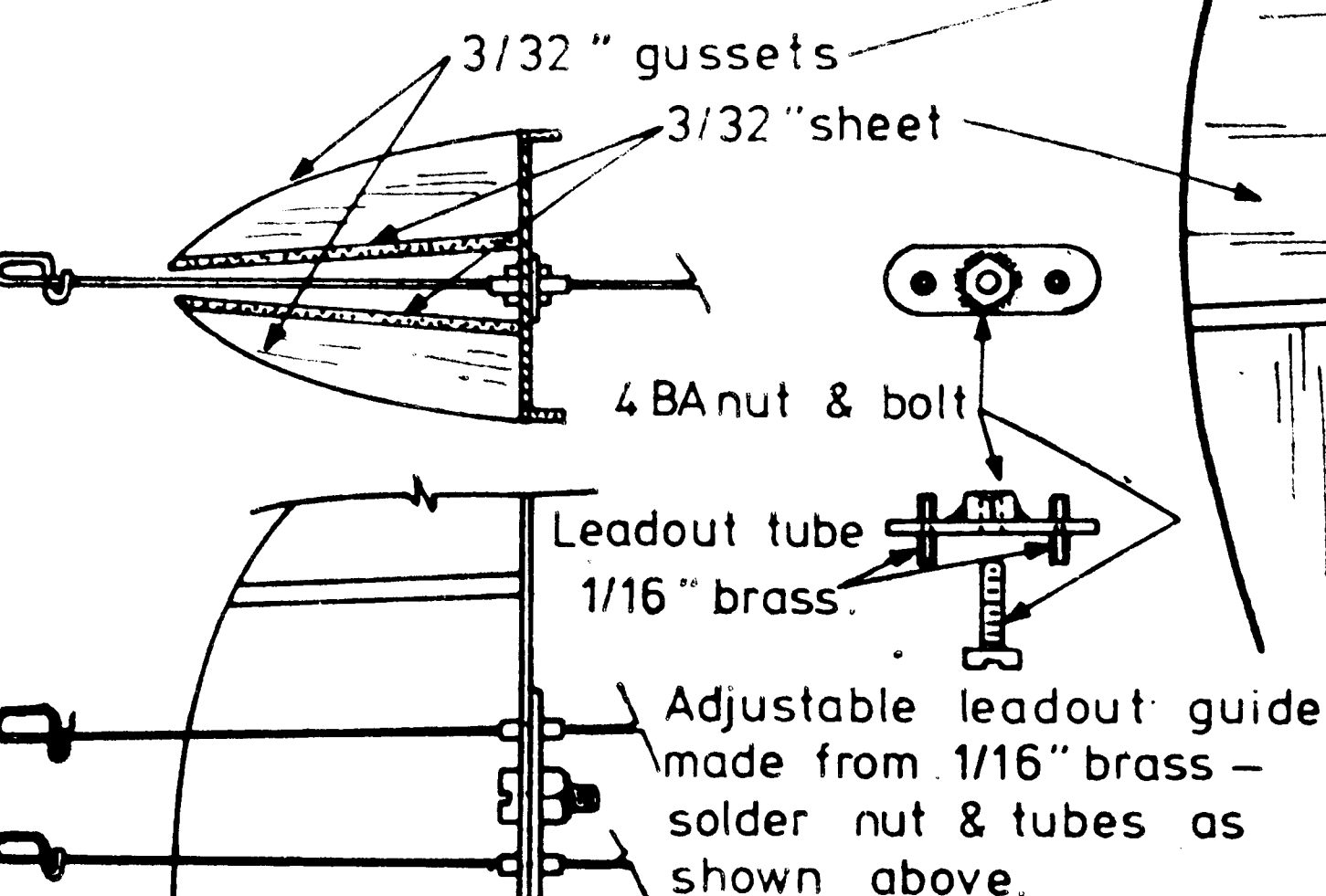


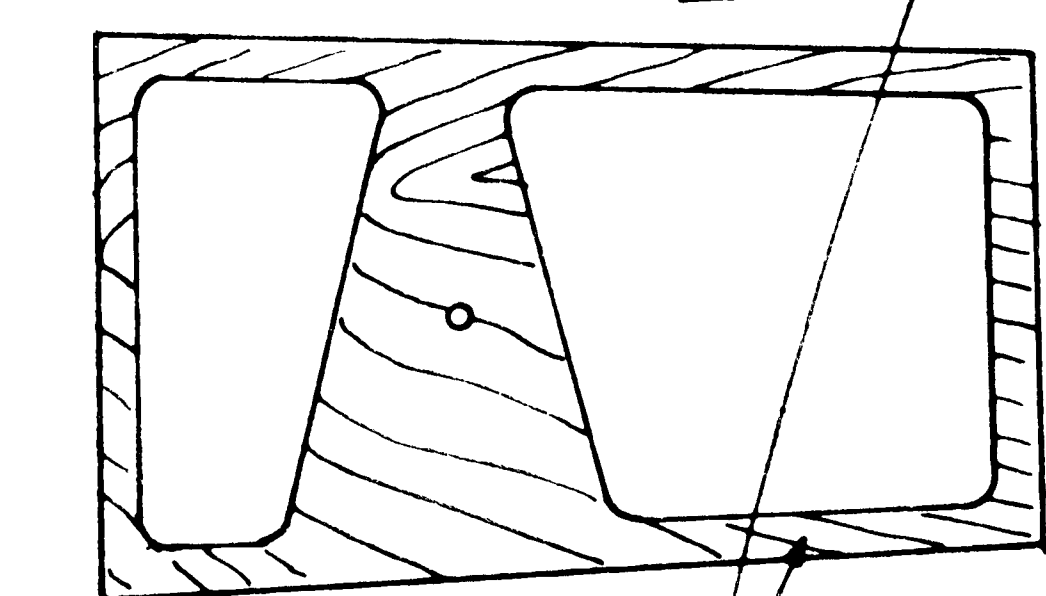
ALL WOOD IS BALSA UNLESS STATED

A 53" wingspan semi-scale control line stunt model
for 0.35-0.40 c.i.in. engines (APS code K)

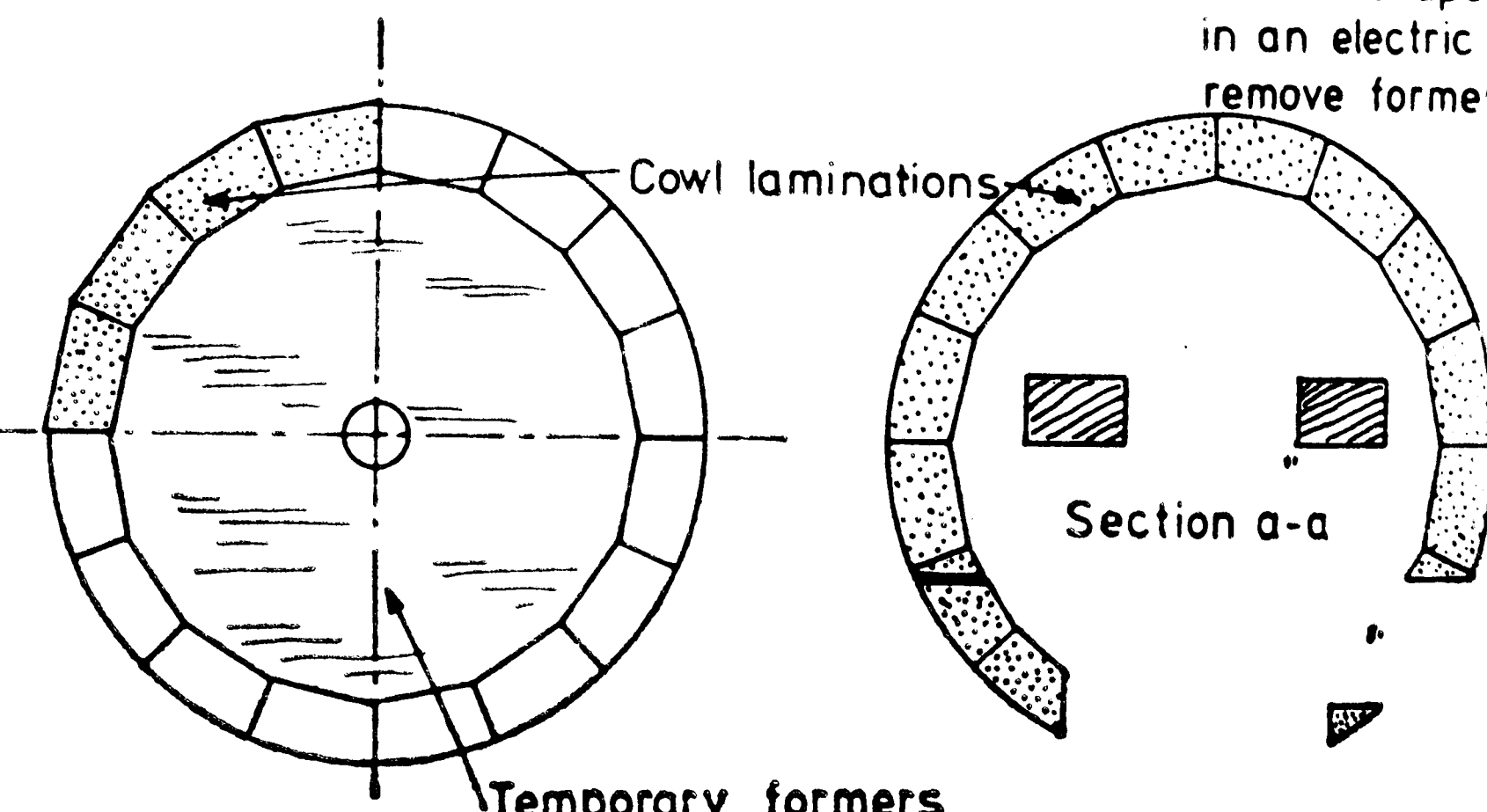
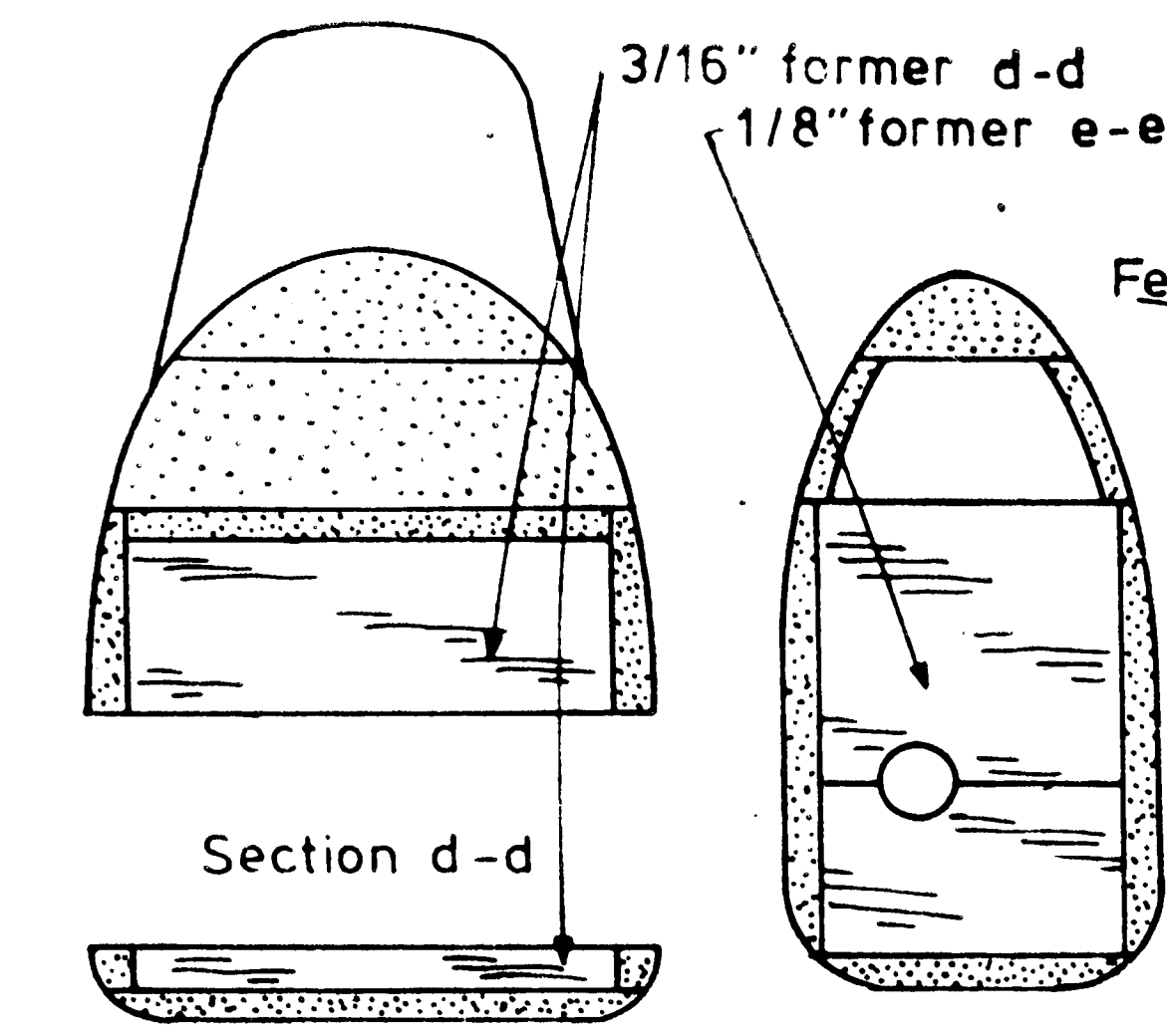
Soft block infill above & below both wing
tips forward of
gussets



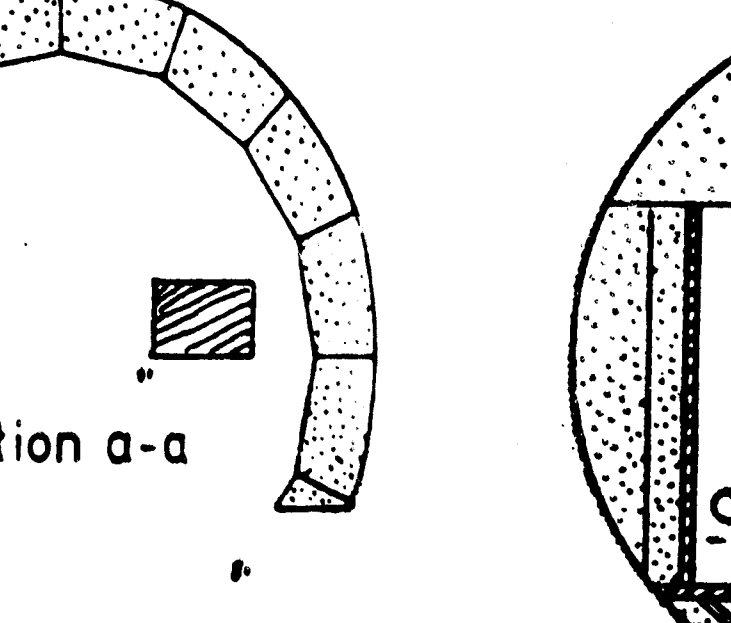
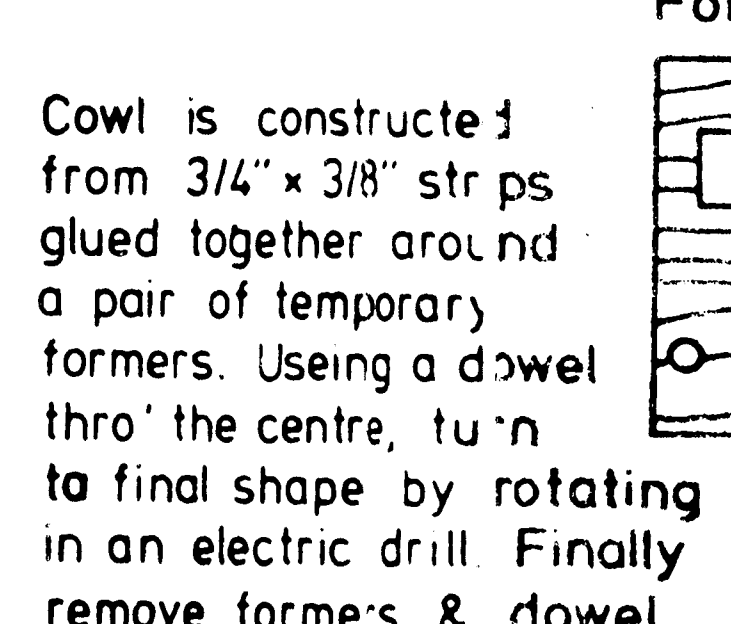
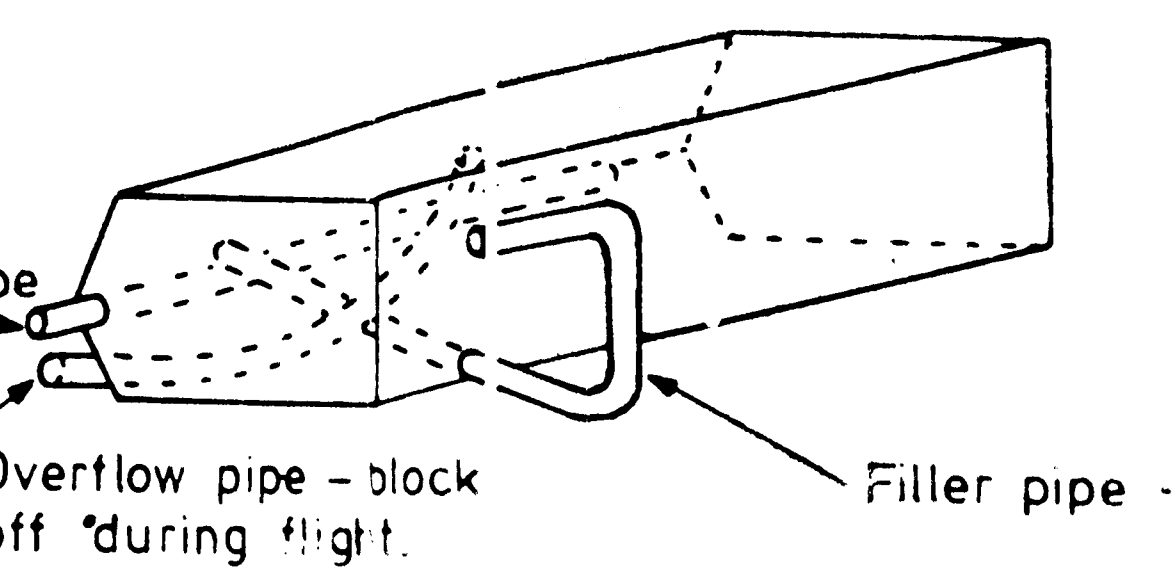
Scrap views (above) show
installation of adjustable
leadout guide.
Leadouts from 20 s.w.g.
piano wire or heavy-
weight laystrate



Top & bottom bellcrank
platforms from 1/8" ply

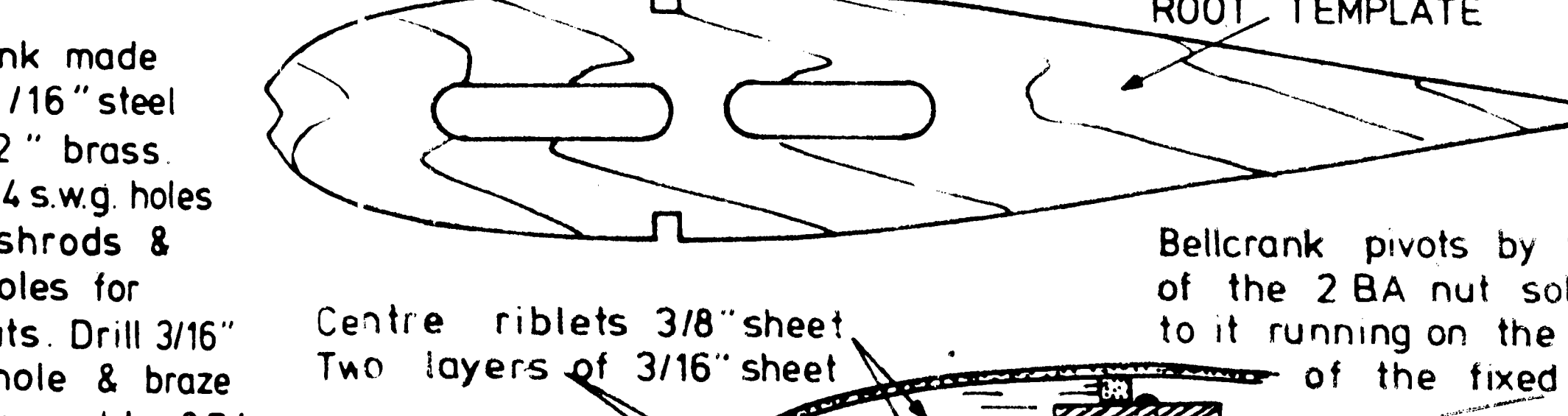


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

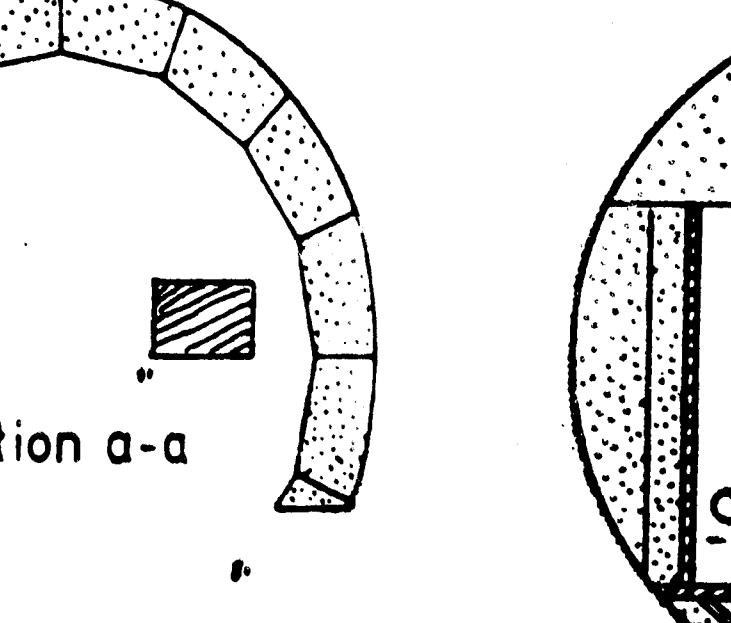
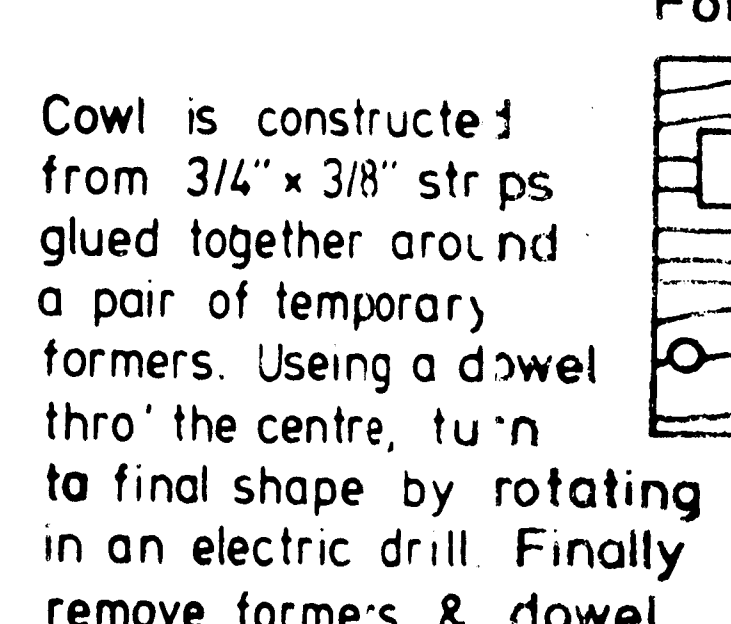
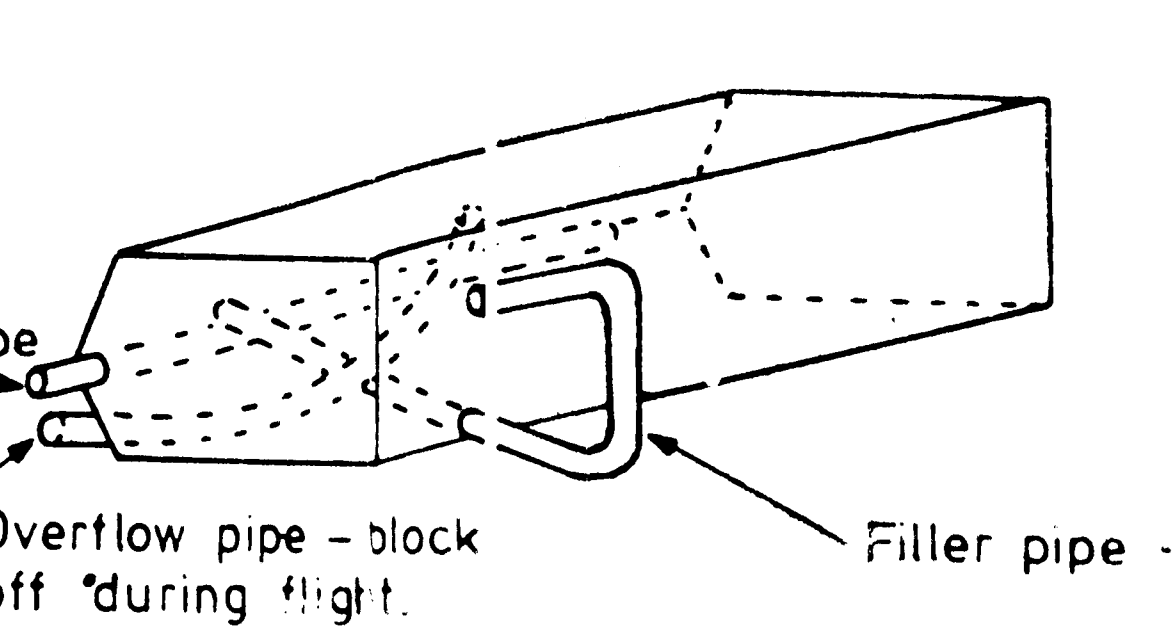


Temporary formers

Set for adjustable line guide.

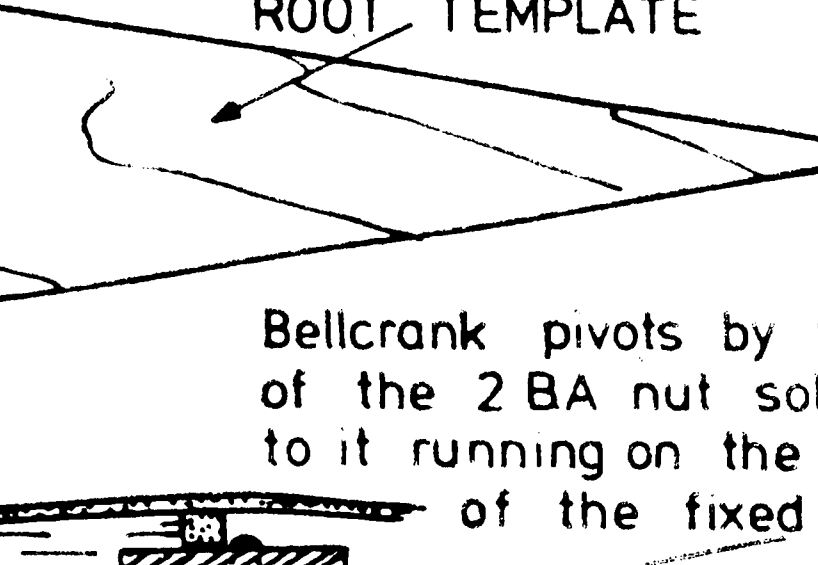


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

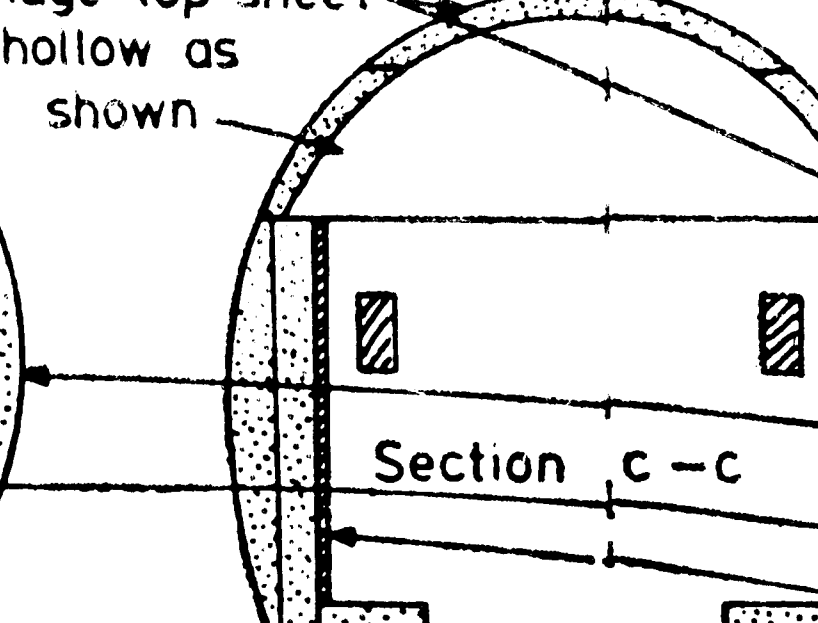
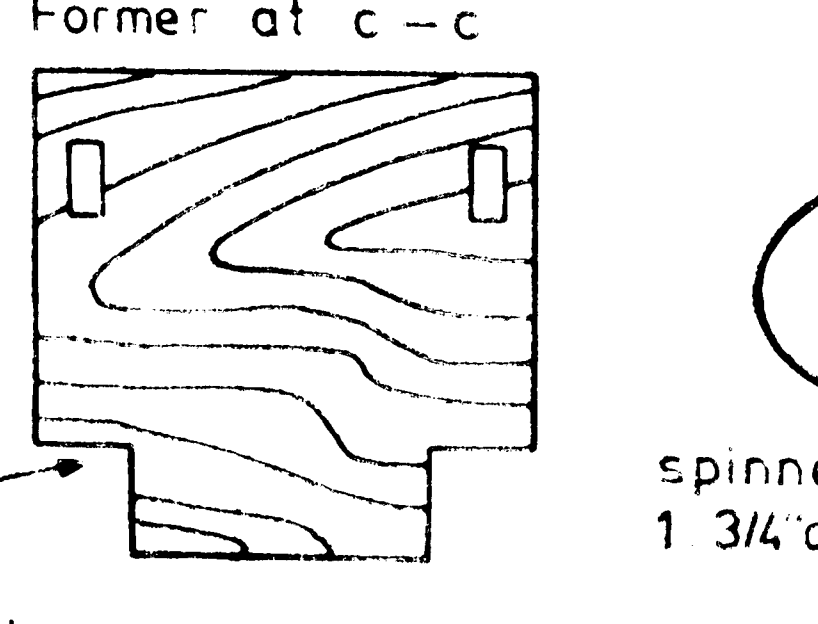
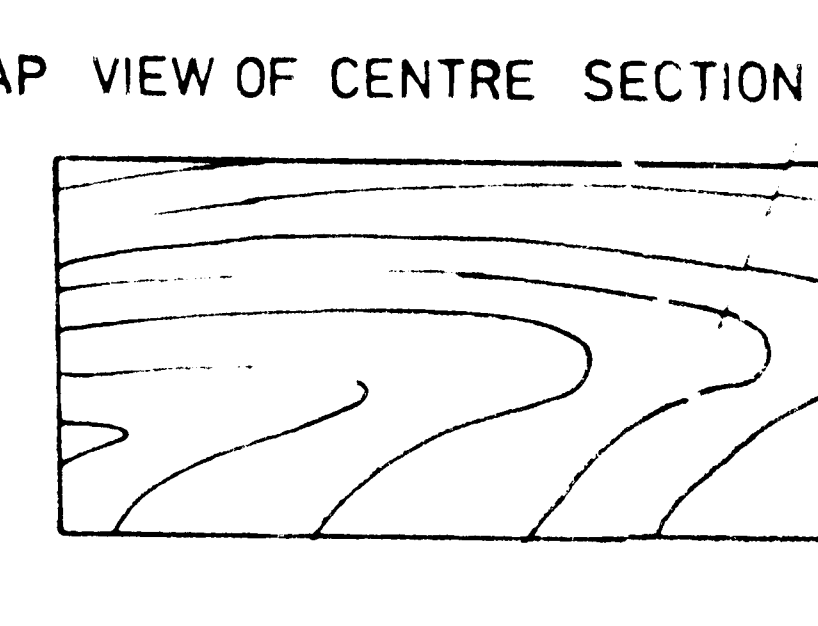


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

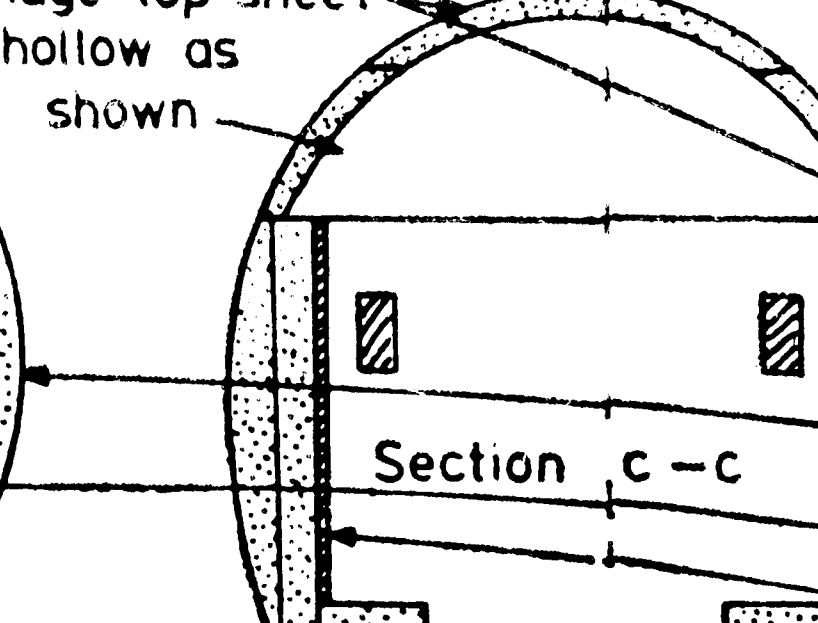
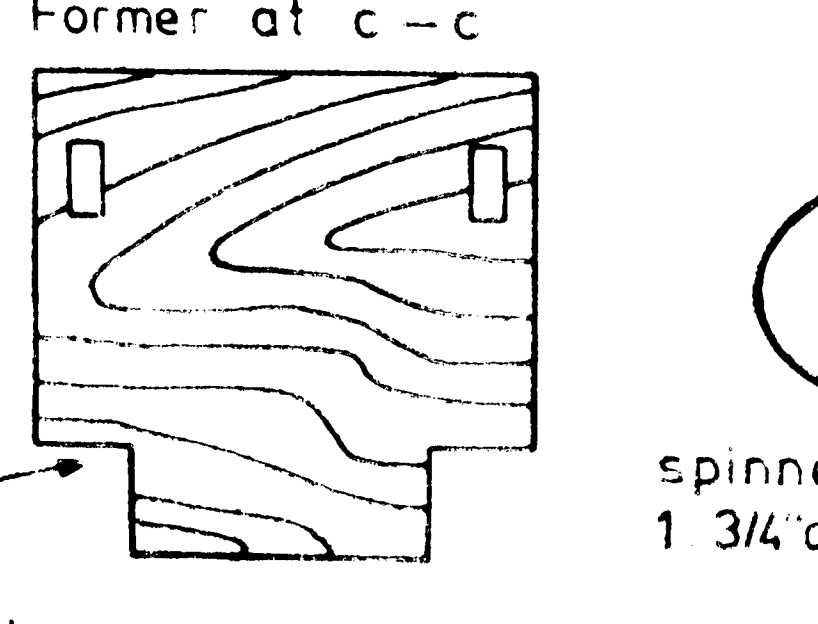


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube



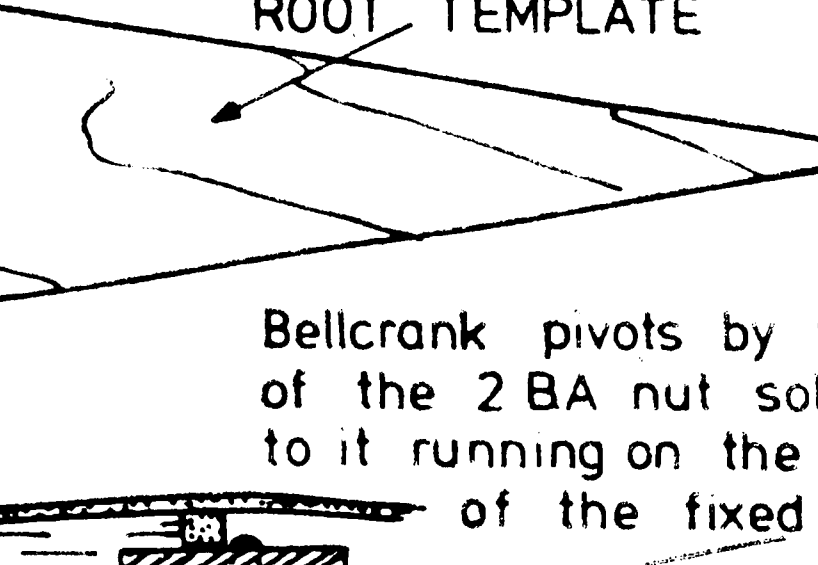
Temporary formers

SCRAP VIEW OF CENTRE SECTION

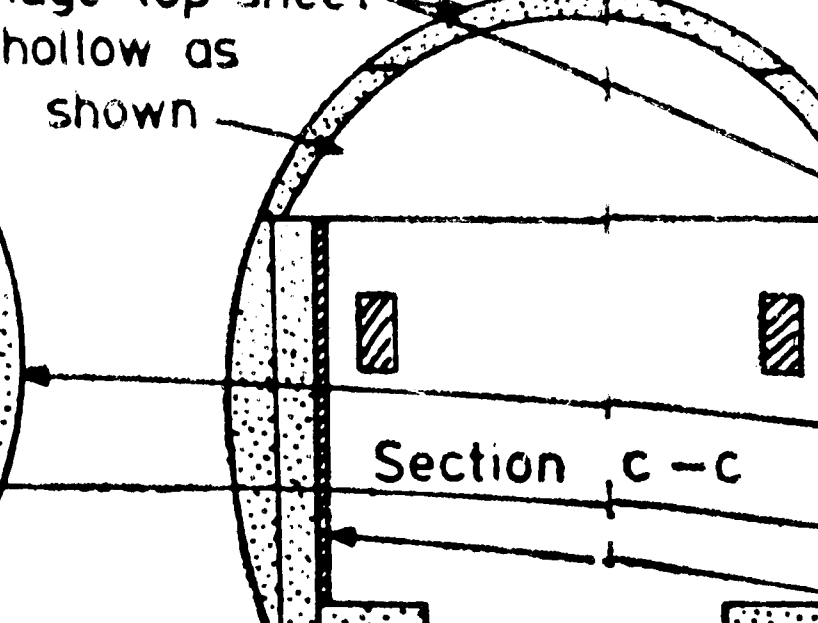
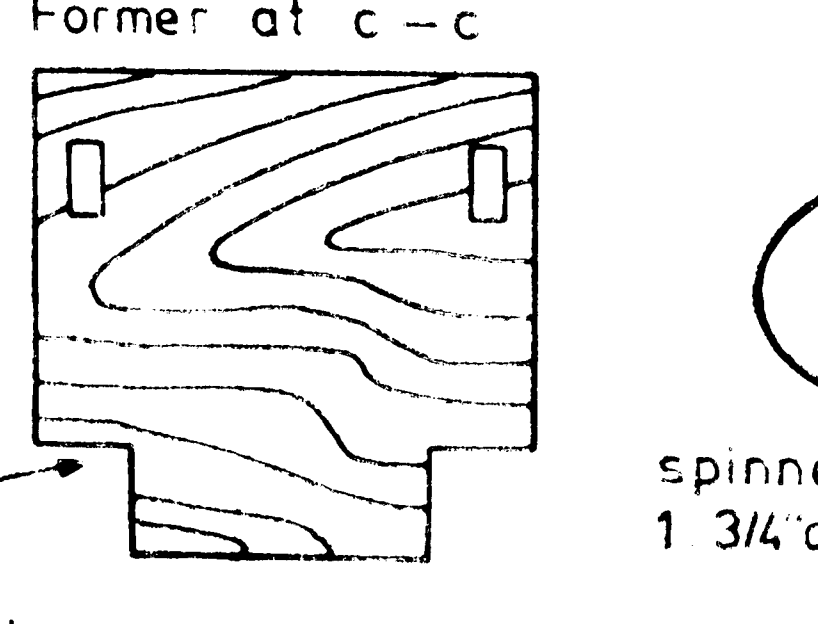
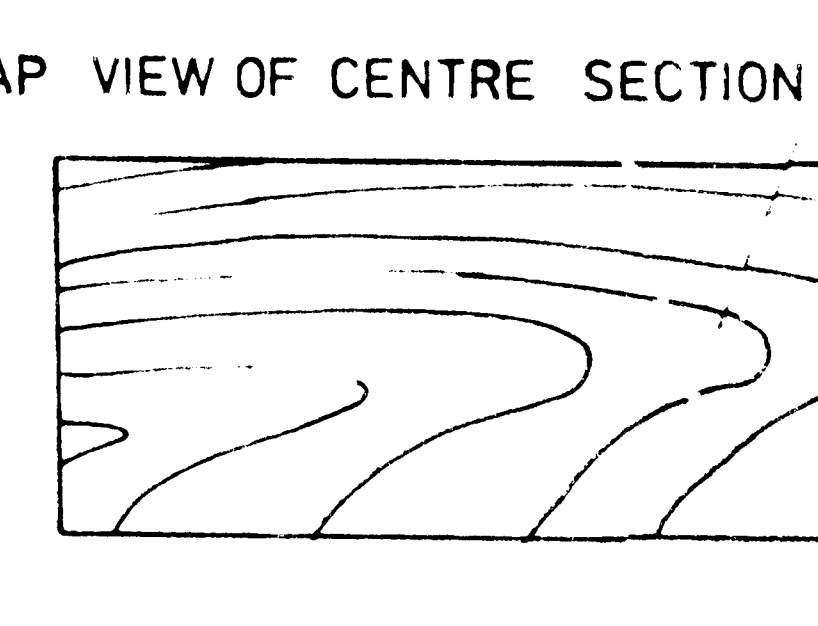


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

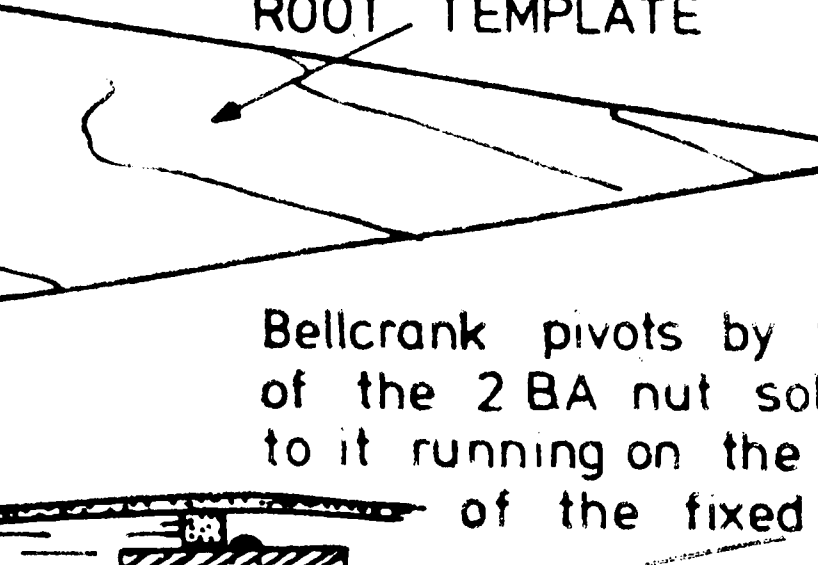


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

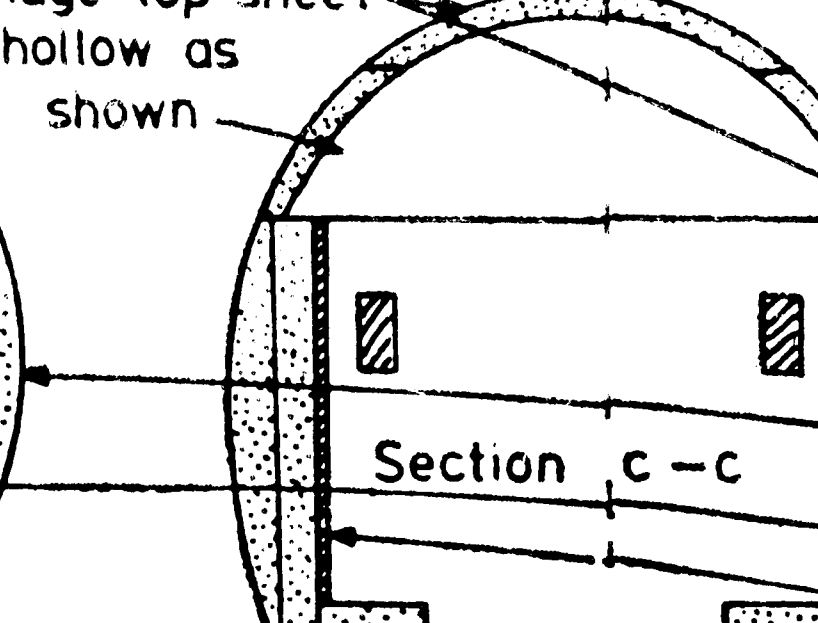
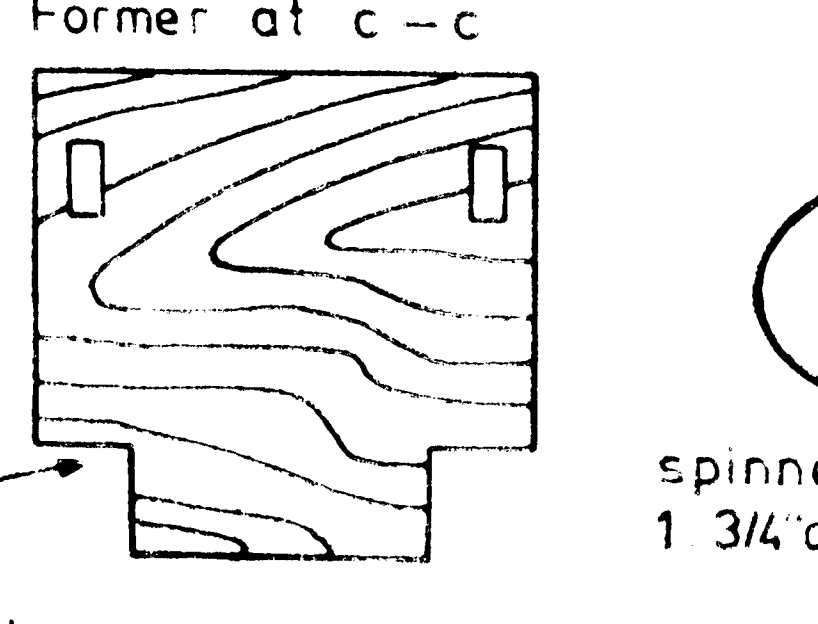
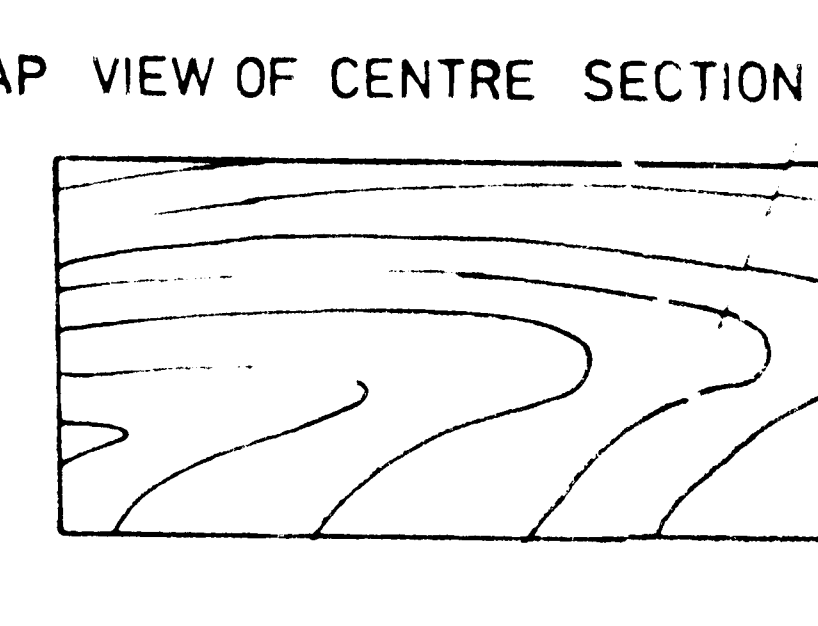


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

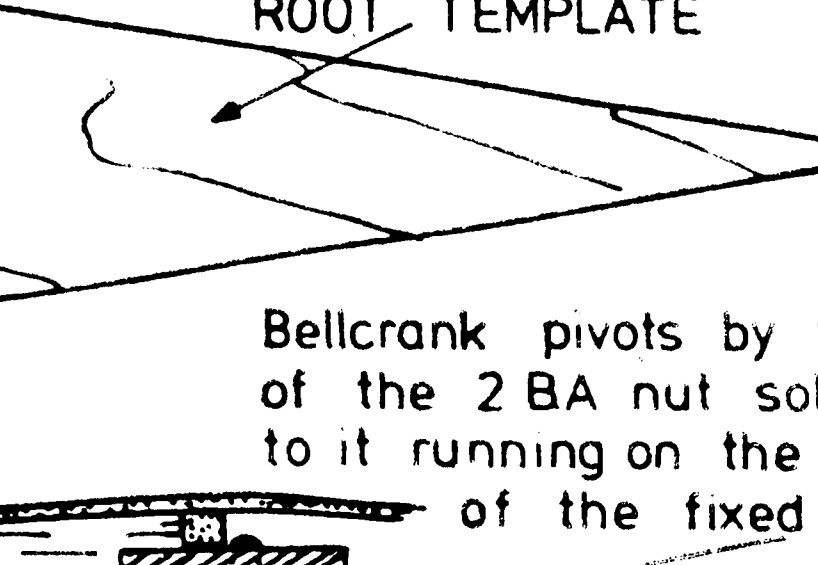


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

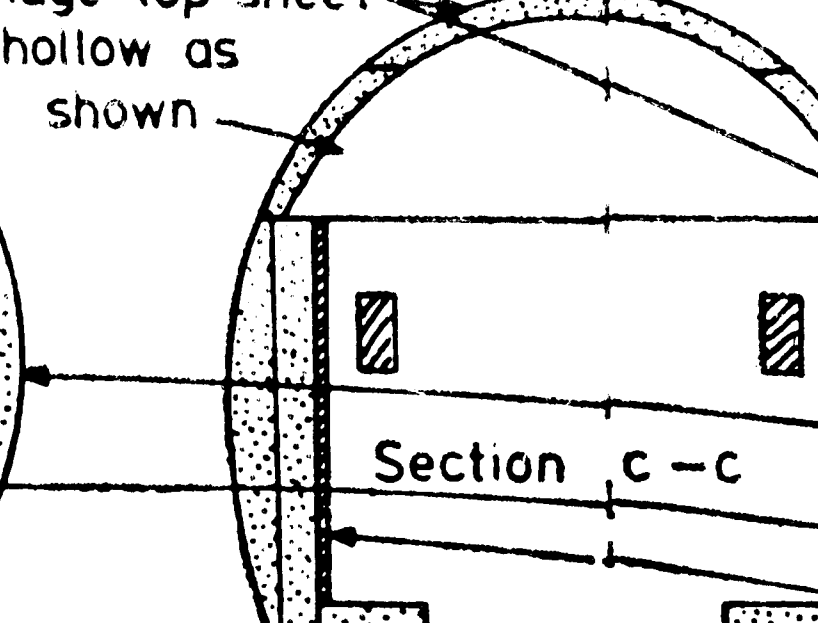
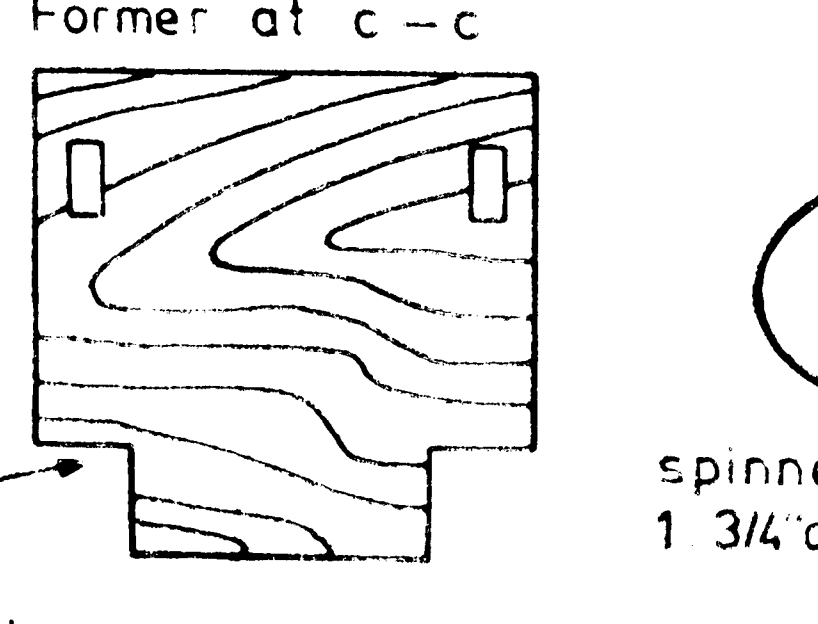
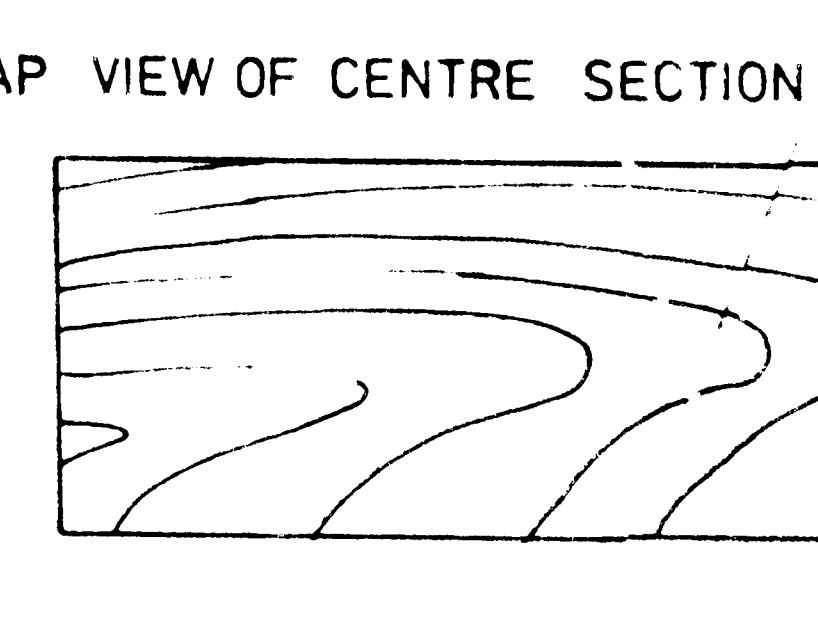


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

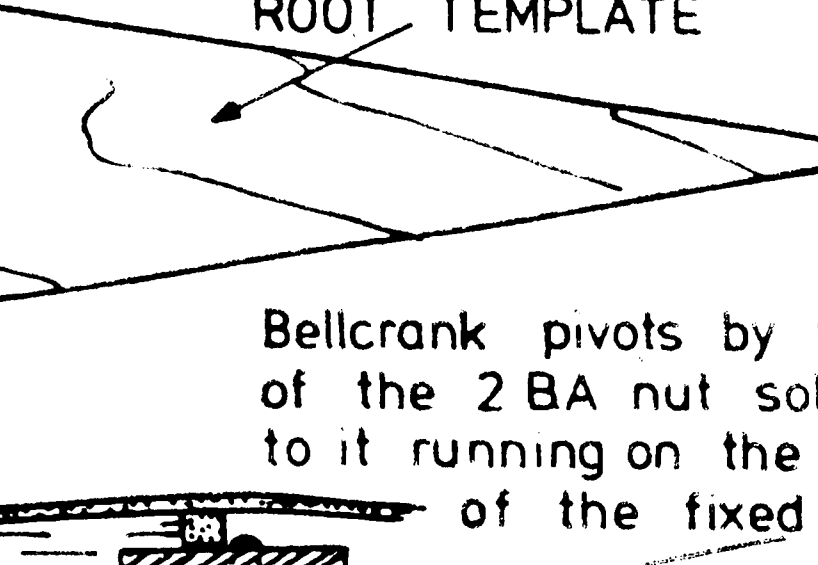


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

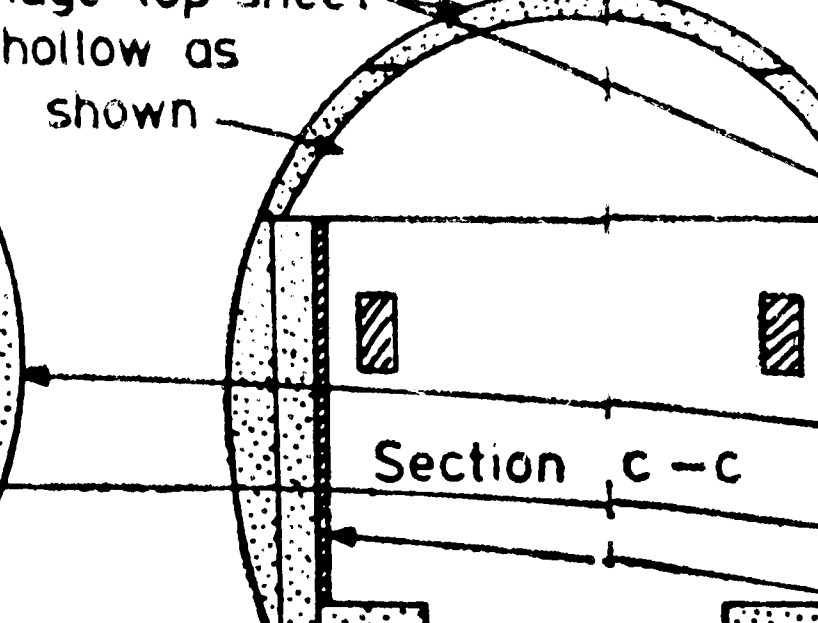
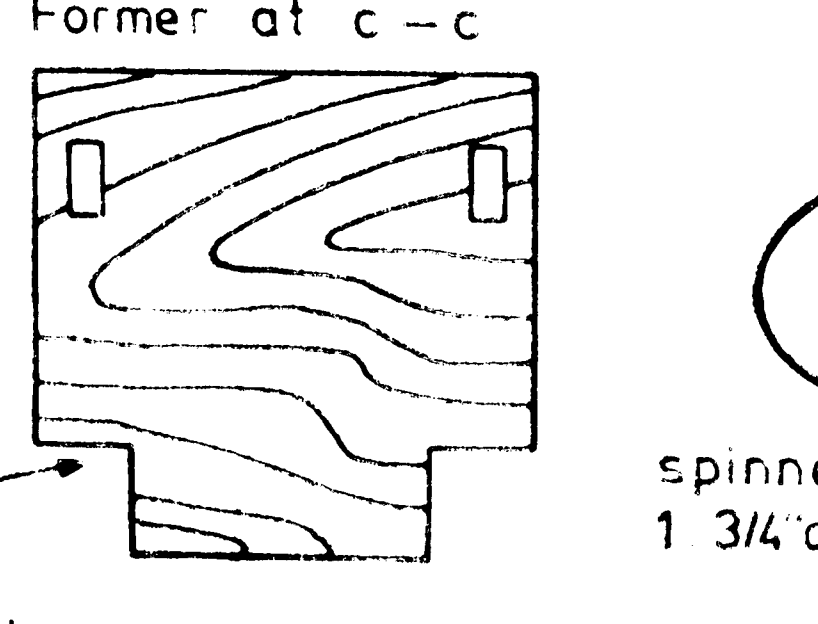
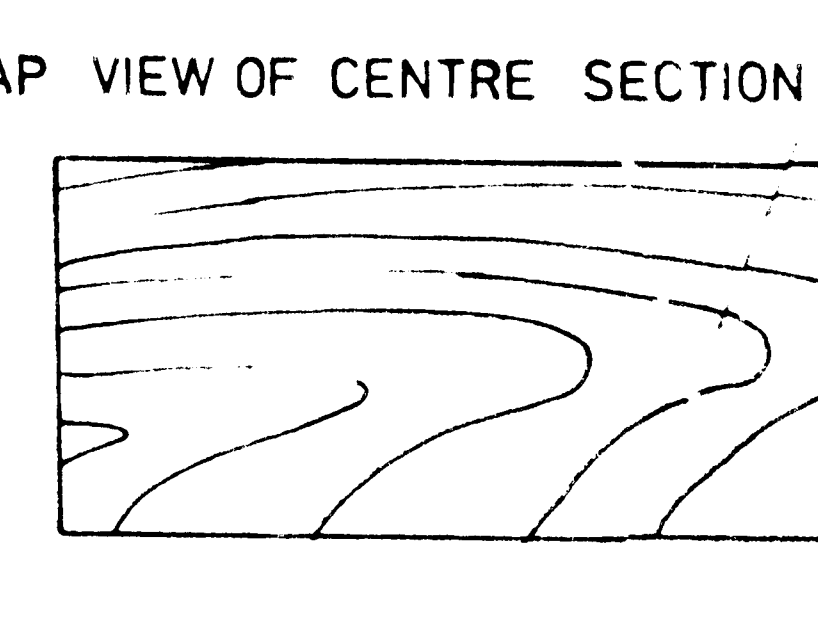


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

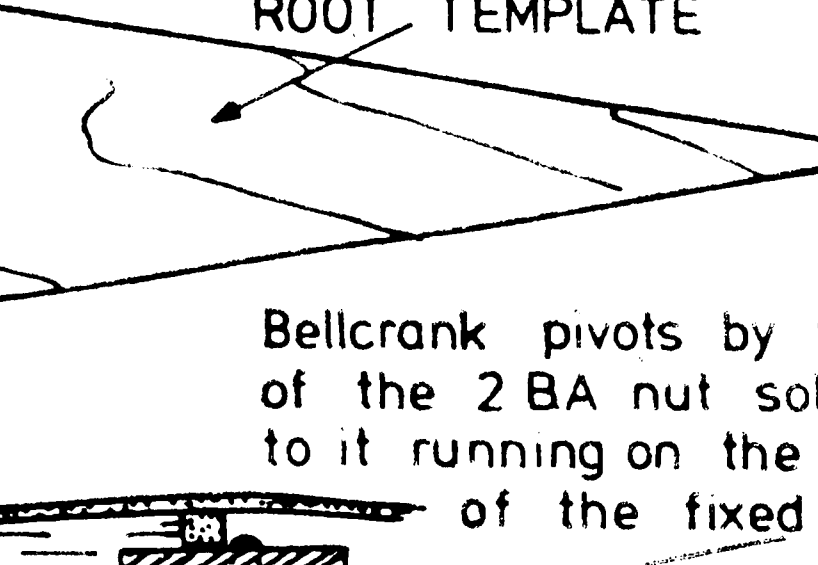


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

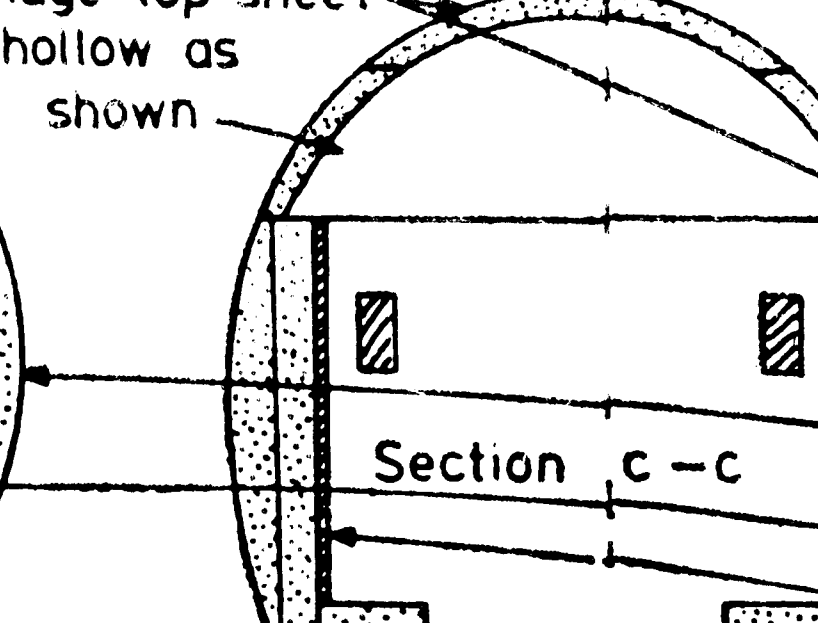
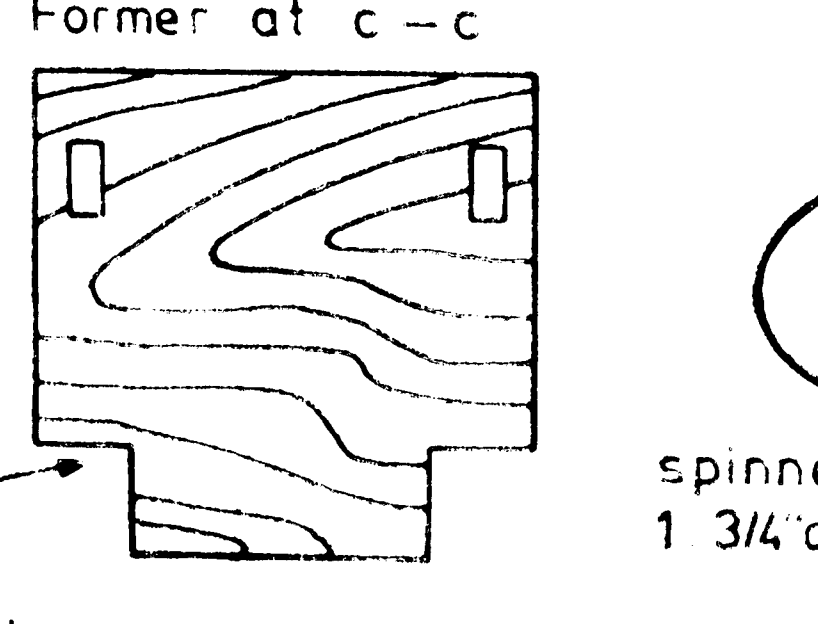
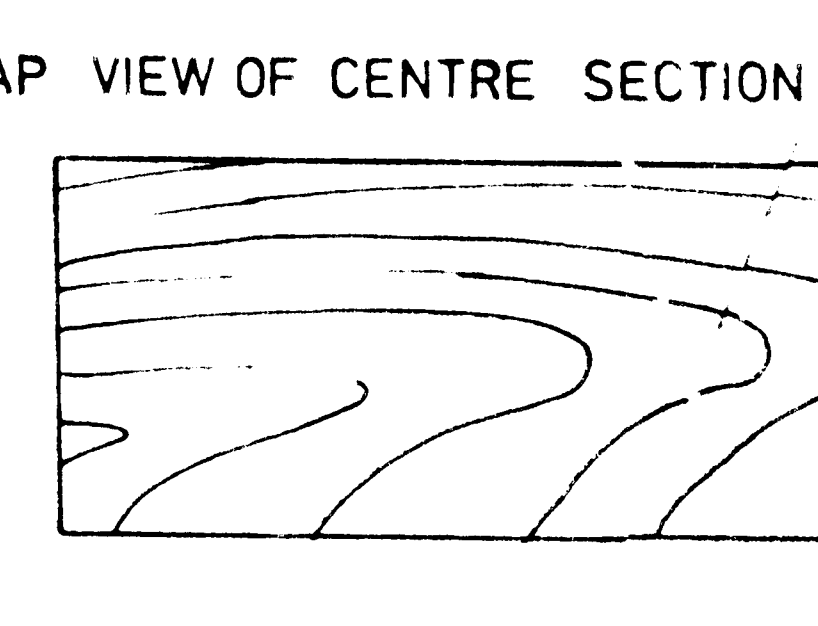


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

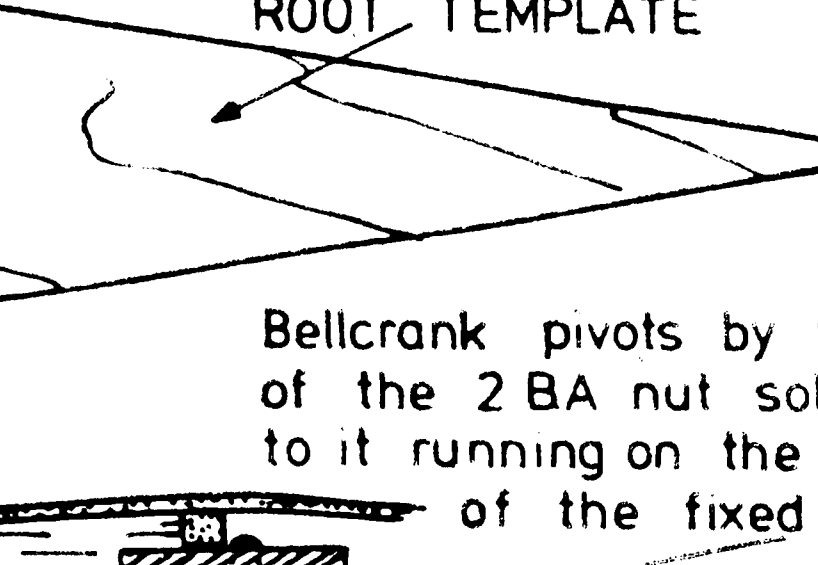


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

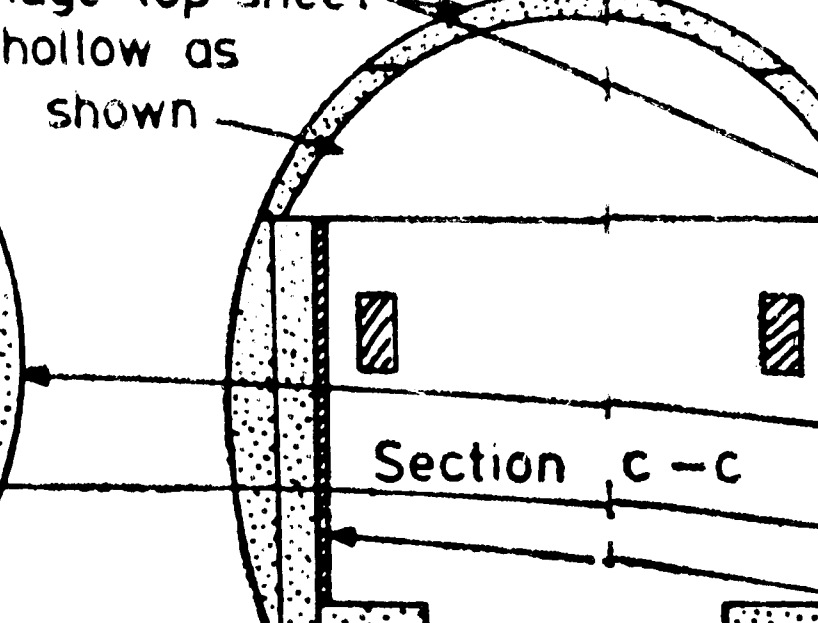
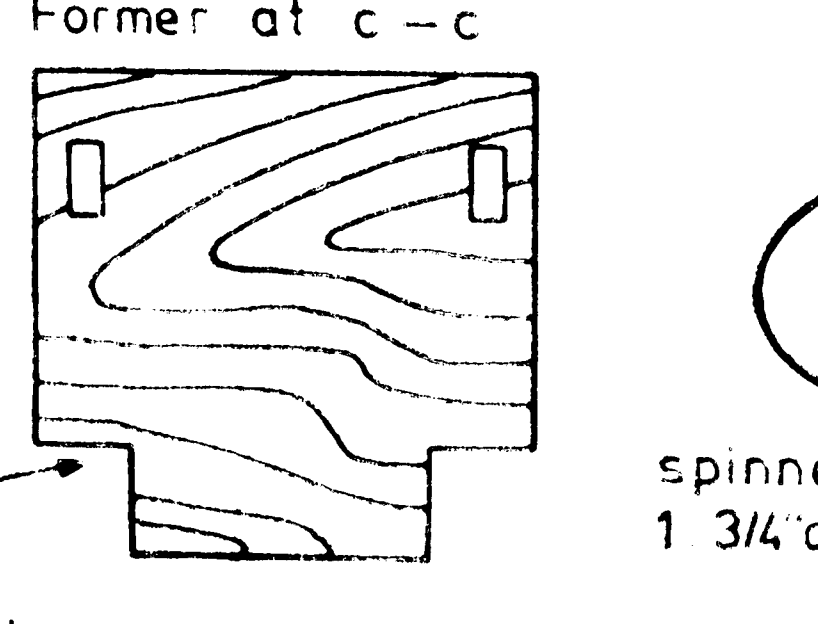
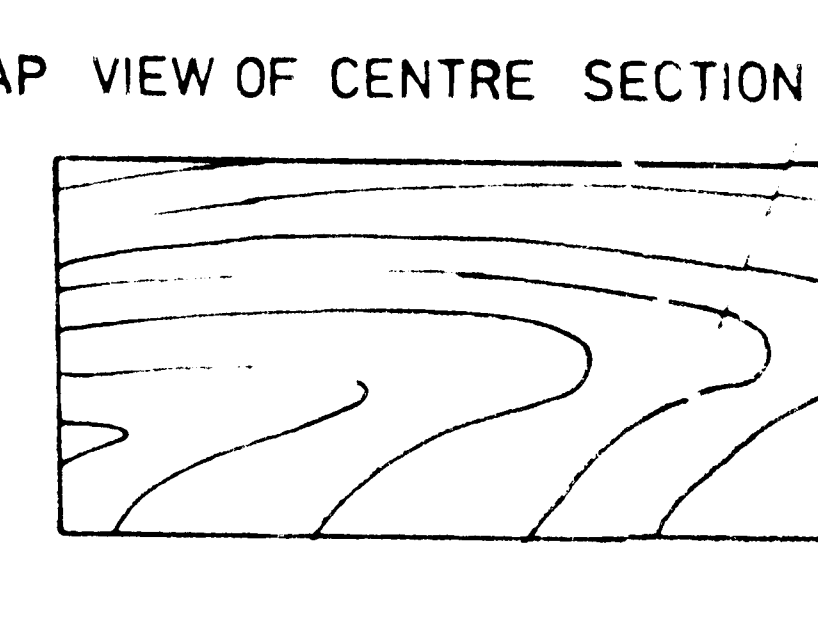


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

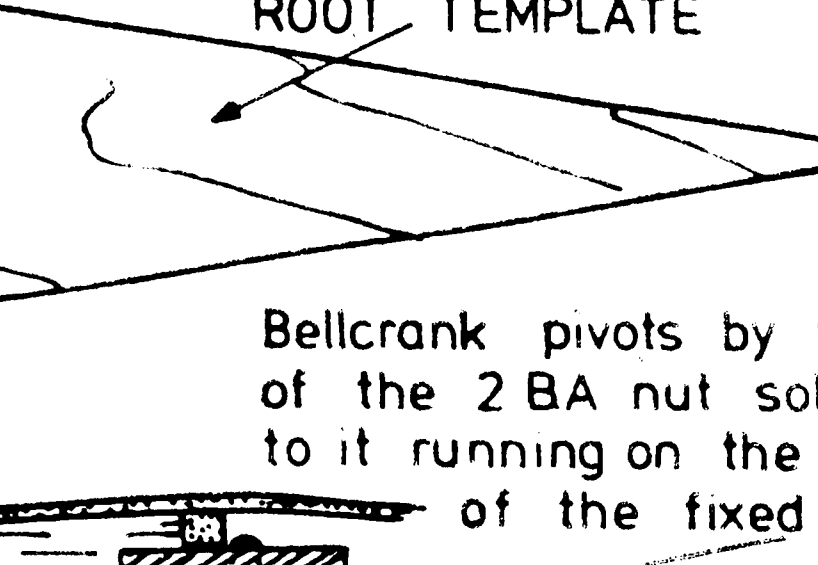


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

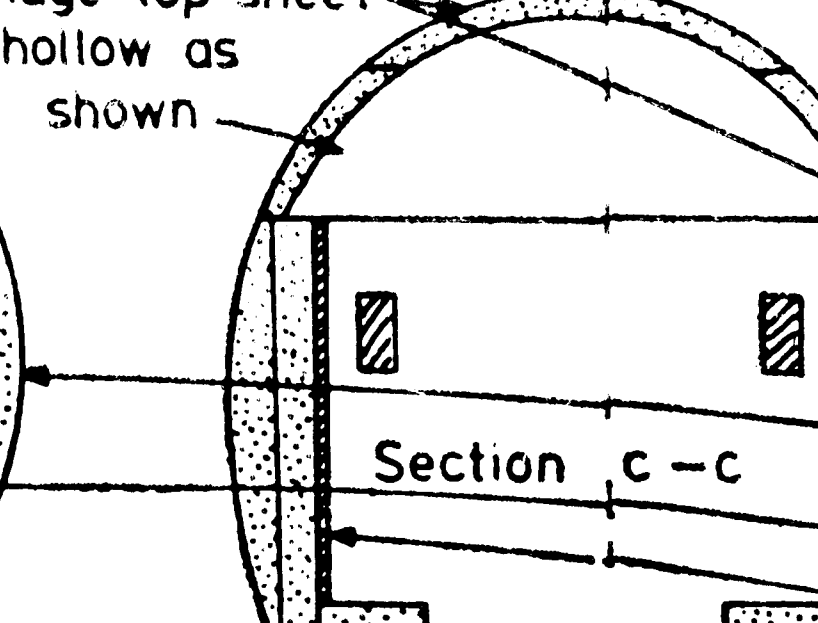
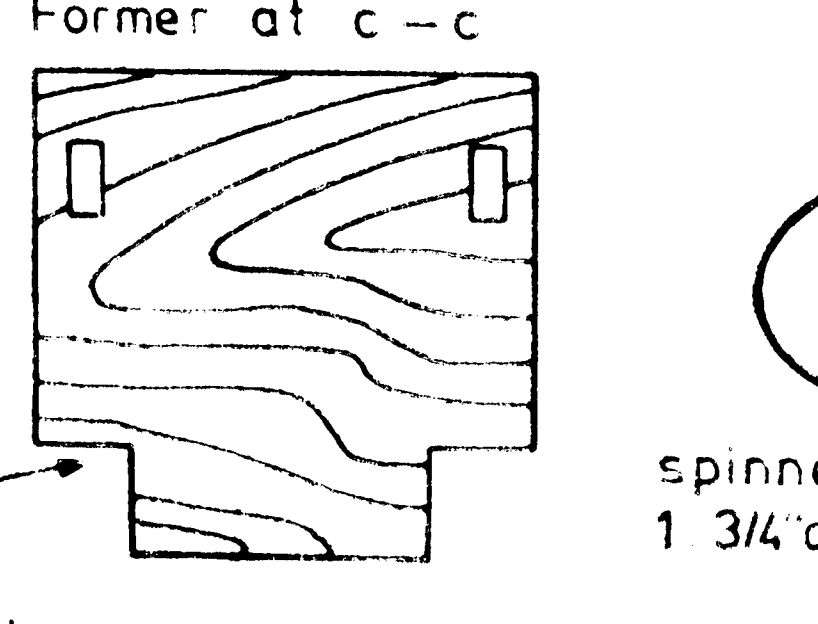
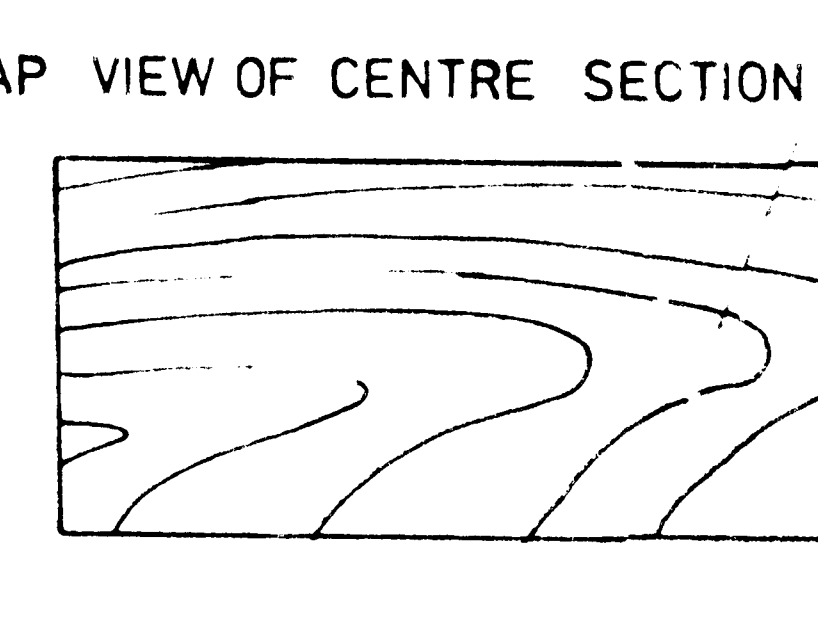


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

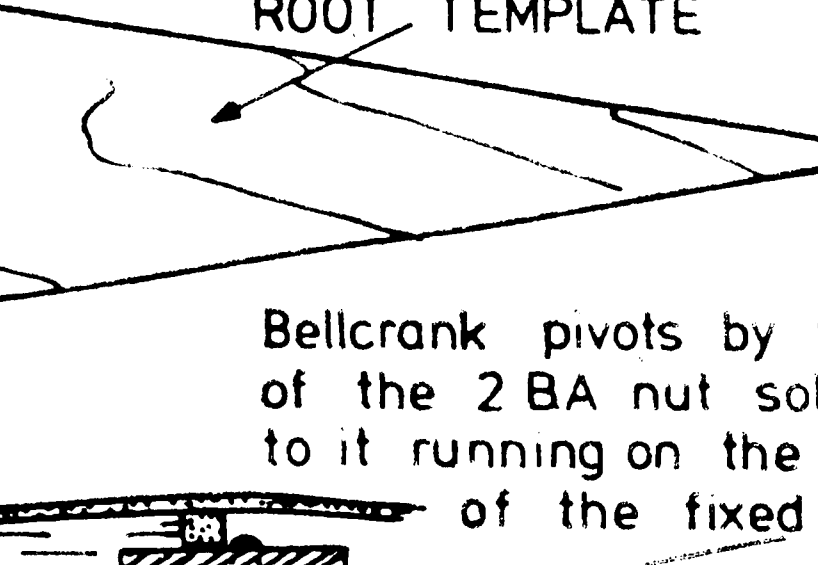


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

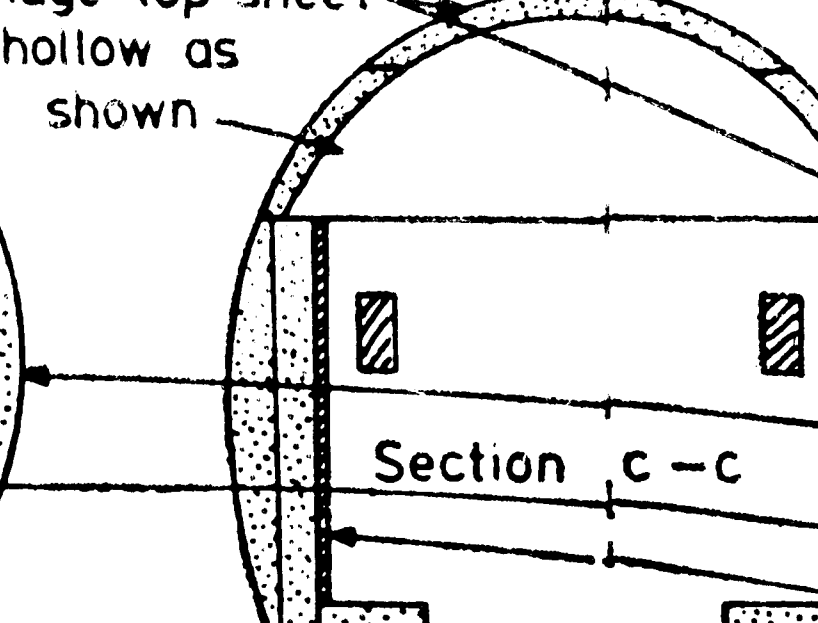
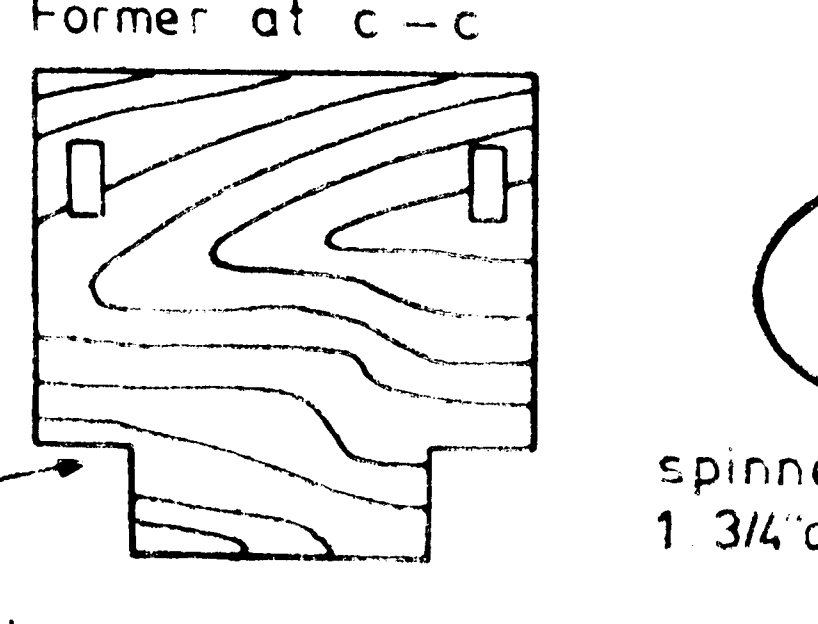
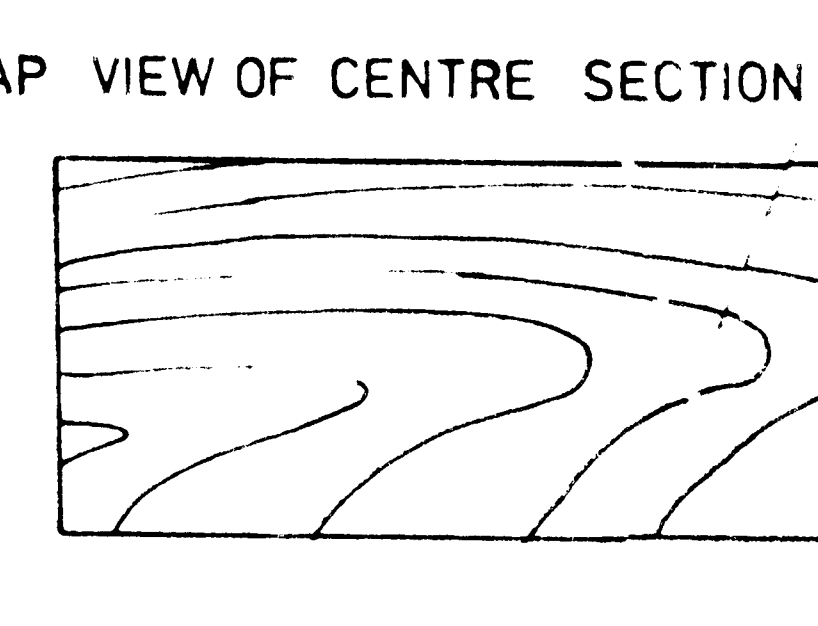


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

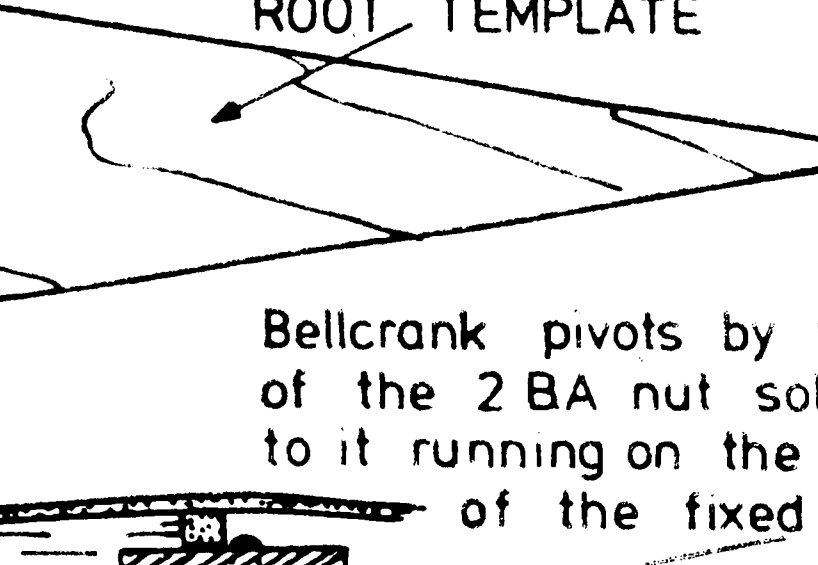


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

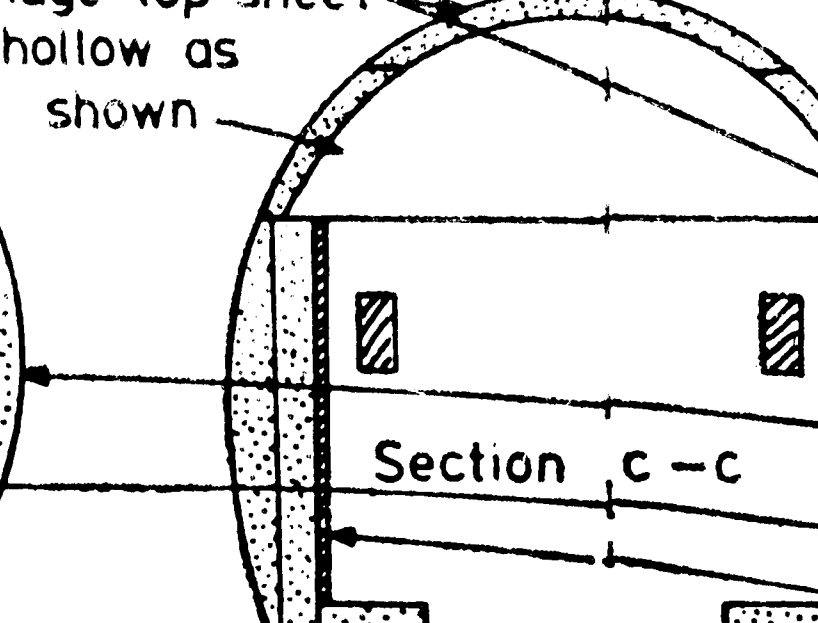
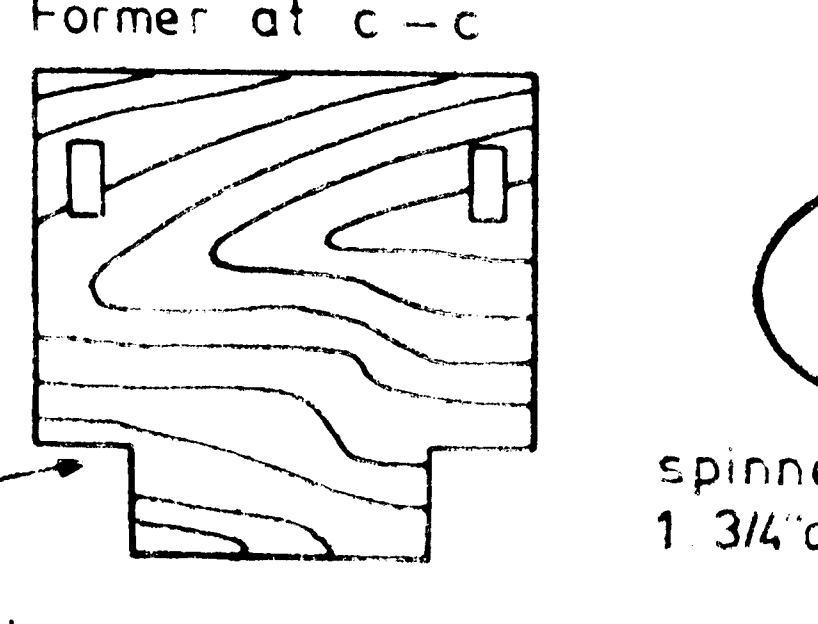
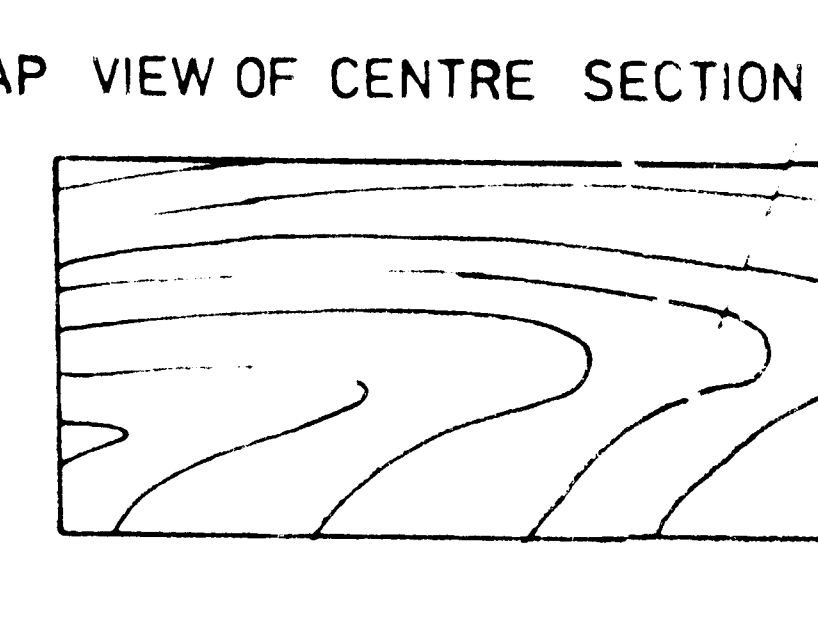


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

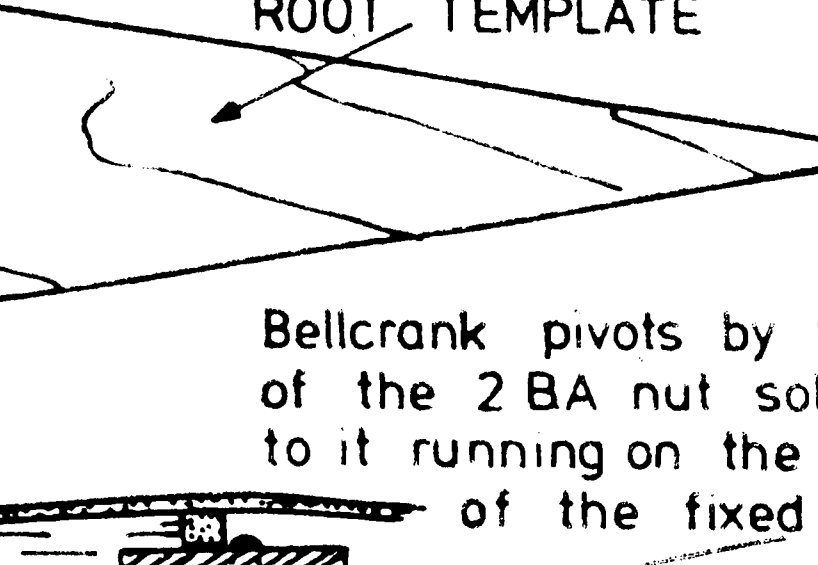


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

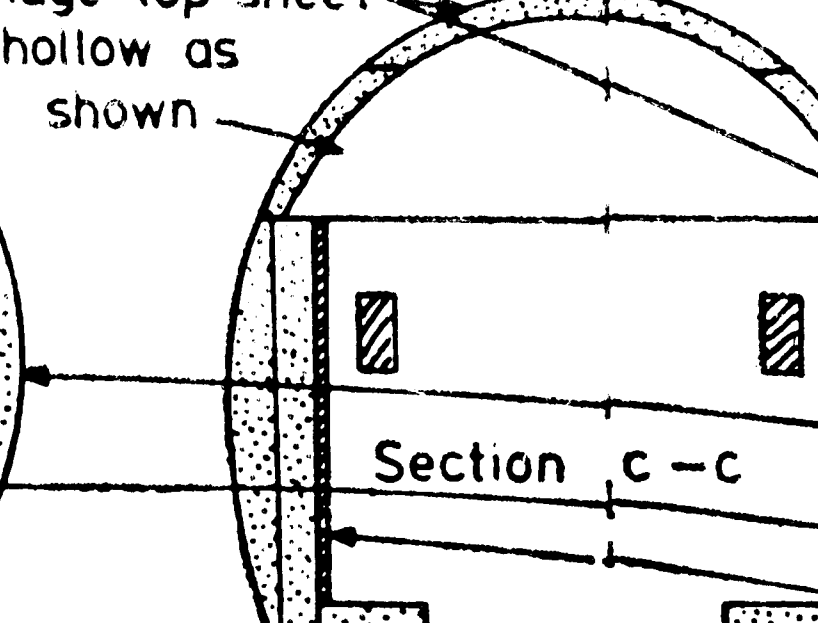
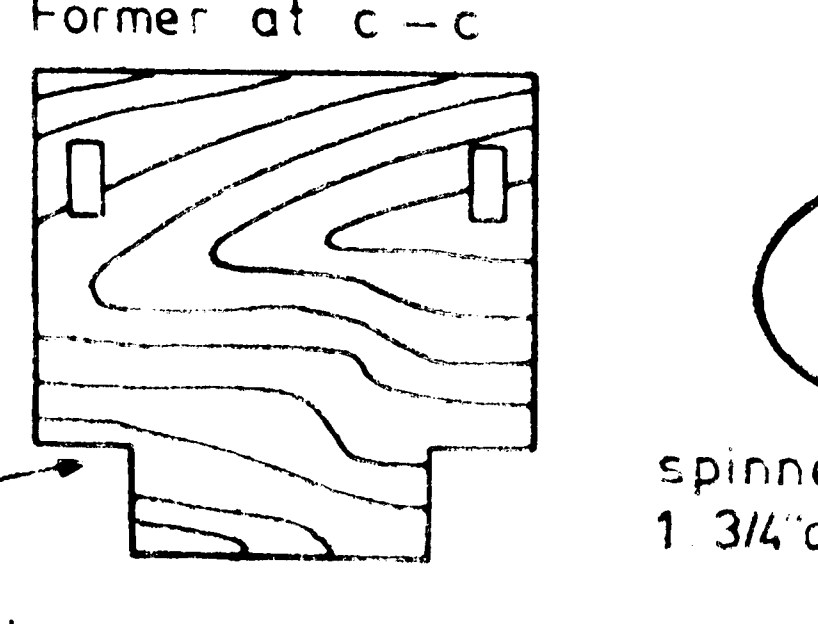
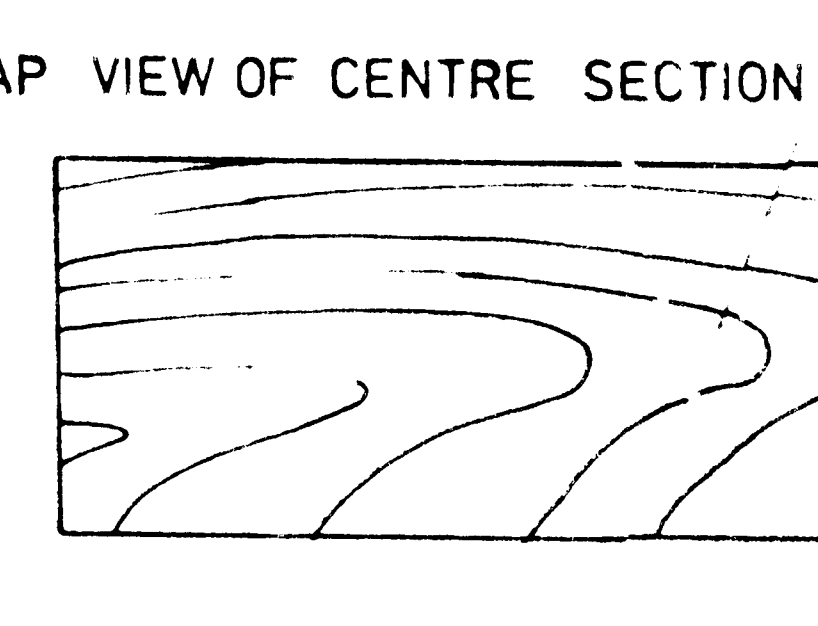


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

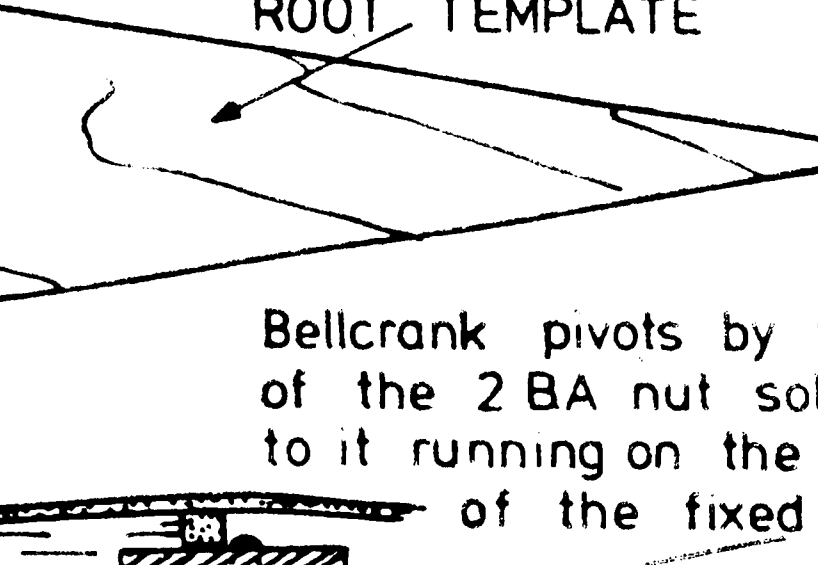


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

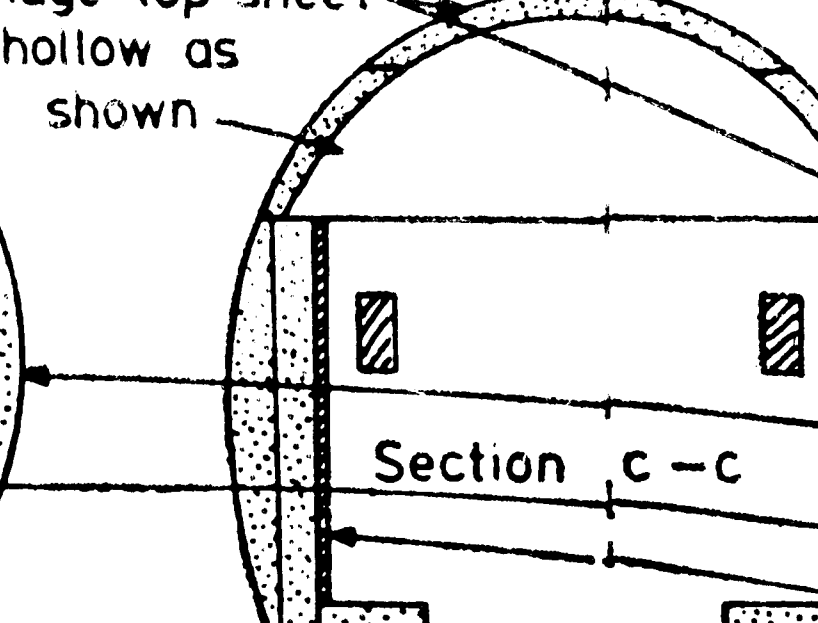
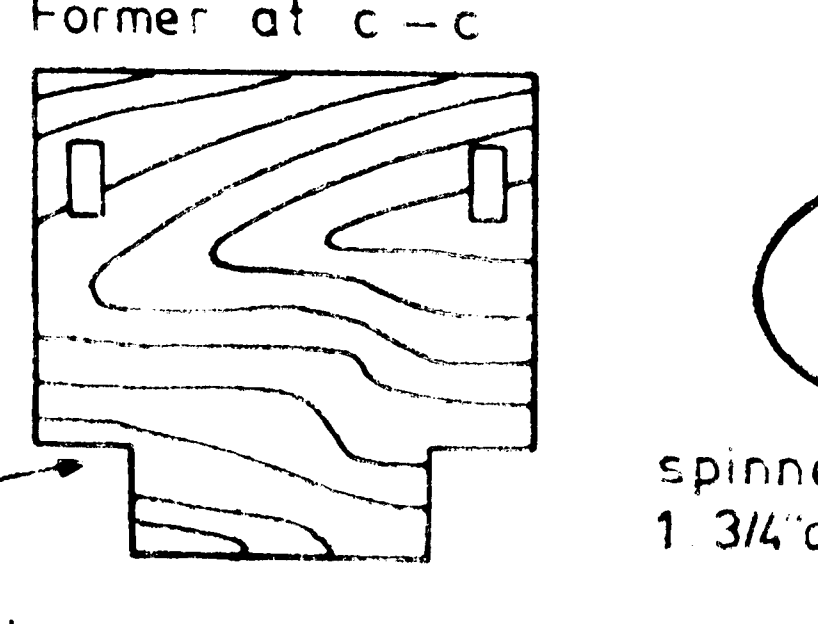
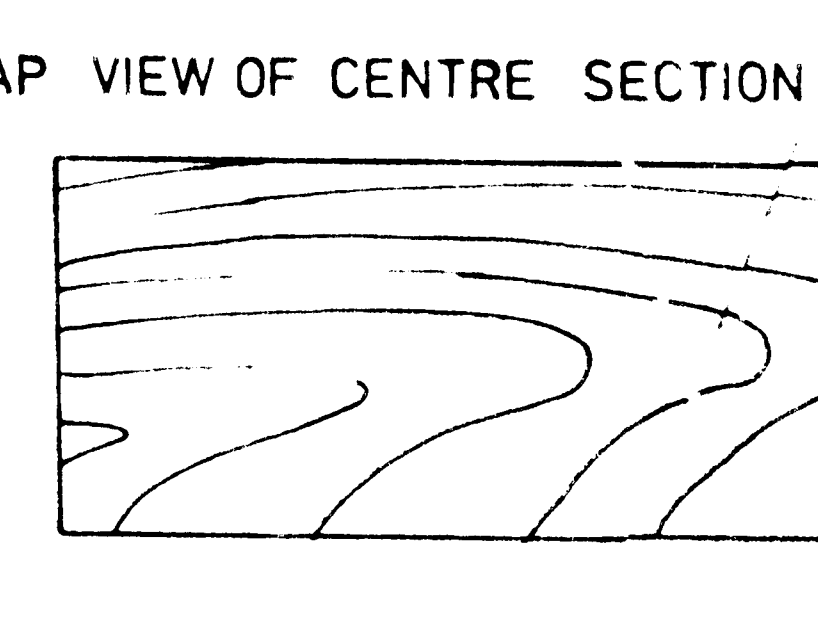


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.

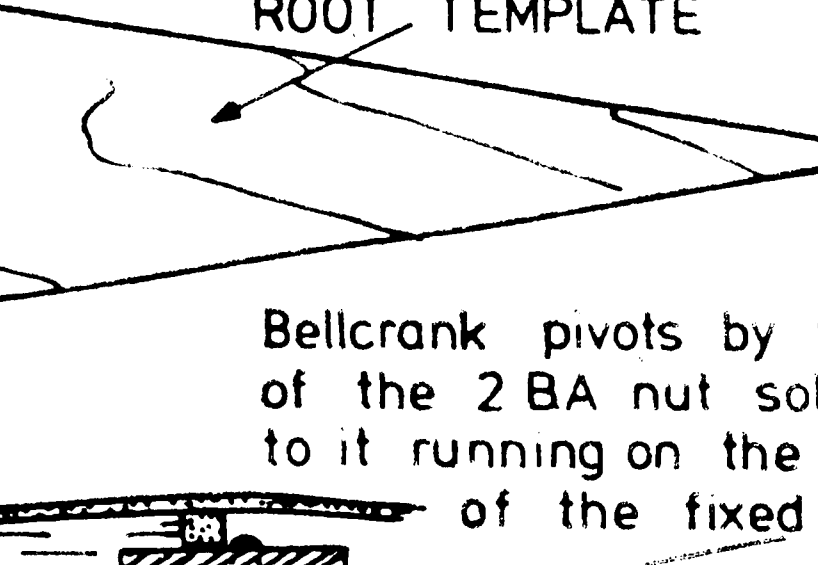


Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube

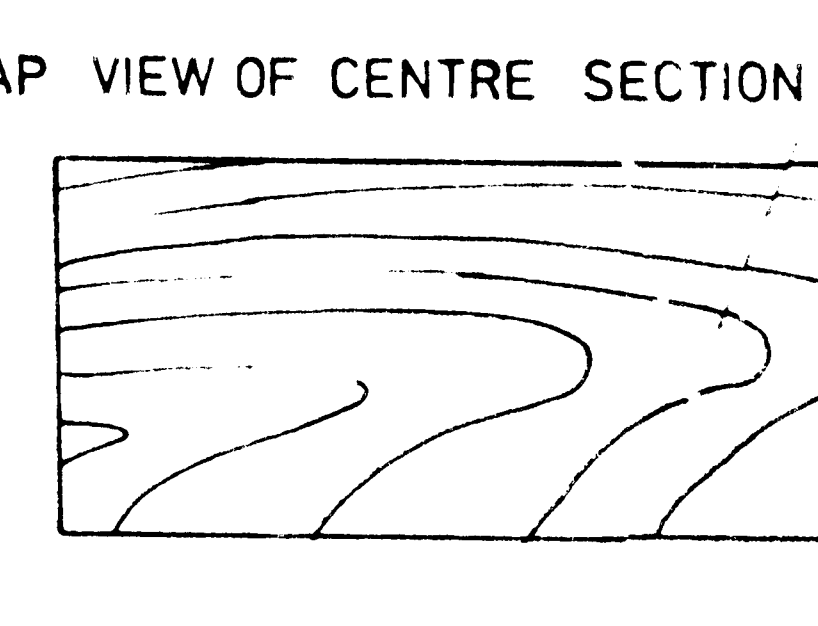


Temporary formers

Ribs are made by the "Sandwich" method using the
plywood templates shown. All ribs are from 1/16" sheet
except left hand tip rib which is 1/16" ply &
root ribs from 1/4" sheet.



Uniflow tank - make from
.010" brass shim & 1/8" dia.
soft copper tube





Another attractive fully aerobatic design from Claus Maikis
— a semi-scale

FOCKE WULF 190

WHEN I SAW Dave Day's *Iroquois* way back in June 1963 *AeroModeller*, I knew that I just *had* to build a radial cowl model one day. That 'day' came three years ago, when my *Domino* design was just finished – and there was still a long winter in front.

There are some designers who claim that their stunt aircraft are built to exact scale dimensions, or at least as near as possible. What is the purpose of this? If the model lacks in performance – and it almost certainly will – the stunt judge will not give him any bonus points for his geometry. After all, we are flying aerobatics. My *Focke Wulf 190* is *not* a scale model; I just intended to retain the overall shape of the full size. As with a caricature, concentration on the most specific detail – and sometimes even over-emphasis – will help expression more than the exact replica. The onlooker simply ought to get the impression of a Focke Wulf 190. I did not want to deviate from typical 'stunt dimensions' other than to use a relatively short nose and even that was compensated for by renouncing the usual shaft extension. The nose seems to be rather 'chubby', but after checking, it has very little more frontal area than, for example, the *Nobler*. Also there is hardly any more wood in the construction, so the increase in drag and weight will be negligible. The wing has a 15 per cent airfoil at the root and nearly 20 per cent thickness at the tip, both at 28 per cent chord. Thus, the airplane can be flown quite slowly, if you prefer.

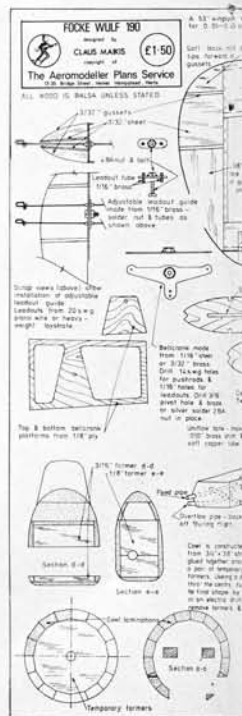
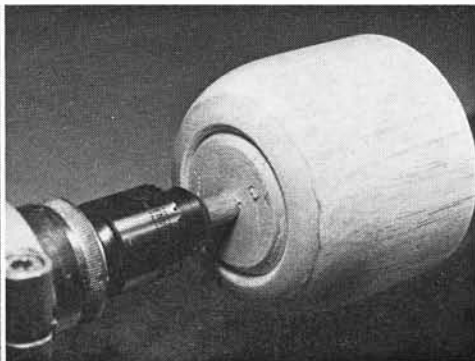
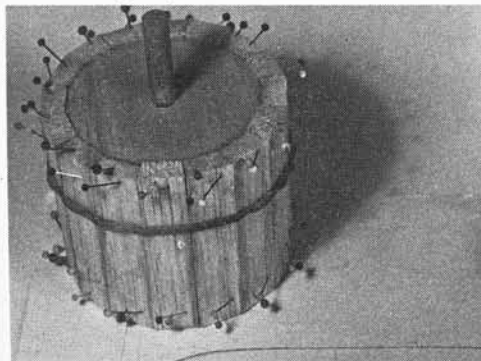
Engine is my old reliable OS Max H 40 P. I made a new venturi with a 6.5mm bore, while the spraybar is from a Taifun Bison engine. This spraybar has threads on both

ends and thus can be accurately fixed with the admission hole in the middle of the venturi. This hole is very small which certainly helps carburetion, while the thread is very fine, making for a non-critical needle. The knob of the needle is replaced by an angled piece of wire, which is much easier to operate and to check. My last venturis were made of nylon, because it is easier to obtain and faster to work on. I mention all this, because many 'big' engines today are only available with an R/C throttle, and I do not like to run my engines with a throttle fixed in the 'open' position.

The 10 x 6 three bladed Tornado propeller looks best with this aircraft – alas I was not satisfied with the performance! A normal 10 x 6 two blader seems better, while I had best results with an 11 x 5in. propeller. If your engine can cope with the bigger prop, it should be preferred, but it has to be selected and reworked carefully (pitch and airfoil) in order not to overload the engine. Muffler is the original OS Max type. Though it absorbs quite a lot of power, it produces a somewhat metallic, biting sound. Enlarging the tailpipe diameter made no

FULL SIZE COPIES OF THIS 1/8th SCALE REPRODUCTION ARE AVAILABLE AS PLAN NO. CL 1291, PRICE £1.65 (INCLUSIVE OF VAT AND POSTAGE) FROM AEROMODELLER PLANS SERVICE, PO BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE.

Two stages in the preparation of the radial cowl. Glue strips of soft balsa together around the three temporary formers, as drawn on the plan and shown below left – using pins and rubber bands to hold them in place. Adhesive should be one that sands easily and cleanly – such as balsa cement, or some 'white glues'. When dry, connect to electric power tool via the beech dowel, and 'turn' to circular section using glass paper glued to a sanding block. Remove temporary formers and smooth inside surface of cowl.



difference to the power, but increased the noise, so this is not recommended. The present Max 40 is more powerful, but I have experienced trouble in starting when the engine is hot, and if the engine cuts shortly after starting, this might cost you an 'attempt'. Of course, I would not have any doubts in using a Super Tigre 40, Enya 40 or HP 40 engines too.

Since so many construction articles have appeared on stunt airplanes, I will not bore the reader, but just give a few hints where necessary. There is nothing new in building the wing. The plan shows the shape of the two wing supports (two each) which I use. The adjustable lead outs require a little extra work, but I would highly recommend them. I am not such an expert pilot to really gain advantage in shifting the guide according to weather, but for basic trimming of the airplane, it is a most useful fixture.

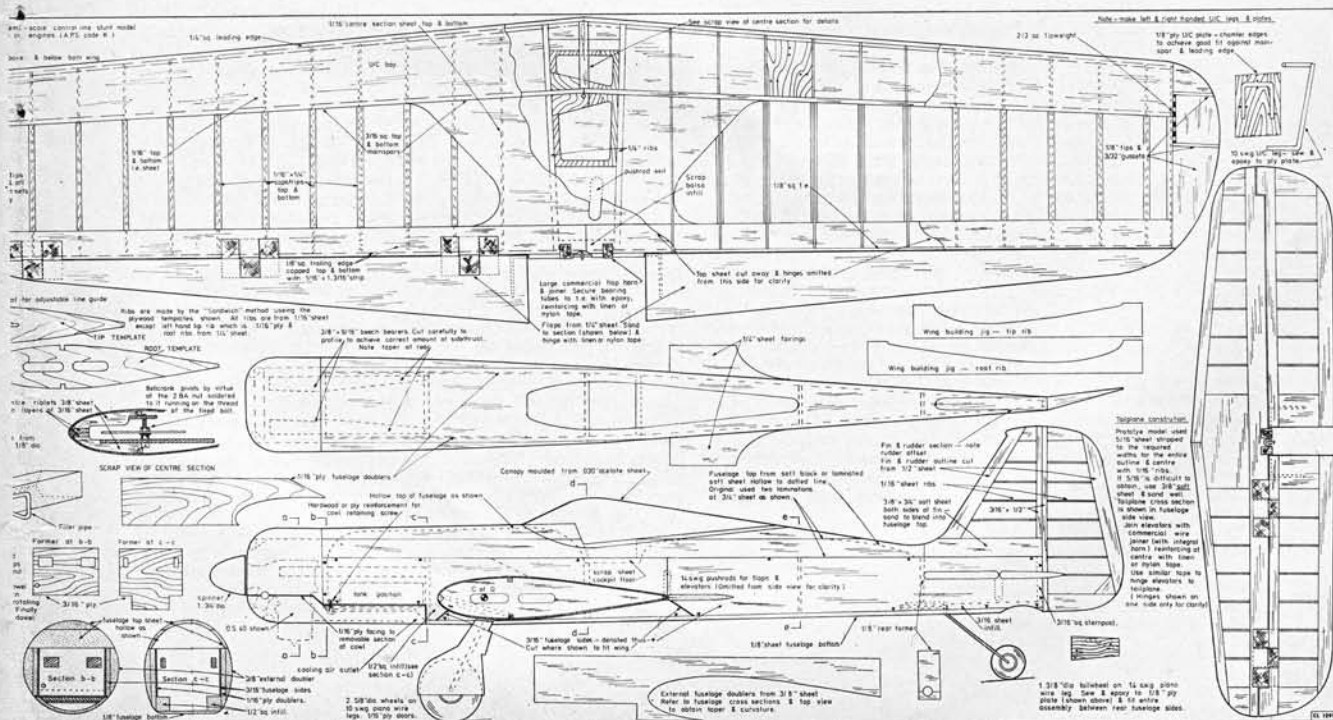
The fuselage section demanded some changes in construction. Start by cutting some soft pieces to the shape shown in Section X. Make three formers as shown there, gluing together two of them crosswise, and fix them to a 10mm beech dowel, about two inches longer than the cowl. The rear former may be tack glued only, since it is removed later. Using a glue which can be sanded easily, add the trapezoid pieces carefully around the former and hold them in place with pins and rubber bands as shown in the photograph. When thoroughly dry, place the whole unit on an electric drill and sand carefully with a suitable sanding block. Use a sharp knife to carve the front shape. Now remove from the drill, cut through the front formers, remove formers with dowel, and smooth inside of cowl.

Fuselage construction is straightforward except for the outward fuselage doublers - shape them roughly before adding to the sides. Also note the filler blocks in section C-C. Try to keep the tail as light as possible. The cowl is glued to the front end, the lower part is cut off and trimmed to take the removable part of the engine cowl. The edge is surrounded by a ply frame as a facing and takes the hardwood retaining block with cooling duct, which also serves as a stiffener/tank compartment floor. Forming a

canopy has been described many times before, but I would like to add this: be careful when pulling the hot plastic sheet over the mould. Areas which have been stretched too much will decrease in thickness and might later warp. A muffler cut-out is not shown on the plan, as this depends on the brand used and can differ considerably. As the removable cowl is not very rigid, it should be completely covered with glass cloth and epoxy. Wing fillets are shaped with micro balloons; the lightest filler I have found.

My finishing method is quick; apply one coat of thinned sanding sealer to the wooden airframe, then after drying, rub down really smoothly with 320 grade wet/dry paper. Add one coat of the sanding sealer with white pigment. Rub down. Cover open areas with heavyweight tissue, remaining airframe with lightweight tissue. Rub down with 400 grade paper. Now apply two coats of thinned clear dope on 'open' areas, followed by two coats of white

continued on page 458



FOCKE WULF 190

continued from page 437

dope on the whole model, rubbing with 400 paper after each coat. A last check for dents and holes is made now. Car spray cans lend themselves to a camouflage paint scheme of this type. *Duplicolor* offers a wide range of colours; it is a nitro type lacquer which dries fast and is very light. *AeroModeller* Plan Pack 2761 (price 45p including postage) is a great help when searching for details or panel line configuration. A clear two part resin fuel proof finish should be applied finally. My finish usually weighs about six ounces. Since I am rather lazy, I do not rub down the spray coats and while this finish is by no means up to 'American' standard, it is enough for the distance from the judges to the model!

Appended is a listing of the weights of my model – this is about 49 ounces which I am not too happy about, but it is not so bad for an aircraft of this size, especially as it was necessary to move the CG far more forward than anticipated. Even then the aircraft is rather sensitive.

After many years of stunt flying, it is my opinion that aerobatics require more 'nerves' than any other event (control line, at least!). Even 'big names' admit that starting the engine can be decisive to the whole flight. I have found the following contest procedure suitable for

different equipment: If at all possible, a practice flight in the morning of the contest day is desirable. I always fill tank while the previous pilot is flying. The engine is primed and flicked over several times until it feels quite 'wet'. At the circle, the tank is filled once more. The engine is choked (flicked over with closed venturi) twice if warm, four times in cold air. In very cold weather, prime the engine through the exhaust (not with inverted engines!) and via the venturi. Connect the battery and feel the 'kick' on the propeller. Only then are the judges signalled 'ready'.

Now, if your engine starts with the first flick, you have managed the first half of the flight. If you master the wingover, the second half is done. Let your *Focke Wulf* do the third one!

Table of weights

Wing: complete with flaps and two push rods	430 grammes
<i>Tailplane</i> (rough)	23 grammes
<i>Elevators</i> (rough – each)	4 grammes
Tailplane complete	44 grammes
<i>Airframe</i> + 1 coat sanding sealer	770 grammes
+ 2 coats sanding sealer	780 grammes
+ covering + 2 coats of dope	800 grammes
+ 2 coats dope + fairings	825 grammes
+ Dupli color + trim	930 grammes
+ fuel proofer	970 grammes
Complete	1480 grammes