

Baby Dolphin

A woodwork project

Design by
John Van Der Kolk
1997-2003



Project Worksheets

- Comprehensive step by step instructions
- Full size patterns
- Detailed diagrams
- Material list
- Minimum of tools required

Patterns are included for only one Baby Dolphin Sculpture. The included instructions are taken from the complete Dolphins Sculpture Project which includes an adult and 2 babies. The complete Dolphin Family Sculpture patterns are available on the web site.

You can find coloured photos of the finished sculpture on our web site at
www.fantasticwoodworking.com

Introduction

Welcome to Profile Art woodwork projects.

By way of an explanation, Profile Art combines a simple patternmaking technique with the contemporary designs of sculptor/woodcarver John Vanderkolk. The end result is a range of unique projects for both the beginner and experienced woodworker alike.

The basic construction method involves the laminating together of a series of profiles (full size patterns are supplied for each profile). The woodworker is then instructed through the process of stock removal, shaping, finishing and final presentation of the piece.

NOTE: *The plans and patterns supplied, although comprehensive allow for the makers own alterations or modifications, the woodworker is encouraged to be adventurous in his application of these worksheets.*

Possibly one of the most daunting aspects of carving animals is the initial process of roughing out, ie. establishing the correct proportion, form and shape of the animal (in other words taking away the bits(in this case) that don't look like part of the dolphin). This is due in part to the fact that we are not normally called upon to assess things in 3 dimensions, when we look at an object, our immediate concern is what we see in front of us, not what we can't see from the side or back. But when sculpting in three dimensions, we must keep in mind the complete form and the relationship of each component to the whole.

Another desirable skill in sculpting fauna is knowledge of the structure (skeleton, muscle, etc) that generates the shapes we see when we look at the creature.

Recognising these difficulties, sculptor/carver John Vanderkolk has developed a simple method of introducing the woodworker to the process of carving the Dolphin. By following the instructions and patterns provided, the woodworker constructs and shapes a piece where the proportion and form have already been established. Not only will these techniques add a new dimension to your woodworking skills, the end result is a delightful sculpture that will provide as much enjoyment in its making as it will in its presentation and display.

NOTE: *The instructions and material list supplied are for the configuration of Dolphins on the front cover ie: 1 large Dolphin presented with 2 smaller dolphins. I have found that the position of the 2 smaller dolphins balance the larger one nicely. There is certainly no reason why this configuration should be adhered to, just modify your material and profile quantity accordingly.*

Please read all instructions before commencing.

Tools & Equipment

The Dolphin project can be achieved with a minimum of tools. Having said this, a difficulty arises in recommending specific tools for a specific process. Firstly, there are a number of alternative methods of achieving a result. For example, the cutting out of the profiles can of course be achieved by hand with a fret saw, never the less a jigsaw would be infinitely more convenient and quicker, or even better still a band saw or scroll saw. Consequently, when suggesting a particular tool, I will explain what I have used to complete the project and I will also offer alternative methods and equipment.

Materials

All material needed for the dolphin project (apart from the base) can be cut from a single dressed board measuring 1600mm x 240mm x 19mm (63" x 9½" x ¾"), of course the patterns can be staggered onto any size board with a similar surface area.

NOTE: The widest component is the large Dolphins main Profile (A) at 165mm (6½") wide, the rest of the project can be staggered onto a 130mm (5¼ins) wide board.

The thickness being the only critical dimension, I have chosen 19mm (¾") simply because it is a standard thickness and readily available (in either radiata pine from any hardware or in something more exotic from a cabinet timber merchant).

Shopping List

- Timber - 1 dressed board 1600mm x 240mm x 19mm (63" x 9½" x ¾") - (or equivalent surface area) - minimum width 165mm (6½") - species of your choice
- Dowel - 8mm (5/16") diameter - approx 400mm (16") long
- Glue - PVA Wood glue (good quality) or 2 part epoxy

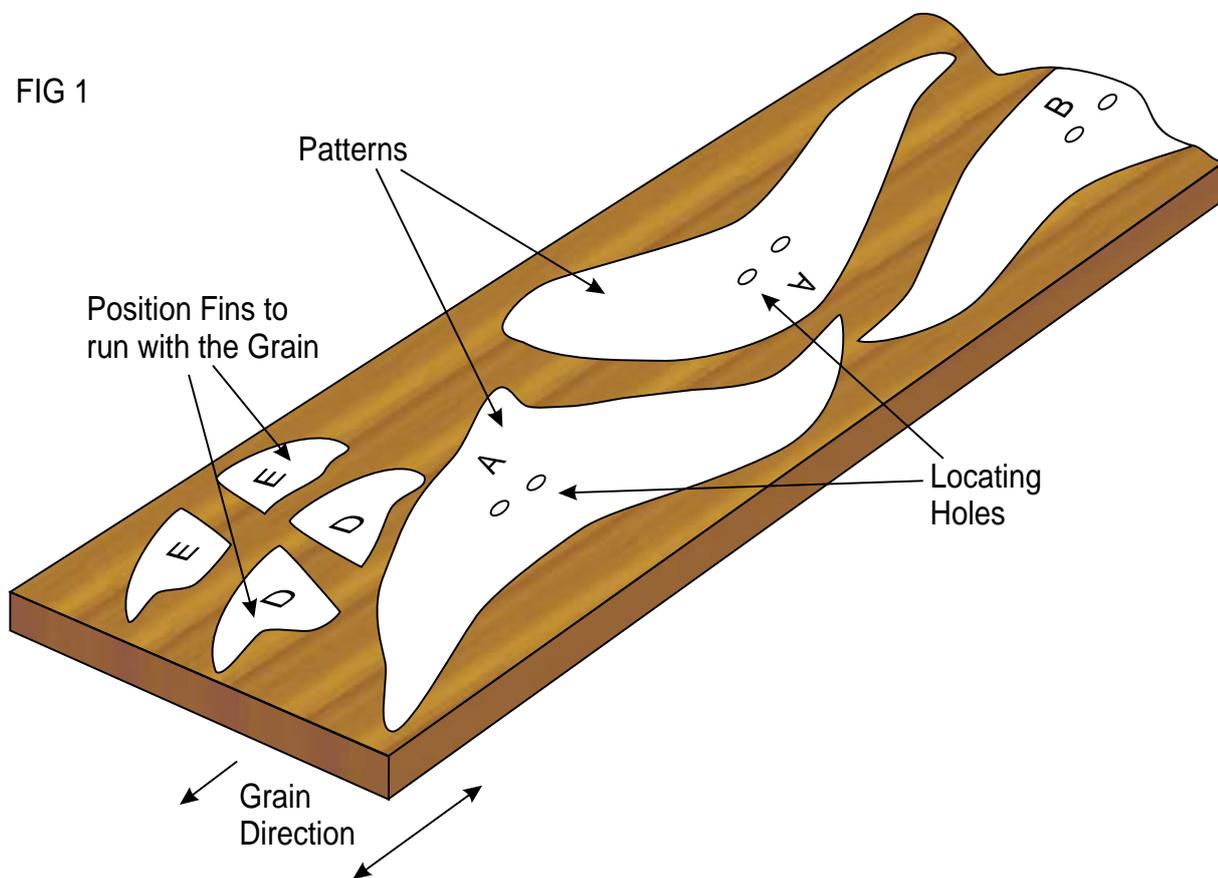
STEP 1 - Patterns

Photocopy patterns and trace or glue onto timber, (including the locating holes) or if you intend to repeat the project, trace onto plywood or masonite templates. See List next page for the quantities of each Profile.

PROFILES - QUANTITY & DESCRIPTION

				Quantity		
A	-	Main Profile	-	Large Dolphin	-	1
B	-	Second Profile	-	Large Dolphin	-	2
C	-	Third Profile	-	Large Dolphin	-	2
D	-	Tail Fin	-	Large Dolphin	-	2
E	-	Pectoral Fin	-	Large Dolphin	-	2
F	-	Main Profile	-	Small Dolphin	-	2
G	-	Second Profile	-	Small Dolphin	-	4
H	-	Tail Fin	-	Small Dolphin	-	4
I	-	Pectoral Fin	-	Small Dolphin	-	4

BASE - SEE STEP 9



STEP 2 - Cutting Profiles

Using a jigsaw or a bandsaw cut out timber profiles, make sure each profile is correctly lettered according to the pattern (it will make it easier to keep them in order).

NOTE: Place patterns for fins and tails D, E & H, I, with grain running diagonally to the tip for strength as in (FIG 1+ 5B).

STEP 3 - Locating Holes

Drill, locating holes 8mm (5/16") diameter in profiles A, B & F only (not in C & G yet).

The two holes locate each profile in its correct position as well as stopping the laminations from slipping out of position when glued and clamped.

NOTE: It is important that the locating holes (particularly between centres) be fairly accurate in relation to each other. I find the easiest way is to drill the holes in profiles A & F first, then use these profiles as a drill guide for the other holes.

Once you have drilled the locating holes through profiles A & B on the large dolphin and F on the smaller dolphins tap short sections of 8mm (5/16") dowel into the holes approx 75mm (3") for the large and 35mm (13/8") for the small dowel. Slide on profiles B over dowels either side of A (FIG 2A) (If the fit is too tight open out the holes a bit).

Now cut the dowels so they only protrude 6mm (1/4") either side of the laminations (FIG 2B), Shallow holes 8mm (5/16") diameter and 6mm (1/4") deep are then drilled into ONE side only of profiles C & G FIG 2C.

The reason we do this is that these are the outer profiles of the large and small dolphin and we don't want the dowel's exposed on the finished piece.

IMPORTANT Remember profiles C & G are on opposite sides of the large and small dolphins, consequently these blind holes must be drilled on opposite sides of each profile (FIG 2C).

FIG 2

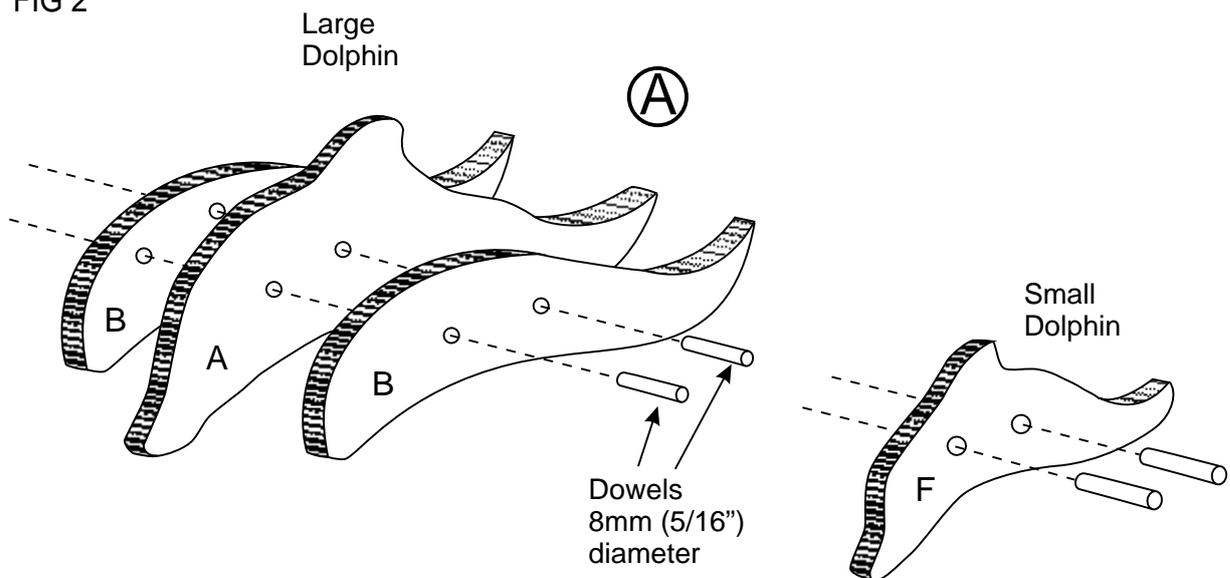
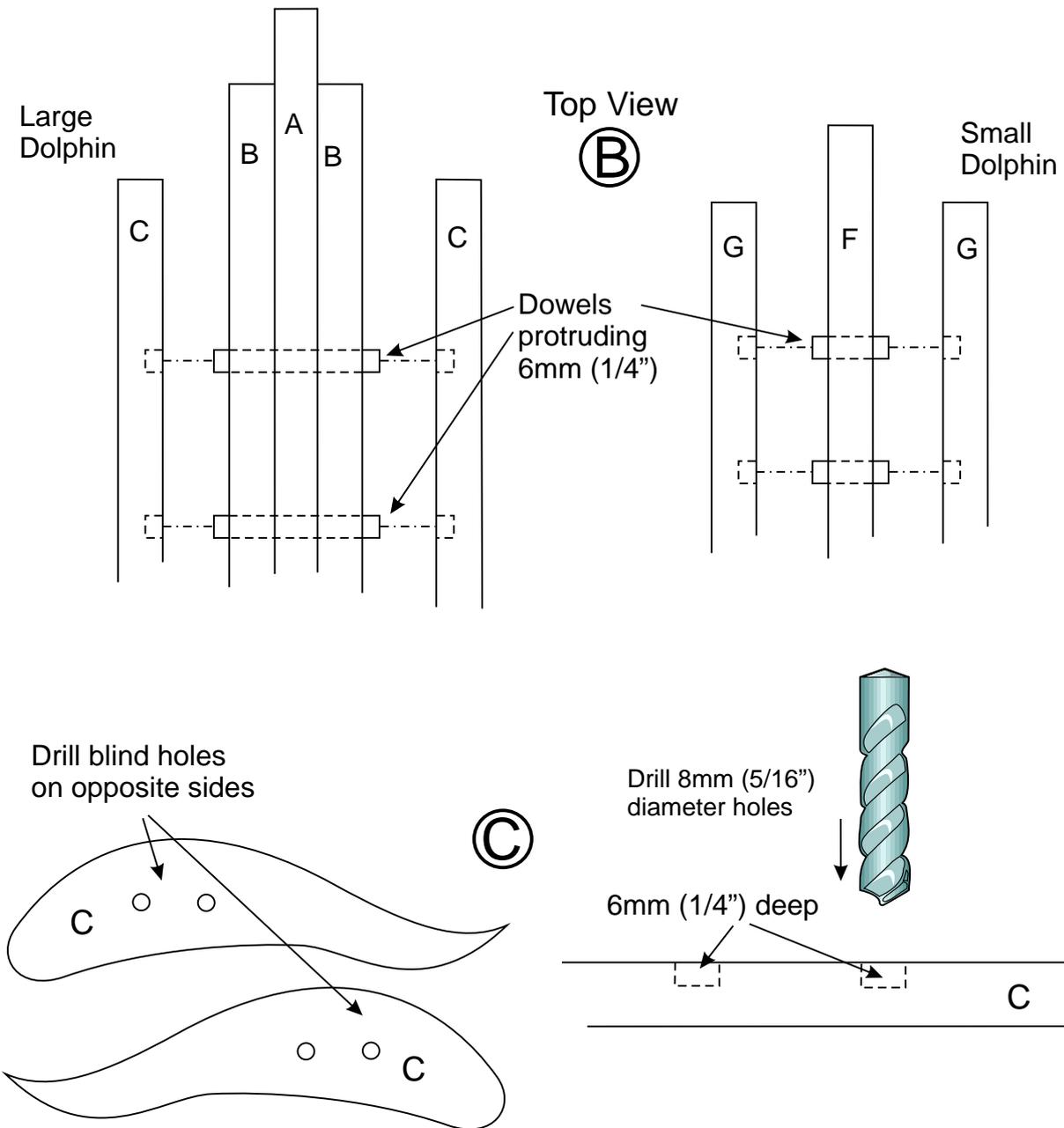


FIG2



STEP 4 - Laminating (Gluing and clamping)

At this stage the process is just about the same for both the large and small dolphins. The methods described from now on will be for both (unless otherwise stated).

Now with most clamping jobs I always seem to be 2 or 3 clamps short of what I really need. In the case of the large dolphin. I'd say 3 would be the minimum, five would be nice, the more the merrier basically (2 minimum for the small one).

Dismantle the profiles and lay out in order, smear an even layer on the insides of the profiles, replace dowels and assemble and clamp together till dry (Yes, glue goes everywhere).

STEP 5

OK, the glue has dried, and if you have got it right so far, you should have an odd looking stack of laminations probably half covered in glue. (The shape and form does not begin to become apparent till the profile steps are removed).

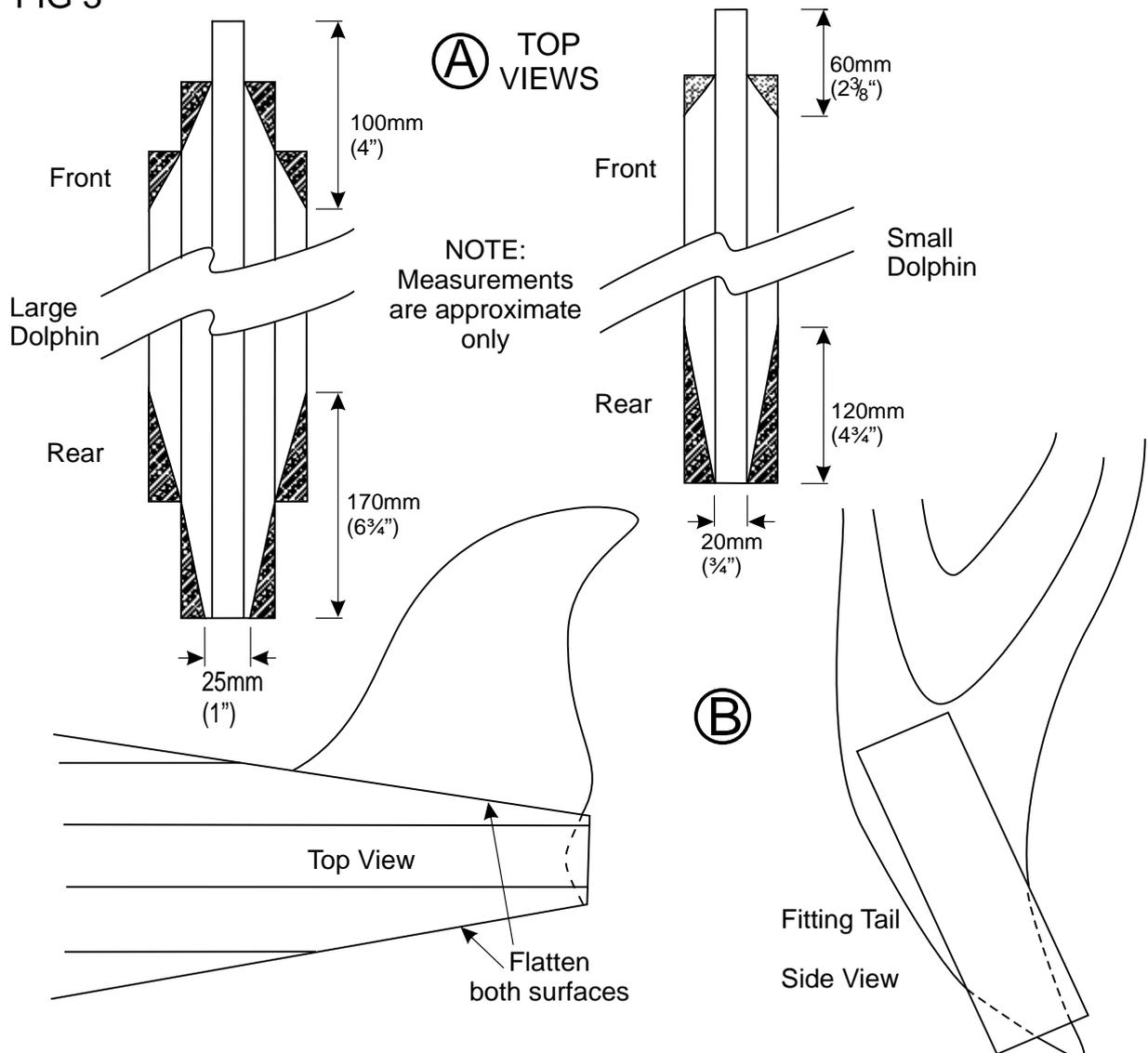
The next step requires starting to remove some waste timber and fitting on the tail fins.

With hand saw or bandsaw cut off front & back profiles as in plan view FIG 3A (avoid cutting the front of the centre profile, this will become the dolphin snout).

NOTE: *The measurements in FIG 3A are a guide only they are not critical.*

The next step is to flatten the surface of the tail area to accommodate the tail fins FIG 3A this is best achieved with a belt or disc linisher/sander but a length of coarse abrasive (60-80grit) glued onto a flat board will do the job also (the flats of the tail profiles D & H must also be perfectly flat).

FIG 3



STEP 5

Place Dolphin body on it's side on a flat surface, smear an even layer of glue on the flat of one tail profile and press into position as in FIG 3B (*Yes, again the glue comes out everywhere*) The tail does not need to be clamped press it in position for 30 seconds then leave to dry, when dry, repeat on the other side.

NOTE: *The tail and fins of the smaller dolphins patterns, H & I, need not be so thick, they can be thinned down to about 10mm (3/8"), this will save on stock removal later.*

STEP 6 - SHAPING

The next step requires the systematic removal of the profile steps (excess wood) (FIG 4). Basically how it works is that the steps are taken down to the glue line of each lamination, this step removal determines the cross sectional form of the dolphins.

There are a number of methods of removing these step, edged tools may be used, spoke shaves, draw knife etc) but due to the method of construction (stack laminating) this process is best achieved by power tools.

For the rough shaping of the dolphins I have used a 100mm angle grinder with a 36 grit abrasive disc on a rubber arbour (available at most hardware stores).

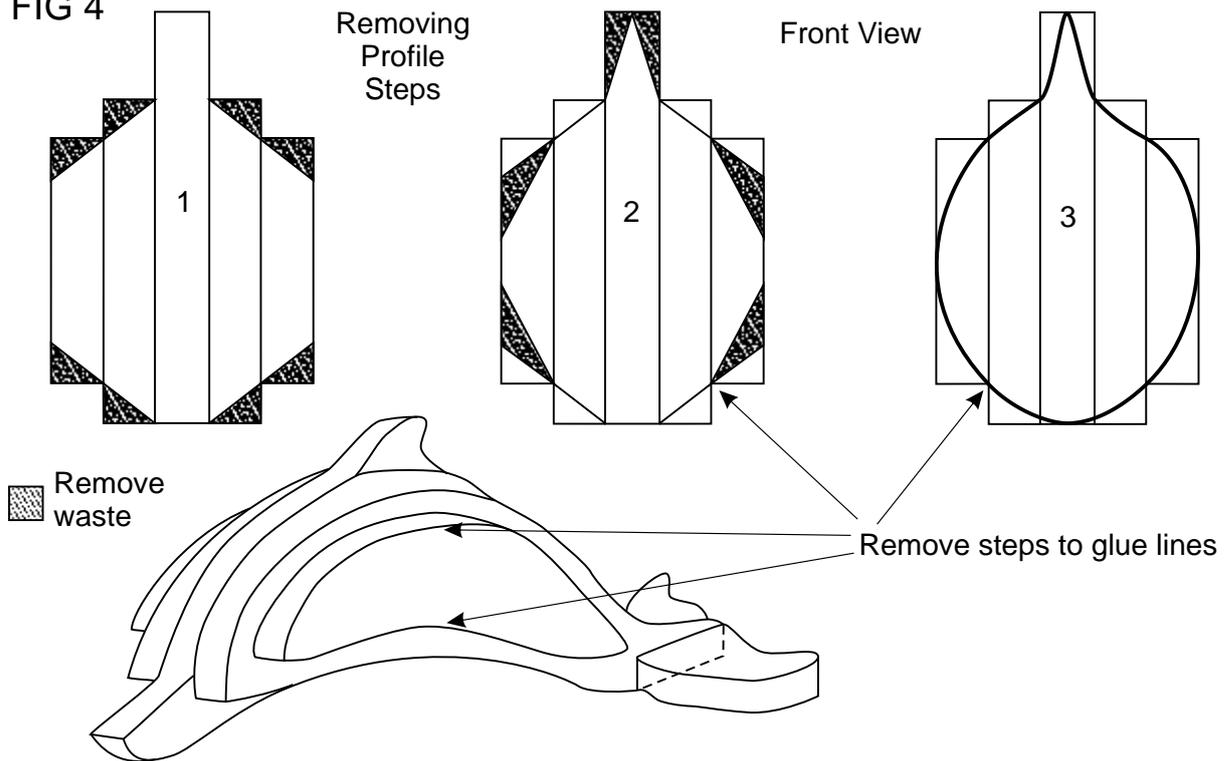
The 100mm diameter of the disc allows me access to just about all of the dolphin. Some alternatives for waste removal could be:-

- A drill with coarse abrasive on a rubber backed disc, but it is slower and you don't have as much control of the tool.
- A gentle touch with one of the angle grinder carving disc combinations (ie Arbortech) will remove stock very quickly. (The Arbortech mini carver is also ideal for this job)

To see how the process works, first secure your work in a vice, try working along the length of the body (topside and underside), grinding down the steps until you touch the glue line, see (FIG 4). The shape and contours of the body should begin to become apparent. (Leave the dorsal and tail fins and snout till the rough shaping of the body is complete).

NOTE: *Abrasive power tools make noise, dust and throw chips. IT GOES WITHOUT SAYING that you will be wearing ALL the appropriate safety gear (mask, goggles and earmuffs).*

FIG 4



STEP 7 - The Tail & Fins

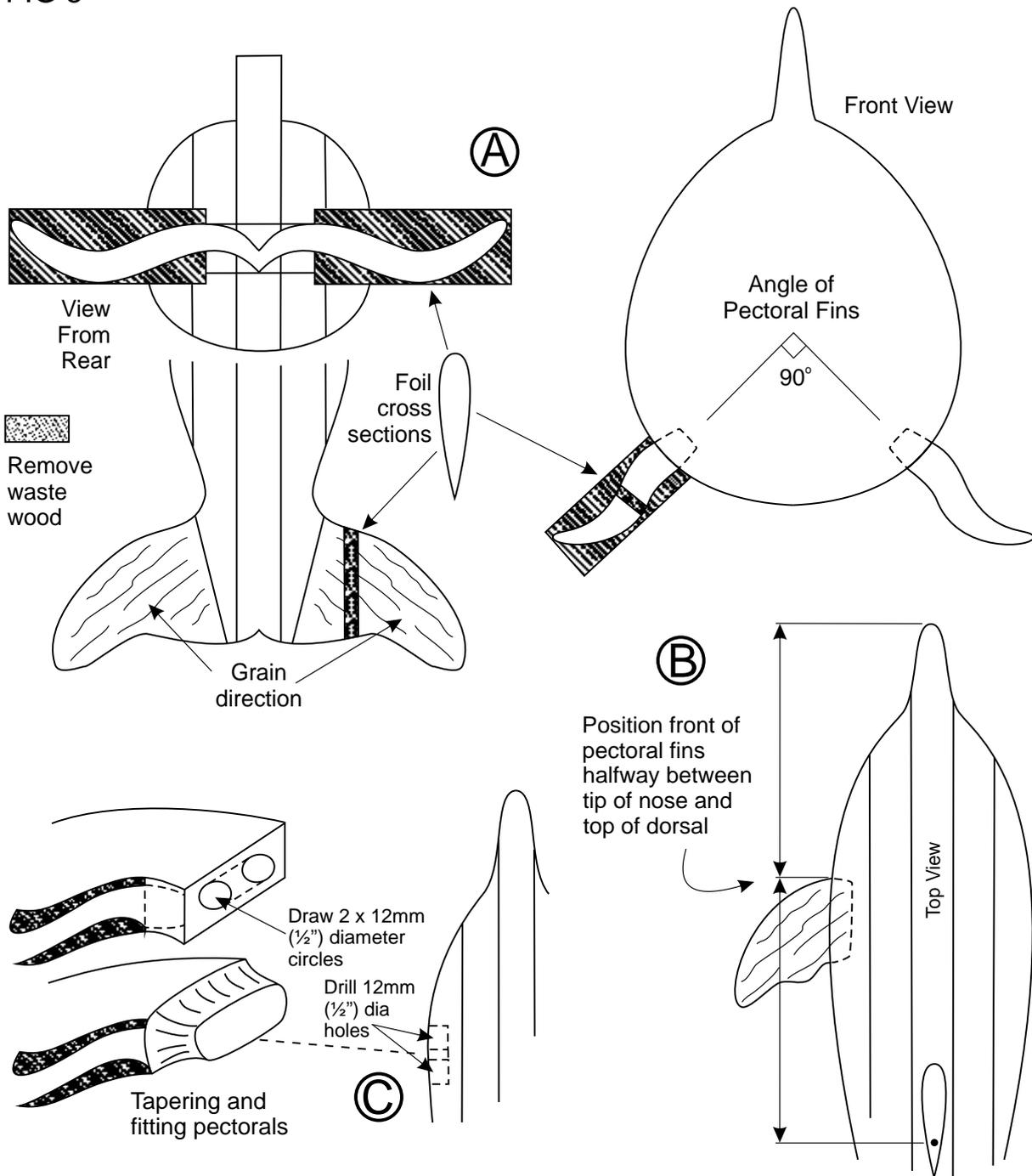
The shaping of the tail and fins is where I find the angle grinder and coarse grit disc particularly useful. A gentle hand with the outer edge of the disc quickly removes stock and shapes the curves and foil of the tail. OK, lets look at the tail, first we need to establish the plan shape (top view) of the tail. Use the template on the pattern sheet as a guide, (the tip of the grinder disc works well).

Next decide on the curve of the leading and trailing edge of the tail. These shapes are subjective, as the tail of a dolphin is flexible and can accommodate many variations. I have shaped the tail as in (FIG 5A). Draw the lines on the front and rear of the tail. I then grind the tail to an even thickness of about 10mm (3/8ins) thick (approx 5mm (3/16ins) either side of the line I have drawn). Establishing the cross sectional shape of the tail is a matter of rounding over the leading edge and grinding down the trailing edge to a point, use (FIG 5) as a guide.

The pectoral fin and dorsal fin cross sections are shaped in the same way.

To fit the pectoral fins into the body, I first draw 2 x 12mm (1/2") circles [6mm (1/4") on the smaller dolphins] on the flat of the fin blank, joining these with two lines makes an ellipse shape (FIG 5B). Clamped in a vice, I use the tip of the grinding disc (with a light touch) to taper the fin blank down to the shape I've drawn. (A sharp carving or Stanley knife can also be used to whittle the taper).

FIG 5



STEP 7 - The Tail & Fins (continued)

Position the pectoral up against the body as in (FIG 5A & 5B) and trace a line around the shape. Now in the body, drill 2 x 12mm (1/2") diameter holes (approx 10mm (3/8") deep) inside the lines marked FIG 5C. (A smaller pilot hole may be advisable first).

Remove the material between the holes with a carving or Stanley knife. When I am happy with the shape of the hole in the body. I return to the fin and refine the taper until it fits to about 6mm into the hole. (When you are happy with the fit smear glue on both surfaces and press fins in).

STEP 7 - The Tail & Fins (continued)

I find it easier to shape and refine the curves and cross section of the pectorals when they are fixed in the body.

By now the roughed out shape and form of the dolphins should be well established remember the basic shape of the dolphin is an elongated tapered cylinder.

Rotate the dolphin in your hands refine any flattened surfaces you can see, stand back regularly and look at your work.

NOTE: Use the plan and profile templates on the pattern sheets as a guide to refine the form.

STEP 8 - Sanding

When you are satisfied with the basic shape you have achieved, sit down , and get comfortable, you are going to do some sanding. (A good piece of woodwork is destroyed by a bad finish). Now there is no shortage of power tools designed to sand a flat surface, not so, unfortunately, for 3D pieces with curved surfaces. Most machine sanders leave a series of flat or faceted surfaces, which even though small must be removed. There are a number of velcro rubber backed discs available that will fit into a drill that will take out the coarse sanding scratches, but the best tool available for sanding the curved surfaces of the dolphins consists of 5 rubbery digits, and is usually found on the end of ones arm.

Starting with a coarse abrasive paper (80 grit) generally work over the surface, *removing all the previous machine marks.*

NOTE: Low quality abrasives are a false economy, a good quality, flexible, cloth backed abrasive although more expensive will last substantially longer without losing grit.

Being so coarse, the 80 grit paper is also used to establish and form the final shape. To get into the corners & crevices I wrap the paper around a piece of flexible rubber or plastic such as pieces of ice cream container lid.

When your piece has no more machine marks, repeat the previous step with 120 grit abrasive. Then 180 grit, 240 grit and finally 320 grit.

NOTE: Some woodworkers have no problems going on to 400 and 600 grit, some stop at 240 grit. Others jump straight from 180 to 320 grit (This gap between grits I find is often dictated by the species. Softer woods handle bigger grit jumps than hard woods as a rule).

STEP 9 - Finishing & Presentation

I am convinced that there are as many finishes for a piece of wood as there are woodworkers. My suggestion is to find the best finished piece of woodwork you can, and ask it's maker what they used.

At this stage, some carvers will wipe the piece with a slightly damp cloth (This raises any fibres that have been flattened in sanding). I prefer a coat of wood sealer. This low viscosity liquid, seals the wood and stands the grain up. Which when dry, is then finished with a vigorous rubbing of bees wax polish on a pad of 0000 (4/0) steel wool (replace the steel wool fairly regularly, as soon as it collapses).

If you prefer a harder wearing finish, seal first, then a matt or low sheen lacquer or urethane, finished with wax & steel wool, (as above) I think you will find very acceptable.

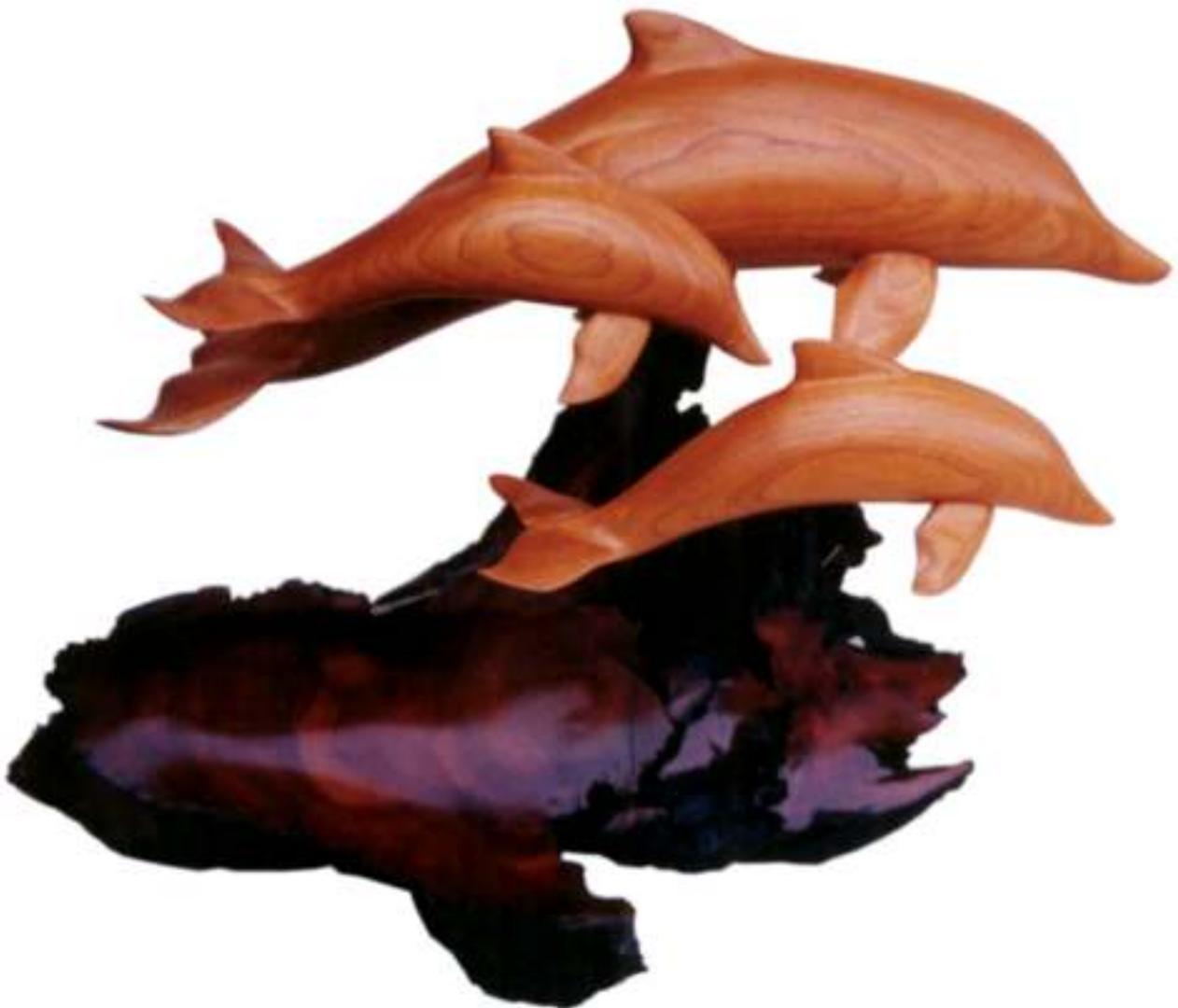
How you present the piece is again subjective, in the photograph on the cover I have simply used the top of a very weathered old fence post cut on a diagonal for its flat base. As an alternative I highly recommend a wander along a beach for a piece of driftwood or just as enjoyable a walk through the bush, keeping an eye out for the weathered remains of fallen trees that can be salvaged for use as a base for your sculpture.

I find this one of the most pleasurable aspects of the project and I rarely come home empty handed. The only real criteria for the base is that it needs to be made up of sound wood, (a good scrub with a wire brush works well) it needs to be able to support the dolphins without falling over, and ideally the piece needs to have the appearance of having movement, by that I mean, it needs to represent water or waves in some way. (Luckily, most pieces of weathered wood have this attribute).

For fitting the dolphins to the base, I have used short sections of steel rod drilled into the dolphins then into the base, glued in with two part epoxy. For the large dolphin I have used 8mm (5/16") diameter rod approximately 100mm (4ins) long, for the smaller ones I have used 6mm (1/4") diameter rod about 80mm (3 1/2") long (bolts with their heads cut off work just fine).

Advice on positioning the dolphins is nearly impossible without seeing the base you have chosen. Have someone loosely hold them in different positions while you stand back and direct, or you can use the positioning of the dolphins on the cover as a guide.

Enjoy the result of your efforts.



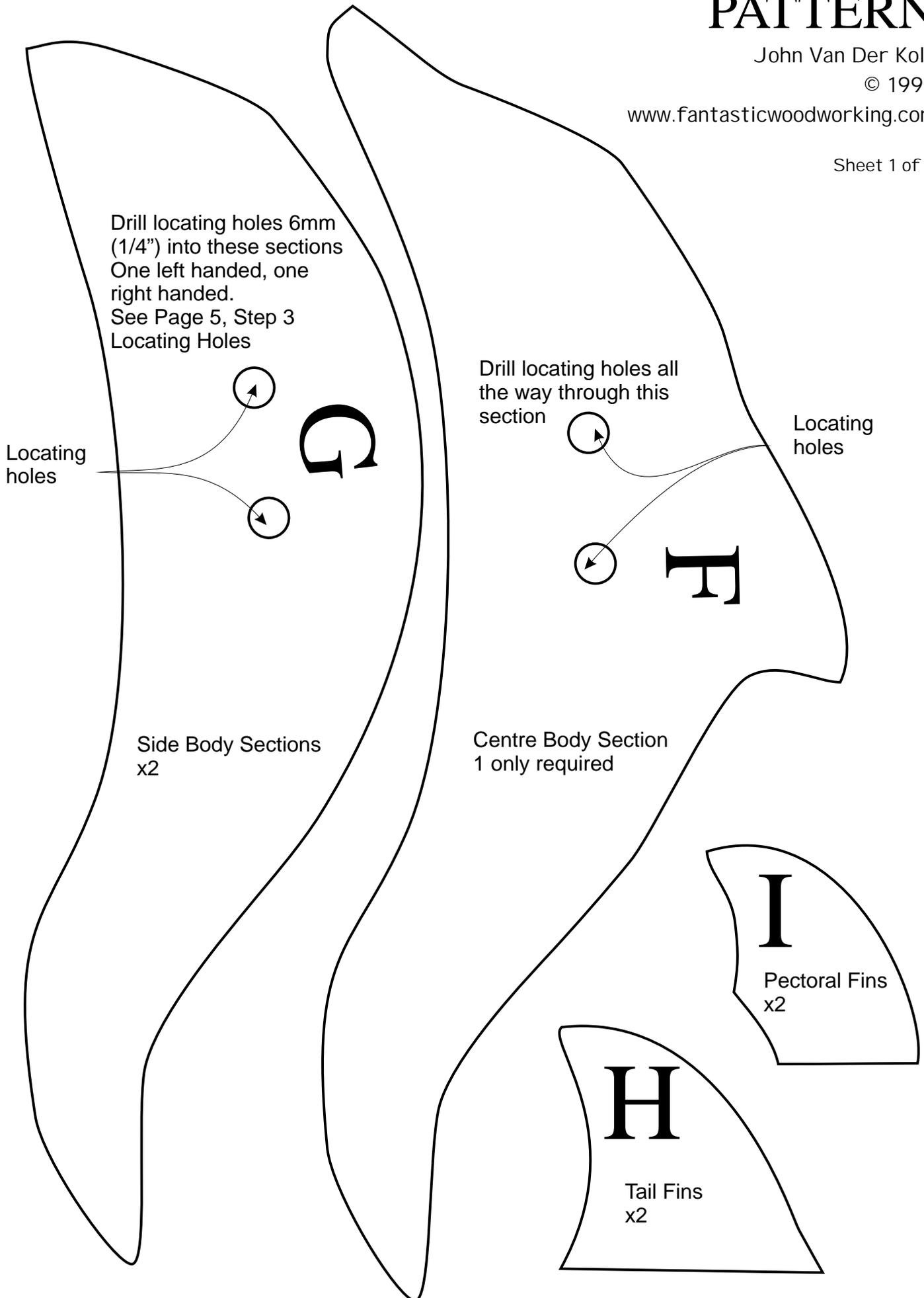
Baby Dolphin PATTERN

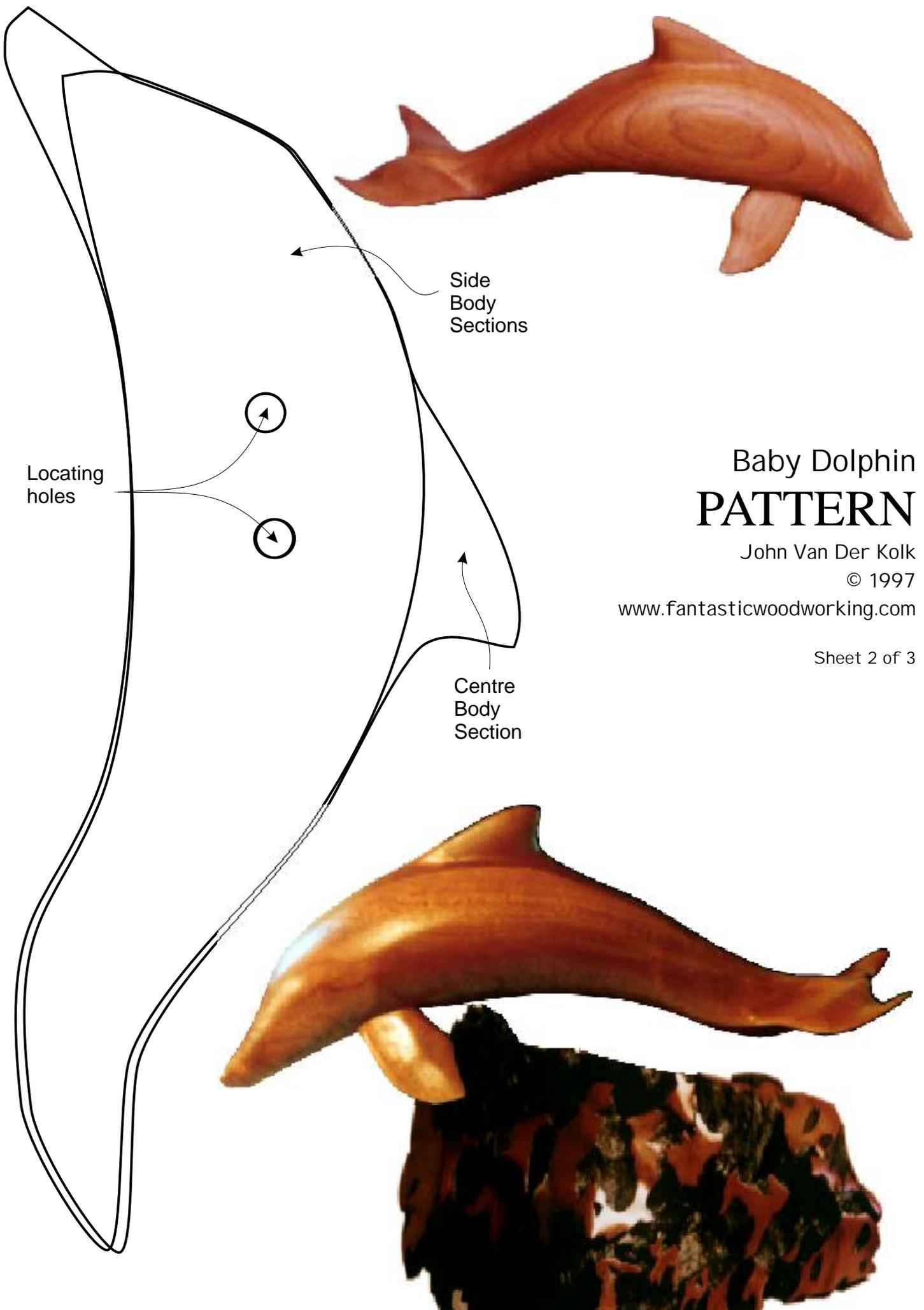
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