

NUMBER DRILL BITS:
 #40=PILOT HOLES (.098")
 #30=A4 (.129")
 #20=A5 (.161")

CLECO COLOR CODE
 COPPER =#30 HOLE
 ALUMINUM=#40
 BLACK =#20

RIVET DESCRIPTION
 A4 = AVEX 1/8" BLIND RIVET
 A5 = AVEX 5/32" BLIND RIVET

STEP 6: DRILLING THE RIBS:
 WITH A MARKER, DRAW A LINE IN THE MIDDLE OF THE RIB FLANGE. CLAMP THE RIB TO THE SPAR. CHECK THE RIB IS CENTERED BETWEEN THE LEFT AND RIGHT SPAR FLANGE. BACK-DRILL & CLECO A FIRST HOLE WHEN THE RIB FLANGE CENTER LINE IS VISIBLE THROUGH THE DRILLED HOLES IN THE SPAR.

EDGE DISTANCE:
 DISTANCE FROM THE CENTER OF THE HOLE TO EDGE OF THE SKIN. APPROX. 10MM (2.5 X DIAMETER)

STEP 5: SQUARE THE BOTTOM OF THE SPAR FLUSH AND EVEN WITH THE HORN. THE FRONT FLANGE OF THE RIB FITS INSIDE THE SPAR AND OVERLAPS ON TOP OF THE DOUBLERS.

STEP 10: RIVETER NOSE PIECE:
 ALWAYS USE A SPECIAL CONCAVE MACHINED NOSE PIECE ON THE RIVETER TO TRANSFORMS THE FLAT COUNTERSUNK RIVET HEAD INTO A ROUND DOME HEAD. CHECK: THE EDGE OF THE RIVET HEAD MAKES FULL CONTACT WITH THE SKIN; THERE IS NO GAP BETWEEN THE RIVET AND THE SKIN.

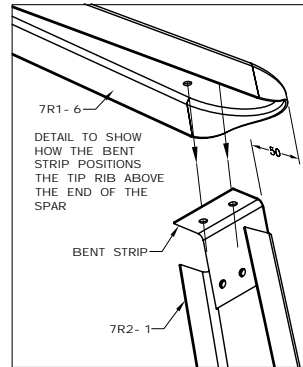
STEP 3: NOTE: IN THE RUDDER WORK THE UPPER RUDDER HINGE ANGLES 7F2-4 ARE NOT INSTALLED. THE AREA IS MARKED AS A "NO RIVET ZONE" TO ALLOW EXACT ALIGNMENT WITH THE FUSELAGE ATTACHMENT POINTS.

STEP 8: UNCLECO THE SKELETON AND DEBUR HOLES

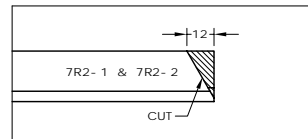
TRACE THE OUTLINE OF BOTTOM RIB ON THE HORN

STEP 4: MARK A LINE AT 24mm FROM THE FRONT EDGE OF THE HORN. CLAMP A PIECE OF EXTRUSION (USE 7R2-4) ON THE 24mm LINE.

STEP 4: POSITION THE HORN AND EXTRUSION ASSEMBLY ON BOTTOM RIB 7R1-1 BY LINING UP CENTERLINES, TRACE AROUND THE HORN. REMOVE HORN AND LAYOUT 10 HOLES AT PIVET PITCH FROM THE OUTLINE AND EDGE. SEE PART #3 ON DRAWING 7R2 FOR RIVET LAYOUT.

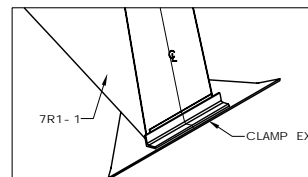
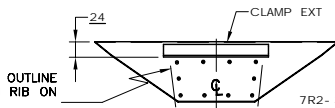


STEP 7: MARK A LINE AT 50mm FROM THE FRONT OF THE RIB. POSITION THE FRONT EDGE OF THE BENT STRIP ON THE 50MM LINE. CHECK: 1318 FROM BOTTOM OF THE SPAR TO THE TOP OF 7R1-6.



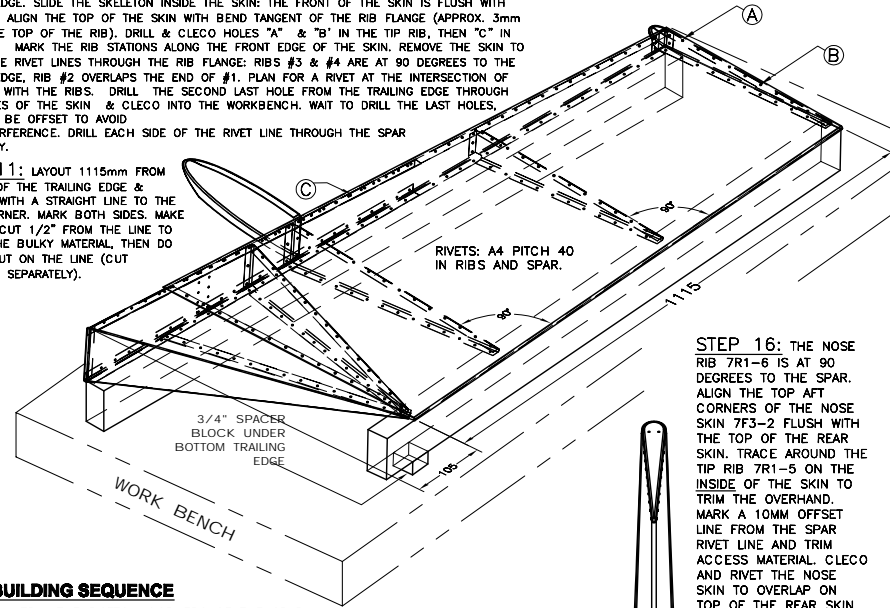
STEP 1: TRIM THE BOTTOM CORNERS OF THE SPAR. LINE UP DOUBLER FLUSH TO THE END OF THE SPAR. TRACE & TRIM.

STEP 2: CLAMP THE DOUBLES FLUSH WITH THE BOTTOM OF THE SPAR.



STEP 12 & 13: POSITION THE RUDDER ON THE BOARDS (TO KEEP THE TRAILING EDGE STRAIGHT) THEN POSITION THE SPACER BLOCK BETWEEN THE WORKBENCH AND THE BOTTOM TRAILING EDGE. SLIDE THE SKELETON INSIDE THE SKIN: THE FRONT OF THE SKIN IS FLUSH WITH THE SPAR, ALIGN THE TOP OF THE SKIN WITH BEND TANGENT OF THE RIB FLANGE (APPROX. 3mm BELOW THE TOP OF THE RIB). DRILL & CLECO HOLES "A" & "B" IN THE TIP RIB, THEN "C" IN THE SPAR. MARK THE RIB STATIONS ALONG THE FRONT EDGE OF THE SKIN. REMOVE THE SKIN TO LAYOUT THE RIVET LINES THROUGH THE RIB FLANGE: RIBS #3 & #4 ARE AT 90 DEGREES TO THE TRAILING EDGE, RIB #2 OVERLAPS THE END OF #1. PLAN FOR A RIVET AT THE INTERSECTION OF THE SPAR WITH THE RIBS. DRILL THE SECOND LAST HOLE FROM THE TRAILING EDGE THROUGH BOTH SIDES OF THE SKIN & CLECO INTO THE WORKBENCH. WAIT TO DRILL THE LAST HOLES. THEY WILL BE OFFSET TO AVOID RIVET INTERFERENCE. DRILL EACH SIDE OF THE RIVET LINE THROUGH THE SPAR SEPARATELY.

STEP 11: LAYOUT 1115mm FROM THE TOP OF THE TRAILING EDGE & CONNECT WITH A STRAIGHT LINE TO THE FRONT CORNER. MARK BOTH SIDES. MAKE A ROUGH CUT 1/2" FROM THE LINE TO REMOVE THE BULKY MATERIAL, THEN DO A FINAL CUT ON THE LINE (CUT EACH SIDE SEPARATELY).



BUILDING SEQUENCE

1. TRIM THE BOTTOM CORNERS OF THE SPAR
2. POSITION THE DOUBLERS FLUSH WITH THE BOTTOM OF THE SPAR & TRIM. MARK THE RIVET LINE IN THE MIDDLE OF THE FLANGE THAT OVERLAPS THE SPAR WEB, CLAMP DOUBLER INSIDE THE SPAR.
3. LAYOUT THE RIB STATIONS ON THE INSIDE OF THE SPAR, MARK THE NO RIVET ZONE FOR THE UPPER BEARINGS, PITCH 40 BETWEEN THE RIB STATION AND THE TOP OF THE DOUBLER. DRILL AND CLECO WITH #30 EVERY THIRD HOLE IN THE DOUBLER, THEN GO BACK AND DRILL THE IN BETWEEN HOLES.
4. CLECO THE HORN 7R2-3 TO BOTTOM RIB 7R1-1
5. LOCATE THE BOTTOM RIB INSIDE THE SPAR, SQUARE THE BOTTOM OF THE SPAR FLUSH WITH THE HORN. CLAMP THE SIDE OF THE RIB TO THE SPAR FLANGE. DRILL AND CLECO FRONT FLANGE WITH 4 X A4 (#30 HOLES).
6. CONTINUE TO DRILL THE REAR RIBS TO THE SPAR, ADD THE NOSE RIB ON THE FRONT SIDE OF THE SPAR. NOTE: THE RIB FLANGES POINT DOWN.
7. CLECO THE BENT STRIP TO THE TIP RIB 7R1-5. POSITION THE RIB ASSEMBLY AT THE END OF THE SPAR LEAVING A FEW MILLIMETERS BETWEEN THE RIB FLANGE AND THE SPAR.
8. DEBUR HOLES AND ROUGH EDGES AND CORNS.
9. REASSEMBLE AND CLECO SKELETON (WITHOUT THE HORN).
10. RIVET RUDDER SKELETON ASSEMBLY: PLACE THE HEAD OF THE RIVET ON THE FRONT SIDE OF THE SPAR.
11. CUT THE BOTTOM ANGLE OF THE REAR SKIN 7R2-1
12. POSITION THE RUDDER SKELETON ASSEMBLY IN SIDE OF SKIN TO MARK RIB STATIONS.
13. PRE-DRILL REAR SKIN WITH #40 PILOT HOLES.
14. CLECO THE SKIN AT POINT A,B & C. DRILL & CLECO TO SKELETON WITH #30 WHEN THE RIB FLANGE CENTER LINE IS VISIBLE. TURN OVER AND DRILL THE OTHER SIDE (WAIT TO DRILL THROUGH THE SPAR).
15. SLIDE THE LEADING SKIN IN BETWEEN THE SPAR AND THE REAR SKIN AND DUCT TAPE DOWN; DRILL AND CLECO THROUGH THE SPAR: START IN THE MIDDLE AND WORK OUTWARDS. DRILL & CLECO THE OTHER SIDE.
16. DRILL THE NOSE RIB BETWEEN THE CRIMPS.
17. DEBUR & RIVET FINISH RUDDER.
18. CUT THE HORN 7R2-3

STEP 16: THE NOSE RIB 7R1-6 IS AT 90 DEGREES TO THE SPAR. ALIGN THE TOP AFT CORNERS OF THE NOSE SKIN 7F3-2 FLUSH WITH THE TOP OF THE REAR SKIN. TRACE AROUND THE TIP RIB 7R1-5 ON THE INSIDE OF THE SKIN TO TRIM THE OVERHAND. MARK A 10MM OFFSET LINE FROM THE SPAR RIVET LINE AND TRIM ACCESS MATERIAL. CLECO AND RIVET THE NOSE SKIN TO OVERLAP ON TOP OF THE REAR SKIN.

THE FINISHED RUDDER HAS NO TWIST WHEN THE TRAILING EDGE SPLITS THE TAPERED SPAR IN THE MIDDLE. FROM A DISTANCE SIGHT THE TOP OF THE TRAILING EDGE IN THE MIDDLE OF SPAR, DROP OUT OF LINE OF SIGHT TO CHECK THE BOTTOM.

STOL CH 701	ORIGINAL INFO MJM 02/21/01	DESCRIPTION STOL 701 RUDDER WORKSHOP	ASSY NO.
	REVISION INFO	REF. DRAWINGS: 7R0, 7R1, 7R2, 7R3	7RW
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