NORMATIVA PARA VELOCIDAD FORMULA X.

OBJETIVOS:

1. Acercamiento a la modalidad de Velocidad de V/C.
2. Facilitar la participación de cualquier aeromodelista con un aeromodelo simple y si necesidad de motor específico.

MODELO:

- Modelo con fuselaje tipo "tablas" o carenado (sólo tipo bólidos como el original) con una envergadura máxima de 100 cm.
- Superficie mínima de 2 dm2/ c.c. de cilindrada del motor (lo que hace un total mínimo de 5 dm2 para un motor de 2.5 cc)
- Peso máximo de 100 g/ c.c. = 500 g de peso para un 2.5 cc de motor.
- El modelo deberá despegar desde el suelo con ayuda de un tren de aterrizaje que podrá ser fijo, desprendible o usar un carrito auxiliar para este propósito.

MOTOR:

- Cilindrada máxima de 2.5 cc dotado de silencioso dotado de un escape con un diámetro máximo de 8 mm, y de 5.56 mm en el caso de dos escapes (éstas medidas podrán ser modificadas en función del lugar de organización y limitación del ruido),
- El motor estará dotado obligatoriamente de un sistema de paro efectivo y deberá ser accionado para terminar el vuelo una vez completadas las vueltas de clasificación.
- El motor no montará buje puntiagudo.
- Se admite sistemas de depósito presurizados sea cual sea su tipo.
- Sonido del motor máximo es de 90 db (en el VCN2011)
- Para los modelos dotados de pipa resonadora, media pipa la limitación del sonido a 90 db entra en vigor ya.
- Se admiten motores eléctricos con las siguientes limitaciones:
  - Diámetro máximo del estator 26 mm
  - Longitud máxima del estator 13 mm
  - Voltaje máximo batería 11,10
  - Intensidad máxima de la bateria 2,5 amperios.

HELICE:

- La hélice será bipala comercial o auto-construida de cualquier materia excepto las metálicas, no admitiéndose las monopalas. Se acepta la modificación de la hélice comercial en diámetro y/o paso, siempre y cuando la hélice resultante reúna seguridad suficiente a criterio de los jueces.

CABLES:

- Serán de acero trenzado de 0.385 mm de diámetro mínimo y de una longitud de 15.92 m medidos desde el eje del motor al eje de la manija, siendo por ello obligatorio la realización de 10 vueltas cronometradas para la toma de tiempo oficial.

- Como alternativa se podrá utilizar cables de 17,69 m y 9 vueltas de clasificación si el participante lo considera necesario por razones de seguridad o por que el diámetro acondicionado de la pista lo requiere.
- La organización podrá optar por esta alternativa de 17,69 m/ 9 v. como medida obligatoria en la convocatoria si concurren circunstancias que obliguen a ello.
- La salida de cables en el modelo tendrá una separación mínima de 5 mm y de 25 mm en la manija, no pudiéndose trenzar o unir de manera intencionada los cables en su recorrido o tratar los cables con productos que faciliten su aerodinámica.

NOTAS ACLARATORIAS:

NO SERÁ OBLIGARIO EL EMPLEO DEL PILON DE VELOCIDAD COMO MANDA LA NORMATIVA FAI. CON EL OBJETO DE FACILITAR LA PARTICIPACION, PARA ELLO SE PODRA VOLAR CON LA MANIJA AL PECHO MARCANDO EL COMIENZO DEL CRONOMETRAJE A LOS JUECES LEVANTANDO EL BRAZO LIBRE EN ESE MOMENTO.

PARA EL RESTO DE NORMAS SE APLICARA EL REGLAMENTO FAI PARA EL DESARROLLO DE LAS PRUEBAS A EXCEPCION DE LA REFERIDA AL COMBUSTIBLE EN CASO DE NO FACILITARLO LA ORGANIZACIÓN DEBERÁ APORTARLO EL PARTICIPANTE BAJO LA FORMULA DE 80/20 PARA LOS MOTORES GLOW Y SERA LIBRE PARA LOS DIESEL. ESTE TERMINO SERA DADO A CONOCER CON ANTELACION SUFICIENTE A LOS INSCRITOS ASI COMO EL ESTABLECIMIENTO DE DIVERSAS CATEGORIAS EN FUNCION DE LA INSCRIPCIÓN TRATANDO DE IGUALAR RESULTADOS.

APOYO TECNICO:

Para aquellos que decidan construir un modelo específico que cumpla con los requisitos expuestos anteriormente se les facilita unos croquis y fotos de entrenadores para velocidad fáciles de hacer.

Animamos a la construcción de prototipos de acuerdo con la normativa y que abran un vía de aproximación al espíritu la modalidad FAI, siendo interesante que sean difundidos para facilitar la progresión a otros interesados.

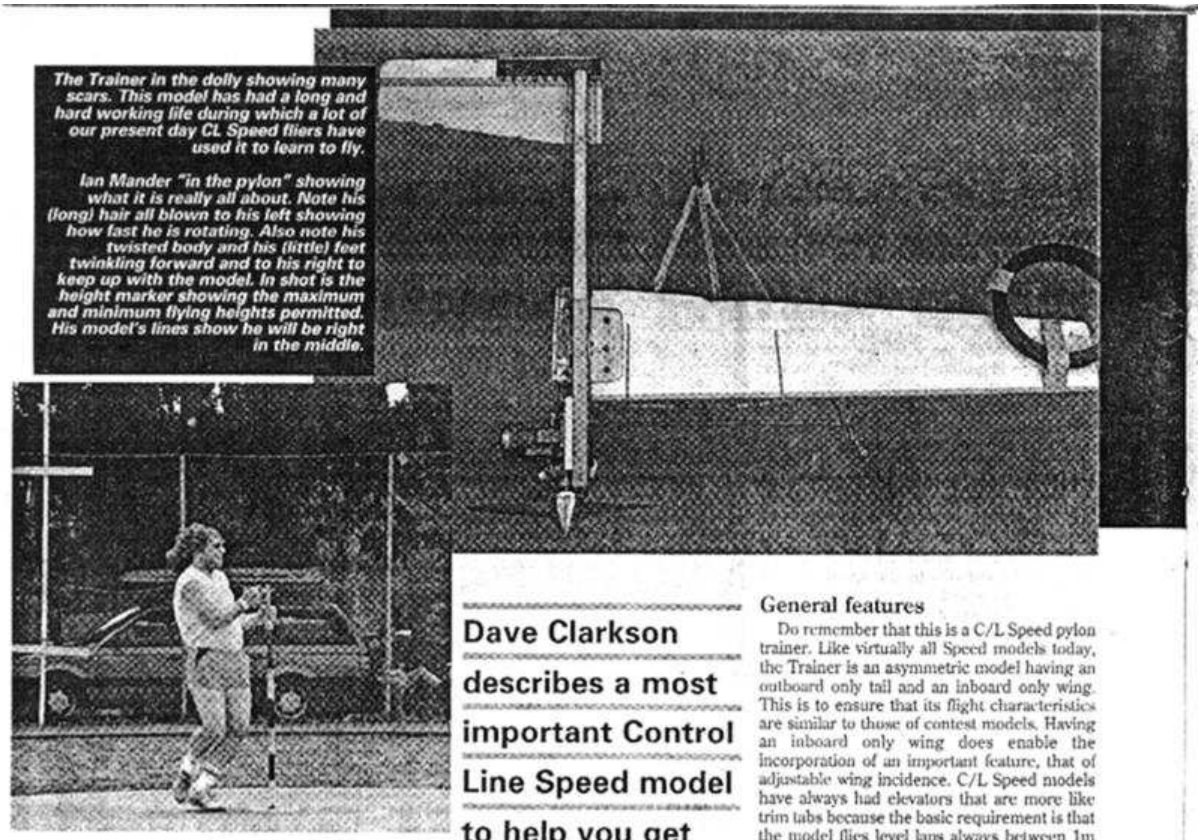
Como punto de arranque, cualquier modelo de entrenador, “racer” o “goodyear” más un motor “glow” olvidado procedente del combate u otro uso, o un diésel, pueden servir para conseguir resultados dignos e ir evolucionando en una lucha personal hasta llegar a la fecha de la competición.

Si se prefiere algo más específico: el modelo “THE TRAINER” del conocido Dave Clarson (maestro de muchos aeromodelistas en Inglaterra en los 80 y 90), y cuyo croquis fue publicado en “Aeromodeller” se adjunta. Este es un modelo probado y muy práctico para empezar . Como alternativa se adjunta un modelo también asimétrico y construcción algo más clásica: el “BLITZ” publicado en “Modelar” con un motor “BWT”(desconocido por mi) consiguió 150 km/h.

Por último añado mi aportación personal: fotos de mi modelo “FERRUM”, un asimétrico diseñado a partir de diversos modelos de F2A y construido todo madera en los años 90 para montar un motor Rossi y una bancada de aluminio “hand made”, de uso en combate en aquel momento, y que puede dar luz a quienes quieran algo personal con un motor actual.

En cualquier caso ofrezco mi archivo de datos de modelos de F2A donde inspirarse o tomar referencias si es que alguien necesita algo más que no encuentre **en**

internet, añado una muestra básica: carritos, depósitos, y modificaciones básicas para cualquier motor . fjimenezgamez@yahoo.es



The Trainer in the dolly showing many scars. This model has had a long and hard working life during which a lot of our present day CL Speed fliers have used it to learn to fly.

Ian Mander "in the pylon" showing what it is really all about. Note his (long) hair all blown to his left showing how fast he is rotating. Also note his twisted body and his (little) feet twinkling forward and to his right to keep up with the model. In shot is the height marker showing the maximum and minimum flying heights permitted. His model's lines show he will be right in the middle.

THE TRAINER

Dave Clarkson describes a most important Control Line Speed model to help you get "in the groove"

Those of you who have watched the flying of C/L Speed models will have noticed the vertical pole in the centre of the circle to which the pilots must have attached their handles to record a flight. The idea behind this pole, known as the 'pylon', is to ensure that the flight radius for all of the flights in any one class is the same and therefore that these flights are directly comparable. It also makes the application of physical assistance to the model in the air to make it go faster virtually impossible. All well and good but I have never known of any C/L pilot when first having to use a pylon has not found it to be the most obstructive device ever invented to make piloting difficult. It sticks up precisely where you want to place your feet so when you try to move around the pylon it gets in the way of your feet and very rapidly can lead to you getting so far behind the model that a crash becomes inevitable.

Furthermore, it forces you to position your body on the opposite side of the circle to your model with the result that instead of rotating your body to the left with the rotation of your model, you have to rotate to the right. All very confusing, in fact you have to learn to fly again, in so much as your body and foot movements are concerned, when learning to fly "in the pylon". Fine once you have got into the swing of things, and at contests like the Nationals you can see many pilots who do it very well indeed, but a major barrier to those who wish to start to fly C/L Speed. It gets much worse when a real Speed model is at the other end for these can have line tensions, as may happen in 10cc Speed, approaching 100 Kg and have rotational speeds, as is the case with FAI Speed models, as fast as 1.2 sec per lap. Dealing with such extreme physical challenges is bad enough but with a pylon in the way it approaches impossibility for the newcomer.

Of course, just as when flying to learn in the first place, learning to fly in the pylon requires a training model and this article is all about the most successful of these in recent times. I would guess that at least half of the newcomers into C/L Speed in the last five years in this country have learnt to fly in the pylon using the model described here. Originally built by Steve Kinsey it has been passed from one newcomer to the next and has been uniformly successful. Truly one of the most important CL Speed models in this country for many years.

General features

Do remember that this is a C/L Speed pylon trainer. Like virtually all Speed models today, the Trainer is an asymmetric model having an outboard only tail and an inboard only wing. This is to ensure that its flight characteristics are similar to those of contest models. Having an inboard only wing does enable the incorporation of an important feature, that of adjustable wing incidence. C/L Speed models have always had elevators that are more like trim tabs because the basic requirement is that the model flies level laps always between 1m and 3m off the ground. The elevator only serves in flight to give non-critical control over this. Present day C/L Speed models natural 'groove' height is not adjusted by the elevator but rather by adjusting the wing incidence.

In the Trainer the wing is connected to the body using aluminum angles top and bottom all bolted together so that by just loosening the fuselage bolts and tweaking in a little more incidence gives a higher natural groove and vice versa. This feature is very useful on a training model for over and under elevated wing positions can be arranged so that the symptoms of these can be learnt as well as how to fly if such accidentally occurs. Having an inboard only wing leaves the outboard side of the fuselage behind the motor unencumbered for the bolting in place of the fuel tank. The bellcrank is externally mounted beneath the aluminum wing angles allowing easy changing of the lines.

Interchangeable lines

This is one of the most important features for it has three different length sets of 0.4mm dia single strand lines. A 52 ft set which gives a rotational speed of about 2.0 sec per lap, a 45 ft set which gives a rotational speed of about 1.7 sec per lap and a 35 ft set which gives a rotational speed of about 1.4 sec per lap. Newcomers find the long set perfect for learning the basics of

flying in the pylon and once this has been achieved then moving to the intermediate set and finally the shortest set get you up to full speed. Experience has shown that once newcomers have gained competence and confidence with the short set then a move can be made without the probability of disasters to a proper C/L Speed model. To be sure of this the Trainer is intended for use using a conventional 'rat trap' dolly, for handling a model in the dolly is another vital skill to be learnt. Therefore it is equipped with all of the necessary skids. A bent 10G wire nose skid inserted into the top motor bearer and clamped to the bottom motor bearer using a conventional UC saddle, a bent 14G wire tail skid epoxied into the rear underside of the fuselage, a bent 18G wire skid epoxied into the wing tip and a scraper plate epoxied to the underside of the tail tip.

Robust construction

Being a trainer it is built with unintended landing in mind. Therefore it is strongly built with a medium hard 3/8 in balsa wing incorporating an LE from 1/4 in sq spruce strip. The whole, except where its mounting angles fit which is left flat, being of symmetrical section as is the tail. This is from hard 3/16 in balsa sheet and has a substantial, full span, full depth spruce spar. Both are covered in glass cloth and epoxy resin using a wing press. The fuselage is a plank assembled using 1/2 in wide balsa, beech and spruce strips. The beech strips are of course the motor bearers and extend far enough back for the bolting in place of the tank and wing. Inside of these beech bearers are full length spruce strips 3/16 in deep and the balsa strips are used to fill in all of the gaps. Like the wing and tail, the fuselage is covered using glass cloth and epoxy resin. The motor is screwed to a 1/4 in thick dural plate which in turn is bolted to the motor bearers. This dural plate is also used to mount a fuel tube crusher shut-off, an essential feature on any C/L Speed model, particularly a trainer.

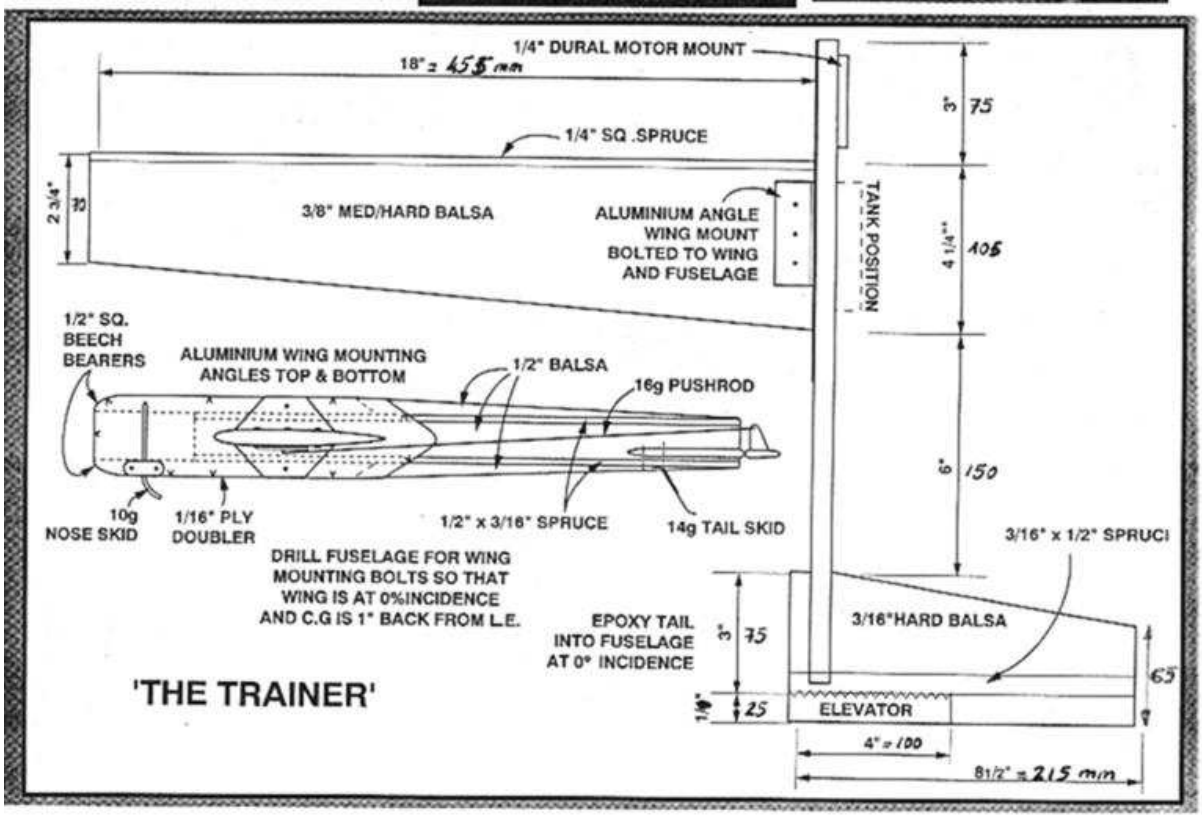
The sketch shows the general dimensions of the model. These are not very critical and variations according to what happens to be in your scrap box are quite OK. They suit the Irvine 20 motor which has been adapted to its purpose by being fitted with a spinner, a 10mm ID venturi and a pressure nipple in its backplate. Any similar size and specification motor could have been used. An APC 7-6 prop, a narrow 30cc pressure tank and Model Technics GN-10 fuel complete the mechanical side. No expense spared, or in this case unnecessarily incurred. These days as the photo shows, "the Trainer" does not look so good for it has had a hard life. The fact that it still exists shows it is tough enough for the job. An essential job as so many of our present day C/L Speed fliers will testify.

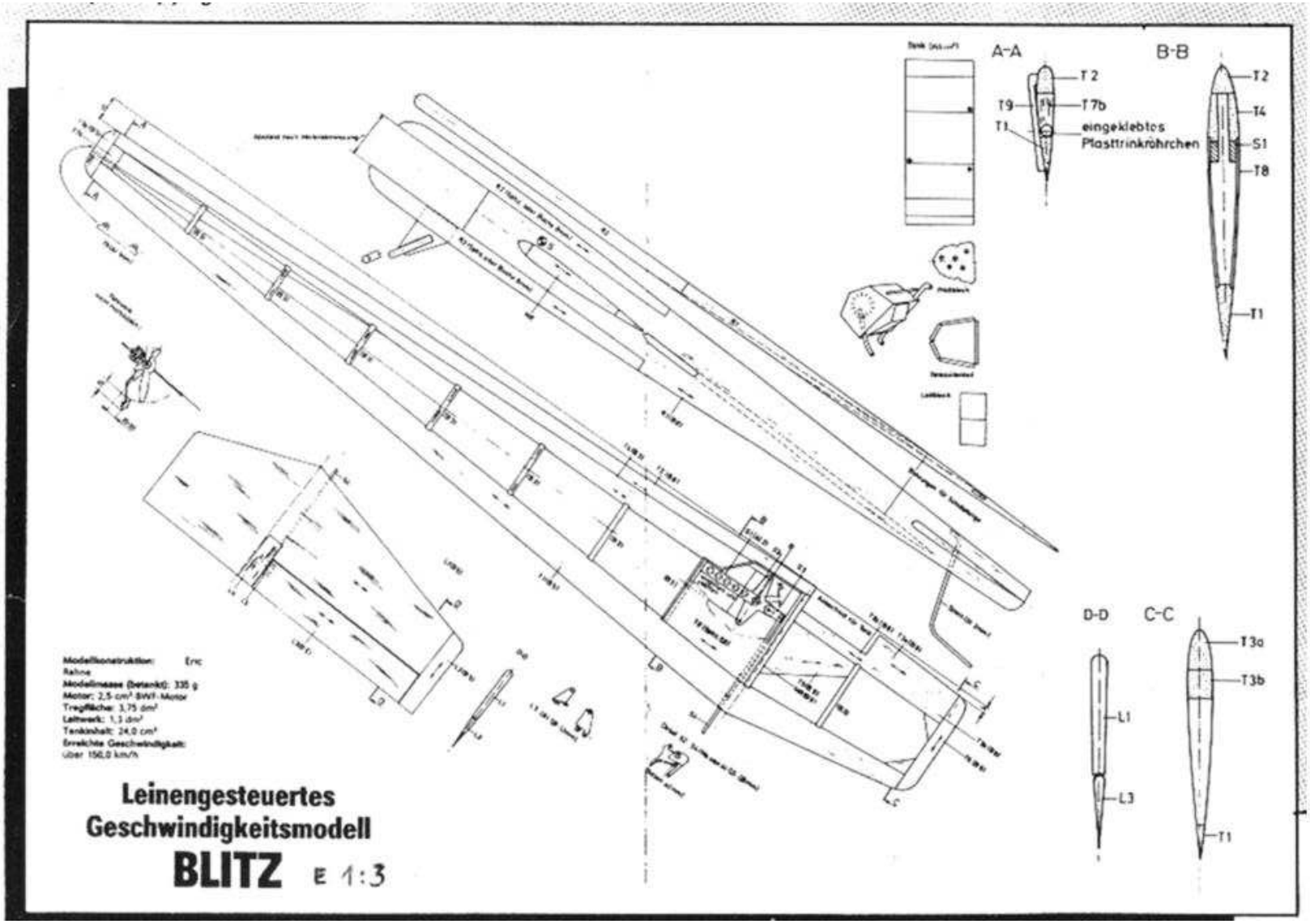
What to do next

If you are interested in speed flying the very best thing to do is to attend a speed meeting, talk to the fliers and examine the equipment. They are a friendly bunch and welcome newcomers. Meetings are often arranged too late to get into What's On but you can find out what is going on and where by ringing Ian Mander of F2A Supplies on 0908 260858.

This is what the Trainer is for. Learning to use a speed control line handle engaged in the pylon. Note the mandatory and substantial safety strap.

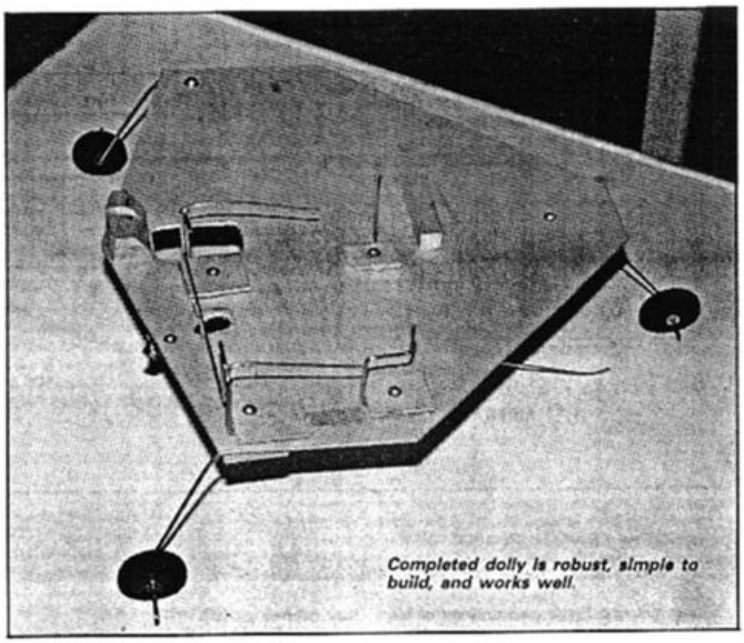
When flying, the correct technique is to grasp the pylon just below the yoke like this.




A-A
B-B
T2
T9
T7b
T1
eingeklebtes
Plasttrinkröhrchen
T2
T4
S1
T8
T1
D-D
C-C
T3a
T3b
L1
L3
T1
Modellkonstruktion: Eric
Rahne
Modellmasse (betankt): 335 g
Motor: 2,5 cm³ BWT-Motor
Tragfläche: 3,75 dm²
Leitwerk: 1,1 dm²
Tankinhalt: 24,0 cm³
Erreichte Geschwindigkeit:
über 150,0 km/h
Leinengesteuertes
Geschwindigkeitsmodell
BLITZ E 1:3

Dolly Mixture

Dick McGladdery describes his latest dolly – ideal for use with our SST design – and looks at control loops



Completed dolly is robust, simple to build, and works well.

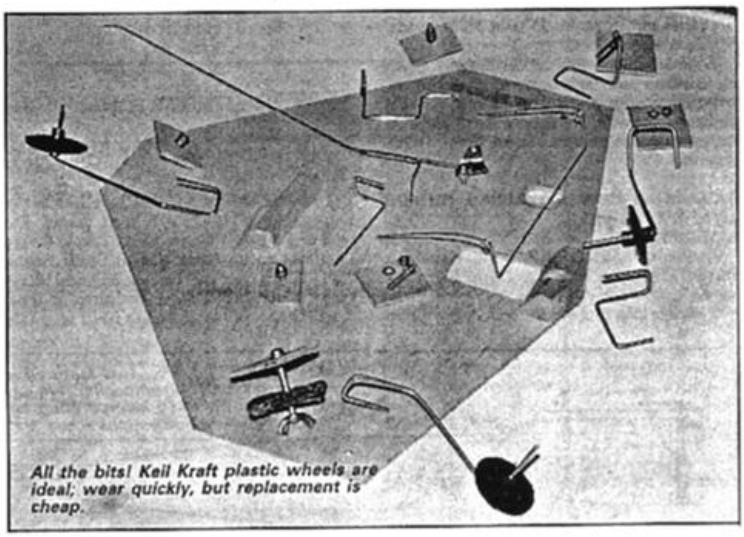
BACK IN the April 1986 Aeromodeller, I tried to explain the basic problems that afflict these devices, and although I then commented unfavourably on the 'rat trap' type, they are better suited to inexperienced users due to their inherently superior security, holding the model firmly until the whisker releases the clamps. The design shown here is generally similar to my previous effort, but the ply clamp plates sharply reduce the number of bolts needed to hold the thing together, yet allow the positions of the guides etc to be adjusted so that the model fits snugly but without binding.

As in the earlier design, skinny, hard wheels are recommended. I used Keil Kraft 1.1/2in plastic wheels intended for sports rubber F/F models. These tend to wear extremely rapidly, lasting perhaps only a dozen or so take-offs, but they are very cheap, so can be replaced when needed without excessive financial pain.

As a more durable alternative, Ed Needham makes some very neat wheels of suitable size for dollies, consisting of a polystyrene disc 'tyre' mounted in a turned aluminium hub, for about £9-10 a pair. These will last for years, and can be obtained from Ed at 10 Lowfield Road, Stockport, Cheshire, SK3 8JR, along with a host of other goodies for Goodyear and T/R. I made my example of the present dolly design with axles long enough to take fat balloon wheels, to try a few theories on the tracking problem when the opportunity arises, but until then, I recommend this type of wheel be shunned in favour of skinny ones.

Another feature repeated from my earlier design is the ballast attached on the outboard front wheel mounting bolt. This counters the tendency for the model to swing in just after release for take-off. Unfortunately, with a rat trap, the model has to lift the dolly clear of the ground in order to release the clamps, and if too much ballast is attached, the model has a hard time lifting it. After initial tries with about 90gm attached, I finished up with only 30gm, and in this condition the model was successfully taken off and flown by someone who had never previously flown a speed model, so I guess 30gm is enough.

The release mechanism should be adjusted so that when testing static, release occurs when the assembly is lifted between 10-20cm above the ground. Release in actual use will occur somewhat later, at around two metres altitude. It is important that release should not occur too soon, otherwise it could happen on a bump during the ground run, before flying speed has been reached. Similarly, it should not release too late, otherwise it will get thrown harder and further than necessary – rat trap dollies tend to have a hard life, being ill-equipped for flying and lacking the sense to land properly by themselves.



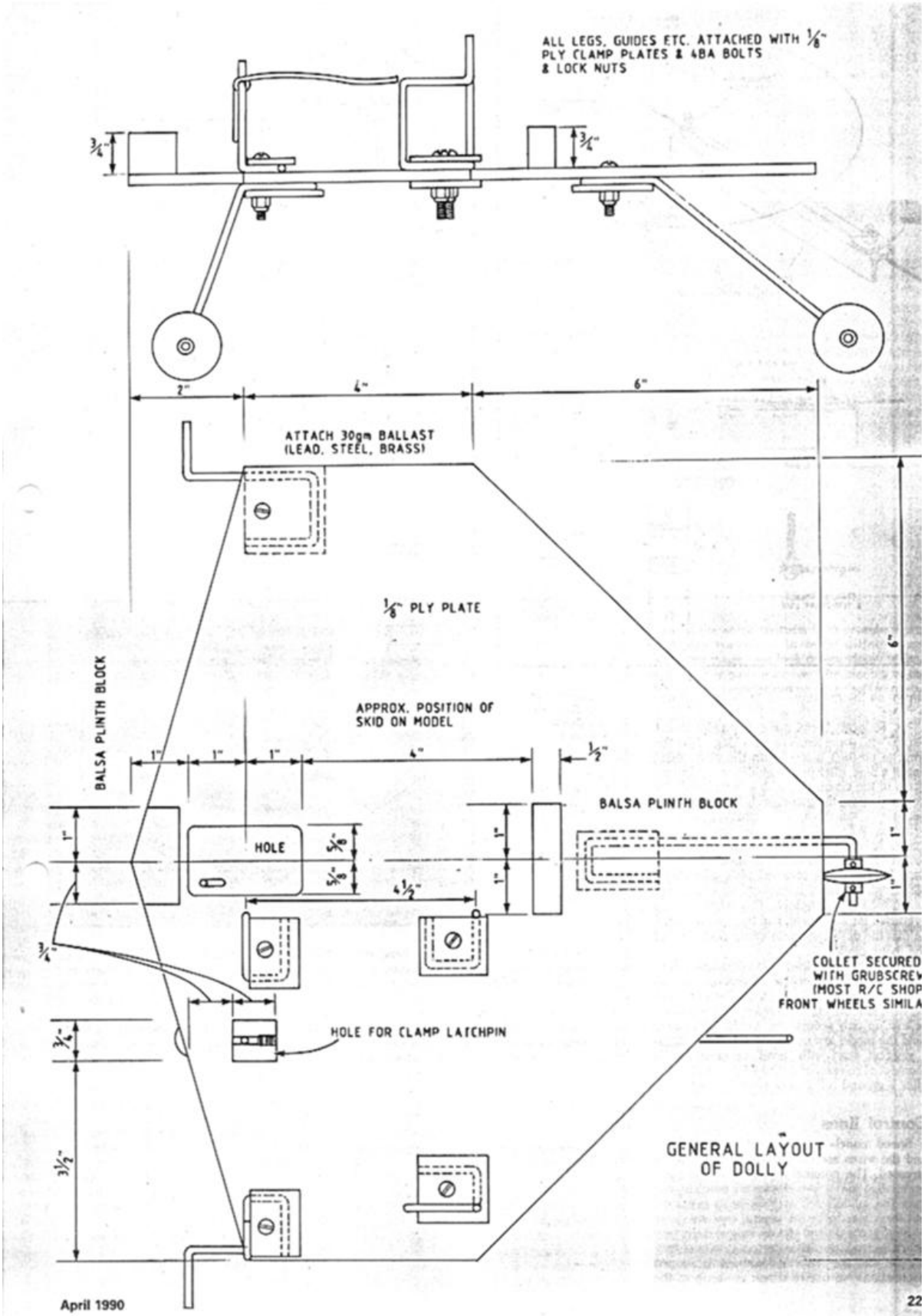
All the bits! Keil Kraft plastic wheels are ideal; wear quickly, but replacement is cheap.

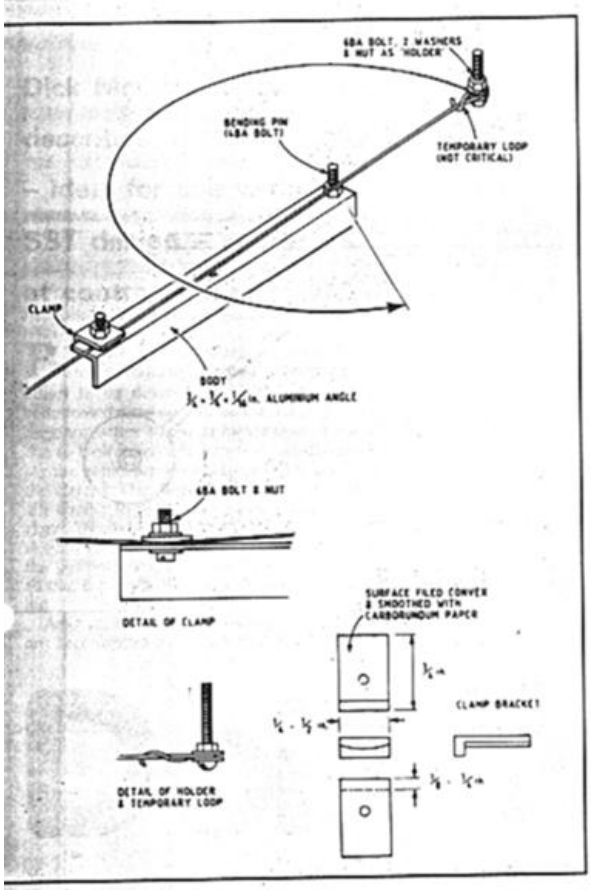
Build your dolly

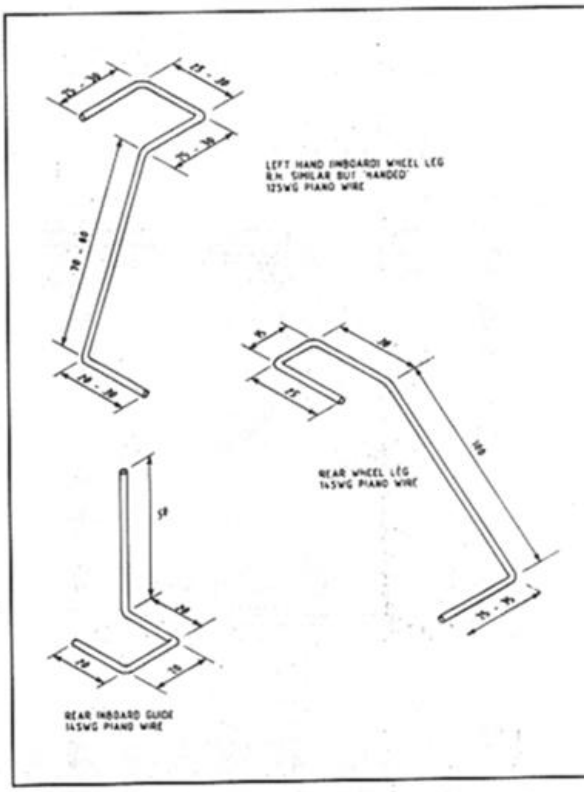
The hold through the main plywood plate or chassis for the model's main landing skid as shown on the drawing is the minimum practical size – if anything, the outboard edge should be extended another 10mm or so.

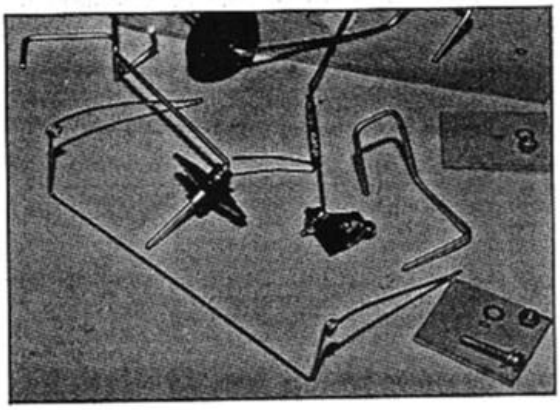
The front plinth block needs to be notched to clear the end of the cutout crusher bar on the model. Gaining access to the latter, for instance to shut off or open to stop fuel flowing through whilst awaiting the moment to start up, is less than desirable; but it is a minor inconvenience which will have to wait for a Mk2 version to sort out.

The positions of the clamps and guides


ALL LEGS, GUIDES ETC. ATTACHED WITH 1/8" PLY CLAMP PLATES & 4BA BOLTS & LOCK NUTS
3/4"
3/4"
2"
4"
6"
ATTACH 30gm BALLAST (LEAD, STEEL, BRASS)
1/8" PLY PLATE
6"
BALSA PLINTH BLOCK
APPROX. POSITION OF SKID ON MODEL
1"
1"
1"
4"
1/2"
BALSA PLINTH BLOCK
1"
HOLE
5/8"
5/8"
1"
1"
1"
1"
4 1/2"
3/4"
COLLET SECURED WITH GRUBSCREW (MOST R/C SHOP FRONT WHEELS SIMILA
HOLE FOR CLAMP LATCHPIN
3/4"
3 1/2"
GENERAL LAYOUT OF DOLLY







Wire bender shown above. See 'Control lines'. Dolly metalwork dimensions above right; major components at right. Far right: critical dimensions of control loop. Be accurate! Below: Dolly inverted, showing outboard weight and whisker.

shown on the drawings are fairly approximate and are consequently not located by dimensions. To locate them, place the model on the plinths with some temporary packing under the wing to position it level with the plate, then, one at a time, offer up the guides' mark the position of the clamp bolt with a pencil, drill the hole and install the guide, fairly lightly for now, because it will have to be removed later for painting. When all the clamp brackets and guides have been fitted, the main wheels and tail wheels can be installed in much the same way. I painted the plywood plate and clamp plates with ordinary household oil paint, then assembled permanently. The wheels were eyeballed for alignment, and tracking adjusted so that the dolly tended to swing gently out of the flying circle.

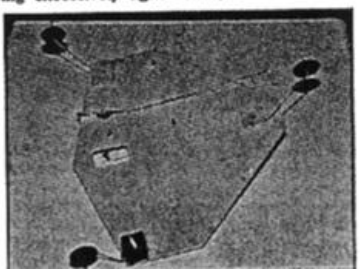
In testing, we noticed it was desirable not to climb too high, otherwise separation was too jerky. The model took over a quarter of a lap to unstick, and the only difference between more or less 'up' only seems best, and to deliberately hold the model low until the dolly drops off, so I suggest start with 'level' elevator at the moment of release, and then feed in a little 'up' after a ground roll of a quarter of a lap.

Control lines

Speed models pull harder than other types, and the wires are consequently more heavily stressed. The nominal strengths of the sizes required in the various classes are much higher than the models are ever likely to generate, but they have to be for several reasons.

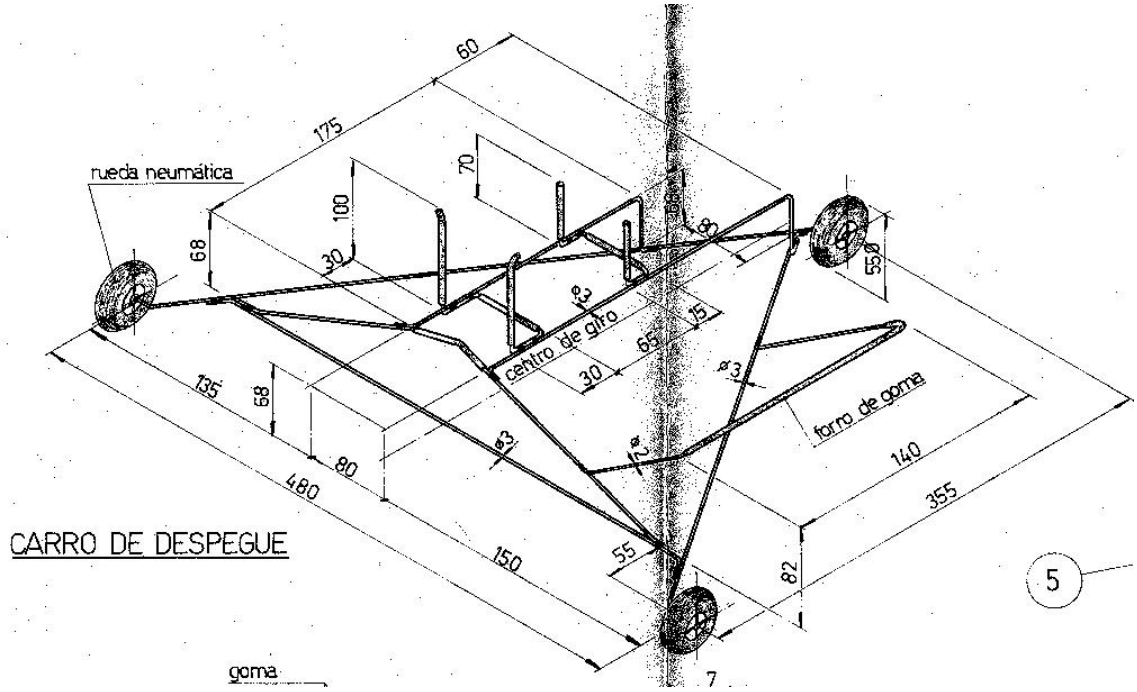
First, at the quoted strains, fatigue life is very short; second, the laboratory methods of testing the wire are performed without the looped connections we use to attach the lines to the model and handle. Any permanent bend deforms the wire, reducing its cross-sectional area and therefore its strength; the tighter the radius of the bend, the more pronounced is this 'waisting' (and weakening) effect, and as previously indicated, a generally accepted minimum 'safe' radius for bends is four times the wire's diameter, beyond which the degree of weakening becomes progressively more severe.

For safety reasons, it is important to avoid weakening the wires unnecessarily when making the connection loops. Apart from avoiding excessively tight bends, care should be taken to avoid distorting or marrying the surface of the wire as happens when pliers are used to grip it – don't use pliers on any part of the wire or loop. Annealing is another danger, so any soldering should be carried out without excessive heating – never use a naked flame and use the soldering iron at the minimum practical temperature. If the wire (and binding wire) is properly cleaned immediately before soldering, the operation is much easier because there is less time for atmospheric corrosion to hamper it.

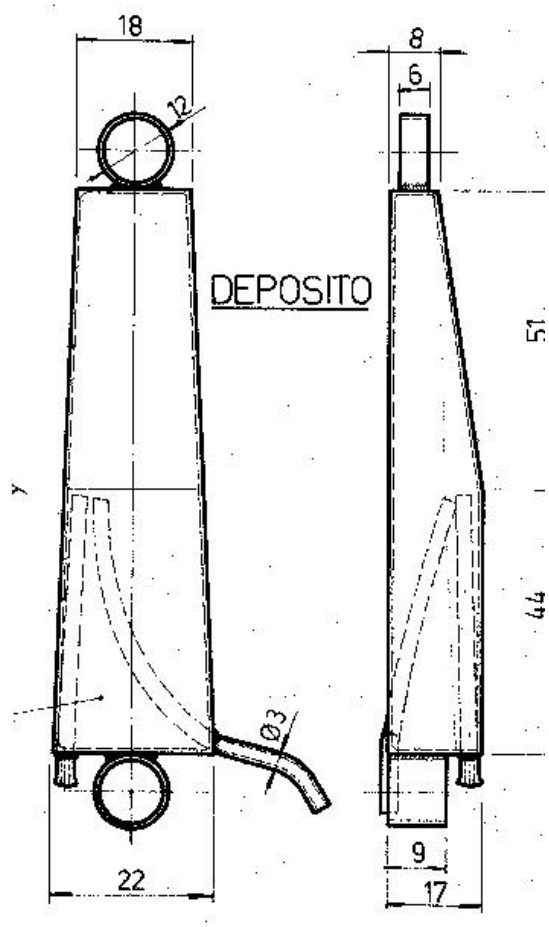


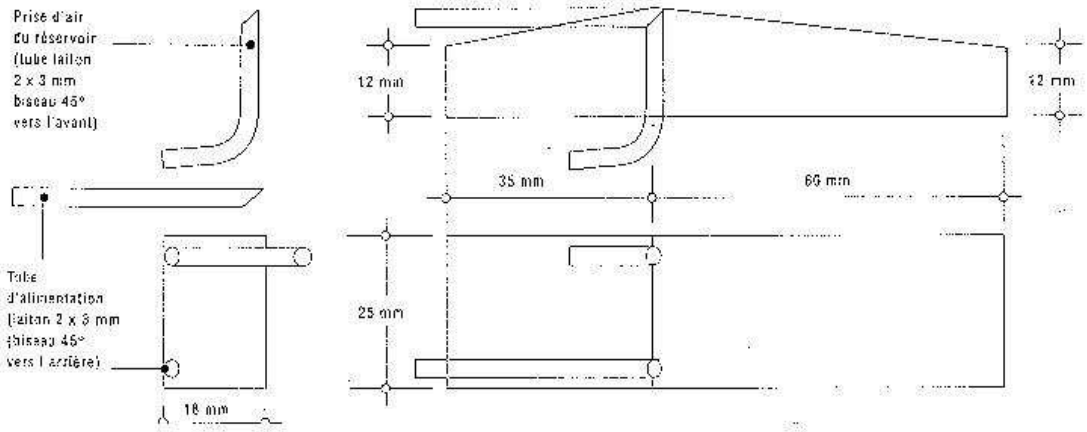
Now to bending the loops to the required shape and size without recourse to re-bending and 'teasing' (which is another cause of weakening). The jig shown in the diagram will be found very useful. After a few practice tries with scrap wire, consistent well-shaped and correctly sized loops can be produced.

For the general design of loops and the manner of fastening them, the SMAE Speed Rules are illustrated in the sketch. The object of the 'step down' portions of binding either

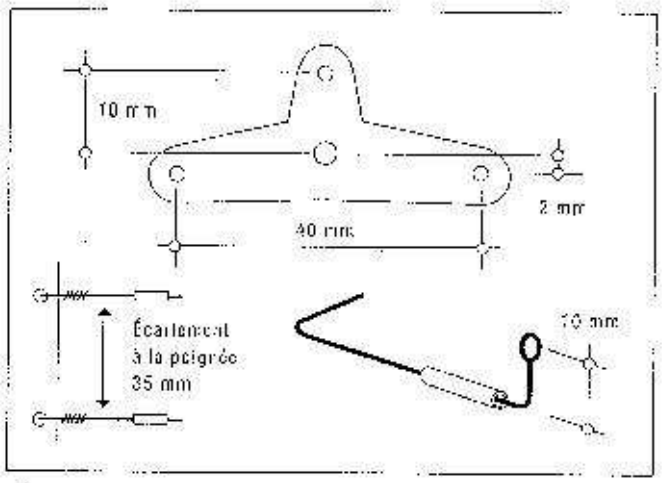


Esquemas de carrito para despegue y depósito del plano del modelo “Xiulet III” de Luis Parramón

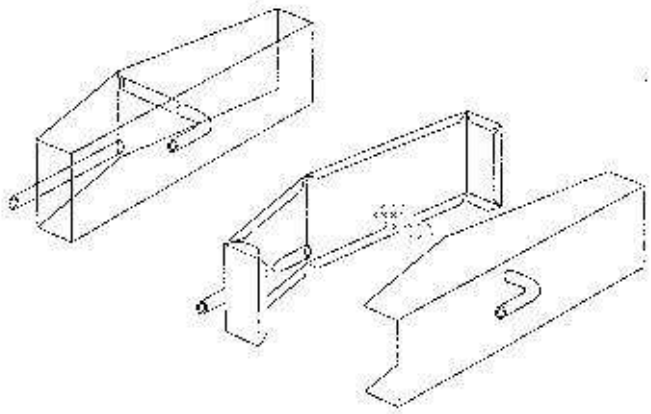




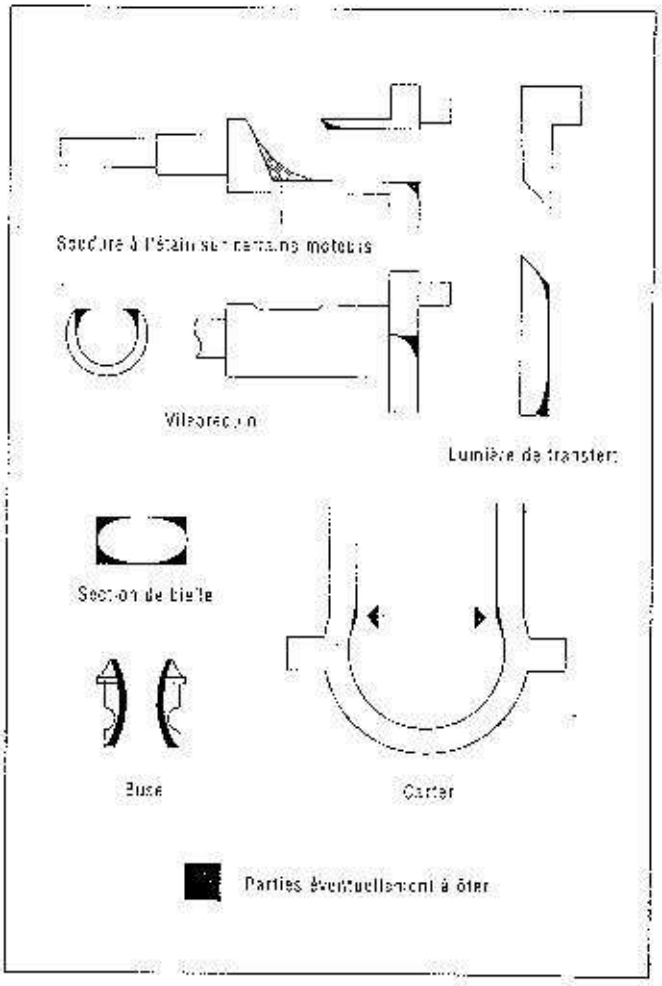
obtenir une bonne trajectoire.



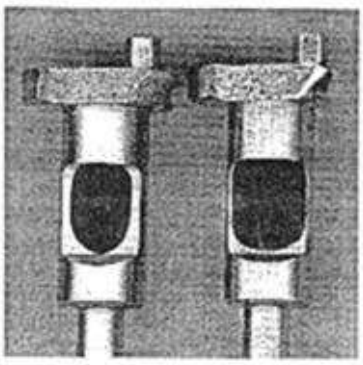
ais en vitesse est apporté par ailleurs.



Croquis de construcción de "T" y accesorios de mando y un depósito tipo para velocidad, aplicable a un modelo "tablas"



Esquema de modificaciones básicas para mejorar el paso de combustible: Hay que fresar o limar las zonas señaladas sombreadas del venturi, cárter, biela y cigüeñal. Hay que rellenar el escalón de entrada del cigüeñal con Nural 21 o similar en caso de traerlo de fábrica.



FOTOS DEL MODELO "FERRUM"

Fuselaje construido con listón de madera semidura (chopo) de 15x25 mm, con refuerzos de contrachapado de abedul en la parte frontal (laterales y partes de apoyo de la bancada. Ala fabricada con dos conchas de contrachapado de abedul de 0.8 mm con alma 1/3 de la cuerda en listón de cedro de 5x10 mm en la raiz del ala y disminución progresiva a 3x7 mmm en el marginal. Estabilizador de contrachapado de 0.6 mm y alma de balsa de 2 mm.

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