CAT. No. 715 GK.

FROG TRADE MARK

"DIANA"

36" SPAN HIGH-PERFORMANCE LIGHTWEIGHT SAILPLANE

SPECIFICATION :

LENGTH O.A.	...	21¼in.
WING AREA	...	144 sq. ins.
WEIGHT ..	...	3½ ozs.

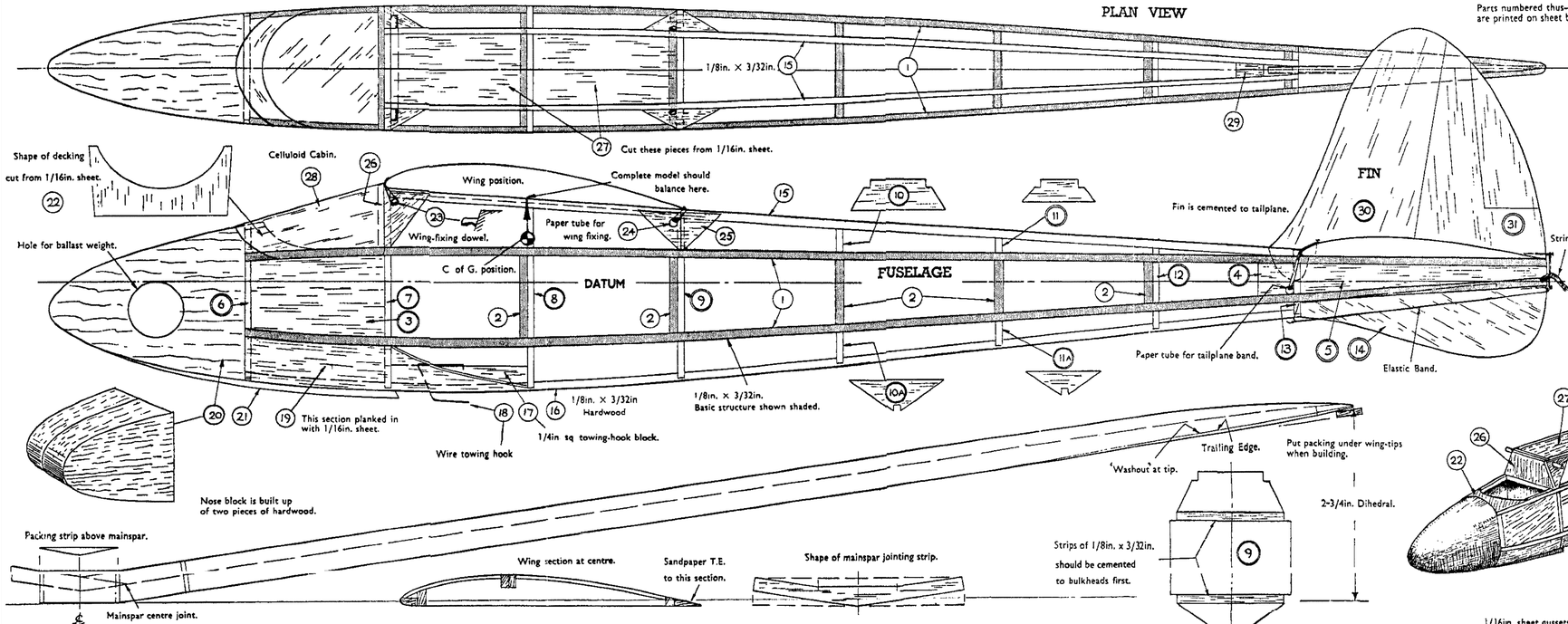
Designed and Produced in England by
INTERNATIONAL MODEL AIRCRAFT LTD.
MORDEN ROAD, MERTON, LONDON, S.W.19.

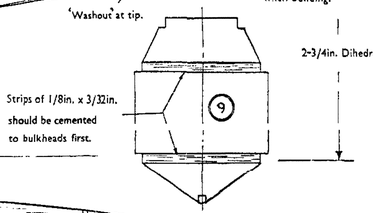
CAT. No. 715 GK.

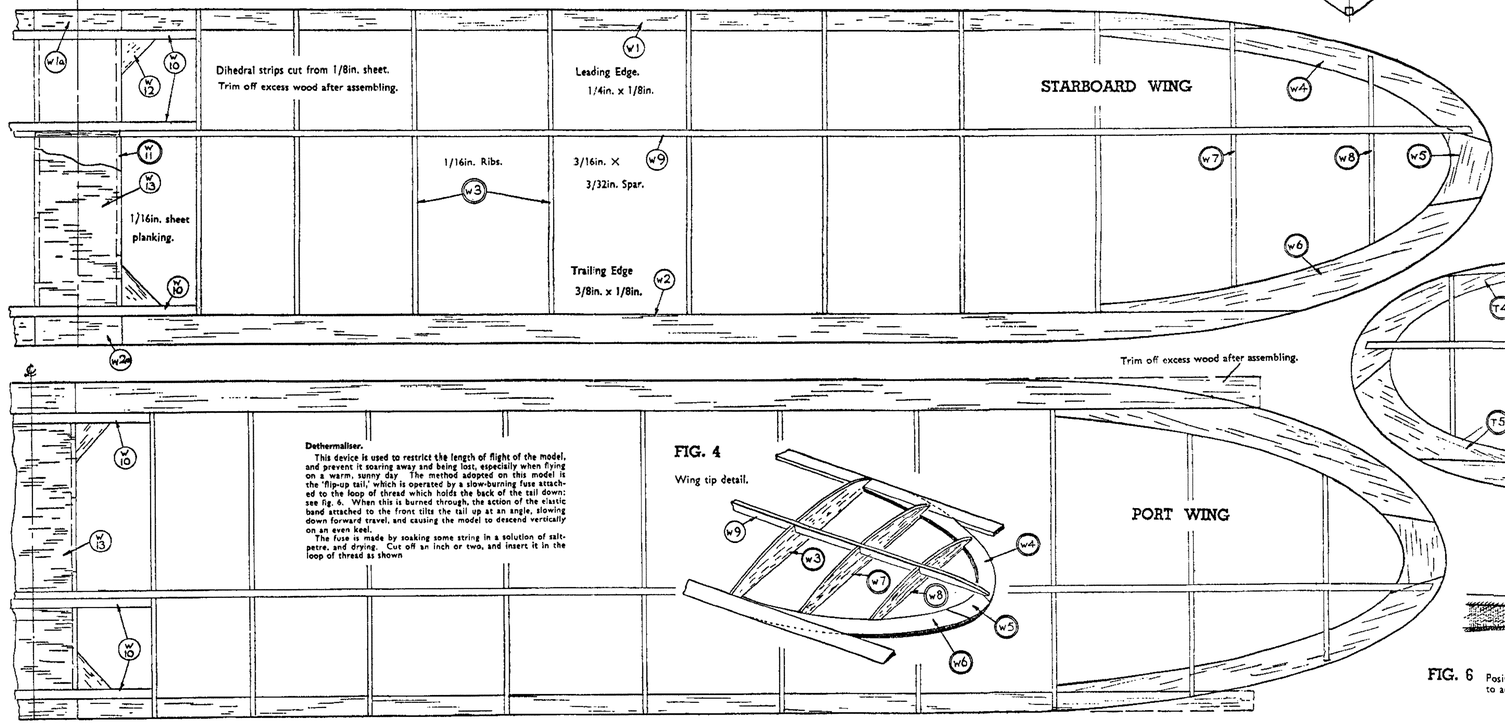
Parts numbered thus— (3) are printed on sheet balsa.

All parts are balsa unless otherwise stated.

PLAN VIEW







Dethermaliser.

This device is used to restrict the length of flight of the model, and prevent it soaring away and being lost, especially when flying on a warm, sunny day. The method adopted on this model is the 'flip-up tail,' which is operated by a slow-burning fuse attached to the loop of thread which holds the back of the tail down; see fig. 6. When this is burned through, the action of the elastic band attached to the front tilts the tail up at an angle, slowing down forward travel, and causing the model to descend vertically on an even keel.

The fuse is made by soaking some string in a solution of saltpetre, and drying. Cut off an inch or two, and insert it in the loop of thread as shown

FIG. 4
Wing tip detail.

FIG. 1 Longerons (1) pinned down and struts (2) together with pieces 3, 4 and 5 cemented in place.

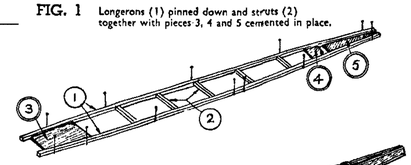


FIG. 2 Bulkheads 6—12 assembled to sides.

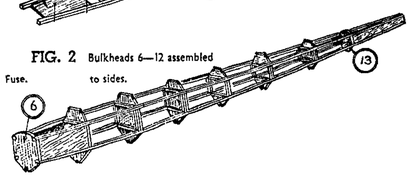


FIG. 3 Completed fuselage structure, before covering.

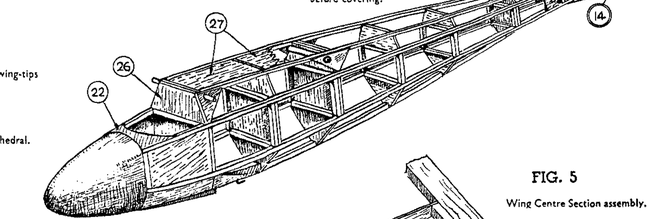
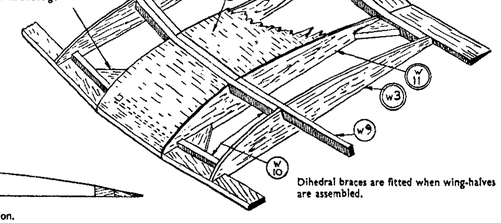
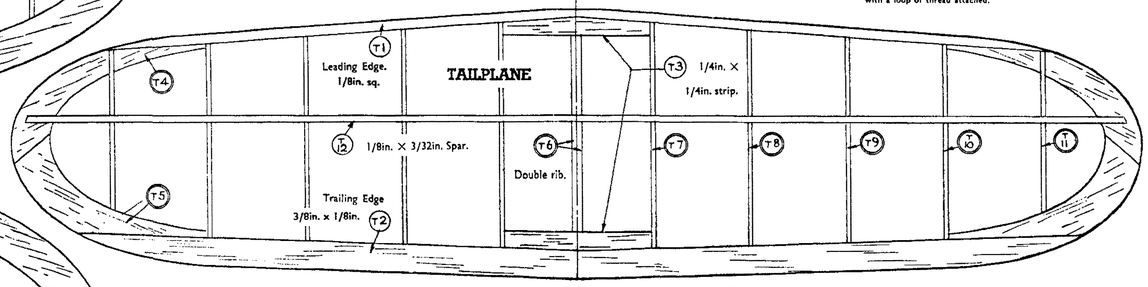


FIG. 5
Wing Centre Section assembly.



Tailplane section.



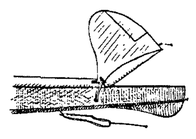
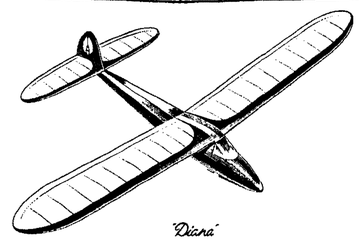


FIG. 6 Position of tail unit in 'up' position to act as D/T.



INTRODUCTION.

In the design of this sailplane, an attempt has been made to produce a model that is not only better looking than the usual trend of small models, but possessing a very good performance, and yet simple enough for the beginner to get satisfactory results. A feature of this kit, as with other Frog models, is the ready-cut parts, numbered for easy reference with the plan, and step by step instructions. The cut parts require just easing from the panels with the help of a razor blade, and the various components can be assembled on the plan.

Before commencing, lay a sheet of grease-proof or tracing paper over it, to prevent the cement sticking.

BUILDING INSTRUCTIONS.

Fuselage.

This is built up from two side frames of ¼in. x ⅜in. strip as shown in fig. 1. First pin down the longerons over the plan, and having cut the struts 2, to length, cement these into place, together with parts 3, 4 and 5. Make the two sides identical, by assembling one over the other.

Whilst these are drying, remove the bulkheads from the panel, and cement the cross-struts in place. Separate the side frames, and cement the bulkheads 6, 7, 8, 9, 12 and 13 into position, and then the rear ends, which should be level. Next cement the cross-struts and half-bulkheads 10, 10a, 11 and 11a. Fix the lower fin 14, then the top and bottom longerons 15 and 16.

Next cut the block 17 to length, attach the wire hook 18 from the top, drill a small hole in 16, and cement them firmly into place, bending the lower end of the wire afterwards.

Cut the panelling pieces 19 to shape, and cement them over the edges of bulkheads 6 and 7. Cement the two halves of the nose-block together, and mark out the plan outline. Carve it to shape as shown in fig. 3, following the lines of the fuselage, and cement it to bulkhead 6. Cut the hardwood strip 21 to length and fix into place. Shape the top decking piece 22, and cement this also.

Cement the dowel 23, paper tube 24, together with gussets 25. Using a piece of spare sheet for part 26, mark out the shape from bulkhead 7, cut and cement it into place as a guide for the cabin.

Cut pieces 27 to shape and cement them into place between the longerons. Cement the cabin along the top of 26 first. When dry, pull down the sides and fix into place with pins until set. Be sparing with cement, or it will dissolve the celluloid. Finally fit top packing piece 29 at tailend, and sand the whole fuselage carefully before covering.

Wing.

Pin the Leading and Trailing edges W1 and 2 over the drawing, and cement ribs W3 in place, followed by tips W4, 5 and 6 and tip ribs W7 and 8 see fig. 4. Trim the ends of spar W9, and cement this into place.

When both halves are made, assemble them together with short pieces of L.E and T.E W1a and W2a. Raise the tips 2¾in. as shown, and cement into place strips W10, centre ribs W11 and gussets W12. Finally cut the planking pieces W13, and cement these over the centre-ribs. Fig. 5.

Shape the L.E and T.E as shown in section and sand the whole wing smooth.

Tailplane.

Assemble this over the drawing, pinning down T1 and T2 first. These have to be cut in the centre, and joined by strips T3. Cement tips T4 and 5 and centre rib T6, followed by ribs T7—11. Cut the spar to length, and cement this to the ribs and tips.

Shape the L.E and T.E. round off the tips, and smooth down the whole structure.

Fin.

This is composed of parts 30 and 31 cemented together. Sand it to a smooth finish, and fix it in place on the tailplane.

Covering.

The fuselage, wing and tailplane are covered with tissue, using paste or dope as an adhesive. Start with the fuselage, and use a separate strip for each side. Cut the paper into strips, allowing a small margin all round. Paste the side of the frame to be covered, lay the tissue over it and pull it gently all round. Do not attempt to get it drum-tight, but aim at getting a smooth surface with no deep wrinkles. When the paste is dry, spray the tissue with water to shrink it. Fasten the wing and tail down on to a flat board to prevent warping.

When thoroughly dry, apply a coat of dope to the wing and tail, and two coats to the fuselage. A coat of lacquer to finish off is beneficial.

Painting should be restricted to the fuselage, and edges of the wing and tail, and attach the transfers supplied to the fin.

Assembling.

The wing is fitted as follows:—

Loop two of the longer bands together to form one 4in.—5in. length. Draw one end through the tube 24 with a wire 'pull-through', place the wing in position, then stretch each end of the band over the centre-section diagonally, and loop them over the dowel 23.

The tail is held in place by one or two of the small bands passed through the holes in 4, and looped over small pins at the front of the tailplane. The rear is held down by another band with a loop of thread attached.

Balancing.

When the model is assembled complete, check that it balances where shown on drg.; if the balance point is further back, add weight to the nose, and if forward, add a smaller weight to the tail end. It is now ready for testing.

Flying

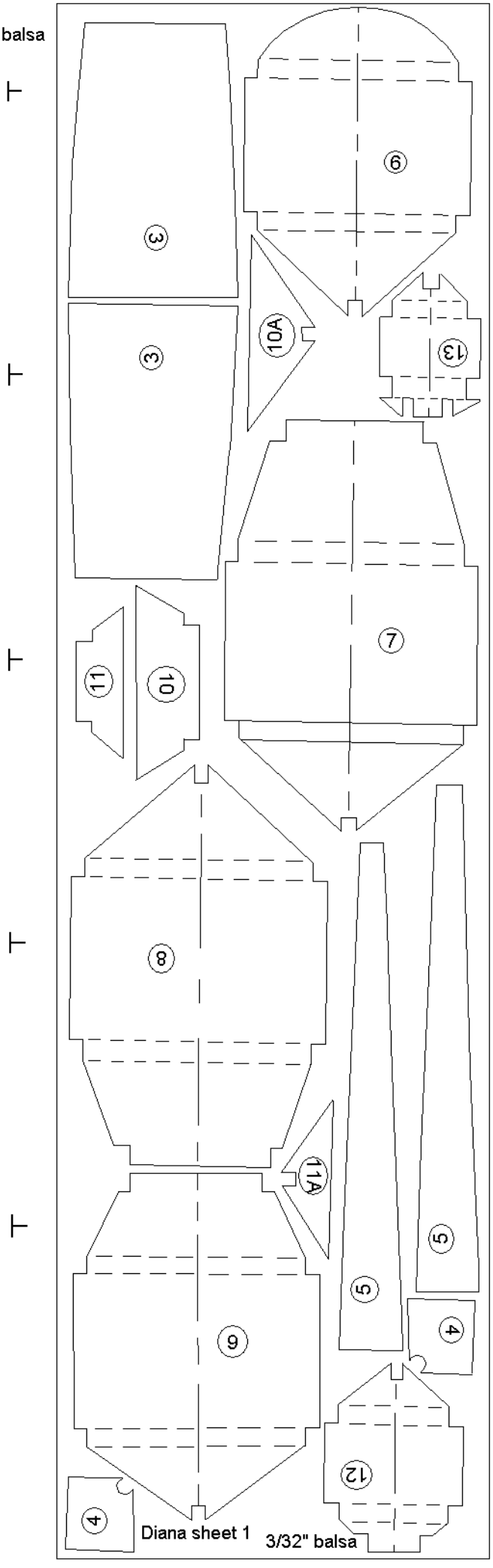
Choose a calm day ,or testing if possible, and make a few hand-launched flights first. If the model turns sharply either way, look for a warp in the wing or tailplane. Correct this as soon as possible, and use the trimming tab for further adjustments.

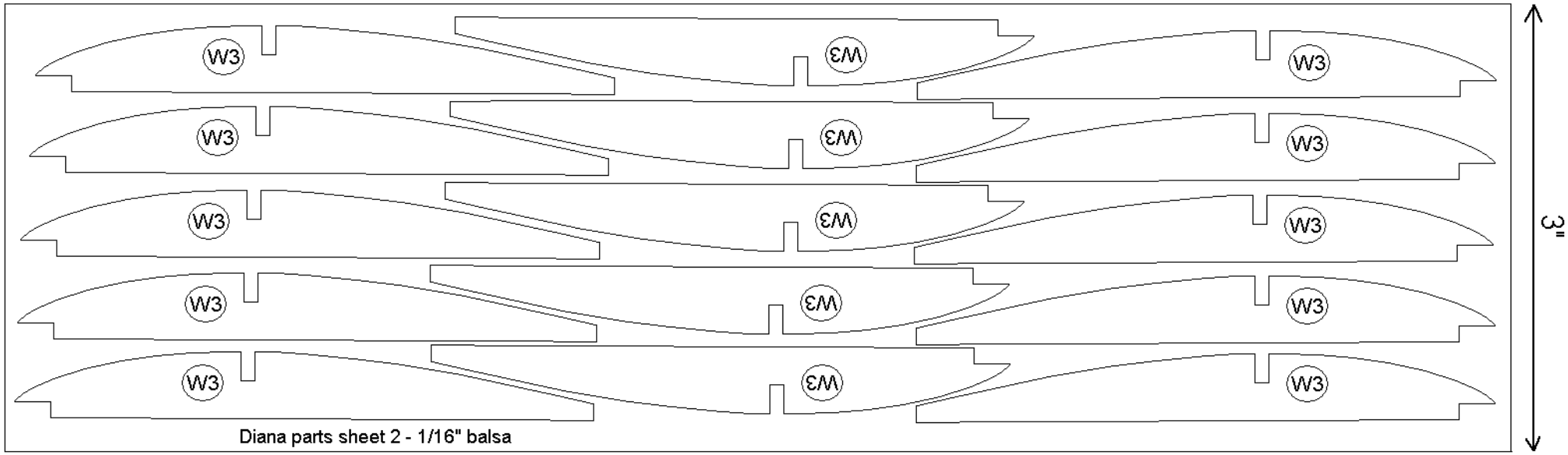
When a satisfactory glide is obtained, a tow-line launch can be attempted. For this, a length of thin kite string attached to a reel is required, with a wire ring tied to the free end. Just below this, tie a piece of rag or tissue, to the line, to help it disengage from the model.

Unreel the line, loop the ring over the hook on the model, and get an assistant to launch it (into wind) while you haul in the line. A running launch can be used to save reeling if desired. If the model has a tendency to 'weave' when being towed up, pull it in slower, and do not release it until it has levelled out to its normal gliding angle.

Do not forget to put your name and address on the model, and light the D/T. fuse before making long flights

3" wide sheet balsa

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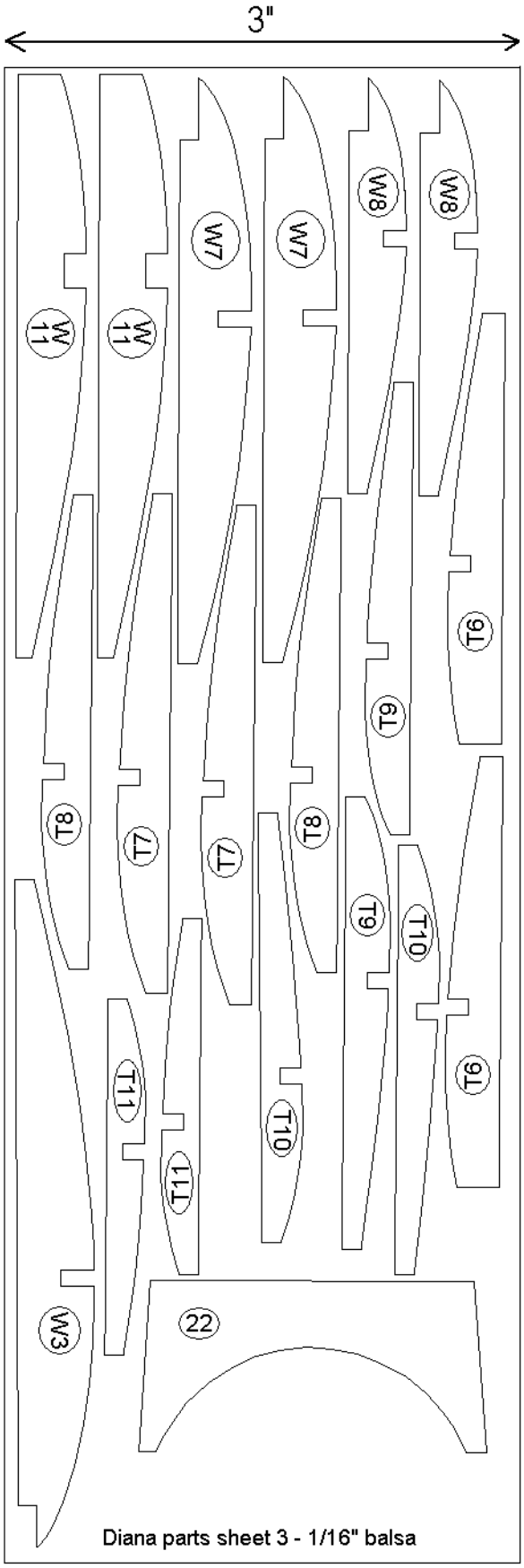
3"
Diana parts sheet 2 - 1/16" balsa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W11
W11
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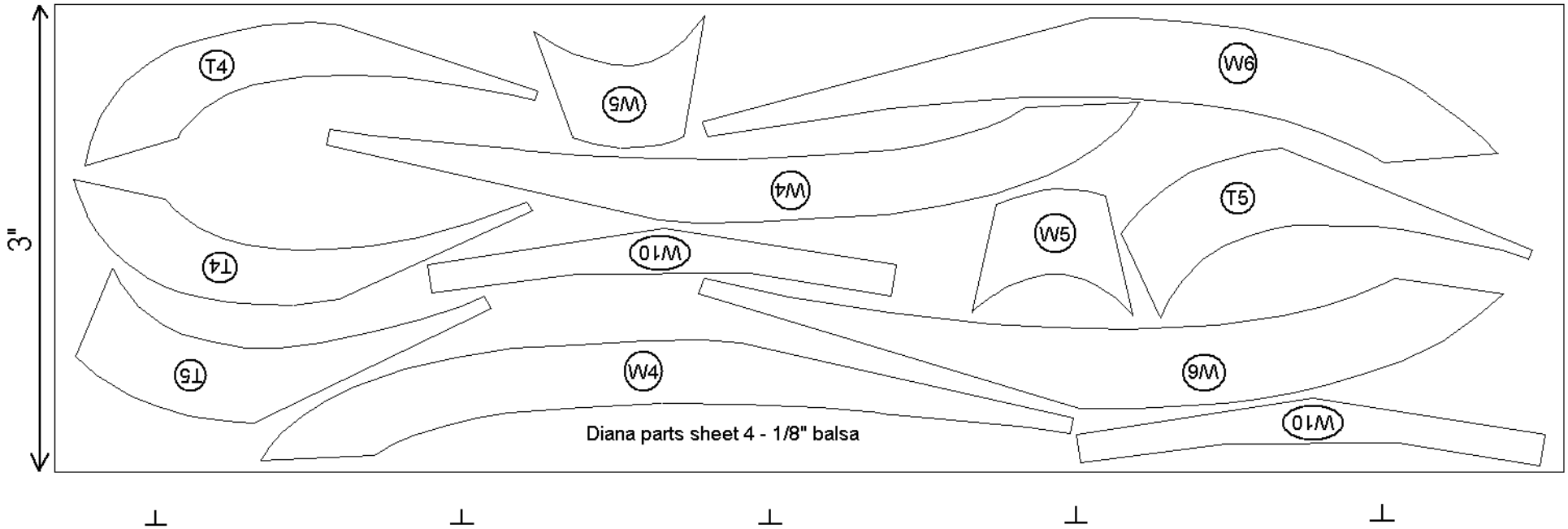
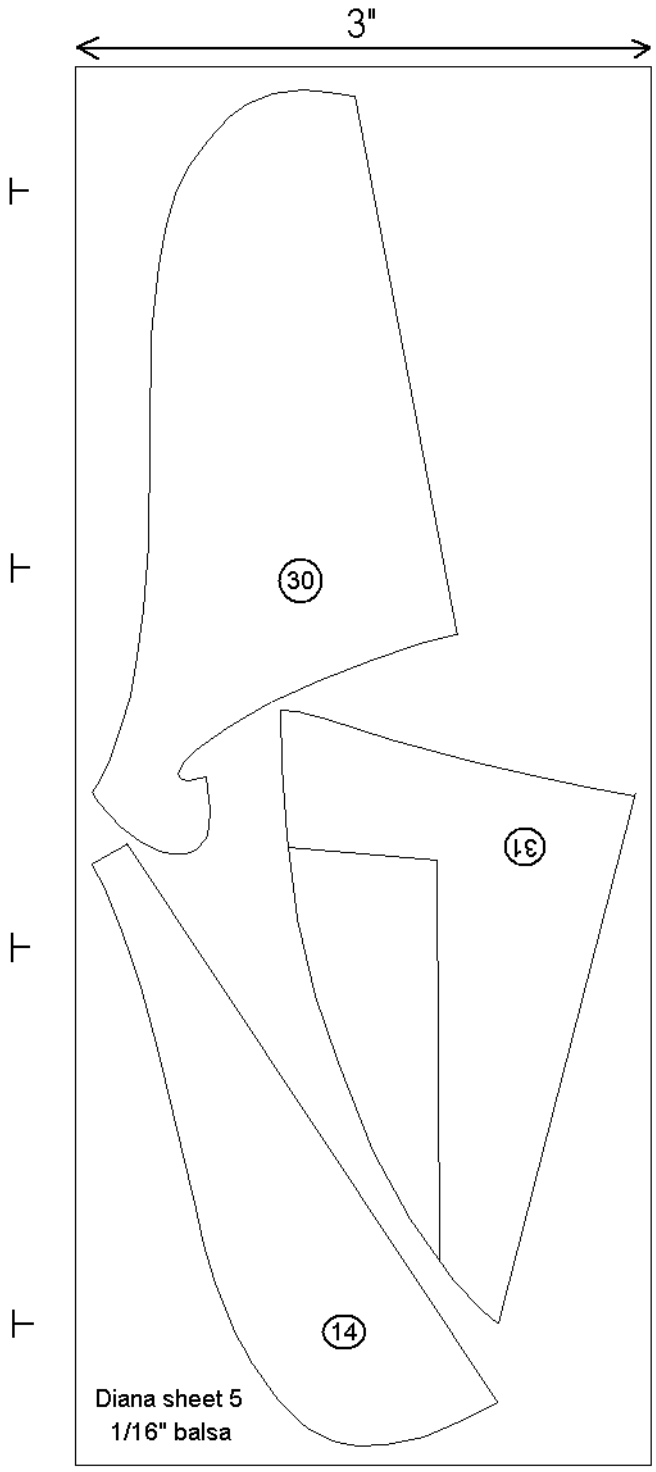
W3
22
Diana parts sheet 3 - 1/16" balsa


3"
T4
W5
W6
W4
T5
W5
W10
T4
T5
W4
W6
W10
Diana parts sheet 4 - 1/8" balsa


3"
30
31
14
Diana sheet 5
1/16" balsa