TopNotch Maverick

ASSEMBLY MANUAL

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BEFORE YOU BEGIN

A **word about laser cut parts and adhesives.**

There are three primary types of adhesives recommended for constructing your model. They are CyanoAcrilate (CA) in all viscosities, Aliphatic Resin Glue (carpenters glue) and Epoxy. CA is the primary adhesive to use however there are times when it is not the best choice. They are;

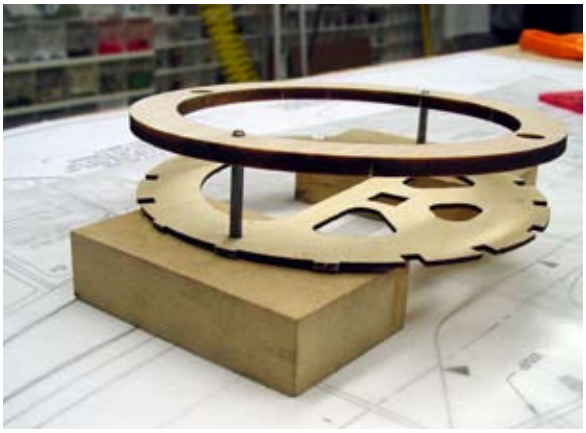
1. When you need more time to carefully position a part then a fast setting adhesive will allow.
2. When attaching plastic such as a windshield (Use Pacer formula 560 here).
3. When gluing laser cut aircraft grade plywoods. The microwave set adhesives used in aircraft grade plywood does not ablate well under a laser beam. As a result it burns the wood fibers near by leaving a charred edge. Fast setting CA adhesives do not allow time for the adhesive to penetrate this layer of char and bond to the wood fiber underneath. Use a slower setting adhesive such as Aliphatic Resin or for maximum strength use Epoxy on aircraft grade ply parts. Lite Ply's do not use this type of adhesive and do not suffer from this problem.

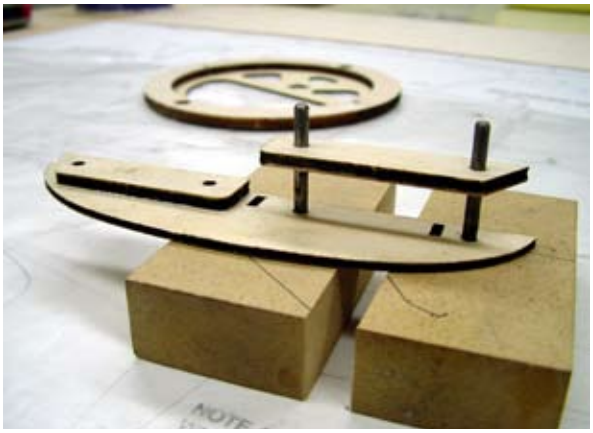
To apply thin CA I recommend the Dave Brown pipets available at your hobby shop. Be sure to stretch the end (pull it with a pair of pliers) to a thin applicator tip, as they are not supplied in this configuration and some folks don't know that you have to do this. No mention of this is made on the package they come in.

PIN REGISTRATION

A great shop technique introduced by Top Notch Products is the use of 1/8" piano wire pins to quickly and precisely position laminated parts such as fuselage doublers etc. Many of the parts in Top Notch kits utilize this method and are supplied with pinning holes. Take the time to construct two of these handy tools. Use two small hardwood blocks and two short lengths of 1/8" music wire. Round the ends for easy insertion into the parts.

Below are two examples of this technique as used in the Cessna 195 kit. On the left, two fire wall components are being assembled using the pins. Any time precision placement is required, this method is used. You will find the pinning holes are easily filled after completing the model. This method allows the use of fast setting adhesives such as CA because the parts cannot be out of register. In the photo on the right, landing gear components are being assembled with the pins. Precision placement of these parts is required to assure that the 1/8" landing gear wire will fit snugly into this assembly. In the background is the completed fire wall assembly.





Use a sheet of Wax Paper to protect your plans. When assembling flat sheets such as the stabilizer skins I recommend laying the parts on a sheet of parchment paper. Assemble the parts, apply thin CA and frequently lift the part and wipe up any excess CA from both the part and the paper with a piece of paper towel.

OK, LETS BUILD A TOPNOTCH MAVERICK

STABILIZER ASSEMBLY

☐ 1 Place the stabilizer plans on the building board and lay a sheet of waxed paper over them.

☐ 2 Locate the three sticks of 7/32” x 1/16” balsa on sheet #8. Place pins along the inner edge of the stabilizer leading edge.

☐ 3 Form the three strips of balsa along the row if pins and secure in place with additional pins along the outside of the leading edge.

☐ 4 Use thin CA to glue the three laminations of balsa to form the stabilizer leading edge.

☐ 5 Install the stabilizer tips S9, trailing edges S7 and S8.

☐ 6 Install and glue SB to the inner edge of the leading edge.

☐ 7 Install and glue S-1.

☐ 8 Install both S1-B’s

☐ 9 Install all remaining ribs, S2 through S6.

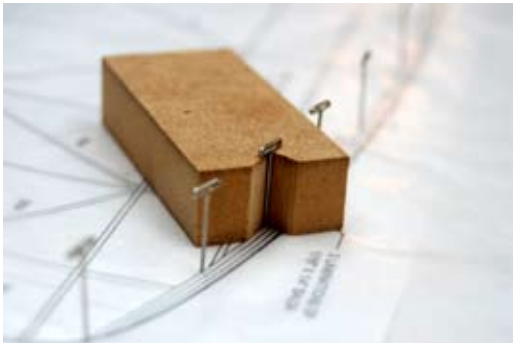
☐ 10 Install the forward spar SS.

☐ 11 Install the 1/16” x 1/8” aft spar.

☐ 12 Taper slightly the leading and trailing edges of all the angled ribs S2-A through S6-A and install.

☐ 13 Install gussets SG at the trailing edge and S1.

☐ 14 This concludes the main assembly of the stabilizer. The rubber hook and the lower alignment tongue will be installed after covering.



This simple guide will help keep the pins at 90° to the building board. A block with a V-notch cut into it will make the task easy.

The completed stabilizer ready for sanding and covering.

The stabilizer rubber hook shown here and the stabilizer alignment tongue (on the bottom) are permanently installed after sanding and covering the structure.

VERTICAL FIN ASSEMBLY

Note that the vertical fin is not built over the plans.

☐ 1 Locate the vertical fin core VC.

Install split ribs V-1 through V-3 on one side of VC. Keep the assembly flat on the building board when applying glue to assure a straight structure.

☐ 3 Install four edge doublers V4 through V7.

☐ 4 Turn the assembly over and repeat this process Note that you will be adding the remaining parts in hand. This completes the vertical fin assembly

The completed vertical fin assembly. This assembly will plug into slots provided in the fuselage top and bottom for perfect alignment. Cover the fin before installing onto the fuselage.

PYLON ASSEMBLY

☐ 1 Locate P-1; you will be installing components one side first and then on the remaining side.

☐ 2 Install the vertical brace P-5 into P-1, note that the notches are polarized and can only be installed one way.

☐ 3 Install ribs P-2, P-3 and P-4.

☐ 4 Flip the assembly over and install the remaining P-5, P-2, P3 and P-4.

☐ 5 Install P-6 and P-7, these will provide pockets for the rubber hooks to fit into.

☐ 6 The pylon skins are supplied as two parts that must be assembled prior to installation. Locate the pylon skins and glue them together. Before installing, sand them smooth while still flat. Then install onto the pylon assembly.

☐ 7 Sand the leading and trailing edges of the pylon to shape.

☐ 8 Use Epoxy to install the rubber hooks, PHF in the front and PHA at the aft edge.

☐ 9 Wing platform WP is provided in three sections and must be assembled. Glue these three sections together and then install onto the pylon.

☐ 10 Install alignment tongue AT into the bottom of the pylon in the slot provided.

☐ 11 Install the 1/8" pylon rails PR onto the wing platform on each side of the platform.

The pylon assembly under way. The ribs are split and tabs on the ribs fit into notches on the pylon core. The notches in the upper corners of the assembly will receive the rubber hooks.

The nearly completed pylon assembly ready for covering. The rubber hooks slide into pockets in the pylon core after shaping the leading and trailing edges. The alignment tongue will slide into a notch in the bottom of the pylon and fit into a slot in the top of the fuselage for perfect alignment when installed.

FUSELAGE ASSEMBLY

☐ 1 The fuselage bottom and sides are supplied in two sections and must be assembled before beginning the fuselage. Locate these parts and glue them together. Note that there is a left and a right side due to the built in side and down thrust. Pay close attention to the labeling on these parts as they are not interchangeable. It's best to pair up these parts and lay them out prior to gluing. When gluing the sections together, butt them up against a straight edge to assure that they are assembled straight.

☐ 2 Locate the left fuselage side FS-LEFT and the left fuselage side doubler FD-LEFT. Use the pinning method described at the beginning of this manual to laminate these two components. The doubler will be on the inside of the fuselage. Install the aft fuselage doubler in the same manner.

☐ 3 Locate the right fuselage side FS-RIGHT and the right side fuselage doubler FD-RIGHT and once again using the pinning method, glue them together. Install the aft fuselage doubler in the same manner.

☐ 4 The hatch on the bottom of the fuselage is optional however the hatch frame must be installed in either case. The corners of the hatch opening have been cut so you can use these as your guide to open up the hatch area. Use the pin registration method to install the hatch frame HA-FR.

☐ 5 Place the fuselage bottom on the building board; note the label indicating the left side.

☐ 6 Install formers F-1 through F-12 into the fuselage bottom. Use the a square to assure that they are at 90º to the fuselage bottom. Note that the firewall will be installed last.

☐ 7 Place the sides in position and assure that all notches and tabs are fully nested. Then beginning at the front, apply thin CA to all formers and the fuselage/bottom corners while pressing firmly together.

☐ 8 Install the firewall and line the sides with ¼: triangle stock for extra strength.

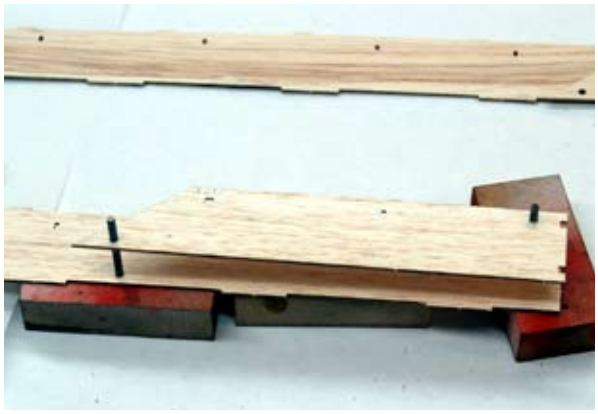
☐ 9 Install two 1/8" square balsa braces on both sides of F-2 and one in the aft end just ahead of F-11 in the notches provided.

☐ 10 Install FP in the tab provided on F-11.

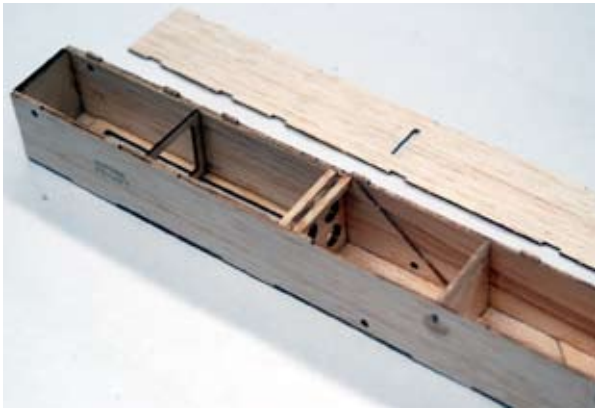
☐ 11 Install the remaining top section FT.

☐ 12 Sand all four sides of the fuselage flat and the sand slightly round all four corners.

☐ 13 If you are going to cover the model you may want to install the pylon and the vertical fin to the fuselage after covering, if not you can install the pylon at this time.



Both the fore and aft fuselage doublers are installed using pin registration to assure that all notches are correctly positioned. Take care to assure that the left and right side parts are correctly paired up as they are not interchangeable. 1.5° of left and down thrust is built into the firewall.



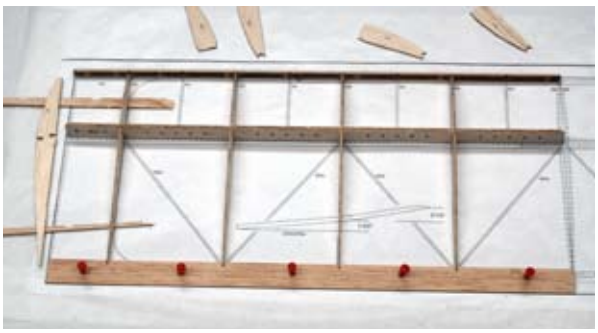
The fuselage assembly nearing completion. The 1/4" triangle stock between the firewall and the fuselage sides will be installed next and then the top can be installed. Check frequently for straitness and twist in the fuselage while assembling it. Keep the bottom flat on the building table when gluing up the sides and bottom.

INNER WING PANEL ASSEMBLY

We will begin by assembling the inner wing panel first. Consider any wash in or wash out you want to introduce into the structure. Excellent results have been obtained with 1/8" of wash in added to the inner panel. This is easily accomplished by shimming up the leading edge with some 1/8" scrap balsa at W-6.

☐ 1 The wing is built over the plans in the conventional manner. Start by pinning the trailing edge W-15 into position on the plans.

☐ 2 The wing spar is a true I-Beam comprised of two sheer webs (top and Bottom) and two ply spar flanges. Locate the bottom spar web (SWB) and slide each rib into the appropriate notch in it.



Wing assembly underway, note the shim stock under W-1 and W-2.

☐ 3 Locate the top sheer web (SWT) and slide it down into the top slot of each rib. The top and bottom sheer webs must be flush to each other at the top and bottom.

☐ 4 Tack glue the sheer webs to each other through the glue ports in SWT at each end and at the center. You should now have all the full ribs captive in the sheer web assembly. W-1 will be installed later.

☐ 5 Use two pieces of scrap 1/16" balsa to shim up ribs W-1 and W-2. Place the trailing edges of each rib into the appropriate slots in the trailing edge. Assure that the ribs are square to the trailing edge and then glue them to the trailing edge. Note that there will be a gap on W-1 and W-6 where the dihedral braces will be installed later.

☐ 6 Locate the leading edge and slide it into position on the leading edge of the ribs, then glue it to the leading edge. Now pin the leading edge to the building board to stabilize the assembly.

☐ 7 Install all RA ribs and glue them to the leading edge and the sheer web. Make sure they are flush top and bottom to the sheer web.

☐ 8 Use a slow setting adhesive such as Aliphatic Resin (Yellow Carpenters Glue) to glue on the top spar flange. Place a weighted straight edge on top of it to assure that it is in good contact with the top of the sheer webs and let it cure.

☐ 9 Install the for and aft center section sheeting. Trim for a snug fit against the top spar flange.

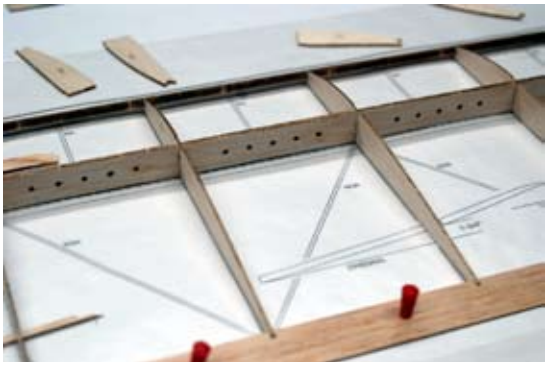
☐ 10 Remove the assembly from the building board and flip it over. Install the bottom spar flange in the same manor as you did the top spar flange.

☐ 11 Install the bottom center section sheeting.

☐ 12 Use a sanding bar to sand both the root and tip rib sections perfectly flat, then sand the leading edge to contour.

☐ 13 Apply a drop of thin CA into each of the glue ports in the sheer web to cement the two sheer webs together.

☐ 14 Repeat steps 1 through 13 for the remaining inner panel.



With all parallel ribs captive in the sheer webs, the trailing edges of the ribs are glued to the shaped trailing edge in the appropriate notches. The leading edge notches will engage the birds mouth at the front of each rib.

The top spar flange is installed using a heavy straight edge to assure good contact between the flange and the sheer webs. The holes in the back of the top sheer web will allow CA to be wicked into the sheer webs for additional strength.

OUTER WING PANEL ASSEMBLY

☐ 1 Laminate two W-12 wing tip sections together using the pin register technique. Note that these parts are cut so that two have the grain running in one direction and two have been rotated so the grain will cross that of the other two. Select two with opposing grain to form a cross grain part for strength.

Laminating two WT pieces together to form the wing tip plate using the pin registration method.

☐ 2 Pin W-11, W-12, W-13 and W-14 into position over the plans and glue them together.

☐ 3 Locate SWB and slide the straight ribs W-7, W-8 and W-9 into their appropriate slots.

☐ 4 Locate SWT and slide it into this assembly from the top. Tack glue the two sheer webs at each end.

☐ 5 Place the rib trailing edges into there appropriate slots in W-13 and W-14 and glue them.

☐ 6 You will need to trim the leading edge to a triangle shape from the rib slot for RA to the tip to accommodate the interface of the leading edge and W-11, then install the leading edge.

☐ 7 Install all RA ribs.

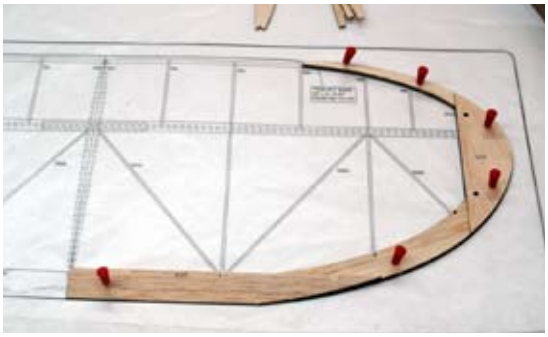
☐ 8 Install the angled ribs W-7A, W-8A and W-9A and then glue it.

☐ 9 Install the top spar flange.

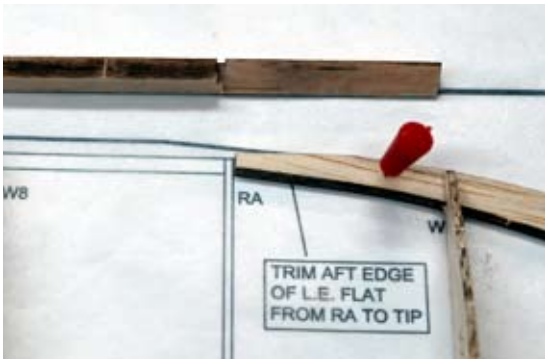
☐ 10 Remove this assembly from the plans, flip it over and install the remaining ply spar flange.

☐ 11 Repeat steps 1 through 10 for the remaining tip panel.

☐ 12 The wing panels are assembled using 1/16" dihedral braces. These braces will glue to the front and back of the sheer web assembly. The dihedral should be set by the sheer webs but check it against the dimensions recommended on the plans.



Outer panel assembly begins by pinning W-11 through W-14 to the plans as shown here.



Before installing the leading edge trim it to a triangle shape from the slot for RA to the tip to accommodate the interface with W-11.

The wing panels are joined using these ply dihedral braces glued for and aft of the sheer webs.

RIGGING NOTE FROM JIM JENNINGS

Notes on Rigging

My model is rigged with blind nuts in the firewall to mount an Axi outrunner. The motor wires pass through the firewall to the ESC. inside the model. I use a Starlink timer mounted on the outside of the model and a Hitec HS55 servo for DT. The wires for the battery pass through the bottom of the model through a hole that is reinforced with ply. The battery is mounted to the bottom of the model with rubber bands for ease of ejection in the event of a crash and accessibility for charging.

This model currently holds the AMA Electric B record with 1/8" wash-in in the right main panel and 1.5 degrees of decalage between the wing and the stab. It has 1.5 degrees of down and left thrust in the nose. RTF the model weighs 12.57 ounces and makes 260 watts.

Good luck with your TopNotch Maverick.

Part #	Sheet #	Material	Part Description
AT	15	3/32" X 4" X 17" BALSA	PYLON ALIGNMENT TAB
BOT TIP X4	1	1/16" x 4-1/2" x 9" AC PLY	DIHEDRAL BRACE
BRACING	12	1/8" X 3" X 36" BALSA	FUSELAGE BRACING
F1	1	1/16" x 4-1/2" x 9" AC PLY	FUSELAGE FORMER
F2	12	1/8" X 3" X 36" BALSA	FUSELAGE FORMER
F3	6	1/16" X 3" X 36" BALSA	FUSELAGE FORMER
F4	6	1/16" X 3" X 36" BALSA	FUSELAGE FORMER
F5	6	1/16" X 3" X 36" BALSA	FUSELAGE FORMER
F6	6	1/16" X 3" X 36" BALSA	FUSELAGE FORMER
F7	6	1/16" X 3" X 36" BALSA	FUSELAGE FORMER
F8	6	1/16" X 3" X 36" BALSA	FUSELAGE FORMER
F9	6	1/16" X 3" X 36" BALSA	FUSELAGE FORMER
F10	6	1/16" X 3" X 36" BALSA	FUSELAGE FORMER
F11	1	1/16" x 4-1/2" x 9" AC PLY	FUSELAGE FORMER
F12	6	1/16" X 3" X 36" BALSA	FUSELAGE FORMER
FB	2	1/16" X 4" X 36" BALSA	FUSELAGE BOTTOM
FB	7	1/16" X 3" X 36" BALSA	FUSELAGE BOTTOM
FD-2 X2	8	1/16" X 4" X 36" BALSA	FUSELAGE DOUBLERS
FD-LEFT	8	1/16" X 4" X 36" BALSA	FUSELAGE DOUBLER
FD-RIGHT	8	1/16" X 4" X 36" BALSA	FUSELAGE DOUBLER
FS X2	2	1/16" X 4" X 36" BALSA	FUSELAGE SIDE DOUBLERS
FS-LEFT	3	1/16" X 4" X 36" BALSA	FUSELAGE SIDE
FS-RIGHT	3	1/16" X 4" X 36" BALSA	FUSELAGE SIDE
FT	2	1/16" X 4" X 36" BALSA	FUSELAGE TOP
FT	2	1/16" X 4" X 36" BALSA	FUSELAGE TOP
FW	11	1/8" X 2" X 2" AC PLY	FIREWALL
HA	1	1/16" x 4-1/2" x 9" AC PLY	HATCH COVER
HA-FR	1	1/16" x 4-1/2" x 9" AC PLY	HATCH FRAME
P1	15	3/32" X 4" X 17" BALSA	PYLON CORE
P2 X2	9	1/16" X 6" X 36" BALSA	PYLON RIB
P2 X2	15	3/32" X 4" X 17" BALSA	PYLON RIB
P4 X2	15	3/32" X 4" X 17" BALSA	PYLON RIB
P5 X2	12	1/8" X 3" X 36" BALSA	STAB GUSSET
P6 x2	2	1/16" X 4" X 36" BALSA	PYLON POCKET
P7	2	1/16" X 4" X 36" BALSA	PYLON POCKET
P7	8	1/16" X 4" X 36" BALSA	PYLON POCKET
PHA	14	3/13" X 2" X 3" AC PLY	PYLON AFT HOOK
PHF	14	3/13" X 2" X 3" AC PLY	PYLON FOR HOOK
PR X2	12	1/8" X 3" X 36" BALSA	PYLON RAILS
PYLON SKINS	9	1/16" X 6" X 36" BALSA	PYLON SKINS
RA X6	5	1/16" X 3" X 36" BALSA	WING RIB
RA X6	6	1/16" X 3" X 36" BALSA	WING RIB
RB X2	7	1/16" X 3" X 36" BALSA	WING RIB
ROOT BOT X2	1	1/16" x 4-1/2" x 9" AC PLY	DIHEDRAL BRACE
ROOT D.G.	12	1/8" X 3" X 36" BALSA	WING DIHEDRAL GUAGE
ROOT TOP X2	1	1/16" x 4-1/2" x 9" AC PLY	DIHEDRAL BRACE
S2 X2	7	1/16" X 3" X 36" BALSA	STAB RIB

Part #	Sheet #	Material	Part Description
S2A X2	4	1/16" X 3" X 36" BALSA	STAB RIB
S3 X2	7	1/16" X 3" X 36" BALSA	STAB RIB
S3A X2	6	1/16" X 3" X 36" BALSA	STAB RIB
S4A X2	6	1/16" X 3" X 36" BALSA	STAB RIB
S5 X2	7	1/16" X 3" X 36" BALSA	STAB RIB
S5A X2	6	1/16" X 3" X 36" BALSA	STAB RIB
S6 X2	7	1/16" X 3" X 36" BALSA	STAB RIB
S6A X2	4	1/16" X 3" X 36" BALSA	STAB RIB
S7	12	1/8" X 3" X 36" BALSA	STAB T.E.
S8 X2	12	1/8" X 3" X 36" BALSA	STAB T.E.
S9	12	1/8" X 3" X 36" BALSA	STAB TIP
SAT	1	1/16" x 4-1/2" x 9" AC PLY	STAB ALIGNMENT TONGUE
SB	8	1/16" X 4" X 36" BALSA	STAB BRACE
SF-BOT X4	10	1/32" X 4" X 17" AC PLY	WING SPAR FLANGE
SF-TOP X4	10	1/32" X 4" X 17" AC PLY	WING SPAR FLANGE
SG	12	1/8" X 3" X 36" BALSA	PYLON SPAR
SLE-STIX	8	1/16" X 4" X 36" BALSA	STAB-STIX
SM	1	1/16" x 4-1/2" x 9" AC PLY	STAB PLATE
SP	1	1/16" x 4-1/2" x 9" AC PLY	STAB PLATE
SRH	1	1/16" x 4-1/2" x 9" AC PLY	STAB RUBBER HOOK
SS	3	1/16" X 4" X 36" BALSA	STAB SPAR
SWB X4	4	1/16" X 3" X 36" BALSA	SHEER WEB BOTTOM
SWT X4	4	1/16" X 3" X 36" BALSA	SHEER WEB TOP
TIP D.G.	12	1/8" X 3" X 36" BALSA	WING
TOP TIP X4	1	1/16" x 4-1/2" x 9" AC PLY	WING DIHEDRAL GUAGE
TP	1	1/16" x 4-1/2" x 9" AC PLY	TIMER MOUNT PLATE
V1 X2	4	1/16" X 3" X 36" BALSA	FIN RIB
V2 X2	5	1/16" X 3" X 36" BALSA	FIN RIB
V3 X2	4	1/16" X 3" X 36" BALSA	FIN RIB
V4 X2	4	1/16" X 3" X 36" BALSA	FIN EDGE
V5 X2	4	1/16" X 3" X 36" BALSA	FIN EDGE
V6 X2	4	1/16" X 3" X 36" BALSA	FIN EDGE
V7 X2	4	1/16" X 3" X 36" BALSA	FIN EDGE
VC	9	1/16" X 6" X 36" BALSA	VERT. FIN CORE
W1 X2	5	1/16" X 3" X 36" BALSA	WING RIB
W-10	3	1/16" X 4" X 36" BALSA	WING RIB
W11	12	1/8" X 3" X 36" BALSA	WING
W12 X4	9	1/16" X 6" X 36" BALSA	WING TIP
W13	12	1/8" X 3" X 36" BALSA	WING
W14 X2	NONE	3/4" TRAILING EDGE STOCK	
W15 X2	NONE	3/4" TRAILING EDGE STOCK	
W2 X2	5	1/16" X 3" X 36" BALSA	WING RIB
W2A X2	2	1/16" X 4" X 36" BALSA	WING RIB
W3 X2	5	1/16" X 3" X 36" BALSA	WING RIB
W3A X2	7	1/16" X 3" X 36" BALSA	WING RIB
W4 X2	5	1/16" X 3" X 36" BALSA	WING RIB
W4A X2	6	1/16" X 3" X 36" BALSA	WING RIB

Part #	Sheet #	Material	Part Description
W5 X2	5	1/16" X 3" X 36" BALSA	WING RIB
W5A X2	6	1/16" X 3" X 36" BALSA	WING RIB
W6 X2	5	1/16" X 3" X 36" BALSA	WING RIB
W7 X2	5	1/16" X 3" X 36" BALSA	WING RIB
W7A X2	6	1/16" X 3" X 36" BALSA	WING RIB
W8 X2	6	1/16" X 3" X 36" BALSA	WING RIB
W8A X2	6	1/16" X 3" X 36" BALSA	WING RIB
W9 X2	6	1/16" X 3" X 36" BALSA	WING RIB
W9A X2	2	1/16" X 4" X 36" BALSA	WING RIB
WLE X2	13	3/16" X 1" X 24" BALSA	WING LEADING EDGE
WP X3	12	1/8" X 3" X 36" BALSA	WING PLATE
WS X2	9	1/16" X 6" X 36" BALSA	WING SHEETING
WS X4	8	1/16" X 4" X 36" BALSA	WING SHEETING
WTB X4	12	1/8" X 3" X 36" BALSA	WING TIP BRACE

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