CEMENT ALL TRIANGULAR GUSSETS W13'S IN PLACE AS SHOWN. ALLOW UNIT TO DRY THOROUGHLY. REMOVE FROM FLAT SURFACE AND CEMENT 3/16 SQ. STRIP INTO NOTCHES ACROSS BOTTOM OF RIBS. ALLOW TO DRY THOROUGHLY BEFORE REMOVING FROM FLAT SURFACE.

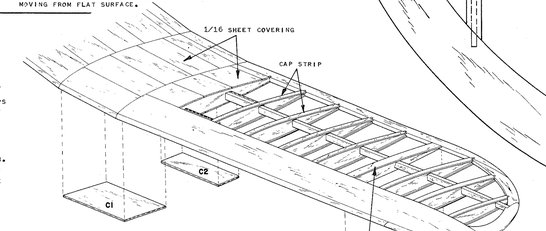
METHOD OF CENTERING RIBS ON TRAILING EDGE

DRAWING ABOVE SHOWS HOW 1/16 STRIP IS PLACED BENEATH REAR OF RIBS TO RAISE RIBS UP TO CENTER OF TRAILING EDGE.



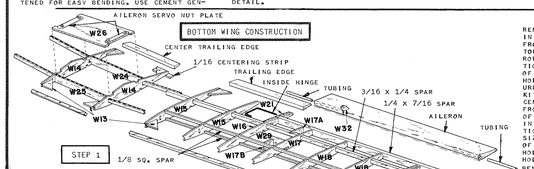
STEP 2

JOIN WING PANELS TO CENTER SECTION BY SLIDING W11 AND W12 INTO NOTCHES FOR SAME THROUGH RIBS W2 AND W3'S. APPLY A GENEROUS COAT OF CEMENT TO INSIDES OF W2'S AS WELL AS LEADING AND TRAILING EDGES WHERE THEY JOIN. TOP OF W11 IS FLUSH WITH TOP OF REAR SPAR AS SHOWN. USE CEMENT GENEROUSLY THROUGHOUT THIS OPERATION. WHEN BOTH PANELS HAVE BEEN INSTALLED, FASTEN CENTER SECTION DOWN ON FLAT SURFACE. CENTER OF EACH WING TIP (WHEN VIEWED FROM FRONT) MUST BE 3-1/4" FROM FLAT SURFACE FOR PROPER DIHEDRAL ANGLE. IF NECESSARY EITHER RAISE OR LOWER WING PANEL TO THIS MEASUREMENT. APPLY A SECOND HEAVY COAT OF CEMENT TO ALL JOINTS. CHECK THAT WING IS FREE FROM WARPS AND ALLOW TO DRY THOROUGHLY BEFORE PROCEEDING. WHEN DRY, C1 IS CEMENTED ACROSS BOTTOM OF CENTER SECTION, AGAINST LEADING EDGE, WET OUTSIDE OF C1 TO PERMIT EASIER BENDING. CEMENT C2 AGAINST TRAILING EDGE IN SAME MANNER. COVER THE REMAINDER OF THE CENTER SECTION (TOP AND BOTTOM) WITH 1/16 X 2 SHEET BALSA. COVER TOP AND BOTTOM OF LEADING EDGE ON BOTH WING PANELS WITH 1/16 X 2-1/4 X 24-7/8 SHEET BALSA AS SHOWN. OUTSIDE OF SHEET SHOULD BE MOISTENED FOR EASY BENDING. USE CEMENT GENEROUSLY ON ALL FRAMEWORK COVERED. HOLD IN PLACE WITH PINS UNTIL DRY, CHECKING CONSTANTLY TO PREVENT WARPS. USING 1/16 X 2 SHEET BALSA, COVER TOP AND BOTTOM OF SECTION BETWEEN W2 AND W3, USING PATTERN PROVIDED. CUT TWO EACH RIB W5 CAP-STRIPS FROM 1/16 SHEET BALSA. CEMENT SOLID STRIPS TO TOP OF W5 RIBS BETWEEN LEADING EDGE SHEET COVERING AND TRAILING EDGE. CEMENT SLOTTED STRIP ON BOTTOM, BEING CERTAIN THAT SLOT IS DIRECTLY OVER OPENING BETWEEN RIBS. BREAK OFF 1/4 STRIPS FROM 1/16 STRIP SHEET FOR RIB-CAP-STRIPS. CEMENT TO TOP AND BOTTOM OF REMAINING RIBS BETWEEN LEADING EDGE COVERING AND TRAILING EDGE AS SHOWN. WHEN INSTALLATIONS ARE DRY, REMOVE ALL PINS AND TRIM WING TIPS TO SHAPE. ROUND OFF TIPS TO BLEND SMOOTHLY INTO LEADING AND TRAILING EDGE AS SHOWN ON SECTION AND CROSS SECTION. ENTIRE WING STRUCTURE IS NOW SANDED SMOOTH TO PREPARE FOR SILKSPAN COVERING. IF WIZARD IS BEING BUILT FOR CONTROL LINE FLYING, ADD 1-1/2 OUNCES OF WEIGHT TO RIGHT TIP OF WING. COVER WING WITH SILKSPAN APPLIED WET. WHEN DRY, APPLY TWO COATS OF HOT FUEL PROOF DOPE CHECKING STRUCTURE CONSTANTLY FOR WARPS. IF WARP SHOULD OCCUR, APPLY ADDITIONAL COAT OF DOPE AND TWIST IN OPPOSITE DIRECTION HOLDING UNTIL DRY. WING IS NOW READY TO BE PAINTED AS DESCRIBED IN PAINT NOTE DETAIL.



BOTTOM WING CONSTRUCTION

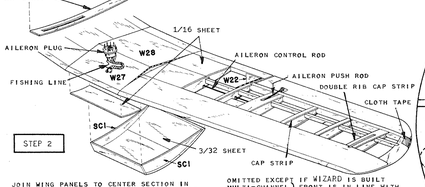
STEP 1



CUT TWO REAR SPARS TO LENGTH FROM 3/16 X 1/4 X 21-7/8 STRIP. CEMENT W21 TO RIB W16 FLUSH WITH REAR, MAKE ONE EACH LEFT AND RIGHT, WHEN DRY DRILL 1/16 HOLES THROUGH PUNCH MARKS. MAKE TWO WING TIP ASSEMBLIES BY CEMENTING DOUBLE LAYER OF W17'S AND W20'S TOGETHER AS SHOWN. WING FRAMEWORK IS ASSEMBLED ON PLAN. SLIDE RIBS ONTO REAR SPAR IN NUMERICAL ORDER SHOWN. DO NOT CEMENT UNTIL FRAMEWORK IS COMPLETED. PIN SHORT TRAILING EDGE AND 1/4 X 7/16 AILERON SPAR (CUT TO PROPER LENGTH) TO PLAN. CEMENT RIBS IN PLACE CENTERING SAME ON TRAILING EDGE AND AILERON SPAR WHICH ARE ALSO DESCRIBED IN TOP WING CONSTRUCTION. DO NOT USE CEMENT ON DOUBLE W18 RIBS. IF WIZARD WILL USE RADIO AILERON CONTROL, INSERT W29 INTO NOTCHES BETWEEN RIBS W16 AND W17 WHEN CEMENTING AND GLUING OF RIBS TO TRAILING EDGE. PIN RIBS TO PLANS TO KEEP FRAMEWORK IN ALIGNMENT. INSTALL 3/16 SQ. LEADING EDGE TO FRONT OF RIBS CEMENTING SECURELY TO ALL RIBS EXCEPT W18 DOUBLE RIBS. INSTALL 1/8 SQ. STRIPS INTO NOTCHES IN TOP OF RIBS CEMENTING IN PLACE TO ALL EXCEPT DOUBLE RIBS W18. CEMENT W31 BETWEEN RIBS W18 AS SHOWN, SO THAT LONGEST SIDE IS ON TOP. CEMENT W18B FLUSH WITH BOTTOM, FROM 1/8 SQ. STRIPS TO REAR SPAR, BETWEEN

DOUBLE RIBS W18 TO FORM POCKET FOR OUTER WING STRUT. ASSEMBLY (DOUBLE W18 RIBS) IS CEMENTED AGAINST ANGLED EDGE OF W31 SO THAT TOP OF RIBS ANGLE TOWARDS WING TIP, AT THIS TIME ASSEMBLY CAN ALSO BE CEMENTED TO LEADING EDGE, 1/8 SQ. STRIP AND AILERON SPAR. JOINT BETWEEN RIBS AND REAR SPAR MAY ALSO BE SECURELY CEMENTED. CEMENT WING TIP ASSEMBLY IN PLACE RAISING TIP 3/16" AS SHOWN. CEMENT TRIANGULAR GUSSET W13 IN CORNERS OF W15 AT LEADING AND TRAILING EDGE. ALLOW FRAME TO DRY THOROUGHLY ON FLAT SURFACE THEN REMOVE AND CEMENT 1/8 SQ. STRIPS INTO NOTCHES IN BOTTOM OF RIBS FROM W15 TO TIP, CEMENT W17A AND W17B VERTICALLY IN PLACE AS SHOWN IN SKETCH AND FULL SIZE WING DRAWING. W17A IS CENTERED ON AILERON SPAR WHEN VIEWED FROM FRONT. W17B IS FLUSH WITH TOP AND BOTTOM OF 1/8 SQ. STRIP, TRIANGULAR SHAPED AILERONS ARE CEMENTED TO PLACE CENTERED ON REAR OF AILERON SPAR WHEN VIEWED FROM REAR. IF AILERONS ARE NOT TO BE USED, CEMENT LIGHTLY SO THAT AILERON CAN BE EASILY

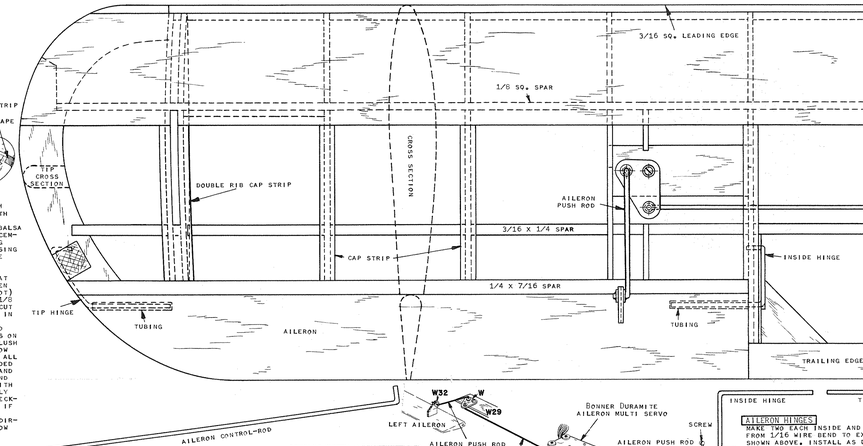
REMOVED; OTHERWISE CEMENT PERMANENTLY IN PLACE. IN LINE WITH RIBS WHEN VIEWED FROM SIDE. TRIM AILERON AND SPARS TO TOP VIEW SHAPE THEN REMOVE AILERON AND ROUND OFF FRONT AS SHOWN IN CROSS SECTION DRAWING. CUT A 3/32 SLOT IN FRONT OF AILERON AT LOCATION SHOWN, DRILL 1/16 HOLES THRU PUNCH MARKS IN W32 AND SECURELY CEMENT 1/16 EYELETS (PROVIDED IN KIT) INTO HOLES. INSERT AND SECURELY CEMENT HORN W32 FLUSH WITH BOTTOM AND FRONT OF AILERON, USING TWO HEAVY COATS OF CEMENT. LOCATE AND DRILL 1/8 HOLES IN BOTH ENDS OF AILERON AT EXACT LOCATION SHOWN ON CROSS SECTION AND FULL SIZE WING DRAWINGS. CUT 1-3/8 LENGTHS OF STEEL TUBING PROVIDED AND INSERT INTO HOLES CEMENTING SECURELY, DRILL 1/16 HOLES THROUGH WING TIP AT LOCATION SHOWN. BEND HINGE PINS FROM 1/16 WIRE USING PATTERNS PROVIDED. SECURELY CEMENT INSIDE AILERON HINGE IN PLACE WITH TWO HEAVY COATS OF CEMENT. INSERT AILERON INTO SPUR. INSERT SPUR OF TIP HINGE IN AILERON. OTHER SIDE IS INSERTED INTO HOLE IN TIP, AND CEMENTED SECURELY. USE TWO COATS OF CEMENT. WHEN DRY COVER WITH CLOTH TAPE AND APPLY A THIRD HEAVY COAT OF CEMENT. AILERON SHOULD NOW PIVOT FREELY AND EASILY. NOTCH AILERON SPAR AS SHOWN TO CLEAR HORN FOR MAXIMUM AILERON MOVEMENT. MAKE OPPOSITE WING PANEL IN SAME MANNER. ALLOW TO DRY THOROUGHLY ON FLAT SURFACE. BUILD CENTER SECTION BY MAKING LEADING AND TRAILING EDGE AS SHOWN IN DETAIL NOTE. FIT TRAILING EDGE DOWN ON PLANS. CEMENT RIBS FIRST AGAINST SHOULDERS FOR SAME IN W24 AND W25 AS SHOWN. NOTE THAT TOP OF RIBS ANGLE INWARD. THIS ANGLE MUST BE MAINTAINED TO INSURE PROPER DIHEDRAL WHEN ASSEMBLED. CEMENT REAR OF RIBS TO TRAILING EDGE (CENTER W WITH 3/16 SHIM) FLUSH WITH ENDS. PIN RIBS TO PLAN TO INSURE SQUARE ASSEMBLY. CEMENT LEADING EDGE TO FRONT OF RIBS FLUSH WITH ENDS. CEMENT ALL TRIANGULAR GUSSETS W13 IN PLACE AS SHOWN. DRILL 1/8 HOLES AT PUNCH MARKS IN W20 AND INSTALL FUEL TUBE (SEE DETAIL), NUT PLATES ARE USED ONLY FOR RADIO AILERON CONTROL, OTHERWISE THEY ARE OMITTED. CEMENT IN PLACE BETWEEN, AND INTO NOTCHES IN W14'S. ALLOW TO DRY THOROUGHLY BEFORE REMOVING FROM FLAT SURFACE.

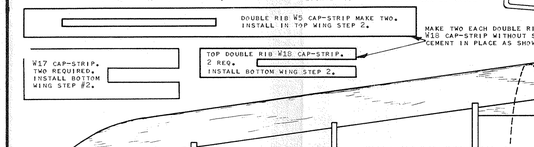


STEP 2

JOIN WING PANELS TO CENTER SECTION IN SAME MANNER AS TOP WING. DIHEDRAL ANGLE FROM FLAT SURFACE TO CENTER OF WING TIP IS 2-3/8". COVER TOP AND BOTTOM OF LEADING EDGE WITH 1/16 X 2 X 17-7/8 SHEET BALSA. AT THIS POINT (IF RADIO AILERON CONTROL IS USED) MUST BE INSTALLED AS DESCRIBED AND SHOWN IN DETAIL NOTE. COVER TOP OF CENTER SECTION WITH W27 AND W28 AS SHOWN. IF RADIO IS USED, DRILL HOLES THROUGH W27 FOR AILERON PLUG AND RETAINING CORD AT LOCATION SHOWN ON FULL SIZE PLANS. INSERT AND BEND WIRES THROUGH LARGE HOLE AND SOLDER TO RADIO AILERON PLUG AS DESCRIBED IN RADIO WIRING DETAIL NOTE. THREAD ONE END OF AN 8" LENGTH OF STRONG FISHING LINE THROUGH BOTH HOLES AND TIE SECURELY. THE OTHER END IS INSERTED THROUGH CENTER HOLE OF AILERON PLUG. TIE SEVERAL KNOTS IN LINE TO SECURE IN PLUG. CORD MUST BE SHORTER THAN SERVO WIRES SO THAT WHEN WING IS DETACHED FROM SERVO, SHOCK CORD PULLING OUT OF SOCKET IS TAKEN UP BY CORD AND NOT SERVO WIRES. COVER BOTTOM OF CENTER SECTION FROM LEADING EDGE TO W25 WITH 1/16 SHEET AS SHOWN. IF RADIO AILERONS ARE NOT USED COVER COMPLETELY TO TRAILING EDGE. ADD WING SECTIONS BETWEEN RIBS W25 ARE COVERED (TOP AND BOTTOM) WITH 1/16 SHEET AS SHOWN. CEMENT SC1'S VERTICALLY TO SHEET COVERING, DIRECTLY BELOW RIBS W25, (SC1'S AND COVERING FORM SERVO HOUSING. ENTIRE UNIT IS

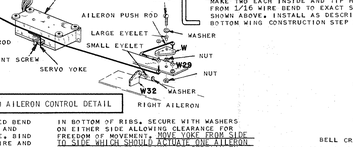
OMITTED EXCEPT IF WIZARD IS BUILT MULTI-TWIN. FRONT IS IN LINE WITH BELOW RIBS W16, FRONT IS IN LINE WITH REAR OF W25. COVER BOTTOM AND THEN FRONT OF SC1'S WITH 3/32 X 3 SHEET BALSA AS SHOWN. ALLOW TO DRY THOROUGHLY. CEMENT GUSSET W22 IN CORNER OF TRAILING EDGE AND W21 ON BOTH WING PANELS. USING PATTERN PROVIDED CUT TWO EACH DOUBLE RIB W18 CAP STRIPS FROM 1/16 SHEET. CEMENT SOLID STRIPS TO BOTTOM AND SLOTTED STRIP TO TOP, BEING SURE THAT SLOT IS DIRECTLY OVER OPENING BETWEEN RIBS. TRIM OUT NOTCH (CONTINUING SLOT) IN LEADING EDGE COVERING UP TO TOP 1/8 SQ. STRIP, USING PATTERN PROVIDED, CUT TWO EACH W17 CAP STRIPS AND INSTALL IN SAME MANNER. CEMENT 1/16 X 1/4 CAP STRIPS (FROM STRIP SHEET) TO TOP AND BOTTOM OF REMAINING RIBS. CAP STRIPS ON W16 ARE NOTCHED TO FIT AROUND AND FLUSH WITH SPAR AND AILERON AS SHOWN. ALLOW STRUCTURE TO DRY THOROUGHLY. REMOVE ALL PINS AND SAND SMOOTH. TIPS ARE ROUNDED OFF TO BLEND SMOOTHLY INTO LEADING AND TRAILING EDGES AS SHOWN ON SKETCH AND CROSS SECTION DRAWING. COVER WING WITH SILKSPAN APPLIED WET. WHEN DRY, APPLY TWO COATS OF HOT FUEL PROOF DOPE CHECKING STRUCTURE CONSTANTLY FOR WARPS. IF WARP SHOULD OCCUR, APPLY ADDITIONAL COAT OF DOPE AND TWIST IN OPPOSITE DIRECTION HOLDING UNTIL DRY. WING IS NOW READY TO BE PAINTED AS DESCRIBED IN PAINT NOTE DETAIL.





AILERON PUSH RODS

ONE EACH LEFT HAND AND RIGHT HAND REQUIRED. BEND TO EXACT SHAPE ON DRAWING ABOVE FROM 1/16 WIRE.

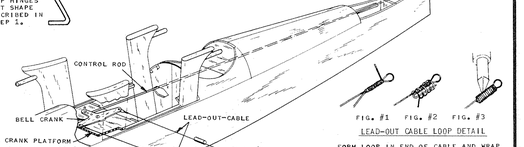


RADIO AILERON CONTROL DETAIL

USING FULL SIZE PATTERNS PROVIDED BEND AILERON CONTROL-ROD, SERVO-YOKE AND AILERON PUSH-RODS FROM 1/16 WIRE. BIND SERVO-YOKE IN PLACE WITH SOFT WIRE AND SOLDER SECURELY TO CONTROL-ROD IN POSITION SHOWN. DRILL 1/16 AND 1/8 DIA. HOLES (AS NOTED) THROUGH BELL CRANK W AND W29, SECURELY CEMENT PROPER SIZE EYELET (PROVIDED) INTO HOLES. INSERT VERTICAL SPUR OF AILERON PUSH-ROD IN BELL-CRANK AND SOLDER WASHERS TO EITHER SIDE OF SPUR AS SHOWN, LEADING ENOUGH CLEARANCE FOR BELL-CRANK TO PIVOT FREELY. INSTALL BOTH BELL-CRANKS USING 4/40 NUTS, WASHERS AND MACHINE SCREWS (NOT PROVIDED) IN MANNER SHOWN ON SKETCH. NUTS ON EITHER SIDE OF W29 ARE TIGHTENED TOWARD EACH OTHER ALLOWING ENOUGH CLEARANCE SO THAT BELL-CRANK PIVOTS FREELY AND EASILY. INSERT OPPOSITE SPUR OF PUSH-ROD THROUGH W32, SOLDERING WASHERS TO EITHER SIDE OF SPUR ALLOWING ENOUGH CLEARANCE FOR FREE MOVEMENT. CONTROL-ROD AND YOKE ASSEMBLY IS NOW INSTALLED SLIPPING SPURS INTO BOTTOM OF W16 AS SHOWN; HORIZONTAL PART FITS INTO NOTCHES FOR SAME IN BOTTOM OF RIBS. SECURE WITH WASHERS ON EITHER SIDE ALLOWING CLEARANCE FOR FREEDOM OF MOVEMENT. MOVE YOKE FROM SIDE TO SIDE WHICH SHOULD ACTUATE ONE AILERON UP AND ONE AILERON DOWN. BE CERTAIN ENTIRE SYSTEM WORKS FREELY AND EASILY. INSERT SERVO YOKE IN PLASTIC ADJUSTMENT LUG AND BOLT (NOT PROVIDED) BONNER DURAMITE MULTI-SERVO RECOMMENDED FOR WIZARD TO W26 AS SHOWN. THIS COMPLETES THE MECHANICAL HOOK-UP. SERVO IS NOW PLACED IN NEUTRAL POSITION ELECTRONICALLY. MAKE UP A SET OF SERVO BATTERIES AS SHOWN AND DESCRIBED IN MULTI-RADIO WIRING DETAIL. TEMPORARY CONNECT THE POSITIVE TERMINAL TO THE BLUE WIRE, THE NEGATIVE TERMINAL TO THE ORANGE WIRE, AND THE COMMON TERMINAL TO THE WHITE WIRE; NOW TOUCH GREEN AND BROWN WIRES TOGETHER MOMENTARILY AND SERVO WILL MOVE INTO NEUTRAL POSITION. AILERONS SHOULD NOW BE IN NEUTRAL POSITION. IF ONE IS UP AND ONE IS DOWN, ADJUSTMENT MUST BE MADE BY ROTATING PLASTIC ADJUSTMENT LUG ACCORDINGLY (IN OR OUT) ON BONNER SERVO AS SHOWN.

AILERON HINGES

MAKE TWO EACH INSIDE AND TIP HINGES FROM 1/16 WIRE BEND TO EXACT SHAPE SHOWN ABOVE. INSTALL AS DESCRIBED IN BOTTOM WING CONSTRUCTION STEP 1.



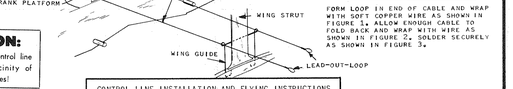


FIG. #1 FIG. #2 FIG. #3

LEAD-OUT CABLE LOOP DETAIL

FORM LOOP IN END OF CABLE AND WRAP WITH SOFT COPPER WIRE AS SHOWN IN FIGURE 1. ALLOW ENOUGH CABLE TO FOLD BACK AND WRAP WITH WIRE AS SHOWN IN FIGURE 2, SOLDER SECURELY AS SHOWN IN FIGURE 3.

CAUTION:

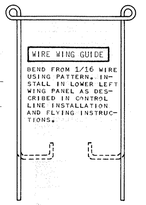
Do not fly control line models in the vicinity of electric power lines!

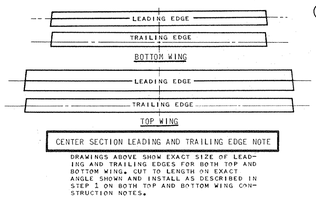
CONTROL LINE INSTALLATION AND FLYING INSTRUCTIONS

CONTROL EQUIPMENT DESCRIBED IN THE FOLLOWING INSTRUCTIONS IS NOT INCLUDED IN KIT BUT MUST BE PURCHASED SEPARATELY BY THE MODEL BUILDER. PREPARE BELL CRANK PLATFORM BY CEMENTING TWO PIECES OF PLYWOOD TOGETHER (FROM RADIO PLYMOOD PARTS WHICH ARE NOT BEING USED) LARGE ENOUGH TO FIT BETWEEN FUSELAGE FROM F3 TO F4 AS SHOWN. CUT PLATFORM TO FIT THEN CEMENT SECURELY IN PLACE FLUSH WITH TOP OF SIDES USING THREE HEAVY COATS OF CEMENT, ALLOWING SUFFICIENT TIME BETWEEN COATS FOR THOROUGH DRYING. DRILL A 1/8 HOLE IN CENTER OF PLATFORM 2" BEHIND BULKHEAD F3. MOUNT LARGE VECO (OR SIMILAR TYPE) BELL CRANK. BEND CONTROL ROD FROM 3/32 MUSIC WIRE (NOT PROVIDED) TO EXACT SIZE AND SHAPE SHOWN ON FULL SIZE DRAWING BELOW, INSERT THROUGH FUSELAGE AND ENGAGE IN BELL CRANK. REAR IS ENGAGED IN ELEVATOR HORN AFTER TAIL HAS BEEN INSTALLED. ENGAGE LEAD-OUT-CABLE IN BELL-CRANK AND BRING THROUGH HOLES MADE IN COWL AND STRUT. LOWER WING SHOULD BE CEMENTED PERMANENTLY IN PLACE TO BOTTOM OF FUSELAGE, USE THREE HEAVY COATS OF CEMENT AROUND ALL JOINTS. CHECK THAT WING IS HORIZONTAL AND IN LINE WITH STABILIZER, ALLOW TO DRY THOROUGHLY BEFORE PROCEEDING. PLACE TOP WING IN POSITION ON CENTER STRUTS AND LASH WING FIRMLY IN PLACE WITH FRESH STRANDS OF 1/8 OR 1/4 RUBBER (SEE YOUR DEALER). CHECK THAT UPPER WING IS IN ALIGNMENT WHEN VIEWED FROM FRONT, SIDE AND TOP. ROUND OFF FRONT AND BACK OF OUTER STRUTS, LEAVING TOP AND BOTTOM SQUARE. PRE-GLUE BOTTOM OF STRUT AND SOCKET FOR SAME, ON EITHER SIDE OF LOWER WING. WHEN DRY, ADD ADDITIONAL COAT OF CEMENT AND CAREFULLY INSERT STRUTS IN SOCKET. TOP OF STRUTS ARE ENGAGED IN POCKET FOR SAME IN TOP WING, BUT ARE NOT CEMENTED SINCE TOP WING REMAINS REMOVABLE. APPLY THREE HEAVY COATS OF CEMENT AROUND LOWER STRUT JOINT ALLOWING SUFFICIENT TIME FOR THOROUGH DRYING BETWEEN COATS, BEND WING GUIDE FROM 1/16 WIRE USING PATTERN PROVIDED. DRILL HOLES FOR SAME THROUGH DOUBLE RIBS IN LEFT SIDE OF WING AND INSERT WING GUIDE AS SHOWN, TOP AGAINST INSIDE OF STRUT. BEND BOTTOM LEG TO FORM SPUR. A UNIT IS THEN PULLED UP ENGAGING SPURS IN BOTTOM OF DOUBLE RIBS THIS SECURING SAME. BIND TOP OF WING GUIDE TO STRUT WITH THREAD THEN APPLY THREE HEAVY COATS OF CEMENT AROUND ENTIRE INSTALLATION (TOP AND BOTTOM) ALLOWING SUFFICIENT TIME TO DRY THOROUGHLY BETWEEN COATS. LEAD-OUT-CABLES ARE INSERTED THROUGH LOOPS IN WING GUIDE AND LEAD-OUT-LOOPS ARE MADE AS SHOWN 3" PAST WING GUIDES. CHECK SYSTEM FOR FREENESS OF OPERATION BY PULLING ON LEAD-OUT-CABLES. SYSTEM MUST BE CHECKED BEFORE EACH FLIGHT. MODEL MUST BALANCE SLIGHTLY NOSE DOWN AT LOCATION OF FRONT LINE. DO NOT ATTEMPT TO FLY MODEL UNTIL THIS BALANCE IS CORRECT. ADD WEIGHT TO NOSE IF NECESSARY. BE CERTAIN THAT RUDDER IS OFFSET 3/4" TOWARDS OUTSIDE OF CIRCLE FLOWN. COWL WHICH WAS BUILT AS A REMOVABLE UNIT MAY NOW BE PERMANENTLY CEMENTED IN PLACE. GOOD LUCK! HAPPY LANDINGS!!!

WIRE WING GUIDE

BEND FROM 1/16 WIRE USING PATTERN. INSTALL AS DESCRIBED IN CONTROL LINE INSTALLATION AND FLYING INSTRUCTIONS.





CENTER SECTION LEADING AND TRAILING EDGE NOTE

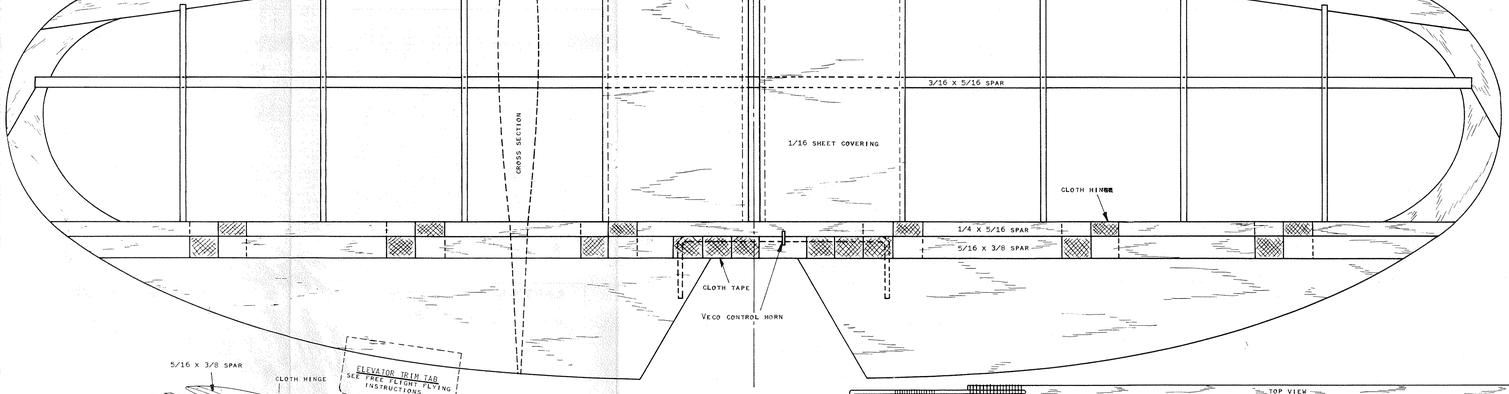
DRAWINGS ABOVE SHOW EXACT SIZE OF LEADING AND TRAILING EDGES FOR BOTH TOP AND BOTTOM WING. CUT TO LENGTH ON EXACT ANGLE SHOWN AND INSTALL AS DESCRIBED IN STEP 1 ON BOTH TOP AND BOTTOM WING CONSTRUCTION NOTES.

DOUBLE RIB W5 CAP-STRIP MAKE TWO. INSTALL IN TOP WING STEP 2.

TOP DOUBLE RIB W18 CAP-STRIP. 2 REQ. INSTALL BOTTOM WING STEP 2.

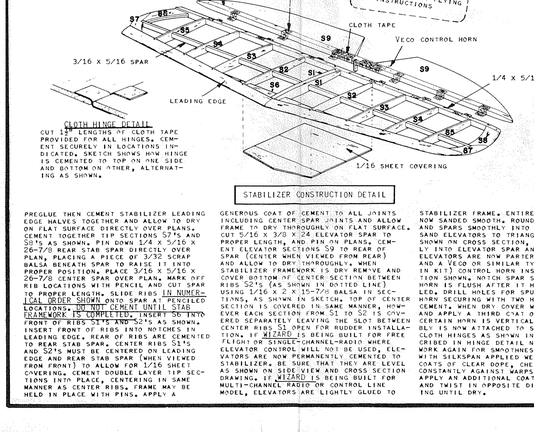
W17 CAP-STRIP. TWO REQUIRED. INSTALL BOTTOM WING STEP #2.

MAKE TWO EACH DOUBLE RIB W5 & W18 CAP-STRIPS WITHOUT SLOT. CEMENT IN PLACE AS SHOWN.



AILERON CONTROL-ROD AND SERVO YOKE

USING 1/16 WIRE BEND AILERON CONTROL ROD TO EXACT SHAPE SHOWN ABOVE. BEND SERVO YOKE FROM 1/16 WIRE TO SHAPE SHOWN ABOVE AND BIND IN LOCATION SHOWN WITH SOFT WIRE AND SOLDER SECURELY. INSTALL AS DESCRIBED IN RADIO AILERON CONTROL DETAIL.



CLOTH HINGE DETAIL

CUT 1" LENGTHS OF CLOTH TAPE PROVIDED FOR ALL HINGES. CEMENT SECURELY IN LOCATIONS INDICATED. SKETCH SHOWS HOW HINGE IS CEMENTED ON ONE SIDE AND BOTTOM ON OTHER, ALTERNATING AS SHOWN.

STABILIZER CONSTRUCTION DETAIL

PREGLUE THEN CEMENT STABILIZER LEADING EDGE HALVES TOGETHER AND ALLOW TO DRY ON FLAT SURFACE DIRECTLY OVER PLANS. CEMENT TOGETHER TIP SECTIONS S7'S AND S8'S AS SHOWN. PIN DOWN 1/4 X 5/16 X 26-7/8 REAR STAB SPAR DIRECTLY OVER PLAN. PLACE A PIECE OF 3/32 SHEET BALSA BENEATH SPAR TO RAISE IT INTO PROPER POSITION. PLACE 3/16 X 5/16 X 26-7/8 CENTER SPAR OVER PLAN. MARK OFF RIB LOCATIONS WITH PENCIL AND CUT SPAR TO PROPER LENGTH. SLIDE RIBS IN NUMERICAL ORDER SHOWN ONTO SPAR AT PENCILED LOCATIONS. DO NOT CEMENT UNTIL STAB FRAMEWORK IS COMPLETED. INSERT S9 INTO FRONT OF RIBS S1'S AND S2'S AS SHOWN. INSERT FRONT OF RIBS INTO NOTCHES IN LEADING EDGE. REAR OF RIBS ARE CEMENTED TO REAR STAB SPAR. CENTER RIBS S3'S AND S2'S MUST BE CENTERED ON LEADING EDGE AND REAR STAB SPAR (WHEN VIEWED FROM FRONT) TO ALLOW FOR 1/16 SHEET COVERING. CEMENT DOUBLE LAYER TIP SECTIONS INTO PLACE, CENTERING IN SAME MANNER AS CENTER RIBS. FRAME MAY BE HELD IN PLACE WITH PINS. APPLY A G