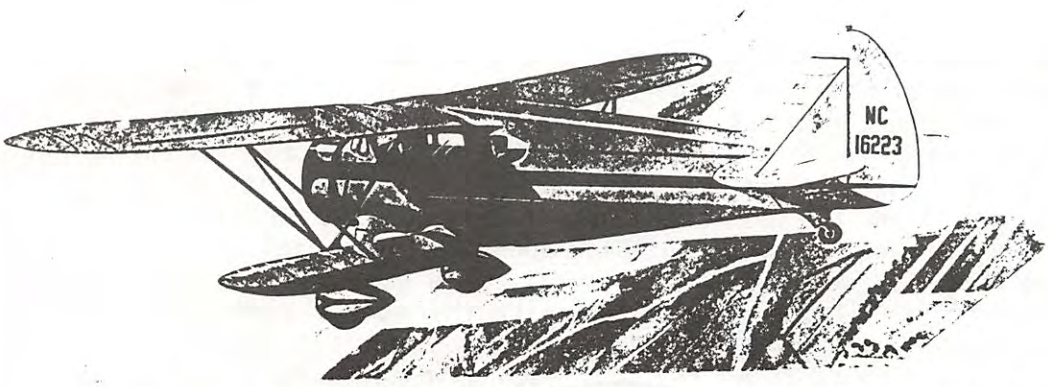
CROSSWINDS 88



CLEVELAND FREE FLIGHT SOCIETY

WACO CUSTOM CABIN IN VERMILLION RED WITH BLACK TRIM
COURTESY POPULAR AVIATION

CROSSWINDS
MICHAEL C. ZAND
5803 EAST ASH ROAD
INDEPENDENCE, OH 44131



WACO AIRPLANES

CROSSWINDS

THE JOURNAL OF THE CLEVELAND FREE FLIGHT SOCIETY

EDITORIAL COMMENT

Issue No. 88

One of my favorite model subjects was the Waco Coast Guard. I am writing about this in the past tense because my model no longer exists. Usually I spend time rebuilding a model at least one time, but when I tried to reconstruct this particular airplane (one of the few models I used white glue in construction and covering) it practically self destructed when I started to prepare it for recovering. As you can see from the photos it was closer to the original airplane than the Comet plan version. I used that plan and some three-views plus the official Coast Guard photo to detail my model. It was a good flyer with rubber, but when converted to CO2 it was superb. Despite the models size , a Brown MJ70 was the perfect power source. Information for the Comet kit version of the Waco Biplane was obtained by me from the Coast Guard in April 1977. At that time Buz Morman was the editor of the *Engineer's Digest.* Along with two official Coast Guard photos he sent me the information on color markings and a little history of the Waco Coast Guard airplanes nos. 157,158 & 159.

Our other modeling subject is the Waco N. It is coincidence that a plan of this subject is included with the latest *Flying Aces.* We chose it for this issue of *Crosswinds* because of its Coast Guard role. During WW II some civilian pilots flew N's to patrol the East Coast of the U.S. looking for German U-Boats. CFFS member, George Bredehoft **(Volaré Products)** is responsible for the new plan. The scale data included in *Crosswinds* should help you finish your model from whichever plan you choose.

Someone answered my request for a plan for the Czech lightplane, the Kunkadlo. We have reprinted the picture that appeared in *Crosswinds* issue 86. We also are including a reduction of the plan. The Walt Mooney construction article can be found in **M.A.N. May 1980.** For your information the colors are a blue fuselage with silver wings and tail surfaces. All the struts are red.

On March 3rd of this year *CFFS* held its *Annual Indoor Contest.* For the second year we flew at the KENT STATE UNIVERSITY FIELDHOUSE which has proved to be a very excellent site. There was a fine turnout of flyers despite some tough driving weather on the morning of the contest. Since then some constructive comments have been received and next year we will make use of these suggestions in an effort to improve the contest. There will be extended flying time for all events. Golden Age Scale will be added as an FAC event and there will also be an over 5 gram No-Cal event. The Jetco ROG prop rule has been clarified. You may use any commercial plastic prop and the diameter cannot exceed 5 and 1/2 inches. The prop may be altered by sanding or scraping and the pitch can even be changed by regluing the blades.

If you would like a copy of the results of the KSU Contest please send me a business size SASE.

MICHAEL C. ZAND

THE WACO COAST GUARD

It used to be that a trip to the corner store included the possibility of choosing from a limited collection of model airplane kits. One such model was the **Waco Coast Guard** by *Comet*. For some reason it did not survive as a kit as long as the popular **Aeronca K Seaplane**, the **Phantom Fury** or **Stinson Reliant**. And for this reason Crosswinds has selected the **Waco Coast Guard** as a worthy subject. The full size plan is available from *Golden Age Reproductions*.

James Gilbert's book, The Great Planes, has a chapter entitled "What Waco is that, Mister?" Crosswinds will not attempt to unscramble the combination of letters and numbers to identify various Waco Aircraft except to say that for sure the Coast Guard designation was J2W-1 and its civilian designation was model EQC-6. In 1936 the Coast Guard procured three Waco Cabin airplanes and they were given numbers V157-159. This information is documented in the book USN Aircraft Since 1911 by Gordon Swanborough and Peter Bowers. Further proof that numbers 157-159 were C-6 models can be seen by comparing the data from the back of the official Coast Guard photos to the information in the October 1938 Popular Aviation (page 38) which pictures a civilian C-6 Waco and mentions the Jacobs L-4 as a power plant, the wing span as 35' 0 inches, and the top speed as 159 mph. These figures match up with the information on the back of the Coast Guard's official photos of the J2W-1.

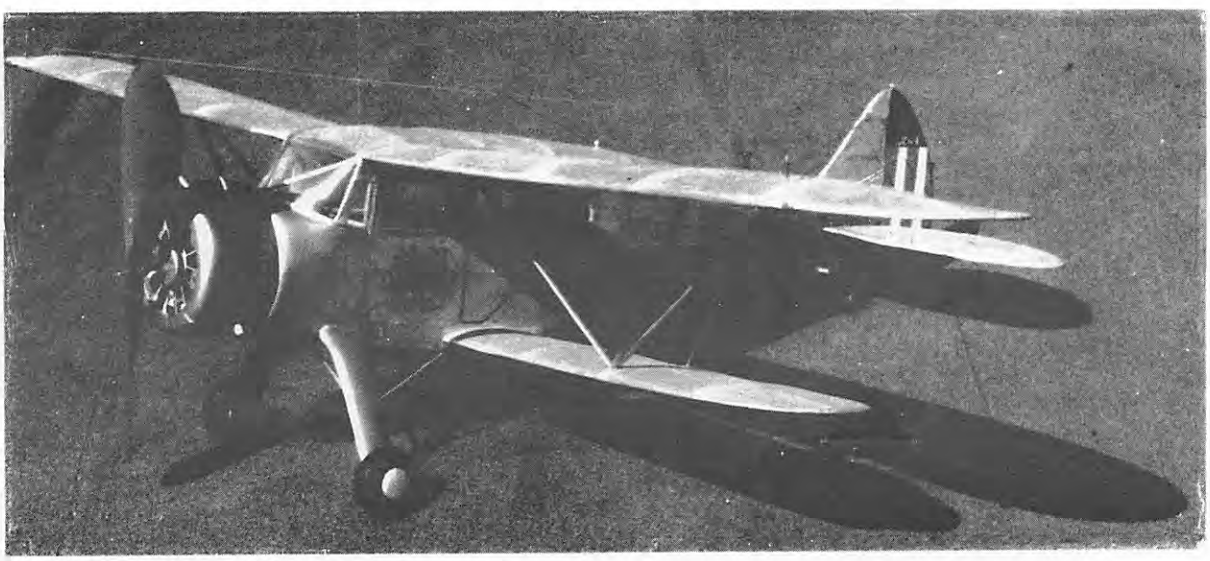
The Comet plan shows Coast Guard number V-158. I obtained the photos of number 159 and the J2W-1 on skis from Buz Morman, Editor of the Engineers Digest.

COLOR SCHEME

1. The upper surface of the upper wing, including the upper surface of the ailerons, shall be chrome yellow in color. All other surfaces shall be aluminum color. The upper surfaces of the elevator and horizontal stabilizer shall be chrome yellow.

2. The exterior of the hull, wing tip floats, fuselage, cowling, landing gear, nacelles, ring cowl, struts, etc., shall be aluminum in color unless otherwise specified.

3. Steps, walkways and handgrips shall be painted insignia blue or black.



The following information is included on the reverse side of the official Coast Guard photos:

Public Information Division
U.S. Coast Guard Headquarters
Washington, D.C. 20591

J2W-1 (ON WHEELS)
PLANES-HISTORICAL
U.S. COAST GUARD AVIATION

OFFICIAL U.S. COAST GUARD PHOTOGRAPH - API-07-01-56 (15)

A J2W-1 (On wheels), Coast Guard Plane No. 159, sits on the field at the Coast Guard Air station, Floyd Bennett Field, Brooklyn N.Y. This was one of three that was obtained by the Coast Guard in March 1937.

All three crashed in 1939--the CG No. 157 in January, the No. 158 in April and the No. 159 in October. These aircraft were used with wheels, or fitted with skis for landings and takeoffs on ice.

Manufactured by Waco Aircraft Co., Troy, Ohio.

Other designation: YQC, ATC-598

Unit Cost:	$12,054		
Span	35'0''	Length	25'-8 1/2"
Wing Area	244sq. ft.	Height	8'-7 1/2"
Fuel	70 gals.	Oil:	5 gals.
Empty Weight	2,050 lbs.	Gross Weight:	3,350 lbs.
Seats	5		
Top Speed:	159 mph	Stall Speed:	55 mph
Cruise Speed:	140 mph	Range:	600 miles
Sea-Level Climb:	760 fpm	Service ceiling	16,000 ft.

ENGINE: Jacobs, L-4, R-755
Takeoff Power: 225
Prop. Diameter/Blades 8'4"/2 Hamilton Standard, twp position

CREDIT--OFFICIAL U.S. COAST GUARD PHOTO



INSIGNIA AND MARKING

1. The words "U.S. Coast Guard" and under this the number shall be painted in black block letters on each side of the hull or fuselage, comparable in size to the airplane, not to exceed twelve inches in height.

EXAMPLE: U.S. COAST GUARD
V159

The number of the airplane shall be applied to the bottom of the hull, forward of the step, in a suitable location which can be readily seen while the airplane is in flight, the number positioned from forward aft, centered at the keel of the hull, and the tops of the numbers to be on the left side as you look at the front of the plane. On landplanes, this number shall be applied to the bottom of the fuselage in such a location as to be readily seen from the ground when the airplane is in flight. The size of the numbers shall be comparable in size to the size of the plane. The size of the letters and numbers shall be submitted to the Commandant, U.S. Coast Guard for approval.

2. The Coast Guard Insignia shall be placed on the right and left side of each hull and fuselage in a location approved by the Commandant, U.S. Coast Guard.

3. "U.S.C.G." shall be painted on the right and left side of a monoplane wing. The letters shall be approximately twenty-four inches in height. On biplanes, this marking shall be applied to each underside of the lower wing.

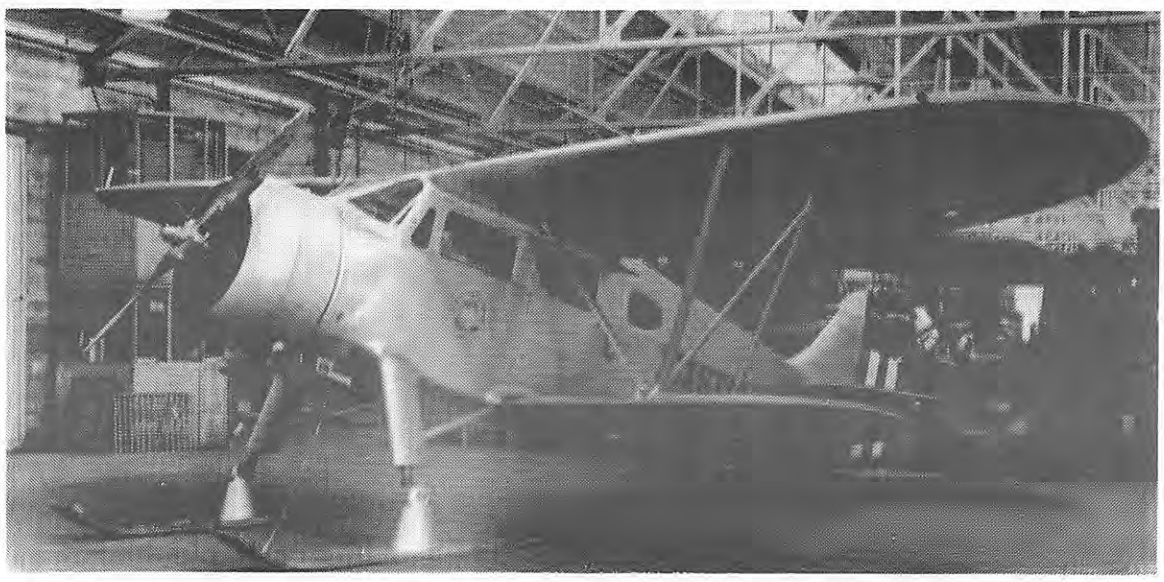
4. Letters and numbers shall be of the modified block type and shall be uniform in shape and size.

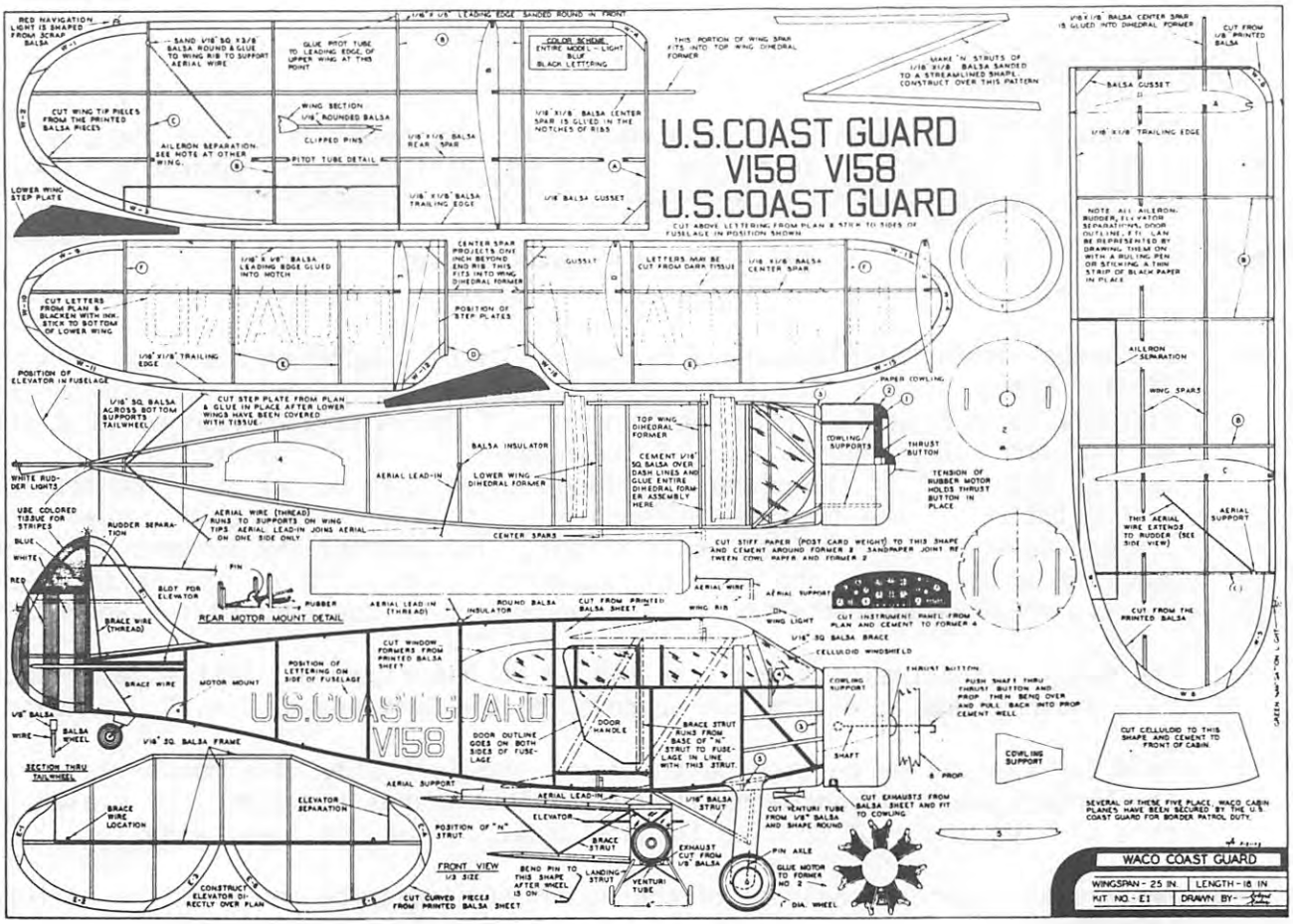
5. White shall be used on red or blue; black shall be used on white, aluminum or yellow.

6. The upper third of each side of the rudder shall be painted insignia blue with a clear cut horizontal line at the lower boundary. Five vertical stripes of equal width shall be applied to the remaining section of each side of the rudder. The first stripe shall be red, the second white, the third red, the fourth white, and the fifth red.

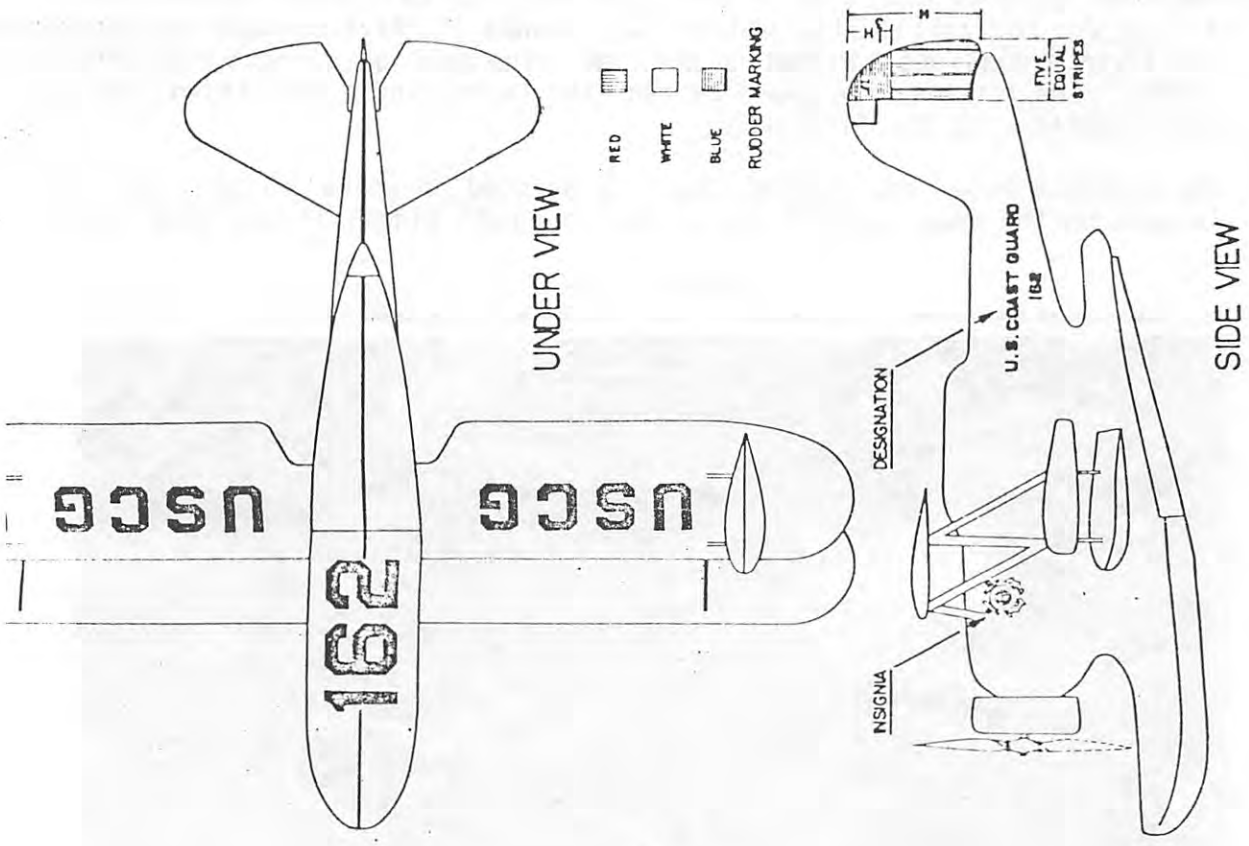
7. The airplane model designation shall be painted in white in two inch block letters on the upper part of the rudder (on both sides) in the blue field.

Example: J2W-1





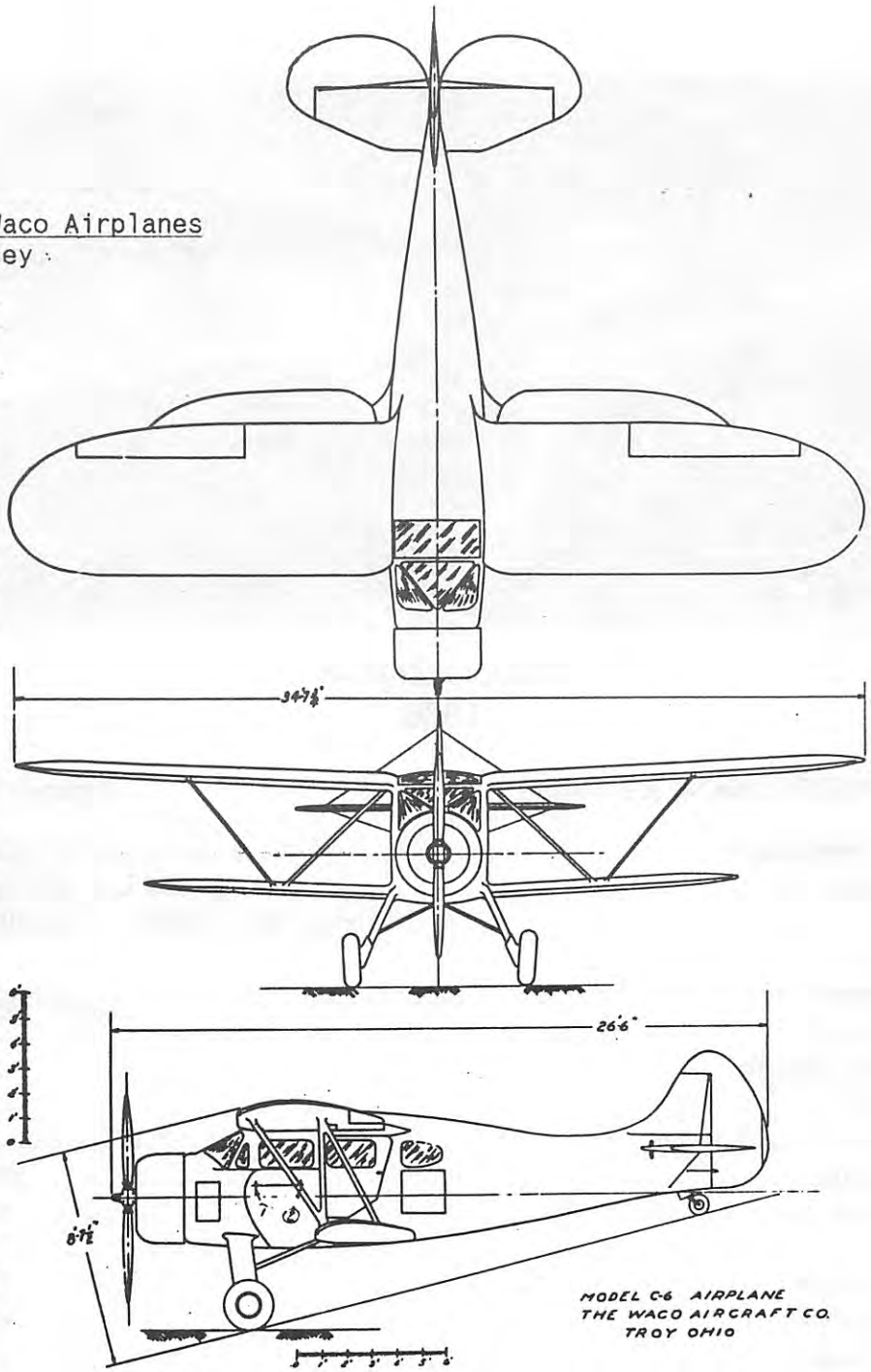
Enlarge 1.6 for 13" Peanut



Department of Commerce Waco Cs.

3-View from Waco Airplanes
by Ray Brandley





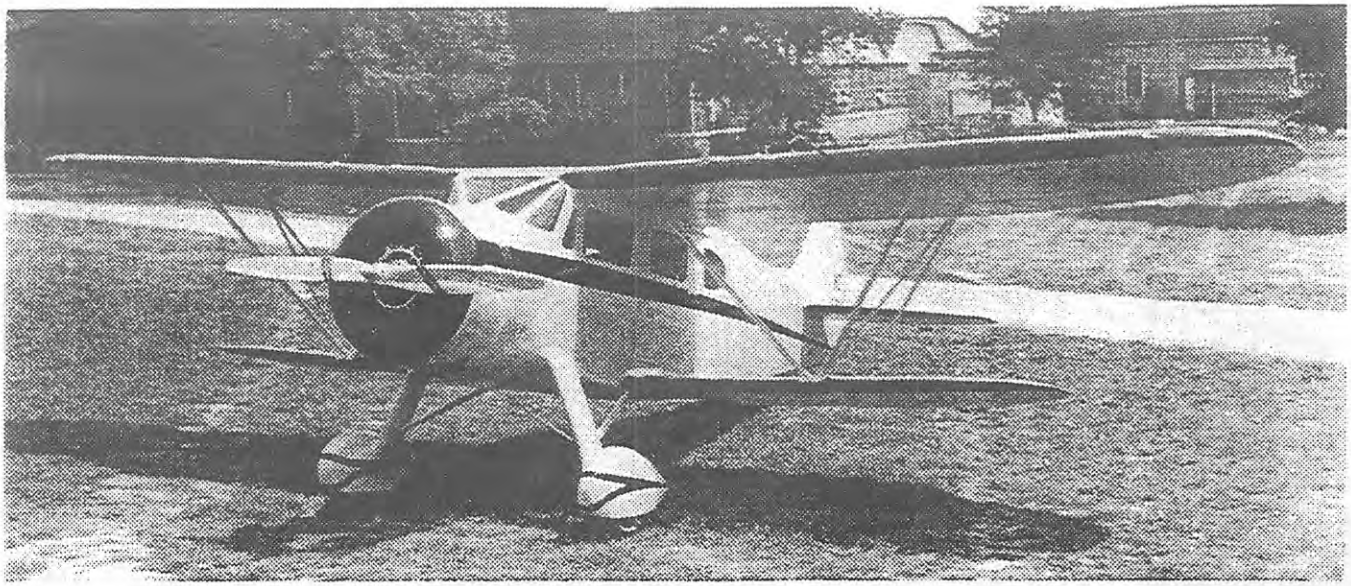
ORANGE & BLACK DEPT. OF COMMERCE WACO C,NC 53

Many refinements have been made in the new Waco C-6 which add greatly to the comfort of the pilot and passengers and to economy and ease of operation.

The **Waco C-6** cabins are quieter and roomier than ever before and plenty of room is allowed for luggage in a compartment that can be loaded through an outside door. The landing -gear has been given greater travel, smoothing out landings on rough fields and the shocks in taxying.

The C-6 Series is offered with the choice of six power plants, Continental 225-240 hp, Jacobs 225hp, Jacobs 285 hp, Wright 250 hp, Wright 285 hp, and Wright 320 hp. Many of the dimensions, including the weights vary with the powerplants employed. All of the engines mentioned are seven cylinder radial, air-cooled.

When equipped with a Jacobs L-4, the span of the wings is 35'-0" and the total length is 26'-8". This gives a top speed of 159 mph and a cruising speed of 140 mph. (Popular Aviation, Oct.1936)



WACO ZQC-6
1936

WACO MODEL ZQC-6 ATC #598 ..... Number Sold - 68

General Description	5-place cabin land or sea biplane
Power Plant	Jacobs L-5, 285 hp engine
Propeller	Curtiss-Reed 55501 or Hamilton 2B20
Top Speed	166 mph
Cruising Speed	150 mph
Landing Speed	52 mph
Climb First Minute	850 feet
Service Ceiling	17,000 feet
Normal Fuel Consumption	17 gallons per hour
Fuel Capacity	95 gallons
Oil Capacity	6 gallons
Airfoil	Clark Y
Chord — Upper	72 inches
Chord — Lower	48 inches
Span — Upper	35 feet
Span — Lower	24 feet 6 inches
Length Overall	26 feet 8 inches
Height	8 feet 8 inches
Gear Tread	87 inches
Tires	7:50 x 10
Empty Weight	2023 lbs.
Gross Weight	3500 lbs.
Price with Standard Equipment	$7835.00

WACO MODEL YQC-6 ATC #598
Power Plant — Jacobs L-4, 225 hp
Price — $7295.00 Sold — 12

WACO MODEL AQC-6 ATC #598
Power Plant — Jacobs L-6, 330 hp
Price — $8995.00 Sold - 8

Performance figures given are with Curtiss-Reed propeller. Figures are slightly less with Hamilton 2B20 propeller.

Colors: Vermilion, Diana Cream and Insignia Blue or Customer's Choice.

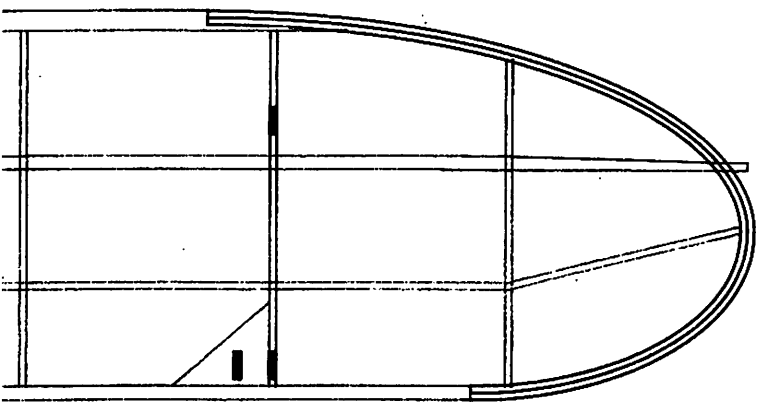
)alsa except trailing edges (1/8 x 1/16), leading edges (1/8 square).
ept 1/32" cowl. Laminate wing tips using 3 or 4 layers of 1/32 x 1/8.
ıg 2 or 3 layers of 1/32 x 1/16)
e) 17.375" span.

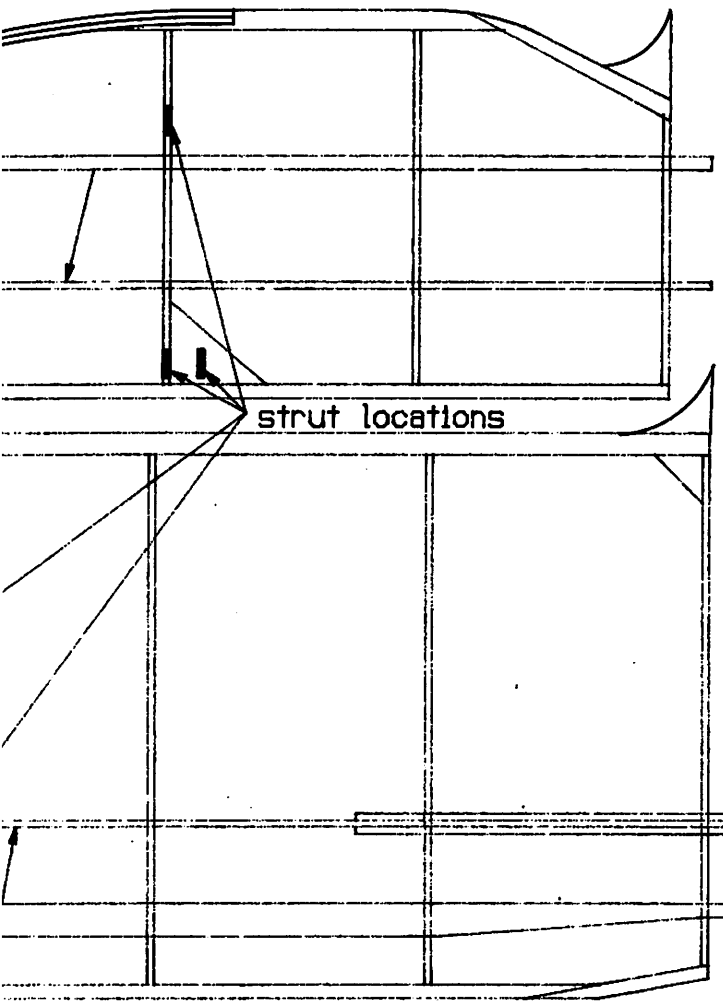
ypical rib structure

TE

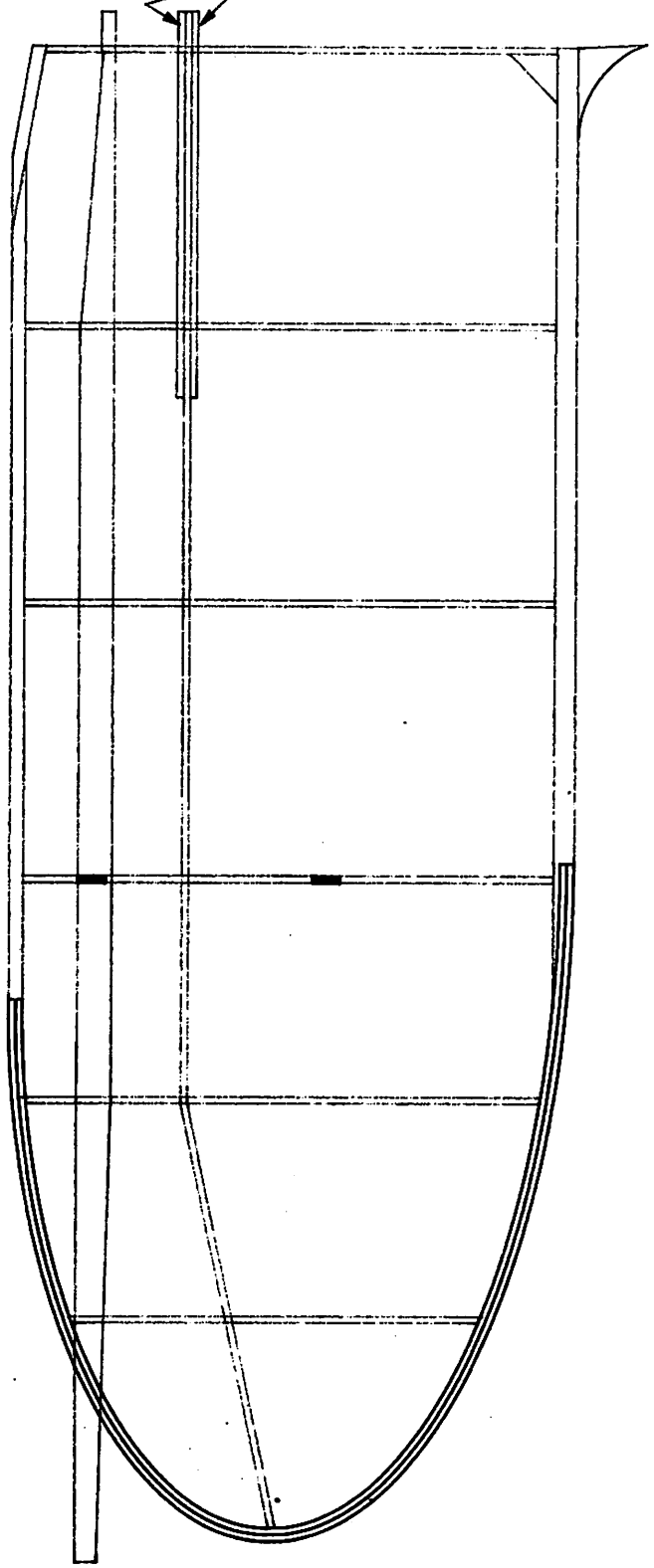
OR cut solid ribs and
use a single 1/16 square
hard balsa spar

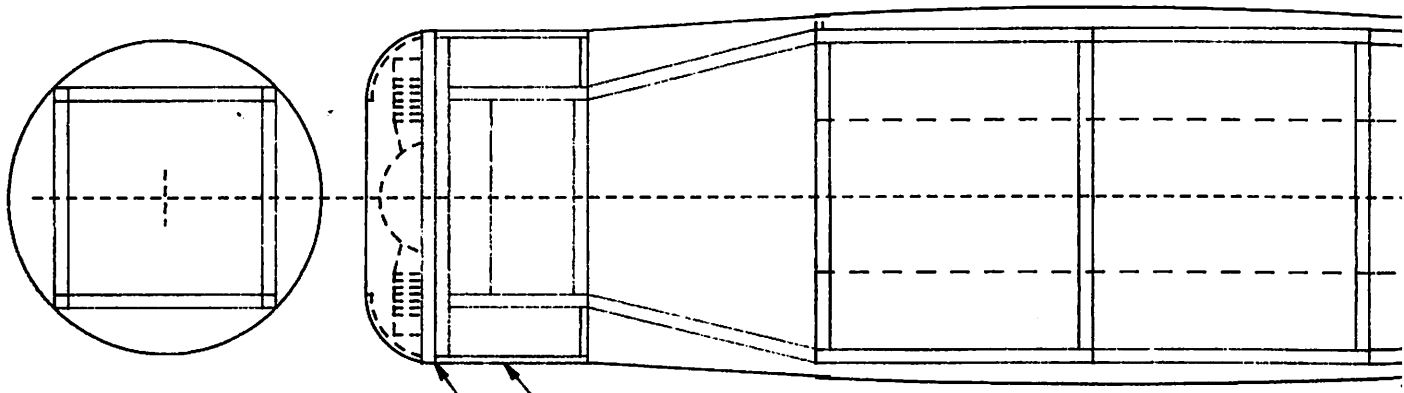
ər & lower





1/16" square spar supports





Wrap cowling with 1/32nd sheet

Nose block separation is here

window & door locations

1/16" ply or 2 layers or
2 layers 1/32" cross-grained

wing locations

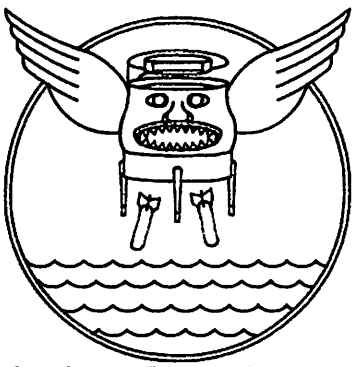


image 3x

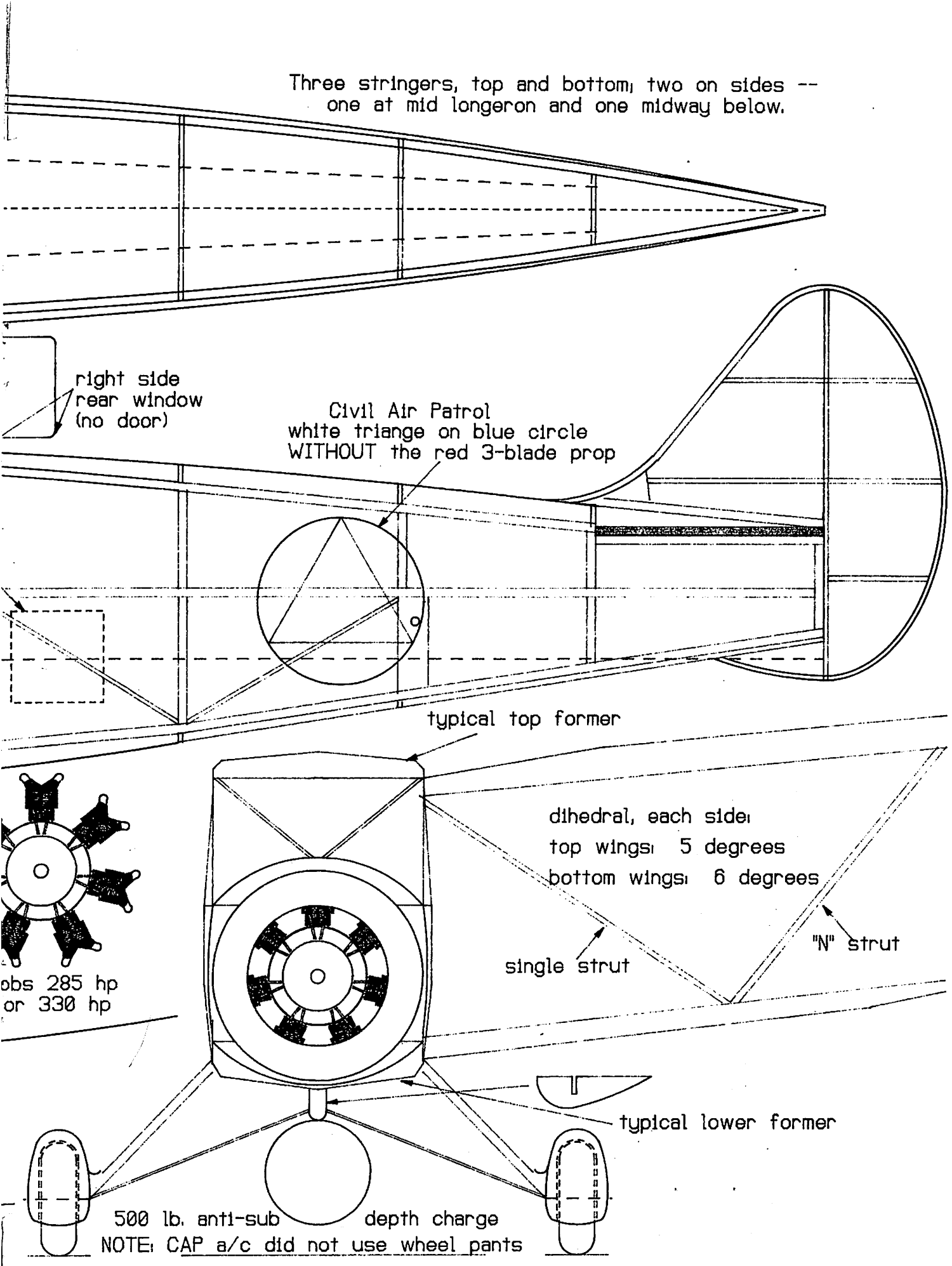
Civilian Coastal Patrol
St. Simon's Island, GA
designed by Zack Mosley

Civil Air Patrol Wacos did not use pants.

Jac

Production Waco "N"s used pants on all three wheels.

1938 WACO AVN/ZVN
George A. Bredehoft 5/96


Three stringers, top and bottom, two on sides --
one at mid longeron and one midway below.
right side
rear window
(no door)
Civil Air Patrol
white triange on blue circle
WITHOUT the red 3-blade prop
typical top former
dihedral, each side:
top wings: 5 degrees
bottom wings: 6 degrees
"N" strut
single strut
obs 285 hp
or 330 hp
typical lower former
500 lb. anti-sub depth charge
NOTE: CAP a/c did not use wheel pants

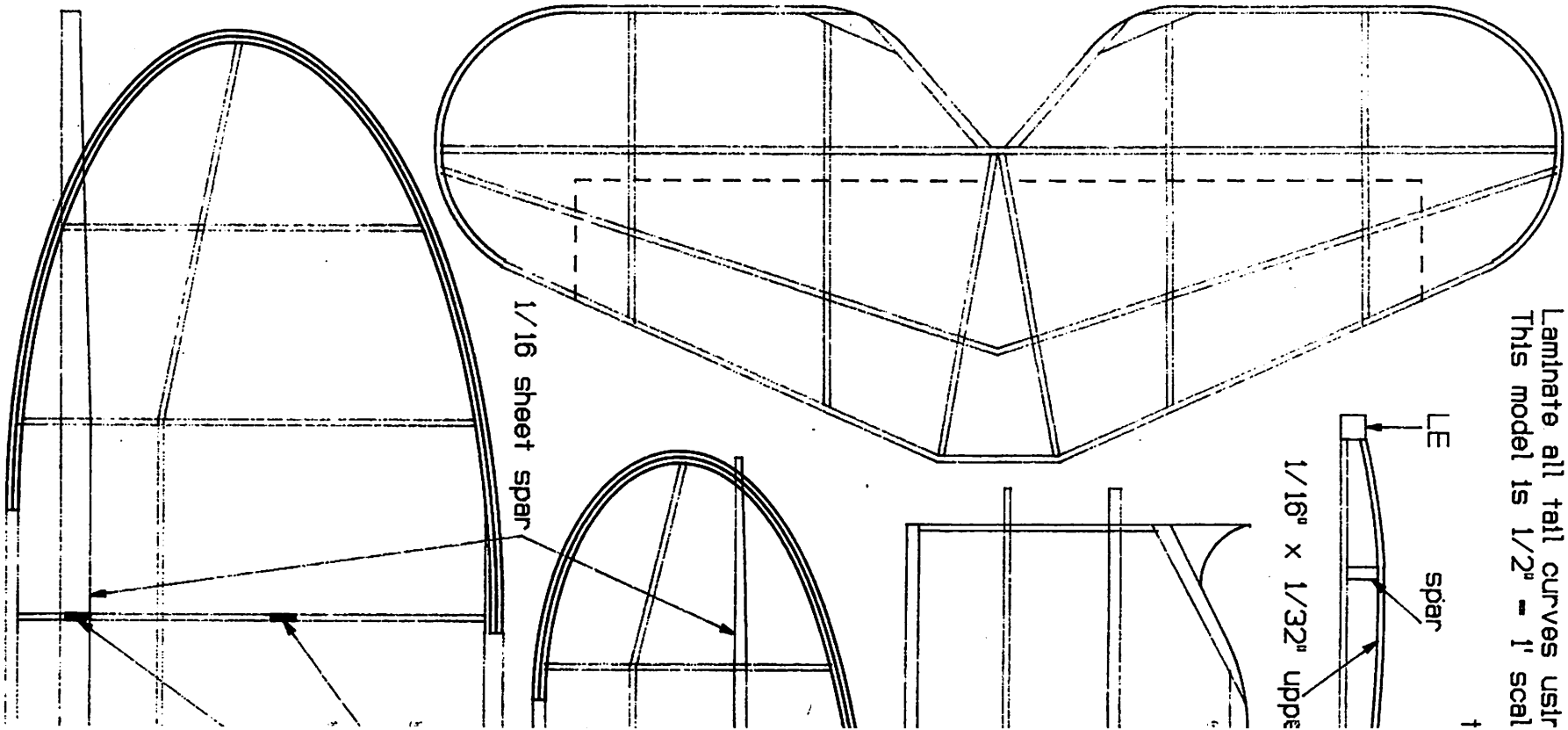
1938 WACO AVN/ZVN

George A. Bredehoft 5/98

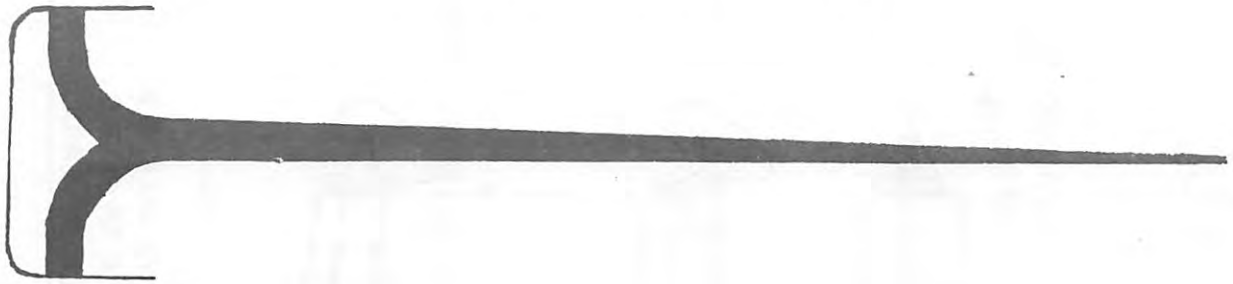
1938 Waco AVN & ZVN: powered by 330 hp Jacobs (AVN) or the 285 hp Jacobs (ZVN). An executive model, designed with tri-gear for ease of take-offs and landings. Total production: 15 AVNs and 5 ZVNs. WACO Ns also had flaps on the lower wings, also.
In 1943, the Civilian Coastal Patrol located on St. Simon's Island, Georgia, had 5 WACO N's. They (and other a/c) were used to patrol the southern Georgia coast from Savannah to Flagler Beach, Florida. They patrolled for German submarines. The planes carried 1-500 pound depth charge. The sub-patrol's unit insignia was designed by the contemporary aviation cartoonist, Zack Mosely.

References: Vintage Airplane 1/93, Waco Aircraft Production Book, Popular Aviation 7/37.

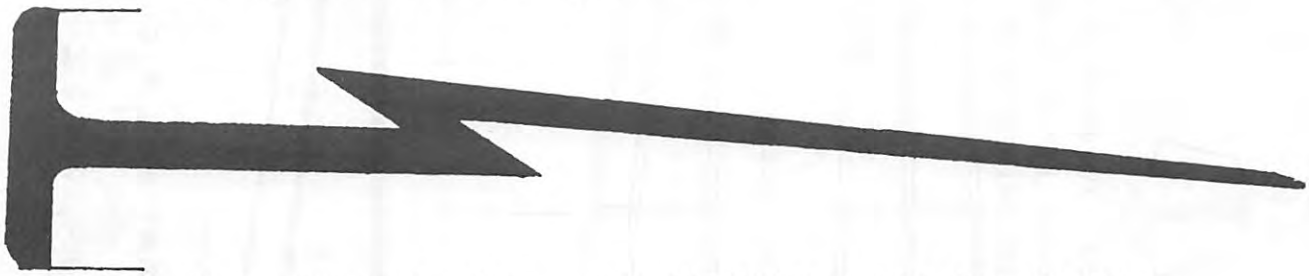
Special Thanks: Michael Zand (CFFS) for the inspiration, Russ Brown (CFFS) for information on WACO-Ns and Jack Metz (LCRC) for the first-hand information on the Georgia Civilian Coastal Patrol.



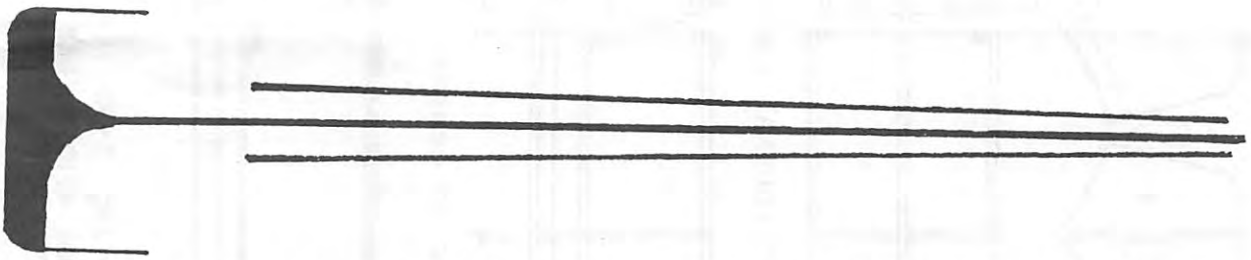
WACO AIRCRAFT COMPANY
Factory Trim and Stripings



Lockheed striping was used on cabin WACOS from 1935 thru 1942. This stripe should be tapered from four inches in width to ½ inch. Striping and trim was edged with a ⅜ inch stripe.

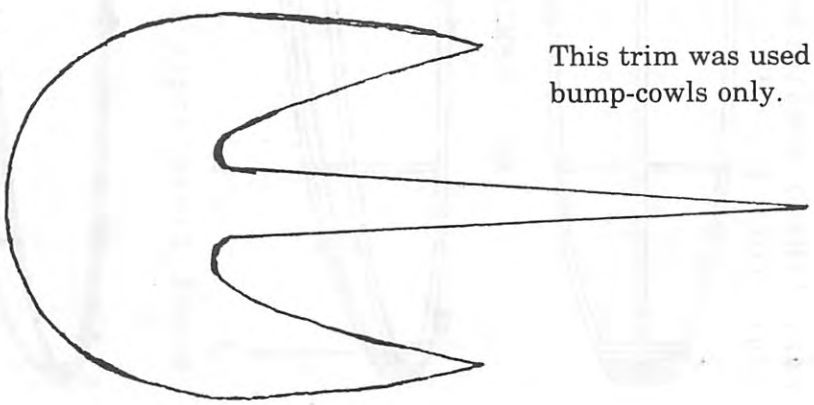


Lightning striping was used on Custom cabin WACOS from 1936 thru 1940. This stripe should be tapered from four inches to a point. Striping and trim was edged with a ⅜ inch stripe.



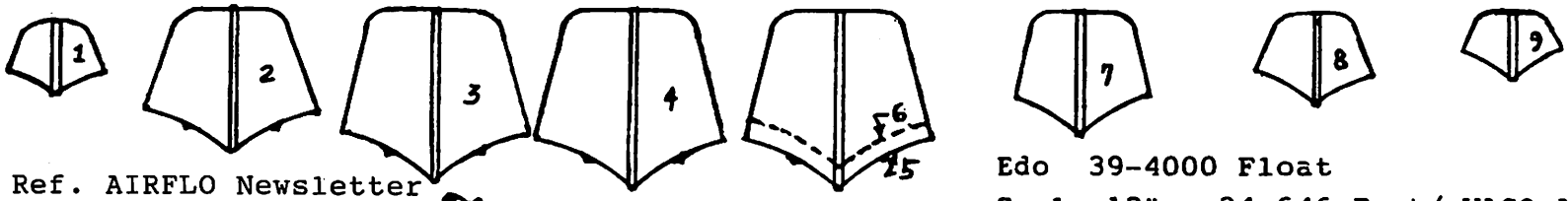
Custom Three-line striping was popular on Custom cabin WACOS from 1937 thru 1942. No edging stripe was used. Each stripe tapered from ¾ inch to a point and were spaced 2½ inches apart tapering to 2 inches apart at the rear.

Polywog Design
(on cowl bumps)



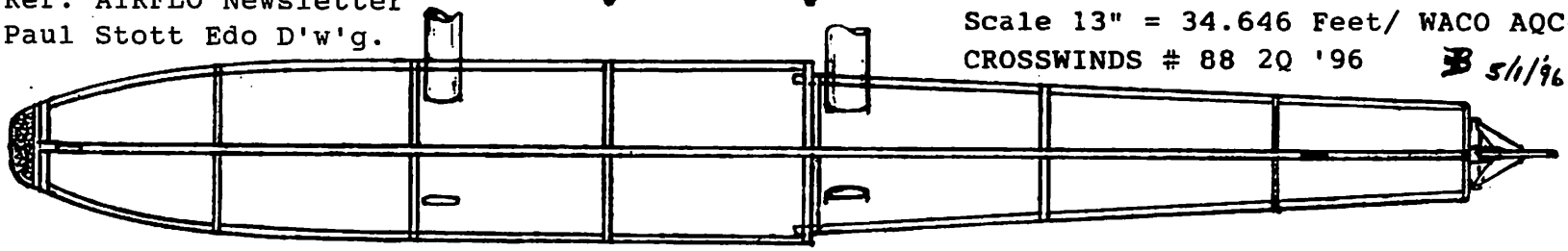
This trim was used on bump-cowls only.

Suggested construction is a 1/32nd sheet balsa center profile keel with lightening holes between 1/32nd sheet bulkhead formers. Add 1/20th stringers and a foam bow piece. Make two for twin float WACO C-6 and +5 bonus, or try skis at plus 3 bonus points in FAC.

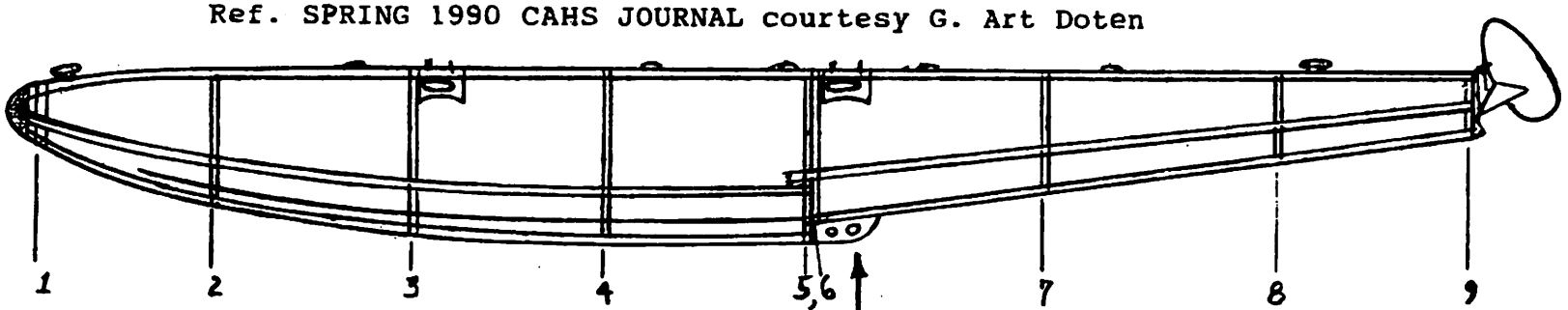


Ref. AIRFLO Newsletter
Paul Stott Edo D'w'g.

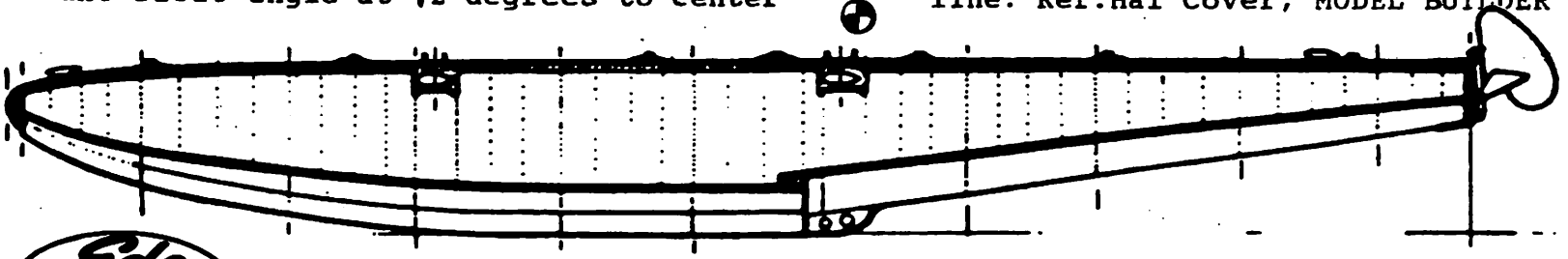
Edo 39-4000 Float
Scale 13" = 34.646 Feet/ WACO AQC-6
CROSSWINDS # 88 2Q '96 5/1/96



Ref. SPRING 1990 CAHS JOURNAL courtesy G. Art Doten



Mount float angle at +2 degrees to center line. Ref. Hal Cover, MODEL BUILDER 10/73

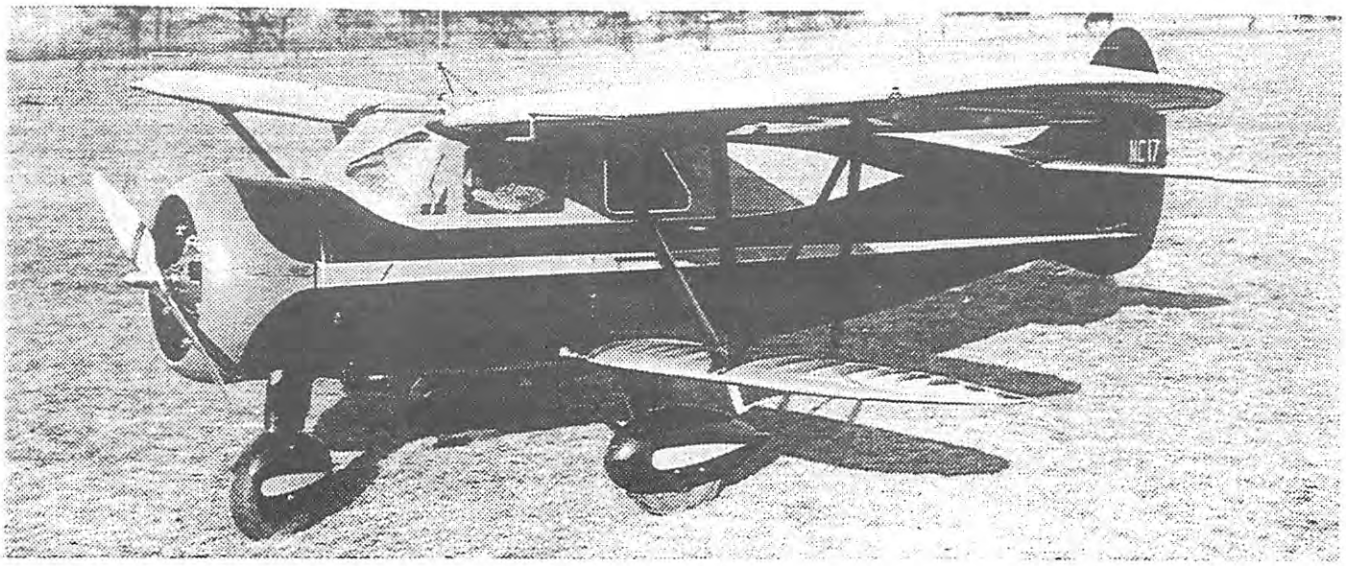


Edo FLOATS

39-4000
L•21'4" B•31⅛ H•29⅜ T•10¼" C-6
WT 3300-3800 WM 4210 WA 868°

BEECHCRAFT B-17E,R, C-17R,E17B,F17D RYAN B-5
STINSON SR-6,SR-7,SR-8,SR-9 B,C,D. SR-10 A,B,C.
WACO AGC-7,AQC-6,ZQC-6 FOKKER UNIVERSAL

ORANGE & BLACK DEPT. OF COMMERCE WACO N,NC 17



WACO AVN-8
1938

WACO MODEL AVN-8 ATC #677 ..... Number Sold — 15

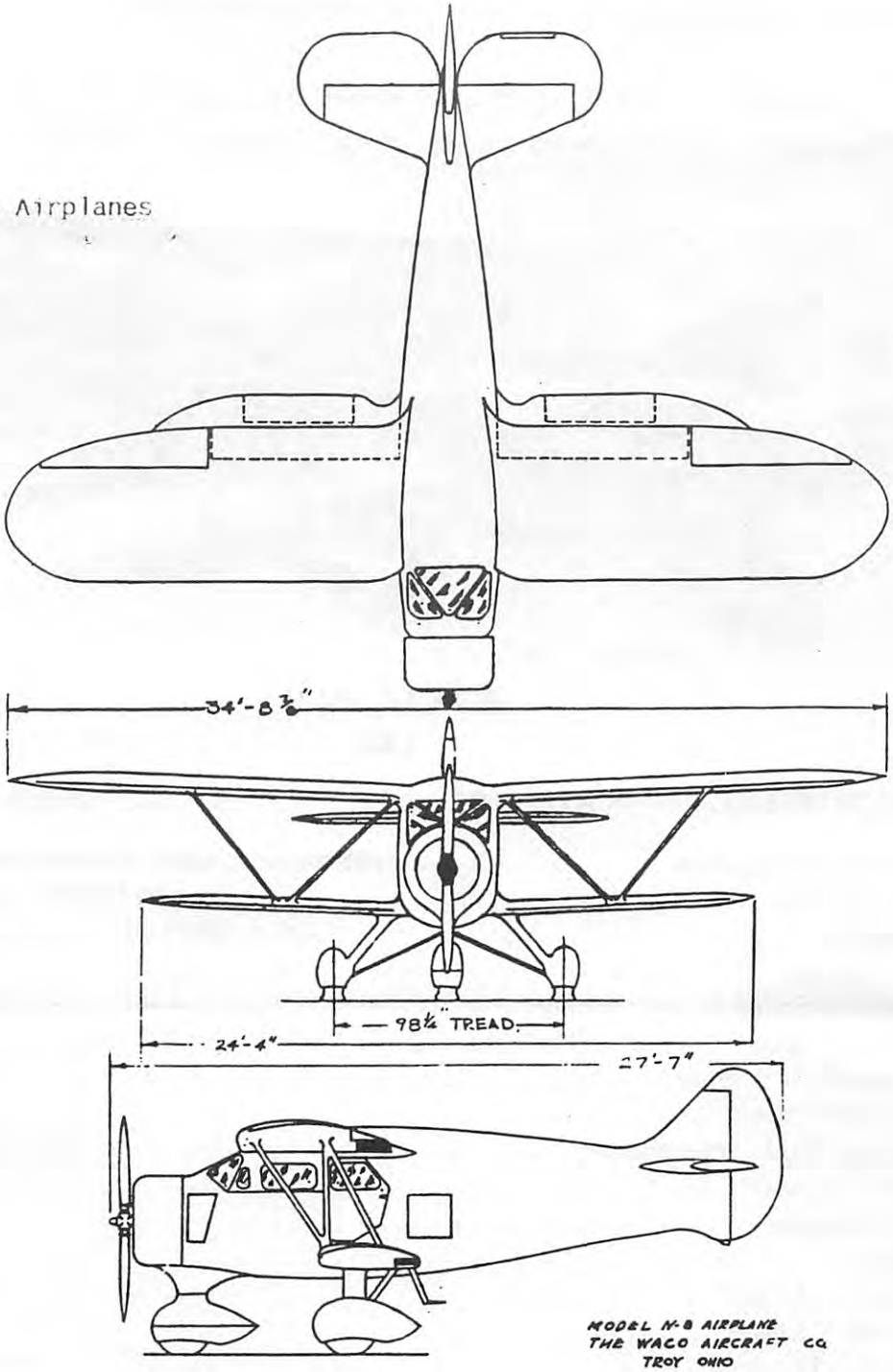
General Description ..... 5-place cabin land biplane (tri-cycle landing gear)
Power Plant ..... Jacobs L-6MB, 330 hp engine
Propeller ..... Curtiss-Reed 55501 or Hamilton 2B20
Top Speed ..... 161 mph
Cruising Speed ..... 139 mph
Landing Speed ..... 51 mph
Climb First Minute ..... 900 feet
Service Ceiling ..... 16,000 feet
Normal Fuel Consumption ..... 19 gallons per hour
Fuel Capacity ..... 95 gallons
Oil Capacity ..... 6 gallons
Airfoil ..... Clark Y
Chord — Upper ..... 72 inches
Chord — Lower ..... 48 inches
Span — Upper ..... 34 feet 9 inches
Span — Lower ..... 24 feet 6 inches
Length Overall ..... 27 feet 7 inches
Height ..... 8 feet 6 inches
Gear Tread ..... 99 inches
Tires ..... 7:50 x 10
Empty Weight ..... 2493 lbs.
Gross Weight ..... 3800 lbs.
Price with Standard Equipment $11,375.00

Note: Performance is with Hamilton propeller — performance will increase with Curtiss-Reed propeller.

WACO MODEL ZVN-8 ATC #677 — Number Sold - 6
Power Plant - Jacobs L-5MB, 285 hp engine — Price $10,695.00

Colors: Gunmetal Grey, Cadmium Cream, Vermilion or Customer's Choice.

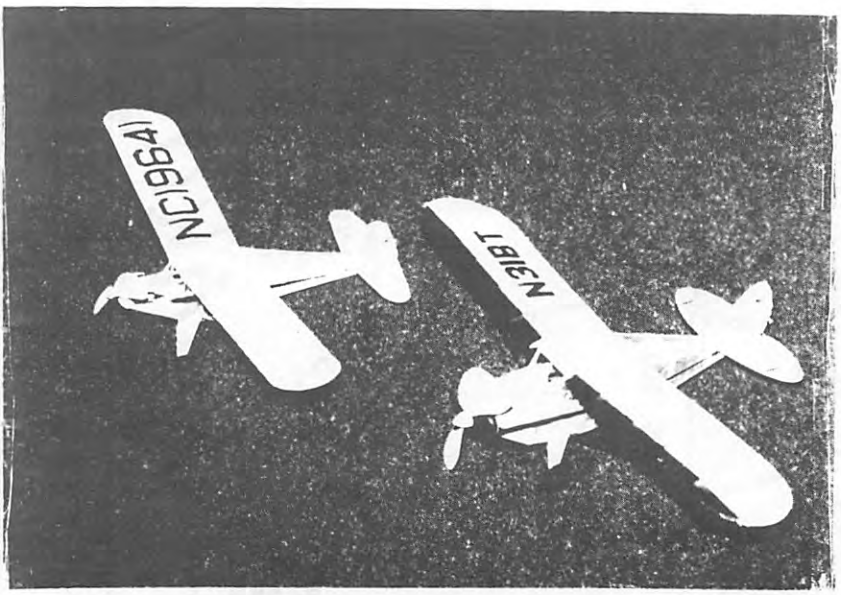
3-View from Waco Airplanes
by Ray Brandley





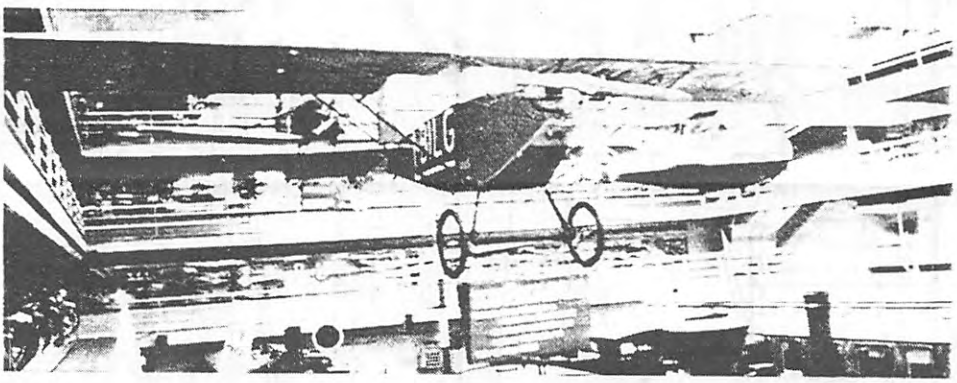
All White
Wine Red Trim
N1937S

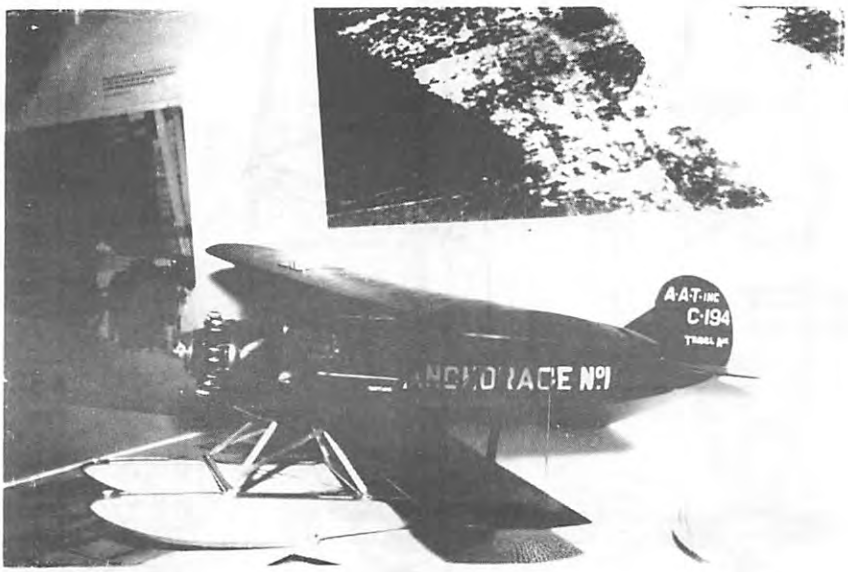
ONE OF THE FINEST RESTORATIONS YOU WILL EVER SEE, THIS 1938 WACO ZVN-8 FROM KANNAPOLIS, NORTH CAROLINA. RESTORED TO ORIGINAL AND FLOWN BY JACK GOODNIGHT, THIS BEAUTIFUL WACO IS ONE OF ONLY TWENTY ONE THAT WERE BUILT AND IS THE ONLY ONE THAT IS CURRENTLY FLYING.



Two more production Peanuts at the CFFS Indoor Contest. **Taylorcraft** by Steve Griebling and **Piper Pacer** by Gordon Roberts.

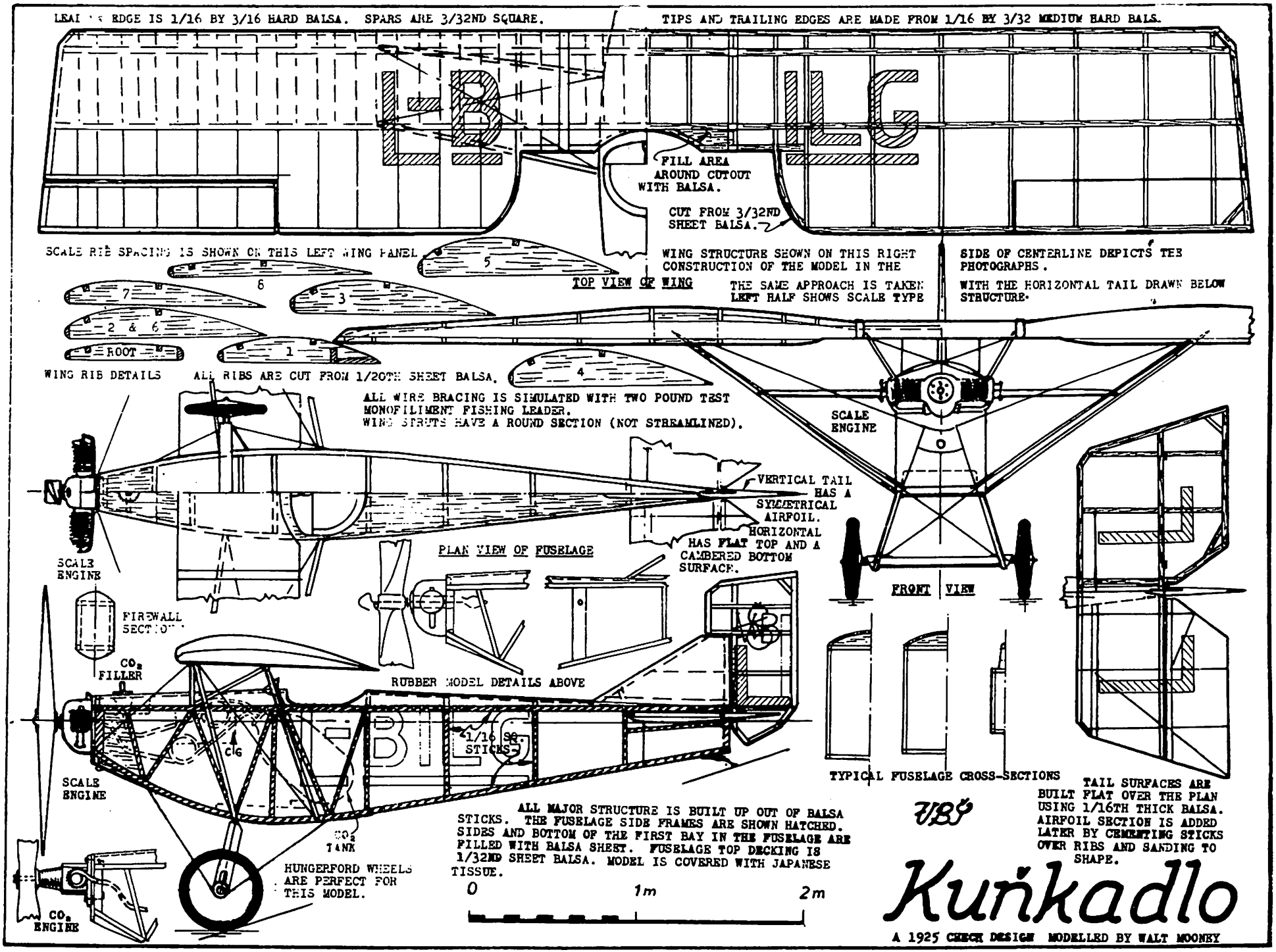
Kunkadlo
National Technical Museum,
Prague, CR.





Travel Air Model
ALASKA AVIATION HERITAGE MUSEUM
4721 Aircraft Drive
Anchorage, AK 99502

If you have a plan or 3-view please send to *Crosswinds*.



FULL-SIZE PLANS AVAILABLE . . . PAGE 121.

Ref. COURTESY TONY PETERS



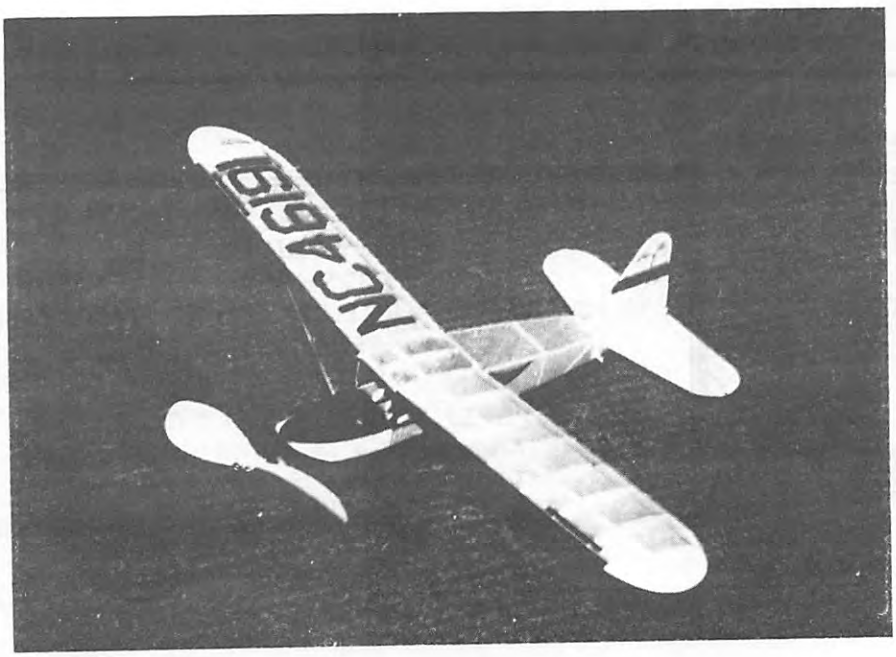
CFFS Members at January meeting at Dennis Norman's home. Our club's 25th Anniversary Party.

Front row left to right:

Vern Neff, Al Kretz, Jim Hyka, John Grega, Larry Mzik, Russ Brown, Steve Griebling,(President).

Standing left to right:

Warren Weisenbach, Rudy Profant, Vern"Doc" Hacker, Michael Zand, Norb Dunn, Dennis Norman, Dave Diels, Del Balunek, Larry Loucka, Peter Lloyd, Peter Zbasnik, Gordon Roberts.





Gordon Roberts' Stinson 125. Model placed first at recent CFFS Indoor in new FAC Production Peanut event.

1996 CONTEST CALENDAR

JUN 29-30	ANNUAL WACO FLY-IN AT MT. VERNON, OH WYNKOOP FIELD.
JULY 6-7	ANNUAL TAYLORCRAFT FLY-IN AT ALLIANCE, OH BARBER FIELD.
JUL 19-21	FAC NATIONALS AT GENESEO, NY. WARBIRD MUSEUM FIELD.
SUN JUL 28	CFFS FAC AT CALL FIELD, STOW OH 10-5 GORDON ROBERTS 749-4817
AUG 1-7	EAA ANNUAL FLY-IN AT OSHKOSH, WI
SUN AUG 4	CFFS FAC AT LORAIN C.C.C. 10AM-5PM CD PETER ZBASNIK 476-4824
SAT AUG 10	ERIE FAC & PICNIC AT PRANGMORE CD VIC DIDELOT 814/838-3263
	FAC AT DAYTON, OH WPAFB CD FRANK SCOTT
AUG 31-9/1	FAC AT MUNCIE, IN AMA FIELD
SUN SEPT 8	CFFS FAC AT L.C.C.C. 10AM-5PM CD RUSS BROWN 216/382-4821
SAT SEPT 14	ERIE FAC AT PRANGMORE 10-5 CD JOE BARNA 814/833-4985
SUN AUG 18	DETROITENGESCHWADER FAC AT FLINT, MI CD DAVE LIVESAY
SAT OCT 5	ERIE FAC LAST CHANCE AT PRANGMORE,PA CD ROSS MAYO 814/833-6855
SAT AUG 10	ALL NEW WORLD FAC SIMULTANEOUS MASS LAUNCH AT (4:00 P.M. ESDT)

CFFS ANNUAL INDOOR CONTEST March 9, 1997
Kent State University Fieldhouse

CROSSWINDS readers with red feather scratched renewal issue codes lower than this #88 can avoid the KAPUT chop to the address label by sending $12 to : Russ Brown, 4909 N. Sedgewick, Lyndhurst, OH 44124.

"Interested in Jetex flying, plans, fuel and engines? Join the more than 300 some already receiving the only newsletter designed for the promotion and preserving of Jetex flying. Subscribers as far away as Saudi Arabia and Switzerland are receiving this rag. Issue number 9 started off with full size plans, and three views for those who'd like to create their own models. There's even a "technical" section and photo page of the readership's creations. Subscription is $9.00 currently in the United States, $10.00 for Canada; and $12.00 if in Europe ($14.00 - Brown enveloped), surface $11.00, and if Australian or Japanese subscription, $14.00 ($16.00 brown enveloped) Single back issues are $2.00 each except in Australia and Japan which would have to be $3.00 including postage unless purchased as a group by Volume number. Those persons in countries other than Europe and The United States who would want back volumes need to add $3.00 extra per volume for overseas postage. Those in Japan and Australia would need to pay 4 dollars per volume because postage to send there is more than it is to send to Europe. This will save you some postage costs. Vol 1, #'s 1-6 runs $6.00; Vol 2, #'s 7-12 runs $7.00; and Vol 3, #'s 13-18 will run $9.00, and following volumes are $9.00 each. (more pages and full size plans). Currently, we are on issue # 33 and each issue is 'These' oriented.

Send replys to Roger L. Wathen Sr., P.O. Box 18251 Indpls, Ind. 46218 Phone 1-317-547-5963"

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Thanks again for your continued support.

Jetex Forever,

Roger

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