

DUES
NOTICE



MAX-FAX

January-February 1992

EDIZIONE SPECIALE ITALIANO

MEMBERSHIP INFORMATION: Dues are \$15 per year in the USA, Canada, & Mexico, and \$25 per year for all other countries. Expired dues will have a red X in the box at the top of this page. You will receive only one notice for renewal. Make checks payable to the D.C. Maxecuters and send to the Treasurer. The D.C. Maxecuters meet the first Wednesday at 7:30PM at College Park Airport, the world's oldest continuously operating airport.

CLUB OFFICERS

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NEWSLETTER CONTRIBUTORS: Please send all correspondence and contributions for MAX FAX to the club President

D A T E S T O R E M E M B E R

MAXECUTER'S INDOOR FLYING AT FARQUHAR SCHOOL - SATURDAYS - 4 TO 7 PM
JANUARY 18; FEBRUARY 1 AND 22; MARCH 7.

PATUXENT RIVER INDOOR CONTEST - MARCH DATE TO BE DETERMINED - BUT WILL BE A SATURDAY AFTER MARCH 7 -
SEE ANNOUNCEMENT THIS ISSUE AND CONTACT CLAUDE OR TOM FOR DATE

---- ALSO SEND YOURS AND GUESTS NAMES TO CLAUDE POWELL, BOX 454, RIDGE, MARYLAND 20680; PHONE (301) 872-4105 ----

AMA NATS AT CHICOPEE, MASSACHUSETTS JUNE 21 - 28.

FAC NATS AT GENESEO, NEW YORK JULY 10 - 12.

E D I Z I O N E S P E C I A L E I T A L I A N O

Questa edizione da "MAX-FAX" eh da aeroplani Italiano ----OOPS!!! I almost forgot not everyone reads Italian, so, to start over --this edition of "MAX-FAX" is about Italian aeroplanes. It is a theme issue devoted to some lesser known aircraft from Italy. I believe that other than a few Italian aircraft, Ansaldo SVA5, Fiat G-50, Fiat CR32, Macchi 2005 and a few others there are many that have never been modeled before, maybe never even heard of. With this in mind we decided to do an issue and present plans and 3-views of some of these aircraft.

Our feature plan for this issue is the MAGNI-VALE sport plane of 1932. This plan is a redesigned version of the 1937 Lindberg plan to bring it closer to scale with the 3-view. Carlo Godel had indicated some of the discrepancies on the Lindberg plan years ago in a Flightmaster's newsletter and in subsequent correspondence detailed the aircraft's colors and markings. Those revisions were done to the plan in this issue when I re-drew it and the letter from Carlo is printed in this issue.

The second plane in this issue is the MACCHI M-16, from Carlo Godel. MAXFAX ran a PEANUT float version of this plane by Lindsey Smith in a 1990 issue. This is the land version of the aircraft. An electric version is under construction and will be powered by a Hi Line MICRO-4 motor system. The little history about this aircraft came from Dr. Harvey Pastel who received it from Bill Hannan.

The 3-views in this issue were obtained from various sources. Many are courtesy of Carlo Godel; others are from "Aerofan", an Italian publication no longer available. A special publication of S.A.I.A. (Savio Marchetti) aircraft published by "JP4 Aeronautica", an Italian magazine and Thompson's book "Italian Civil and Military Aircraft 1930 - 1945", now out of publication. I hope this issue will tweak your interest to convert some of these 3-views into models. By the way -many more 3-views of rare aircraft are available from Carlo Godel. A SASE to the address noted on the MACCHI M-16 plan will bring you a list of what is available.

This issue also contains a thoughtful review of model propeller design by Prof. Bud Carson and the results from the November 16th Patuxent River Indoor Contest. All attendees agreed it was a fun-filled low-key affair and wish to salute the efforts of Claude Powell and the U.S. Navy in putting on a terrific contest. We should also mention that Walt Eggert flew up a storm to walk away Grand Champion. Claude has since reported that \$75 were collected for Navy Relief and wishes to thank all who donated.

Special last minute announcement concerning the availability of SHARK CO2 motors. They are now available from PROKIT PRODUCTS, WORMERSLEY HALL, WOMERSLEY, Nr DONCASTER, YORKSHIRE, DN6 9BH, ENGLAND; TEL. (0977) 620670; ATT. G.I. DAVIE. Price for SHARK single cylinder CO2 motor is L27.50 plus L3.50 postage to USA. Twin cylinder and contest variants are available; all motors are tested before shipment; write or call for details. (Editors note: a British Pound is about \$1.85 at current exchange rates)

Please address any comments on this issue to Bill Ceresa, 11410 Blueidge Drive, Beltsville, Maryland 20705 - Chow eh arriverederci -



HERBERT J. CLUKEY 1925 - 1991

Aeromodeling lost one of its "quiet giants" on 19 November 1991 with the passing of Herbert J. Clukey, of Fairfax, Virginia. Herb was a cofounder of Flyline Models and president of the firm until his untimely death at the age of 66. In addition to being responsible for many of the Flyline designs, he did a number of beautiful drawings for Model Aviation and other publications.

Herb was born in Jackman, Maine where he spent his entire youth, until serving in the Navy during World War II. In addition to being an ardent modeler, he was a most talented musician and played tenor saxophone in several of the popular "big bands" of the post-war era. He later found himself fully employed in the vocation of his first love, the model industry. He spent many years with the famous Corr's hobby shop in Washington, D.C., prior to his career with Flyline Models.

Herb is survived by his wife, Mrs. Sue Clukey, of the home; a son, Mr. Terry Clukey of Fairfax; two daughters, Mrs Ilka Costales of Los Angeles and Mrs. Sandra Smith of Fairfax; and a sister, Mrs. Angela Robertson of Mount Pocono, Pennsylvania.

He will be greatly missed, not only by his family and many friends, but by the entire aeromodeling community, worldwide, who have so enjoyed his designs and contributions for many years. ----- Hurst Bowers -----



CY HANZELY ----- 1991

On Aug 27, 1991, while on vacation with his family, Cy Hanzely suffered a massive heart attack. In that instant, we his friends, his co-workers, but mostly his family, lost a true and caring human being. Cy's wonderful sense of humor, friendliness, and dedication to his values made him welcome anywhere. Cy was an extremely bright person, which only became apparent as one got to know him because he would never push it on you. He had the rare gift of making people feel better simply by being there. Losing Cy is an occasion of great sadness for me and many, many others.

True and caring friends are the rare treasures in life. I feel lucky to count Dave Rees, Bob Pyfrom, and Cy Hanzely in that category. So it was with much grief I found myself without someone that I valued very highly. My work this year is really rotten (isn't everyone's ?) which only added to my overall misery. Cy's wife, Pam, had asked me to sell his modeling supplies and equipment and this task has kept me involved and busy since September. This endeavor has had some wonderful side effects that I would like to pass on to you.

At a "S.A.M." contest near Lancaster PA, I met a bunch of new people and was able to sell a lot of things. Pam received the first installment (\$600) of the proceeds after that and I felt like Santa Claus because that was Christmas money for the family.

About this time, Claude Powell phoned inviting me in a very sincere manner to the Pax River contest. He sounded as though he really wanted me to be there. I have wanted to attend for several years and the warmth of the invitation, the chance to visit with Dave Rees, plus a lot more of Cy's stuff to sell, resulted in a decision to attend even though I had almost nothing to fly. I truly appreciated the fact that Claude extended the invitation in the way he did.

As I was packing my van on Thursday night before the contest, Bud Carson called asking if I would be down to Pax River. I've known Bud for many years and he's an awfully nice guy, but to get a personal call indicating that he would like to see me again was one of the nicest things he could have done. Hey, somebody cares!

During the contest, I had made a suggestion to a chap camped next to my table. Later, he was outside and I complimented him on his flying and hoped my suggestion had contributed a little to his winning second place in WWI combat. Randy Kleinert was listening to this conversation and recalled an incident maybe ten years before when we were total strangers. I had apparently approached him at a contest in PA and tweaked something on his airplane saying it might help. It seems the airplane needed just that, and Randy was appreciative. The incident was LONG gone from my memory, but not from Randy's, and he made me feel great by recalling it.

After the Pax River contest I was able to pass along another \$800 to Pam Hanzely which I hope will help with a lot of things. There's another hundred or two of value in the things left and I hope to realize that for the family as soon as possible. I feel good about that, but it is just as good to know there are three other friends out there that I never knew cared.

I am reflecting that life has enough sad times, "mighta beens", angers, etc., but it seems that when it's really bad, it's the little things people do (like a friendly phone call or a casual recollection) that can make life pleasant again. Yes, I lost a very good friend; but in the last couple of months I've come to appreciate the caring of other friends. Don't let too much time pass before you say something nice to someone, you may make their whole day-week-month-outlook, brighter. And you might feel better for doing it. ----- Rowland Hoot -----

INDOOR MODEL AIRPLANE CONTEST

NAS/NATC PATUXENT RIVER - LEXINGTON PARK, MARYLAND
LOCATION - ROTARY WING HANGAR BUILDING 717

DATE NOT SET - BUT WILL BE SATURDAY MARCH 14, 21, OR 28, 1992

CHECK WITH CLAUDE OR TOM FOR FIRM DATE - SEE PHONE NUMBERS BELOW

NO ENTRY FEE BUT DONATIONS TO THE NAVY RELIEF SOCIETY ARE WELCOMED
MAJOR EVENTS (FAC Rules & Trophies awarded)

- MASS LAUNCH
- 1- OLD TIME SCALE* 11:00 AM
 - 2- WW-I 12:00 PM
 - 3- NAVY SCALE 1:00 PM
 - 4- PEANUT SCALE 2:00 PM
 - 5- GOLDEN AGE 3:00 PM
- OTHER EVENTS
- 6- FAC RUBBER SCALE
 - 7- COCONUT SCALE**
 - 8- BOGUS SCALE BOSTONIAN
- 14 GRAMS MINIMUM WGT.***
(Rules in Nov-Dec 89 M-F)

- SPECIAL EVENTS
- 1- FAC POWER (Electric & CO2)
 - 2- 14 GRAM (WEST COAST) BOSTONIAN.***
 - 3- NOVICE PENNYPLANE (AMA Rules).***
 - 4- NO-CAL.***
 - 5- MASS LAUNCH CONSOLATION EVENT - FLOWN ABOUT 4:00 PM.****
- * OLD TIME SCALE RULES - Any old time kit plan; vintage before December 31, 1942 with 20 inch wingspan or less.
** COCONUT Rules - 1 oz minimum weight w/o motor
Minimum wingspan - monoplanes 36 ins. - multiwings 30 ins.
Judging - 30 point maximum scale points
added to flight time in seconds for total score.

*** Single best flight time determines winner in these events.
**** SECOND and THIRD place flyers from the 5 standard MASS launches are eligible to enter this event but must use plane flown in the above MASS launch events. One launch, last one down wins!

AIRCRAFT FOR SCALE JUDGING MUST BE TURNED IN BY 11:00 AM
NO QUALIFYING FLIGHT IS REQUIRED
ALL FLIGHT TIMES MUST BE SUBMITTED BY 4:30 PM DEADLINE
AWARDS: 5:10 - 5:30
LOCAL RULE: ONLY ONE MASS LAUNCH EVENT PER AIRCRAFT
(EXCEPT FOR CONSOLATION EVENT ABOVE)

CONTEST INFORMATION: CLAUDE POWELL 1 (301) 872-4105
TOM SCHMITT 1 (301) 530-0327




IMPORTANT NOTICES:

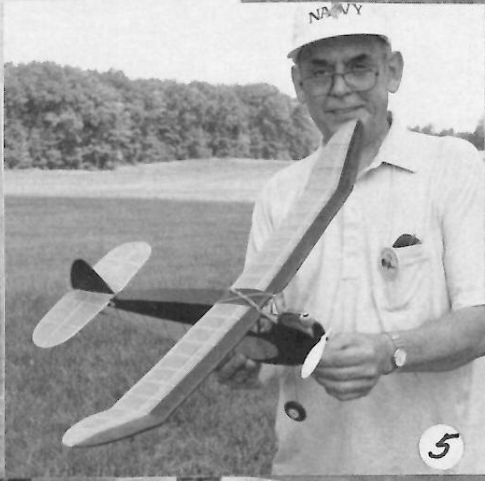
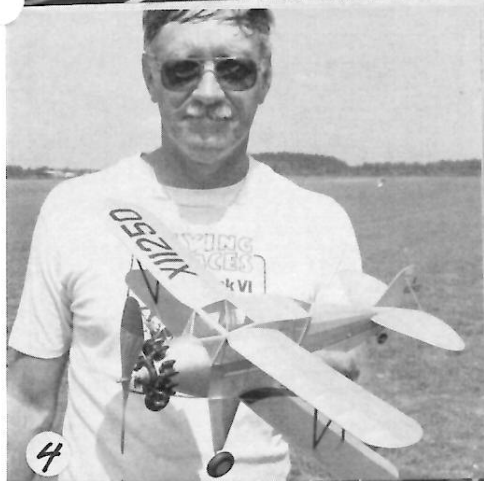
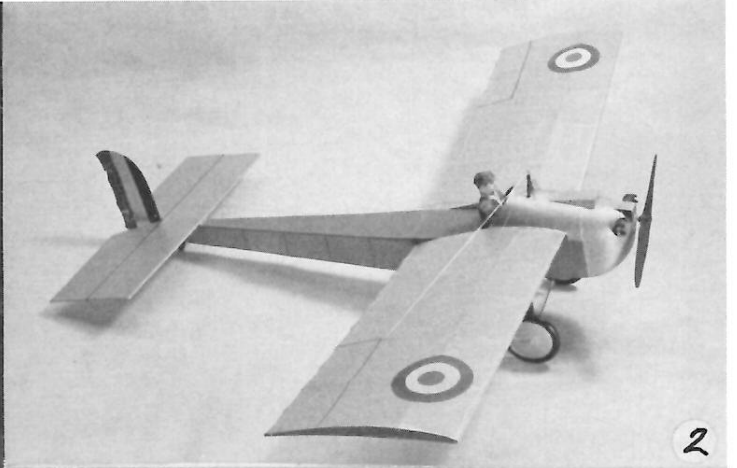
PLEASE CONTACT CLAUDE POWELL AT LEAST ONE WEEK BEFORE CONTEST TO PROVIDE YOURS AND GUESTS NAMES FOR ENTRY TO BASE.-----

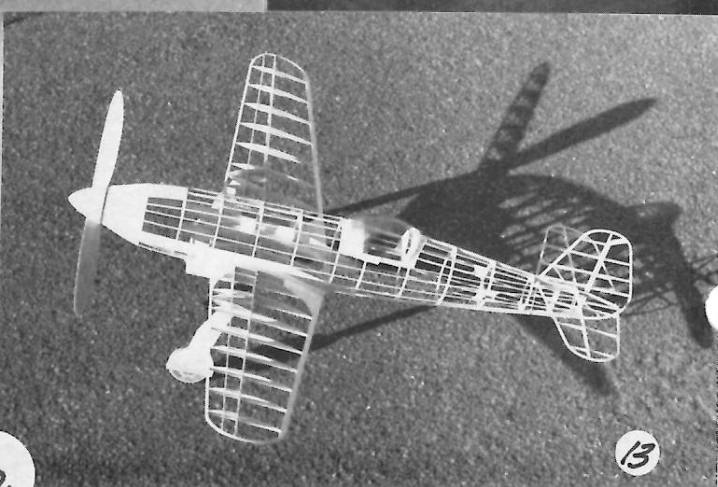
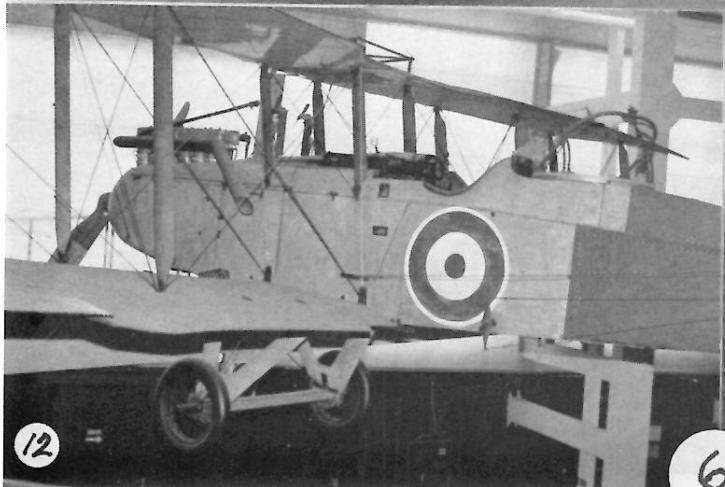
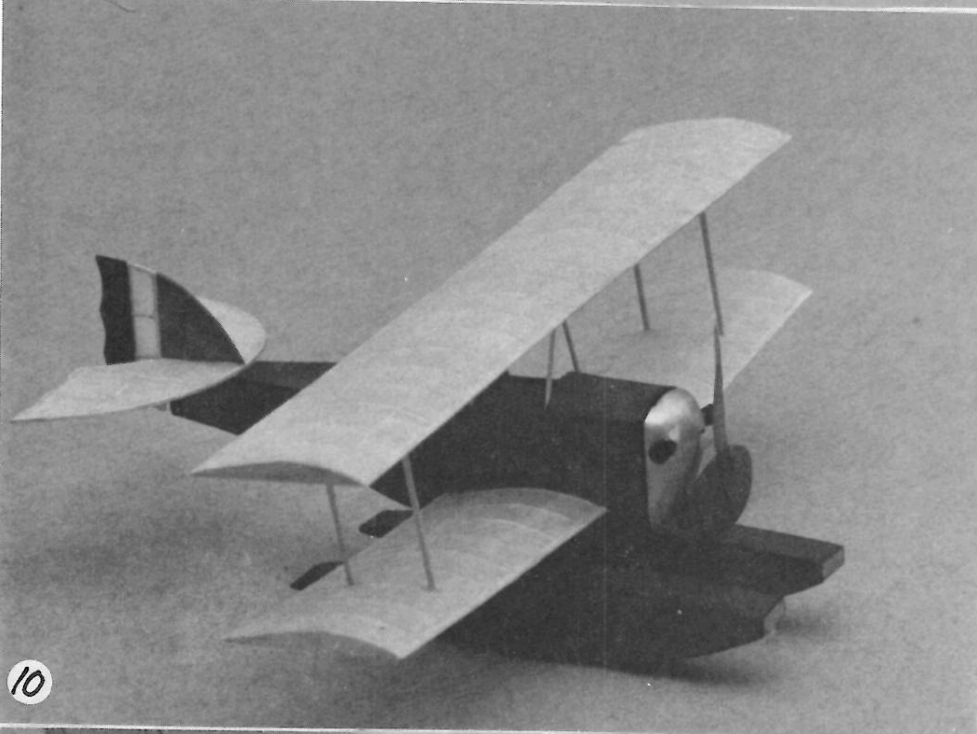
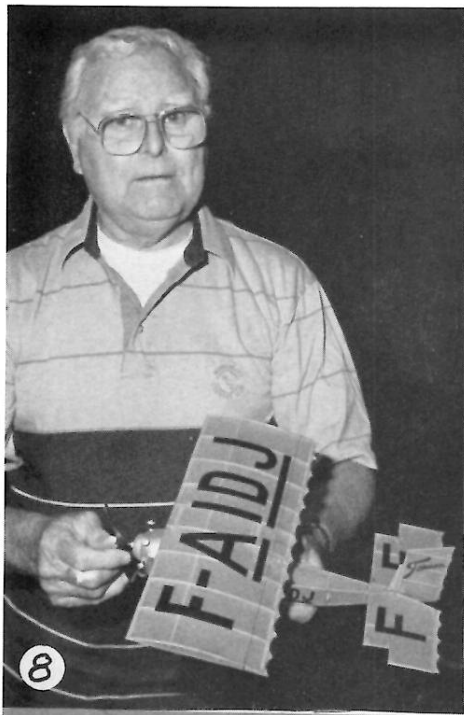
FOOD AND BEVERAGES WILL BE AVAILABLE IN THE HANGAR AT NOMINAL PRICES
ALSO PLEASE NOTE THERE WILL BE NO TABLES OR CHAIRS AVAILABLE IN THE HANGAR SO BE SURE TO BRING YOUR OWN.

SPONSORED BY: NAVAL AIR STATION/NAVAL AIR TEST CENTER,
PATUXENT RIVER, MARYLAND AND
ST. MARY'S COUNTY RECREATION AND PARKS.

1. Herb Clukey is no longer with us and now flies with the angels. Together he and Hurst Bowers developed FLYLINE and its terrific line of scale aircraft which Herb continued after Hurst left. Those of us who have known Herb since his early days at Corr's will miss him and his ever present smile. Please see Hurst's tribute in this MAX-FAX.
2. Sorry guys this may be R/C but it is nifty pixie of a model aircraft! How about Don Srull's Farman Moto-Aviette enlarged from Bill Hannan's three-views to 20 inches span and 80 square inches area. It is powered with a Hi Line MICRO-4 electric motor and weighs 52 grams soaking wet. The radio is a pulse system using an Albin receiver and actuator manufactured by Fritz Mueller down in Georgia. It is truly a backyard and indoor R/C aircraft. Just ask Don when he is not busy recovering it from a brier bush.
3. If the above was not enough to inject a little building inspiration, what about this one - another Hi Line scoop with MICRO-4 power! Don holding his ducted fan semi scale Lavochkin which has flown for over a minute at COMSAT and was demonstrated indoors at Pax River in November. The aircraft plans with fan construction details will be published in an issue of Flying Models magazine.
4. Joe Hurdle and his beautiful model of the first WACO cabin aircraft. Joe and his Dad have restored the original at their location in Mebane, North Carolina.
5. Professor Bud Carson and his Hi Line electric powered 1/2 scale WANDERER old-timer. I believe the original Wanderer was Bud's first gassie. Be sure to read Bud's article on props in this issue.
6. Another shot of Al Flesher's electric powered (Hi Line Mini-6) PBY and also Al. See last issue for flight shot; it is a great flyer.
7. Vance Gilbert took some time out from singing engagements and building super flying scale aircraft to visit MECCA. Wish we knew the joke; but then Stew did not figure it out either!
8. Doug Buchanan may not be getting a BLUE-MAX soon, but he is certainly close to the Guinness record of number of by-passes for one person. Welcome back Doug after your latest R&R.
9. A great photo of a great model both by Jiro Sugimoto way off in Japan. Naturally it is PEANUT of the HE 1000, weighs 9.5 grams and flies close to 40 seconds.
10. Harvey Pastel's photo of his perky PEANUT Macchi seaplane built from a MAX-FAX plan drawn by Lindsey Smith.
11. A study in concentration, Bert Phillips adjusting his neat little Vega. Now let's see do we need right, left or down thrust? Maybe all three!
12. Another pic from Glen Simpers taken at last year's Paris Air Show; this time a detailed look at the forward half of a DH-9. Thanks again Glen.
13. Al Lidberg must never sleep; here is the skeleton built from his latest plan offering, the WW II Romanian IAR 80A. This is a large model with a 34.5 inch wingspan. The plan comes with color sheet of insignia to be cut out for the model. You can get the plan with instructions, three-views, color insignia sheet and Al's catalog for \$9.00 postpaid. Just think no scrounging around for documentation or good color data. That is worth \$9.00 by itself! The complete catalog alone is \$1.50 and has 14 pages with illustrations of all the plans available plus additional useful info concerning them. Send to A. A. Lidberg / model plan service / 614 E. Fordham / Tempe, Arizona / 85283.

NEW!		MODEL PLANS & 3-VIEWS INTERNATIONAL	NEW!	
THE FIRST IN A "PLANNED" SERIES, COMPILED BY BILL HANNAN				
		\$9.95		
 <p>HANNAN'S RUNWAY BOX 210 MAGALIA CA 95954 USA PHONE (916) 873-6421</p>	 	<p>STILL AVAILABLE: Peanuts & Pistachios Volume 1 @ \$6.95 Peanuts & Pistachios Volume 3 @ \$6.95 Peanuts & Pistachios Volume 4 @ \$6.95 Peanuts & Pistachios Volume 5 @ \$7.95</p> <p style="font-size: small;">All prices are plus postage and packing. PLEASE TELL YOUR FRIENDS ABOUT P&P AND P&P!</p>		





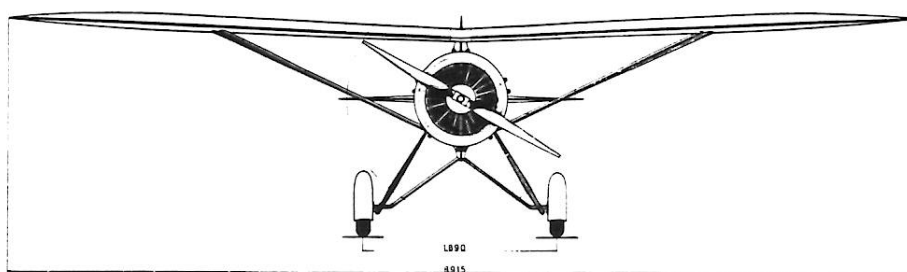
6.

SKETCHBOOK: MAGNI VALE

Ingegnere Piero Magni, one of the Italian pioneer pilots and designers, died on 17 April 1988 at the age of 89. The sketchbook recalls one of his famous airplanes, the Vale, a small, single seat high-wing touring and acrobatic monoplane of intriguing design built in 1934. The PM 3/1 Vale featured swept wings of elliptical planform, with wooden structure and plywood covering, a very sleek fuselage, Magni engine cowling, spinner and streamlined wheel pants. This plane was tested at Milano Taliedo in March 1935 and subsequently flown to Montecelio experimental center. A 1937 refinement of the Vale, the PM 3/4, differed very little, although empty and loaded weights rose to 1320 and 1760 lbs., respectively. Minor aerodynamic refinements included a longer engine cowling, increasing maximum speed from 155 to 162 mph..

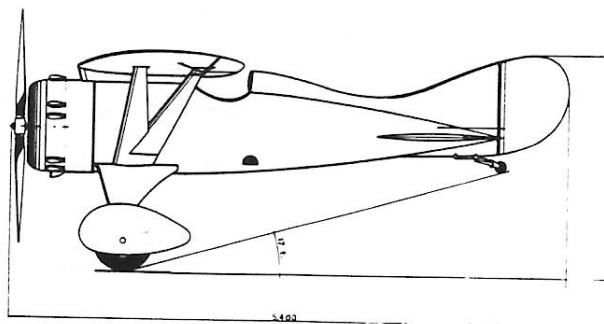
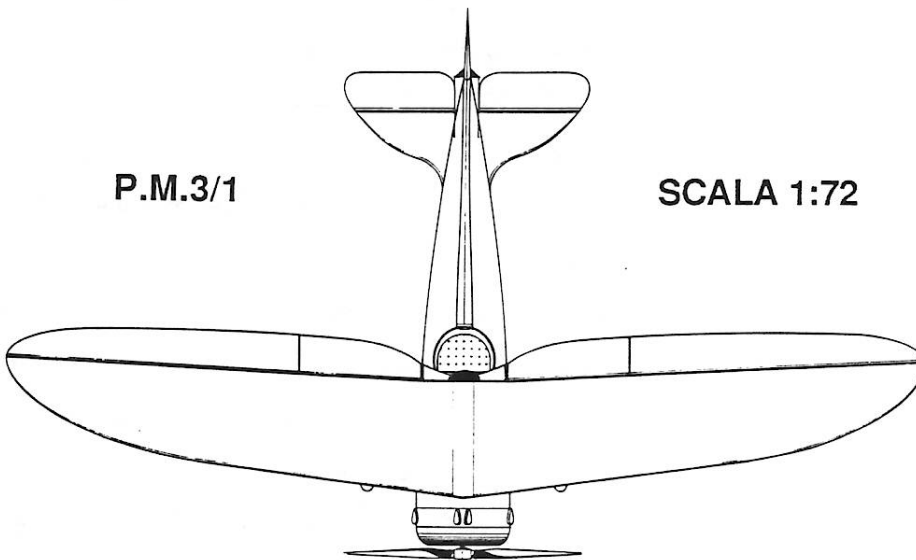
Also this airplane was delivered, as the previous one, to Regia Aeronautica, but owing to the loss of the PM 3/1 Vale with its pilot Corrado Mattioli, the PM 3/4 was temporarily abandoned. At the end of the war the only example built was donated to the "Museo della Scienza e della Tecnica" of Milan, where it is now exhibited.

A further development, the PM 4/1 Supervale, was designed in 1937 but never built.



P.M.3/1

SCALA 1:72



CONSTRUCTION NOTES ON MAGNI VALE P.M. 3/1 MODEL

FUSELAGE:

Conventional box with shaping formers. Sheet balsa fill added to those areas indicated on the plan.

COWL:

The cowl is made by the half-shell method and attached to the fuselage when completed.

PYLON:

There are a number of methods -- solid balsa or built up. I am sure you can use your skills to build a pylon that will work. I suggest you can add the dihedral to the pylon for good wing attachment.

WING:

Straight forward construction. You can laminate the tips instead of what is on the plans.

TAIL SURFACES:

Conventional building methods.

CONCLUSIONS:

I am in no way an authority on building this model. Use any building methods you choose. I followed the Lindberg plan as close as possible so as to preserve a 1937 plan brought up to scale appearance.

Feb 10 1983

Dear Tom

Good to hear that my interest in Italian aircraft is rubbing off on a few of the flightmasters.

As to the exact colors used on the Magni PM 3-1 Vale. Two color schemes were used for various testing procedures or I should say after some damage it was repaired and repainted. The first color scheme used was overall scarlett red with green, white and red tail stripes on the vertical only, on the nose the name Vale is painted in yellow the nose itself was in natural aluminum to a point just behind the wing pylon attachment to the fuselage the lettering on the tail was in white. The faces insignia appeared on the fuselage sides only and was done in full color with shading on the fagot and axe blade.

The second scheme was all dove grey (imitation silver) with all the same trim colors except for the lettering on the tail which was done in black. The tail stripes as on all Italian aircraft was green forward, white in center, and red at the rear. the crest of Savoy appeared on the tail in the white band about $\frac{2}{3}$ up the band.



colors

red shield, and crown band
and bell ribbon
green poles
gold ribbon of crown top
and bell

gold white cross almost circular in shape.



colors

black outline

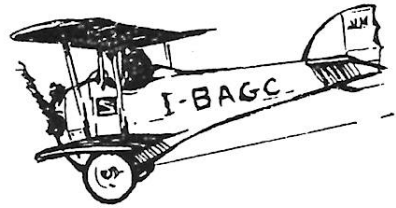
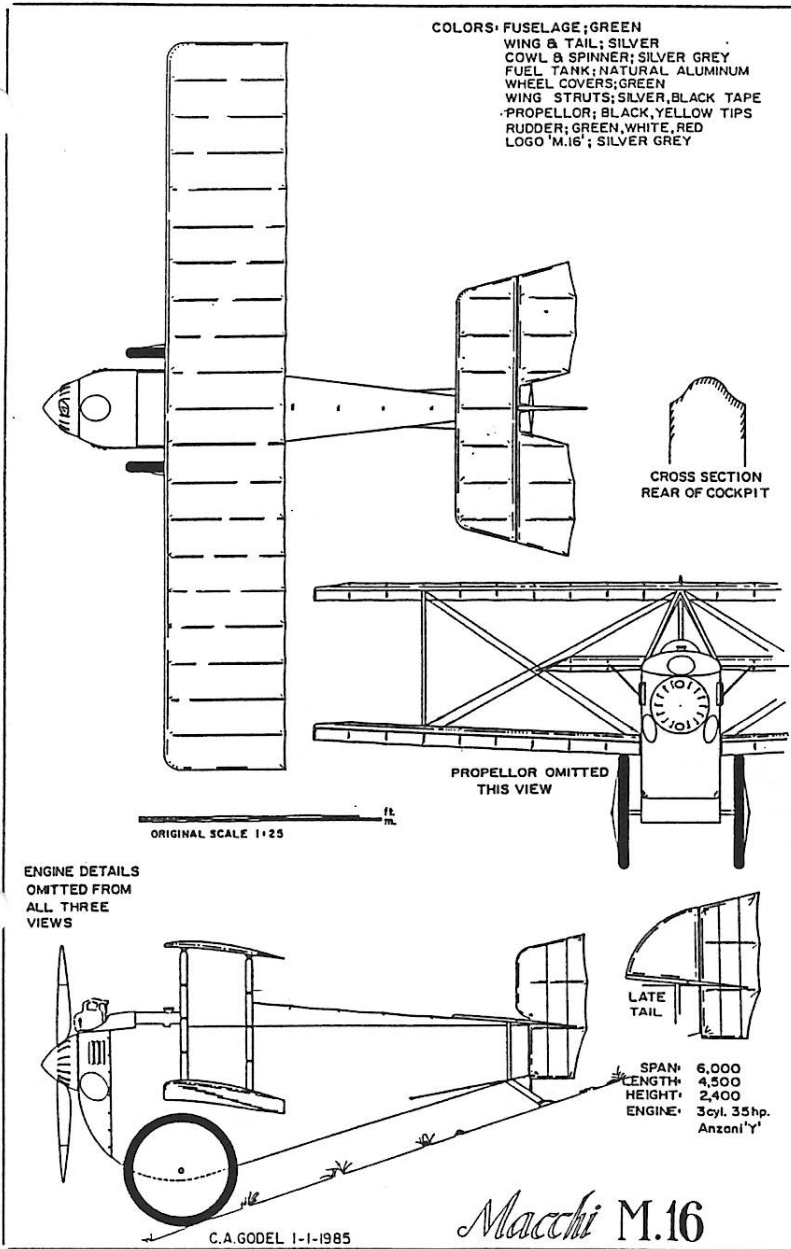
shaded brown to tan fagot & handle
with black outlines

shaded silver blade blue field shaded
to light blue at bottom

I Hope all this helps

Regards

Carlo



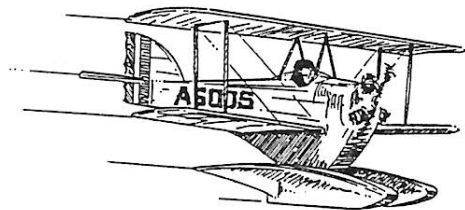
MACCHI M-16

The MACCHI M-16 is a small Italian sport plane circa 1918-1919. It was powered by a 35hp. 3 cylinder Anzani "Y" engine.

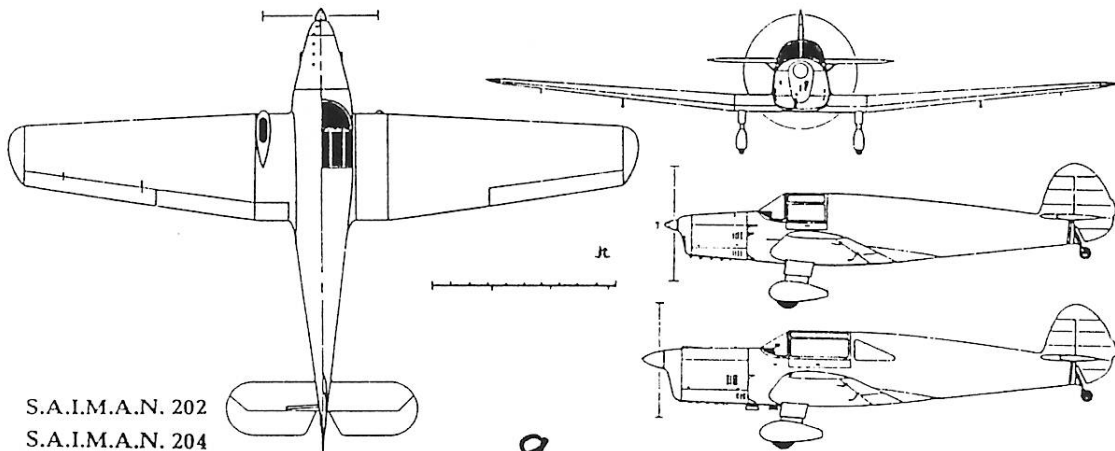
In 1920 it became the first in its class to climb to an altitude of 3770 meters, (12,450 ft.). It won the Coppa Napoli in 1920-1921. The large wheels made it ideal for take offs on rough terrain.

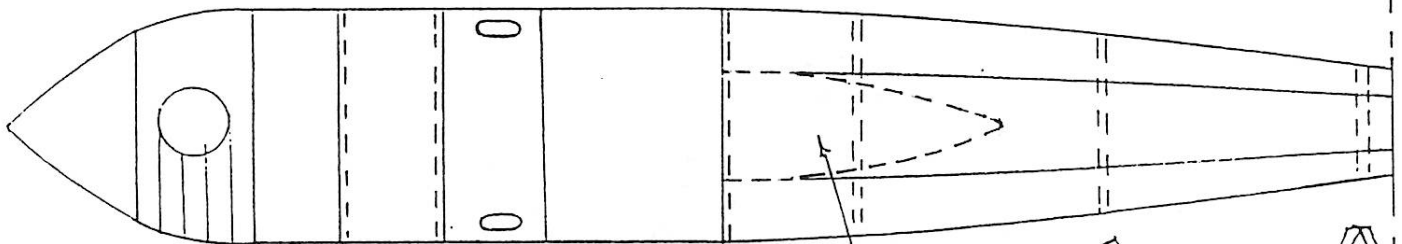
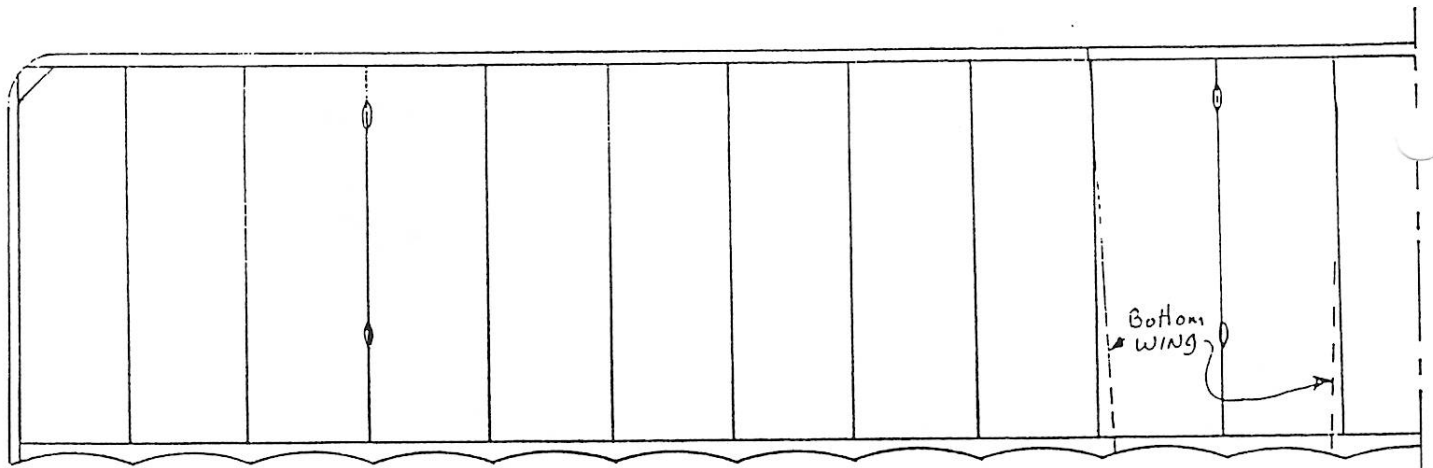
Another version of this aircraft was a float model, which was tested by the U.S. Navy. A plan of the float model was published by MAX-FAX in the March-April 1990 newsletter. It is a peanut by club member Lindsey Smith of England.

The above history of the MACCHI M-16 was obtained from Dr. Harvey Pastel via Bill Hannan. Bill did not list the source of his information.

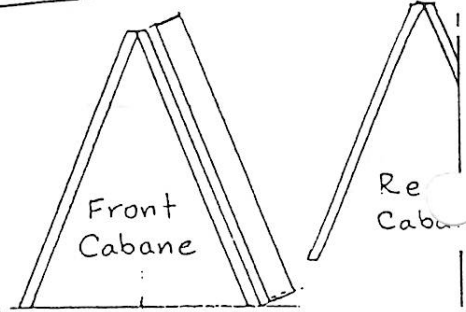


S.A.I.M.A.N.

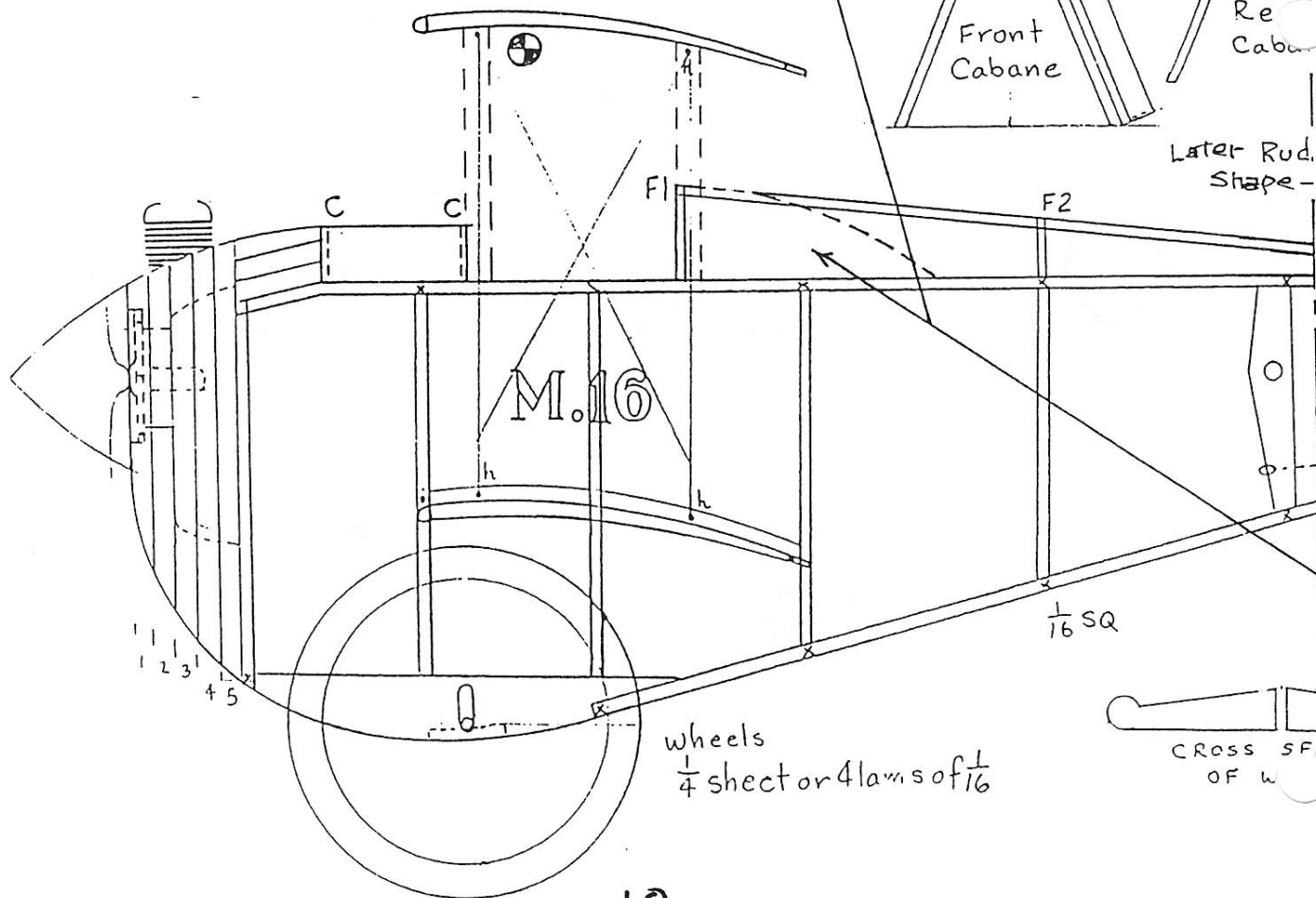


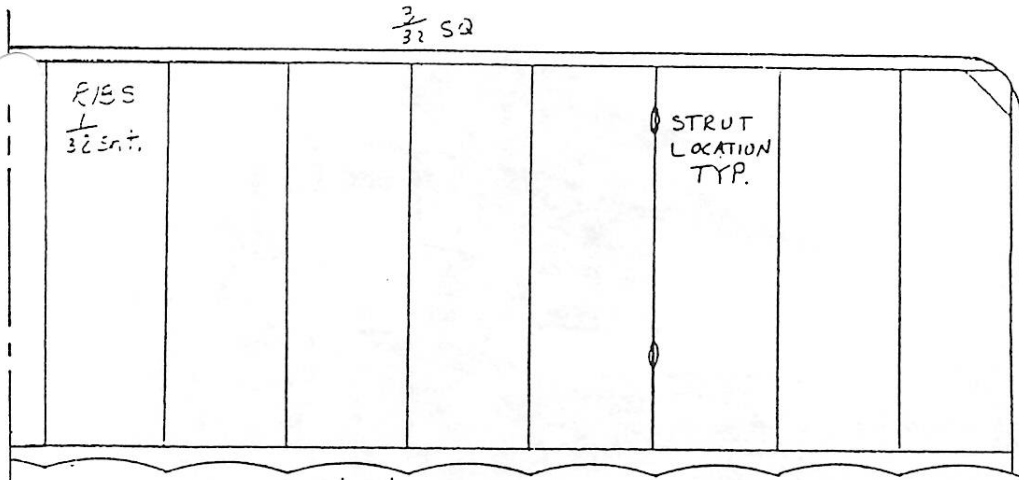


$\frac{h}{2}$ FRONT STRUTS $\frac{1}{h}$
 $\frac{h}{2}$ REAR STRUTS $\frac{1}{h}$

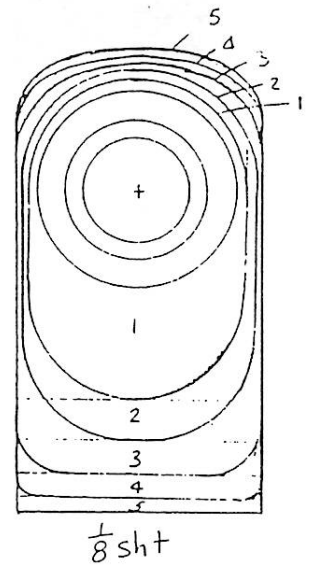
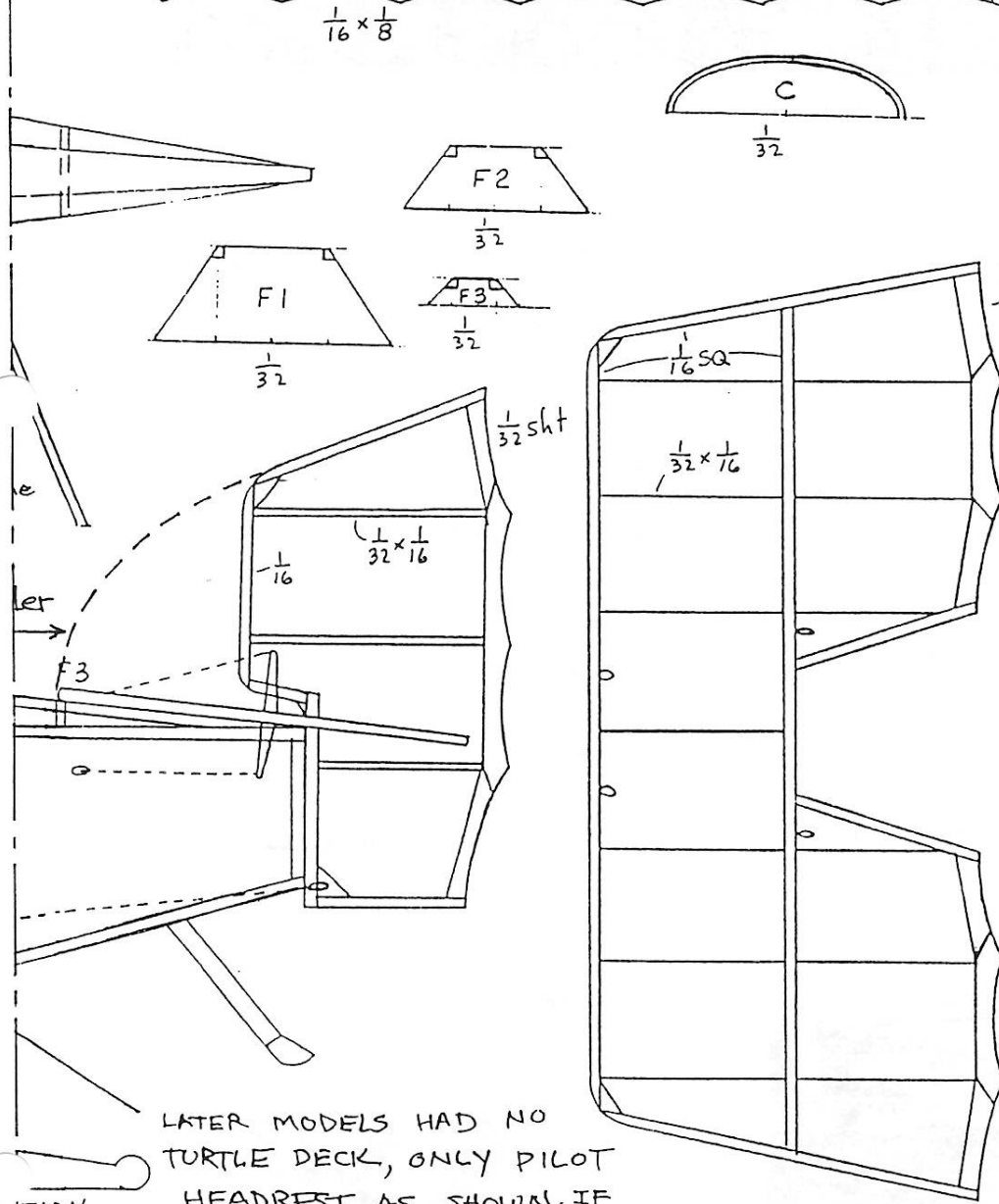


Later Rud. Shape -





Pelivoli
 3-views of rare aircraft
 Carlo Godel
 5726 Case Ave.
 N. Hollywood Ca. 91601
 Send a SASE.
 for listing

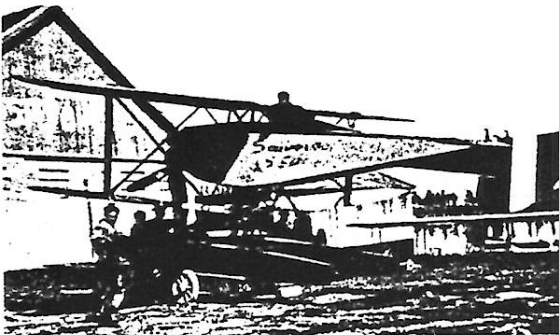
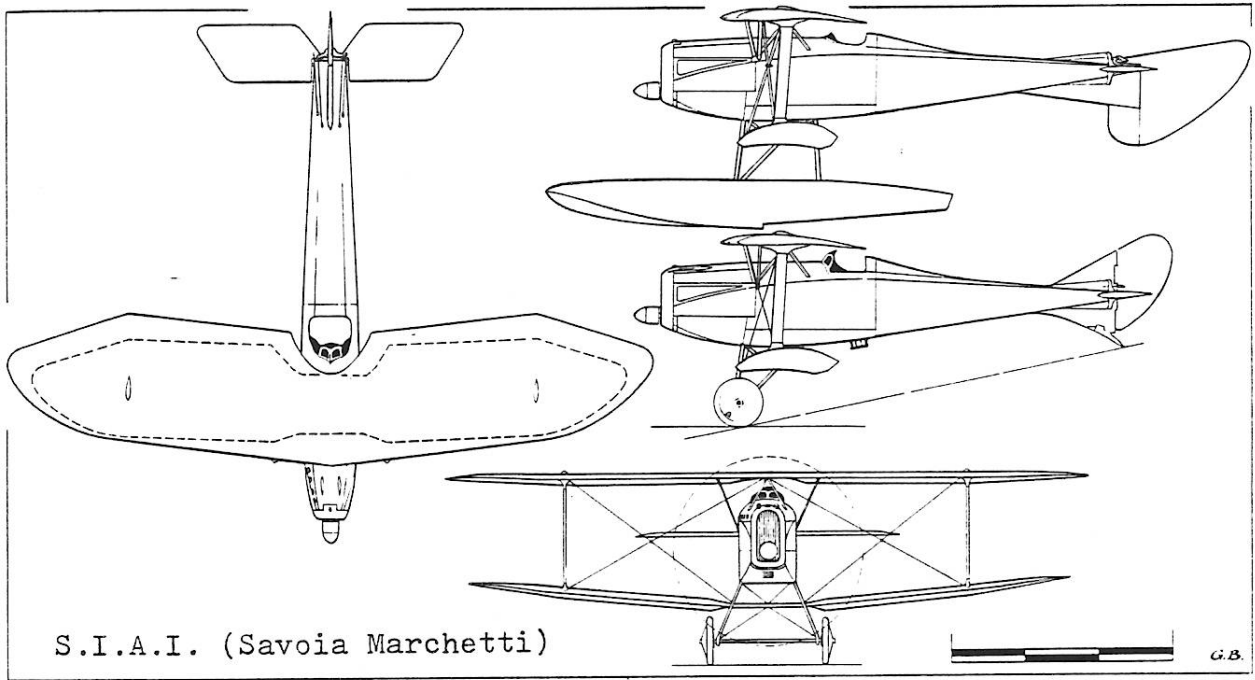
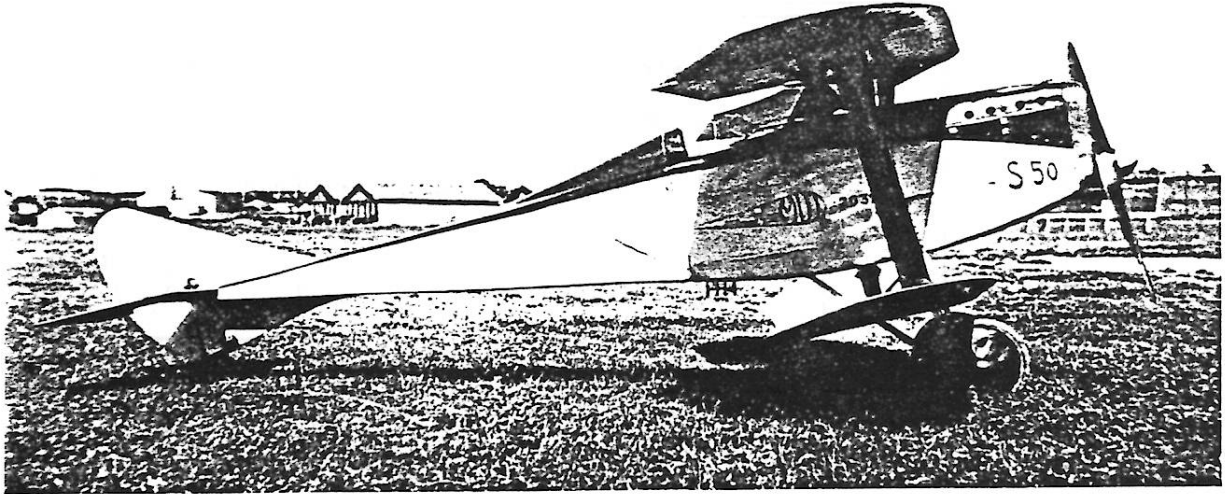


Colors
 Fuselage - Green
 Wings & Tail - Silver
 Nose & Tank - Silver

LATER MODELS HAD NO
 TURTLE DECK, ONLY PILOT
 HEADREST AS SHOWN. IF
 YOU BUILD THIS VERSION USE
 LATER RUDDER SHAPE.

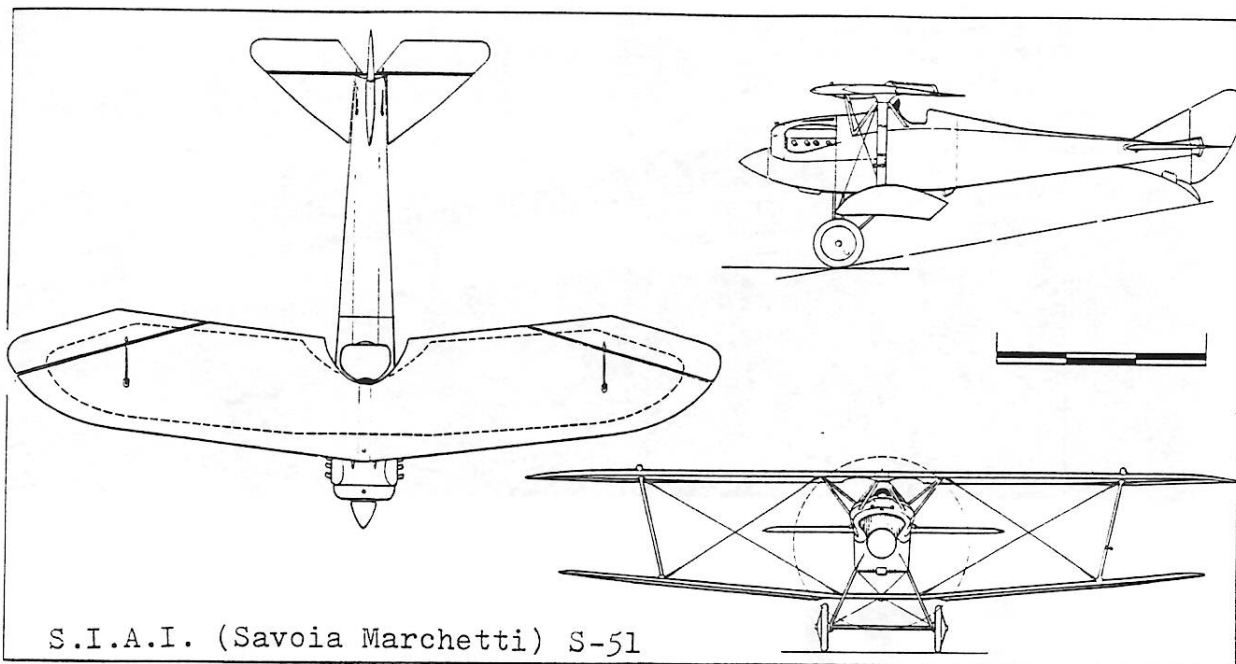
Macchi
 M. 16
 Peanut Scale

Carlo Godel
 Oct 1985

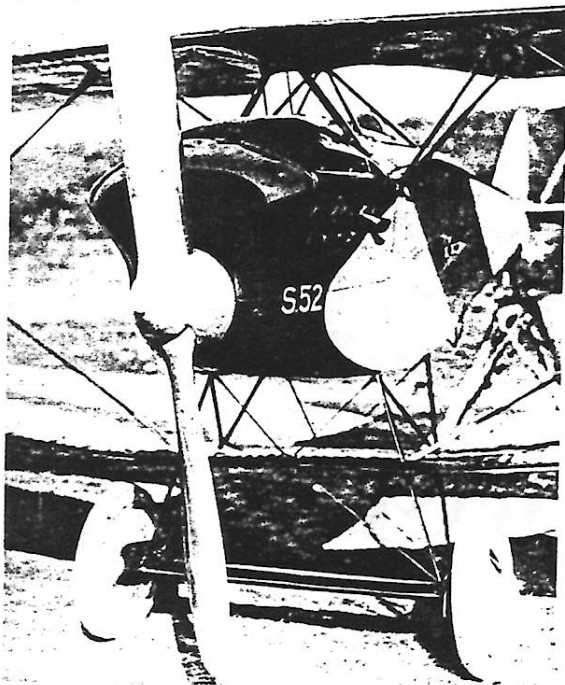


Di fronte, l'M.V.T. n/c 2031 con le insegne della SIAI e la denominazione S.50, a Montecelio. Sopra, l'S.50 nella versione a scarponi.
 Facing page, the M.V.T. c/n 2031 with SIAI logo. Above the S.50 on floats for the Schneider Trophy.

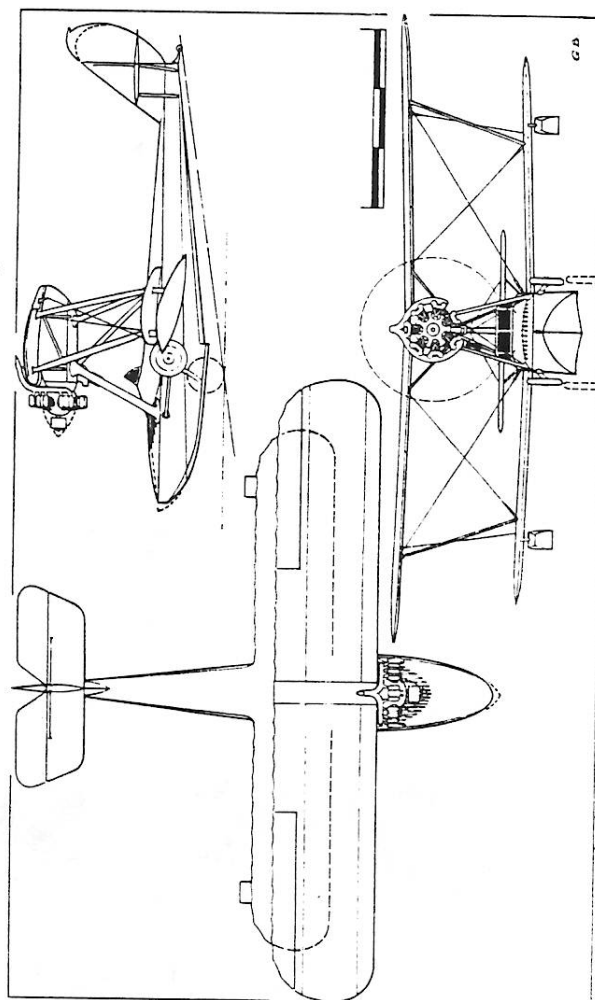
S.50

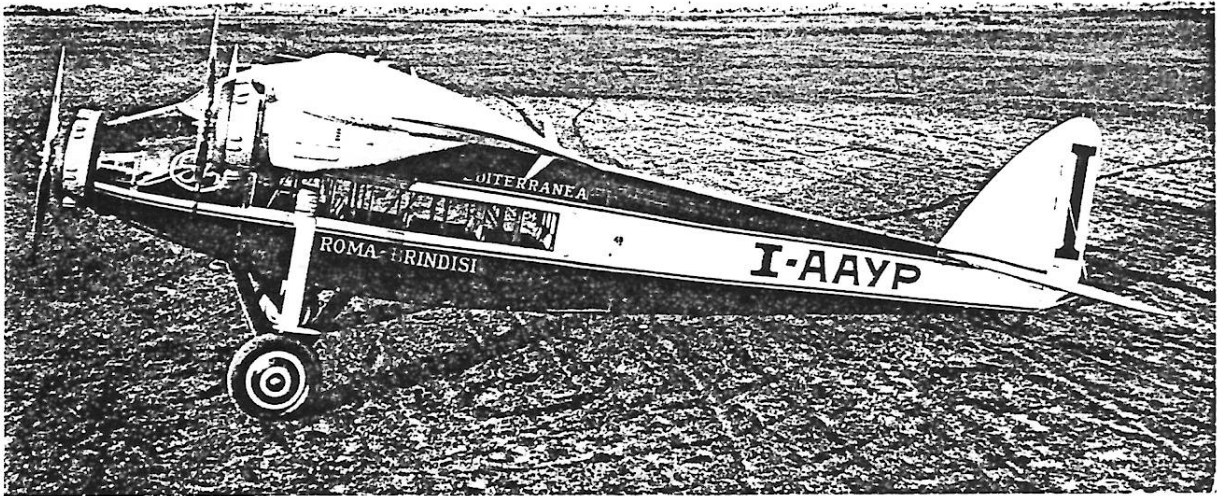


L'elegante S.52 aveva alettoni e piani fissi orizzontali tradizionali, ed apertura alare aumentata rispetto all'M.V.T.
The elegant S.52 had traditional ailerons and stabilizers, and bigger span than the M.V.T.



S.I.A.I. (Savoia Marchetti) S-56

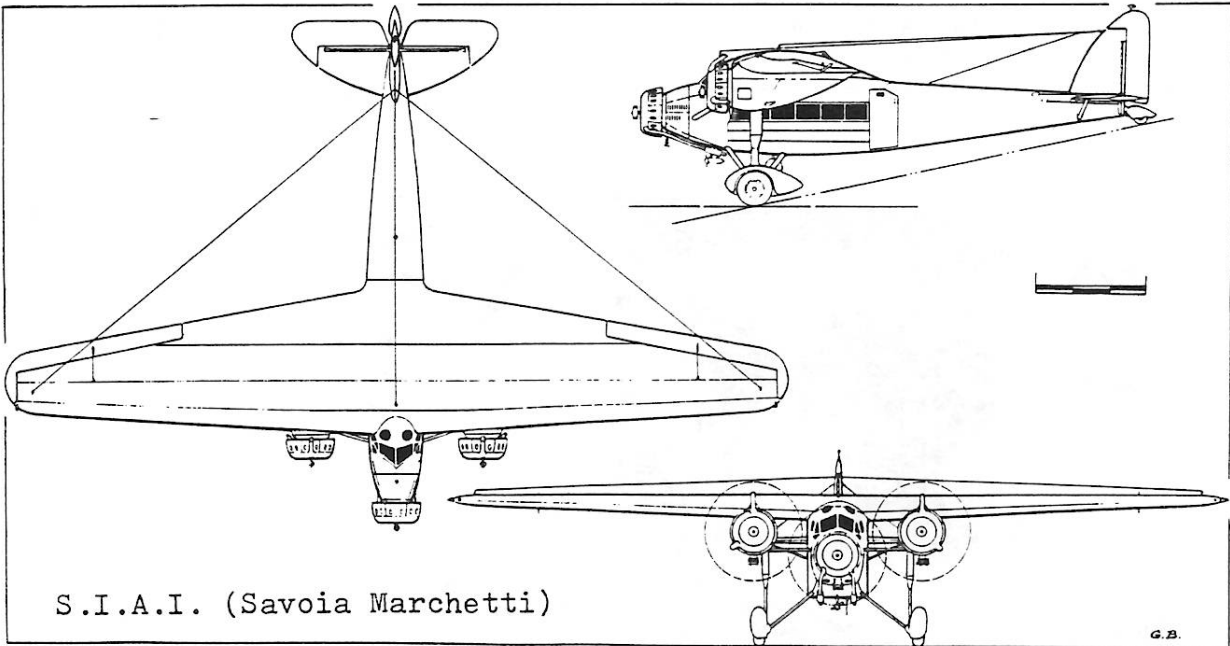




S.71

Il prototipo S.71 I-AAYP della Società Aerea Mediterranea, in una livrea blu e argento. Questo aereo era inizialmente dotato di pattino di coda.
The S.71 prototype I-AAYP of Società Aerea Mediterranea: it was painted in blue and silver. This airplane was initially fitted with a tail skid.

ATTENZIONE DAVE REES-----IT WOULD MAKE A GREAT ELECTRIC.



S.I.A.I. (Savoia Marchetti)

G.B.



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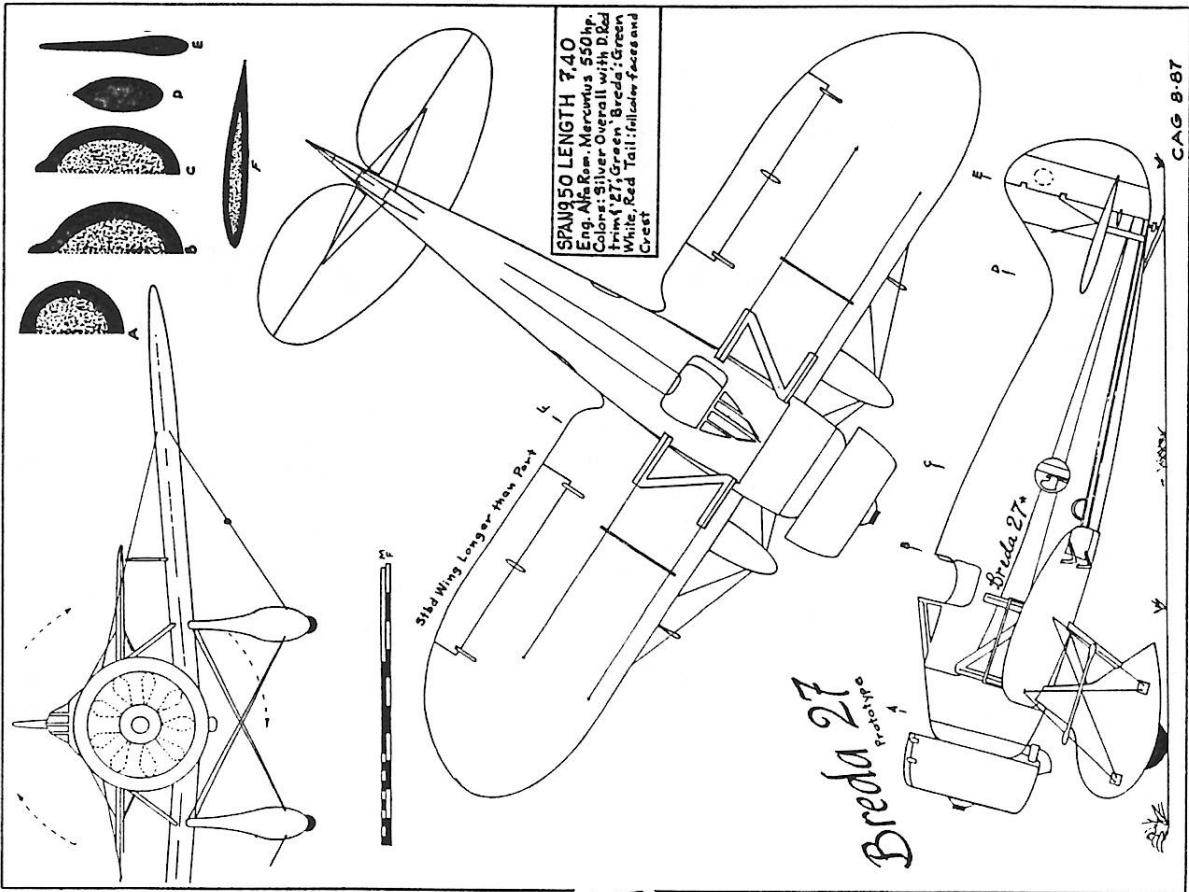
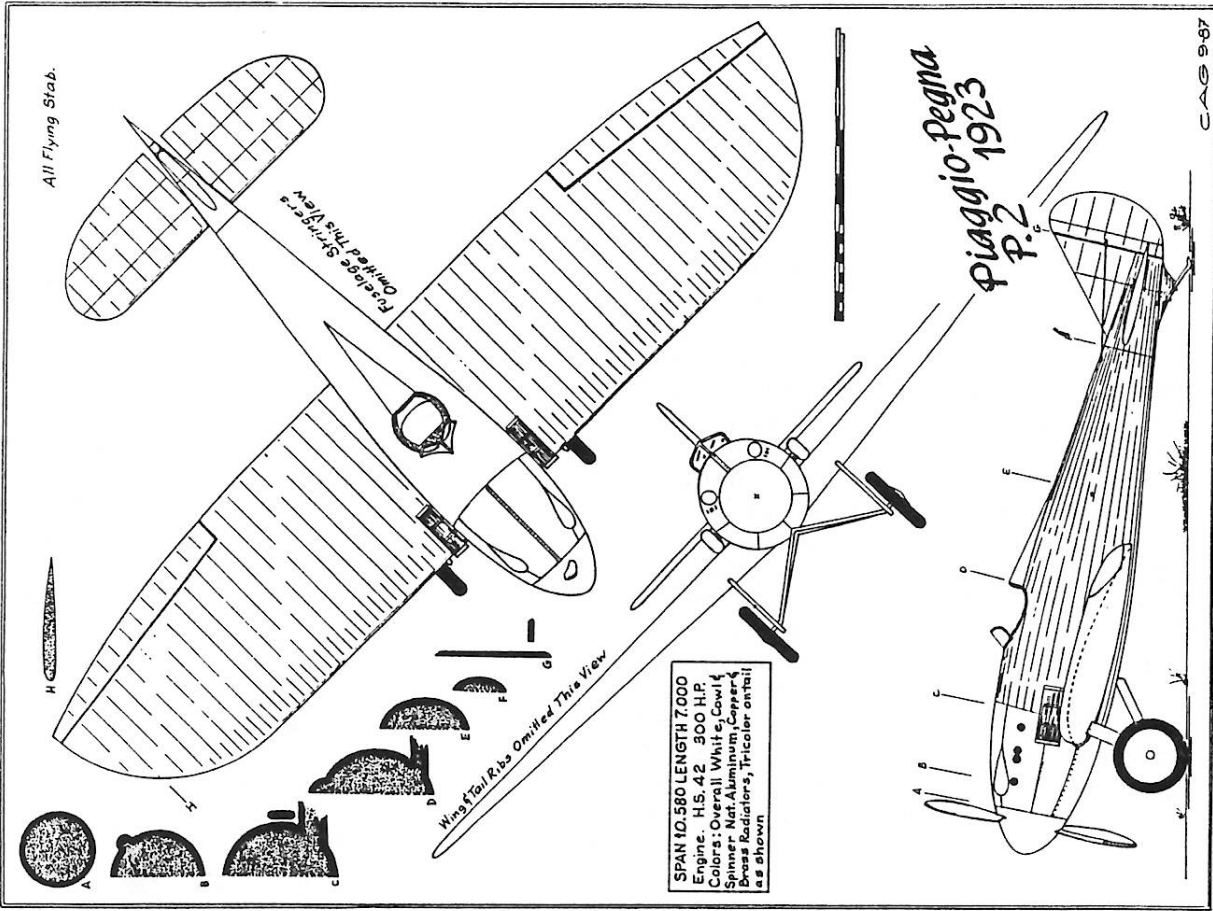
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Thoughts on Props

Bud Carson

I recently got a very nice letter from Tom Arnold of West Coast fame who said that he and Claude Powell were doing some hangar flying while Claude was visiting him not long ago, and a question came up about props that neither he nor Claude could answer. So Tom wrote to me about it, since I seem to have achieved some reputation as a guru on such matters.

The truth is that if I knew more about modeling, I would be ranked higher than a rough, tough Captain in the FAC, but his question is fairly easy to answer. After writing back, I thought some of our club members might be interested, too, hence this short article.

Tom asks, "Why do our props have such high pitch?" A typical rubber model prop has a pitch of 20-28° at the 75% radius, he notes. When the propeller spins, the section should have way too much angle of attack, since it will stall at about 8° - in other words, aren't the blades stalled, just pushing and thrashing the air? Wouldn't a much lower pitch work better?

The answer is no, the blade sections are not stalled, or at least, not when the prop is driven within its design envelope. Tom's dilemma is solved when we examine the relative wind diagram.

The relative wind at any radial station is the vector sum of the forward (axial) plus the rotational speed components. Tom hints at this when he notes that as the model picks up speed, the incoming air reduces the angle of attack, but then he dismisses it as making little or no difference.

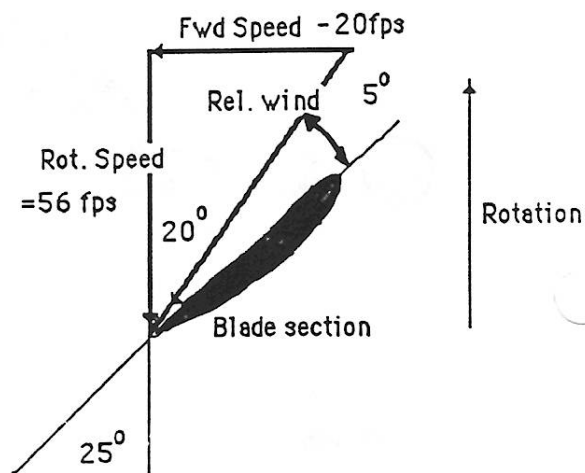
Actually, it makes all the difference in the world. (I am reminded of the French politician who once noted in a speech that, in reality, there was very little difference between men and women. Someone in the crowd yelled *Vive la difference!*)

I think this can be best illustrated by a practical example. Once you see this, you might be inclined to say, "Hooray for the difference" too.

I have a model that flies at 20 fps with a 9.5 in. prop turning at 30 rps. (round, but reasonably accurate numbers.) The 75% radius is thus $(.75 \times 9.5 / 2) / 12 = 0.3$ ft. To get the speed in the plane of rotation, we multiply the radius times the rps times 2π , or 6.28. Multiplying these numbers out gives a rotational speed component, in the

plane of rotation, of 56 fps.

When this vector is added (see sketch) to the 20 fps forward speed, we see that the relative wind enters the plane of rotation not at zero degrees, as Tom assumed, but at an angle of about 20°. We must therefore measure the angle of attack of the blade section from *this* direction, not the plane of rotation. Thus the blade section there would need at least this amount of pitch to produce any thrust at all. If the pitch angle at that point is set at 25° (say) with respect to the plane of rotation, the section will now have an angle of attack of 5°, which is well within the unstalled region, even for these low Reynolds numbers, and also, incidentally, is nicely bracketed by the range of angles Tom cited for a typical prop at the 75% radius.



OK, you say, but what about when there is no forward speed, when you are just launching the model? Wouldn't the 75% blade section now be seeing an angle of attack of 25°, and be utterly stalled?

Again, the answer is no, because at zero forward speed, the prop generates its own axial air flow, *exactly like a stationary fan*. In other words, if a prop is denied forward motion, it will simply generate its own axial velocity! This is called the "induced" flow and actually exists at all forward speeds, to some extent. Thus, in the above example, the actual angle of attack of the blade section would be even less than the 5° cited, by a degree or two. But the induced effect is maximum at zero speed, and unless the blades have an outlandish amount of pitch, they will

induce enough axial flow through the plane of rotation to keep themselves from stalling. In fact, the maximum amount of thrust occurs at zero forward speed, just the opposite of what you would imagine if you didn't know about the induced velocity, or fan effect.

So that is the answer to Tom's question. Now that we know how props work, let's go on to practical matters. Most of us wish there were some simple way to get the best out of our props, but that seems to defy rational analysis, so we use trial and error, guided by experience and intuition.

Trial and error means different things to different modelers. The indoor guys solve this problem by having dozens of props to choose from at a contest. A real pro will have drawers full of props of different pitches, diameters, and blade shapes, so that by experimentation, he can get the best performance for the ceiling, temperature, rubber size, time day, and for all I know, the price of pork belly futures.

Of course, it's a simple thing to swap out props on an indoor model, but for the rest of us, we are pretty much stuck with the prop we start out with on our scale models, unless we are willing to go to a lot of trouble.

But all is not lost. One solution for fine tuning a prop is to make it ground-adjustable by mounting the blades on dowels that are inserted in an aluminum tube that serves as the hub. The hub is lightly crimped on the dowels, and can readily be uncrimped in the field for minor adjustments. My experience has been that the blades are rather tender and are easily broken in outdoor flying, but they seem to work well for coconuts and other scale models when flown indoors.

Another tack is to use the Peck series of plastic props which, in my opinion, are hard to beat for efficiency, cost, and lightness, unless you like to carve your own from scratch. These are easily tweaked by holding the hub with one hand and twisting pitch in or out at the root, matching up the pitch on each blade by eyeball. The same goes for the Pacific Northwest (red plastic) props.

This does not work on some other plastic props because they are brittle and will snap if you try it. I should also mention that those beautiful little Williams props that work so well with the Hiline electrics cannot be repitched because they are made from some sort of "memory" plastic that always returns to the original pitch, about a minute after you have altered it. (This practically drove me nuts on one model until I figured out what was happening. I would crank in some more pitch, the model would fly better, and by the time I recharged, I was back to square one!)

Another question I get asked is, how about props having more than two blades, as in three, or four? My answer is that this is a good way to absorb torque if the diameter is restricted (by gear length, say) but as for thrust, it is the classic case of two steps forward and one back. Increasing the number of blades has a blockage effect on the airflow through the propeller disc and results in poorer (less efficient) performance per blade. As a general rule, increasing diameter on a two bladed prop beats adding more blades (moral - use the biggest prop that you can get away with. The oldtimers had a rule of thumb: the prop diameter should be one-third the wingspan.)

My final thought on props is to look and learn from the guys who win all the contests, keep on experimenting, and remember the adage, "Good Enough is the enemy of the Very Best."

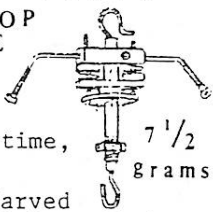


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FAC RUBBER SCALE

CONTESTIANI	AIRCRAFT	STATIC	BONUS	FLIGHT	TOTAL	PLACE
Kevin Sharbonda	T4H	54	15	18	87	-
Walter Eggert	Cessna C-34	49	0	84	121	-
Walter Eggert	Puss Moth	51	0	89	125.5	2
Dave Rees	Piper J-4	49	0	107	128.25	1
Jim Pollard	Bristol F2B	50	15	31.5	96.5	-
John Houck	Brewster F2A-3	54	5	22	81	-
Mary Yoder	Fairchild 24	52	0	62	113	-
Bud Carson	Taylorcraft	47	0	49	96	-
Frank Rowsome	Waterman Gosl.	48	0	30	78	-
Terry Pittman	Pilatus PL-9	51	0	--	--	-
Bert Phillips	Monocoupe	44	0	27	71	-
Norm Reece	Vagabond	45	0	78	114	-
Steve Hales	Vagabond	45	0	93	120.75	3

FAC POWER SCALE

CONTESTIANI	AIRCRAFT	STATIC	BONUS	FLIGHT	TOTAL	PLACE
Walter Eggert	Farman Sport	57	15	74	131.5	1
Terry Pittman	Maboussin PH-X	50	0	24	74	-
Terry Pittman	Bellanca Cruis.	50	10	68	118.5	3
Steve Hales	Sopwith Tabloid	40	15	122	122.5	2

COCONUT SCALE

CONTESTIANI	AIRCRAFT	STATIC	BONUS	FLIGHT	TOTAL	PLACE
Walter Eggert	Verville Air C.	51	0	58	109	-
Dave Rees	Zippy Sport	49	0	120	169	1
Pat Daily	Curtiss Robin	42	0	-	-	-
Bud Carson	Dayton Wright	46	0	96	142	2
Bert Phillips	Ryan Blue Bird	42	0	42	84	-
Doug Buchanan	Cessna 180	45	0	86	131	3

NO-CAL

CONTESTIANI	AIRCRAFT	BEST SINGLE FLIGHT TIME	PLACE
Pat Berg	Farnham 160	52	-
Walter Eggert	P-47	107	1
Mark Houck	Cessna Cardinal	70	-
Rich Gillis	Waterman Gosling	91	3
Bud Carson	XB-70	103	2

GOLDEN AGE SCALE MASS LAUNCH

CONTESTIANI	AIRCRAFT	ROUND ELIMINATED	PLACE
Pat Berg	Rearwin Speedster	1	3
Walter Eggert	Cessna C-34	-	X
Dave Rees	General Aristocrat	-	-
Jim Pollard	Monocoupe	-	X
John Houck	Rearwin Speedster	X	-
Dan Driscoll	J-3	X	-
Mary Yoder	Fairchild 24	X	-
Pat Daily	Corben Ace	-	-
Bud Carson	Farman	-	X
Bert Phillips	Lockheed Vega	X	-
Paul Spreiregen	Fairchild	-	X
Stew Meyers	Porterfield	X	-
Mike Moskow	Taylorcraft	-	-
Rowland Hoot	Fairchild 24	X	-

WW I MASS LAUNCH

CONTESTIANI	AIRCRAFT	ROUND ELIMINATED	PLACE
Pat Berg	SE5A	1	3
Kevin Sharbonda	Pfalz	-	X
Walter Eggert	SE5A	-	-
Dave Rees	Martin Handysyde	-	-
Mike Hostage	Bristol Scout	X	-
Mark Houck	Nieuport 12	X	-
Mary Yoder	Albatros DVII	-	X
Frank Rowsome	Fokker DVII	-	X
Terry Pittman	Martinsyde S-I	X	-

NAVY SCALE MASS LAUNCH

CONTESTIANI	AIRCRAFT	ROUND ELIMINATED	PLACE
Pat Berg	F4F-3	1	3
Kevin Sharbonda	Skua	X	-
Mike Hostage	Brewster Buffalo	-	X
John Houck	F6F-3	-	-
Pat Daily	Boeing F2B	-	-
Frank Rowsome	F6F	-	X
Doug Buchanan	Fairey Firefly	X	-

PAX RIVER CONTEST RESULTS NOV 1991

BOGUS BOSTONIAN

CONTESTIANI	AIRCRAFT	BEST SINGLE FLIGHT TIME	PLACE
Dan Driscoll	Robin	77	2
Harv Yoder	Revere Speedster	58	-
Pat Daily	Aristocraft	71	-
Frank Rowsome	Beech Stroganof	42	-
Rich Gillis	Citabria	53	-
Jerry Paisley	Cadet	25	-
Bud Carson	Corben	72	3
Bill Ceresa	De Haiibut Moth	79	1
Bert Phillips	Heijo	41	-

WALI MOONEY BOSTONIAN COMMEMORATIVE

CONTESTIANI	AIRCRAFT	BEST SINGLE FLIGHT TIME	PLACE
Jim Pollard	Pacific Ace	66	-
Harv Yoder	Revereware	58	-
Jerry Paisley	Pumpkin	96	1
Bill Ceresa	Boston Beancraft	87	2
Bert Phillips	TBA	41	-
Kevin Sharbonda	Kev's Racer #3	78	3
Reggie Batterson	Boston Beanbox	78	3

OLD TIME SCALE MASS LAUNCH


CONTESTIANI	AIRCRAFT	ROUND ELIMINATED	PLACE
Pat Berg	Curtiss Robin	1 2 3	-
Walter Eggert	Puss Moth	X	-
Jim Pollard	Comet Monocoupe	X	1
Mark Houck	Allied Sport	X	-
John Houck	Gee Bee D	X	-
Dan Driscoll	Funk	-	-
Rich Gillis	Harlow PJC 2	X	3
Jerry Paisley	Stinson 105	X	-
Bud Carson	Wiley Post	-	-
Doug Buchanan	Taylorcraft	X	2
Bert Phillips	?????	X	-

PEANUT SCALE MASS LAUNCH

CONTESTIANI	AIRCRAFT	ROUND ELIMINATED	PLACE
Pat Berg	Cougar	1 2 3	-
Kevin Sharbonda	Monocoupe	X	-
Walt Eggert	Pietenpol	X	-
Dave Veas	Martin Handysyde	X	-
Jim Pollard	'Ol' Ironsides	X	-
John Houck	Monomail	X	3
Harv Yoder	Wittman Tailwind	X	-
Frank Rowsome	Waterman Gosling	X	-
Rich Gillis	Pottier P100TS	-	-
Bert Phillips	Monocoupe	X	1
Paul Spreiregen	Lacey	-	-
Doug Buchanan	HL-2	X	2
Mark Batterson	Anderson	X	-
Marty	?????	X	-

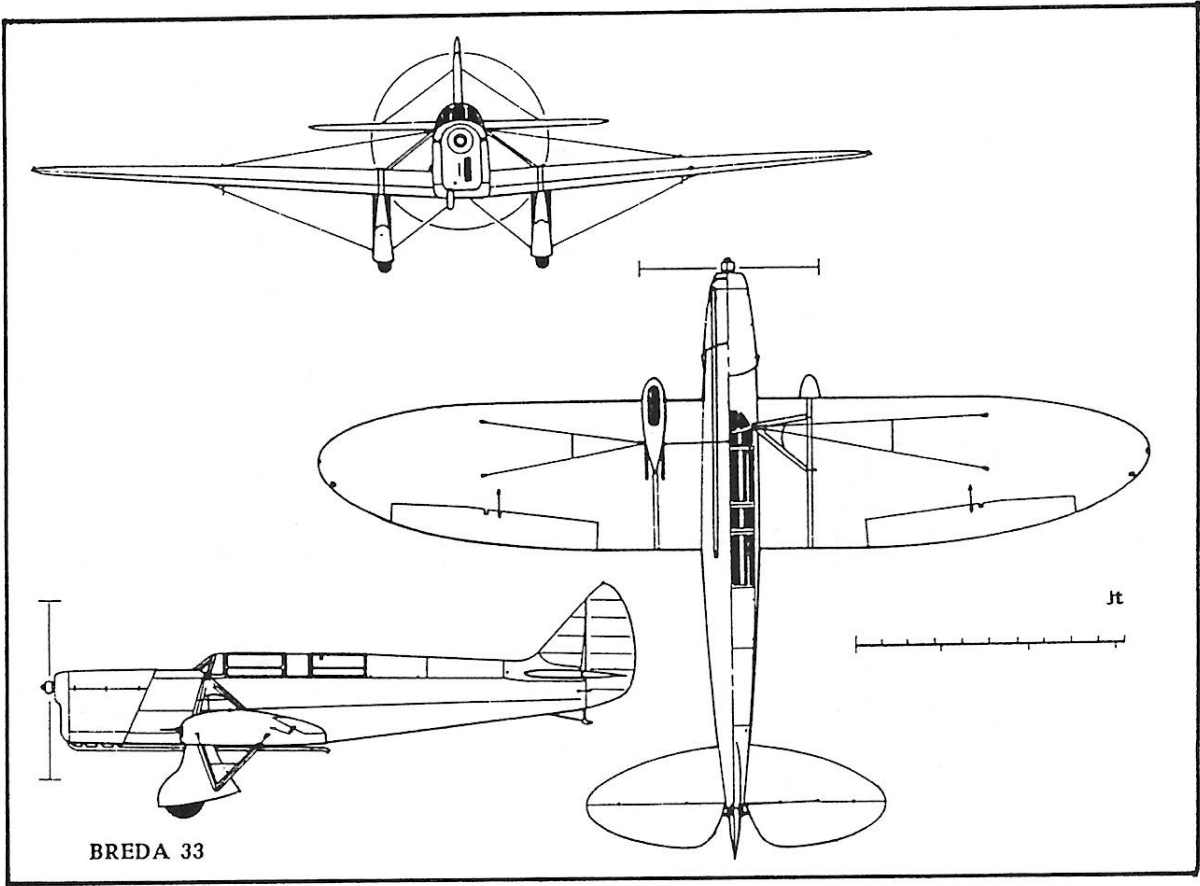
NOVICE PENNYPLANE

CONTESTIANI	AIRCRAFT	BEST SINGLE FLIGHT TIME	PLACE
Rowland Hoot	NPP	7:03	3
Frank Rowsome	Mod. IMS	6:38	-
Bud Carson	Original	7:42	2
Paul Spreiregen	Cezar B.	2:00	-
Randy Kleinert	Original	8:25	1



**Golden Age
REPRODUCTIONS**

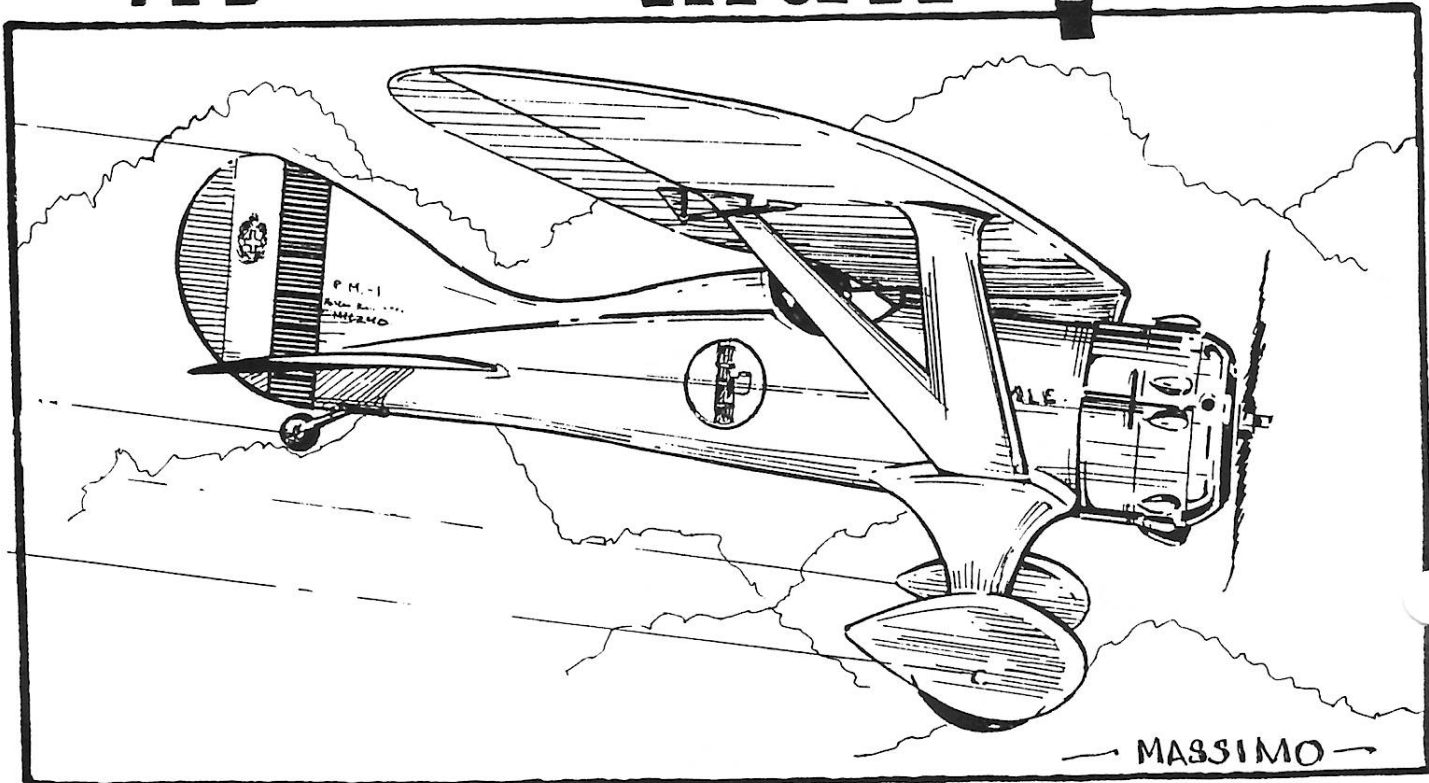
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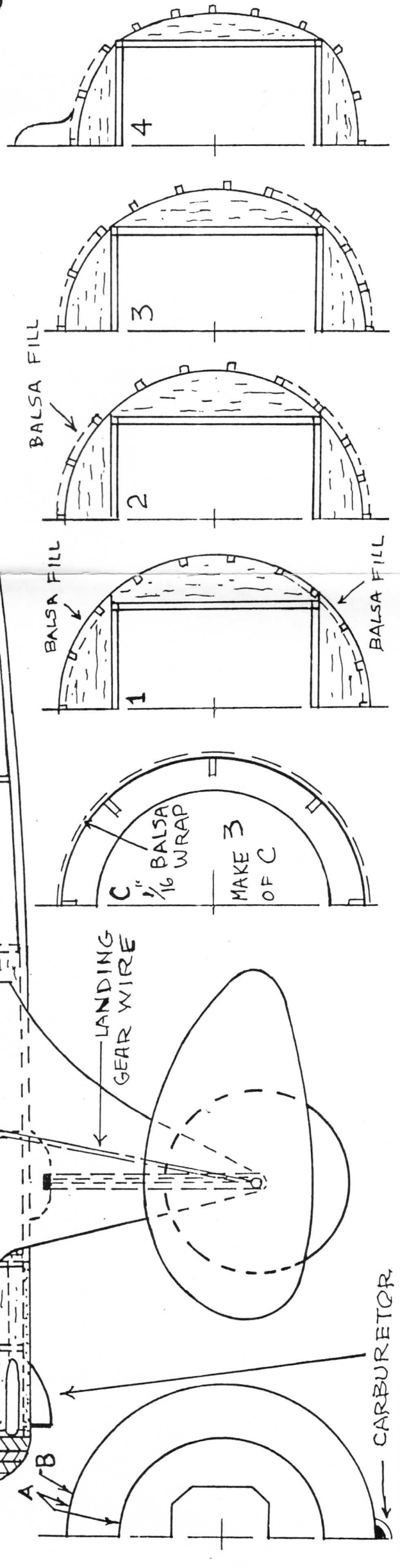
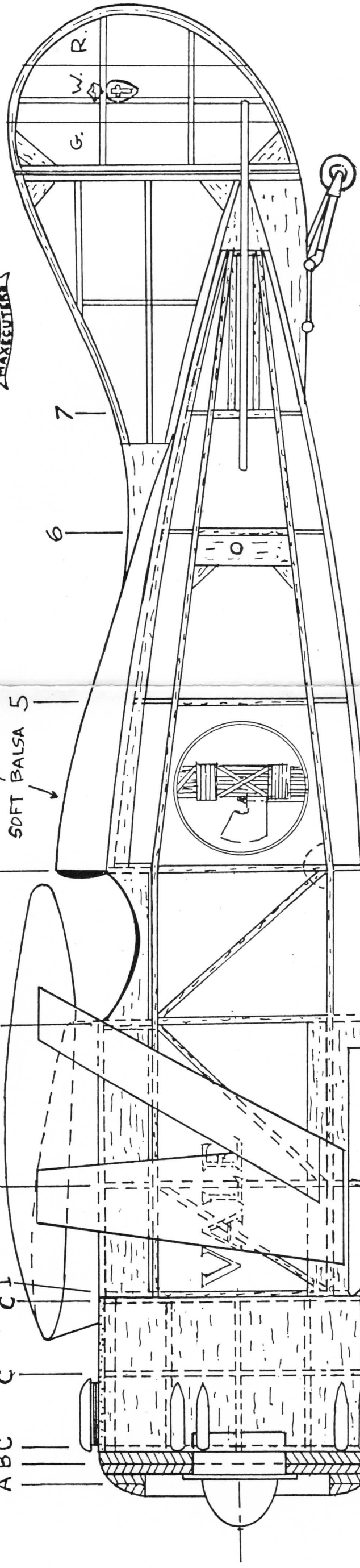
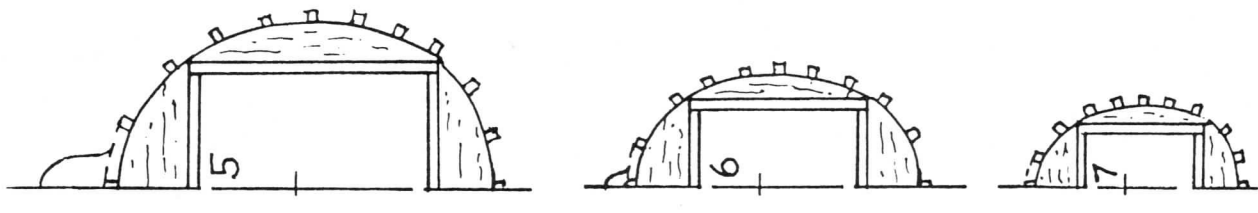
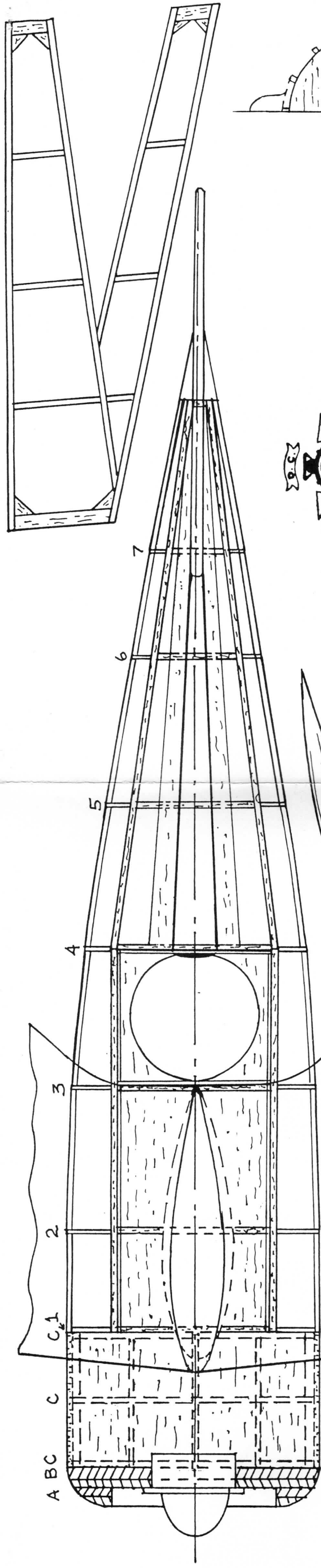


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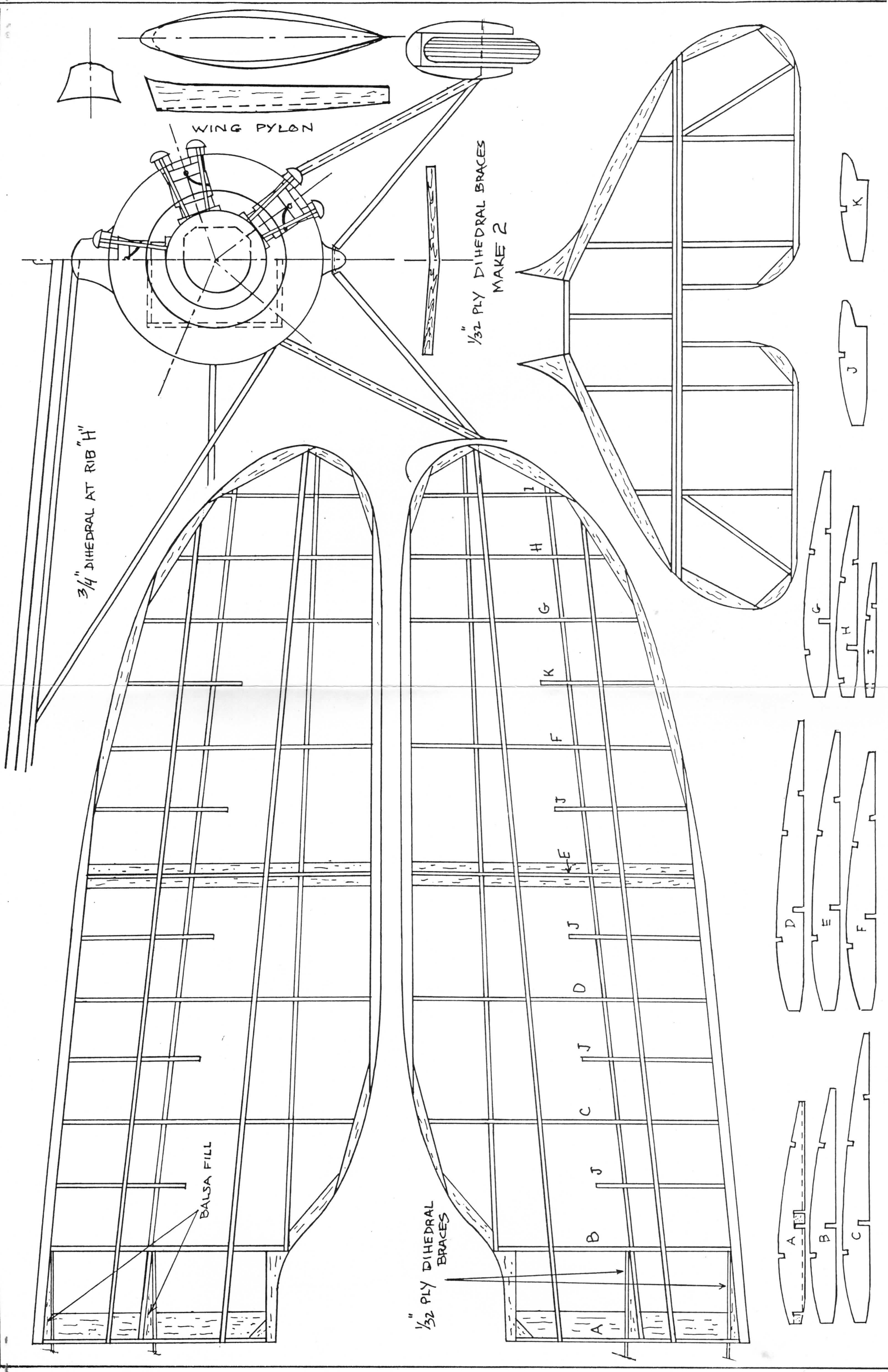
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