

# 54 MINUTES

## N. A. A. WORLD'S RECORD CABIN FUSELAGE MODEL



The model that made the longest flight at the Nationals, setting the highest N. A. A. mark.

*Complete plans for reproducing  
one of the finest new weight-rule  
models that appeared at the  
1937 Nationals - the 18th con-  
secutive Air Trails trophy -  
winning model*

**By Richard Korda**

*In collaboration with Gordon S. Light*

DURING the 1936 Nationals in Detroit, Korda flew a fuselage model out of sight after twelve minutes. Several weeks passed without news of the model. He had given it up as lost when he received a letter from a farmer living about ten miles from Wayne County Airport. The farmer had discovered the model while he was harvesting his wheat. He managed to catch a glimpse of it before it disappeared into the binder. Unfortunately, he didn't see it in time to stop the machine. The only part of the model which was salvaged was the return slip containing Korda's name and address.

Flying models out of sight is a favorite Korda pastime. During the past several years he's turned in many long flights. Last July in Detroit he set a new fuselage model record of 54:13. This flight was the longest of the meet and is the highest official N. A. A. record turned in under the new weight rules. Korda competed in the open class cabin fuselage event.

During the 54-minute flight the model covered 5-1/2 miles and was recovered undamaged. In the afternoon of the same day the model flew out of sight after eighteen minutes to place third in the Moffett Elimination contest. For the Moffett finals Korda was forced to substitute an old model for his lost Elimination job. He placed fifth in the finals. And, Ironically enough, his 54-minute model was returned to the airport immediately after the contest.

In the last three National meets Korda has had five out-of-sight flights. Four of these wandering models have been returned safely. The fate of the fifth was described in the beginning of the article.

Korda has developed a fine contest-flying technique. Under his care a model delivers its peak performance. A simple, rugged, dependable model expertly handled is his formula for winning contests.

### CONSTRUCTION

Fuselage is built of 1/8 x 1/8" hard balsa longerons bent and pinned to the outline of the sides of the fuselage. It will be necessary to break the top longerons at the cabin window. Note that the top of the fuselage is flat for a distance of 7" to the rear of the cabin window. The front and rear ends of the fuselage are covered with 3/32" soft sheet balsa. The tail boom joins the fuselage with a 1/4" plug which fits inside the longerons. The boom is secured in place with strips of "scotch" cellophane gummed tape.

The rear rubber hook is an interesting departure from the conventional design. A bamboo piece 1/16 x 1/4 x 2" -- inserted through notches in the sheet balsa - sides 1" from the rear of the fuselage. The bamboo rear hook provides more bearing surface for the rubber and prevents cutting. Aluminum plates are cemented to the inside of the fuselage to prevent the bamboo stick from cutting the balsa.

Cut the nosing from a block 3/4 x 1-3/4 x 11/16". Cement a piece of 1/4" flat balsa to the inside of the nosing to fit inside the fuselage. The nosing is attached by a rubber band, which fits into a notch in the nose block and extends to the bottom of the fuselage where it engages gages a wire hook cemented across the bottom. The propeller bearing is made of brass and pressed into the nose block. Punch the hole through the nosing to give the propeller shaft 1 degree negative and 1 degree right thrust.



Richard Korda and his world-record model. His formula: A simple model expertly handled.

### ABOUT RICHARD KORDA

Despite having ten years of modeling experience, Richard Korda attended his first National meet as a spectator! This was in Akron, in 1934. Evidently he got a good idea of contest procedure, for the next year he won the Mulvihill Trophy with a flight of 24 minutes at the St. Louis National Meet. This was his first and last contest in the senior division. The next year at Detroit he graduated into the open class-taking second in the stick with 5 minutes and second in the fuselage with 12 minutes.

Speed flying is one of his favorite sports. He "dusts" his speedsters over the course at speeds as high as 75 m.p.h. For the last two years he's won the speed event at the National meets of the junior Aviators of America.

Korda is married and lives in Cleveland. He is an active member of the group of championship builders who have put Cleveland on the model map. And like most true champions, his skill and enthusiasm have added much to the welfare of the model hobby. He offers one criticism of the present contest rules-the weight rule should be raised to two ounces for every 50 square inches.

## LANDING GEAR

Bamboo struts are tapered from  $3/32 \times 1/2$ " to  $3/32 \times 1/4$ ". They are cut to oval cross section. The struts extend 9 inches from the fuselage with a tread of 11 inches. Wrap thread from one strut to the other underneath the fuselage to prevent tearing out the struts on hot landings. If cemented thoroughly, no additional binding is required.

This particular method of construction is both simple and sturdy.

## WING

The wing is made with a 15" center section and 14" tips. Ribs are spaced 1-1/2" apart, except at the tips. The trailing edge is notched 1/8" to receive the ends of the ribs. Small triangles are cut from 1/8" flat balsa and cemented to the joint between the rib and the leading and trailing edges. These reinforcements are used to prevent the trailing edge from warping down and destroying the shape of the wing. The 1/16 x 1/16" spars used in the wing are curved back at the tip of each wing to prevent warping.

## ELEVATOR

Construction is similar to the wing. Use the full size rib pattern and the dimensions included in the sketch.

## RUDDER

A typical rudder rib is shown in the drawing. The remainder of the ribs are cut to a similar shape and the required lengths. The rudder extends below the bottom of the fuselage where a piece of 1/8" flat balsa is used to complete the streamlining.

The rudder is cemented on the top center line of the elevator and is NOT set for any turn. The camber in the rib shape takes care of the turn to the right. In the sketch of the rudder, the wire tail skid is shown extending down between the junction of the fuselage and rudder to 2" below the bottom of the rudder.



A greatly enlarged photo of the model taken while gliding.

## **PROPELLER**

The block size is 1-1/2 x 2 x 16" medium balsa. The excess wood is cut away as shown in the drawing. The hub of the blank should be 3/8". Cut the propeller blades to taper in thickness from 1/4" at the hub to at the tips. Each blade is given 3/16" camber in the rear face. The propeller is sanded smooth and highly doped. Use a half dozen coats of dope with intermittent sandings. The propeller shaft is bent from 1-1/6" if wire.

## **POWER**

Use 24 strands of Banko's 1/8" flat brown. The motor length is 40". This type of rubber is the result of experiments conducted by the Cleveland modelers. They claim its superiority on the following points -long life which enables the contestant to adjust his model with the same motor to be used in the contest; less affected by heat and sunlight; more power and strength with greater winding capacity.

## **COVERING**

Ordinary tissue is used. After covering it is first water-doped and then treated with four coats of thin dope on wing and tail-with several coats of heavier dope on the fuselage.

## **FLYING**

When adjusting a contest model under full turns, Korda usually flies after 6 o'clock in the evening when the air is cool and calm. Even at this time he is annoyed by out-of-sight flights and has lost four models during these evening sessions. One model was launched at 7:15 and was lost out of sight after 14 minutes.

Korda treats his rubber motor carefully. And this is probably the most important item in a contest model. He recommends the following procedure break in the rubber motor the night before the contest by first giving it a few hundred turns and gradually increasing the number of turns in subsequent windings until it is nearly fully wound. After it is well broken in, lubricate it slightly and put it away for the contest. (Any of the common rubber lubricants are satisfactory.) If you don't take these precautions to break in your motor, it will not be soft and pliable.

## **WINDING**

Before winding for an official flight, first give the rubber about half of its capacity of turns and allow it to unwind. Repeat this operation several times to loosen up the rubber. Now the rubber is ready for capacity winding. Stretch it about three or four feet from the nose of the fuselage and give it about 200 or 250 turns. Keep winding and move back slowly to about seven or eight feet. Stay at this position until you've added about 450 turns. About this time the rubber will begin to tighten, then come in slowly reaching the model when you have about 900 or 950 turns. Just before launching the model, give it a few turns by hand to tighten up the rubber and give it little extra power.

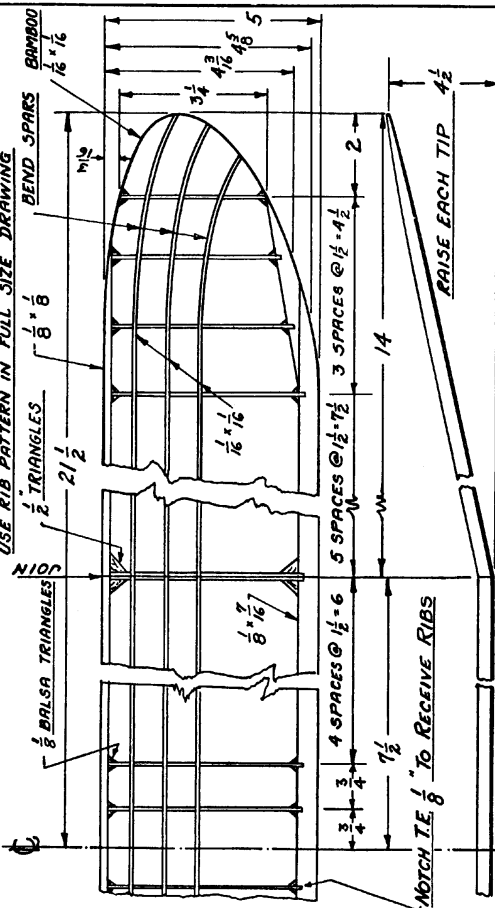
Before lubricating rubber be sure to shake off all the powder. Keep the lubricated rubber free of grit and store it in a cool place away from sunlight.

The model has a rather small propeller, which gives it a quick get - away on the take - off. The climb is slow and against the torque (to the right). Because of the lifting tail, the model assumes a tail-high attitude during the glide, which gives the impression of a steep glide angle. However, the actual sinking speed of the model is slow. This tail-high glide cuts down frontal resistance by putting the fuselage in line with the glide path. When adjusting the nose for offset thrust, use book matches inserted between the nose plug and the fuselage. They can be conveniently split to any thickness. The model weighed 7-3/4 ounces, a figure well above the necessary weight of 6-1/4 ounces.

***Scanned from Feb. 1938 Air Trails***

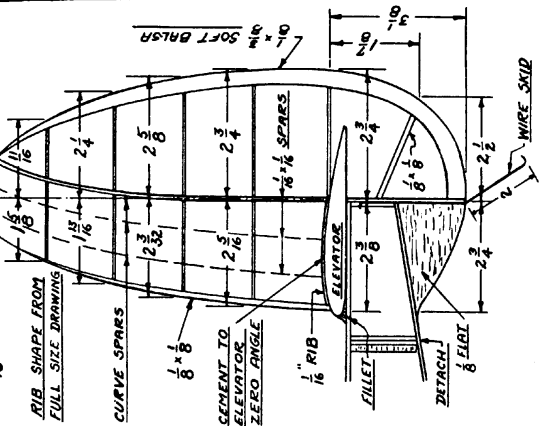
**WING CONSTRUCTION-MAKE 3 PCS. & JOIN ---  $\frac{1}{16}$  RIBS**

USE RIB PATTERN IN FULL SIZE DRAWING



WING AREA = 208 SQ. IN.

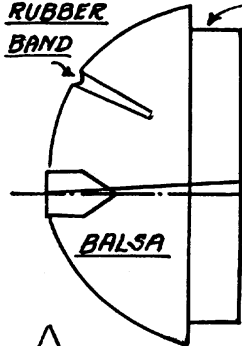
**RUDDER**



# FULL SIZE PATTERNS

NOTCH FOR RUBBER BAND

PLUG FITS INTO FUSELAGE



RUDDER RIB

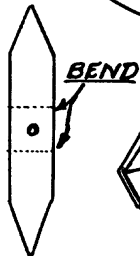
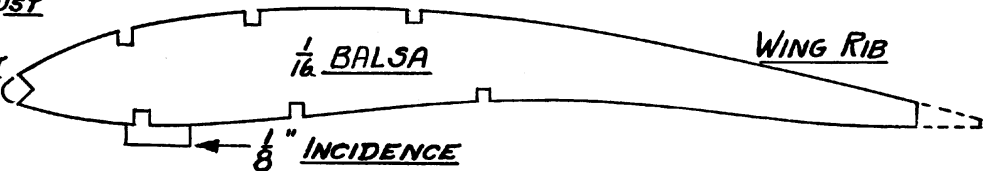


1° NEGATIVE THRUST

1° RIGHT THRUST

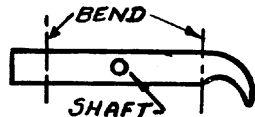
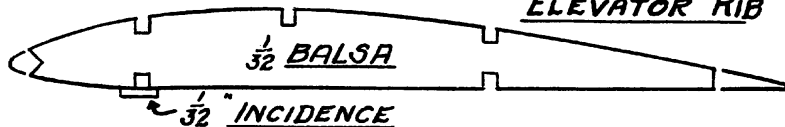
$\frac{1}{16}$  BALS

WING RIB

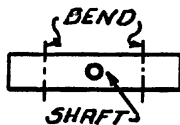


BEARING MADE OF BRASS AND PRESSED INTO NOSE BLOCK

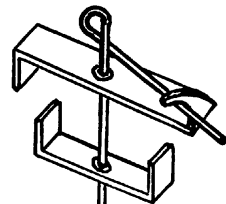
ELEVATOR RIB



FREE WHEELING DEVICE ATTACH TO TOP OF HUB



METAL GUARD REAR OF PROP HUB

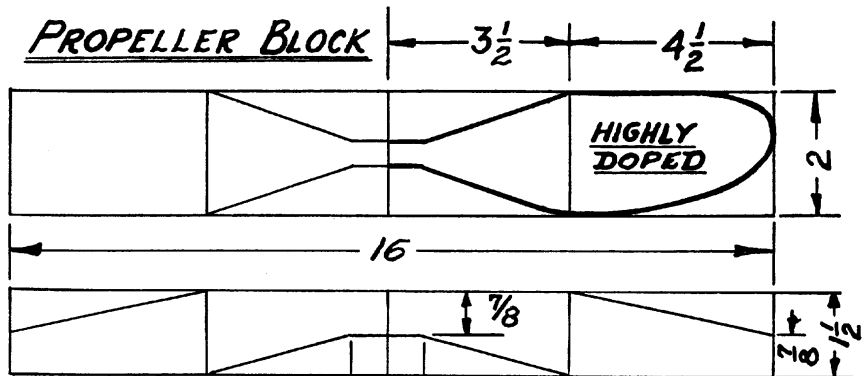


USE  $\frac{1}{16}$  SHEET BRASS

SHAFT



## PROPELLER BLOCK



HIGHLY  
DOPED

16

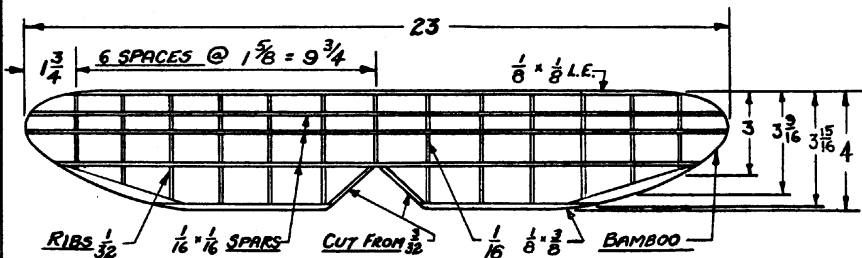
$\frac{7}{8}$

$\frac{1}{2}$   
 $\frac{1}{8}$

PROP SHAFT  $\frac{1}{16}$  WIRE  
PROP BLOCK  $\frac{1}{2} \times 2 \times 16$ "

BLADES  $\frac{1}{4}$ " THICK AT HUB  
TAPERING TO  $\frac{1}{16}$  AT TIP

## ELEVATOR DETAIL



RIBS  $\frac{1}{32}$

$\frac{1}{16} \times \frac{1}{16}$  SPARS

CUT FROM  $\frac{3}{32}$

$\frac{1}{16} \times \frac{1}{8} \times \frac{3}{8}$

BAMBOO

SEE DRAWING OF FULL SIZE PARTS FOR RIB SHAPE