

The finished model was sprayed with yellow floral paint over the tissue.



Davis DA-2A

A simplistic FF rubber design *by Tom Houle*

Leeon Davis wanted his own airplane, but he didn't want to spend a large amount of money to achieve his goal. He looked to see what was available, then decided to design his own.

Drawing on his professional metal-working experience and skills, Leeon designed an easy-to-build, two-place airplane that only required simple aluminum cutting and bending. The design had to transport two adults and some baggage. Leeon used the Clark Y airfoil to ensure plenty of lift out of the small wing.

The Davis DA-2A's square, boxy outlines could not be easier for the homebuilder. Leeon's design employs a simple box fuselage. The cockpit section is framed with lightweight, square steel tubing.


Read the full construction article at www.ModelAviation.com/DA-2A and in the digital edition.

All of the formers, frames, and other parts are short enough to be bent up on a small brake, and then riveted together. The airplane has constant-chord wings and V-tail, and the side engine cowlings cheeks are simple curves.

I've always admired the simplicity of Leon's design and vowed that someday I'd build a FF Scale model. I searched online and turned up a pair of Davis DA-2A plans by Lloyd V. Hunt and William McCombs, respectively. These plans were helpful in visualizing the airframe for a larger model. A Google search generated a number of Davis DA-2A photos. I tracked down a three-view from a 1971 issue of *Air Trails* magazine.

H.G. Frautschy, executive director of the Experimental Aircraft Association's (EAA) Vintage Aircraft Association, provided me with EAA Archive photos. The full-scale DA-2A photo in this article is courtesy of the EAA Archive.

Before I get into the aspects of how I designed and built this interesting airplane, I opted to use old-fashioned rubber for power; however, there are lightweight RC and electric power systems that would also fly this airplane. Had I chosen RC electric, I would have left the V-tail feathers fixed and used aileron controls.

The accompanying pictures should give you the general idea of this build. The entire article can be seen online at www.ModelAviation.com/DA-2A or in the digital edition. 

—Tom Houle
thoule@wi.rr.com

SOURCES:

AMA Plans Service
(800) 435-9262, ext. 507
www.modelaircraft.org/plans.aspx

Easy Built Models
(334) 358-5184
www.easybuiltmodels.com



Cut and form a .015-inch brass sheet. Slot and flare the end of a piece of 3/32-inch diameter brass tubing. See the plans for the tubing length and tips for forming the brass sheet.



This laminated balsa wheel was turned on a Dremel tool. The 3/32-inch diameter brass tubing is cut off after turning the wheel. Paint it flat black. Add silver paper or Styrene hub disks.



Note that the center section ribs are notched to accept the 1/32 aircraft plywood main gear leg mounting plate. The .045 music-wire struts are bound to the plywood with 28-gauge soft brass wire. CA glue secures everything.



Do not assemble the V-tail until after the two halves are covered with tissue. Note the 3/32 sheet balsa angle attached to the LE of the V-tail. The balsa angle ensures a correct V dihedral angle.



Fuselage formers B through E are constructed on top of the plans. Use 3/32 x 3/16 balsa strips. Install the top halves of formers B through E after the fuselage sides are erected. The cockpit bows are laminated 1/32 x 3/32 basswood strips. Angle splice the bows to 3/32 square balsa turtledeck longerons.

2



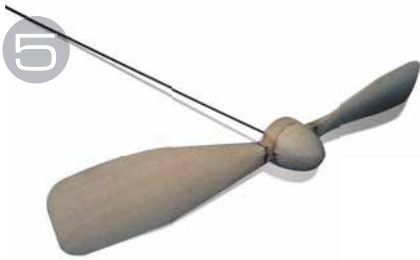
Solder the flared end of the 3/32-inch tubing to the .015 brass sheet.

3



The finished nose strut has a .030 brass wire axle. Solder the axle ends when the nose wheel is in place. The tubing slips over .045 music-wire strut. CA holds the tubing to the strut.

5



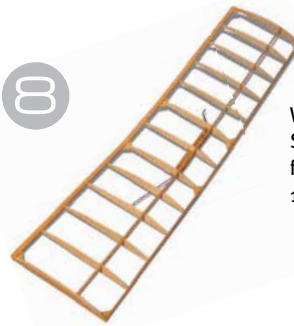
The propeller should be hard balsa, pine, or basswood. Note the slightly rounded blade tips. Start sanding with 50-grit sandpaper and work up to 220 grit. The finished propeller gets a couple of coats of clear dope, then is painted silver with a red spinner. The propeller shaft is .045 music wire. Thread is bound and CA glued to the propeller hub. A Crockett or similar hook is required for winding.

7



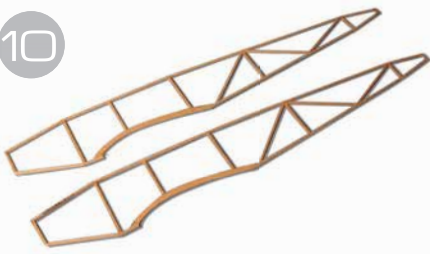
The unassembled V-tail plates are of simple 3/32 square balsa construction. Be sure to pin it down when shrinking the tissue.

8



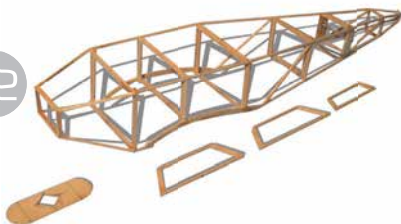
Wing construction could not be simpler. Strong and lightweight, it will hold up to first flights. The tip ribs are covered with 1/32 soft balsa sheet.

10



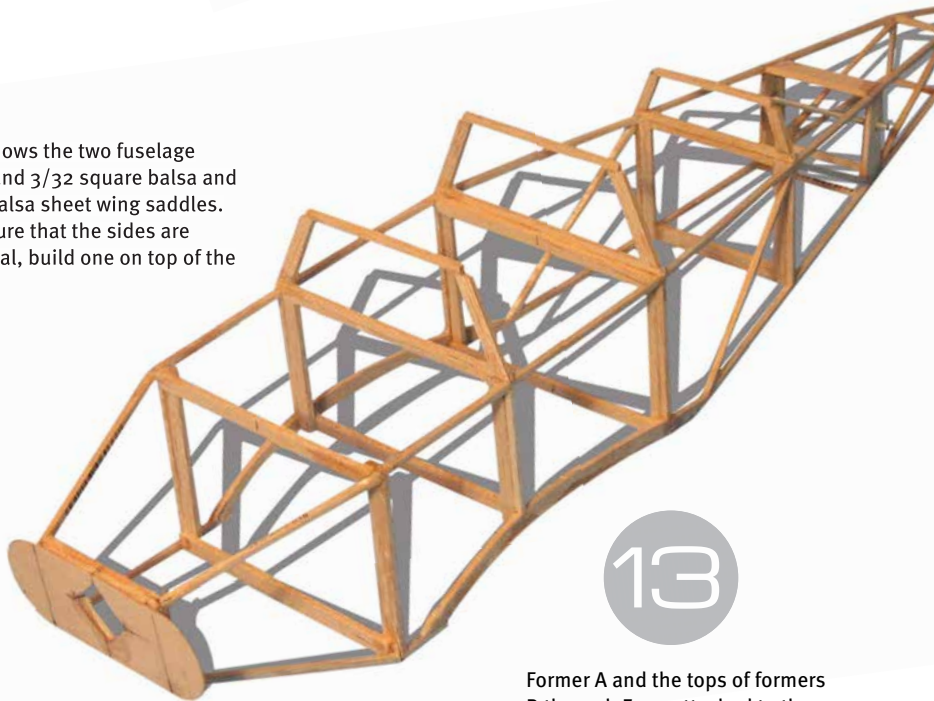
This shows the two fuselage sides and 3/32 square balsa and 3/32 balsa sheet wing saddles. To ensure that the sides are identical, build one on top of the other.

12



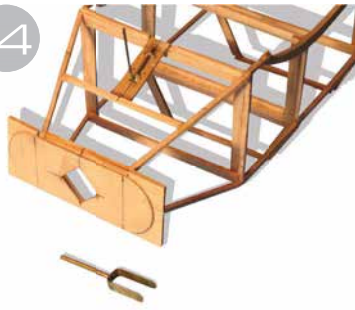
The assembled fuselage is ready for former A and the tops of formers B through E.

13



Former A and the tops of formers B through E are attached to the fuselage. The laminated cockpit bows are attached next.

14



The brass tubing nose strut assembly is ready to slip over the .045 music wire extension. The 3/32 balsa sheet backing at former A facilitates gluing the 1/32 balsa sheet to the cowl cheeks.

15



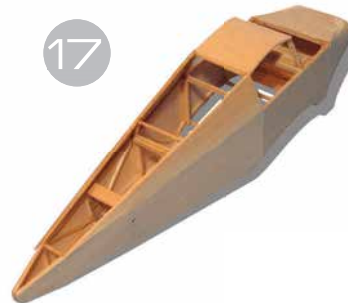
Retain the brass nose strut tubing with gap-filling CA glue.

16



The cockpit bows and turtledeck stringers have been installed. Note that the turtledeck stringers run to the V-tail assembly's LE.

17



Fuselage sides and bottom are sheathed with soft 1/32 balsa sheet. The 1/32 cockpit top sheeting runs cross-grain.

18



The nose strut radiator housing is built up from soft 1/16 balsa sheet. There is an opening at the bottom rear of the fuselage for attaching the rubber to the rear peg.

19



The fuselage sheeting is complete. The three windshield supports are 3/32 strip balsa. The instrument panel glare shield is black construction paper.

20



Bevel trim the inside faces of the fuselage top longerons so that the V-tail assembly rests on the top edges of the top longeron.

21



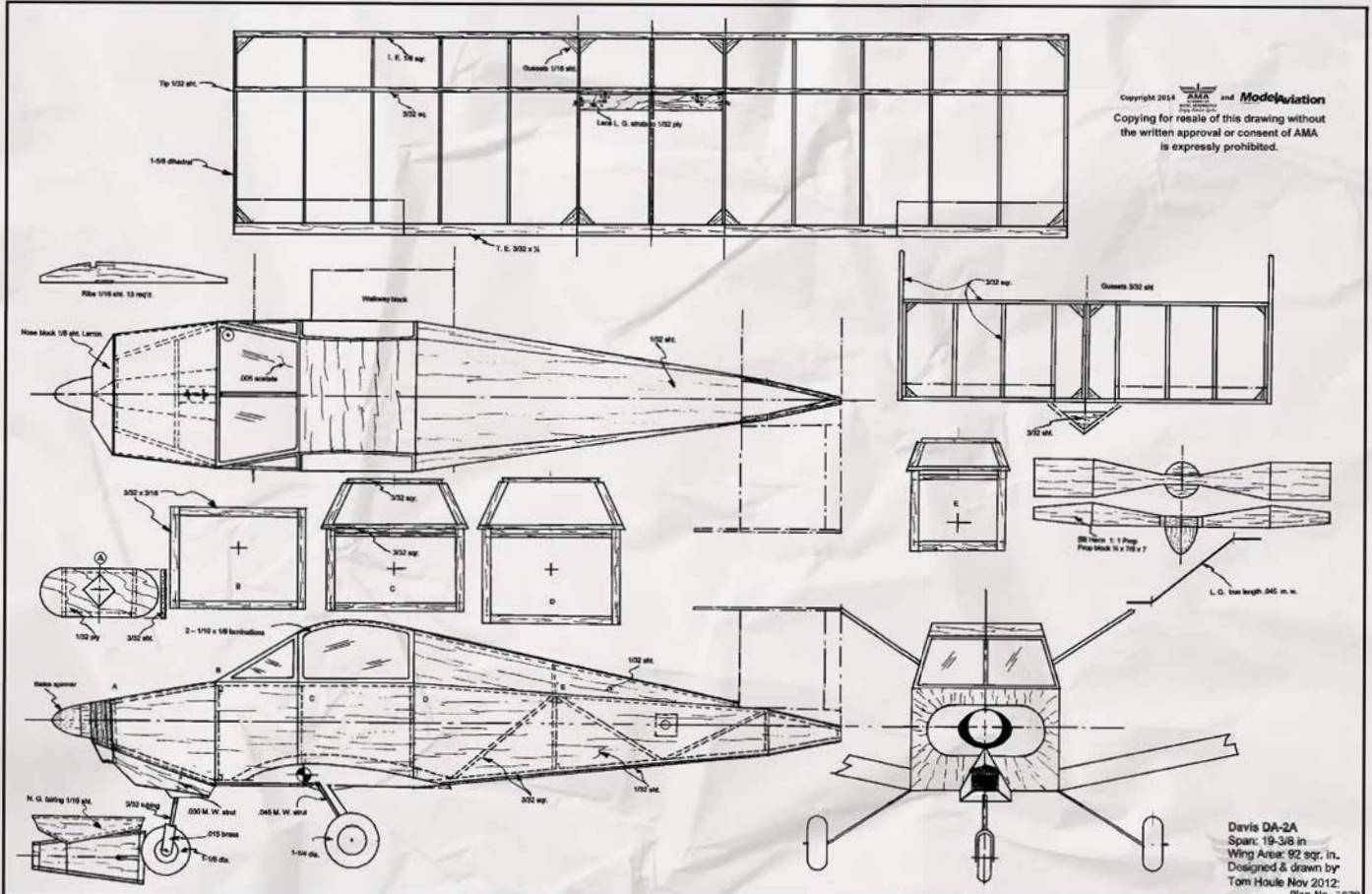
The top edge of the 3/32 angle gusset at the V-tail assembly LE should sit exactly 1/32 inch below the top of the turtledeck sheeting, positioning the LE at zero degrees incidence. Fill the space between the V-tails with a triangular piece of 1/32 balsa sheet. Leave the TE of the V-tail assembly loose to allow shimming in negative incidence.

This is Harmon Lange's full-scale Davis DA-2A and the second one built. Photo courtesy of the EAA Archive.

Davis DA-2A

SPECIFICATIONS

Type:	Semiscale FF
Skill level:	Intermediate
Wingspan:	19 ³ / ₈ inches
Length:	18.5 inches
Weight:	3.3 ounces
Wing area:	92 square inches
Construction:	Balsa



Davis DA-2A
Span: 19-3/8 in.
Wing Area: 92 sq. in.
Designed & drawn by
Tom Houle Nov 2012.
Plan No. 0078