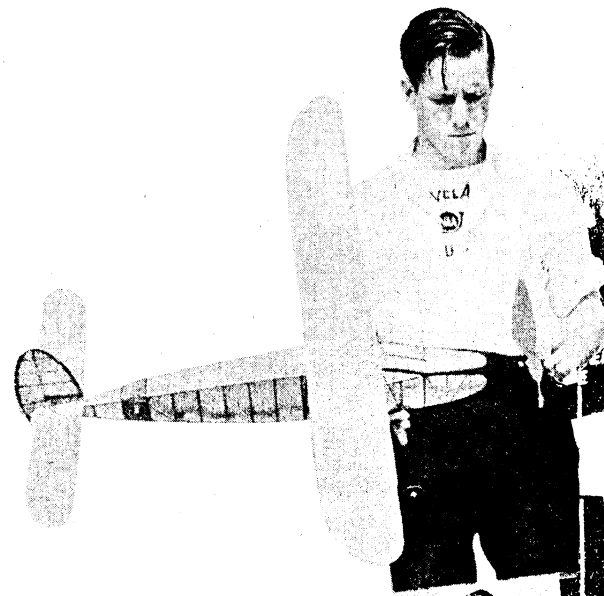
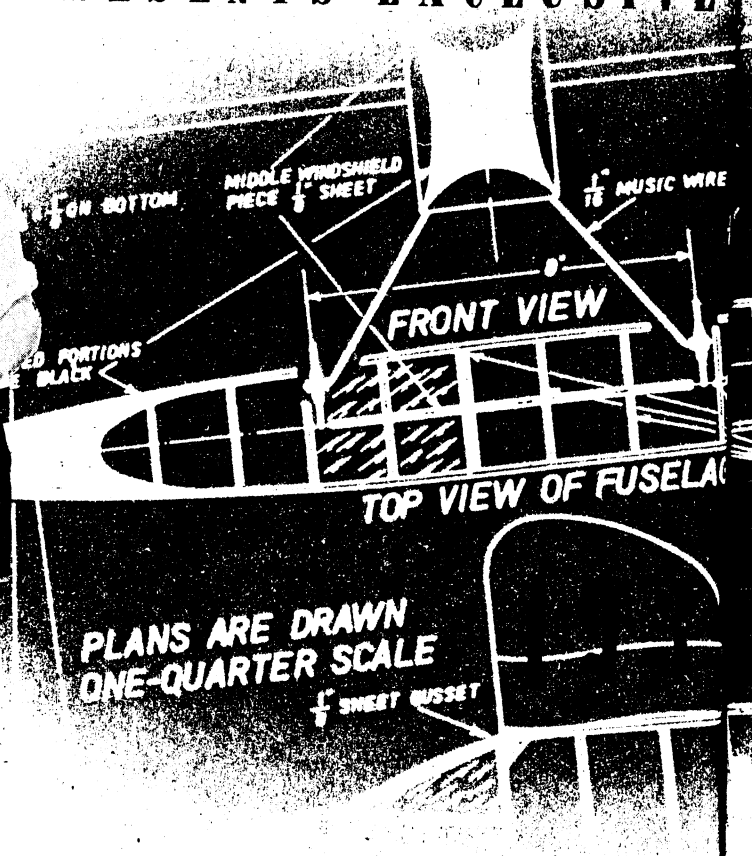
AIR TRAILS PRESENTS EXCLUSIVE





KORDA'S CONTEST RECORD

First Class C stick record in 1935; open fuselage, Class D, 54 min., 1937 Nationals; firsts in 1936-37 Scripps-Howard speed events, 60-75 m.p.h.; flying-scale record in Akron, 2:05; third in C gas and stick, first in B gas, Pittsburgh, 1939; third in C gas, Bowling Green, Ohio, 1939; first in B gas, New Philadelphia, Ohio, 1939—N. A. A. record; third B gas, 1939, Detroit; two firsts, two thirds in gas at Cleveland, 1939; first open fuselage, 1939 Nationals; first in fuselage, Cleveland, Wakefield winner, 1939.

THE Wakefield Contest was over almost before it started. Dick Korda's first flight—in fact, the first of the contest—was a heartbreaker for the other contestants. Not only was the 43:15 flight the longest of the day, but it also set a new international record.

Korda's record-breaking formula is a simple job expertly handled. The model is a development of the basic design with which Chester Lanzo, Korda, and others have been knocking off the prizes for years.

Most interesting feature is the folding propeller. There is nothing new about flop-back props, but this one is unusually perfected. The slanted hinge enables the prop blade to fit perfectly flat against the side of the fuselage. The counterweight, bent back when at rest, tends to straighten out through centrifugal force when the propeller revolves. The resultant reaction balances a similar force exerted by the thrust of the single blade.

Korda's 1939 model and its predecessors have amassed the following wins: 48 minutes, by Chester Lanzo, to take first in the 1936 Nationals, second by Dick Korda with 12 minutes; first in 1937 Nationals, 54 minutes by Korda, third in both Wakefield and Moffett eliminations the same year; third in the Wakefield eliminations and winner of the finals in 1939. The model set a world's record of 43:15 in these finals.

Materials, sizes and quantity are listed in the Bill of Materials at the end of the article.

CONSTRUCTION

Fuselage. The assembly drawings are quarter scale, details full size. Dimensions are given for the preparation of full-size working drawings. Structure is simple. Longerons are pinned on the working drawings, and the cross pieces and diagonals cemented in place. Both side frames are made at once, one superimposed on the other. Pins should not be driven through the wood, but rather along the edges. Wax paper spread over the drawings will prevent adhesion of the work to the paper. Let the cement dry overnight. If the

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AND COMPLETE PLANS FOR DICK KORDA'S

FIELD WINNER

two side frames stick together, separate them with a sliver of a double-edged razor.

Assemble the sides by starting at the widest section of the fuselage. Cement cross pieces in place at Stations 7 and 10. Note that from Station 7 to Station 10 the top cross pieces are cut from 1/8" sheet balsa to match the dihedral of the wing. Rest the fuselage inverted on the bench to check alignment of cross pieces. Pins can be used to hold the work in position. A triangle rested on the bench and against the fuselage will help. When dry, draw the two ends of the fuselage into position. A loose rubber band will hold the nose properly. Cement the nose cross pieces in place, then those between 7 and 10, and finally all others. The nose, as well as the section between Stations 15 and 16, are filled in with 1/8" sheet balsa—the nose on all four sides, the rear-hook section only on the sides and bottom. A celluloid inspection panel is directly over the rear hook.

The rear hook is a 3/16" dowel, slid through holes in the fuselage sides. Square pieces of 1/32" dural—other hard metals may be substituted—are drilled for the dowel and then cemented to the fuselage sides where the dowel is located. The dowel should fit snugly but not too tightly to be readily removed. The ends should extend slightly beyond the fuselage sides.

1/8" sheet balsa triangles are fitted into the fuselage at Station 6. See plans. The windshield is formed by three pieces cut from 1/8" sheet, which give the slightly curved profile noticeable on the side view.

The landing gear is installed before covering. Bend the 1/16" music wire over the full-size pattern. A perspective detail is given on the plan. Note that the portion of the wire within the fuselage is held between two 1/16" sheets of pine. A piece of 1/16" hard sheet balsa is fitted into the U-shaped part of the wire. The whole must be well cemented during construction. Insert the landing-gear assembly at Station 6 and brace with another set of 1/8" sheet balsa triangles as shown in the landing-gear detail.

Covering is red Jap tissue, grain lengthwise. Spray tissue with water before doping. Windshield and inspection panel are sheet celluloid.

Wing. Trace the wing rib on a piece of cardboard and cut out as a template. Use this template to draw the required number of ribs on 1/16" medium sheet balsa. Cut out the ribs, pin together, and smooth to uniformity with sandpaper. Only then cut the notches. A full-size profile for bending the wing tip is given. The tip itself is formed from 1/16" round bamboo. (Split flat bamboo and then round it.) All necessary dimensions are given and the wing is assembled in the conventional way.

Note that there is a double break for dihedral. Small blocks will support the wing on the bench while the multi-spars are tailored to fit. Strengthen the wings at the dihedral breaks with 1/8" balsa angles. Brace each rib at the trailing edge with 1/32" sheet angles.

In covering the wing, run the paper grain chordwise. Cover the sections between the dihedral breaks separately.

Tail surfaces. The stabilizer is constructed in the same manner as the wing. The rudder differs in that the rib sections are 1/32 x 1/8" strips bent over a hard 1/8" square spar. The rudder edges and tail-skid portion are cut from medium 1/8" sheet. Full-size patterns are given.

In attaching the rudder, cement only to the stern post, leaving the front edge movable for adjustment. Both rudder and stabilizer should be cemented lightly to the fuselage so that they will come free in a crash.

Propeller and motor. The one blade is carved from a hard block in the usual way. Note, though, that the diagonals are curved 1/8" outward. The hub is a separate block. The folding mechanism is obvious from the plans. It works in this way: As the power is expended the compressed spring behind the winding eye moves the shaft forward until the right-angle rubber hook engages the wood-screw stop. See detail. This stop insures that the prop be in the proper position for folding. The slanted hinge has

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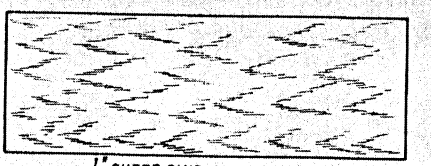
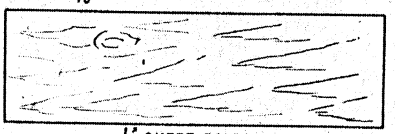


1/16" SHEET PINE MAKE

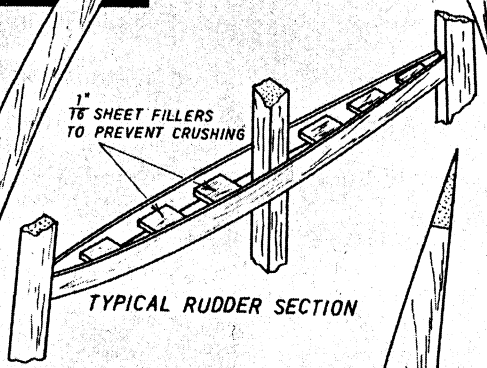


1/16" SHEET BALSA

PATTERNS FOR LANDING GEAR ATTACHMENT SEE OTHER SHEET

FULL SIZE LANDING GEAR PATTERN

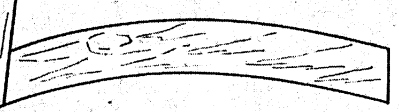
FULL SIZE WING TIP



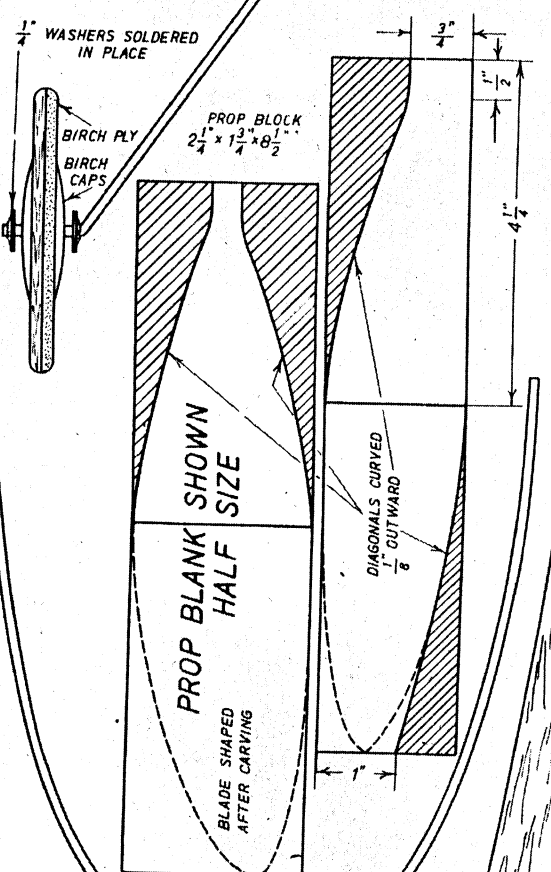
1/16" SHEET FILLERS TO PREVENT CRUSHING

TYPICAL RUDDER SECTION

FULL SIZE WING RIB



FULL SIZE RUDDER PATTERN



1/4" WASHERS SOLDERED IN PLACE

BIRCH PLY

BIRCH CAPS

PROP BLOCK 2 1/4" x 1 3/4" x 1/2"

3/4"

1/2"

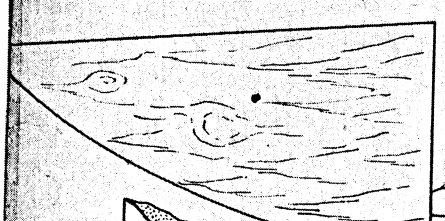
4 1/4"

PROP BLANK HALF SHOWN SIZE

BLADE SHAPED AFTER CARVING

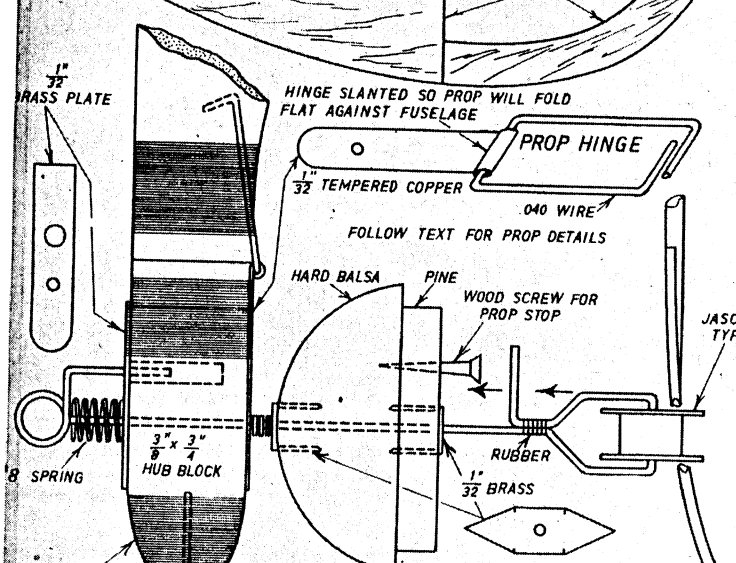
DIAGONALS CURVED 1/8" OUTWARD

1"



EDGES 1/8" SHEET

FULL SIZE STABILIZER TIP



1/32" BRASS PLATE

HINGE SLANTED SO PROP WILL FOLD FLAT AGAINST FUSELAGE

PROP HINGE

1/32" TEMPERED COPPER

.040 WIRE

FOLLOW TEXT FOR PROP DETAILS

HARD BALSA

PINE

WOOD SCREW FOR PROP STOP

JASCO SPOOL TYPE BOBBIN

3/8" x 3/4" HUB BLOCK

SPRING

RUBBER

1/32" BRASS

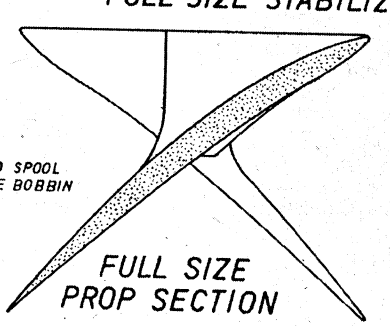
THREAD

DETAILS OF FOLDING PROP

COUNTER BALANCED WIRE DOUBLED

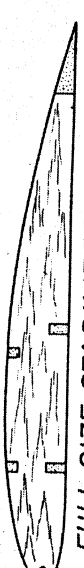
COUNTER WEIGHT

LEAD

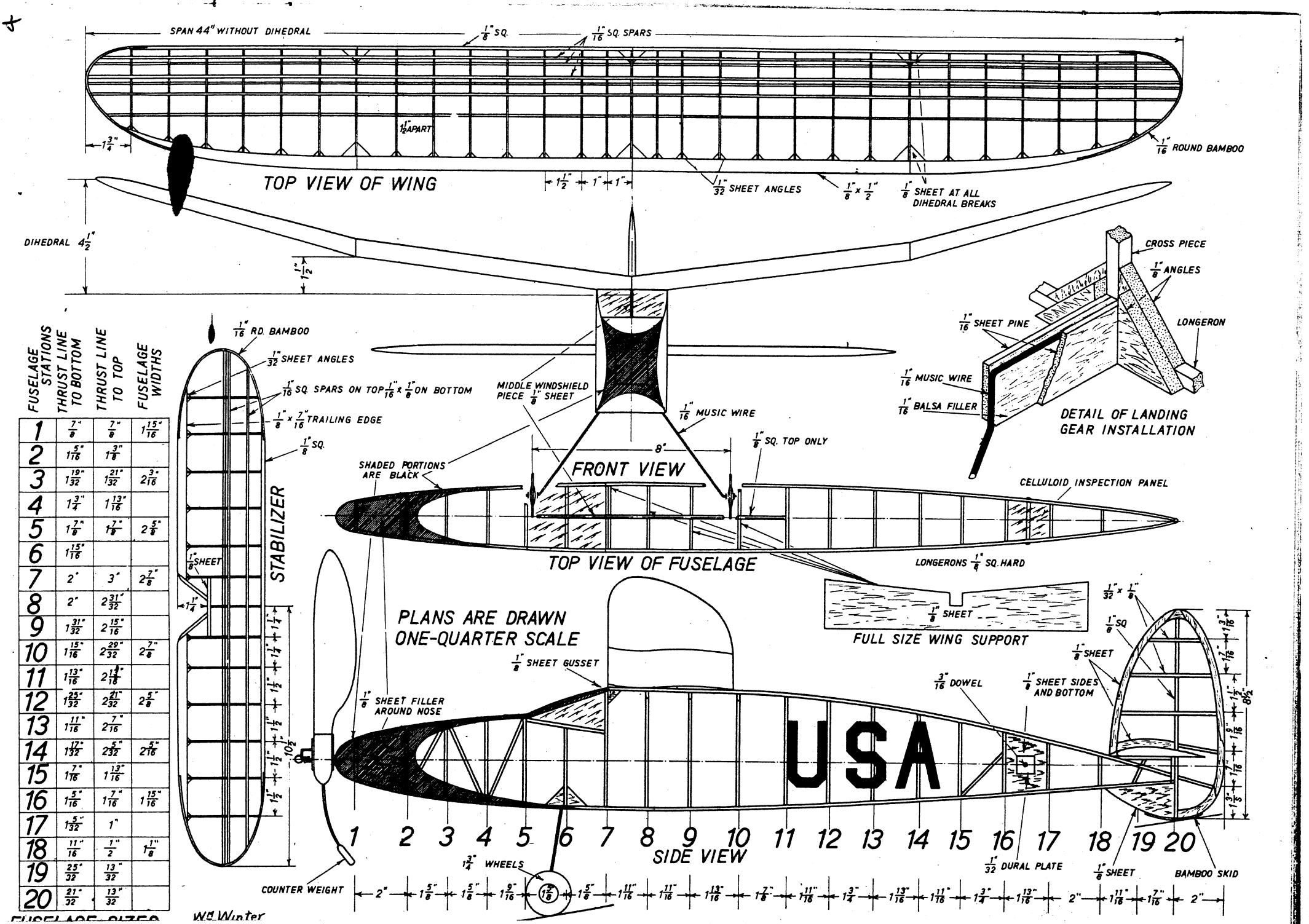


FULL SIZE PROP SECTION

FULL SIZE WING TIP



FULL SIZE STABILIZER RIB



FUSELAGE STATIONS	THRUST LINE TO BOTTOM	THRUST LINE TO TOP	FUSELAGE WIDTHS
1	7/8"	7/8"	1 15/16"
2	1 5/16"	1 3/8"	
3	1 19/32"	1 21/32"	2 3/16"
4	1 3/4"	1 13/16"	
5	1 7/8"	1 7/8"	2 5/8"
6	1 15/16"		
7	2"	3"	2 7/8"
8	2"	2 31/32"	
9	1 31/32"	2 15/16"	
10	1 15/16"	2 29/32"	2 7/8"
11	1 13/16"	2 13/16"	
12	1 25/32"	2 27/32"	2 5/8"
13	1 11/16"	2 7/16"	
14	1 7/32"	2 5/32"	2 5/16"
15	1 7/16"	1 13/16"	
16	1 5/16"	1 7/16"	1 15/16"
17	1 5/32"	1"	
18	11/16"	1/2"	1 1/8"
19	25/32"	13/32"	
20	21/32"	13/32"	

FUSELAGE SIZES

Wm Winter

Wakefield Winner

already been mentioned. The Jasco bobbin is not essential but does keep the rubber from winding around the shaft.

The counterweight is made by wrapping paper around a pencil ten times to form a mold. Pull the pencil out to leave a mold 1¼" deep. Bend the .040 counterweight wire as shown on the plans. Place the U-bend end into the mold and fill with lead. Scrape the lead for balancing. The open ends of the wire are bent at right angles and then are forced into the hub, cemented, and bound firmly with thread.

Although no mention was made of blade protection it is probable, and advisable, to cover the blade with silk. Korda's prop was silver. If silk is applied, use a filler substance to fill the pores and sand well before painting.

All small metal propeller parts are shown full-size on the plans. The motor is 47" long and consists of eighteen strands of $^3/_{16}$" flat brown rubber. A rubber band is tied one inch from one end to form an eye for the rear hook, then the motor is divided into three parts, each of which is wound fifty turns. The three groups of strands are then braided. Naturally, no tensioner is needed.

The nose block is hard balsa. The plug part of the block is a piece of ¼"-thick pine. Metal bearings are shown on the plans.

FLYING

Although not shown on the plans, the thrust line is offset to the right one degree, negatively two degrees. Move the bearing at back of nose block for thrust offset. A thin strip should be cemented beneath the wing's center section in such a way that the leading edge will be raised an additional $^3/_{32}$". The rudder is offset so that the model turns against torque.

Korda reveals that the right wing tip is warped for additional incidence at the beginning of the flight to prevent spinning in under power. The left stab tip is also warped for additional incidence. These adjustments are described as if the model is viewed from the tail looking forward.

Basic flight adjustments are the same as for any other model.

The rubber should take twelve hundred turns. (Korda's did.) However, plenty of leeway should be allowed for doubtful rubber. Korda says that five hundred turns was the maximum he could put in his rubber at the Nationals this year. That does illustrate the varying quality of rubber.

BILL OF MATERIALS

12 ⅛ sq. x 36" balsa (hard for longerons, medium for cross pieces)
1 ⅛ x 2 x 24" soft sheet (nose fill-ins, etc.)
1 short length of $^3/_{16}$" birch dowel

Tail

1 ⅛ sq. x 36" hard balsa
1 $^1/_{32}$ x ⅛ x 24" hard balsa (can be cut from sheet)
1 ⅛ x 2 x 12" medium balsa
1 ⅛ x $^7/_{16}$ x 24" hard balsa (can be cut from sheet)
1 flat bamboo
1 $^1/_{16}$ x 2 x 12" medium balsa
4 $^1/_{16}$ sq. x 24" hard balsa

Wings

2 ⅛ sq. x 24" hard balsa
1 ⅛ x ½ x 24" hard balsa
1 ⅛ x 2 x 24" hard balsa
1 $^1/_{16}$ x 2 x 36" medium balsa
12 $^1/_{16}$ sq. x 24" hard balsa

Propeller

1 1¾ x 2¼ x 8½" hard block
1 ⅜ x ¾ x 2" hard block
1 length .040 music wire
scraps of $^1/_{32}$" thick sheet brass, tempered copper, dural
1 length $^1/_{16}$" music wire

Landing gear

1 length $^1/_{16}$" music wire (see prop list)
1 $^1/_{16}$ x 1 x 6" sheet pine
1 scrap $^1/_{16}$" hard sheet balsa
1 6"-piece $^1/_{16}$" birch plywood (wheels)

Miscellaneous

Dope, cement, 3 sheets Jap tissue, 2" sq. piece ¼"-thick pine, one wood screw, 12 ¼" washers, 76" of $^3/_{16}$" flat brown rubber, one #8 wire spring.