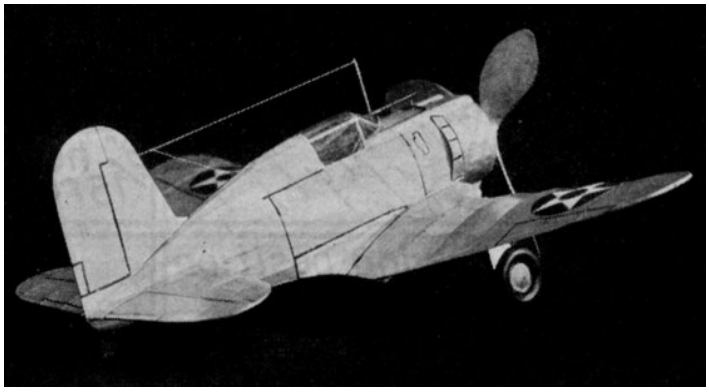
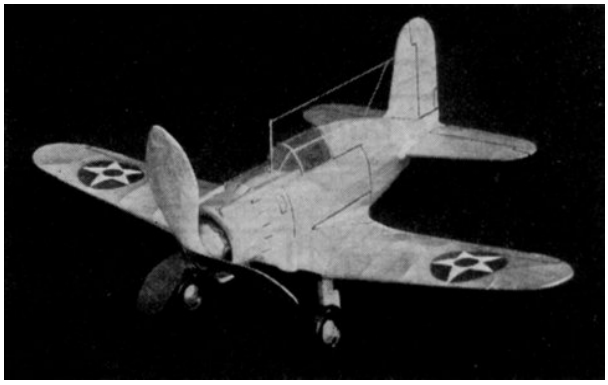


Cleverly designed to give a realistic appearance

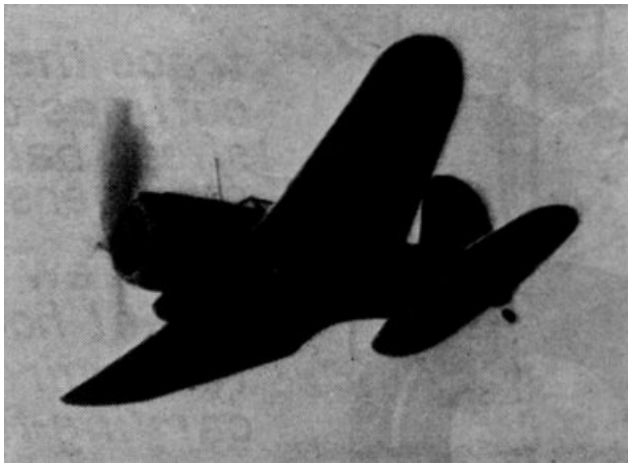


A large prop insures high performance

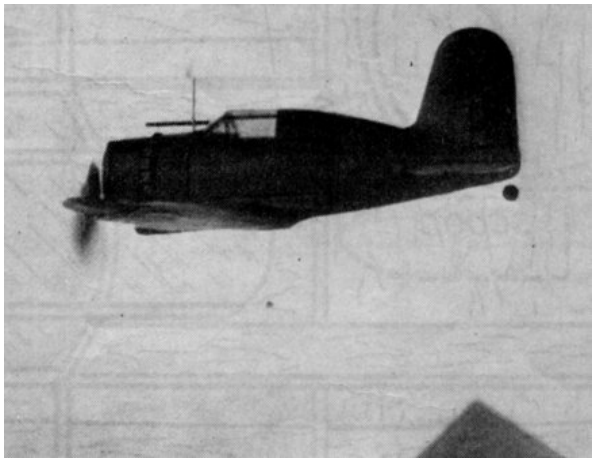
A Vought Fighter That Flies

Complete Data from Which You Can Build an Excellent Performing Flying Scale Model of the U.S. Navy V-143 Fighter

By WILLIAM WINTER



The model in full flight



Not a big ship, just the model

THE new Vought single-place fighter is of all-metal construction and is characterized by its high performance.

Its design includes retractable landing gear, wing flaps, controlled engine cooling flaps and a Hamilton Standard controllable pitch propeller. Either the Pratt & Whitney Wasp Junior or the Twin Wasp junior power plants may be utilized.

With the Wasp junior of only 525 hp. the high speed is 250 m.p.h., cruising speed 220 m.p.h., service ceiling 28,000 ft., landing speed 60 m.p.h. and the range 770-1070 miles. With the Twin Wasp of 700 hp. the performance should show a material difference.

Features of the armament and equipment are the two 30 calibre machine-guns and the racks for 300 lbs. in bombs.

The model is accurately scaled and includes in its construction a workable folding landing gear. The model will fly with the wheels retracted, hand-launched over grass of course, a well as in the conventional manner. The little ship is a picture in flight or on the shelf. At time of drawing ship was experimental so paint all silver or blue fuselage and orange wings. Use star insignia.

Fuselage

Trace the side, top and bottom outlines of the fuselage on 1/16" sheet balsa and cut out the master stringers, allowing about a 1/4" width tapering toward the rear as seen on the plans. On them mark the positions of the bulkheads.

Cut the bulkheads from 1/16" sheet balsa in accordance with the patterns given. Cut only the large notches for the master stringers marking the smaller

ones for a later operation. Cement bulkheads No. 1 to No. 4 on the two side master stringers. When the cement has set, add the remaining formers. Note that No. 8 is two ply cross-grained. The rear hook is bent to shape from .028 wire and fastened in this bulkhead. Add the top and bottom master stringers.

The center section ribs J and K are cut to shape from 1/16" sheet and cemented in place on the bulkhead extensions. Follow the details given in attaching the tubing to rib K. Reinforce and bind with thread as shown.

The wheel housing block which extends across the fuselage will snugly fit between the left and right ribs K. First trim this block down to its required outside dimensions before attempting any shaping. This prepared block is now cut to the top profile shown on the cutaway top view and in the detail. The portion of the block that fits within the body is left flat. The outer portion that extends from the outer rib J to the rib K is shaped to fit the wing as required. The wheel and strut cutouts are made on the bottom to a depth that will accommodate those parts when in the "up" position. Dimensions for the cut-outs are obtained from the block detail.

Cement the auxiliary 1/16" sq. stringers in place cutting the notches already marked as the work progresses

Shape the machine-gun covered troughs from 5/16" x 1/4" soft balsa and fasten them in position. They are made in two portions as seen on the plans the front sections being attached after the cowl is in place.

The front curved edge of the cockpit enclosure is bent to shape from 1/32" sheet. The headrest is 3/16" sheet.

Complete the center section by adding the trailing edge and the 1/16" sheet fillet former seen on the top view.

Shape the tail block from soft balsa and match it to the rear bulkhead. Do not locate the filler sheet at either side until the stabilizer halves are in position. To this block fasten the tail wheel axle with the wheel already in place. Cement the completed block to the fuselage.

Carve the two stabilizer fillet blocks, one left and one right hand from 3/16" soft sheet balsa. After sanding glue them to the fuselage sides at the proper place and angle. Be particular on this point.

The cowling is to be made at this time. The front plate is shaped from laminated 1/4" discs. The rear piece is a 1/8" disc. These two parts are spaced by 8 -- 1/16" x 1/4" strips. The open space is covered by a stiff paper band wrapped around the cowl and cemented *beneath*. Cement a 1/16" circular bulkhead slightly smaller than the 1/8" rear plate to the rear of the cowl to support the paper cooling flaps which will later be installed. Cement the cowl to the nose of the ship and add the front portions of the machine-gun throughs. Add the cowl block X and scoop after fuselage is covered.

To cover the fuselage use narrow strips of superfine tissue to avoid wrinkles. Spray the finished covering evenly and lightly and give one coat of clear dope.

The canopy is of light sheet celluloid cemented in place. Cut patterns from paper until the desired result is attained.

The cowling flaps are of stiff paper, the subdivisions being painted later with black paint.

Tail Surfaces

The spars of all surfaces are tapered from 1/16" sheet balsa from a width of 3/8" to 1/8". The cross-pieces are cut to the required widths from 1/32" sheet balsa and are cemented in place. The curved edges are of 1/16" sq. bamboo bent to shape around a candle flame. Between the innermost pieces of all the tail surfaces insert 1/32" sheet bracing strips.

To cover use a separate piece of tissue for each side of all surfaces. Attach only the outer edges with thickened dope. Spray the partially completed units and pin to the bench until dry to prevent warping. Dope lightly when dry and cement each in its proper place.

The 3/8" filler sheet portions are inserted between the stabilizer inner cross-pieces and the tail block in such a manner that they agree with the shape of the stabilizer.

Landing Gear

The landing gear structure consists of one heavy, hinged strut to which the 1-1/2" wheel is attached on a .028 wire axle. This wire axle on the real ship is a fork strut. The heavy strut on the model is a metal streamline for the fork on the large V-143.

Make the strut from 1/4" sheet, fastening the 1/16" tube hinge in place as directed in the details. Bend the axle to shape and attach to the strut with the wheel already in place. The small piece of tube shown in an internal, vertical position in the strut enables a lock pin to be inserted through another piece of tubing immediately above the strut downward into the strut itself locking it in the flight position. A wire hinge pin runs through the strut tube into the tube on rib K. It is bent slightly to prevent loosening in service.

When retracted the wheels are held up by extending a rubber band from the projection of the axle below one wheel to the same part on the other.

Wings

The wings are made in two panels one left and one right hand each of which fits snugly to the outer

center section rib K. The ribs with the exception of the innermost which is 1/16" sheet are all cut in accordance with the patterns given from 1/32" sheet.

The spar being cut from 1/16" sheet is tapered from 5/8" at the root to 1/16" at the tip. The leading edge is likewise tapered but from 5/16" to 1/8" by 1/8" thick. The trailing edge is 3/32" x 3/16" shaped as required. The tips are 1/16" sq. bamboo bent around a candle flame to the desired shape. Note that the first rib of each panel is slanted to allow for the dihedral.

Between the first two ribs of each panel insert three pieces of 1/16" sq. on both the top and bottom surfaces. This is to prevent distortion of the first rib when covered and to aid in maintaining the dihedral.

To cover use a separate piece of tissue for each surface of each panel. At first fasten only the outside edges. Spray the partly finished panels and pin to the bench until dry. Dope lightly and cement each in position.

Attach the airspeed indicator at the last rib on the left wing.

Motor and Propeller

The two row crankcase is made by shaping two 1/2" pieces, one for each row, as seen on the detail. Cement them together so that the rear row of cylinders will be staggered. From the front the second row cylinders will be visible between those of the first. The rear cylinders need not be detailed as they are not easily seen when in position. The front of the crankcase is a piece of 5/16" x 1" sq. rounded to fit. The rear square is 1/8 " sheet and fits the hole provided in the rear cowling former.

Make two tin bearings and insert one in the crankcase to take up the friction.

Make the three prop blades from 4" x 1-1/4" x 7/8" blocks. Pin each to the bench and assemble as shown before carving. Strengthen the hub by balsa triangles. Carve in the usual manner rounding the tips after this operation has been completed. To balance point one blade directly down. Lighten the one that descends to balance the third. The blade that was originally pointed down, incidentally this should be the heaviest to facilitate the accomplishment of the task, is then balanced in similar manner against one of the others. Insert the two pronged tin washers in the rear face of the hub and bending the front U of the shaft, insert that part also as required. Slide the crankcase with a friction washer on the shaft and bend the rubber hook.

The power plant is eight strands of 1/8" flat. Form the rubber motor around two pins driven into the bench and work into position by using a long wire hook.

Flying

If possible test the ship over grass to prevent damage in the test stage. Otherwise test R.O.G. on a few turns increasing the winds as the balance is ascertained. A small weight may be used to balance if necessary. The tail may be slightly warped down, for example 1/8", if desired. If the model is ever flown with the wheels up it will be necessary to bend the elevators down even if the ship is in balance.

Bill of Materials

6	1/16" sq. x 36" strip balsa
1	3/32" x 3/16" x 24" strip balsa
1	1/8" x 5/16" x 24" strip balsa
1	1/16" x 3" x 36" sheet balsa
	scraps of 3/16" and 3/8" sheet balsa
1	1/32" x 2" x 24" sheet balsa
1	1/4" x 3" x 12" sheet balsa
1	1/8" x 3" sq. sheet balsa
3	4" x 1-1/4" x 7/8" block balsa
1	3/4" x 1-5/16" x 6" block balsa
	small block scraps
2	1/2" x 1-1/16" sq. block balsa
1	3/8" sq. x 8" block balsa

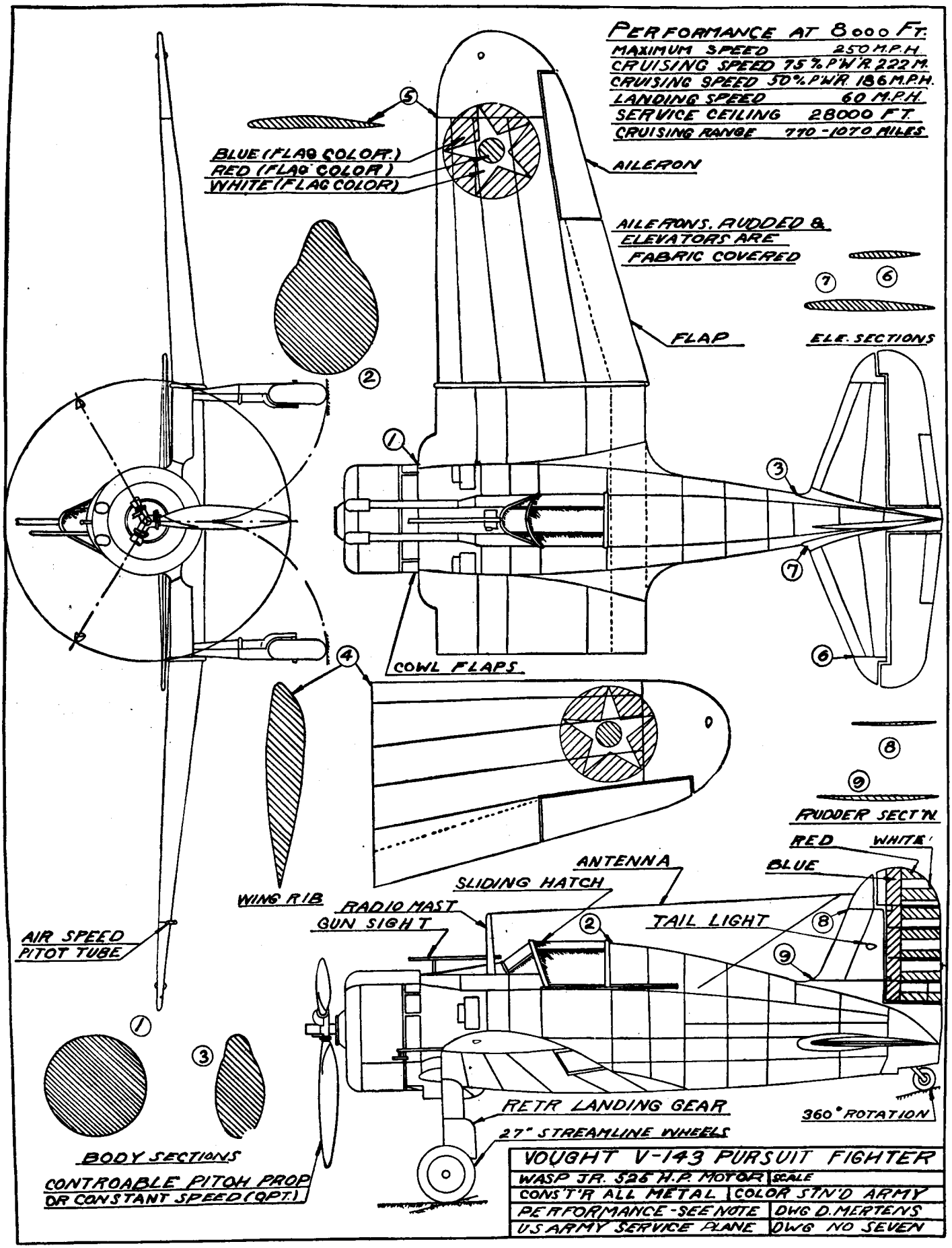
Miscellaneous

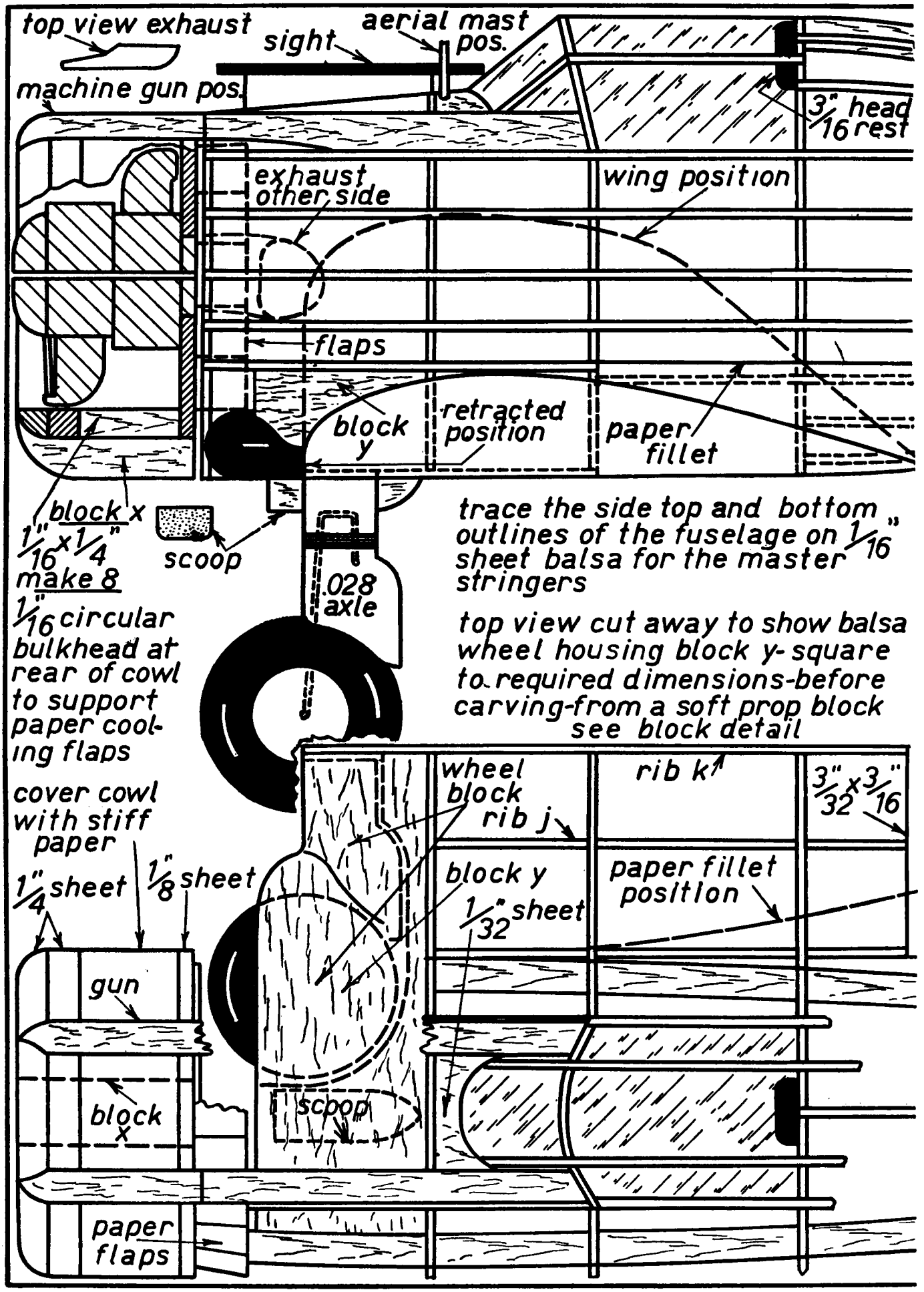
1	1 oz. cement
1	2 oz. clear dope
8 ft.	1/8" flat rubber

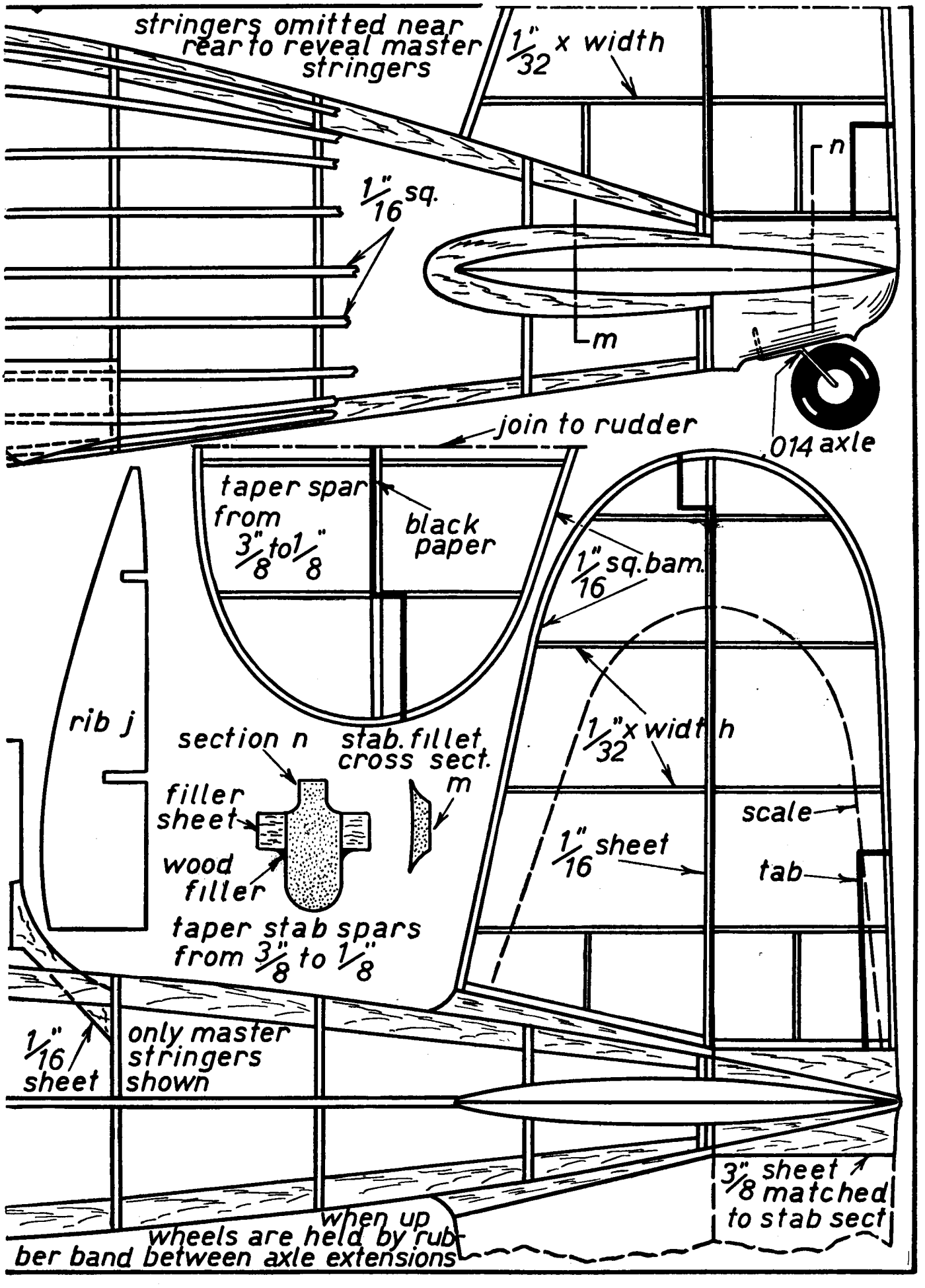
1 ft.	.028 music wire
	scrap of .014 wire
1-pr.	thick 1-1/2 " wheels
1	5/8" tail wheel
sheet celluloid	
paints or colored dope as needed.	

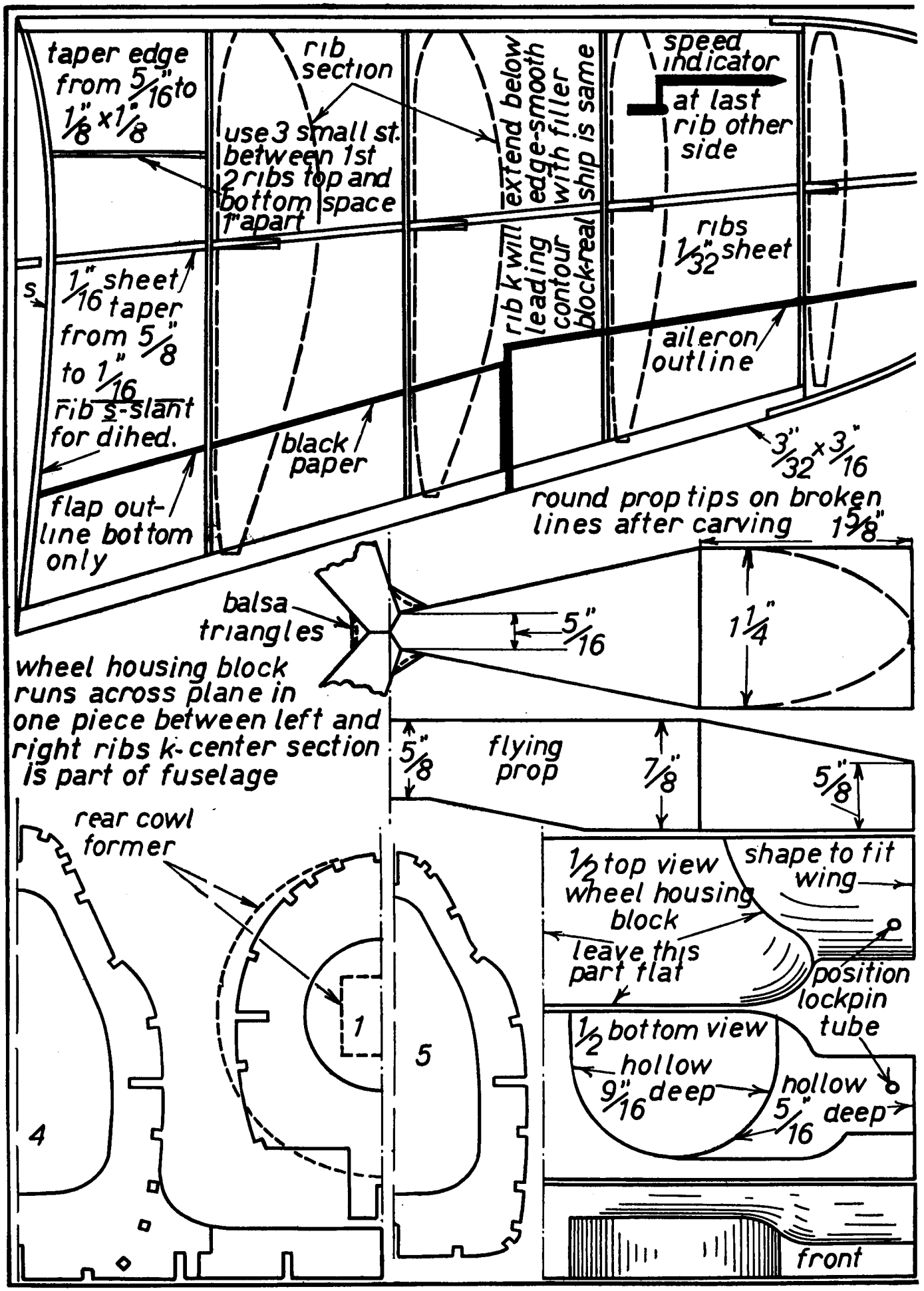
Scanned From September, 1937 Model Airplane News

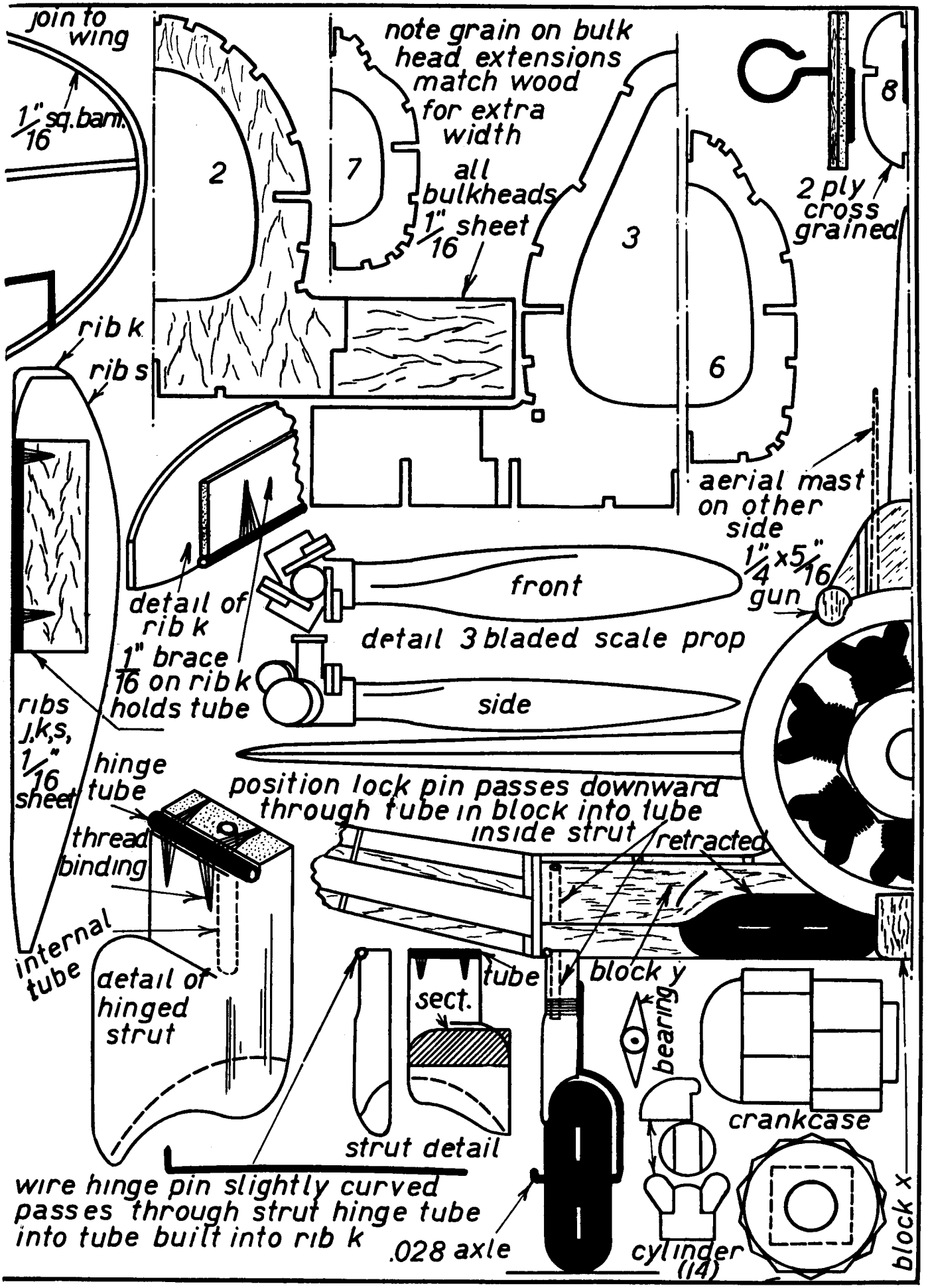
Build a Scale Model from These Plans




top view exhaust
sight
aerial mast pos.
machine gun pos.
3" 1/16 head rest
exhaust other side
wing position
flaps
block y
retracted position
paper fillet
block x
1" 1/16 x 1/4"
make 8
scoop
.028 axle
trace the side top and bottom outlines of the fuselage on 1/16" sheet balsa for the master stringers
top view cut away to show balsa wheel housing block y- square to required dimensions-before carving-from a soft prop block see block detail
1/16" circular bulkhead at rear of cowl to support paper cooling flaps
cover cowl with stiff paper
1/4" sheet
1/8" sheet
wheel block
rib j
rib k
3" 32 x 3" 16
block y
1/32" sheet
paper fillet position
gun
block x
scoop
paper flaps


stringers omitted near rear to reveal master stringers
1/32 x width
n
1/16 sq.
m
join to rudder
014 axle
taper spar from 3/8 to 1/8
black paper
1/16 sq. bam.
rib j
section n
stab. fillet cross sect.
m
filler sheet
wood filler
1/32 x width h
scale
1/16 sheet
tab
taper stab spars from 3/8 to 1/8
1/16 sheet
only master stringers shown
3/8 sheet matched to stab sect
when up wheels are held by rubber band between axle extensions


taper edge from 5/16 to 1/8 x 1/8
rib section
use 3 small st. between 1st 2 ribs top and bottom space 1" apart
extend below edge-smooth with filler ship is same
speed indicator at last rib other side
ribs 1/32 sheet
rib K will leading contour block-real
1/16 sheet taper from 5/8 to 1/16
rib S-slant for dihed.
aileron outline
black paper
3/32 x 3/16
flap out-line bottom only
round prop tips on broken lines after carving
1 5/8"
balsa triangles
5/16
1 1/4"
wheel housing block runs across plane in one piece between left and right ribs K-center section is part of fuselage
5/8
flying prop
7/8
5/8
rear cowl former
1/2 top view wheel housing block
shape to fit wing
leave this part flat
position lockpin tube
1/2 bottom view
hollow 9/16 deep
hollow 5/16 deep
1
4
5
front


join to wing
1/16" sq. bam.
2
7
note grain on bulk head extensions match wood for extra width
all bulkheads 1/16" sheet
3
8
2 ply cross grained
rib k
rib s
6
aerial mast on other side
1/4" x 5/16" gun
detail of rib k
1" brace 1/16 on rib k holds tube
front
detail 3 bladed scale prop
side
ribs j,k,s, 1/16" sheet
hinge tube
position lock pin passes downward through tube in block into tube inside strut
retracted
thread binding
internal tube
detail of hinged strut
tube
block y
sect.
bearing
crankcase
strut detail
wire hinge pin slightly curved passes through strut hinge tube into tube built into rib k
.028 axle
cylinder (14)
block x