

ZODIAC CH 601 Series Kit Aircraft

THE FOLLOWING IS A DRAFT MANUAL

This manual has been written and published strictly for informational purpose. It has been prepared as a guide to facilitate the assembly of the ZODIAC CH 601 kit aircraft. It is published to supplement (and not replace) the Zenair drawings and manuals. If a discrepancy arises between this informational manual and the Drawings, the Drawings always take precedence.

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HDS OUTBOARD WINGS WORK REPORT

Step #	Check	Parts / Tools	Qty
1	<input type="checkbox"/>	6SV3-6 HDS Rear Bottom Skin .016 (the Skin is PRE-DRILLED for the Ribs L stiffeners & trailing edge)	2
1	<input type="checkbox"/>	6SV3-5 HDS Rear Top Skin .025 (the Skin is PRE-DRILLED for the Ribs L stiffeners & trailing edge)	2
1	<input type="checkbox"/>	L Angles (length = 4feet)	20
1	<input type="checkbox"/>	Tool: 1 x 2 furring strip (3/4" board) 4 feet long.	1
2	<input type="checkbox"/>	6SV4-2HDS O/B Splice Plate	2
2	<input type="checkbox"/>	6V7-11Rear Zee	2
9	<input type="checkbox"/>	6SV2 HDS Tapered O/B Main Spar. (The Spar is PRE-DRILLED for the Rib stations)	1L+1R
10	<input type="checkbox"/>	6SV1-1S6 to 6SV1-1S9HDS Nose Ribs.	4L +4R
10	<input type="checkbox"/>	6SV3-2HDS Wing tip Ribs	1L + 1R
11	<input type="checkbox"/>	6SV1-2S6 to 6SV1-2S9HDS Rear Rib.	4L+4R
16	<input type="checkbox"/>	Tool: Crimping tool (see page 5 of the Construction Manual).	
21	<input type="checkbox"/>	6SV3-4Leading Edge (tapered)	2
22	<input type="checkbox"/>	Tool: 1" wide ratchet type straps: 12ft	6
22	<input type="checkbox"/>	Tool: two straight 4 foot beams.	
23	<input type="checkbox"/>	6V3-1Tie Down Ring	2
25	<input type="checkbox"/>	6SV4-3HDS Fiberglass wing tip	1L + 1R
26	<input type="checkbox"/>	6SV3-1 HDS Ailerons Skins	2
26	<input type="checkbox"/>	6V10-3Aileron Ribs .016	3L + 3R
27	<input type="checkbox"/>	6V10-31Aileron Root Rib .025	2
30	<input type="checkbox"/>	6SV3-3Aileron Tip Rib	1L + 1R
32	<input type="checkbox"/>	6SV4-5Wing Locker Door	2
33	<input type="checkbox"/>	6SV4-4HDS Channel	2
34	<input type="checkbox"/>	Piano Hinge length = 540mm	2
35	<input type="checkbox"/>	AJ5-30 Dzus fasteners	16
35	<input type="checkbox"/>	S5A-2255 Dzus Spring	16

SIGNATURES: Builder _____ date

Inspector _____ date

L ANGLES STIFFENERS

V-2

L Angles stiffeners are positioned midway between the ribs on the Top and Bottom Skins - except for the first two inboard ribs at ribs #6 and #7 for the wing locker.

The aft edge of the top L Angles overlap on top of the Rear Zee flange (right middle diagram on 6F8)

1. Back-drill the L Angles Stiffeners for the top and Bottom Skins (left and right sides). The Stiffeners are crimped later to the same curvature as the ribs.

REFERENCE: 6SV4 top right diagram, 6V8. Page 17 of the Construction Manual.

POSITION: Between the Rear Ribs.

WING LOCKER: The wing locker replaces the first Skin Stiffener between R.R #6 and #7

NOTE: The definition of an L Angle is shown in the upper right hand diagram on drawing 6V5. These are supplied in 4 feet length flanges of equal width bent at 90 degrees (the wiggle line in front of the 19 means an approximately, dl=36 stand for developed length: the width of the flat sheet before it is bent).

LAYOUT: a) Mark the center line on the outside flange of 12 L Angles (4ft length)

b) Identify the rib station and the position of the L Angles on the pre-drilled skins.

c) The L Angles face the towards the Root or fuselage, see 6V8

BACK-DRILL: Drill through the pilot holes when the center line of the L angle is visible.

a) Place the L Angle over the edge of a 1 x 2 furring strip (3/4" board), slide the board and L Angle and board under the Skin.

b) Allow the L Angle to overhand the front edge of the Skin by approximately 1/2" inch.

c) Back drill and Cleco an end hole when the flange center line is visible. Drill and Cleco a second hole before drill the inbetween holes.

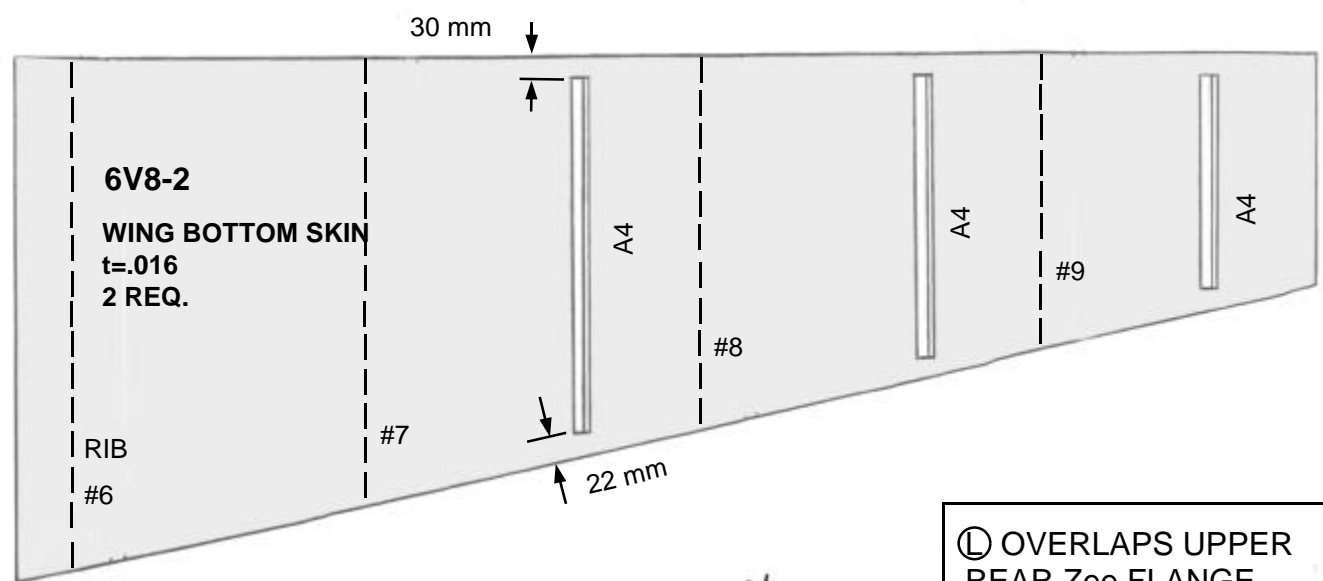
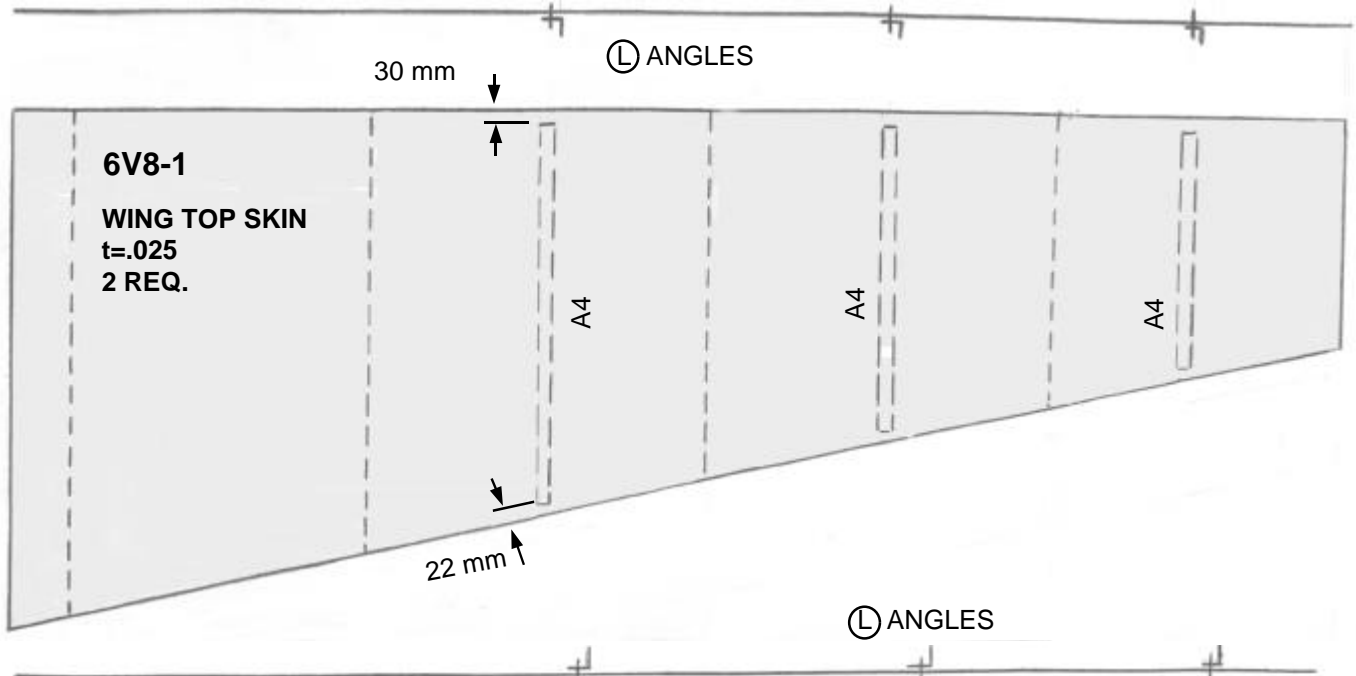
CUT: Mark the width of the Skin on the L Angle, use a marker to trace the edge of the Skin on the L Angle. Remove the L Angle to mark the cut line:

a) From the mark traced along front edge of the Top Skins, go in 30mm (the front of the L Angle to clear the Main Spar top extrusions).

c) From the mark traced along the aft edge of the Top Skin go in 2mm (the L Angle is to overlap on top of the Rear Zee 6V7-11 flange – setting the end of the L angle 2mm back from the aft edge of the Skin will provide just enough clearance for to keep the end of the L angle clear of the Rear Zee radius of the top flange).

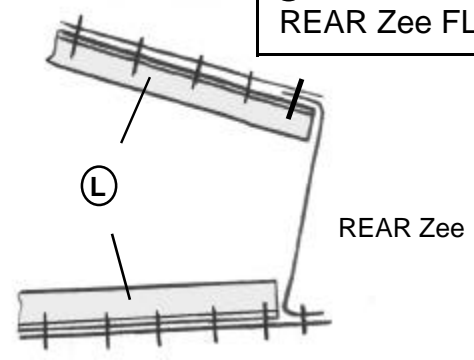
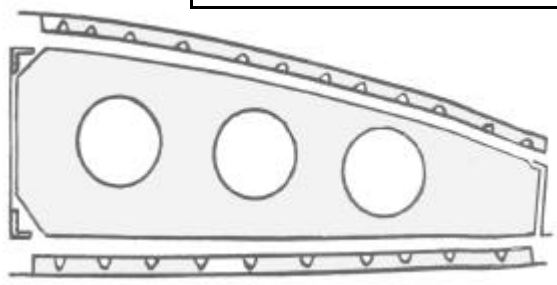
d) Bottom Skin: the front edge of the L angle is also 30mm in from the edge of the Skin

e) Go in 22mm from the aft edge of the bottom Skin (this is the width of the Rear Zee bottom flange).



CRIMP Ⓛ TO THE SHAPE OF THE RIB

Ⓛ OVERLAPS UPPER REAR Zee FLANGE



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CH 601

Drawing Rev.
1st Edition: 7-96

Description:
(L) WING SKIN STIFFENER

V-3

SPLICE PLATE & REAR ZEE LAYOUT

V-4

Rib station #6 is layout on the Rear Zee by the positioning the Splice plate: first mark the position of the Rib at 24mm from the end of the Splice Plate, then position the Splice plate on the Rear Zee on a 123mm overlap. The remaining Rib are evenly spacing at 571mm from Rib #6.

2. Cleco the Rear O/B Splice Plate 6SV4-2 to the Rear Zee 6V7-11

NOTE : Install the Splice Plate with the 20degrees up and the 33degrees down (reference 6V7 – for maximum clearance on the bottom for the Aileron control rod).

LAYOUT: a) On the Splice Plate 6SV4-2, mark the position of Rear Rib #6 at 24mm from the O/B end of the Plate. Rib #6 is designated as “o” on drawing 6SV4 with 5 A5
b) Mark the 4 rivet lines.

NOTE : On the Main Spar, Rib #6 is set at 110mm measured along the top spar extrusion, see bottom right diagram on 6SV1 and top left diagram on 6SV2

PRE-DRILL: With undersize pilot holes #40

CLAMP: The Splice Plate to the Rear Zee, the parts overlap 123mm (2380 - 2257 = 123).

CHECK: a) That the bottom of the Splice Plate is positioned at the beginning of the bent tangent line of the bottom Rear Zee flange.

b) The top of the Splice Plate is slightly lower than the top flange of the Rear Zee.

b) The end of the Rear Zee is on or just shy of the 15 degree bend tangent line of the Splice Plate (6SV4-2 is bent 15 degrees towards the front).

c) 100mm from the inboard (I/B) end of the Rear Zee to the center line of Rib #6

DRILL & CLECO:

a) Back-drill the Rear Zee at Rib #6 with pilot holes #40

b) Back-drill the 4 rivet lines with #20

3. Pre-drill the Rear Zee 6SV4-2 for the Rear Ribs.

LAYOUT: The Ribs are at 90 degrees to the bottom flange of the Rear Zee. The Ribs are evenly space 571mm apart starting at Rib #6

CHECK: Hold the Rear Zee along the aft trailing edge of the Skins and check for the Rib alignments with the pre-drilled skins.

SUGGESTION: To determine the position of the end holes (top and bottom hole on the Rear Zee), clamp a Rear Rib to the top flange of Rear Zee to mark the top and bottom end hole for good edge distances of approximately 10mm. (Referenced from the bottom flange, the three holes are at: 12, 40 and 70mm).

PRE-DRILL: The rib stations with pilot hole #40 in the Rear Zee. The 11 degree flange faces forwards towards the main spar.

4. Cut the O/B end of the Rear Zee 6V7-11 at 45 degrees.

REFERENCE: Rear Zee drawing on the upper left diagram on drawing 6SV4

LAYOUT: The overall length measured along the top flange is 2380mm.

CHECK: The distance measured along the top flange from the O/B tip to Rear Rib #9 is 567mm.



6SV4-2

SPICE PLATE
t=063
1 REQ.



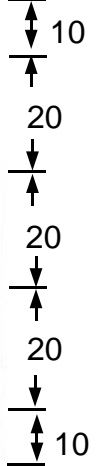
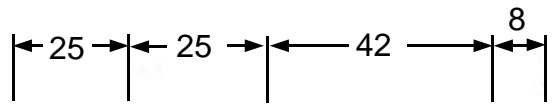
15 mm RADIUS TO PILOT HOLE

20 deg.

33 deg.

BEND

PILOT HOLES



RIB STATION #6

CUT TIP AT 45 deg.

6V7-11

REAR ZEE
t=025
2 REQ.
l=2428

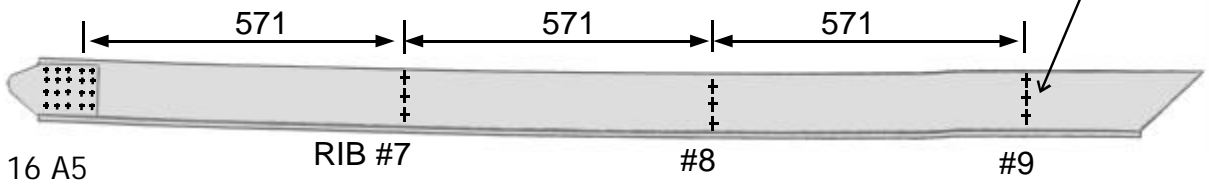
2380

RIGHT WING

SPICE PLATE OVERLAPS THE REAR ZEE 123mm

PILOT HOLE

PILOT HOLES



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Description:
POSITION REAR ZEE

V-5

NOSE RIBS

V6

The Rib stations are defined by the pre-drilled holes in the Main Spar. A common rivet line through the Nose Rib Flange and the and Rear Rib flange will hold the Ribs on both sides of the Spar web.

DESIGN FEATURES OF THE WING SKELETON

- The bottom of the Rib is flat and at 90 degrees to the Spar Web.
 - The Rib Stations are at 90 degrees with the top of the spar.
 - The Ribs are evenly spaced at interval of 560mm (center line to center line) measured along the top of the Spar.
 - Rib #6 is positioned at 110mm from the bottom corner of the spar as shown on 6SV2
 - The Ribs are parallel to each other and at 90 degrees to the bottom spar extrusion.
5. Rivet the L Angle at the O/B end of the Main spar.

REFERENCE: Bottom diagram on 6SV2

POSITION: a) The flange overlaps the Spar extrusions on the front side (web side).
b) The L Angle flange faces aft (like the spar extrusion)

CLAMP & CLECO: Clamp and drill with #20 in the top and bottom extrusion.

CUT: Mark and trim the top and bottom angle flush with the spar. Rivet with one A5

6. Cleco the Nose Ribs to the pre-drilled Main Spar.

REFERENCE: 6SV2

LAYOUT: a) Mark the flange center lines on the Rib.

b) On the Main Spar, connecting the pre-drilled holes at each rib station with a vertical line. (front and back side of the Spar). Also extend the line on the top and bottom spar extrusion (this reference line will be used later to help center the pre-drilled skins over the center of the ribs).

POSITION: a) The Rib flanges face inboard towards the wing root (left & right Ribs).

b) Clamp the Nose Rib to the spar over the pre-drilled holes along the top and bottom extrusion.

c) Also clamp Nose Rib #6 to the L Angle (already riveted to the Spar).

CHECK: a) Use a square against the side of the Rib and the top of the Spar extrusion to Check the 90 degree angle.

b) The flange center line is visible through the Spar Web pre-drilled holes.

c) Check the alignment of the bottom flange of the Rib is flush and even with the Spar extrusion – if necessary adjust the width of the Rib by working on the top flange.

d) The Rib flange center line lines up with the Rib station previously marked on the Spar extrusion.

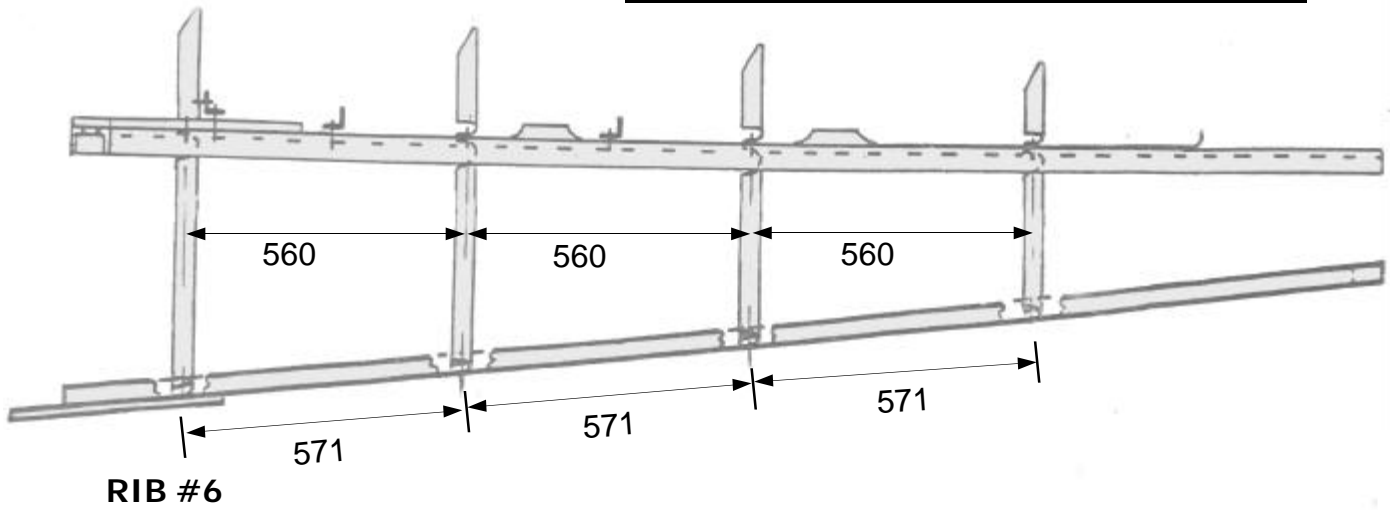
DRILL & CLECO: a) Back drill the Rib with pilot holes through the pre-drilled Spar #40

b) Nose Rib #6 : the top and bottom hole require an AN3 bolt (see bottom diagram on 6SV1). For ribs S7 to S9 use A5 at the top and bottom through the Spar Extrusions.

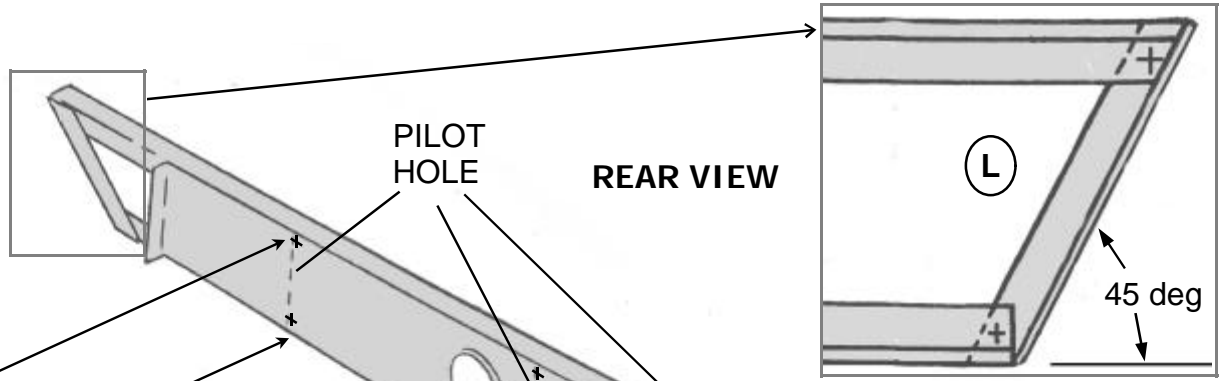
c) Remove the Rib, and back drill the rib pilot holes with #20 for A5 rivets.



RIGHT WING SKELETON TOP VIEW



A5 RIVET



6SV1-1S9

A5



1S8

A5



NOSE RIBS

4R+4L
t=025

1S7

A5



1S6

7A5
Ⓛ AND RIB

AN3 BOLT
(TOP AND BOTTOM
THROUGH RIB AND
SPAR)

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Drawing Rev.
1st Edition: 7-96

Description:
NOSE RIBS, SPAR TIP Ⓛ

V-7

REAR RIBS & REAR TIP RIB**V-8**

Clamp a support angle along the front side of the Rib to help center the Ribs (up and down) on the Spar; unsupported, the day-light corners on the Rear Ribs (the cutout to clear the top and bottom Spar extrusion) make it difficult to judge when the rib is centered.

7. Cleco the Rear Ribs to the Main Spar one at a time with none of the Nose Ribs in place.

REFERENCE: 6SV2

NOTE: The Bottom flange of the Ribs makes a straight line with the bottom of the Spar. If necessary adjust the top flange of the Rib to make it fit the width of the Spar.

LAYOUT: Separate the left and right ribs. Mark the Rib flange center line on all flanges.

POSITION: Since the Rear Ribs have a “day-light” corners to clear the spar extrusions, a support fixture (such as a 2 x 2 board or a length of extrusion) is clamped to the side of the rib while it is drilled to the Spar.

- a) With the Spar flat on the table hold a rib against the spar web to position the support fixture across the Spar Extrusions (6SV2-2 and 6SV2-3). In this position clamp the support to the Rib.
- c) The support fixture is now clamp to the Spar. Carefully center the rib flange over the pre-drilled pilot holes flush with the top and bottom extrusions.

CHECK: That the “day-light corner” flange clears the Spar Extrusion at the top and bottom. The bottom of the Rib is flush with the Spar, if the Rib is too wide adjust the top flange.

DRILL & CLECO: With #20

8. Rivet the skeleton together. Tighten the AN3-6A bolts through the Spar Cap at Rib #6, refer to the torque table on page 7 of the Manual.
9. Cleco the Rear Zee to the Ribs.

REFERENCE: 6SV2

NOTE: The Rear Zee (top flange) overlaps on top of the Rib (see right middle diagram on 6V8).

CLAMP: Clamp the top flanges together, and the Rib rear flange to the Zee web.

CHECK: a) Use an adjustable square against the side of the rib and the bottom of the Rear Zee to check the 90 degree angle.

- b) The flange centerline is visible through the pre-drill holes.
- c) The bottom of the rib is flush with the bottom flange of the Rear Zee.
- d) The rear Rib flange makes full contact with the Rear Zee web. Hand band the flange to match the correct angle to eliminate any separation or gap along the edge of the flange and the spar web.

DRILL & CLECO: #30

RIVET: a) The Splice Plate 6SV4-2 to the Rear Zee
b) The Rear Ribs to the Rear Zee.

10. Cleco the Rear Tip Rib 6SV3-2 at the end of the Spar.

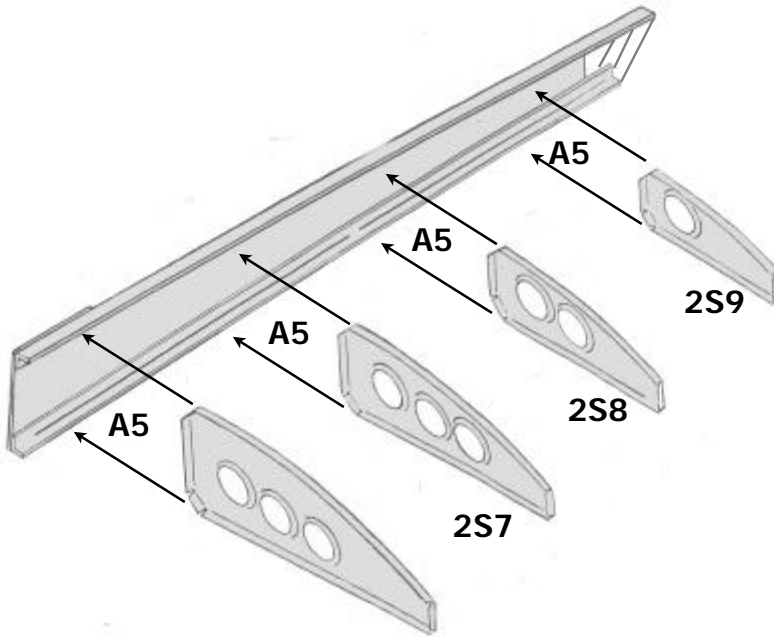
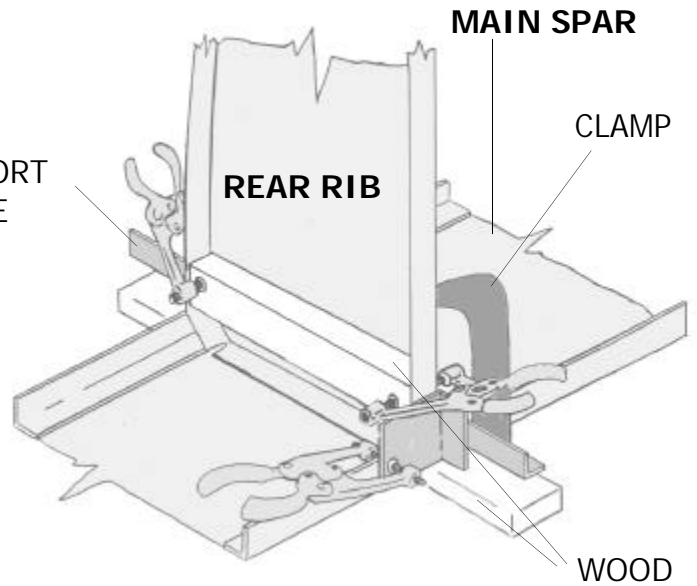
CLAMP: Clamp the Rear Tip Rib to the L Angle on the Main Spar and the rear flange of the Rear Tip Rib to the Rear Zee.

DRILL & CLECO: Reference drawing 6SV4; 7A4 in the L Angle and 3 A4 in the Rear Zee. Wait to rivet, it may be necessary to remove the Rib to install the Fiberglass Tip 6SV4-3



USE CLAMPS TO KEEP THE RIB STRAIGHT AND FLUSH WITH THE BOTTOM OF THE SPAR 8

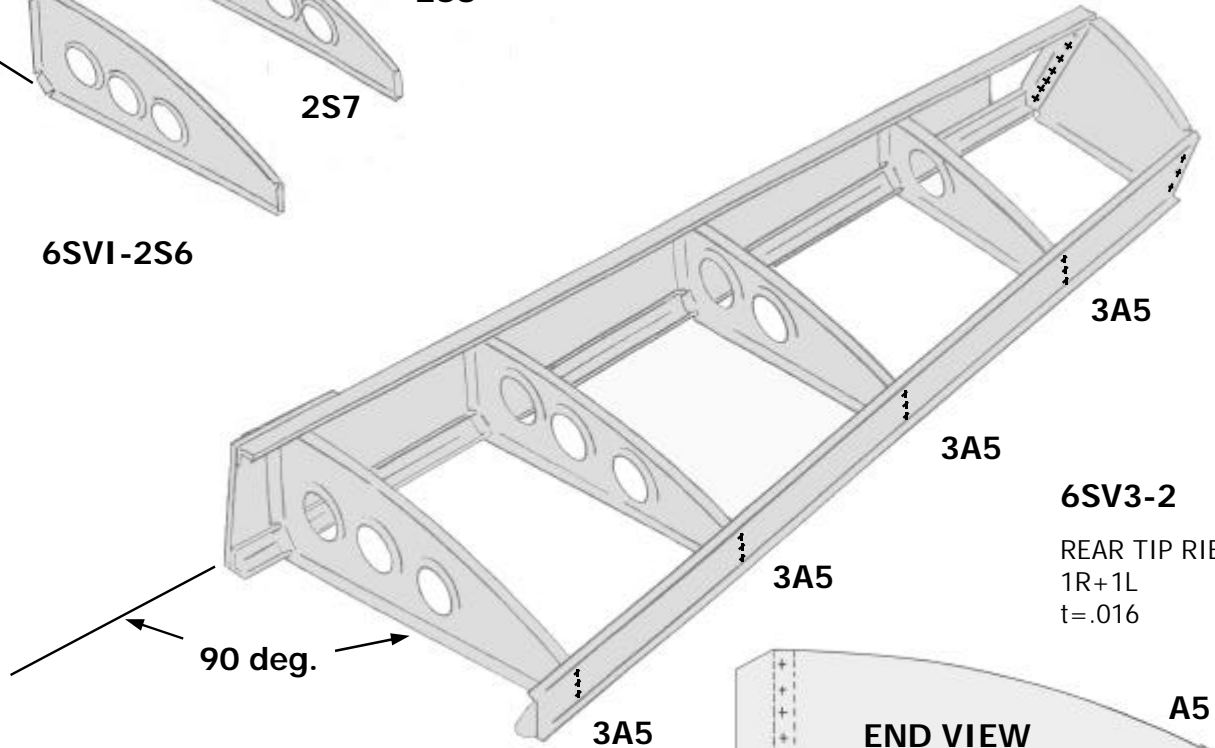
SUPPORT ANGLE



REAR RIBS

4R+4L
t=.025

6SVI-2S6



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Description:
REAR RIBS AND WING TIP

V-9

REAR TOP SKIN**V-10**

The pre-drilled holes in the Skins will square the Ribs to the Main Spar. Adding tack rivets along the front edge into the extrusion will assure the spar stays straight during construction.

11. Crimp the un-drilled flange of the L angles to add curvature. For an effective crimping tool, refer to page 4 of the Construction Manual

CHECK : Compare the curvature of the L angles by holding it up against a Rear Ribs.

12. Cleco the Rear Top Skin 6SV3-5 on the wing skeleton.

REFERENCE: 6SV3-5

LAYOUT: Mark the rib station on the front edge of the skin: use a straight edge to connect the predrilled holes in the skin to extend the rib rivet line to the front edge of the sheet.

POSITION: Line up the rib station marks on the spar extrusion, from step 6, with the rib station lines marked on the edge of the sheet. Clamp the Skin to the Spar. Clamp the Rear Zee to the Skin when the pre-drilled holes for the rive line are in line with the rivets in the rear flange of the Rear Ribs and Rear Zee from Step 3

CHECK: a) The Rib Stations in the Rear Zee line up with the pre-drilled holes in the Skin
 b) The Rib Stations marked on the top of the Spar extrusion line up with the Pre-drilled holes.
 d) The Rib flange center line is visible through the pre-drilled holes, the Rib can be moved for better alignment.
 e) The aft edge of the skin is flush with the Rear Zee web.

PITCH: a) 50 A4 (table on 6SV4).

b) The pitch at rib #6 is 25mm.

TIP: Drill the rear rivet line later with the Aileron clamped in place.

DRILL & CLECO: Before drilling, support the trailing edge by placing the following spacers underneath the Rear Ribs (see page 5 of the Speed Wing Construction Manual):

R.R. #	S6	use spacer	25mm
	S7		24
	S8		23
	S9		22

Back drill with #30 when the rib flange center line is visible. Reach under to adjust the position of the rib to align the center line!

13. Cleco the 3 stiffener L Angles between the Rib stations.

REFERENCE: 6SV4 top right diagram, 6V8. Page 17 of the Construction Manual.

CHECK: the curvature of the Stiffeners with the wing profile. Reach in from below to make necessary adjustments to the crimp (see page 17 of the Construction Manual).

14. **TACK RIVETS** (Flush tack) the skin to the spar. Position the track rivets 20mm to the left of the rivet line through the ribs (with a rivet at the intersection of the rivet line through the rib and spar the tack rivet is positioned in the middle of the 40mm pitch of the spar rivet line).

Reference page 11 of the Construction Manual.

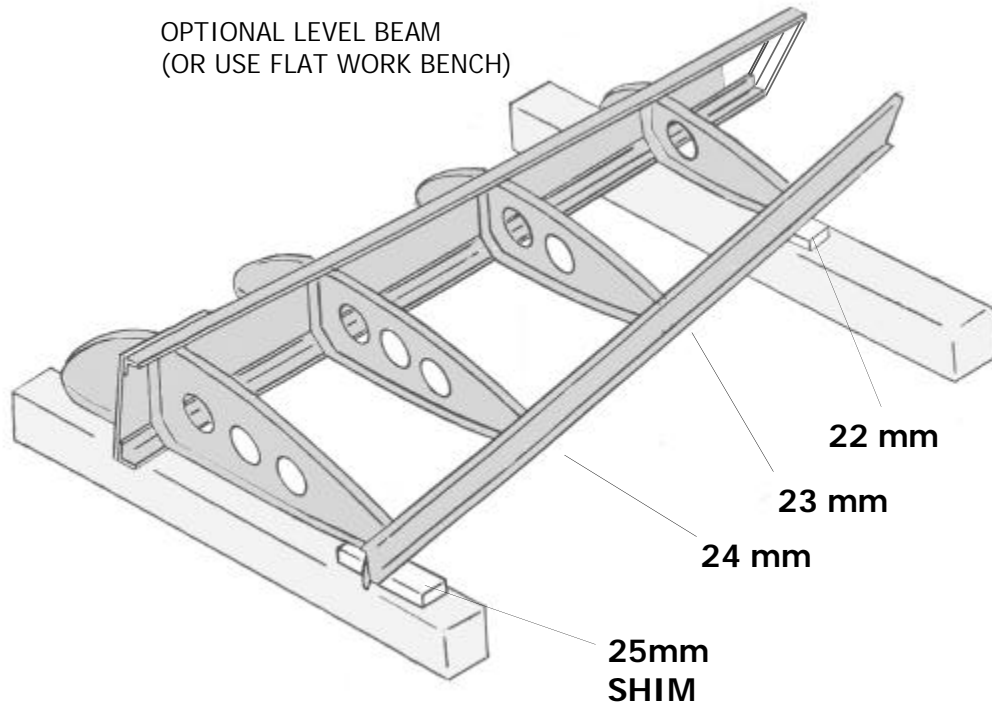
NOTE: The tack rivets will keep the spar straight with the edge of the skin. The tack rivets also prevent the skeleton from shifting when the assembly is turned over to install the bottom skin.

RIVET: A4 with a flat nose piece on the riveter head. Check the diameter of the inside hole in the nose piece, use the appropriate nose piece for the 1/8" rivets!

15. **RIVET**: The Top Skin to the Skeleton, wait to rivet the rivet lines after rib #9



OPTIONAL LEVEL BEAM
(OR USE FLAT WORK BENCH)



6SV3

TOP SKIN
l=2440
t=.025

**NO RIVET
ZONE AFTER
RIB S9**

TACK RIVETS

10 mm offset to Rib
centerline

A4
PITCH 40

A4
PITCH 40

A4
PITCH 20

**POSITION THE AFT
EDGE OF THE TOP
SKIN FLUSH WITH THE
REAR ZEE**

**POSITION THE FRONT
CORNER OF THE TOP
SKIN FLUSH WITH
THE SPAR**

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(9/97)

Description:
REAR TOP WING SKIN

V-11

REAR BOTTOM SKIN

V-12

Turn the wing over, and support the trailing edge.

16. Crimp the L angles using the bottom curvature of the ribs as a guide.

17. Position the Bottom Skin 6SV3-6.

REFERENCE: 6SV3-6, 6SV1-2

SUPPORT: Support the Ribs at the rear using the following block spacers:

S6 159

S7 133

S8 107

S9 81

Subtract upper coordinate U from the last station X from station 0 add 2mm for the thickness of the top skin as shown drawing 6SV1 . Example for S6: $264 - 107 + 2 = 159$

POSITION: a) The aft edge flush with the Zee.

b) The I/B end is flush with the Root of the Main Spar.

LAYOUT: Mark the rib station on the front edge of the skin: use a straight edge to connect the predrilled holes in the skin to extend the rib rivet line to the front edge of the sheet.

POSITION: Line up the rib station marks on the spar extrusion, from step 6, with the rib station lines marked on the edge of the sheet. Clamp the skin to the Spar. Clamp the Rear Zee to the Skin when the pre-drilled holes for the rive line are in line with the rivets in the rear flange of the Rear Ribs and Rear Zee from Step 3

CHECK: a) The pre-drilled holes in the Skin for the aft rivet line for the Rear Zee are in the middle of the flange.

b) The front edge of the skin is flush with the spar.

b) The pre-drilled holes for the rib rivet line are in line with the rib.

PITCH: a) 50 A4 (table on 6SV4).

b) The pitch at rib #6 is 25mm.

18. **L ANGLES:** Crimp and Install the L Angles

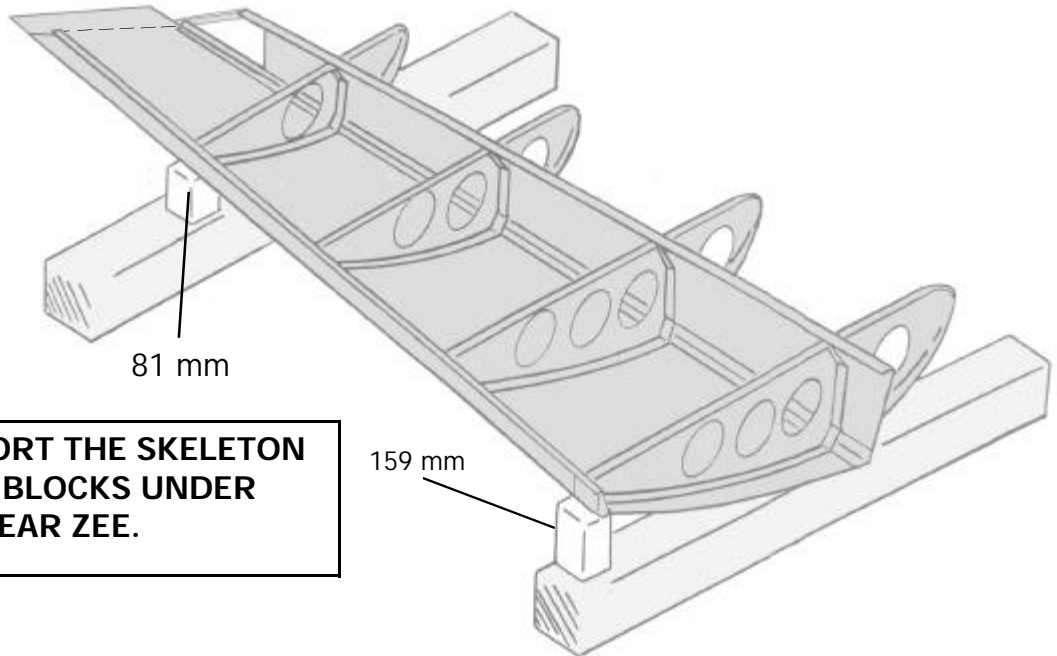
19. **TACK RIVETS** the front edge of the skin to the spar.

20. **CLECO & RIVET:** De-burrs.



TURN WING OVER, TOP SIDE DOWN

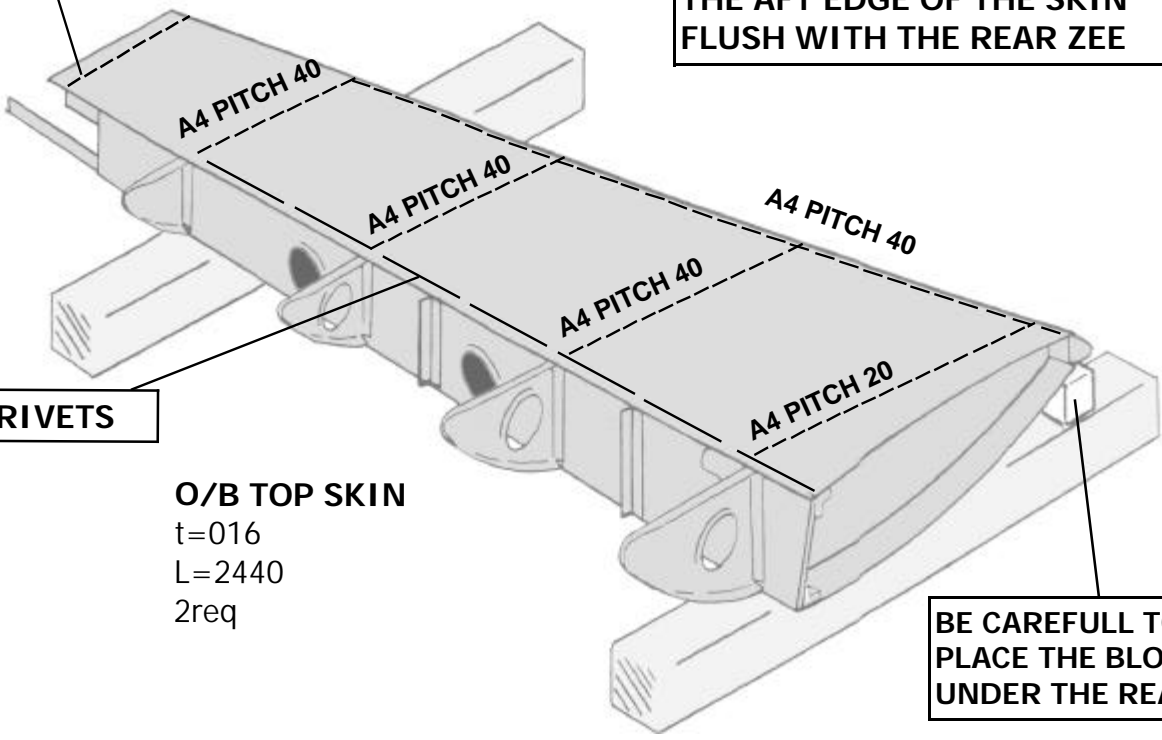
TRIM TO FIT WING TIP



SUPPORT THE SKELETON WITH BLOCKS UNDER THE REAR ZEE.

TRIM TO FIT REAR WING TIP RIB

POSITION I/B END OF SKIN FLUSH WITH THE SPAR ROOT, THE AFT EDGE OF THE SKIN FLUSH WITH THE REAR ZEE



TACK RIVETS

O/B TOP SKIN
 t=016
 L=2440
 2req

BE CAREFULL TO PLACE THE BLOCK UNDER THE REAR ZEE

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(9/97)

Description:
SKIN PLACEMENT

V-13

LEADING EDGE NOSE SKIN

V-14

With the wing upside down on the workbench rivet the bottom side of the Nose Skin. Turn the wing over to strap down the top side of the Nose Skin.

21. The bottom side of the Leading Edge is riveted first.

REFERENCE: 6SV3-4

- LAYOUT:**
- Mark the center line of the Leading Edge radius. For 8feet skins cut to fit with the edge flush with the aft edge of the spar, the center is at 411mm (dl=947) and at 232mm at the tip (dl=232) connect with a straight line.
 - Mark the FRONT of each Nose Rib by holding a large carpenter square on the flat bottom of the Rib to mark the tangent point as the FRONT of the Nose Rib.
 - From the FRONT mark on the Nose Rib make another mark at 40mm along the bottom curvature of the Nose Rib.

SUPPORT: With the wing upside down, support the trailing edge with the spacer in Step 17

- CLAMP:**
- Let the Nose Skin overhangs the bottom I/B end of the Main spar by 20mm.
 - Clamp the aft edge of the skin even with the rear of the Spar Extrusion.

CHECK: The 40mm line on the Nose Ribs lines up with the Leading Edge center line.

PRE-DRILL: a) Extend the rive line of the Rear Ribs to the Nose Skin.

- Remove the Skin to mark the rivet pitch, approximately 40mm

SUGGESTION: Layout the rivet pitch directly on the rib flange, the first hole is at 10mm from the end of the rib; the maximum distance between rivets is 40mm: if necessary add an extra rivet to adjust for even rivet spacing to avoid the crimps. Clamp a strip even with the rear of the spar extrusion, transfer the rivet spacing from the rib to the strip. Remove and clamp the strip flush with the aft edge of the skin to transfer the rivet spacing to the skin. Repeat for each rib. Pre-drill the skin with #40 pilot holes.

CLAMP & BACK DRILL: Clamp the pre-drill bottom side to the Spar. Adjust the position of the Nose Rib to line up the flange center line with the pre-drilled holes.

22. Strap the Nose Skin over the Ribs.

STRAP: Use an 8 ft. 2x4 to push the Skin down on the Ribs, place the straps directly overtop the 2x4 and underneath the workbench to keep the wing from moving. Before tightening the strops, slide a 2x4 block on Rear Zee bottom flange to keep the strap clear of the Rear Zee bottom flange. Position one strap by each Rib.

LAYOUT & PRE-DRILL: Extend the Rear Rib rivet line to the Nose Skin. Mark the aft edge of the Nose Skin on the Rear Skin to reference the rivet pitch template. Remove the straps to layout the rivet pitch on the Nose Skin. Pre-drill with pilot holes.

DRILL & CLECO: Strap down the Nose Skin, add the spacer underneath the Rear Zee and drill the Ribs when the flange center line is visible.

COMMENT: If the work bench is not level, slide two parallel beams underneath the wing assembly at Rib #6 and #9 (perpendicular to the Main spar). Level the beams and add the 22 and 25mm spacers between the beam and the Rear Zee. If the wing is resting on the rivets, add 2mm to spacer to compensate for the rivet head.

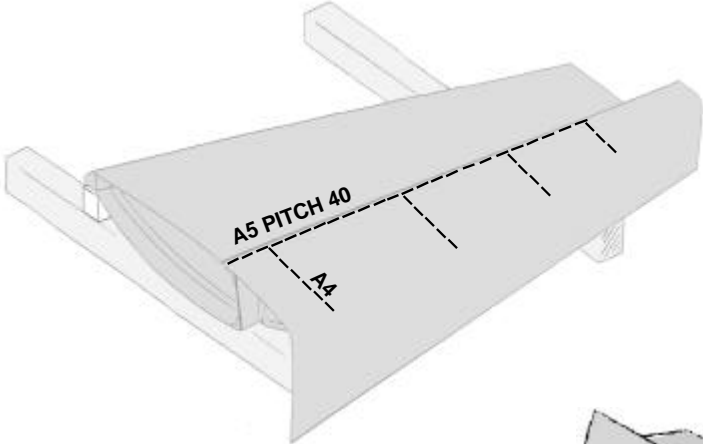
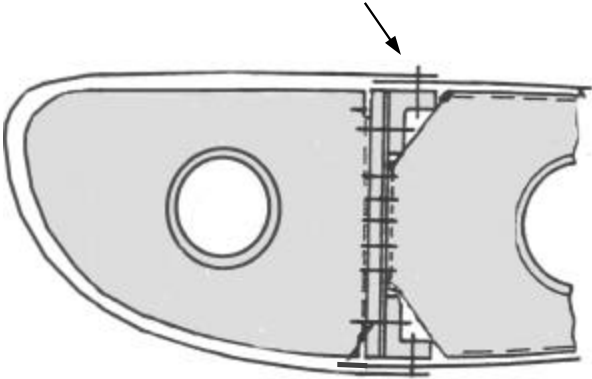
SUGGESTION: Run the strap underneath the table and over the wing to secure the wing to the workbench.

CHECK: The difference in the height of the spacers at the Rear Zee between Rib #9 Rib #6 is 3mm.



TRIM THE AFT EDGE OF THE SKIN FLUSH WITH THE AFT EDGE OF THE BOTTOM SPAR EXTRUSION

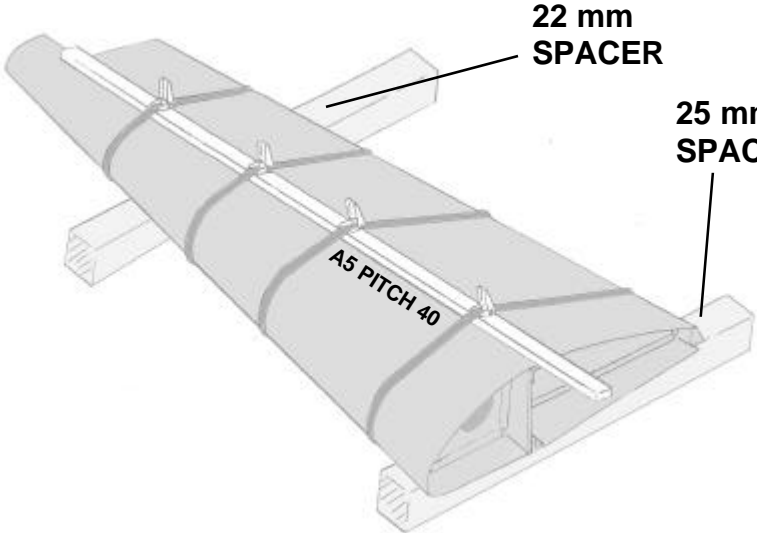
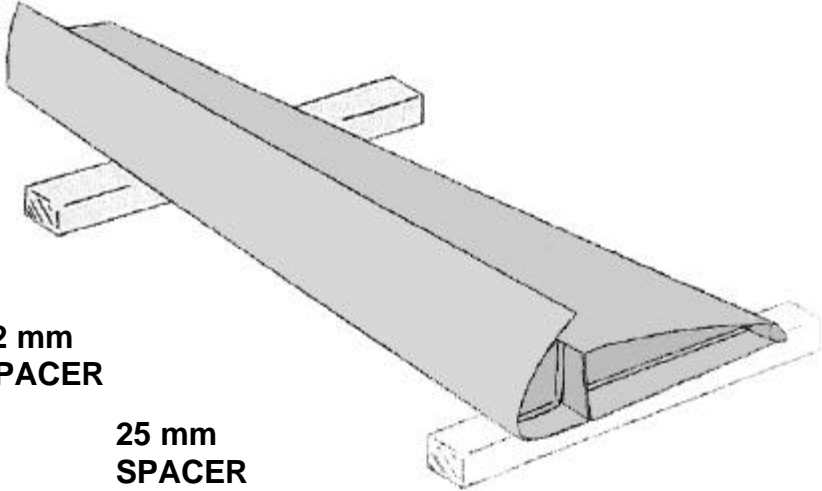
PRE-DRILL THE NOSE SKIN FOR THE NOSE RIB IN BETWEEN THE CRIMPS



6SV3-4
NOSE SKIN
2 REQ.
t=.025
l=2440

RIVET BOTTOM SIDE AND TURN WING OVER

SKIN IS FLUSH WITH I/B END OF SPAR



REMEMBER TO USE SPACERS TO SUPPORT THE WING

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Description:
WING NOSE SKIN

V-15

WING TIP**V-16**

Trim the Nose Skin on the same 45 degrees angle as the Rear Tip Rib: tape a marker at the end of a yard stick, lay the yard stick flat on the Tip Rib to trace the Nose Skin.

23. Install the Tie Down Ring 6V3-1 are positioned through the Lower Spar Cap Angle (extrusion) at 40mm inboard of the most outboard rib as shown on drawing 6V3 section AA (top right diagram and bottom right detail).

24. Trace around the Rear Tip Rib 6SV3-2 to mark the Top Rear and Bottom Rear Skins.

TRIM: Trim the Rear Skins to mach the Rear Tip Rib.

RIVET PITCH:

DRILL & CLECO: Wait to rivet the Skins to the Rear Tip Rib 6SV3-2 until the Fiberglass Nose Rib 6SV4-3 is installed.

25. Cut the Leading Edge Skin to install the Fiberglass Wing Tip 6SV4-3

COMMENT: Some builders prefer to overlap the Fiberglass over the Rear Tip Rib to avoid the reverse overlap as shown on V-9 . How the overlap is made is insignificant, overlapping the Tip Rib over the Fiberglass tip may make a straighter tip!

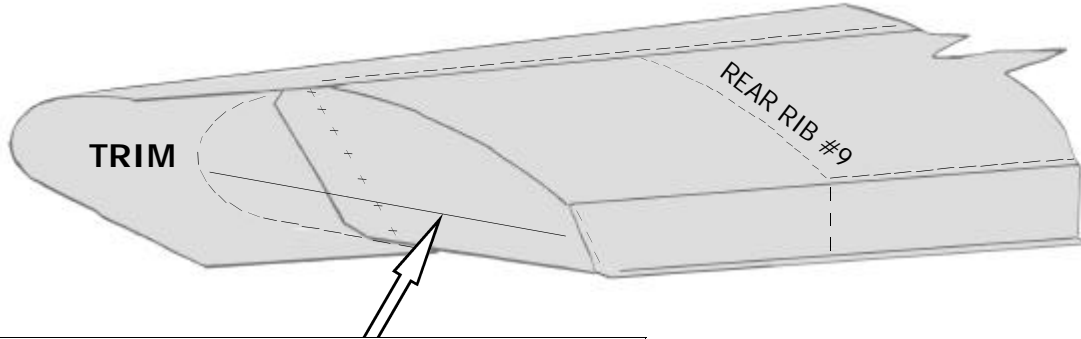
TIP: Look inside the wing by lifting the rear corner of the Top Skin to check the overlap of the Nose Skin over the Fiberglass Tip.

Nav/Strobe system: Install the Fiberglass Tip with the flat portion for mounting the lights at 90degrees to the Main Spar for correct light distribution required for night flying.

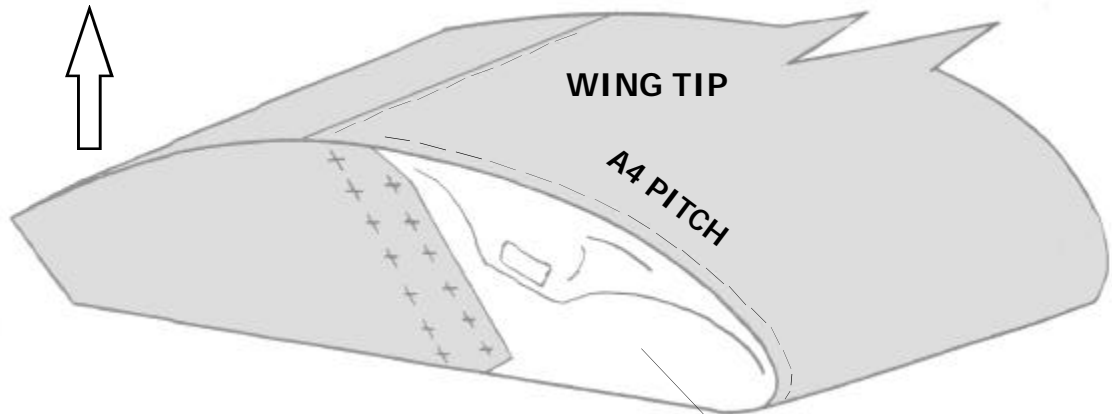
SUGGESTION: Use the hand snips to cut the Fiberglass Tip.

RIVET LINE:

HINT: Remove the Rear Tip Rib or reach in by lifting the Top Skin to firmly push the Fiberglass Tip inside the radius of the Nose Skin to drill and Cleco the first few holes.



MARK NOSE SKIN ON A STRAIGHT LINE WITH REAR TIP



LIFT REAR TOP SKIN TO REACH INSIDE WITH YOUR ARM, PUSH THE FIBERGLASS PART INSIDE THE NOSE SKIN RADIUS.

6SV4-3
NOSE RIB
FIBREGLASS
2 REQ. (L & R)

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Description:
NOSE RIB INSTALLATION

V-17

AILERONS**V-18**

The Aileron Tip Ribs 6SV3-3 are installed later after the Fiberglass Wing Tip and End Rib 6SV3-2 have been installed.

26. The Aileron Ribs are positioned in line with the Rear Bibs to create a continuous rivet line.

REFERENCE: 6SV3, 6SV4, 6V10

LAYOUT: Use rib station on the Top Skin 6SV3-5 as a template to mark the Aileron ribs stations.

- a) Mark the I/B angle on the top side of the Aileron skin starting at the I/B end of the Skin. (38mm along the front edge will set the 11 degree angle, see 6SV3-1 left middle of the page).
- b) From the I/B angle of the Aileron Skin mark an 10mm off-set line: the rivet line for 6V10-31
- c) The Aileron Ribs 6V10-3 are parallel with the Root Rib 6V10-31.

CHECK: The Aileron trailing edge is a straight line. This is easily checked by viewing down the length of the skin from either end. Remember to check the trailing edge for straightness frequently during construction.

TRIM: Cut the top side first, mark the bottom on the same angle as the root of the Main spar to place the Horn is parallel with the Ribs on the wing center section.

PRE-DRILL: Since the Rib Flanges are cut on an angle, take extra care to determine the position of the end-holes to maintain proper edge. Use the Rivet patten of the Root Rib as a template for the other ribs. Refer to drawing 6V10 for the rivet pitch (2 A4 in the web, 5 A4 in the top and bottom flange). The rivet layout is:

Reference:	Top flange:	Bottom flange	Rear flange:
Aileron trailing edge	25	35	-
	65	65	-
	100	100	-
	135	135	-
Bottom Skin	-	-	23
	-	-	45

SUGGESTION: The Aileron Horn 6V10-2 is installed later to check for a Radius = 100 see 6V10.

27. Rivet the Aileron Root Rib 6V10-31 (t=.025) flush with the I/O end of the Skin 6SV3-1

SUPPORT: To make the trailing edge straight work with the Skin on two parallel boards, support the trailing edge along a straight reference (such as two 8 ft. steel 4" "T" beams). Raise one end of the beam 12mm off the table to set the Aileron Twist.

28. Rivet the Aileron Ribs 6V10-1. Start with the rear flange followed by the top flange. The Aileron twist (wash-out) is 12mm up at the O/B tip as view on the finished aircraft.

REFERENCE: 6SV3 Middle left side of page.

- RIVET:**
- a) The front rivet line through the Aileron flange will set the Aileron twist.
 - b) Plan for a rivet at the intersection with the Rib rivet line.

29. Cleco the Aileron to the wing.

REFERENCE: 6V10

CLAMP: The Aileron trailing edge is parallel with the Rear Zee leaving 20mm between the Rear Zee and the Aileron web.

CHECK: Distance from the Aileron trailing edge to the aft edge of the top skin is approximately 215mm (measured along the rib centerlines).



6V10-3

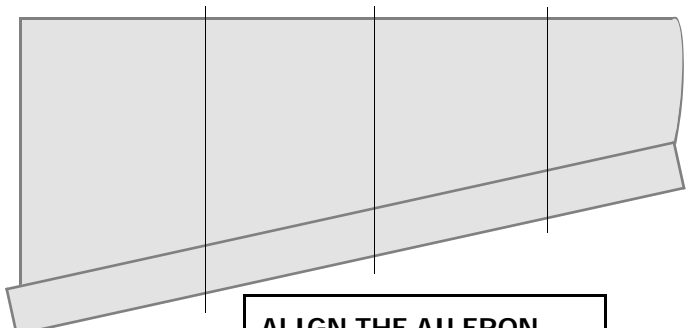
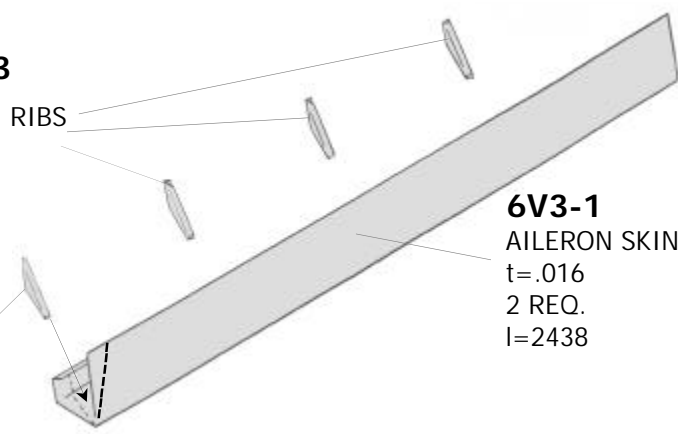
AILERON RIBS
t=.016
3L & 3R

6V3-1

AILERON SKIN
t=.016
2 REQ.
l=2438

6V10-31

AILERON RIB
t=.025
2 REQ.



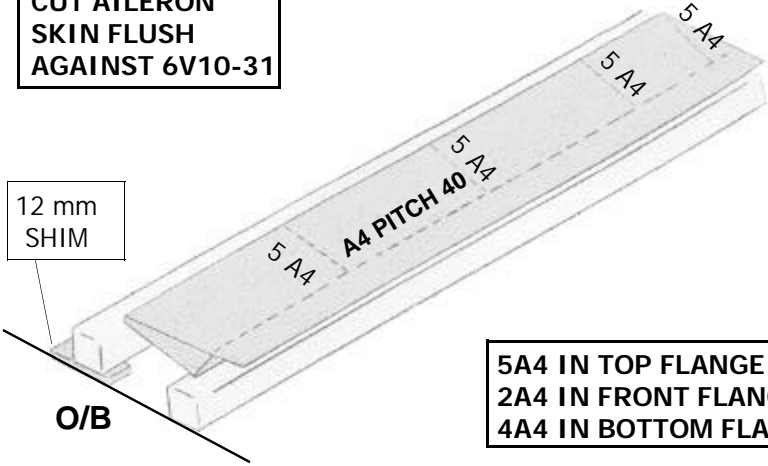
ALIGN THE AILERON RIBS WITH WING RIBS

11 deg.



CUT AILERON SKIN FLUSH AGAINST 6V10-31

I/B



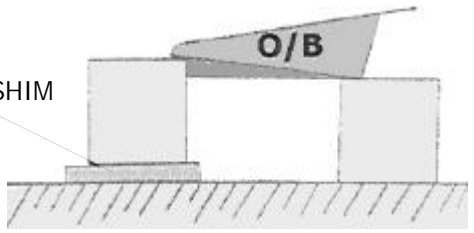
12 mm SHIM

5 A4
A4 PITCH 40
5 A4
5 A4

**5A4 IN TOP FLANGE
2A4 IN FRONT FLANGE
4A4 IN BOTTOM FLANGE**

O/B

12mm SHIM



AILERON TWIST SHIM UNDER THE OUTBOARD TRAILING EDGE

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Description:
AILERON

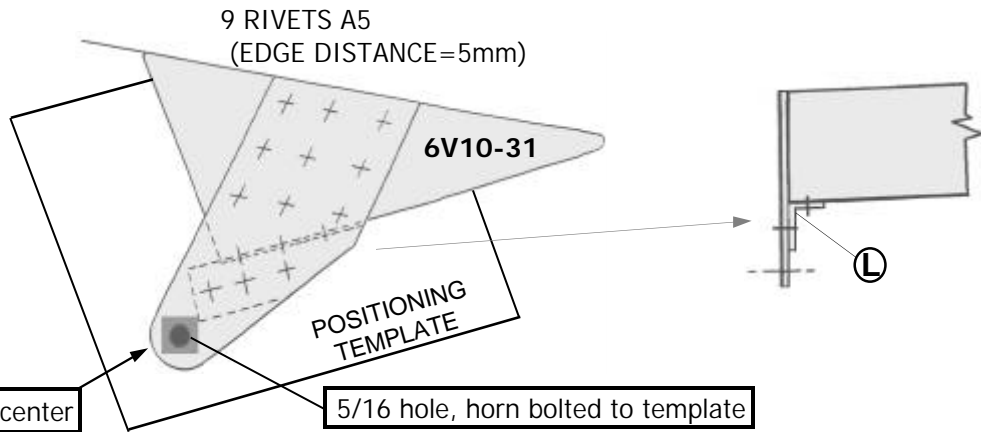
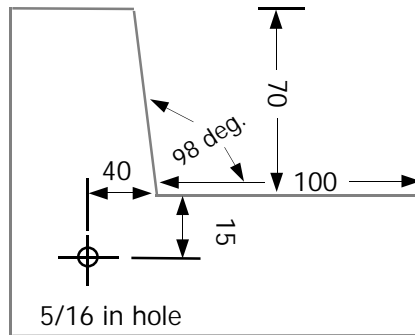
V-19a



6V10-2

AILERON HORN
2 REQ.

**PLYWOOD HORN
POSITIONING
TEMPLATE**



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CH 601

Drawing Rev.
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(9/97)

Description:
AILERON HORN

V-19b

AILERON TIP**V-20**

Trim the Aileron tip with the Skin Clecoed to the wing. The Aileron Tip Rib is installed at the same angle as the Rear Wing Tip Rib 6SV3-2

30. Aileron Tip Ribs 6SV3-3

REFERENCE: V-21, 6SV3

31. Aileron Horn 6V10-2

REFERENCE: V-19, 6V10, 6V14

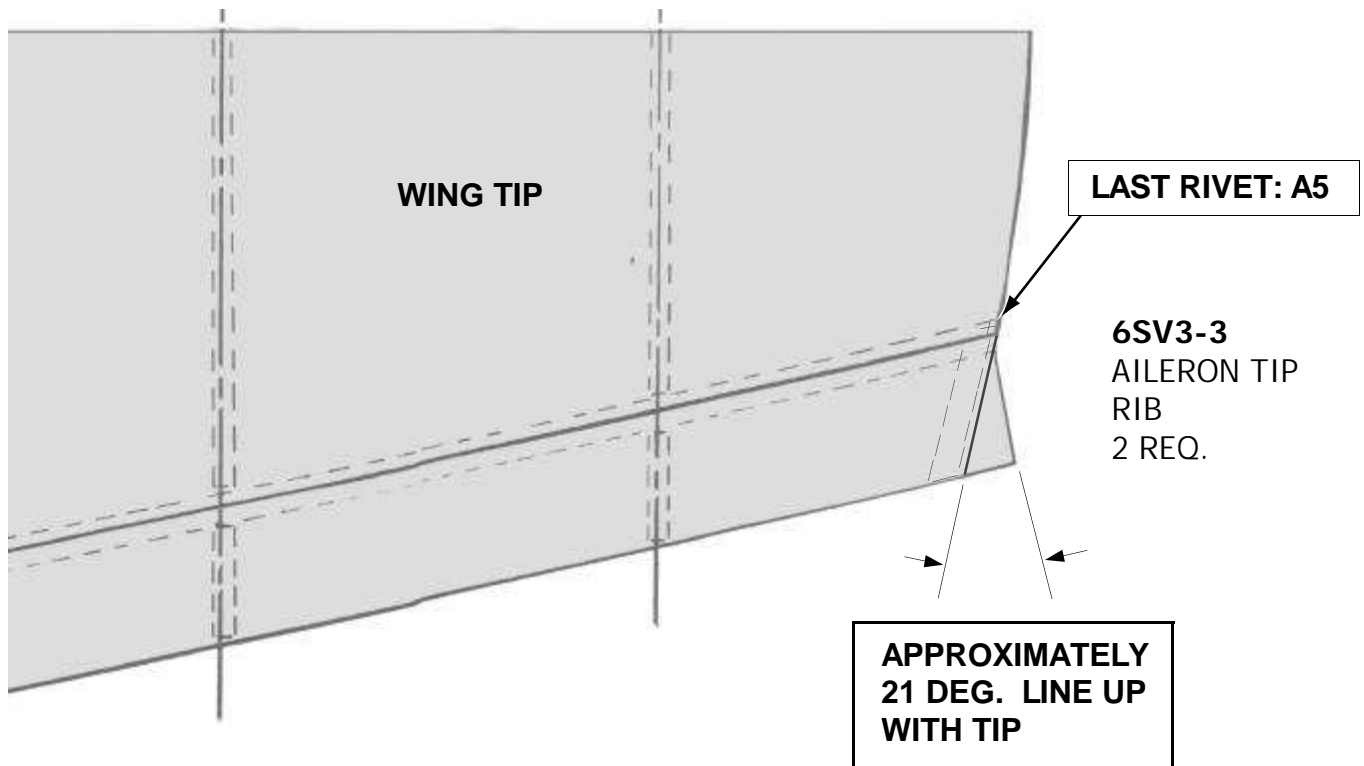
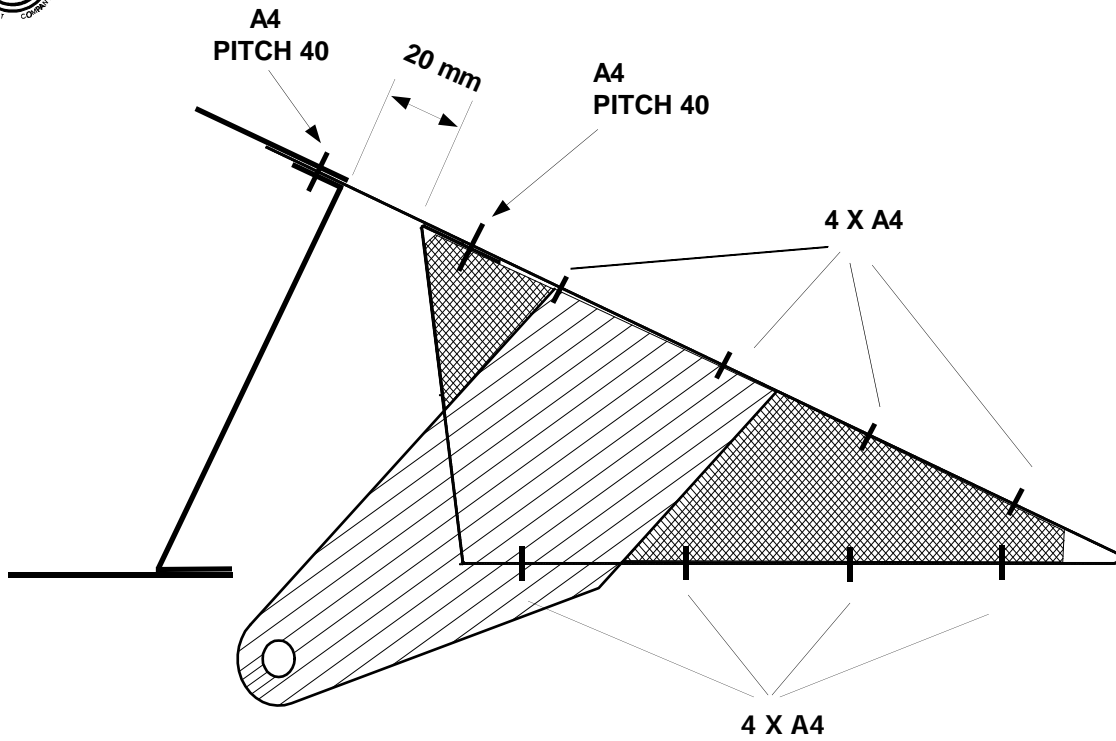
TEMPLATE: Cut a plywood template (use thin plywood) to fit against and bottom of the front of the Aileron Skin. Drill a small pilot hole in the template for the horn bolt. Scribe a 10mm circle around the pilot hole.

POSITION: The Horn is positioned on the Aileron Rib 6V10-31 with reference to the horn bolt for the Rod end. Position the template on the aileron skin flush with the root rib, slide the Horn to fit: flush with the top skin and to completely cover the 10mm scribe circle on the template. Back drill the pilot hole in the template into the Horn.

HORN BOLT: 5/16" hole,

RADIUS: Radius the end of the Horn around the Horn bolt (minimum radius of 10mm)

RIVET: Bolt the Horn to the template, Drill for 9 A5.



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Description:
AILERON TIP RIB

V-21

32. Wing Locker door 6SV4-5

REFERENCE: 6V7, 6SV4**LAYOUT:** Position the Wing Locker Door 6V7-8 on the Rear Top Skin between Rear Rib #6 and #7, the sides are parallel with the rib rivet lines. Trace around the door.**DZUS FASTENERS:** The wing locker door is held closed with Dzus Fasteners along the sides and the aft edge. Before cutting out the opening know how the Dzus Spring S5A-225 will be attached. The size of the opening is determined by the method used to install the Spring.**CUTOUT:** Approximately 45mm smaller than the Wing Locker door, the overhang is to rivet the Dzus Spring in the Skin.

33. Wing Locker Channel 6VS4-4

NOTE: The Channel will slice through the third lightening hole of the outboard Rear Rib #7**POSITION:** The flange point back and rivets to the Top Skin**BOTTOM FLANGE:** Riveted length of L angle.**L ANGLE:** Between the Channel and the Rib.

34. Piano Hinge length

POSITION: Instead of sliding the hinge inbetween the Rear Skin and the Nose Skin the Hinge can be positioned underneath the Spar Extrusion. Pull the pin out, reverse one of the sections, and insert the pin. Trim both end of the hinge**LENGTH:** The length of the hinge is the same as the width of the wing locker.**RIVET:** A5

35. Dzus

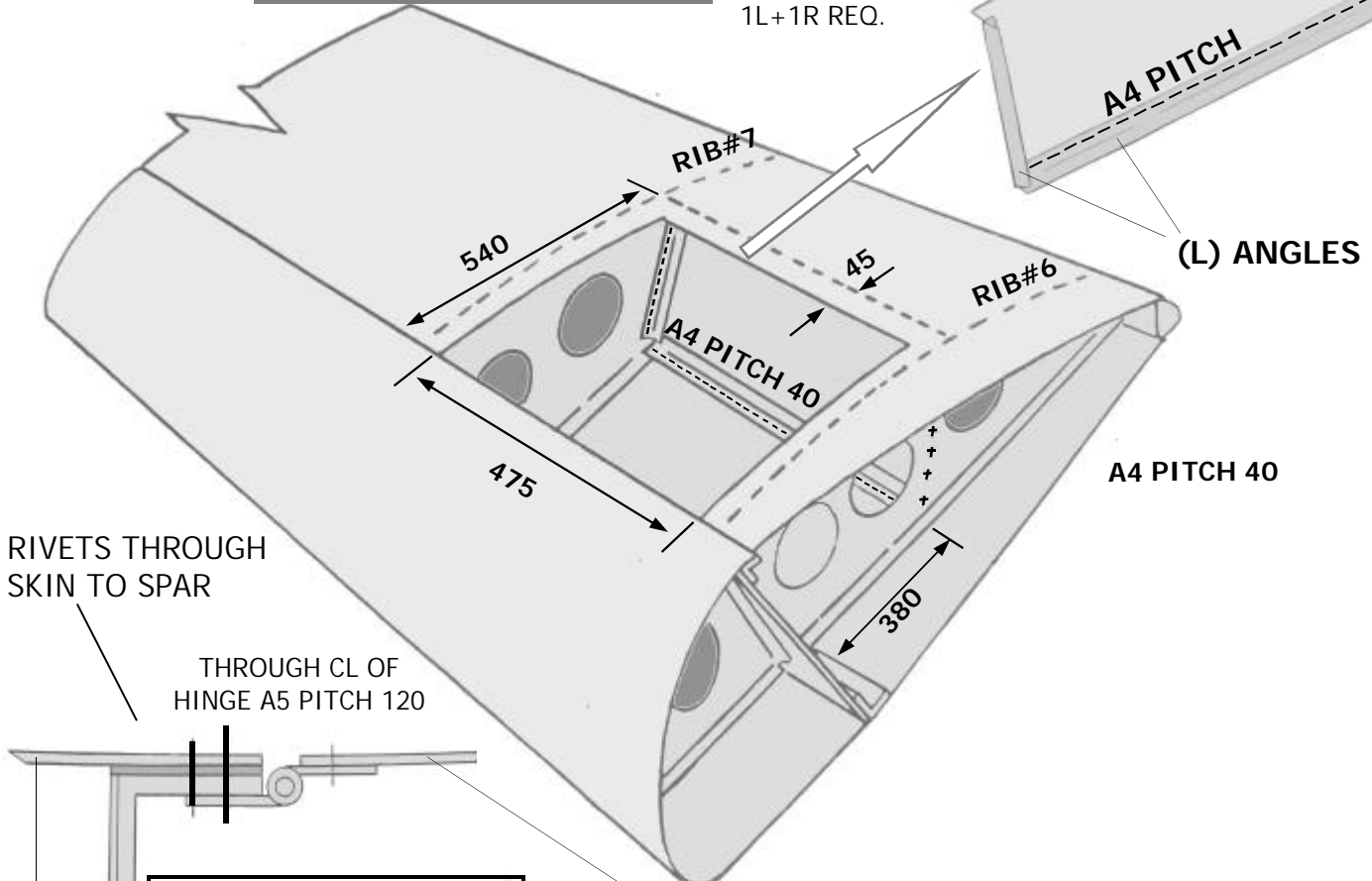
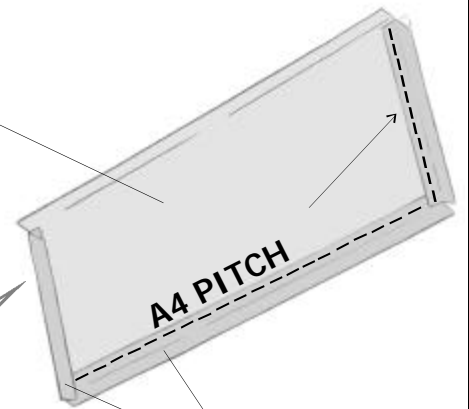
SUGGESTION: Add a retainer ring to keep the Dzus fastener to the Door.**RIVETING** the Dzus Spring: standard A4 with domed head on riveted: the beveled edged of the wing longer door make countersinking unnecessary.

-end-



SKIN OVERHANGS PAST THE RIB TO SUPPORT THE DZUS SPRING

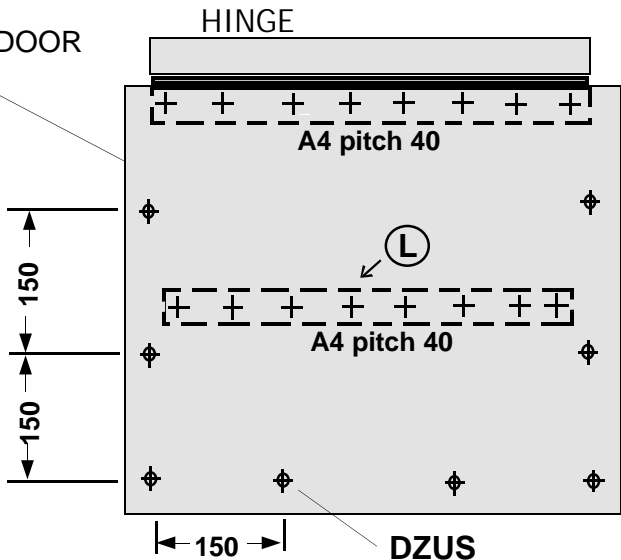
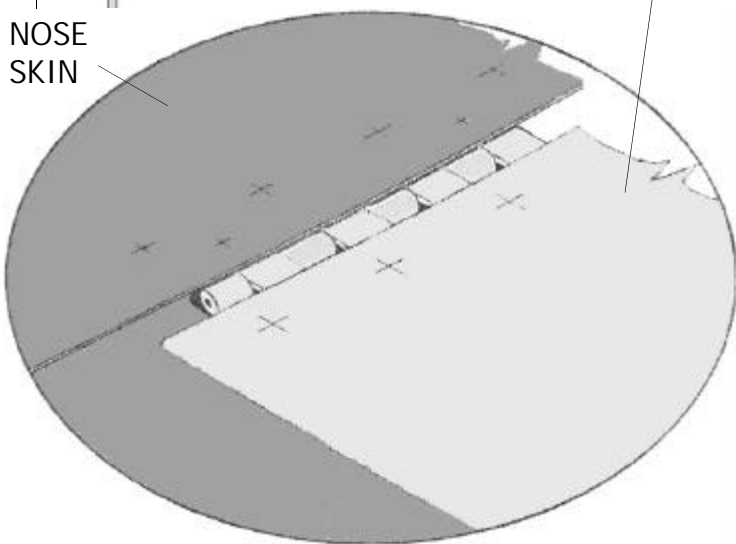
6SV4-4
WING LOCKER CHANNEL
t=.025
1L+1R REQ.



PULL OUT HINGE PIN AND RIVET BOTTOM SECTION

WING LOCKER DOOR

NOSE SKIN



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CH 601

Drawing Rev.
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(9/97)

Description:
WING LOCKER AND DOOR

V-2a