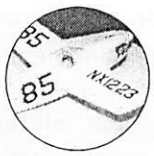
#54

Indoor Flight International

MAI 02

THE LATEST NEWS AND INFORMATION ON INDOOR MODEL AVIATION.

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A Word from the editor

Here is my second issue of IFI, and things have settled down a little after the first quick issue. IFI subscription prices have been calculated and they are described in the colophon on page 2. So, if you have to renew, please look at the prices and pay-methods mentioned.
Furthermore, the format has changed a little in that IFI is now printed on A3 sized paper and then folded - it leaves the A3 drawings in the middle intact.
In the meantime, I have also made some changes to the website. The most significant one is that it is now possible to pay for your subscription online with your credit card through PayPal. PayPal enables any consumer with an email address to send and receive payments online. If you have a credit card, it is probably the most convenient way to pay for your subscription. Watch the IFI website at http://www.indoorflight.com for more details.
Last but not least, I would like to thank the people who have contributed to this issue for the work they've done – without them it wouldn't be possible to edit and print Indoor Flight International!

Contest Calendar

What & When	Where	Info
FAC Postal Contest Till 26.5.2002		Indoor Peanut Scale, Indoor Scale. Contest times count also. Send all entries to: FAC-GHQ, 3301 Cindy LAne, Erie, Pa. 16506.
Belgrade Cup F1D 25-26.5.2002	Belgrad, Yugoslavia	Entry fee US$30. Contact: Vojislav Stojkovic, St. Kralja Petra 70, 11000 Beograd, Yugoslavia Tel: +38 111 18 96 27, fax: +38 111 18 64 43, email: *l.s.d.@Eunet.yu*
Italian Contest 2.6.2002	Italy	F1D F1M/modified, TH, Ministick, IHLG (F1N), CLG contact: Club GAF, PO Box 18 250, I-50 100 Firenze, 0039/ 05522/ 1625 email: jacopopesciolini @hotmail.com
Concours International 22-23.6.2002	Orléan, France	F1D, F1L, F1M. Entry fee €15 1 model, €8 next model. Contact J. Delcroix, 41, Allée du Coudray, 45160 Olivet, France Tel: +33 2 38 63 49 57, fax: +33 2 38 63 49 57
3rd Concours International 29-30.6.2002	Bordeaux, France	F1D, F1L, F1M . Entry fee €16.- for 1 model, €8.- next model. Contact: Jean-Pierre Darrouzes, 27, avenue Kennedy, 33600 Pessac, France Tel: +33 5 56 36 95 44
Flemalle Intern. Contest 22-25.8.2002	Liege, Belgium	F1M, F1D, F1L (ezb), Micro 35, Saint Formula (+3gr), Bostonian (Juniors), F4D, F4E, F4F and Pistachio. Contact: Bernard Delhalle, email: Bernarddehalle@skynet.be See details further on in this issue!
BMFA Indoor Nationals 24-26.8.2002	Cardington, UK	Saturday - F1L, F1M. Sunday New Rules F1D, 1st 2002 World Champs Team Trials. When attending, you MUST contact Laurie Barr on 01628 487544.
Interscale 2002 6-8.9.2002	Prostejov, Cz. Republic	Open Indoor Scale F/F. Contact: Ing. Tonda Alfery, email: astra@uhbrod.anet.cz See details further on in this issue!
F1D-DMM 28-29.09.2002	Brand, Germany	F1D-DMM German Championships all Classes, as well as 2nd. F1D Contest, Cargolifter-Hall Brand/BB, Germany

Contest Announcements - 1

23rd International Contest for Indoor Free Flight Models

Date
22nd, 23rd, 24th and 25th August 2002.

Venue
Tennis Club du Condroz
12, Chemin de Fraineux
4550 Saint-Severin (Nandrin)
Belgium

Contact
Bernard Delhalle
Rue de Souvret, 62
B 4000 Liège
Belgium
Email: Bernarddehalle@skynet.be

Classes to be flown
- F1M (Former F1D Beginner)
- F1D Microfilm
- F1L (ezb)
- Micro 35
- Saint Formula (+3gr)
- Bostonian (Juniors)
- Scale: F4D (Rubber), F4E (CO2/Electro), F4F (Peanut), Pistachio

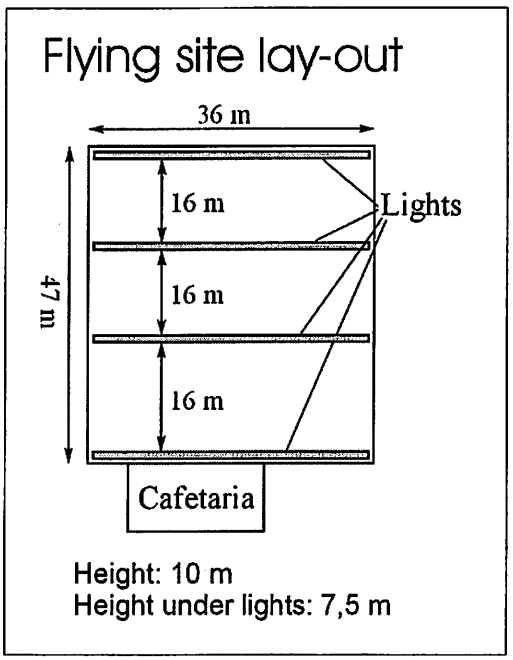
Prices will be given for the three first places of each class. There are also some Challenge Cups: the "Rene Jossien's Challenge" in Saint-Formula (+3gr), the "Alfred Renard's Challenge" for the best Peanut representing a plane designed by this Belgian engineer, the "Armand Petit's Challenge" in Peanut (Senior) and the "Nery Bernard's Challenge" in F1L (ezb). Pistachios will be allowed for "Proxy Flying". Send your model(s) to:

Bernard Delhalle
Rue de Souvret, 62
B 4000 Liège (Belgium)

Send your model(s) with all necessary precautions so that they will not suffer from transport. Include all necessary items for flying, documentation and a technical data sheet containing information like: circling left/right, rubber length and cross section, number of turns, best flight time, etc... After the contest, we will send you back your model(s) eventually with your cup. Please don't forget to include in your inscription fee (EUR 20.-) the correct amount for postal fares.

23rd International Contest Time Schedule

Day	Time	Class
Thursday 22nd	09:00 - 10:30	Training
	10:30 - 12:45	F1L - Micro 35
	13:00 - 14:45	F1M (Former F1D Beginner)
	15:00 - 16:30	F1D
	17:00 - 18:30	Ste Formule (3 grams)
Friday 23rd	09:00 - 10:45	F1M (Former F1D Beginner)
	11:00 - 12:20	Ste Formule
	12:30 - 14:45	F1L - Micro 35
	15:00 - 16:15	F1M (Former F1D Beginner)
	16:30 - 18:30	F1D
Saturday 24th	09:00 - 10:50	Ste Formule (3 grams)
	11:00 - 12:30	F1D
	13:00 - 16:20	F4F - Pistachio
	16:30 - 18:00	F1L - Micro 35
Sunday 25th	09:00 - 10:00	Training
	10:00 - 18:00	F4D - F4E- F4F - Pistachio
	18:00 - 19:00	Fun Fly
	19:00	Results and Prize Giving Ceremony



Colophon

Indoor Flight International is published 4 to 6 times a year and covers all types of indoor models from peanut to microfilm. Texts can be sent in English, French or German and word processed documents can be sent on floppy disks in any text format. Computer drawings should be in Autocad .dwg (saved as Auto-cad v14 compatible) or .dxf formats and if you are no drafstmen, I can do the drawings.

Payment of subscriptions should be in the form of an international money order in Euro's or in cash (American $ or Euro's). It is also possible to pay per creditcard online - see the website for details!

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Rest EUR 22
(or US $ 19)

Contest Announcements - 2

Interscale '02

Invitation

This information bulletin is an invitation to compete in the INTERSCALE '02, an open international event for indoor flying scale models. It is the 6th. INTERSCALE contest and we hope to see again many competitors and friends from all over the world.

Participation is possible in the categories F4D, F4E, F4F and Pistachio. Proxy flying for Pistachio and F4F is encouraged. We are also planing some additional events: Air race, Mass Launch and a contest for RC CO_2/Electric indoor scale.

Date, place and flying site

INTERSCALE '02 will be held on the 6th, 7th and 8th of September 2002 in the Sport hall at Prostějov, Czech Republic. Only one hall is available for the competitions - clear flying size is 55x40 metres. Height is 10 metres and the roof is smooth. The floor is smooth too.

Competition rules

The rules of past INTERSCALE '99 will be followed for the major events -the FAI Scale Indoor Rules for F4E (CO2/El.) and F4D (Rubber) categories and the Czech national rules For F4F (Peanut) and Pistachio categories - please, let me know if you need a copy in advance. A contestant can enter with a maximum of 8 models spread over the 4 categories with a maximum of 2 models per category. However, only the best model of the two will count for the contest. The modified rules for F4C will be followed for the RC CO_2/El. indoor scale contest.

Preliminary Schedule

6th. September - trimming, in the afternoon static judging F4E, Pistachio, RC CO2/El.

7th. September - F4E and Pistachio flights, F4D and F4F static judging, banquet.

8th. September - F4D and F4F flights, price giving.

Organisation, jury, official language

The organisation of INTERSCALE '02 will be supported by the most competent modellers from different modelling clubs of the Czech Republic grouped around Zdeněk Přemyslovský and Antonín Alfery. We will be happy for any help from abroad anyway. The Czech and English will be official languages for INTERSCALE '02.

Second mailing

In the second mailing you will receive an entry form and details about accommodation. This mailing will be sent at the end of March '02. Please, help me to update this file. Please be so kind to inform me about new postal and e-mail addresses...

Contact

Antonin Alfery
Lomená 876
686 05 Uherske Hradiste
Czech Republic
e-mail: alfery@cbox.cz
Tel.: +420 632 579467 (after 18.00)

Cardington (UK) 2002 Flying Dates

I've received the following scheduled dates for indoor flying at hanger No 1 at Cardington in 2002. Some of these will be subject to operational requirements etc, so if you are coming you HAVE to do 2 things.

Ring or write Laurie Barr to confirm your interest on which dates. You MUST be a member of BMFA for insurance complications (Simple just join!), and let me have all your contact details (E-Mail or postal address).

Date	Program
May 19	F1L and NoCal
June 1	Spring Gala - NoCal, F1L, F1M, F1D, LPP, Mini Stick
June 2	ditto - 2nd day
June 16	F1L + LPP
July 13	F1D 1st Eurotrials
July 14	F1D 2nd Eurotrials
July 28	F1M and Mini Stick + reserve date for Eurotrials
Aug 11	F1L + NoCal
Aug 24 Nationals	practice + LPP + NoCal + Catapult Glider?
Aug 25 Nationals	F1L + F1M
Aug 26 Nationals	F1D + Mini Stick) - over 2 days
Sept 8	F1L + NoCal

Two beautiful models as seen at Interscale 1999 in Prostějov , Czech Republic.

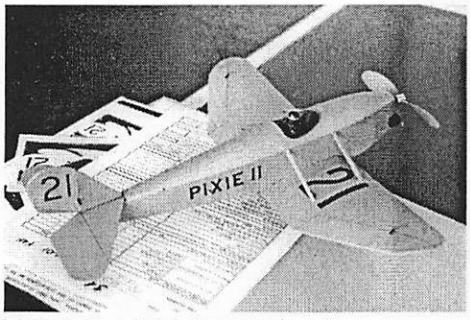


Photo 1: Parnel Pixie by Jan Rajnosek.

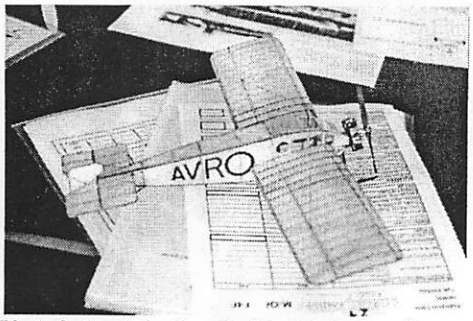


Photo 2: Avro F by Georgios Kandylakis from Greece.

BMFA Indoor Scale Nationals 2002

By Mike Stuart (UK)

It hardly seems 12 months since the last one, but here we were again at Nottingham University for the biggest scale indoor meeting of the season. Entries were slightly down on last year - 52 compared to 55, but there were plenty of new models on show, and many fine flights were made. As usual there was fun flying in the other hall, a swap-meet and SAMS Models in attendance, making it a good day out for those who did not enter the competitions. The Air Race and mass launch were also run again with entry open to all. The former is particularly good fun - I was helping Dave Hanks, and we managed to put his little Chief Oshkosh racer into the spectator balcony not once but twice during the 10 minute race!

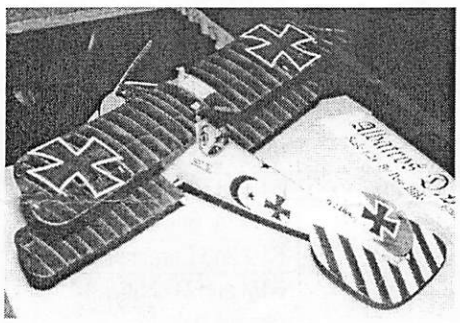


Photo 2 Peter Iliffe's 1/24 scale Albatros D.V

Before the photos here is a quick reminder of the BMFA competition classes and their different rules. The Open Rubber and CO_2/Electric classes have a total based on best flight score (out of 4 flights) plus static score, split 50/50. To qualify, you have to make a flight of only 15 seconds. The flights are judged on realism in the various stages of the flight, i.e. take off, climb out, cruise, approach and landing. Thus a very detailed, heavy model can score lots on the static points, and should be capable of a 15 second qualifying flight. Of course, a heavy model will fly faster (too fast for scale speed usually), be harder to trim and probably do less well on the flight score than a lighter model (they also hit the wall harder!). As always, it is a fine balancing act between weight and detail.

The Peanut (13" wing span) and Pistachio (8" span) classes have different rules, in that the flying scores do depend on flight time. You get a ten second bonus if you ROG (Rise Off Ground). Four timed flights are made, and the best two are added together to give you a flight score (in seconds). The models are ranked in order of flight performance, and also in order of static judging. The final positions are obtained by adding the flight position to the static position - lowest score wins.

This year I entered the Bucker Jungmeister in the Open Rubber class, and my PZL P.24 in the Peanut Scale class. Both flew pretty well, and the PZL did its best ever flight from a take-off of 39 seconds.

The Bucker ended up 5th place in class, and the PZL 6th - so not bad, but plenty of room for improvement! I've got to decide what to build for next year now.....

One of the stars of the show was Richard Crossley's large rubber-powered Lockheed Electra. Constructed entirely of foam, the model uses a separate loop of rubber in each nacelle - each about 2.5 times the motor hook to peg distance. All four props go the same way round.

The model takes off nicely after a straight run, then settles into left hand circuits. Flight time is limited, but it achieved the required 15 second minimum. The model got a great response from the watching spectators.

Steven Glass had his new electric ducted fan Douglas Skyray painted and trimmed out ready for the event, and he was rewarded with 2nd place in the Electric CO_2 class. Steven told me he was able to fine tune the flight pattern in a much larger hall than the one at Nottingham, and gradually tighten the turn up using the adjustable vanes in the exhaust until he thought the model would circle within a normal sized sports hall.



Photo 1 Richard Crossley's Lockheed Electra

The model flew very reliably during the contest, and scored excellent flying marks. This was another favourite with the crowd!

Peter Iliffe's 1/24 scale Albatros D.V was a fantastic example of craftsmanship - an absolutely gorgeous piece of work, and one I would have been very hesitant to risk by flying it! The level of detail is amazing, and the fuselage is constructed, as per the original, from wooden panels, in this case attached to wound laminated balsa formers.

Cockpit detail was immaculate, as was the exposed engine - scale ribbing of course, and printed lozenge tissue. Power is from a Gasparin G.28 CO_2 motor, and all-up weight 30 grams. I am happy to report that the model did fly, and survived unscathed, coming fourth in class, and winning Peter the novice award. With a bit more work on the trim, this model is definitely a potential class winner.

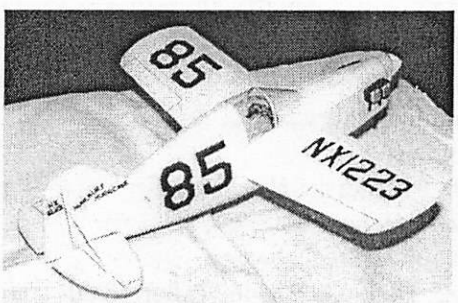


Photo 3 Chris Strachan's Peanut scale Hurlburt Hurricane

Chris Strachan was flying this new Peanut scale Hurlburt Hurricane Goodyear racer, built from Dave Livesay's plans. The model flew very well, and on one flight completed two full circuits up in the roof structure, miraculously avoiding everything! It finished in fifth place in the Peanut class.

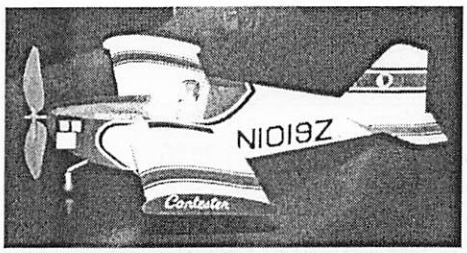


Photo 4 Nick Peppiatt's latest Peanut Scale model: a Tefft Contester

Peter Smart reckoned we were fed up of seeing his TU 95 Bear in the Open Rubber class, so he knocked out a brand new foam multi in just two weeks. His new model is a Piper Cheyenne, constructed from foam to Peter's usual high standard and finished in Lufthansa colours. The model flew nicely, but unfortunately a documentation problem kept it out of the final class placings.

Mike Hadland had his new Stampe SV.4 fully rigged and detailed ready for the event - a lovely model, and only about 12 grams. Not only does it look great, but it flies for over 50 seconds from a take-off. Need I mention that the model won the Peanut class?

David Prior entered his new and rather gorgeous D.H. Hornet Moth in the Peanut scale class. The finish and detailing was immaculate, and the model scored highly in static judging. Construction is conventional balsa/tissue. David is still working on the trim, and when he starts to get the flight times up a bit this is going to be a very competitive model.

Nice to see Andre Petit over from France again for the event, this time with a Peanut Scale Republic P-47D Thunderbolt. Construction is foam, weight is just 11 grams without rubber, and the markings on this model are

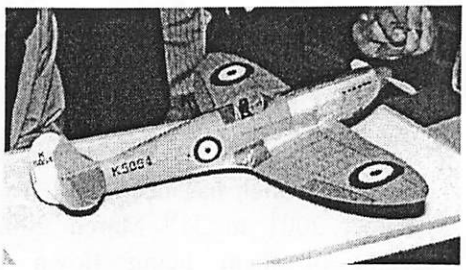


Photo 5 Reg Boor entered this nice model of the Spitfire prototype in the Open Rubber class

time in the Peanut class, but he was just pipped to first place overall by Mike Hadland's Stampe.

Bill Dennis entered a model this year instead of only judging - a fine Puss Moth in the Open Rubber class.

Nick Peppiatt's latest Peanut Scale model is this Tefft Contester - not an aircraft I had heard of before. A fine finish, as usual from Nick, and the model was an excellent flyer, eventually finishing fourth in class.

Results BMFA Indoor Scale Nationals 2002

Peanut Scale

	Name	Model Type	Static Position	Flying Position	Total
1	Mike Hadland	Stampe SV.4	3	3	6
2	Andre Petit	Rep. P-47D Thunderbolt	5	1	6
3	Divs Masters	SE5A	1	9	10
4	Nick Peppiatt	Tefft Contester	5	7	12

Pistachio Scale

	Name	Model Type	Static Position	Flying Position	Total
1	Mike Hadland	Tiger Moth	1	5	6
2	Peter Frostick	P-51 Mustang	3	3	6
3	Nick Peppiatt	Lippisch Storch	5	1	6
4	Gordon Hannah	Caudron 1911	4	6	10

Open Rubber

	Name	Model Type	Stat. Score	Flying Score	Total
1	Divs Masters	Sopwith Triplane	1092	1101	2193
2	Richard Crossley	Lockheed L.188 Electra	993	1178.4	2171.4
3	David Prior	Sopwith Baby	1053.5	1066	2119.5
4	Phil Siddall	Valkyrie	966	1084	2050

Open Electric/$C0_2$

	Name	Model Type	Static Score	Flying Score	Total
1	Derek Knight	Bristol M1C	1014	1008	2022
2	Steven Glass	Douglas Skyray	896.5	1110	2006.5
3	Dave Causer	Sopwith Camel	986	977.5	1963.5
4	Peter Iliffe	Albatros D.V	1050.5	795	1872.5

Rubber Update as per March 2002

Here's a note from John Clapp (from FAI Model Supply), and producer of Tan II rubber.

It turned out that the first trial batch of Tan II at the new factory location was a very good product. The output of the first run was quite small as most of the rubber was scrapped during the run. We met with the factory production team and reviewed possible "fixes" to this situation. The end result is that a new trial batch of 1/8" has been scheduled for delivery to us by February 27th, and test results should be available by approximately March 4th.

As a result of this meeting, the factory has asked us (and our customers) to consider changing the thickness spec to .030" instead of .042". Factory QC as well as the Production Manager feel that this thickness change would allow them to do a better job producing Tan II.

All agreed that a thickness change will not be made until tests can be run on sample strips by a few modellers.

The March 2002 1/8" Tan II is reported to be excellent rubber, better than May '99 which got high marks. The supply of this new batch of 1/8" is limited, but more is on the way including other widths. According to a report, the new batch is indeed slightly thinner at about .041" or so. If the rubber strippers from Oppegard, Harlan, Liem and others will strip the thinner rubber satisfactorily, it seems we have some good rubber available to the indoor community.

Results of the 2001/2002 International Postal Contest

By Bill Henderson

There have been very few entries to the postal which has been held from 1st Oct 2001 to 31st March 2002, several of them being flown in ceilings higher than Category 1 (8 metres or 26.25 ft.). Because of the difficulties with finding reliable fudge factors I have decided not to use a fudge factor, but report all times within the ceiling category that they were flown. The results at the time of are as follows.

F1L

Category 1

Vlad Linardic	Toronto	12:24
Harley Ellis	Toronto	12:21
Ken Mark	Toronto	11:11

Category 2

Akihiro Danjo	Kawasaki, Japan	19:19

Category 4

Bill Gowen	Tropicana Dome, Florida	16:56

F1M

Category 1

Fabio Manieri	Rome, Italy	13:34
Vlad Linardic	Toronto	13:06

Category 2

Akihiro Danjo	Kawasaki, Japan	16:53

Category 4

Bill Gowen	Tropicana Dome, Florida	16:08

FAC Peanut

Category 1

Mike Thomas	Toronto	Lacey M10	1:54
Chris Brownhill	Toronto	Lacey M10	1:34
Stu Weckerly	Dearborn, MI	Stout 2AT	1:13
Gert Brendel	Enschede, Holland	Renard RSV 18-100	1:07
Bill Henderson	Toronto	Davis TX-1	1:02
Bob Fisher	Toronto	Piper Vagabond	0:35

Category 2

Akihiro Danjo	Yokohama, Japan	Andreason	1:12

FAC No-Cal

Category 1

Mike Thomas	Toronto	Hosler Fury	4:49
Vlad Linardic	Toronto	Cassutt Racer	3:25

Category 2

Akihiro Danjo	Yokohama, Japan	Lacey M10	5:06

F1D Indoor supplies

John Tipper (from F1D Indoor Supplies) sells the adjustable nose buttons from Knigh & Pridham, which are a treat if you're flying indoor scale models. One of the other Knight & Pridham products he supplies is their yellow winder, available in 5:1, 10:1 and 15:1. All three winders will wind a 1/4" loop of rubber to breaking point. There is a ball bearing thrust race built in and the winding hook is retractable.

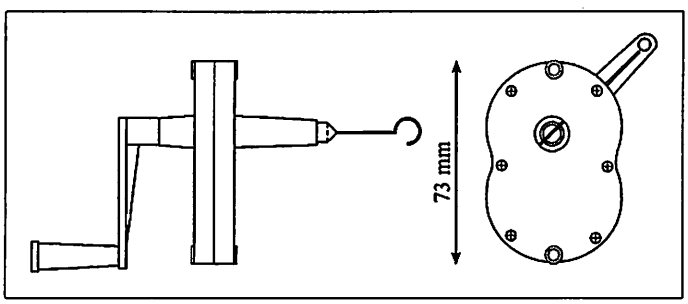


Figure 1: K&P Winder max 0.25 " loop; gear ratio 5:1, 10:1 and 15:1

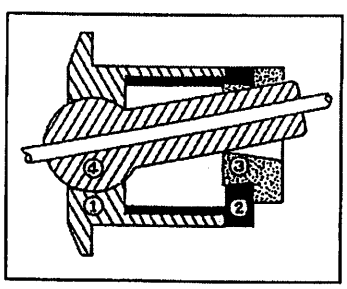


Figure 2: The K&P nose button: 1) Plug Shell, 2) Major Adjusting Ring, 3) Minor Adjusting Ring, and 4) Bearing Ball with Stem.

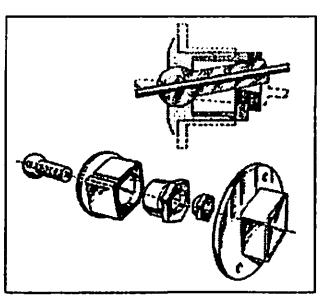


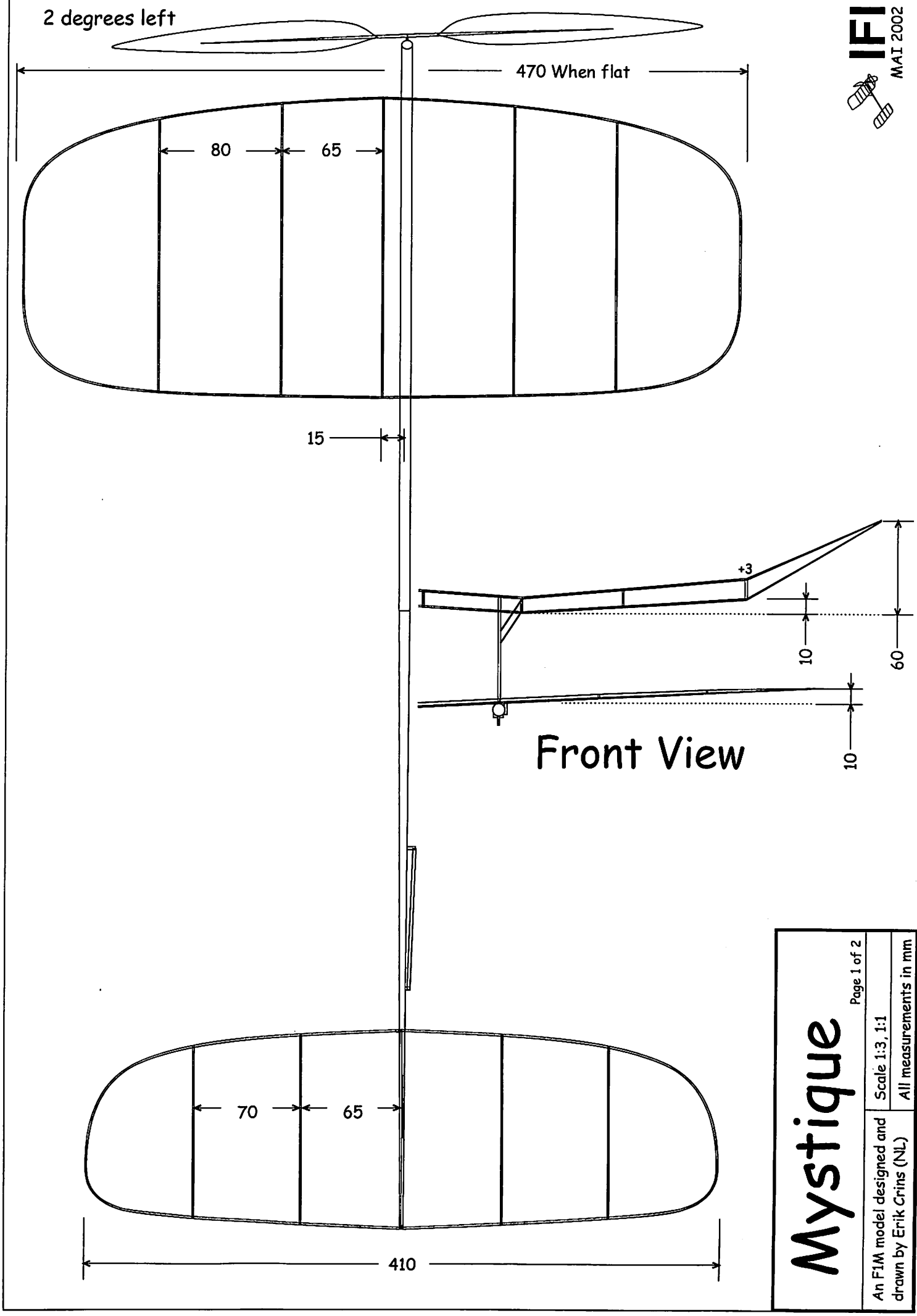
Figure 3: Exploded view of K&P adjustable nose button.

Price including post & packing:

- K&P nose button $4.00 each or $2.00 for 2.
- K&P winders $15.00 each.

Send your $ cash to John Tipper at:

F1D Indoor Supplies
John Tipper
23 Green Lane
Chichester
West Sussex
PO19 4NS
England



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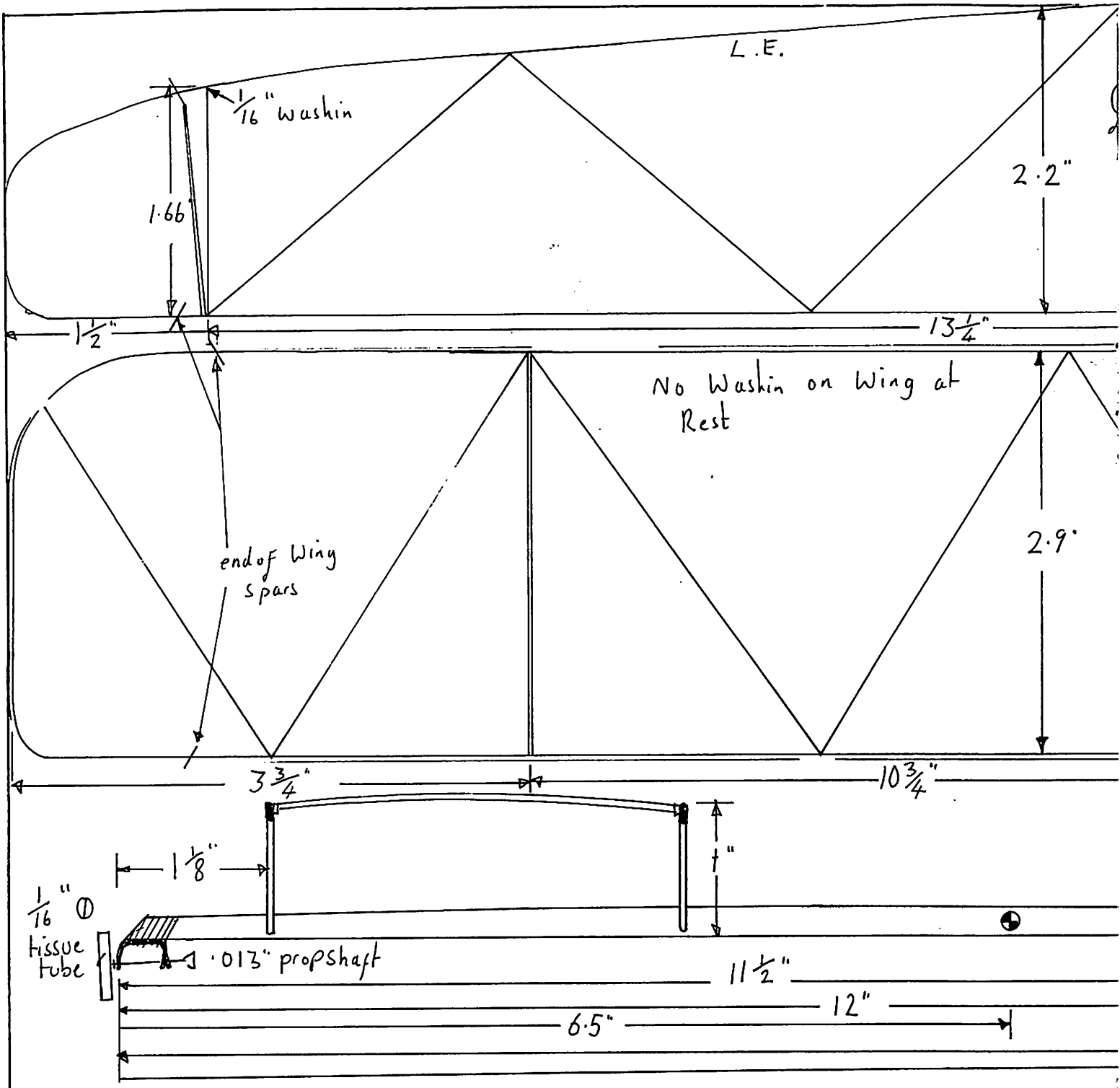
Mystique

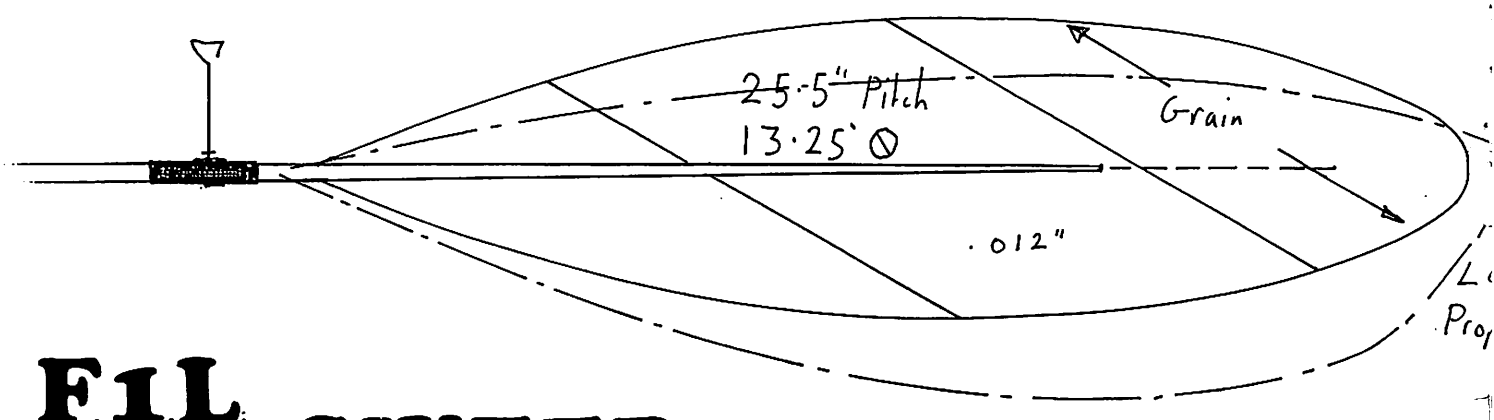
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Scale 1:3, 1:1

All measurements in mm

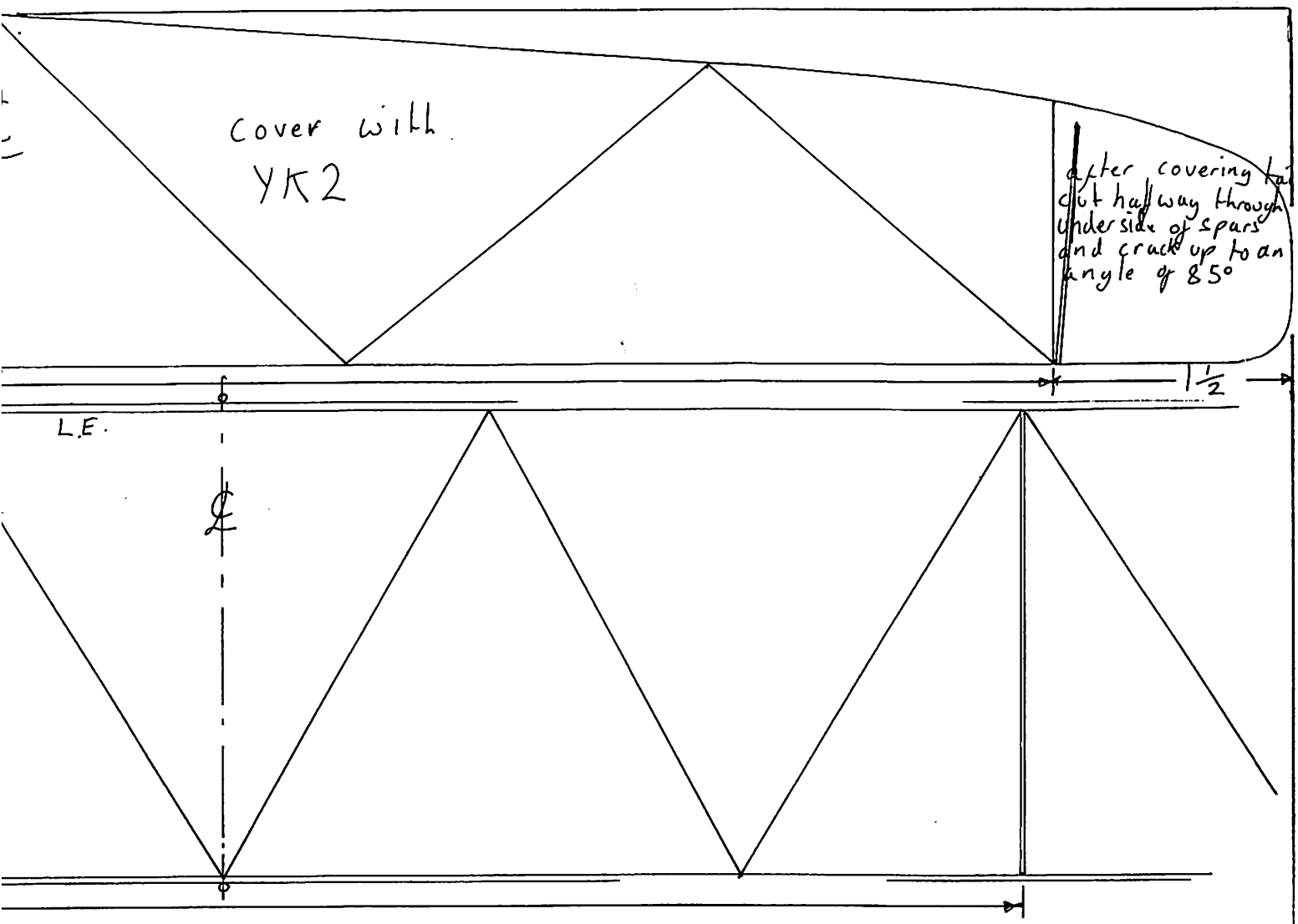
An F1M model designed and drawn by Erik Crins (NL)

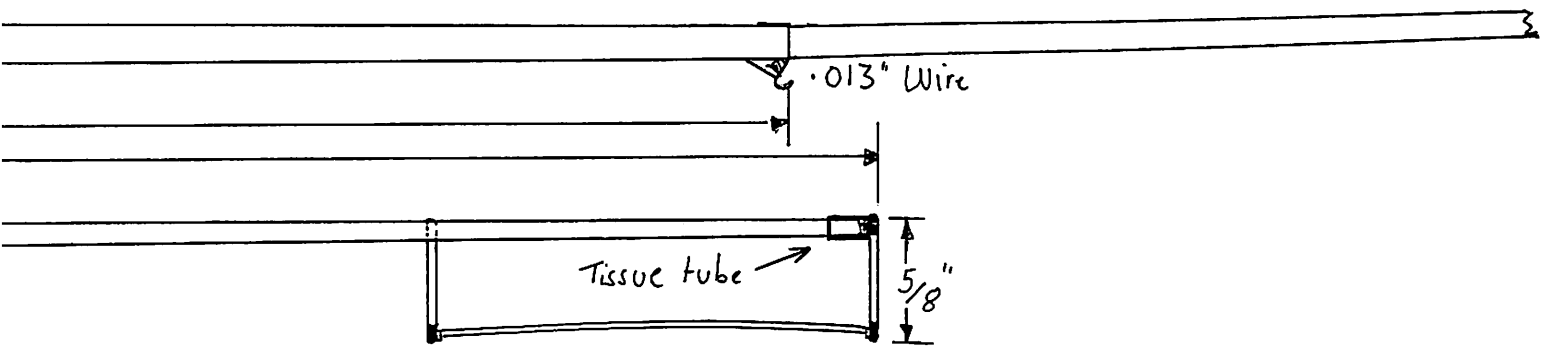




F1L SWEEP

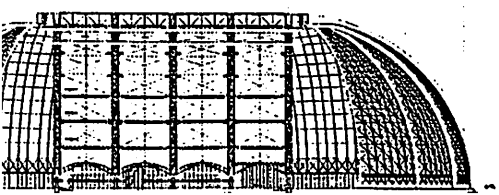
J. K. Tipper 20/1/02





w ceiling
outline

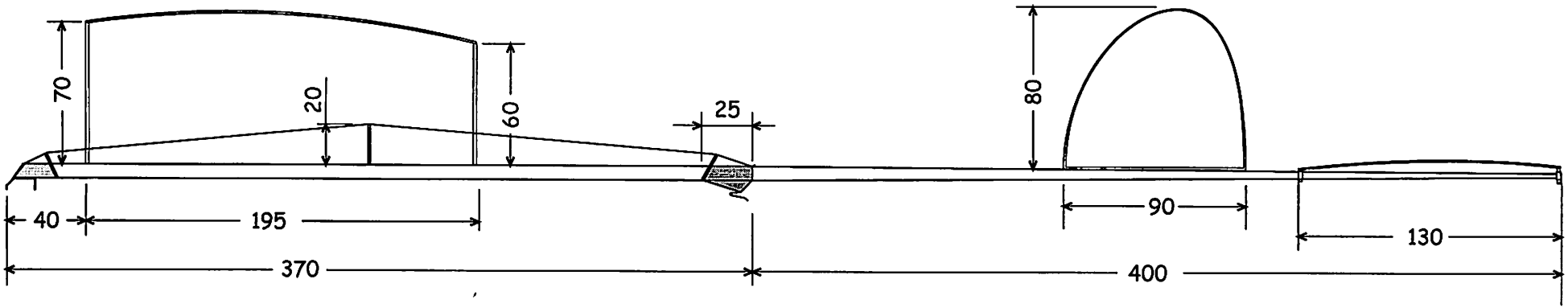
CargoLifter
World

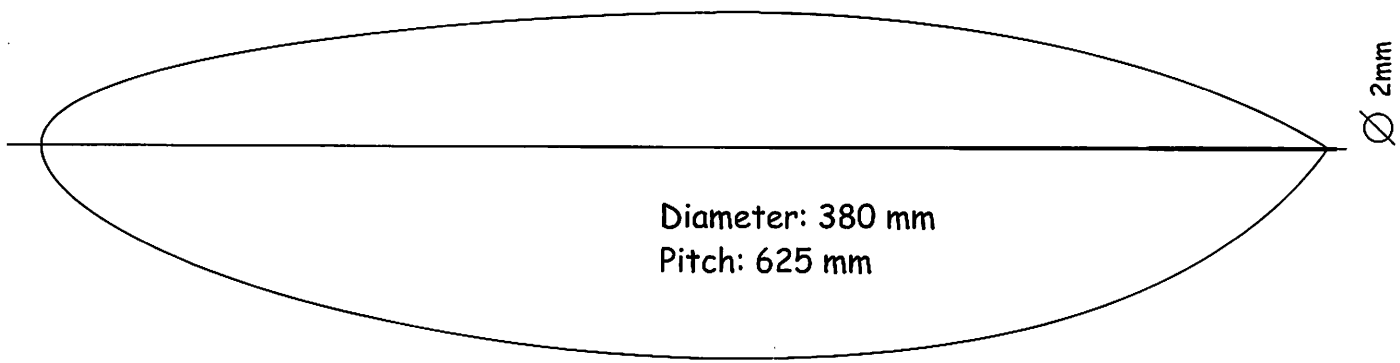


Wood sizes
Stick 4·81b
Nose ·095"X·175" to ·225"X·110" to ·180"X·110"
Boom 4·51b
·155"X·110" to ÷080"X·06"
Wing post ·060"X·060" to ·045" round
Tail post 51b ·040" round
Wing Spars 5·41b ·068"X·038" to ·045"X·038"
Wing tips 4·21b ·040"X·028"
Wing ribs 4·51b ·040"X·025"
Tail spars 4·81b ·060"X·027" to ·032"X·027"
Tail tips 41b ·032"X·020"
Tail ribs 4·51b ·035"X·020"
Prop spar 5·51b ·065"round to ·025" round
Blade 4·21b ·012"

Rubber.
May 99, ·055" 15·5" loop,1·25grams,
2,710 turns back of 20, launch torque 28 grams CM
Dead stick 27·07, temp 68 sunny 85% humidity

Weights	
Stick & boom	·587g
Wing	·207g
Stab	·095g
Prop	·248g
	1·137g
Ballest	·070g
	1·207g





Weights	
prop	0.55
wing	0.80
stab	0.40
motorstick	0.90
tailboom	0.35
total	3.00

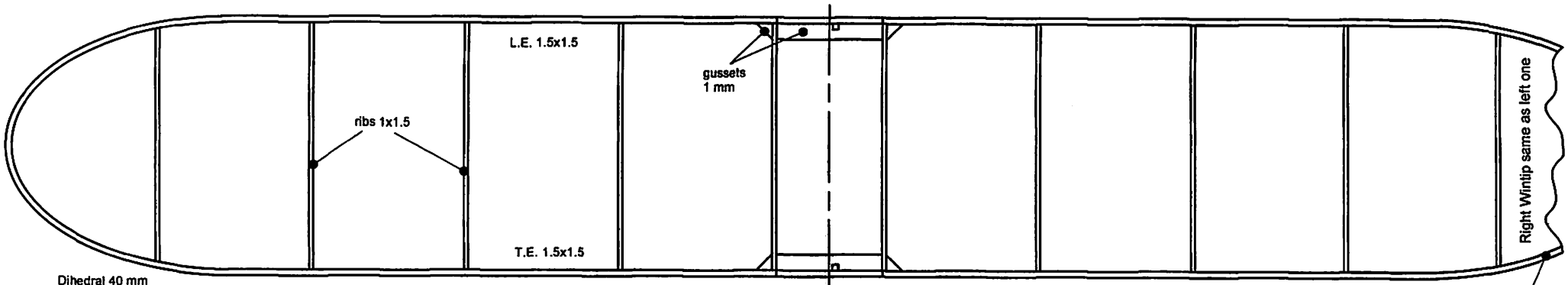
Mystique

An F1M model designed and drawn by Erik Crins (NL)

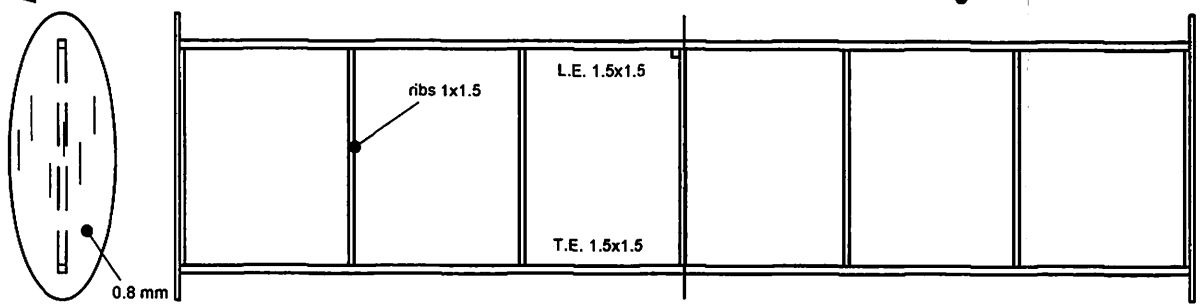
Scale 1:3, 1:1

All measurements in mm

IFI
MAI 2002



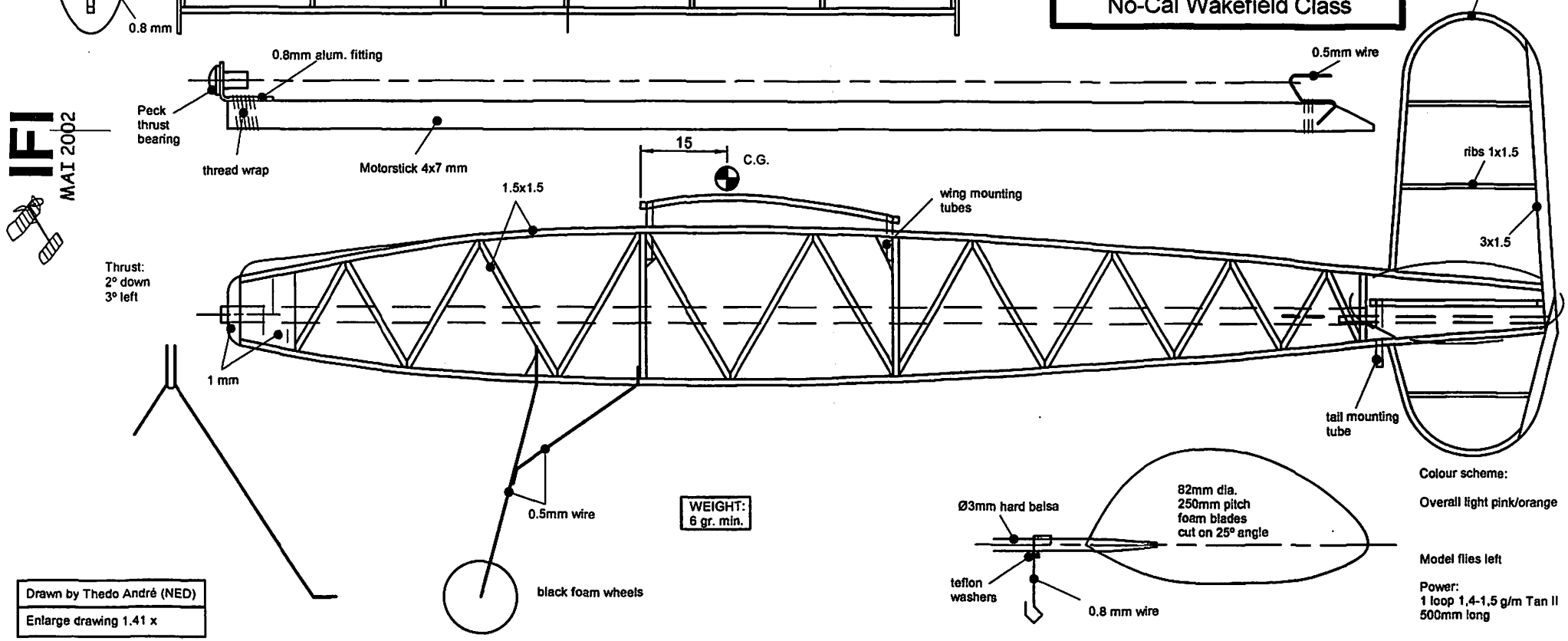
Dihedral 40 mm



1950 Wakefield Trophy Winner

by Aarne Ellila (Finland)

No-Cal Wakefield Class



Colour scheme:

Overall light pink/orange

Model flies left

Power:
1 loop 1,4-1,5 g/m Tan II
500mm long

IFI MAI 2002

Drawn by Thedo André (NED)
Enlarge drawing 1.41 x

Whirling Arm Rig

By Bernie Hunt (UK)

A whirling arm is a measuring device. Traditionally, it is used to test propellers but it is quite versatile and it can be used to test wings and whole models for their lift and drag characteristics rather like a wind tunnel. To illustrate its use I have taken a collection of photos of my whirling arm rig in action.

Photo 1 shows my whirling arm rig being used for testing propellers. The arm is a 2M long, tapered, carbon fibre tube free to rotate on a central ball-raced bearing mounted on a photographic tripod. A small detachable motor stick with prop is attached to the thin end of the arm at 1.5 m radius, with a 60 mm x 360 mm balsa dragplate inboard of it and a balance weight at the thick end of the arm. A motor is wound, backed off and loaded onto the stick / prop. The arm accelerates until the thrust of the prop just balances the drag of the arm and dragplate. By using the same motor and back off and measuring the prop rpm and the speed of rotation of the arm for different propellers, it is possible to compare the relative efficiencies to an accuracy of about 1%. The absolute efficiencies are obtained by calibrating the rig using a falling weight system. This is simply an accurate weight (1-20g), which hangs from a pulley outside the circle and is connected by a thin nylon line to a drive pulley at centre of the arm. The best F1D props have an efficiency of about 58% at cruise and rather less on the climb.

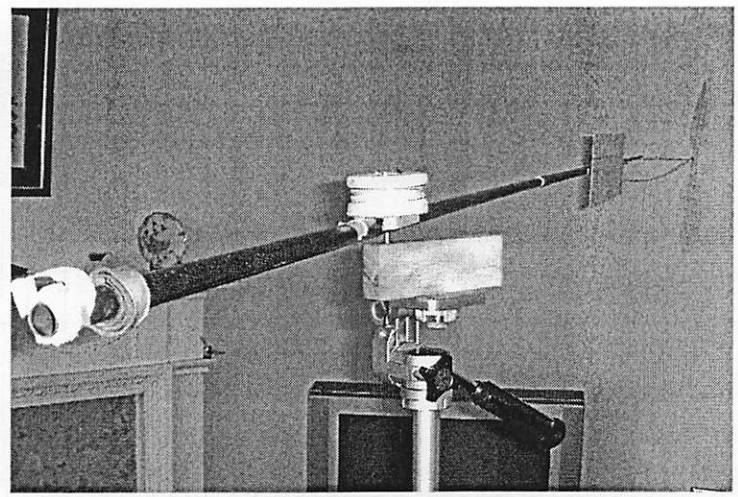


Photo 1: Whirling Arm Rig in use for testing propellers.

Photo 2 shows the rig being used to "fly" a complete F1D (less propeller) at its normal flight speed and attitude using the falling drive weight as motive power. The drag of the complete model can easily be calculated and the airflow over the model can be visualised by attaching tufts of Kevlar to the model and taking flash photos.

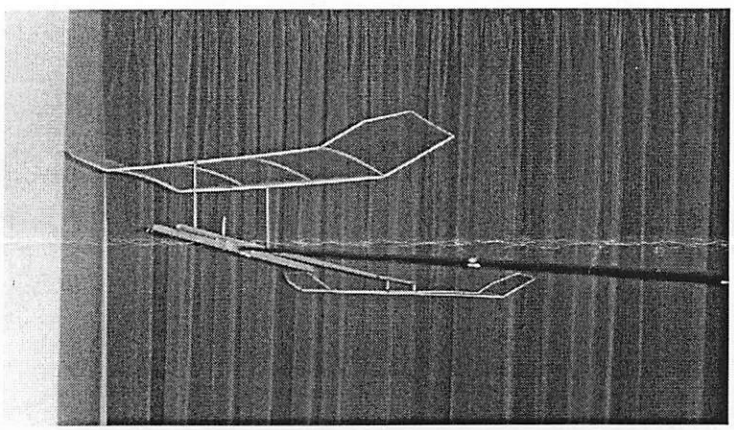


Photo 2: Whirling Arm Rig tests on complete F1D.

Photo 3 shows the amazing angle of flow at the tip of an F1D wing.

Photo 4 shows the rig being used to measure the lift and drag of my F1D wing. The drag is calculated from the drive weight and the lift is measured on the simple beam balance mounted on the end of the arm. The angle of the wing to the airflow can be adjusted and all the usual aerodynamic parameters calculated (C_l v alpha, $C_l^{1.5}/C_d$ v alpha, C_d v C_l^2 etc). The results look pretty sensible (lift slope, C_d min) but for more rigorous work a much stiffer wing is required to allow higher flight speeds and angles of attack.

Photo 5 shows the balance and angle adjuster more closely. Here a wing with tip plates is being tested. These simple tip plates increased the lift of the wing at each angle of attack but unfortunately at the expense of extra drag and overall reduced performance.

This article is only intended to give brief flavour of what a whirling arm is and can do. I hope I haven't given the

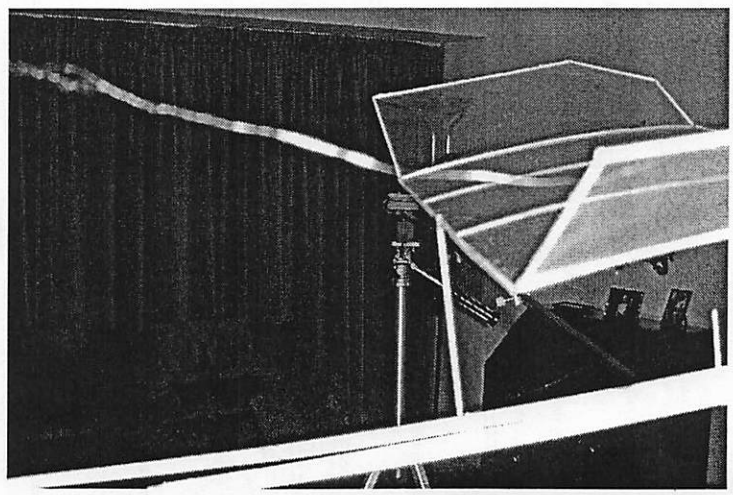


Photo 3: Angle of flow at the tip of an F1D wing.

impression that it is quick and easy to do because it is not. At our flight speeds the drag forces are very small and the effect of draughts is significant, so much repeat testing and computation are needed to get useful results.

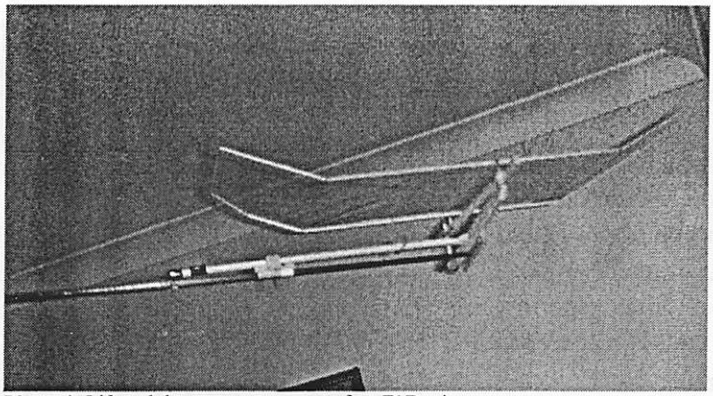


Photo 4: Lift and drag measurements of an F1D wing

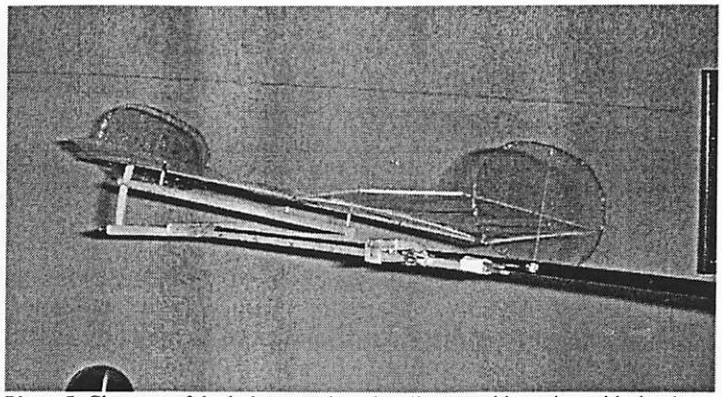


Photo 5: Close-up of the balance and angle adjuster, with a wing with tip plates being tested.

Results 17th. Concours National Vitry sur Seine (F) 2002

Pistachio

	Name	Model	Stat. Pts.	Clas. Stat.	Flight 1	Flight 2	2 Best Flights	Clas. Vol	Total
1	Christophe David	Blériot 25	35	1	53	53	106	1	2
2	Jacques Cartigny	Thunderbolt	29	2	19	18	37	4	6
3	Michel Lemaitre (B)	Fike E	19	4	22	18	40	3	7
4	Michel Lemaitre (B)	Beardmore Wee Bee	13	6	29	24	53	2	8
5	Michel Lemaitre (B)	Piper	16	5	12	9	21	5	10

F4F Peanut

	Name	Model	Stat. Pts.	Clas. Stat.	Flight 1	Flight 2	2 Best Flights	Clas. Vol	Total
1	Jacques Cartigny	Heinkel 64	61	2	65	60	125	3	5
2	André Petit	Denight DDT	54,5	5	58	57	115	4	9
3	Christophe David	Sopwith Tabloïd	51	6	59	42	101	5	11
4	Jacques Delcroix	Trempik	41	11	66	63	129	2	13
	Jacques Cartigny	Darmstadt	55	4	50	45	95	9	13
	Jacques Delcroix	Bleu Citron	47,5	8	55	44	99	7	15
5	Philippe Dubois	Me 109	62	1	18	10	28	16	17
	Jacques Cartigny	Mili Trainer	33	18	77	73	150	1	19

F1M

	Name	Flight 1	Flight 2	2 Best Flights
1	Jacques Delcroix *	4:56	4:13	9:09
2	Jean-Marc Prevault *	2:27	2:12	4:39

* flights with half-motors

F1L

	Name	Flight 1	Flight 2	2 Best Flights
1	Jacques Delcroix *	5:25	5:18	10:43
2	Jean-Marc Prevault *	3:59	3:03	7:02

* flights with half-motors

Micro 35 Cadet

	Name	Flight 1	Flight 2	2 Best Flights
1	Hugo Marllier *	4:52	4:49	9:41
2	Anthony Kocken	4:46	4:07	8:53
3	Stan Kocken	4:22	0:00	4:22
4	Philippe Saint-Denis	1:51	1:50	3:41
5	Cindy Sigaud	1:42	1:32	3:14

* flights with half-motors

Micro 35 Junior

	Name	Flight 1	Flight 2	2 Best Flights
1	Stanislas Gautier	5:54	5:54	11:48
2	Eric Benoit	5:39	5:34	11:13
3	Karine Villenfin	2:50	2:40	5:30

Micro 35 Senior

	Name	Flight 1	Flight 2	2 Best Flights
1	Thierry Marilier *	4:48	4:30	9:18
2	Jean-Marc Prevault *	3:49	3:35	7:24
3	Yves Guillemineau	5:12	4:32	9:44
4	Philippe Roger	3:41	3:29	7:10

* flights with half-motors

Sainte Formule Senior

	Name	Flight 1	Flight 2	2 Best Flights
1	Bernard Delhalle (B)	2:34	2:25	4:59
2	André Rennesson	2:20	2:03	4:23
3	André Rennesson	2:10	1:53	4:03
4	Lucien-Maurice Adjadj	1:58	1:0	3:48
5	Claude Weber	1:46	1:36	3:22

55th MAA Model Aircraft Championships 2001 - 2002

By Ron Bird (AUS)

The F1D and EZB events were flown at the stadium on Thursday evening. F1D was flown to the new FAI rules which meant that the highest individual flight was eligible for an Australian record. As F1D has not been flown at a Nats for a while this managed to arouse the interest of the stalwarts who have the patience to create a 1.2 gm aircraft that flies for over 10 minutes on 0.6 gm of hand-cut and carefully selected rubber. Serious indoor aeromodellers also pay top-dollar for the rarest balsa that most of us just dream about; 4-5 lb/cu ft density, cut and then surface-ground (about 10% stronger compared to sawn balsa) and then graded by destructive Euler buckling (stiffness) tests. An 18" x 2" x .0013" piece of this wood with the grain just right is rare enough to fetch the price of an r/c servo.



Photo 2: Leigh Morgan with her Hangar Rat.

Covering materials used to be microfilm (pour dope plus secret ingredients on water and lift and cure) but modern developments have narrowed the gap such that Y2K film and similar plastics make these events attainable for newbies.

As for the competitions, they were contested down to the wire (literally; as the hanging wire in the stadium caught a few victims). These models are so light that the winner was eventually processed in a sealed room. EZB was flown alternating with F1D as per the consensus of the fliers. A few models failed pre-event processing but were brought up to specs before the event. The wires that hung midway across the stadium roof behaved like the tree-magnets at the F/F outdoor venues and lights and loudspeakers caused their fair share of grief too. Spectators were well behaved, even when Richard Blackham gave a few steering lessons on location in the peanut gallery. Jim Fullarton decided to top this and organised one flight to finish in the next court after circumventing the spectators – his timekeepers broke sprint records getting around the barriers within the mandatory 10 seconds. At the end of a close event, Mr Blackham pulled a big one out of the bag and secured another win.

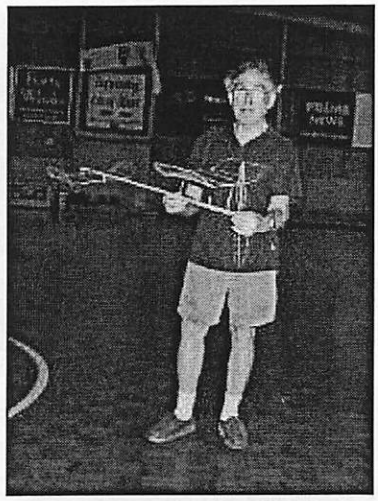


Photo 1: Charlie Leeson with his F1D, which weights in at 1.3 grams

Jim Fullarton put in some consistent flights to finish second and Sean O'Connor improved steadily to put in a magnificent last flight and secured 3rd place.

F1L EZB

Place	Name		Best 2 flights		Total
1	Richard	Blackham	8.57	11.07	20.04
2	Jim	Fullarton	8.28	8.38	17.06
3	Sean	O'connor	6.30	10.56	16.36
4	Ken	Osborne	7.34	7.04	14.38
5	Robert	Rowe	6.47	7.10	13.57
6	Charlie	Leeson	6.23	5.41	12.04
7	John	Firth	5.28	6.16	11.44
8	Michael	Towell	5.26	6.15	11.41
9	Ray	Pike	4.29	5.14	9.43

F1D - MICROFILM

Place	Name		Best 2 flights		Total
1	Richard	Blackham	14.09	13.2	27.29
2	Sean	O'connor	12.17	8.31	20.48
3	Charlie	Leeson	9.39	-	9.39
4	Jim	Fullarton	4.25	4.57	9.22

HANGAR RAT (26 participants)

Place	Name		Best 2 flights		Total
1	Ken	Osborne	190	196	386
2	Danny	Maslowicz	188	174	362
3	Michael	Towell	166	153	319
4	Leigh	Morgan	153	154	307
5	Ray	Pike	118	148	266
6	Mark	Weir-Smith	109	126	235
7	Brett	Mitchell Jnr.	120	114	234
8	B	Hoffmann	116	115	231
9	Kerryn	Pike	113	117	230
10	Graham	Porter	117	104	221
11	John	Firth	98	121	219
12	James	Rae	106	108	214
13	Michael	Beatty	100	106	206
14	Neil	Mcloud	88	104	192
15	Gary	Sunderland	90	97	187

INDOOR HLG

Place	Name		Best 3 flights			Total
1	Leonard	Surtees	41.1	41.2	39.1	121.4
2	Ken	Osborne	40.0	38.5	41.3	119.8
3	Richard	Blackham	33.9	34.1	35.5	103.5
4	Michael	Towell	26.3	26.4	30.0	82.7
5	Ray	Pike	26.4	27.0	26.5	79.9
6	Glenn	Drew	25.0	25.4	27.4	77.8
7	Colin	Collyer	18.8	16.2	19.0	50.4
8	Kerryn	Pike	16.6	15.0	15.5	47.1

BOSTONIAN

Place	Name		Best 2 flights		Total
1	Jim	Fullarton	164	161	325
2	Erica	Pike	95	122	217
3	Bruce	Knight	99	94	193
4	Neil	Mcleod	48	34	82

PEANUT SCALE

Place	Name		Best 2 flights		Flight Pts	Static Pts	Total
1	Ken	Osborne	133.3	159.2	97.46	20	117.46
2	Michael	Towell	101.0	112.0	71.00	21	92.00
3	Colin	Collyer	62.0	74.5	44.93	20	64.93
4	Gary	Lamont	40.6	40.0	26.80	30	56.80
5	John	Lamont	-	-	-	26	26.00
6	Ian	Lamont	-	-	-	22	22.00



Photo 3: "The Lamont Family": John, Ian, Ivor F. and Gary. John flew a Turbulent, Ian a Zero and Gary a Gypsy Moth.

SWEEP F1L

By John Kevin Tipper (UK)

Construction Tips.

This EZB was built just for the Cargo Lifter; I used the best and stiffest wood that I could find. I have been using diagonal ribs for the wing and tailplane for a long time. All the extra work is worth having nice ridged flying surfaces, with the added benefit that should you catch the stab during steering there is less chance of folding it.

Thrust bearing is a shortened Harlan, set at about 1 1/2 degrees down and 3 degrees left side thrust. The extra side thrust is necessary for the quite high torque needed to get up high in the unlimited ceiling of the Cargolifter.

Wing is set flat at rest with no washin, the stab has 1/16" washin which is fine adjusted by twisting the rear tailpost. Use a tissue tube on the very end of the tail boom, then glue the tail post on to the end of this tube. You can then still adjust the washin on the tail plane, then lock it in place with a spot of glue. The front tail post is inserted in to the boom. Raise tail boom 1/2" and off set 1/2" to give left turn. Set tail with about 3/4" tilt.

Covering.

As I was aiming to keep weight to the minimum and I wanted to have a nice smooth finish, I decided on YK2. First I crumple it up quite tightly, then I smooth it out on a large black sheet of art board with a very soft blusher brush. Finally I mount the film on a balsa frame using spray mount (the one in the blue can). I aim to get the film on the covering frame quite tight, then I waft the frame up and down quite rigorously, but not hard enough to tare the film. This helps to stretch out the fine wrinkles and leaves a uniform smooth frame of film with just enough slack for covering. I leave the frame for a week or two, for the static to reduce in strength. Covering the wing, just needs two light passes with spray mount, and one for the tailplane. Drop the outlines on to the frame of film. Before cutting out with a 15 W soldering make sure the film is well stuck to the outline, especially at dihedral ribs.

Setting Dihedral

To set dihedral on wing and stab, cut half way through the underside of spars and crack up wingtips and fins on stab, glue in position, then apply small rectangles of balsa to front of leading and trailing edge spars across the join. Take up slack in covering by running a loaded brush of very thin mixture of 1 part duco and 10 parts acetone along the slack.

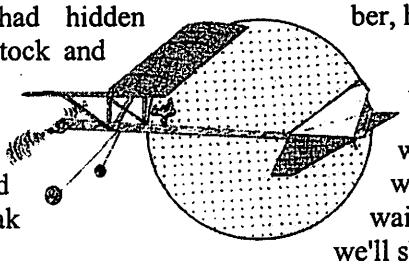
Finally the outline drawings are full size so you can cut out and transfer to card to make your templates, on drawing of wing cut out along the unbroken inner line.

Results Hangar Rat Postal 2002

By Art Lane (CAN)

Our Hangar Rat Postal is now over and I know you fellows want to see where you finished, so, here are the results! (Now the excuse department!)

Unfortunately, for us Canadians, our rubber stock was of OLD, OLD, OLD stock. Our order for the new stuff didn't come in on time to compete. Andy had hidden some of his old stock and thus, was able to get an eleventh place. Walter, Jack and myself did nothing but break our present rubber, hence, NO TIMES.....



Huh, wait till next year!!!! All in all, we had a heck of a lot of fun this year and I would like to thank all those who participated. As I said, wait till next year!!! Hopefully, we'll show you all!

Results Class A (wooden paddle)

1.	Akihiro Danjo	Japan	667
2.	Phil Siddall	England	660
3.	Ken Osborne	AUS	594
4.	George Perryman	USA	570
5.	Danny Maslowicz	AUS	557
6.	Brad Dixon	USA	508
7.	Dohrman Crawford	USA	494
8.	Mike Towell	AUS	491
9.	Leigh Morgan	AUS	472
10.	Ray Pike	AUS	409

Results Class A (wooden paddle) - Continued

11.	Andy Chisholm	Canada	401
12.	George Whitfield	England	362
13.	Jim Altenbern	USA	337
14.	Ray Cudworth	USA	272
15.	Walter Innes	Canada	0
16.	Jack Howe	Canada	0
17.	Art Lane	Canada	0

Results Class B (original plastic prop)

1.	1. Akihiro Danjo	Japan	553
2.	2. Bob Gladding	Canada	247

Results Dutch National Indoor Fly-in 2002

Flown on April 1st. in the Jan Massinkhal, Nijmegen, The Netherlands.

F1M Senior

	Name	1	2	Total 2 best
1	Erik Crins	09:42	09:31	19:13
2	Maarten Blasse	08:12	09:32	17:44
3	Gert Brendel	08:30	08:43	17:13
4	Piet Dibbets	02:43	02:51	05:34
5	Jan van Esch	01:32	01:48	03:20

F1M Junior

	Name	1	2	Total 2 best
1	Martijn Gielen	06:06	05:41	11:47
2	Wouter vd Bekerom	05:17	05:23	10:40
3	Bernard Bruins	05:08	05:05	10:13
4	Allard van Velthuijzen	04:58	04:48	09:46
5	Marijn Zwier	04:47	04:49	09:36
6	Kevin Lamers	04:32	04:52	09:24
7	Niels Wijnhoven	04:31	04:35	09:06
8	Mark Rossen	04:38	04:15	08:53
9	Bart vd Spek	04:08	03:55	08:03

Wortel (F-Looper)

	Name	1	2	Total 2 best
1	Marijn Zwier	01:52	01:46	03:38
2	Martijn Gielen	01:37	01:45	03:22
3	Mark Rossen	01:31	01:34	03:05
4	Allard van Velthuijzen	01:15	01:30	02:45
5	Jan van Esch	01:20	01:20	02:40
6	Edward Ogg	01:16	01:19	02:35
7	Niels Wijnhoven	01:12	01:17	02:29
8	Stan Spruytenberg	01:10	01:17	02:27
9	Dion Teunissen	01:11	01:08	02:19
10	Tom Lamers	01:09	01:08	02:17
11	Marleen van Esch	01:08	01:00	02:08
12	Rik vd Sloot	00:58	00:59	01:57

Scale

	Name	Model	Static	Flight	Result
1	Eric Crins	P-39 Airacobra	47	70	117
2	Theo Ganzeboom	Eastbourne Monoplane	37	54.5	91.5
3	Gert Brendel	Renard R.S.V.	47	43.5	90.5
4	Gerrit de Kruijff	Santa Dumont 14 Bis	41	43.5	84.5

Nocal Scale / Bostonian

	Name	Model	Static	Static Place	Best Flight	Flight Place	Result
1	Martijn Gielen	Fokker E.III	16	3	72	1	4
2	Niels Wijnhoven	Bostonian	16.5	2	43	2	4
3	Martijn Gielen	Fokker S.11	21	1	36	3	4