
WOODEN

DINKY TOYS

SIMPLE TECHNIQUES & COMPLETE PLANS
TO BUILD **18** TINY CLASSICS



LES NEUFELD

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SPRING HOUSE PRESS

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INTRODUCTION

Generations of youngsters have grown up playing with small die-cast metal toy cars, trucks, planes, boats, military vehicles, and spacecraft. Dinky, Corgi, Matchbox, Majorette, Ertl, and Hot Wheels have produced billions of these toys since the Dowst brothers began making TootsieToys in 1920s Chicago. New die-casting methods resulted in realistic, durable, and inexpensive toys.

I asked my son (now in his 20s) to dig out his die-cast toys for a photo. He happily did so. This photo shows about half of the toys he still had, and includes toys from 15 to 50 years old. Some show signs of much use, some are still like new. Most households probably have a similar or larger collection.

BRIEF HISTORY

In the 1930s, Frank Hornby, inventor of Hornby trains and Meccano sets, began making Dinky Toys to accompany his train sets. “Dinky” was a Scottish word meaning “neat” or “small”. Dinky toys quickly

became hugely popular on their own. By 1938, Meccano was manufacturing 300 models of Dinky Toys, representing land, sea, and air travel. Before long, they were producing several million toys each week.

Ertl began making toys in Iowa in 1945, producing many farm equipment toys, as well as other toys. Ertl made die-cast toys for about 60 years.

The 1950s saw other companies (Lesney, Corgi) begin to make similar toys. These toys were based on popular vehicles of the day, as well as toys from movies such as Corgi’s Batmobile and James Bond

Die-cast toys





Wooden dinky toys

cars. Matchbox toys were introduced by Lesney in the 1950s when the daughter of a co-owner was only allowed to bring toys to school if they were small enough to fit inside a matchbox. Lesney began producing small toys that were packaged in matchboxes. These little toys could be carried in a pocket, and dozens of them could be stored in a shoebox.

Mattel introduced the astonishingly successful Hot Wheels brand in 1968. These small die-cast toys included “tricked-out” toys of all types. In 2018, Mattel celebrated the manufacture of its four-billionth Hot Wheels toy. Mattel brands now include Corgi, Matchbox, and Dinky toys to go along with their original Hot Wheels line.

POPULARITY

Today these small toys are more popular than ever. Not only do kids still love them, (apparently Mattel currently sells ten Hot Wheels toys every second), but many adults have extensive collections as well.

The small size of these toys is a big part of the appeal. The cars are typically only 2½ to 3 in. long.



The low cost of die-cast is another factor in their amazing popularity. Die-casting is an extremely fast and inexpensive way to mass-produce detailed toys and toy parts—once the reusable mold or “die” has been made. Even today, many new Hot Wheels diecast toys are on the store shelves for about \$1.

The toys in this book have the same advantages. They are relatively quick to make: most can be made over a weekend and some can be finished in a day. The cost is very low because of the tiny amount of wood used. And, like the original toys, these can be carried around in a pocket or in a small box. A dozen of them can be lined up and played with on a window sill.

MATERIALS & TOOLS

Here are the materials and tools you'll need to create the projects in this book.

- Tablesaw
- Scroll saw or bandsaw
- Push sticks
- Drill press or handheld drill with countersink, twist, Forstner, and hole cutting bits
- Disc sander or sanding board
- Clamps
- Square
- Compass
- Block plane
- Sandpaper in various grits
- Files
- Screwdrivers
- Spray finish of choice
- Wood glue (Titebond III or equivalent recommended)
- Masking tape
- Pencil
- Carbon paper
- Scissors



A drill press with a selection of bits, along with a variety of clamps, are a few of the tools you'll need for these projects.

You'll see that safety guards are sometimes raised in the step photographs to show the step clearly. Guards should be lowered when cutting.

CHOOSING WOOD

AVAILABILITY

Toys provide a good chance to use up the small off-cuts left over from other projects, or to use more exotic woods that you have not used due to high prices. The toys in this book could all be made from my local woods, like birch or box elder. The other woods shown were used only for a bit of variety and because I happened to have off-cuts available.

COST

Many of the toys use so little wood that even an expensive wood is a viable choice, if you can find only a small amount. Most toys will use only a fraction of a board foot. The typical size, about 1 x 1 x 4 in., is only $\frac{1}{36}$ th of a board foot. Even at \$20 a board foot, this will only set you back about 55 cents.

FIGURE & GRAIN

I have found that my favorite beautifully figured, treasured pieces of wood make for particularly unattractive toys! The wonderful grain obscures the outlines of the toy and makes it look more like a nice piece of wood than a fun toy. So, I have learned to use close-grained wood, preferably with grain that is scarcely noticeable.

DURABILITY

I also prefer woods that are hard and dent-resistant. Toys can often take a bit of a beating, and this helps them be longer wearing.

COLOR

If possible, I choose wood that has a coloring appropriate to the toy, such as yellowheart for the school bus. I repeatedly used a couple of local woods, which for me was birch and box elder (also known as Manitoba maple or maple ash). Both those woods yield light-colored toys. I had scraps of purpleheart, bloodwood, padauk, and wenge, so used those as well for more brightly colored toys.



Close-grained wood with a mild grain works well for these toys.

WHEEL OPTIONS



Factory-made wheels are inexpensive, especially the smaller ones. They are usually smooth, strong, and ready to use. If they aren't quite right for your project they can be adapted by adding tread pattern marks, smoothing the tread area, or even coloring them.

If you want a different look (or don't want to go shopping for wheels), you can make the wheels for the car. This allows you to choose the wood type and color, as well as wheel diameter and width. Clearly this will take much more time than attaching factory-made wheels, but you are a woodworker, and the wheels are fun to make.

FACTORY-MADE WHEELS

Contour wheels are available in diameters of $\frac{1}{2}$ in., $\frac{5}{8}$ in., $\frac{3}{4}$ in., and larger. These three smaller sizes are each available with $\frac{1}{8}$ in. holes. They are inexpensive and very easy to use—no modifications needed. They can be stained or colored easily. However, if you need to order them in, you may end up waiting a week or so.

A variety of toy wheels



Factory-made wheels





Modified contour wheel



Stained contour wheel



Dual contour wheel



Modified treaded wheel

MODIFIED FACTORY-MADE WHEELS

These wheels are as described earlier, but with a few simple modifications that may make them better suited to a car depending on your preferences. They can be sized, or treads added, quite easily.

Contour wheels with flat treads, or two contour wheels made into one wide wheel

To do this you will need a #6 machine screw (a threaded bolt, not a wood screw), at least 1½ in. long (and a couple #6 hex nuts) to make a mandrel for the drill press. The diameter of this small bolt is .130 in., which is a hair over the .125 (⅛) in. hole in the factory-made wheel, so size it as follows:

1 Cut the head off the machine screw (not strictly necessary, but makes it a bit quicker to use). Put the machine screw in the drill press chuck, and with the chuck turning at a moderate speed, lightly file the tips off the thread teeth until it fits the ⅛ in. hole in the wheel. This only takes a few light strokes with the file because you are only removing .005 in. (an amount equivalent to the thickness of a piece of paper) from the tips of the threads.

2 Check the sizing of the mandrel by sliding on a wheel.



PLANE STANDS

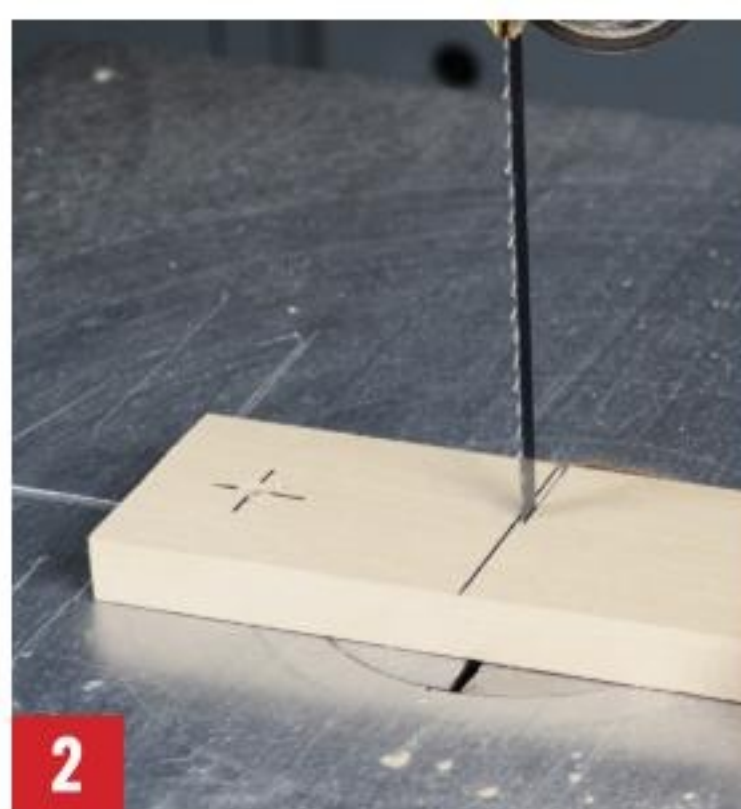
Toy planes often sit on a shelf or in a box. However, sometimes a child (or adult) may want to display them. While wheeled toys display very nicely on their own, planes look better up off the ground. These stands are very simple: just a base and a mounting dowel.

1 Mark out the base block. The base is $\frac{3}{8}$ in. or $\frac{1}{2}$ in.-thick solid wood or plywood, about $2\frac{1}{2}$ in. long by $1\frac{1}{2}$ in. wide. For safety in cutting, use a larger piece. This base can be rectangular, oval, round, or any shape you desire. Mark a dowel hole $\frac{3}{4}$ in. from one end and drill it. The wood is clamped at a slight angle so the dowel is angled, making the toy look more dynamic.

2 Saw the block to the finished dimensions, then sand the cut surfaces to remove saw marks.

3 Cut a length of dowel about 3 in. long. Sand a bevel on the top end so the plane will easily slip over the dowel. Glue the dowel to the base.

4 Apply a finish. You may decide to stain the stand assembly a dark color if you want it to contrast with a lighter-colored plane. Finally, on the plane, drill a small hole under the wing toward the front of the fuselage and square to the fuselage. This lets the plane naturally rest with the nose pointed slightly up when it is placed on the stand's angled dowel.



FINISHING

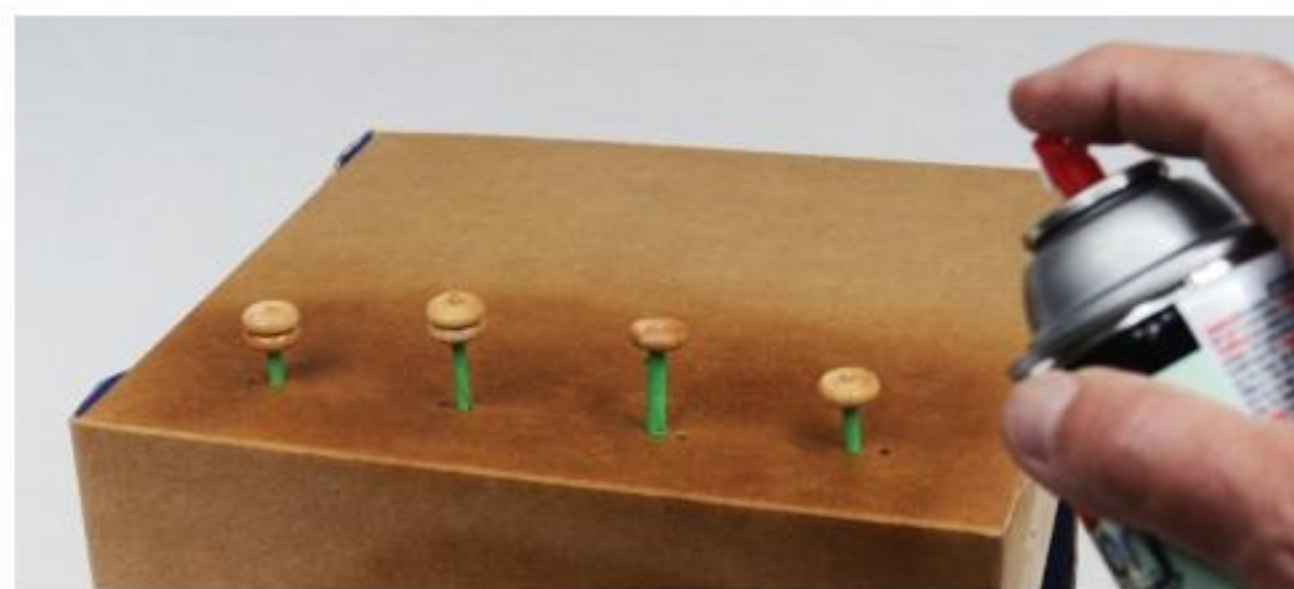
Wood toys should have a durable, safe finish. It needs to be reasonably easy to apply, and I have found that glossy toys are best received. Here are four general guidelines when choosing a finish:

- 1. The finish must be safe.** While the children who will play with these toys are probably old enough that chewing on the toys is unlikely, it is still a possibility in any household with young children around. Fortunately, many finishes answer this requirement, from salad bowl finishes to hard finishes that are safe after curing.
- 2. The finish should be durable.** A finish that wears off quickly will not protect the toy from moisture or general wear and tear.
- 3. The finish should be easy to apply.** Small toys present some problems in finishing, notably small corners and recesses.
- 4. The finish should look great.** I have found out that for kids, this means smooth and glossy. Perhaps gloss appeals because most (though not all) cars, trucks, planes, and boats have shiny finishes. I have made toys using satin, semi-gloss, and gloss finishes; gloss is the consistent favorite.

SPRAY FINISH TIPS

After trying a variety of spray-, brush-, and rag-applied finishes, I recommend using spray finish with UV protection and a high-gloss finish. Most topcoats are non-toxic when cured, but some such finishes develop runs and sags much more easily than others. Because finishes come and go, I suggest trying several kinds and using the most run-resistant.

Spray the moving parts, such as wheels or propellers, separately from the toy body. This allows easy access to the wheel wells or airplane nose sections for finishing, as well as both sides of the



wheel or propeller. This also keeps the axles from sticking later.

It is useful to make a spraying stand to hold the toy and prevent it from sticking to surfaces while it dries. A few nails driven into a scrap piece of 2 x 4 will do the trick (top photo).

Set the wheels on short pieces of axle dowel and stand the dowel upright on an upside-down cardboard box (bottom photo). The dowel plugs the axle hole to keep finish out (if it is a snug fit) and serves to keep the wheels up off the surface.

STAINS & COLORING

I rarely use stain, paint, or dye. I prefer to use wood that is an appropriate color where possible and leave the wood its natural color. I have tried staining wood wheels black, but prefer the natural maple color. However, I did use yellow food coloring to make a school bus into a traditional yellow color and it turned out well (see top left of page 7).

LAND

This first section is jam-packed with toys of the wheeled variety. From car-crunching monster trucks to speedy dragsters to hardworking haulers, you'll find 12 vehicles to park in your toy garage.



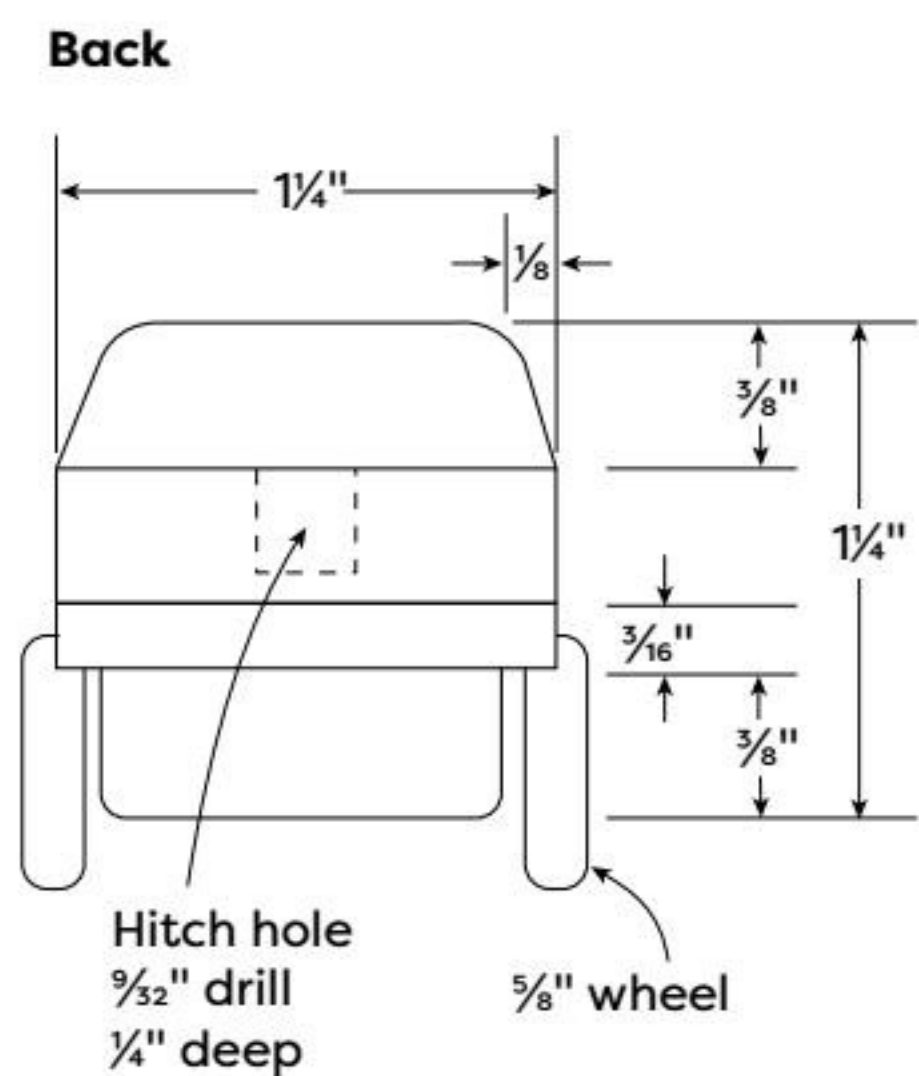
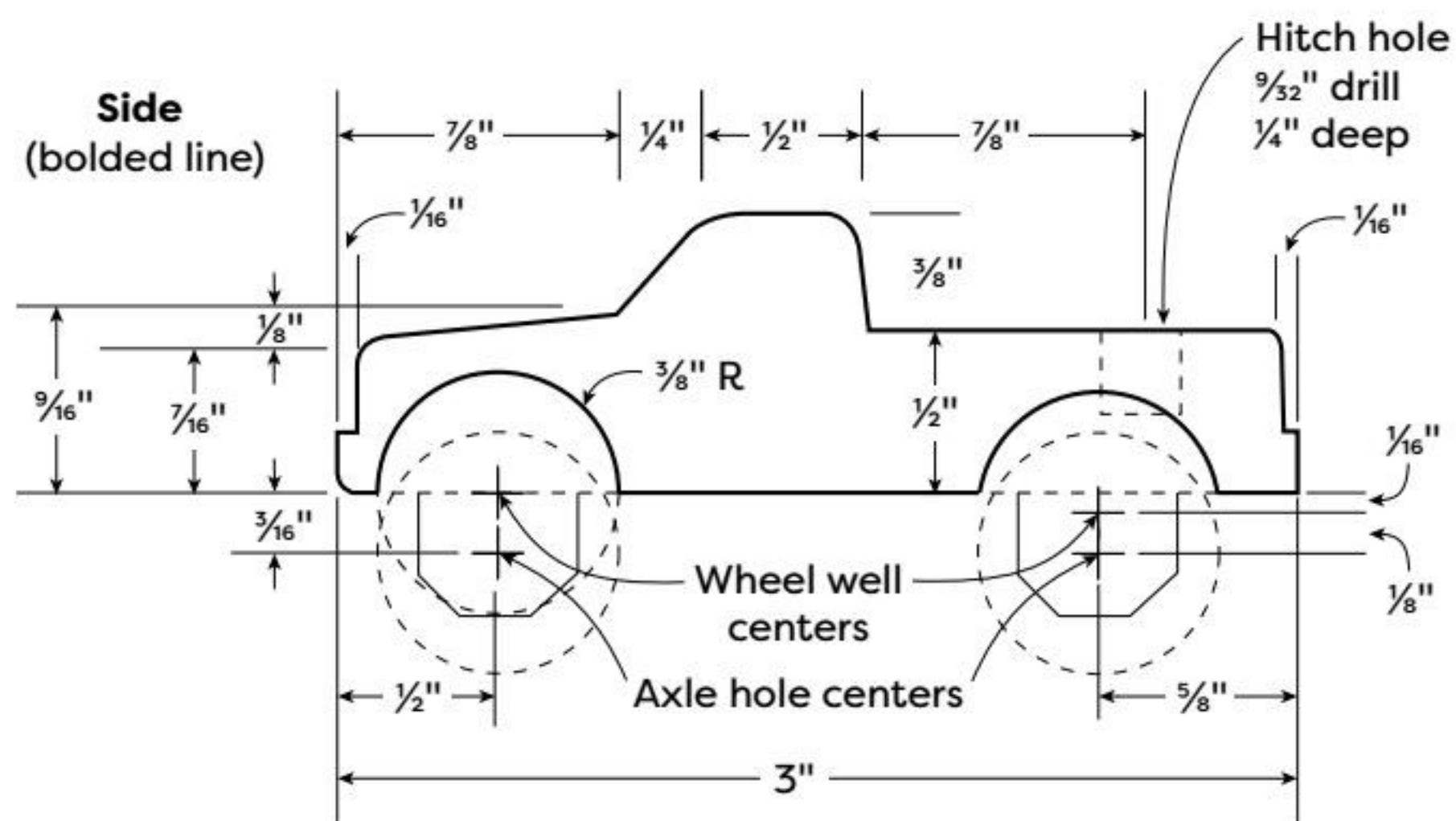
PICKUP TRUCK

This simple pickup truck is a great place to start your toy-making journey. The instructions are extra-detailed here to help walk you through the common steps you'll see in most projects. When you're done, you'll have a rough-and-tumble pickup perfect for toting just about anything you can think of. The trailer hitch hole allows for even more hauling capacity by adding the flat deck or RV trailers (page 32; 39).

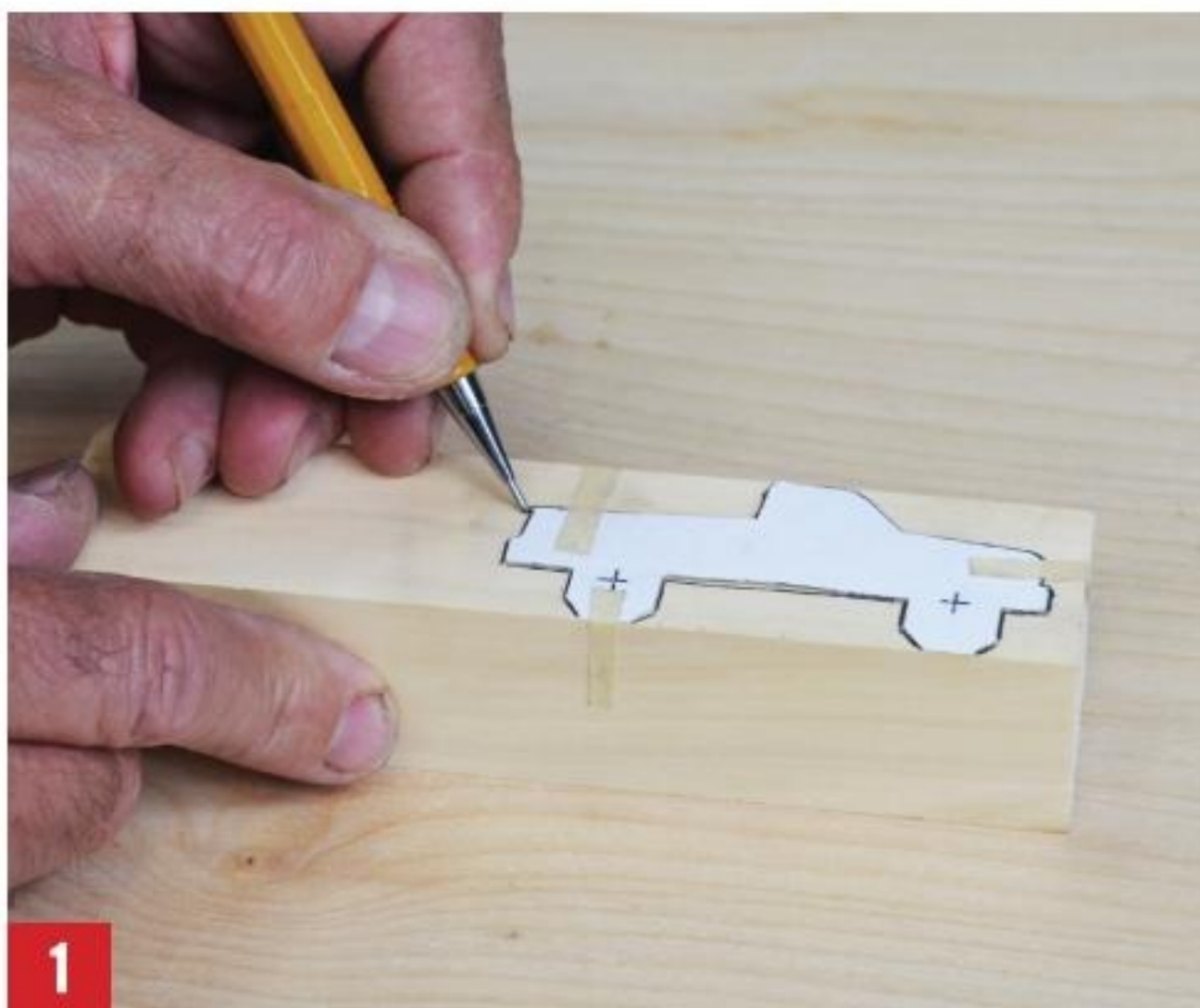
CUT LIST

NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
1	Body	Hardwood	1¼	1¼	3	
4	Wheels	⅝ in. factory-made contour				For custom wheels, see pages 10 to 21 for instructions.
2	Axles	⅜ in. dowel			To suit.	

ASSEMBLY GUIDE & TEMPLATES



TRUCK BODY



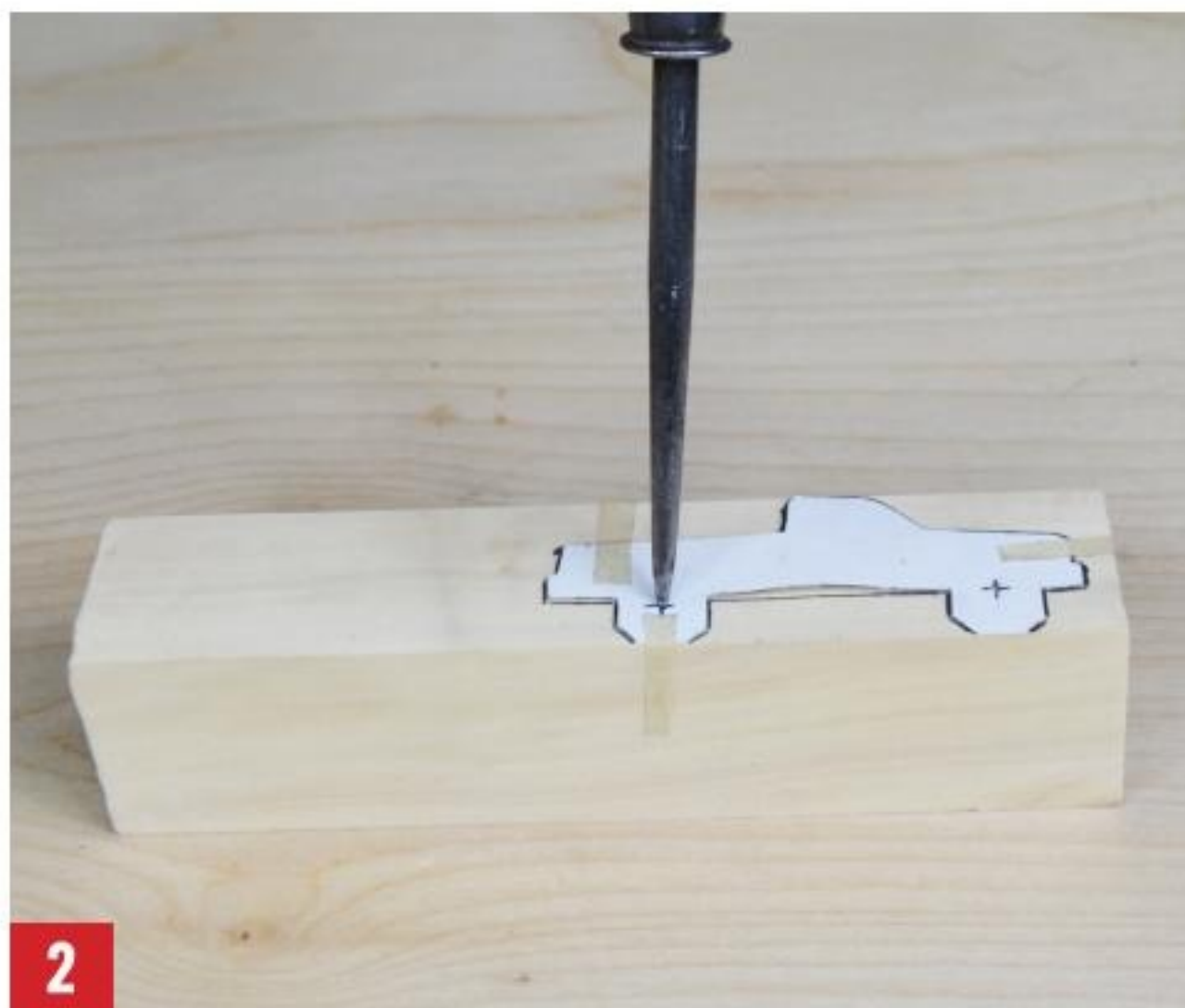
1

1 Select the wood. It needs to be $1\frac{1}{4} \times 1\frac{1}{4} \times 3$ in. long. Best to have it an inch or two longer if possible to allow for easier and safer cutting. Mark out the side profile, using the template (see page 27).

2 Mark the wheel well centers using an awl.

3 Mark out the wheel well centers on the other side, accurately as possible. Use a square to continue the wheel well center locations around the bottom and up the other side, then measure the distance up from the bottom. If the wheel well holes are significantly different side to side, the wheels may rub or look quite off-center.

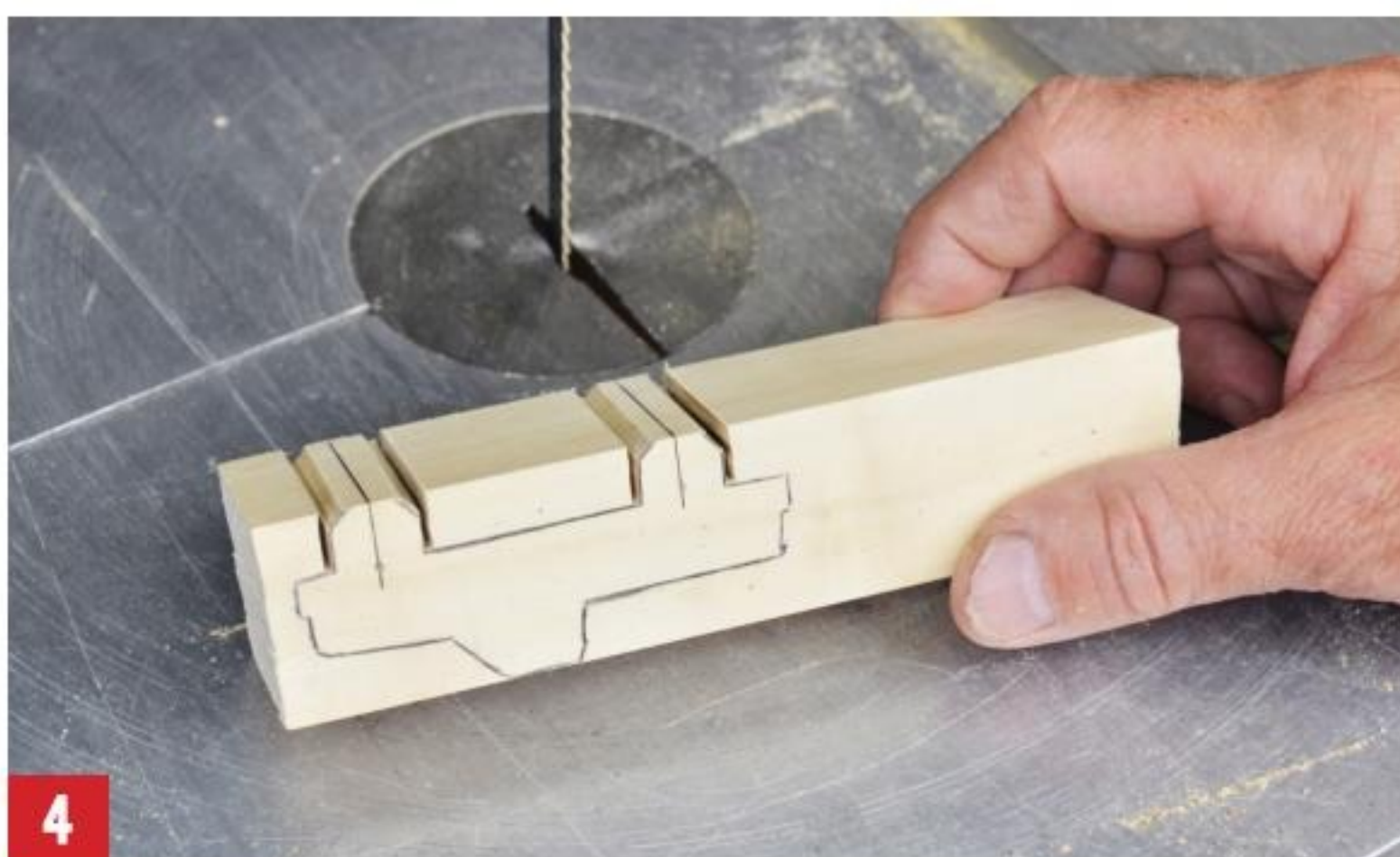
4 Saw the truck bottom contour. Do this now, while the profile lines are still visible (they are partially removed when drilling the wheel wells).



2



3



4



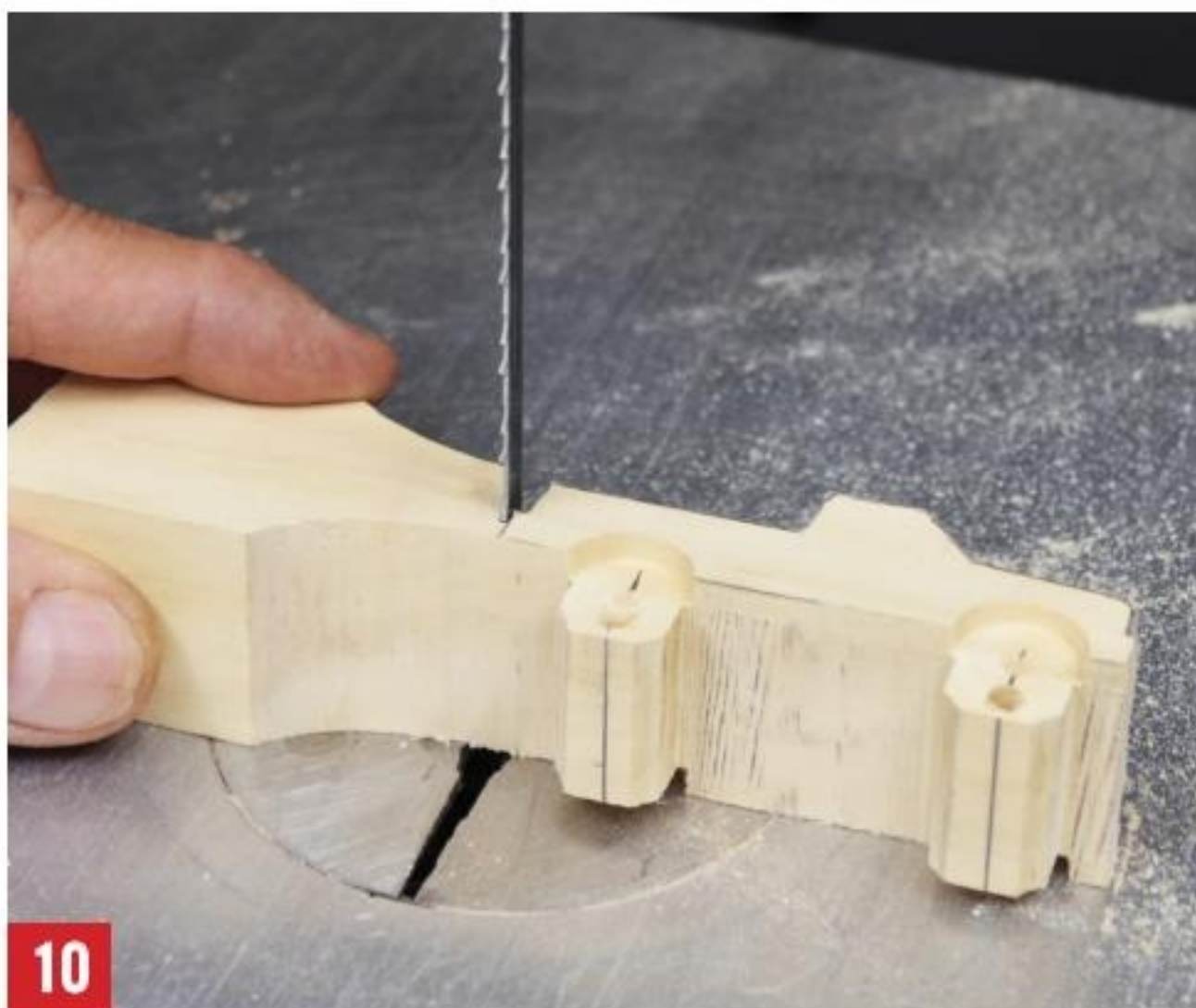
5 Drill the four wheel wells. Use a $\frac{5}{8}$ in.-diameter flat bottom drill to make a $\frac{1}{8}$ in.-deep recess. Shown is a Forstner-style bit, but a brad-point bit would work well also.

6 Saw most of the side profile. Leave a “handle” section if possible.

7 Smooth the axle ends. Use a small sharp chisel or saw to trim the excess corners of the wheel wells, then file or sand the end surfaces flat.

8 Mark out the axle hole centers. Both should be $\frac{3}{16}$ in. up from the bottom, and in line vertically with the wheel well centers. Or, measuring down from the existing wheel well centers, the front axle center will be $\frac{3}{16}$ in. below and the rear axle $\frac{1}{8}$ in. below the wheel well center.

9 Drill the axle holes. This step depends on the wheels you use. The wheels pictured have a $\frac{1}{8}$ in. hole, so required $\frac{1}{8}$ in. dowel axles. This means drilling the holes $\frac{5}{32}$ in. Use a high rpm and a slow feed to help keep the drill from wandering. Clear the chips a few times, as needed.

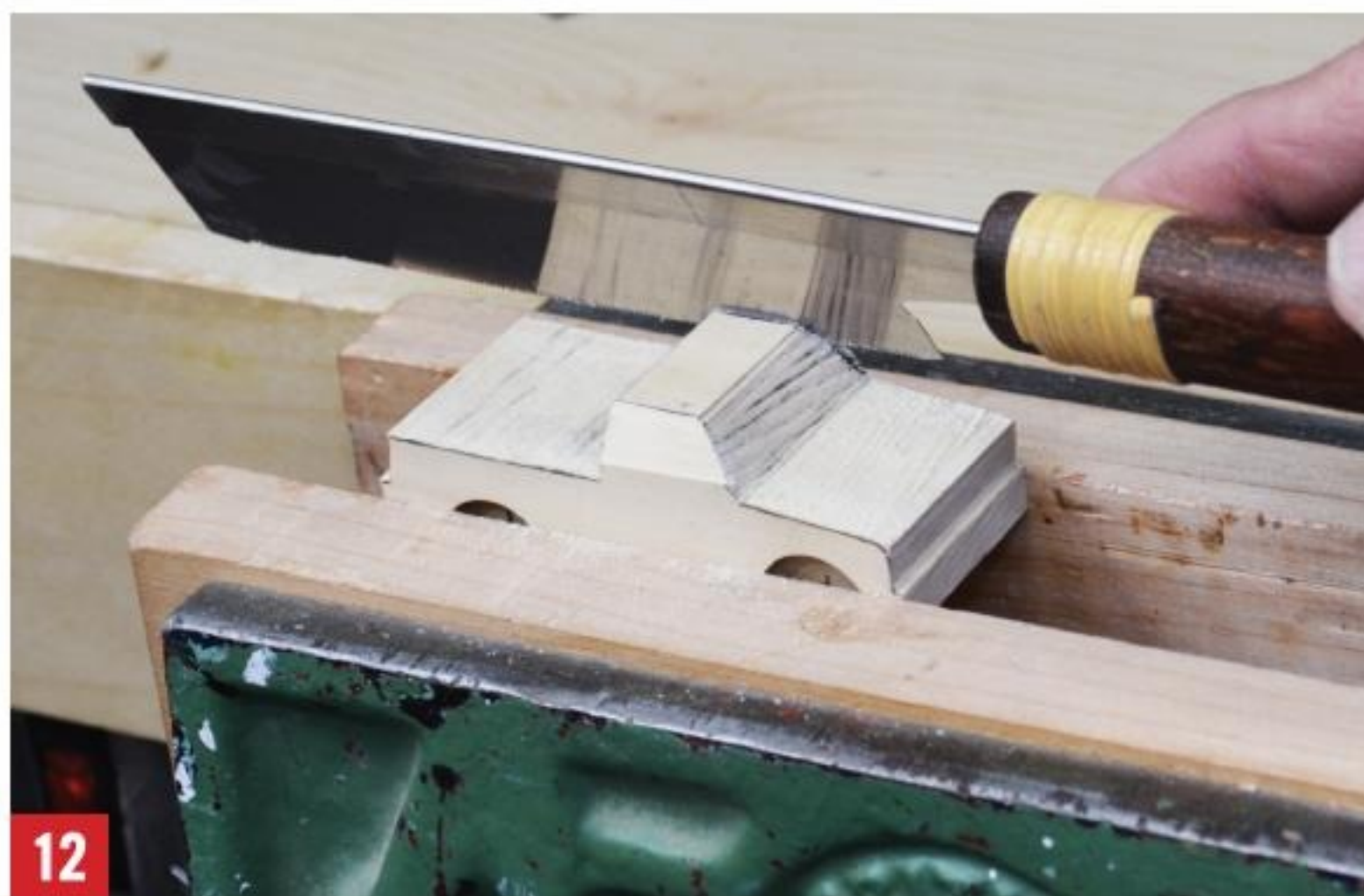


10 Finish sawing the truck. Remove the truck from the excess wood.



11 Mark out the side window angle. Measure or estimate a line $\frac{1}{8}$ in. from the side edges on the roof, and angle down to the bottom of the windshield.

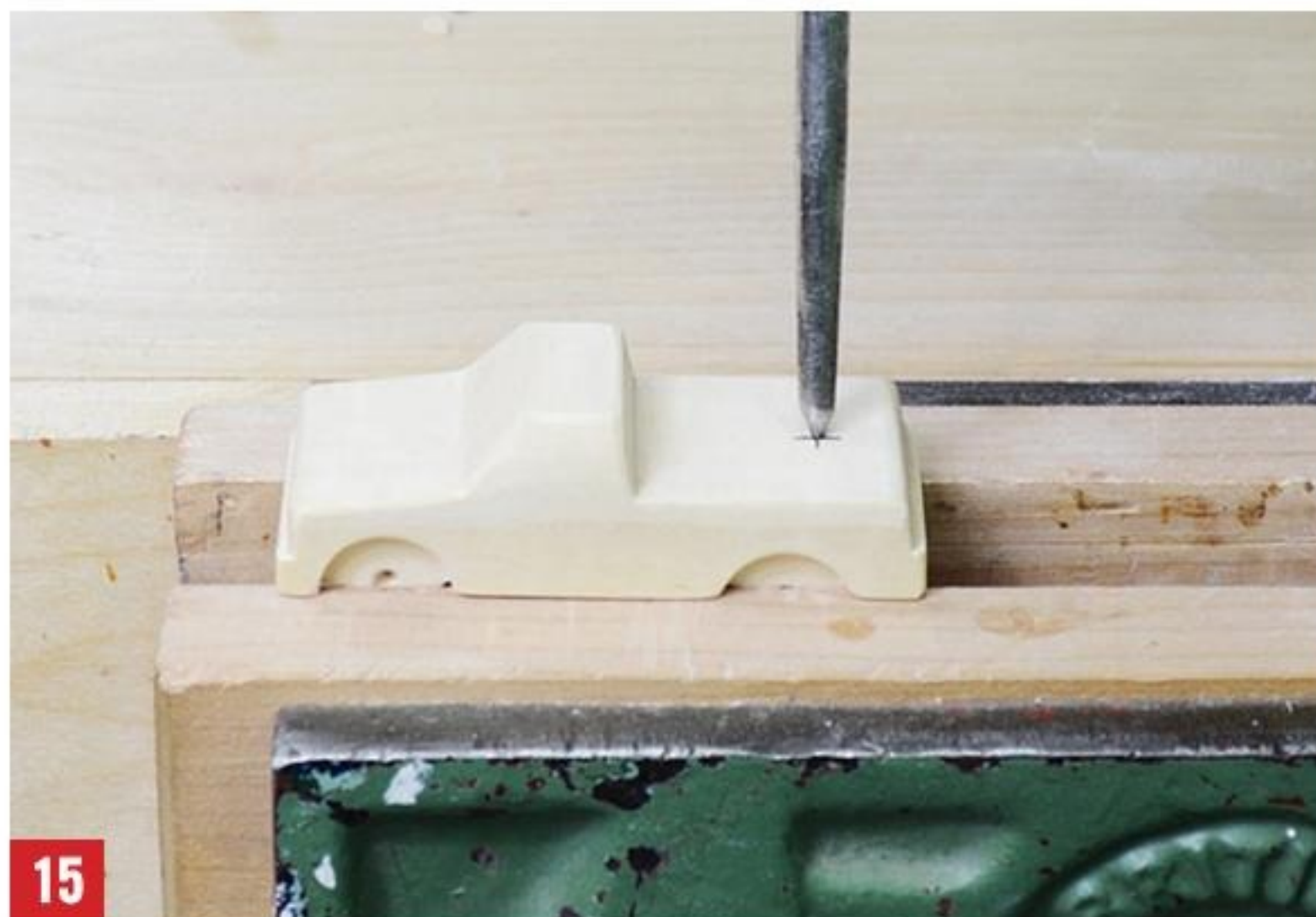
12 Saw the angles.



13 Remove all saw marks. File and sand each surface until smooth.

14 Remove all sharp corners and edges. Round over the hood and roof areas, ending up with a radius of about $\frac{1}{16}$ in. on those surfaces and slightly less on the truck box edges.





15

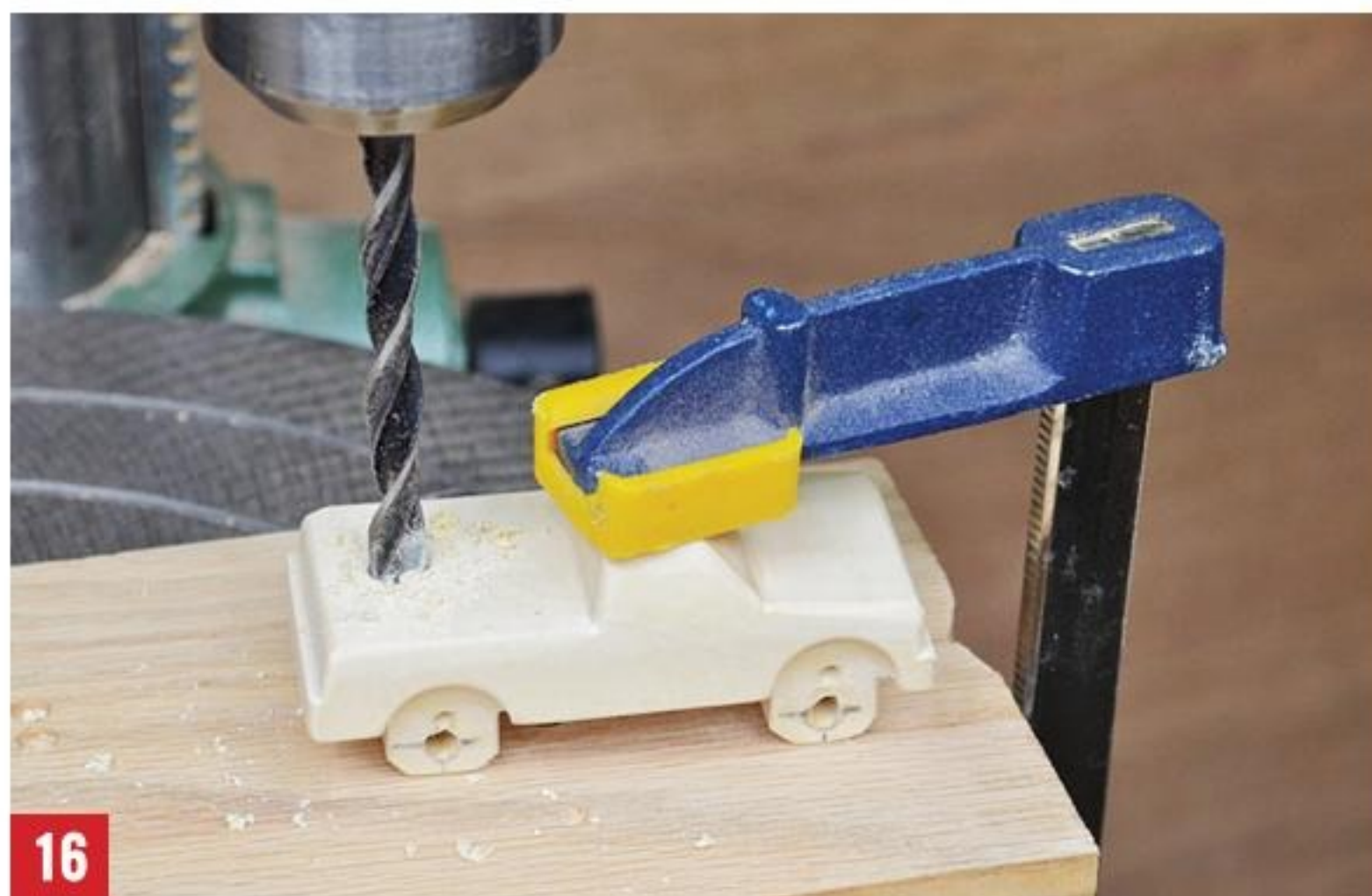
15 Mark out the location of the trailer hitch hole. It is $\frac{5}{8}$ in. from the back of the truck, and on center sideways.

16 Drill the $\frac{9}{32}$ in. hole that is $\frac{1}{4}$ in. deep. This diameter allows $\frac{1}{32}$ in. clearance on the $\frac{1}{4}$ in. trailer hitch dowel.

17 Finish-sand all surfaces.

COMPLETING

The truck in the photos has factory $\frac{5}{8}$ in.-diameter wheels with $\frac{1}{8}$ in. holes. See pages 10 to 21 for information on other wheel options. See page 23 for finishing information.



16



17



FIFTH-WHEEL FLAT DECK TRAILER

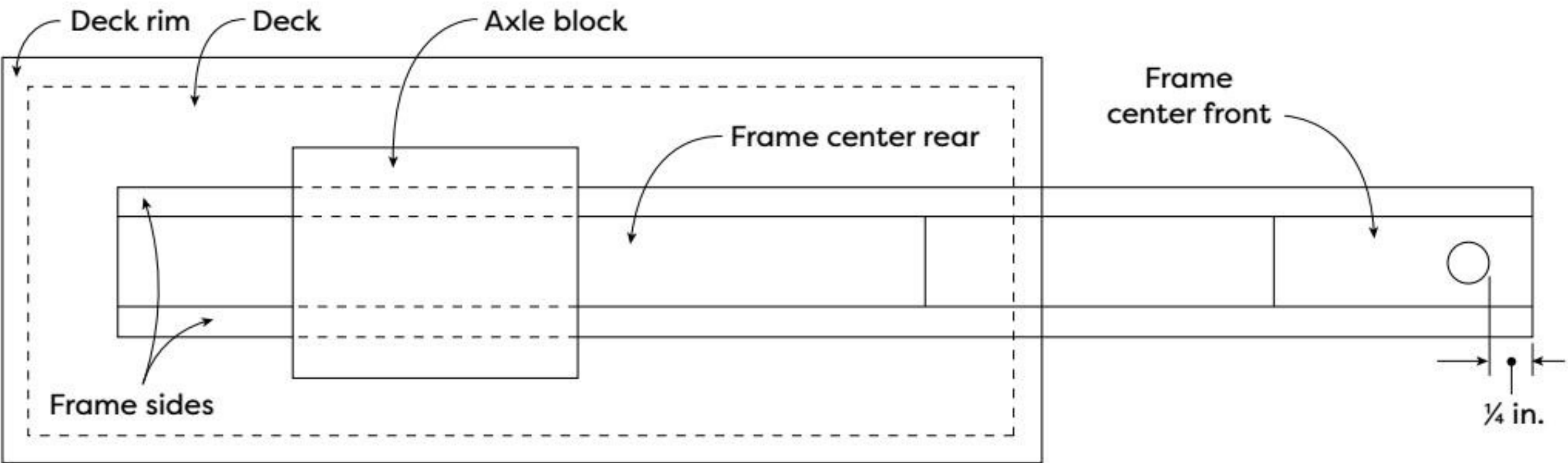
Simply drop the dowel hitch of this fifth-wheel flat deck trailer in place behind your pickup truck to triple its hauling capacity (page 26). The handy lip around the edge of the trailer helps your cargo stay in place around sharp corners and over treacherous routes.

CUT LIST

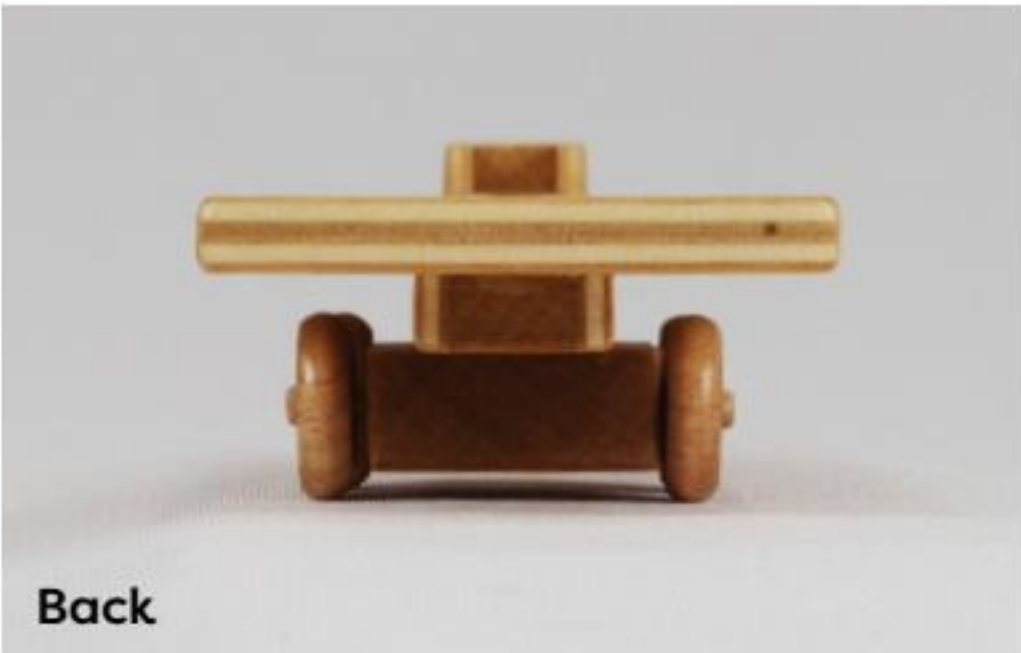
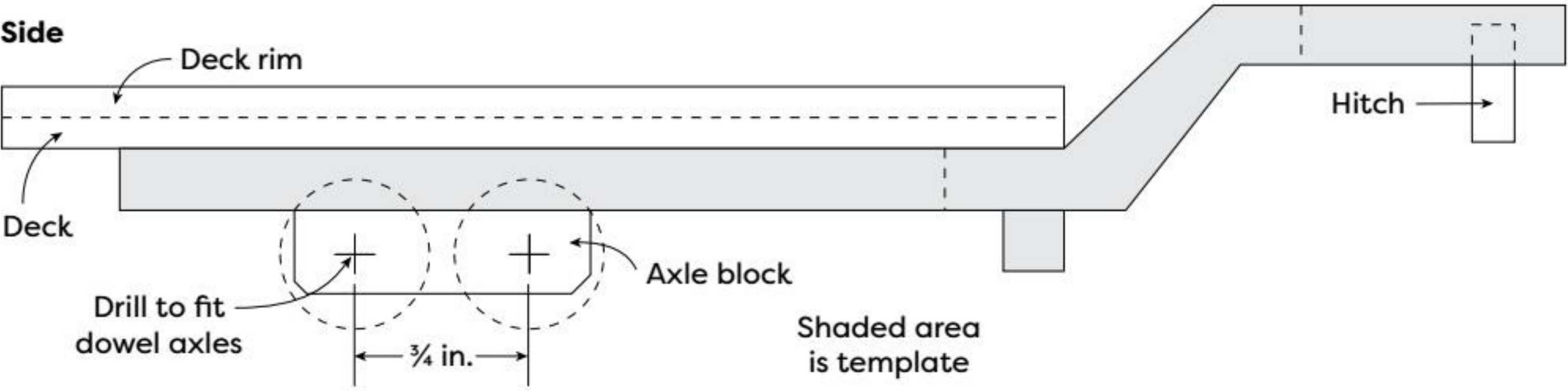
NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
2	Frame sides	Baltic birch plywood	$\frac{1}{8}$	$1\frac{1}{8}$	$6\frac{1}{8}$	
1	Frame center: Front	Hardwood	$\frac{1}{4}$	$\frac{3}{8}$	$1\frac{1}{8}$	Cut at least $4\frac{1}{2}$ in. long to make rear piece also.
1	Frame center: Rear	Hardwood	$\frac{1}{4}$	$\frac{3}{8}$	$3\frac{1}{2}$	See note above.
1	Deck	Baltic birch plywood	$\frac{1}{8}$	$1\frac{3}{4}$	$4\frac{1}{2}$	Rough-cut $\frac{1}{8}$ in. over length and width.
1	Deck rim	Baltic birch plywood	$\frac{1}{8}$	$1\frac{3}{4}$	$4\frac{1}{2}$	Rough-cut $\frac{1}{8}$ in. over length and width.
1	Axle block	Hardwood	$\frac{3}{8}$	1	$1\frac{1}{4}$	
1	Hitch pin	$\frac{1}{4}$ in. dowel			To suit.	Rough-cut about $\frac{3}{4}$ in. long.
4	Wheels	$\frac{5}{8}$ in. factory-made contour				See pages 10 to 21 for custom wheel information.
2	Axles	$\frac{1}{8}$ in. dowel			To suit.	

Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.

ASSEMBLY GUIDE



TEMPLATES





FIFTH-WHEEL RV TRAILER

This trailer is a natural fit with the pickup truck (page 26). This toy has an optional interior, which makes the trailer look a little better, and makes it slightly lighter in weight. However, you may skip the interior details if you like. Either way, hitch up and get ready to travel the country!

CUT LIST

NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
1	Trailer body center	Hardwood or softwood	1	2 ½	6 ¼	
2	Trailer body sides	Hardwood or softwood	¼	2 ½	6 ¼	Note grain direction. See instructions.
1	Hitch pin	¼ in. dia. dowel			To fit.	At least ⅝ in. long.
2	Jack pins	¼ in. dia. dowel			To fit.	At least ½ in. long.
2	Axles	⅝ in. dia. dowel			To fit.	At least 2 ⅝ in. long.
4	Wheels	⅝ in. dia. factory-made contour				⅜ in. axle holes

Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.

FIFTH-WHEEL RV TRAILER



Front



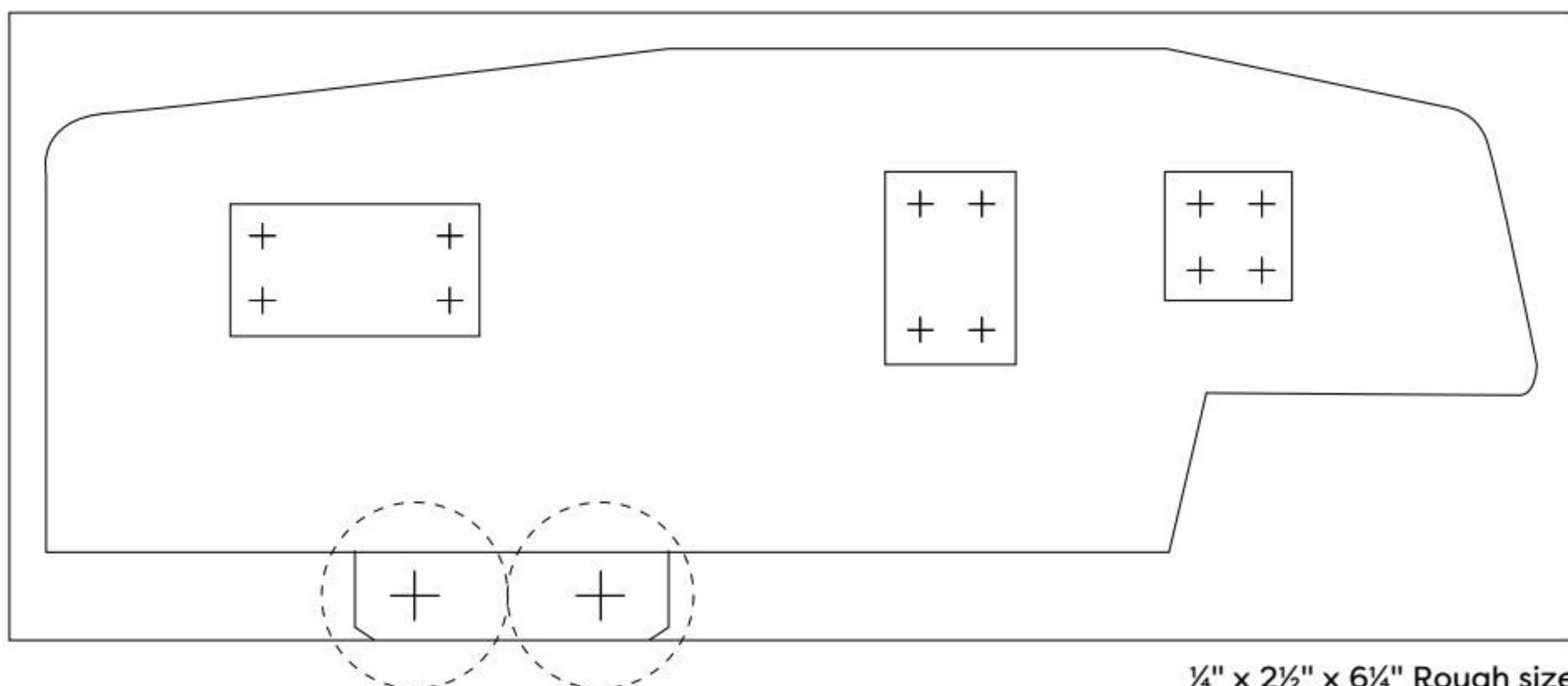
Back



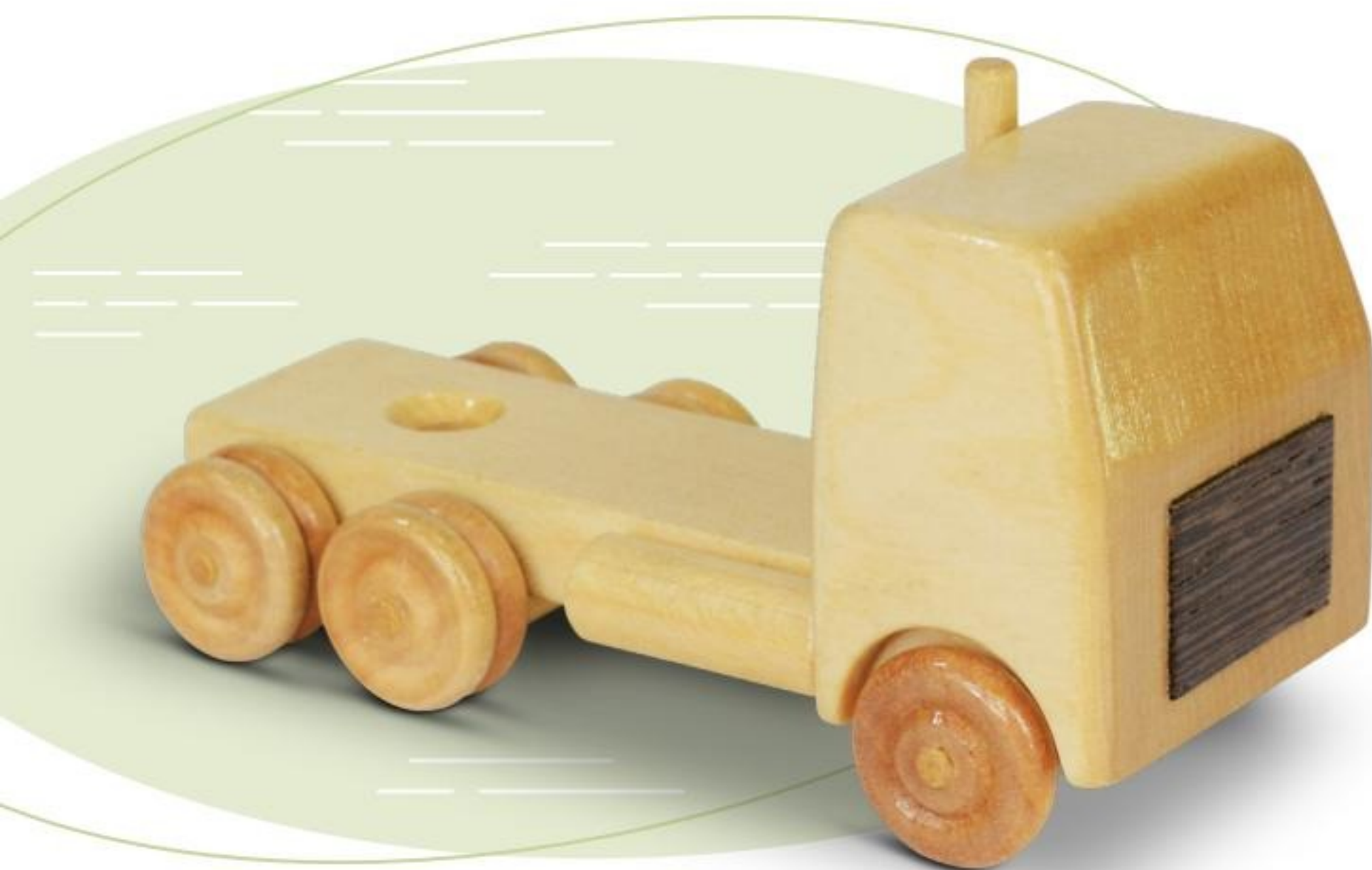
Side

TEMPLATES

Right side



1/4" x 2 1/2" x 6 1/4" Rough size



CAB-OVER TRUCK

The king of the highway, this cab-over truck is ready to move freight through tunnels, over mountains, and cross-country. With details like a grille and exhaust pipe, you'll be ready to hit the road. Make a few to create your own convoy—and don't forget to honk your horn!

CUT LIST

NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
1	Frame and body block	Hardwood	1 3/4	1 3/4	4 1/4	
1	Front axle housings	Hardwood	3/16	3/8	1 1/16	Could be 1/4 in. thick. Need at least 7 in. if making trailer (page 54) as well.
2	Rear axle housings	Hardwood	3/16	3/8	1 1/16	See above note.
1	Grille (optional)	Veneer	1/32	5/8	3/4	
1	Exhaust	3/16 in. dia. dowel			1 3/4	
2	Fuel tanks	3/8 in. dia. dowel			1	Rough-cut overlong. See instructions.
10	Wheels	3/4 in. dia. factory-made contour				Glue rear wheels in pairs to make "duals." See instructions.
3	Axles	1/8 in. dowel			About 1 7/8.	Cut length to fit.

Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.

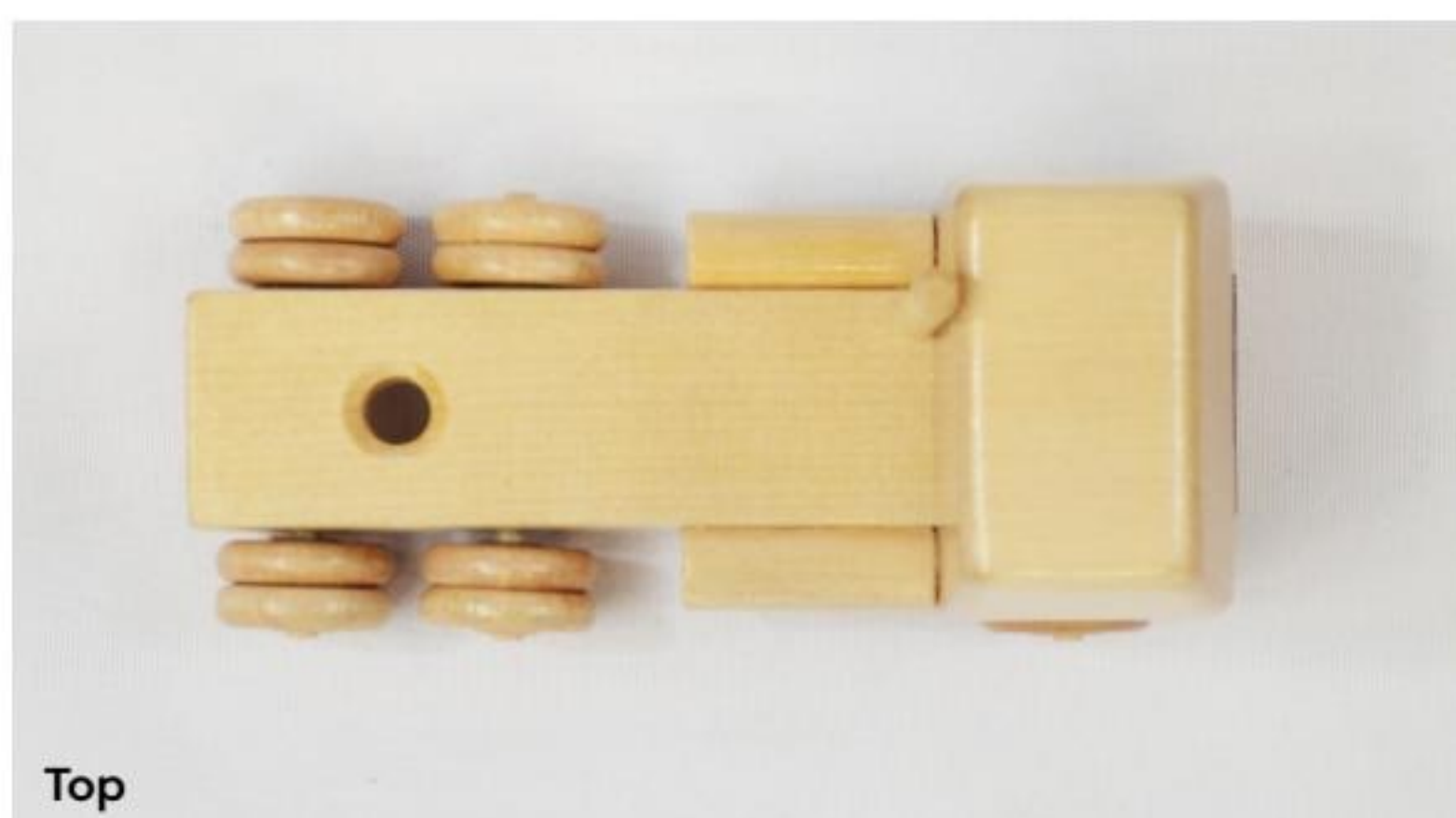
CAB-OVER TRUCK



Side



Front

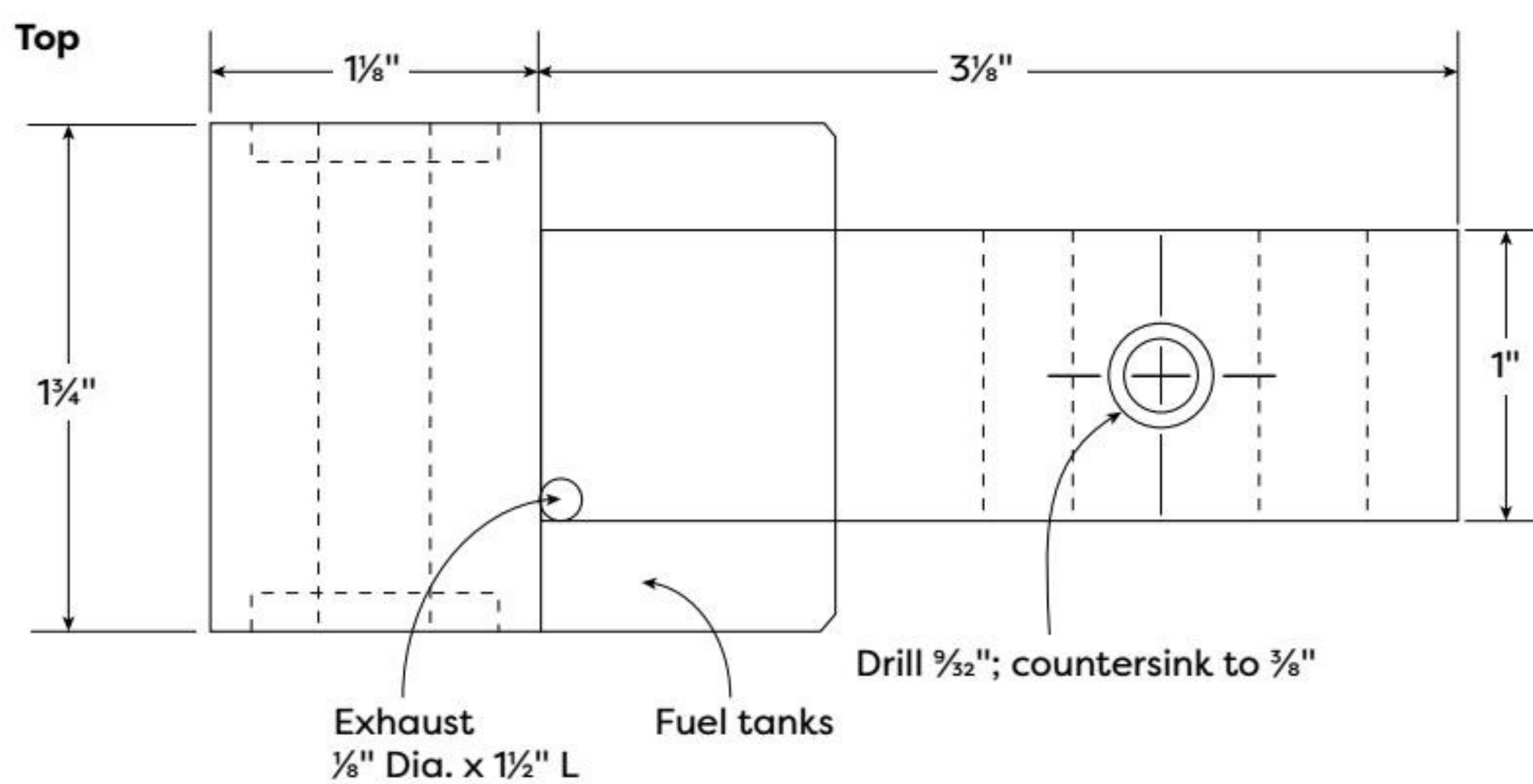


Top



Back

ASSEMBLY GUIDE





FLAT DECK TRAILER FOR CAB-OVER TRUCK

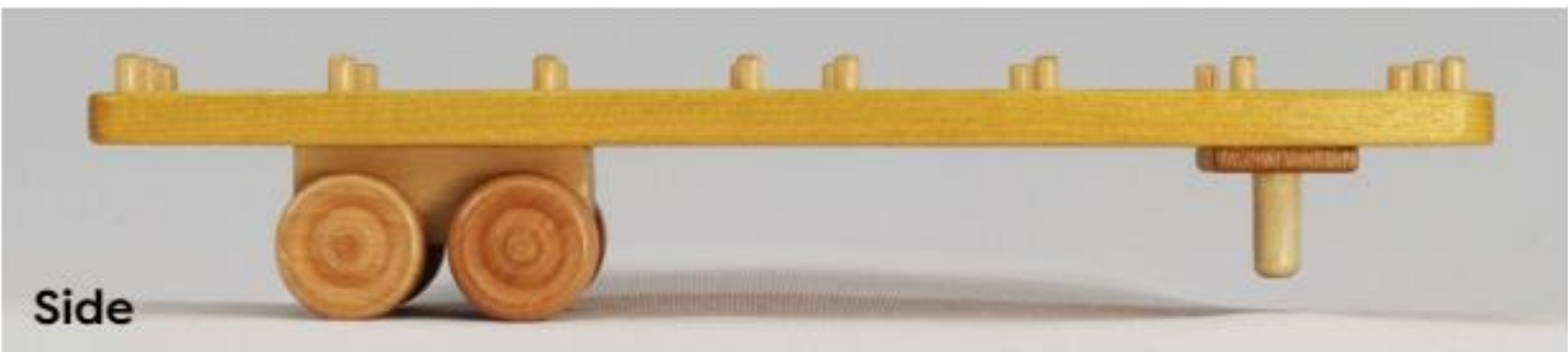
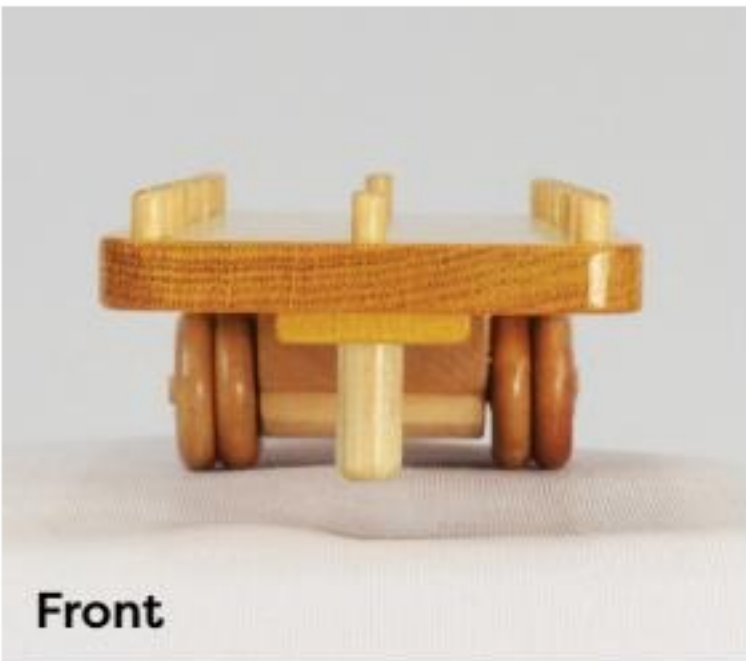
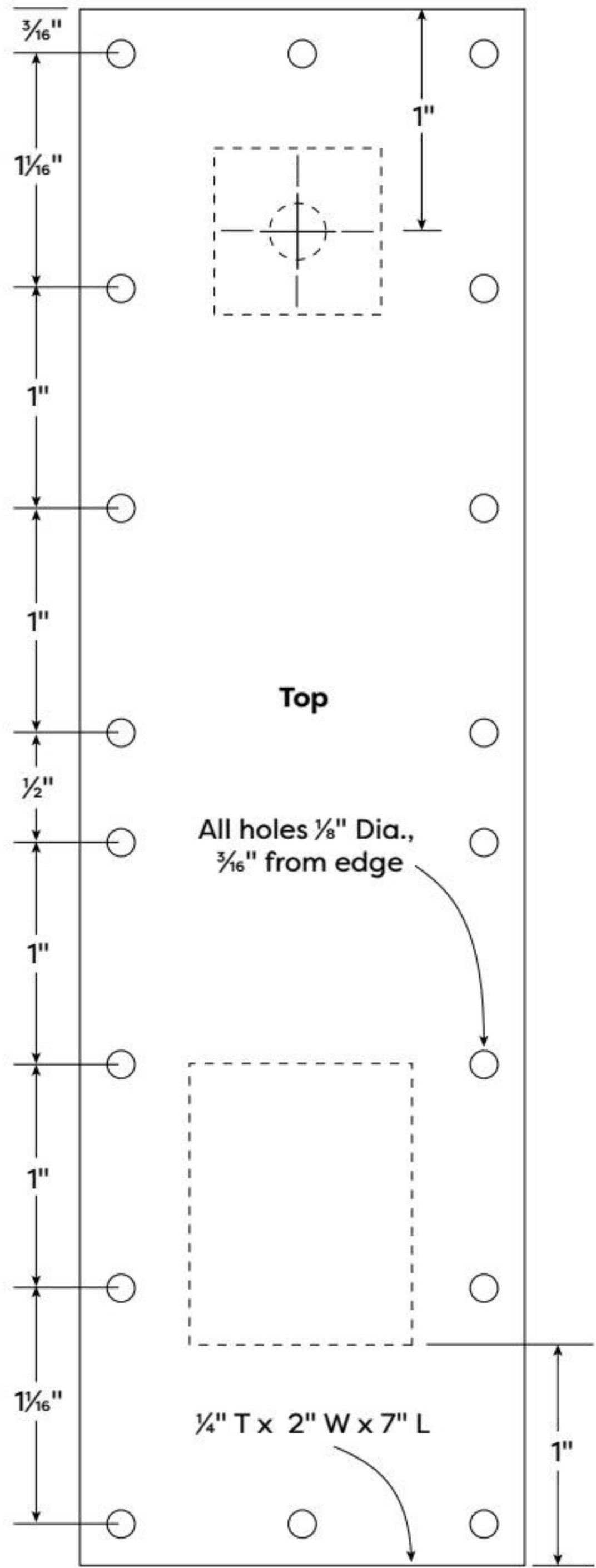
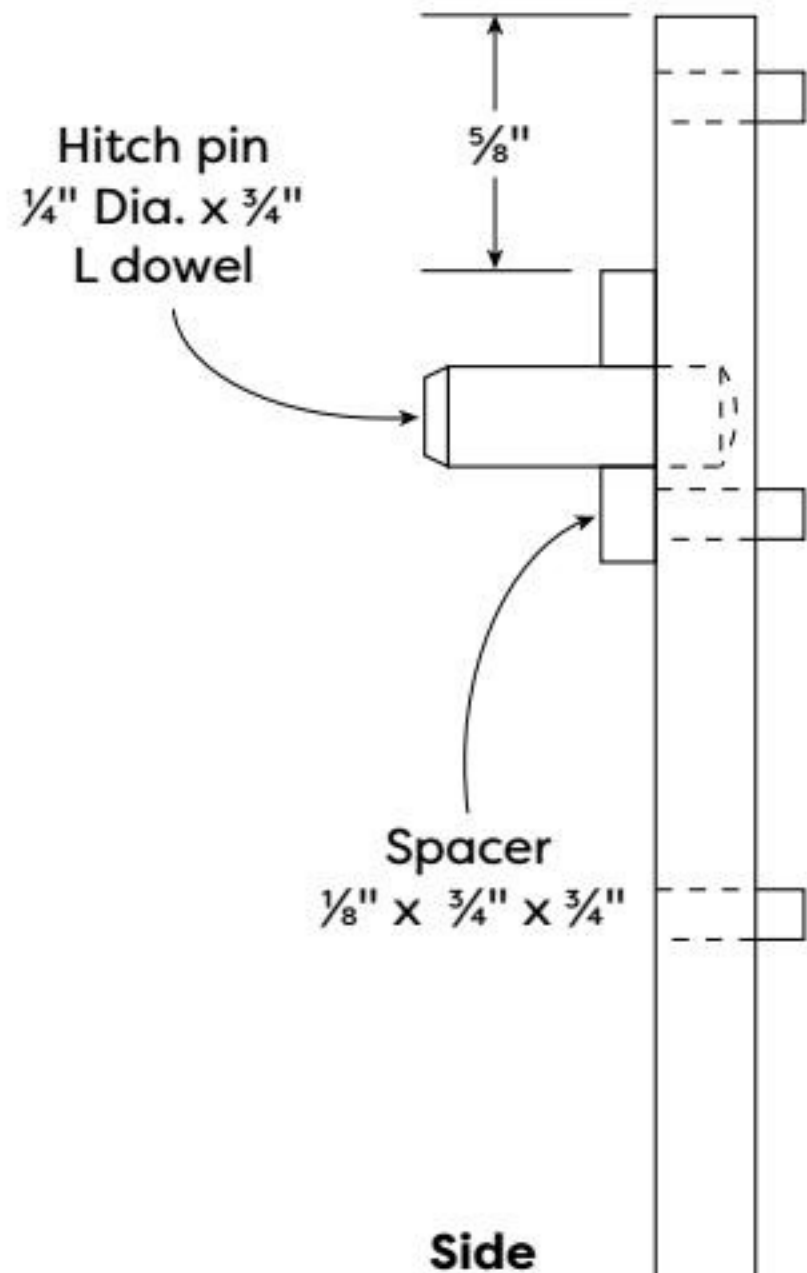
10-4! This cab-over trailer has a flat deck that can be made a little longer or shorter. It is designed to carry the Coast Guard boat (page 102), but can haul just about anything that fits! Size it to suit. It is a good idea to have some sort of lip surrounding the deck so the cargo doesn't slide off. This can be short dowel posts as seen here, or a thin rim as used for the fifth-wheel trailer (page 32).

CUT LIST

NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
1	Deck	Hardwood or Baltic birch plywood	$\frac{1}{4}$	2	7	
18	Dowel posts	$\frac{1}{8}$ in. dowel			$\frac{5}{8}$	
1	Axle block	Hardwood	$\frac{1}{2}$	1	$1\frac{1}{2}$	
2	Axle housings	Hardwood	$\frac{3}{16}$	$\frac{3}{8}$	$1\frac{1}{16}$	Could be $\frac{1}{4}$ in. thick; see cab-over cutting list page 47. Need at least $2\frac{1}{2}$ in. long for trailer only.
1	Hitch spacer	Hardwood	$\frac{1}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	
1	Hitch	$\frac{1}{4}$ in. dowel			$\frac{3}{4}$	
8	Wheels	$\frac{3}{4}$ in. dia. factory-made contour				Glue rear wheels in pairs to make "duals." See instructions.
2	Axles	$\frac{1}{8}$ in. dowel			About $1\frac{7}{8}$.	Cut length to fit.

Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.

ASSEMBLY GUIDE





DEUCE COUPE

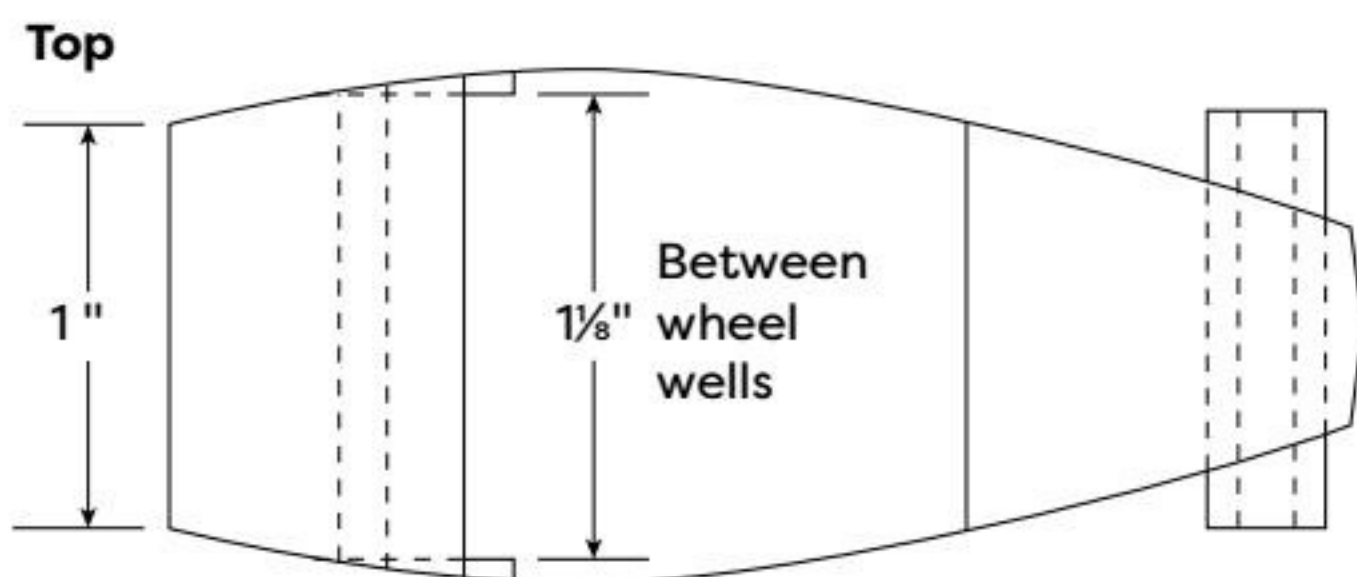
This toy is modeled after the classic 30s Ford Deuce Coupe, which is still a very popular die-cast toy. It is an easy build (our wooden toy, not the original hot rod) consisting of a single small block of hardwood, and then four wheels of your choice. Rev your engine and get ready to cruise around town in style!

CUT LIST

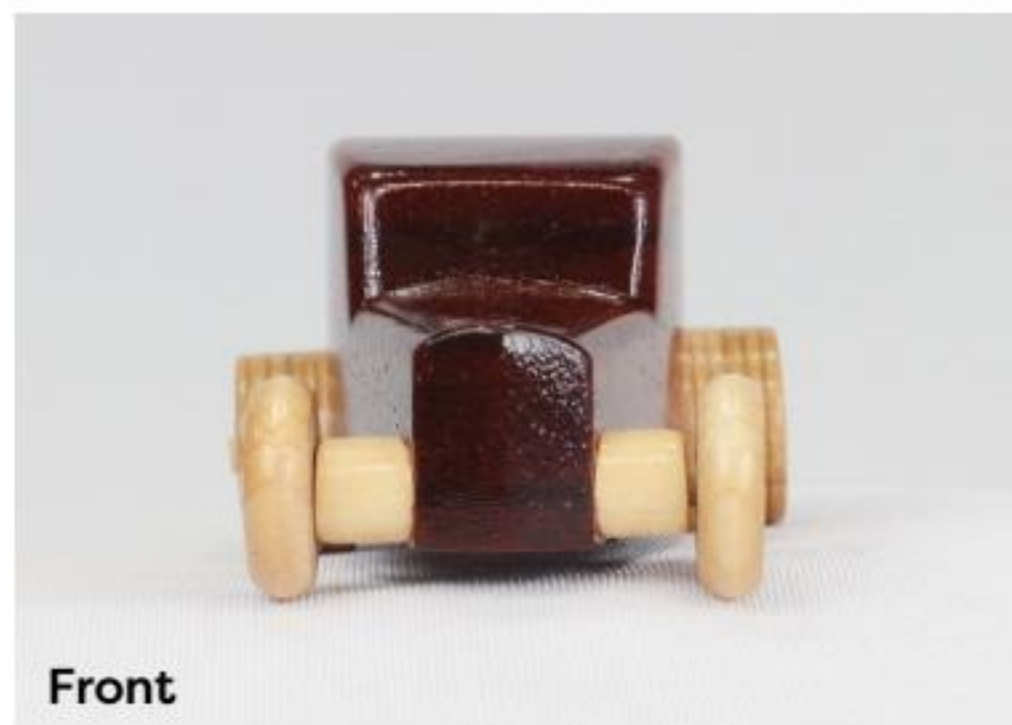
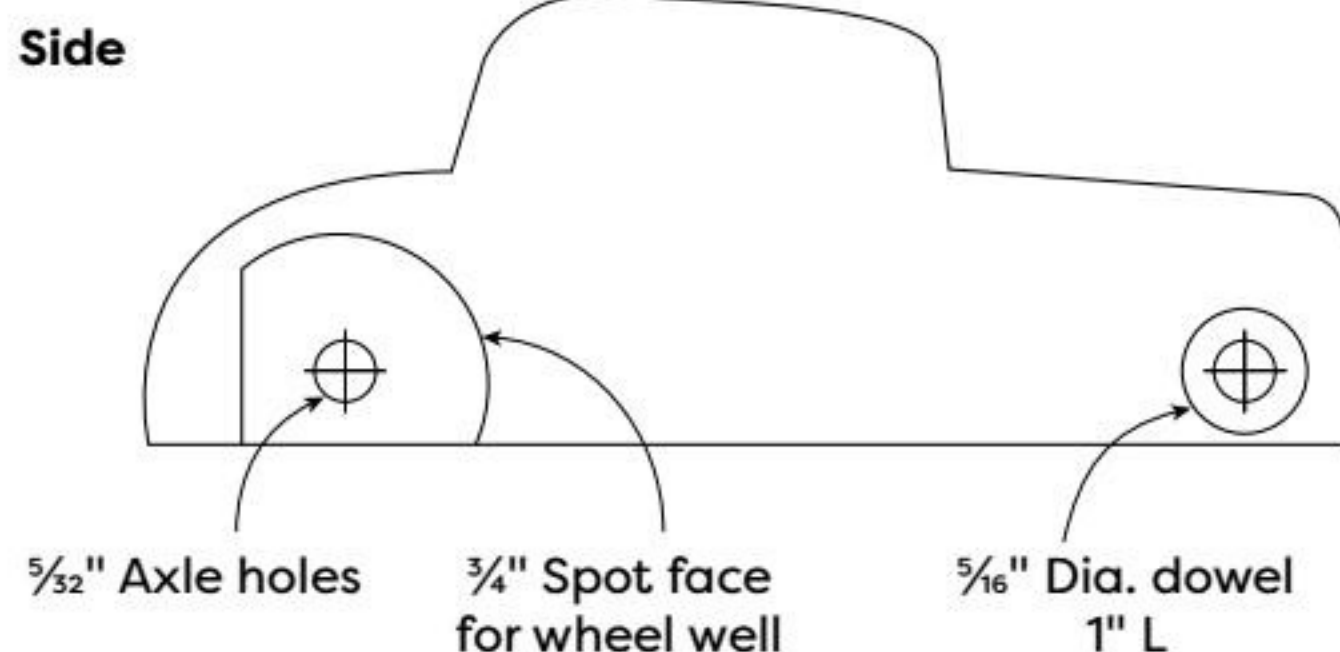
NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
1	Body	Hardwood	1 1/8	1 1/4	3	Rough-cut oversize (see instructions).
1	Front axle housing	5/16 in. dia. dowel			1	
2	Front wheels	5/8 in. dia. factory-made contour				See pages 10 to 21 for custom wheel choices.
4	Rear wheels	3/4 in. dia. factory-made contour				Glue into two pairs. See instructions.
2	Axles	1/8 in. dia. dowel			To fit.	

Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.

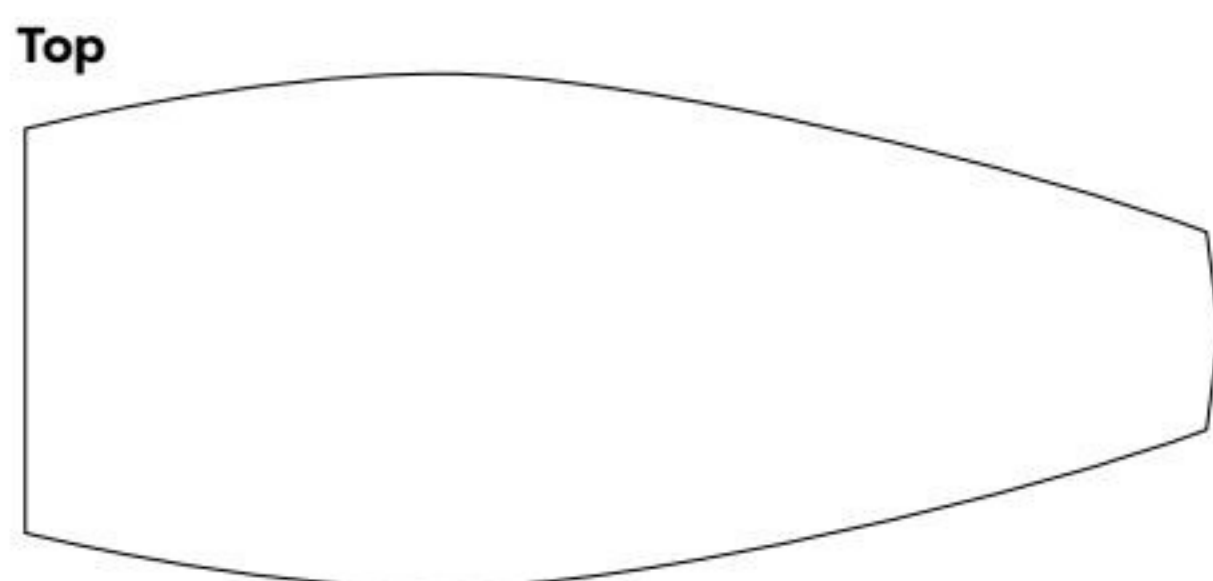
ASSEMBLY GUIDE



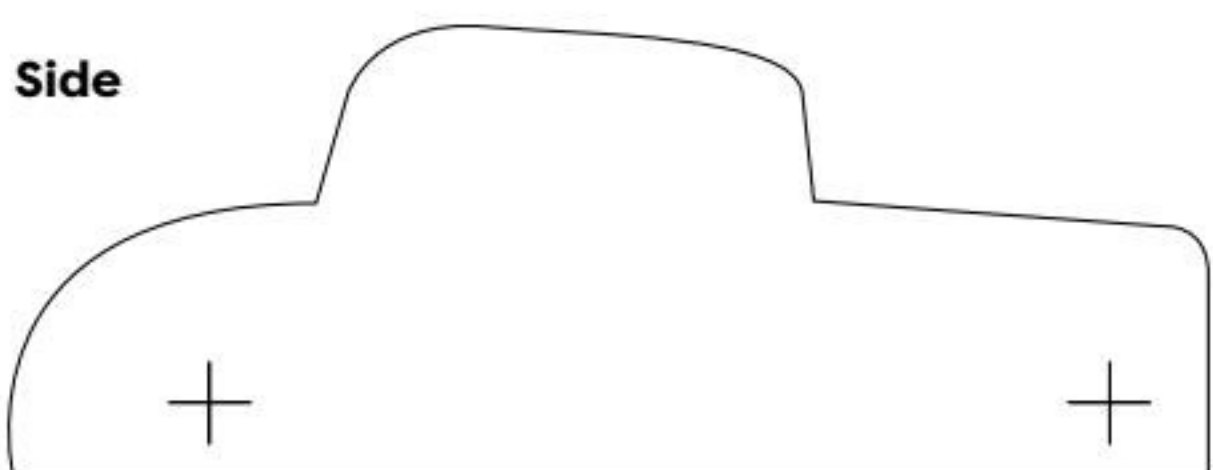
1 1/8" H x 1 1/4" W x 3" L



TEMPLATES



1 1/4" H x 1 1/4" W x 3" L





MONSTER TRUCKS × 3

Monster truck toys were in production almost as soon as the first Bigfoot 4x4 truck made its debut in 1979. The popularity of monster truck shows and toys has grown steadily since then. Two main body styles are shown: a pickup truck modeled after the Ford truck of Northern Nightmare; and a panel truck modeled after Grave Digger. The panel truck has an option for front fenders and an angled windshield, which is a third variation. Get ready to crush the competition with your choice of big tires (see page 16).

CUT LIST

NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
1	Pickup or panel truck body	Hardwood	1¼	1½	3¼	
1	Panel body with front fenders (optional)	Hardwood	1¼	1½	3¼	Rough length is 3 ¾ in.
2	Veneer fenders (optional)	Veneer	⅙ to ⅓ total	1½	2¼	Rough-cut the veneer to at least 2 ¼ in. square.
1	Frame	Hardwood	¾	1	3¼	
8	Wheels	Factory-made 1¼ in. dia. treaded				Glued together to make four wide wheels. See pages 10 to 21 for custom wheel instructions.
2	Axles	¼ in. dowel			To fit.	

Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.

MONSTER PANEL TRUCK



Front



Back



Side



Top

MONSTER PANEL TRUCK WITH FENDERS



Front



Back



Side



Top



SCHOOL BUS

This is one bus that you'll never miss! The interior seats are a fun option and not hard to add. However, the bus looks great without the interior detail. If you expect very young children to play with this bus, skip the interior. This will ensure that no little fingers get caught in the window openings. Choose a yellow wood to make this project even better.

CUT LIST

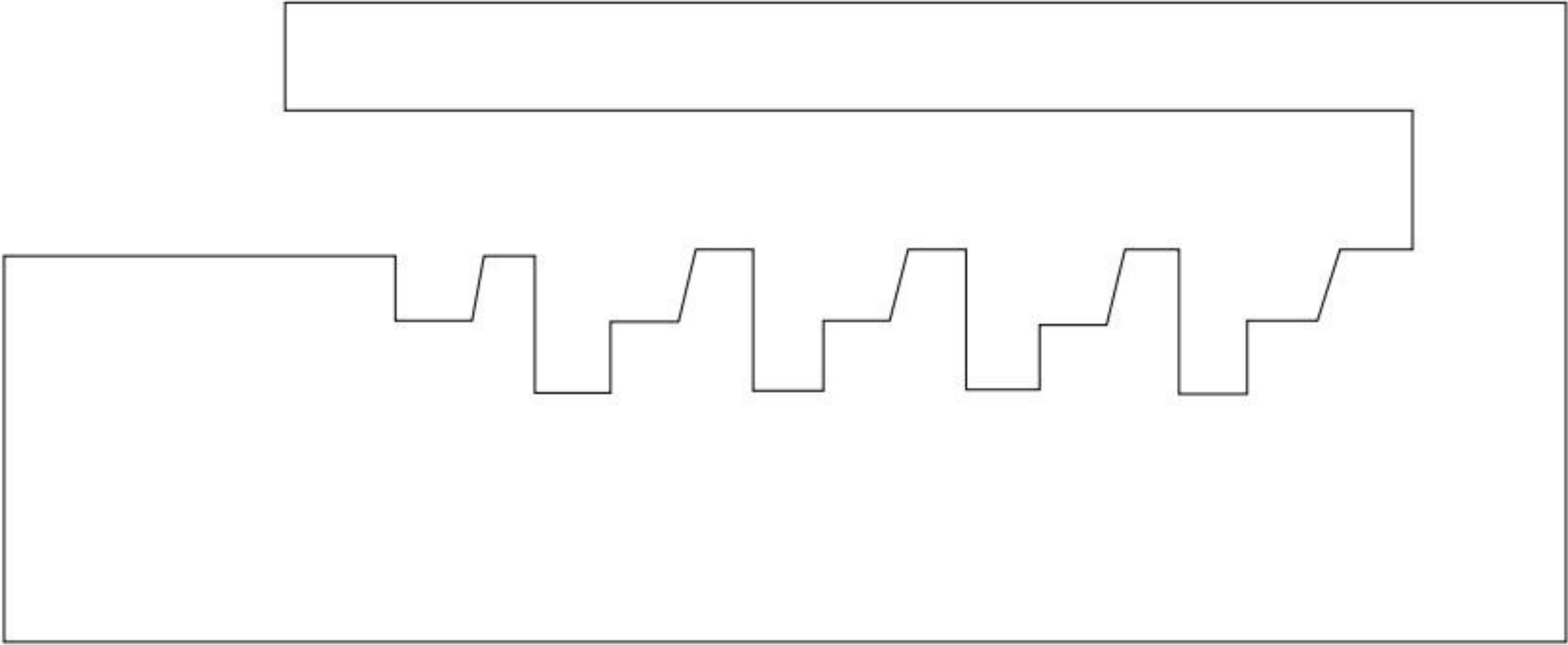
NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
1	Body interior	Hardwood	1½	2¼	5½	
2	Body sides	Hardwood	⅝	2¼	5½	
6	Wheels	Factory-made ¾ in. contour				Optional custom wheels; see pages 10 to 21.
4	Flasher lights (optional)	Hardwood or ¼ in. dowel				See instructions.

Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.

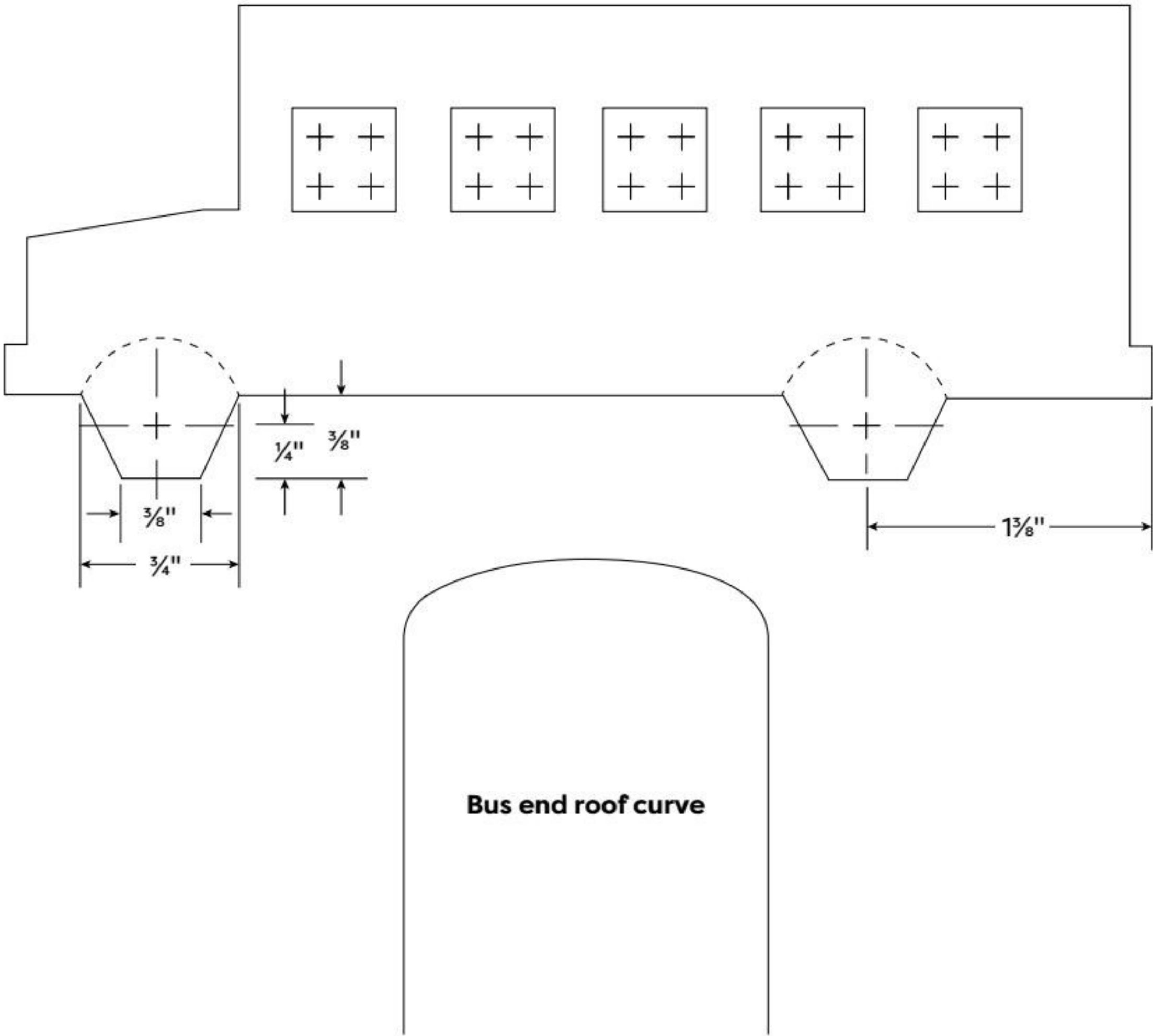


TEMPLATES

Bus interior
 $1\frac{1}{2}" \times 2\frac{1}{4}" \times 5\frac{1}{2}"$



Bus side (2)
 $\frac{1}{8}" \times 2\frac{1}{4}" \times 5\frac{1}{2}"$





1930S SPRINT CAR

These small and stylish cars were made by Ferrari, Maserati, and others back in the early days of racing. Very soon the die-cast toy companies were selling their versions. This wooden model has a one piece body, with two solid axles and factory-made contour wheels. Grab your driving goggles, gloves, and scarf and hit the track in style!

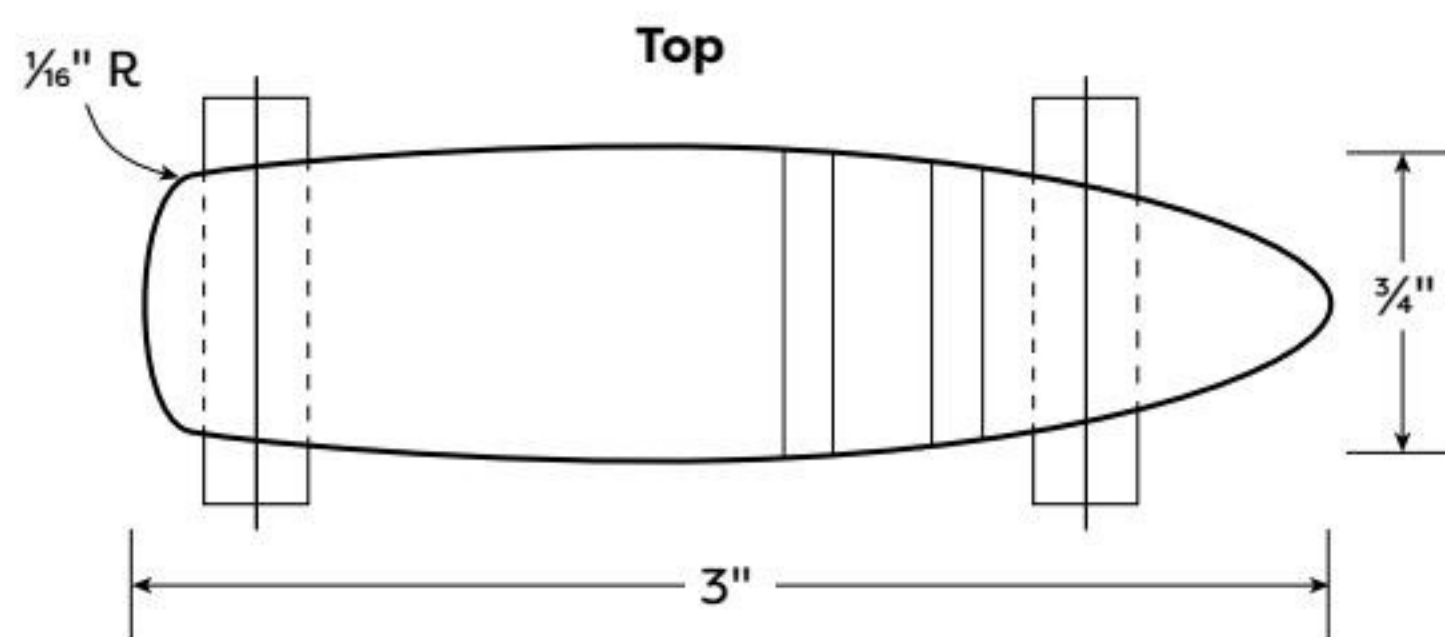
CUT LIST

NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
1	Body	Hardwood	$\frac{3}{4}$	$\frac{3}{4}$	3	
2	Axle housings	$\frac{5}{16}$ in. dowel			$1\frac{1}{16}$	
1	Steering wheel (optional)	$\frac{5}{16}$ or $\frac{3}{8}$ in. dowel			$\frac{1}{8}$	Cut after rounding. See instructions.
4	Wheels	Factory-made $\frac{5}{8}$ in. dia. contour				For custom wheel options, see pages 10 to 21.

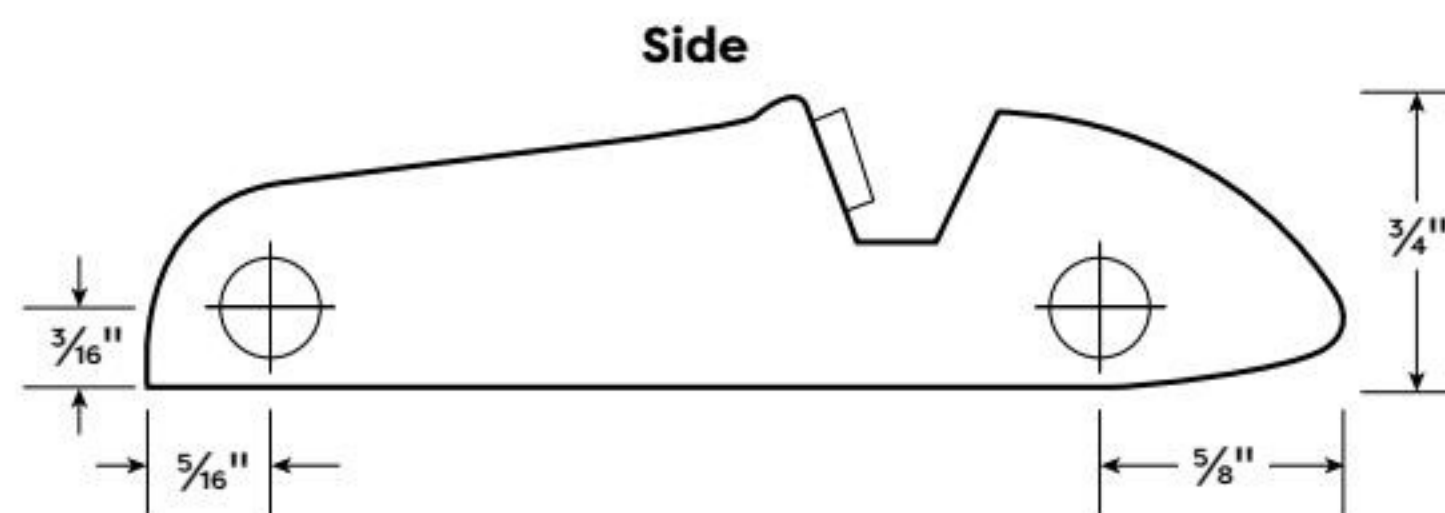
Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.



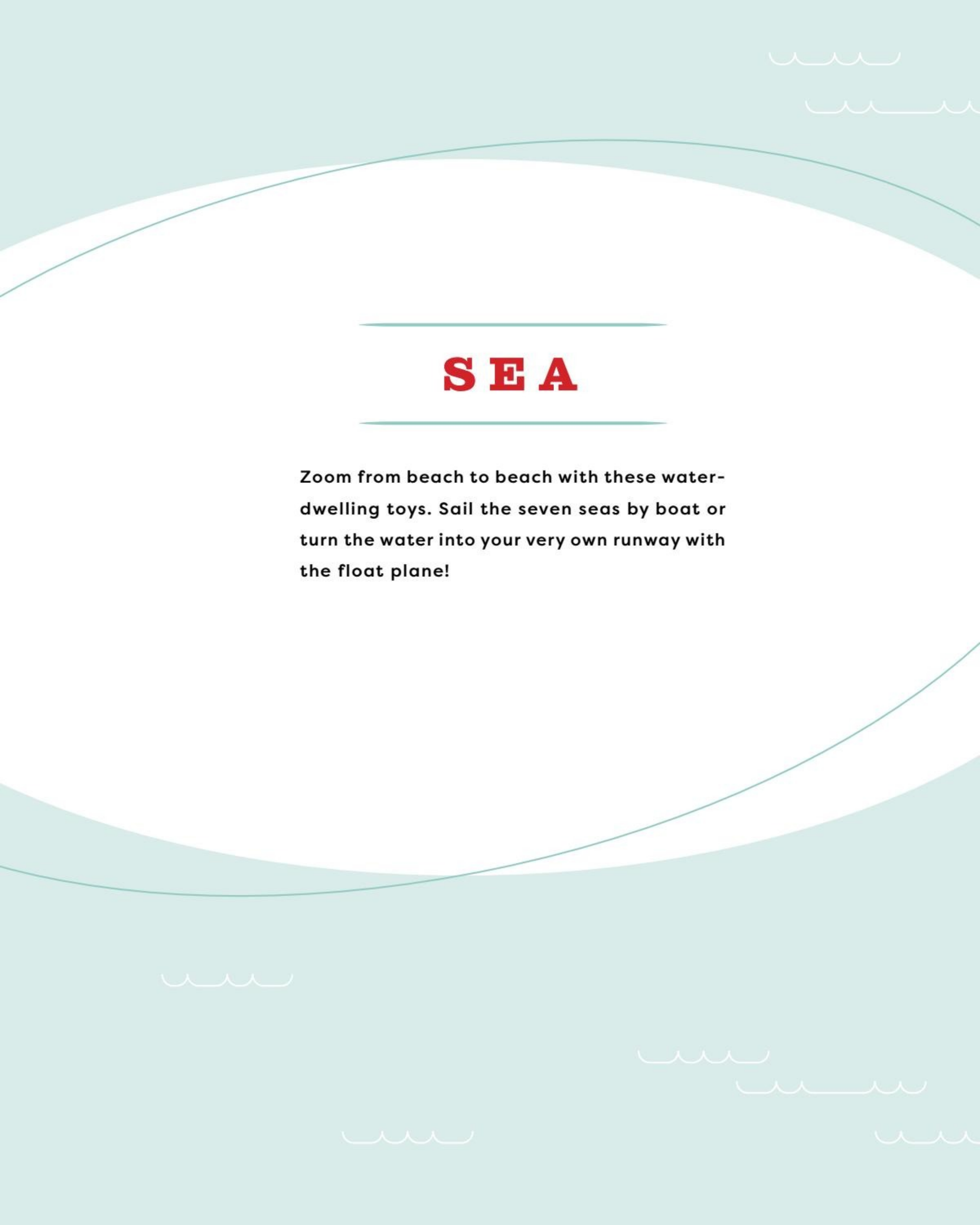
ASSEMBLY GUIDE & TEMPLATES



Bold outlines
are templates



Bold outlines
are templates



SEA

Zoom from beach to beach with these water-dwelling toys. Sail the seven seas by boat or turn the water into your very own runway with the float plane!



COAST GUARD BOAT

This boat is modeled after the 40-foot utility boat used by the Coast Guard. The toy is meant to be carried by the flat deck trailer (page 54), pulled by the cab-over truck (page 47). The hull may be made from one solid block, or may be laminated from several. A strip of darker wood can be used to approximate the paint stripe seen on some Coast Guard boats. Skip over the waves and get ready to defend the coastline!

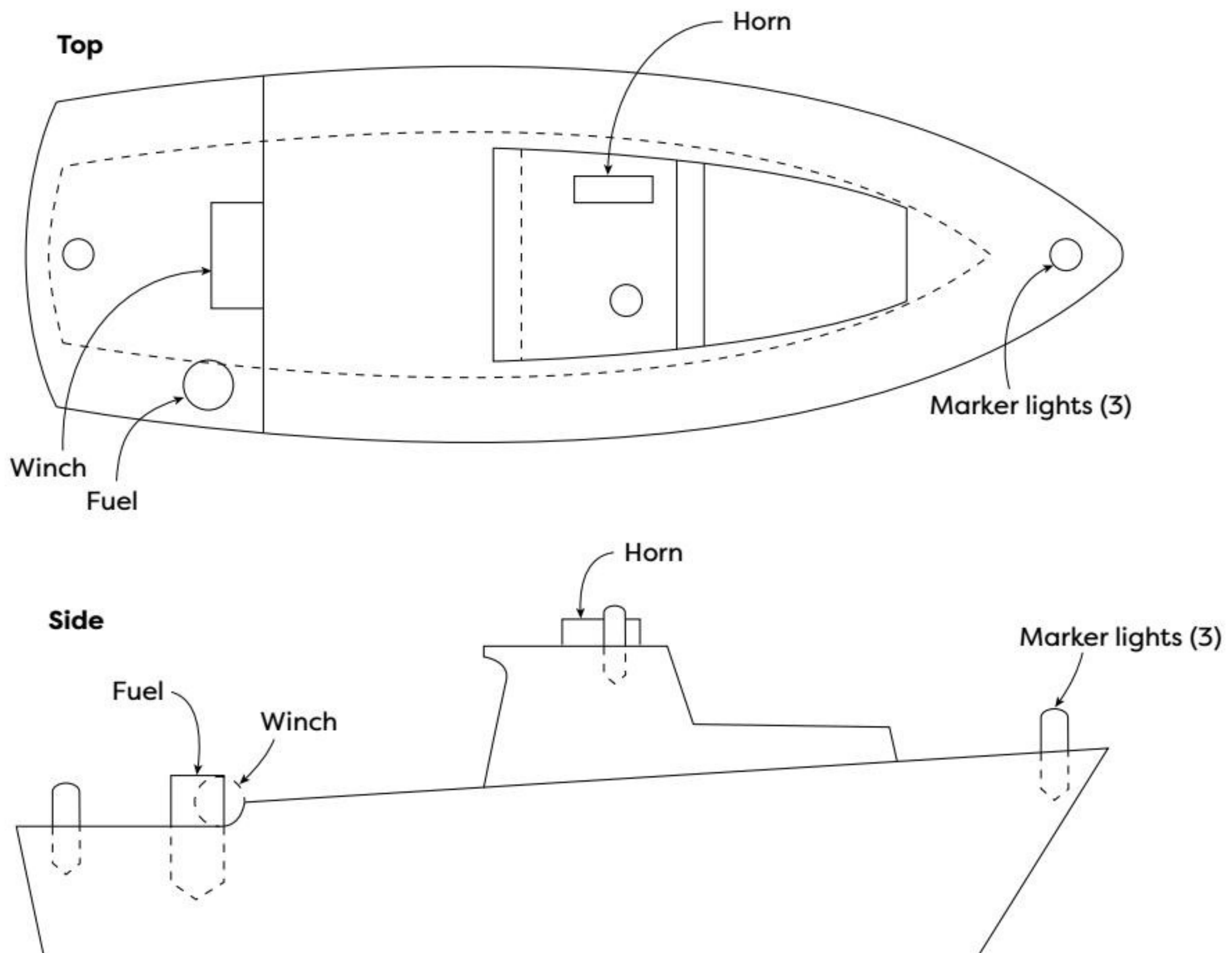
CUT LIST

NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
1	Hull	Hardwood	1	1 3/4	5 1/4	Can be laminated if a colored stripe is desired. See instructions.
1	Wheelhouse	Contrasting hardwood	3/4	1	2	
1	Deck winch	1/4 in. dia. dowel			1/2	
2	Stern and bow lights (optional)	1/8 in. dowel			1/2	
1	Wheelhouse lights (optional)	1/8 in. dowel			1/2	
1	Wheelhouse horn (optional)	1/8 in. dowel			3/8	
1	Fuel container (optional)	1/4 in. dowel			1/2	

Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.



ASSEMBLY GUIDE





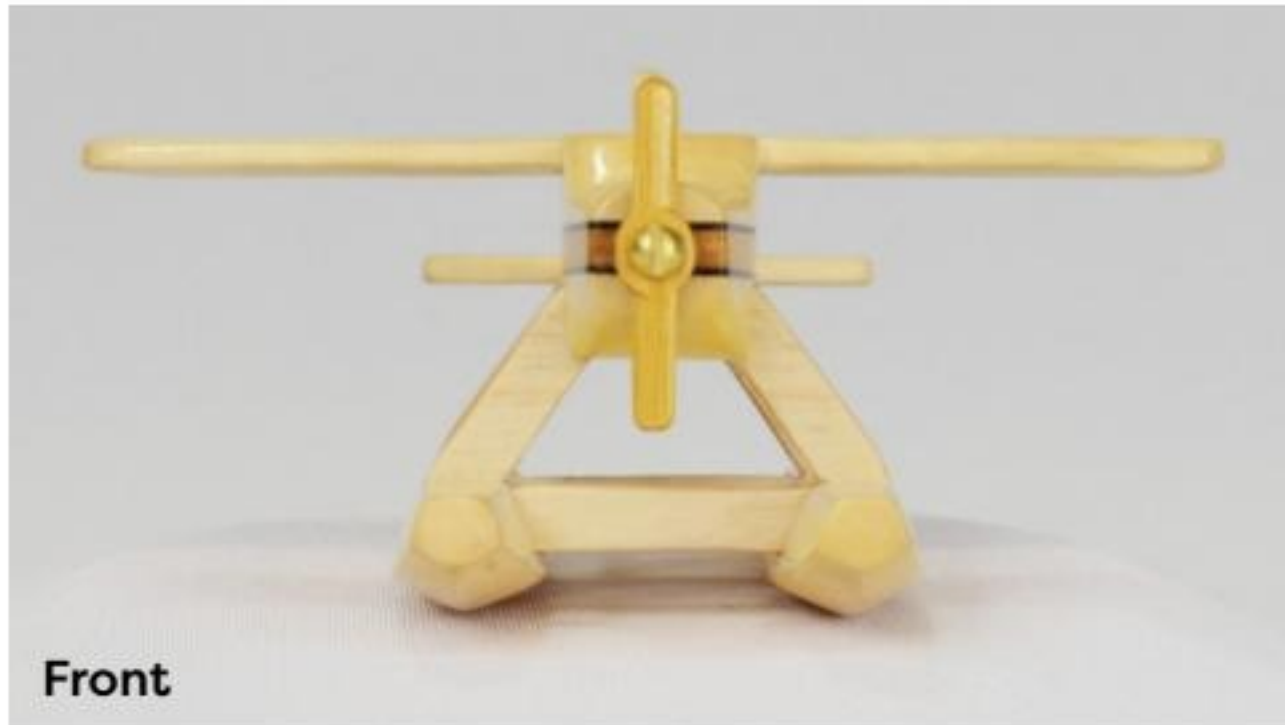
FLOAT PLANE

This float plane is modeled after the legendary Beaver bush plane. Of the toys in this book, this is likely the most time consuming to make. However, each part on its own is quite manageable and the result is a great little toy. Fly up to your forested cabin and land on the lake for a nice vacation!

CUT LIST

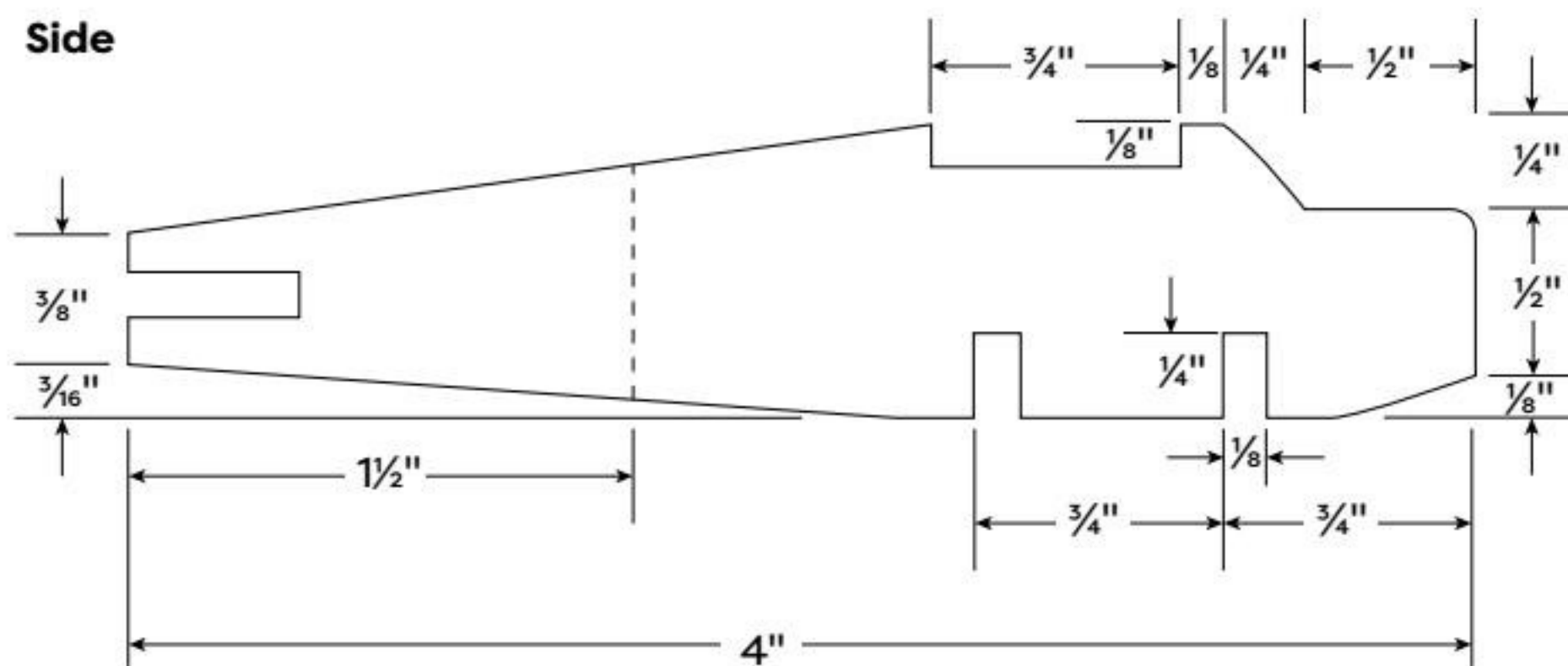
NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
1	Fuselage	Hardwood	¾	⅞	4	Can be laminated if a colored stripe is desired. See instructions. Rough length should be 8 to 12 in.
2	Floats	Hardwood	½	½	3 ¼	Cut oversize; see instructions.
1	Vertical stabilizer (tail)	Hardwood	⅞	1 ¼	1½	Cut oversize; see instructions.
1	Horizontal stabilizer (rear wing)	Hardwood	⅞	½	2	
2	Float struts	Plywood	⅞	1	2	
1	Propeller	Hardwood	⅞	⅝	1¼	

Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.

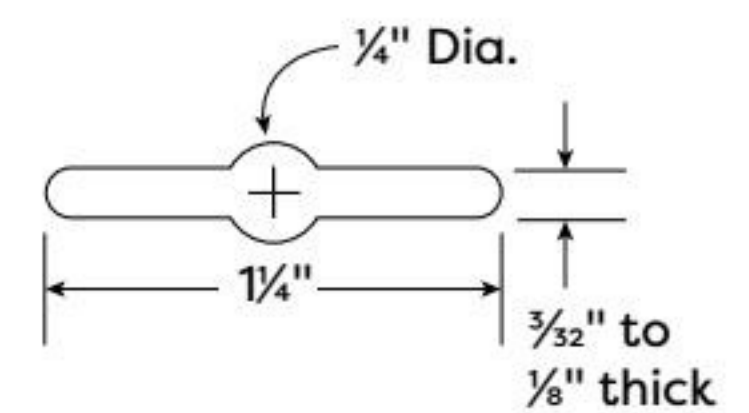


TEMPLATES

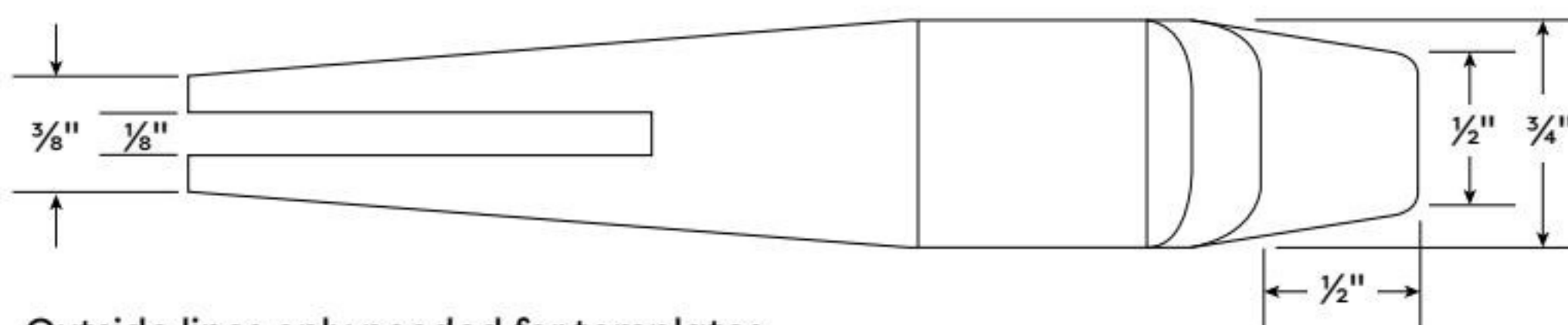
Side



Propeller
Drill to fit woodscrew



Top



Outside lines only needed for templates.



AIR

This high-flying quartet with real spinning propellers will put your head in the clouds. With iconic fighter jets and even a helicopter to choose from, you'll never want to come down to earth!





CORSAIR FIGHTER PLANE

The Vought F4U Corsair fighter plane was made for many years, from the 1940s to the 60s. It had a reputation as an excellent plane, and had a distinctive profile, complete with “W” wings. These things also made it a very popular die-cast toy from the 50s through today. This toy version has a solid wood fuselage, with a layered veneer wing. Zip through the air, and don’t forget to do loop-de-loops!

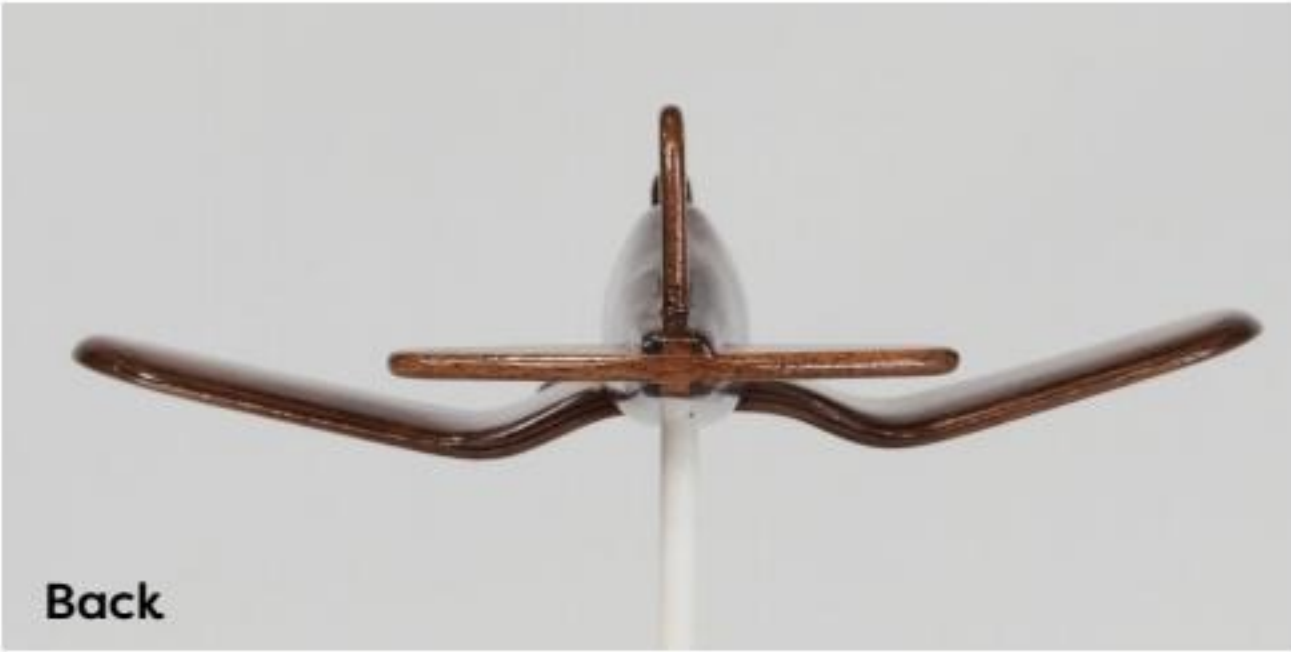
CUT LIST

NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
4 to 8	Wing veneers	Veneer (total thickness $\frac{3}{16}$ in.)	$\frac{3}{16}$	$1\frac{1}{4}$	$6\frac{1}{4}$	Cut veneer oversize. Alternate grain directions. See instructions.
1	Horizontal stabilizer (rear wing)	Veneer (total thickness $\frac{1}{8}$ in.) or $\frac{1}{8}$ in. hardwood	$\frac{1}{8}$	$\frac{3}{4}$	$2\frac{1}{2}$	Cut veneer oversize. Alternate grain directions. See instructions.
1	Vertical stabilizer (tail)	Veneer (total thickness $\frac{1}{8}$ in.) or $\frac{1}{8}$ in. hardwood	$\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	As above, or if using solid wood, note grain direction. See instructions.
1	Fuselage	Hardwood	$\frac{3}{4}$	1	5	
3 to 5	Propeller veneer	Veneer (total thickness $\frac{1}{8}$ in.)	$\frac{1}{64}$ to $\frac{1}{32}$	$1\frac{1}{2}$	$1\frac{1}{2}$	Cut veneer oversize. Alternate grain directions. See instructions.
1	Fuselage, lower section	Hardwood	$\frac{5}{16}$	$\frac{3}{4}$	$6\frac{3}{8}$	Rough-cut about 12 in. long if possible. See instructions.

Note: Depending on the thickness of the veneer, you will likely need between 1 and 2 square feet of veneer to make all the required parts for this toy.



Front



Back



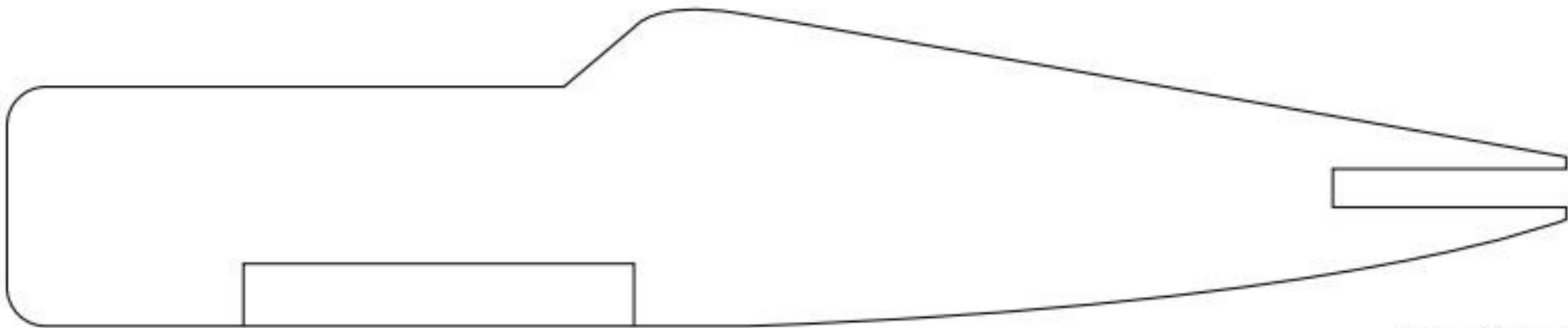
Side



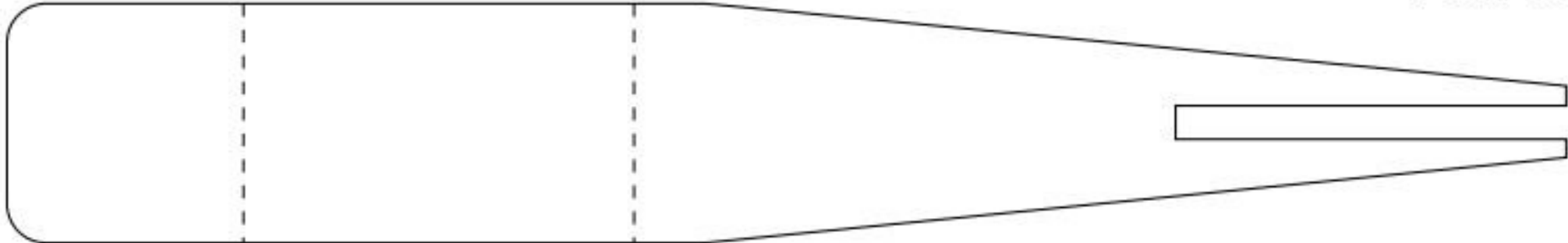
Top

TEMPLATES

Fuselage side



Fuselage top



1" x 3/4" x 5"



F-16 FIGHTER JET

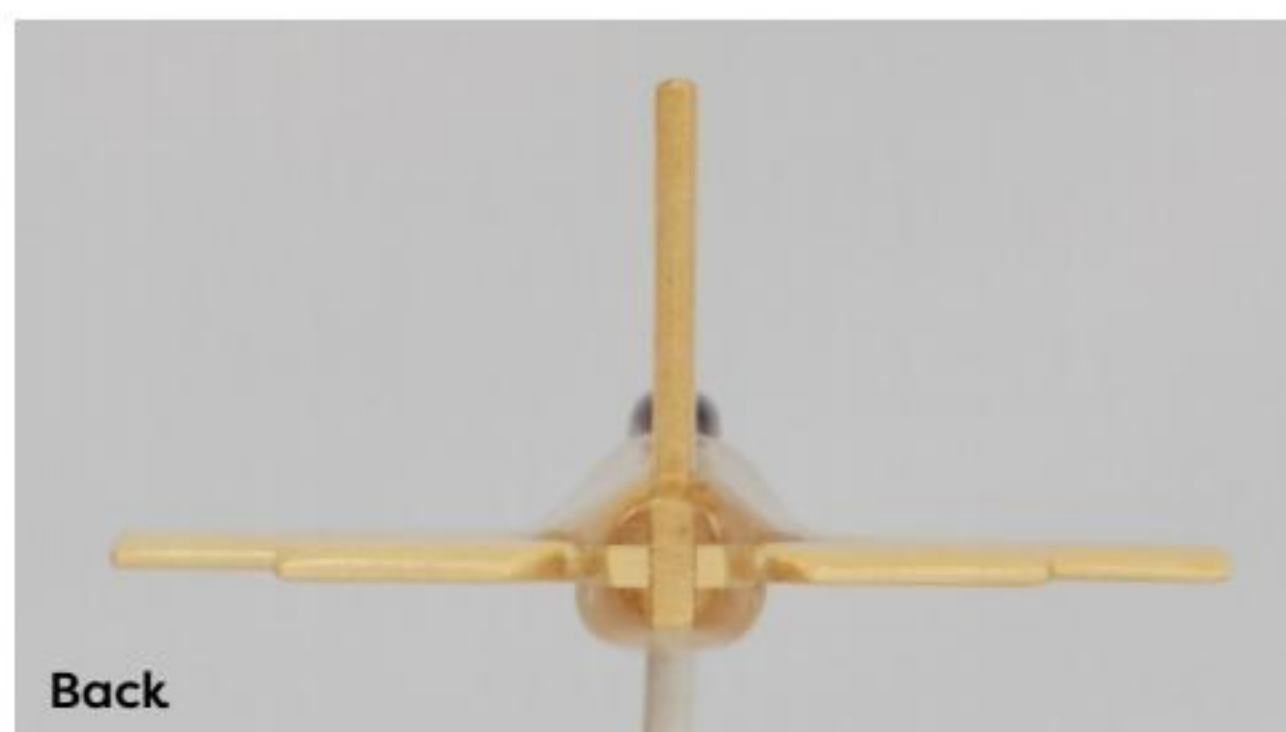
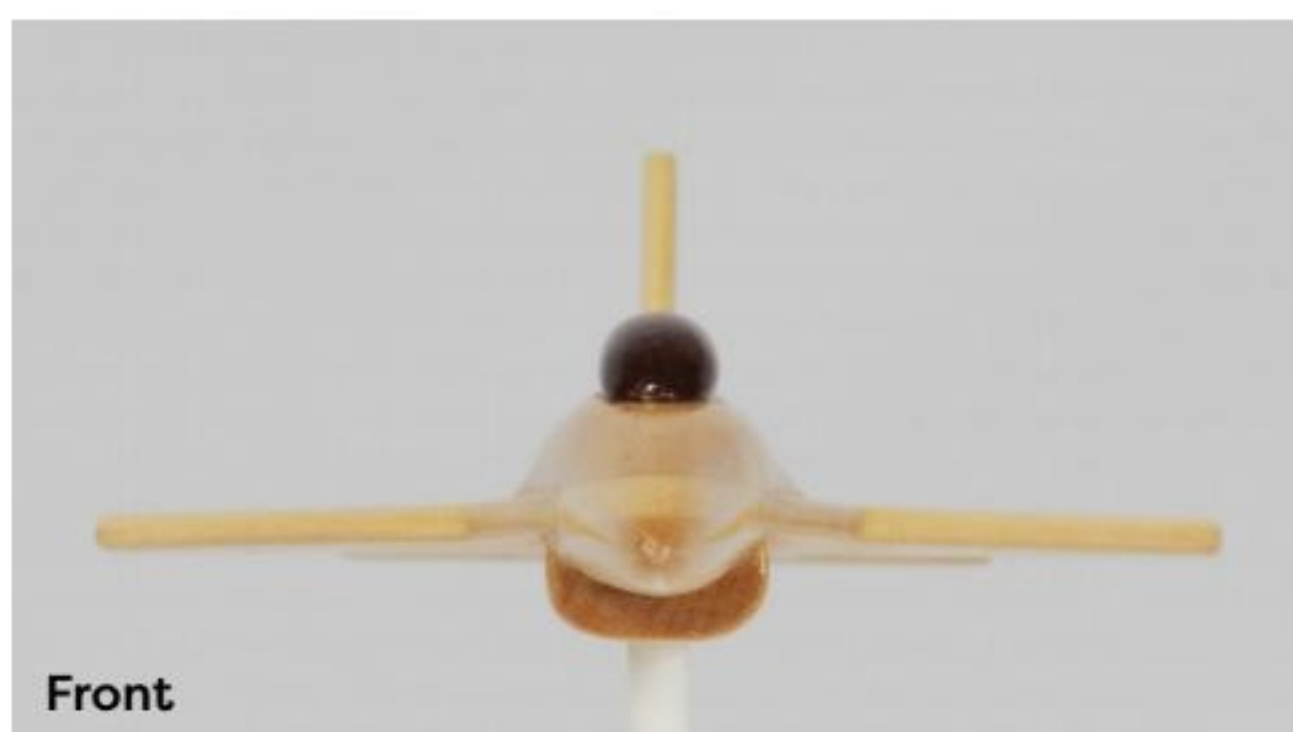
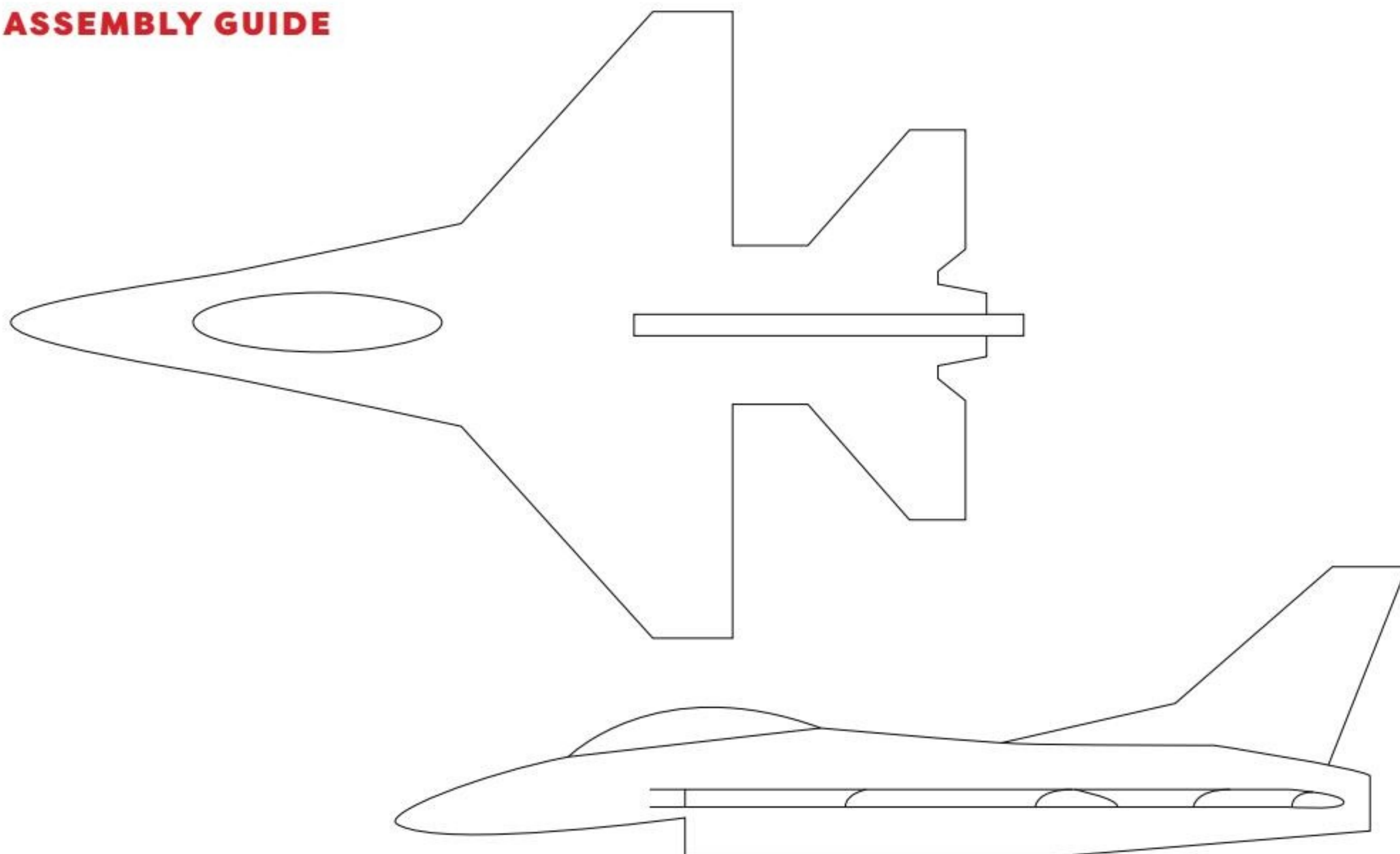
The F-16 fighter jet was developed in 1976 for the United States Air Force. If you have ever admired the Thunderbirds' flying maneuvers, you are watching F-16s at work. These nimble supersonic jets are used in the air forces of more than 20 countries. The toy as pictured requires quite a bit of hand-shaping to round and smooth all the surfaces. However, you can leave the corners only slightly rounded.

CUT LIST

NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
1	Center layer, horizontal stabilizers (rear wings)	Hardwood	$\frac{1}{8}$	$1\frac{1}{2}$	$2\frac{1}{2}$	Note grain direction. See instructions.
1	Center layer, wings	Hardwood	$\frac{1}{8}$	3	4	Note grain direction. See instructions.
1	Center layer, nose	Hardwood	$\frac{1}{8}$	$\frac{3}{4}$	$1\frac{5}{8}$	Note grain direction. See instructions.
1	Vertical stabilizer (tail)	Hardwood	$\frac{1}{8}$	$1\frac{3}{4}$	$3\frac{1}{4}$	Note grain direction. See instructions.
1	Fuselage, upper section	Hardwood	$\frac{3}{8}$	1	$5\frac{7}{8}$	Rough-cut about 12 in. long if possible. See instructions.
1	Fuselage, lower section	Hardwood	$\frac{5}{16}$	$\frac{3}{4}$	$6\frac{3}{8}$	Rough-cut about 12 in. long if possible. See instructions.
1	Canopy	$\frac{3}{8}$ in. dowel			$1\frac{5}{8}$	Rough-cut longer if possible. See instructions.

Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.

ASSEMBLY GUIDE





HELICOPTER

This toy is modeled after the Bell UH-1. As one of the best known and widely flown helicopters, the small die-cast version has been popular for more than 50 years. This toy is made from three strips of wood, with real rotating main and tail rotors. Whether you imagine your finished toy to be a news chopper, an aerial firefighter, or a sight-seeing tour guide, get ready for some fun!

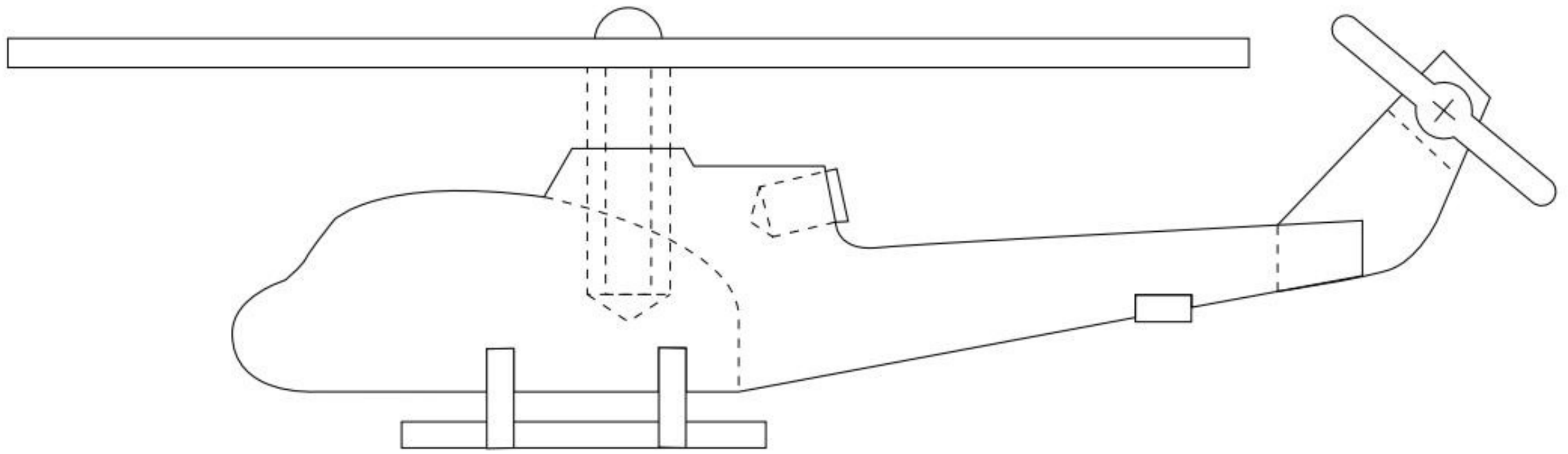
CUT LIST

NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
3	Fuselage sides and center	Hardwood to match	$\frac{1}{2}$	$1\frac{1}{8}$	5	Cut 6 in. rough length. See instructions for details.
1	Tail rotor pylon	Hardwood	$\frac{1}{8}$	$\frac{1}{2}$	$1\frac{3}{8}$	Note grain direction.
1	Tail rotor spacer	Hardwood	$\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	
1	Tailplane (optional)	Hardwood	$\frac{1}{8}$	$\frac{1}{4}$	1	
1	Tail rotor	Hardwood or laminated hardwood	$\frac{1}{8}$	$\frac{5}{16}$	$1\frac{1}{4}$	
1	Main rotor	Hardwood or laminated hardwood	$\frac{1}{8}$	$\frac{5}{8}$	$5\frac{1}{2}$	May be $\frac{1}{2}$ in. longer or shorter; see instructions.
2	Skid struts	Baltic birch plywood	$\frac{1}{8}$	$\frac{1}{2}$	$1\frac{1}{2}$	See instructions for rough-cut size.
2	Skids	$\frac{1}{8}$ in. dia. dowel			$1\frac{1}{8}$	
1	Nozzle	$\frac{1}{4}$ in. dowel to fit			$\frac{1}{2}$	See instructions for rough-cut size.
1	Mast	$\frac{3}{8}$ in. dowel to fit			1	See instructions for rough-cut size.

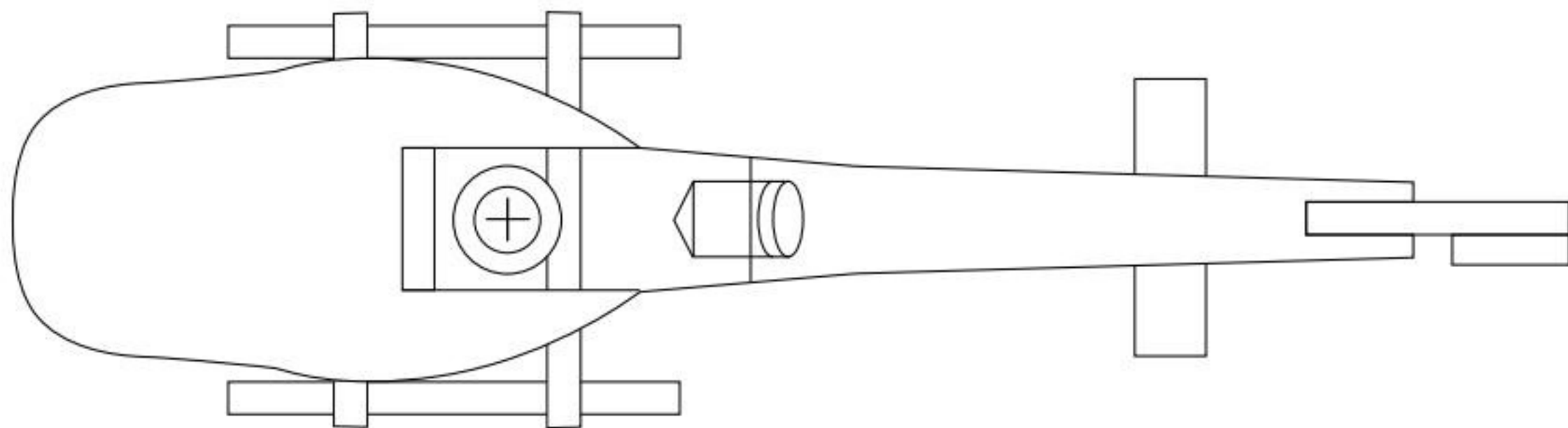
Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.

ASSEMBLY GUIDE

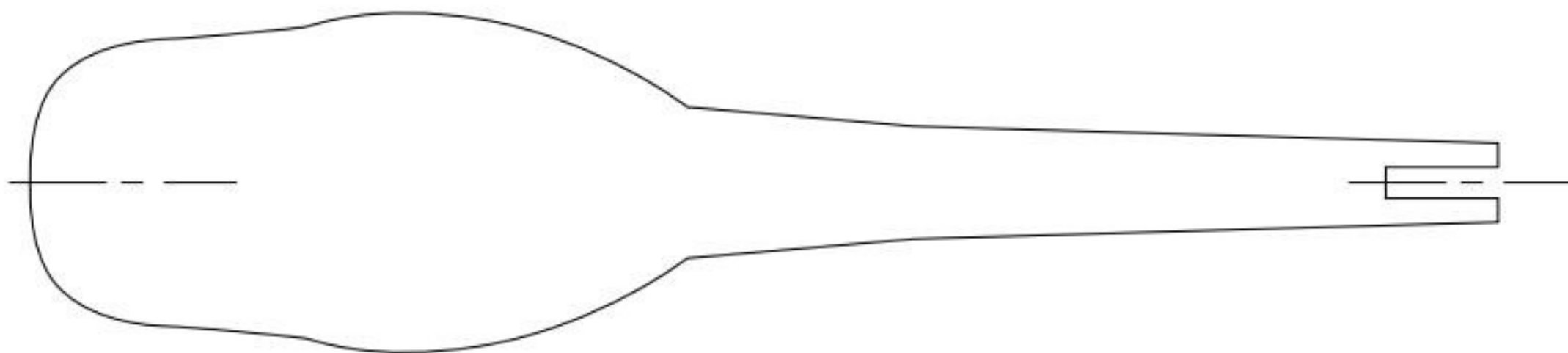
Side



Top



Assembled top profile





P - 51 MUSTANG FIGHTER PLANE

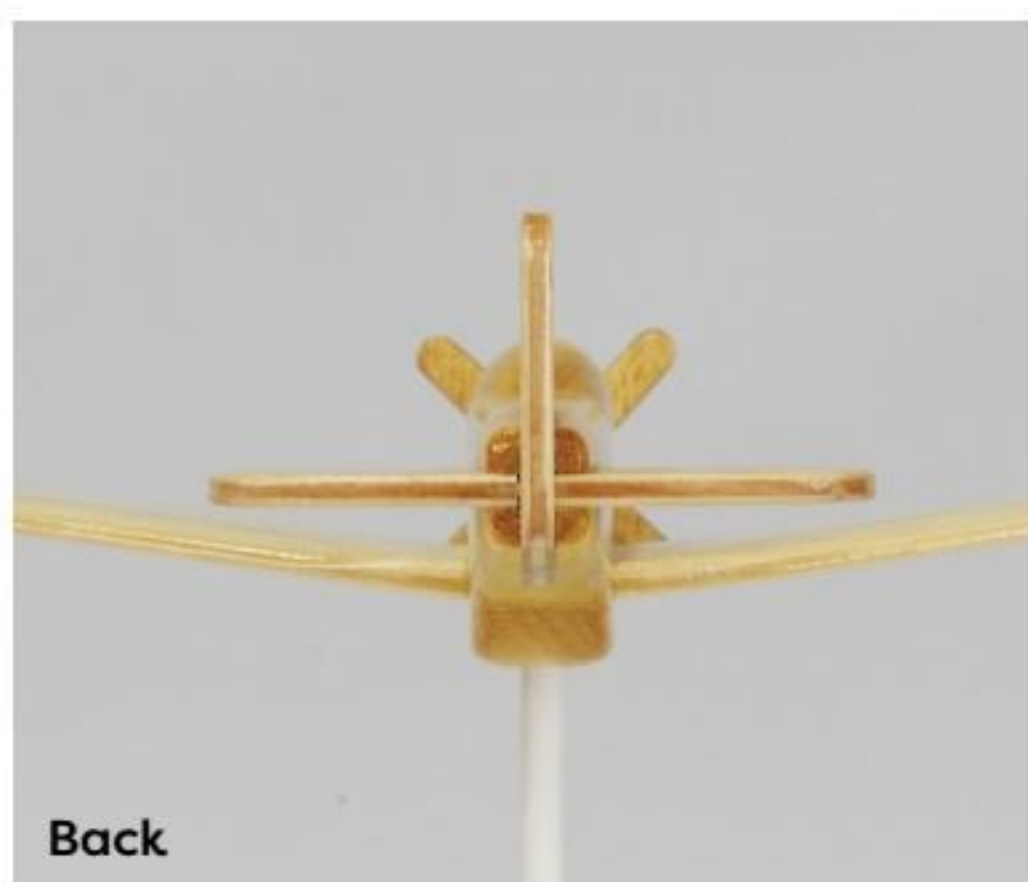
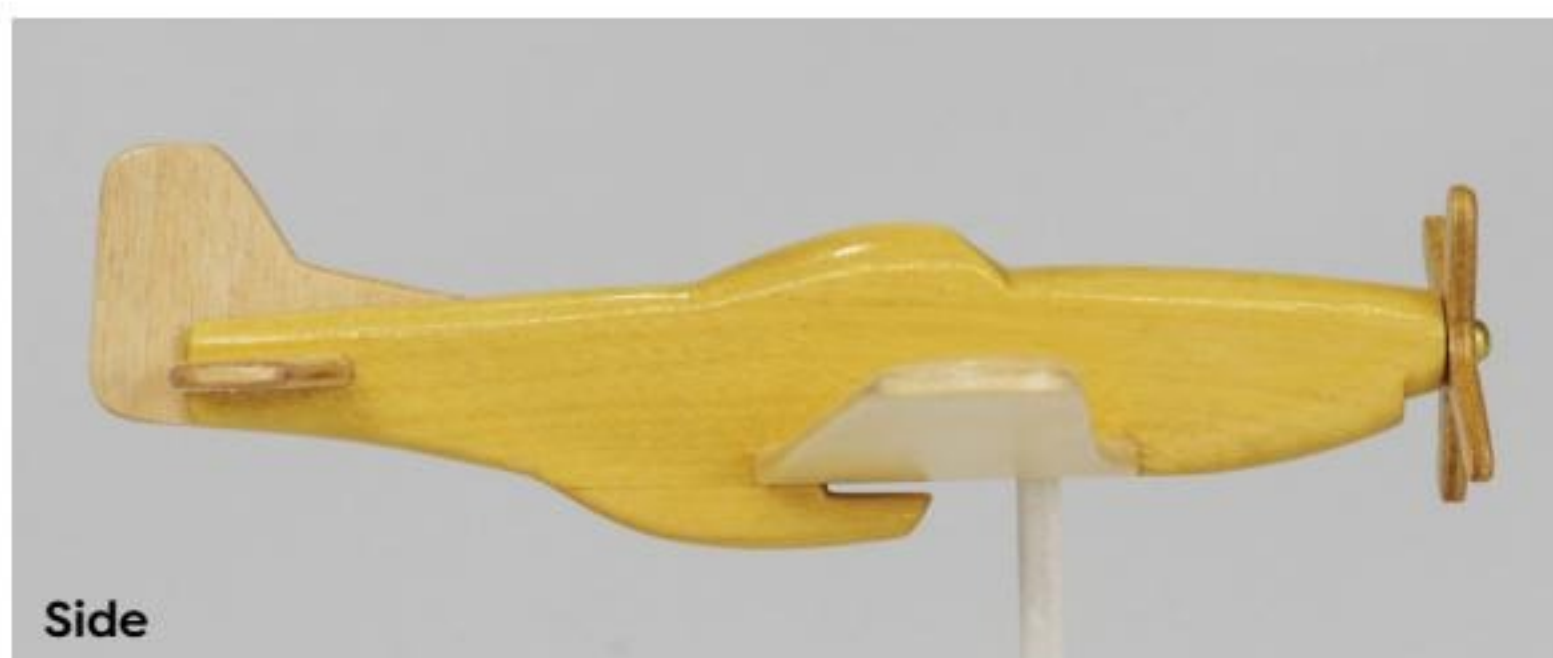
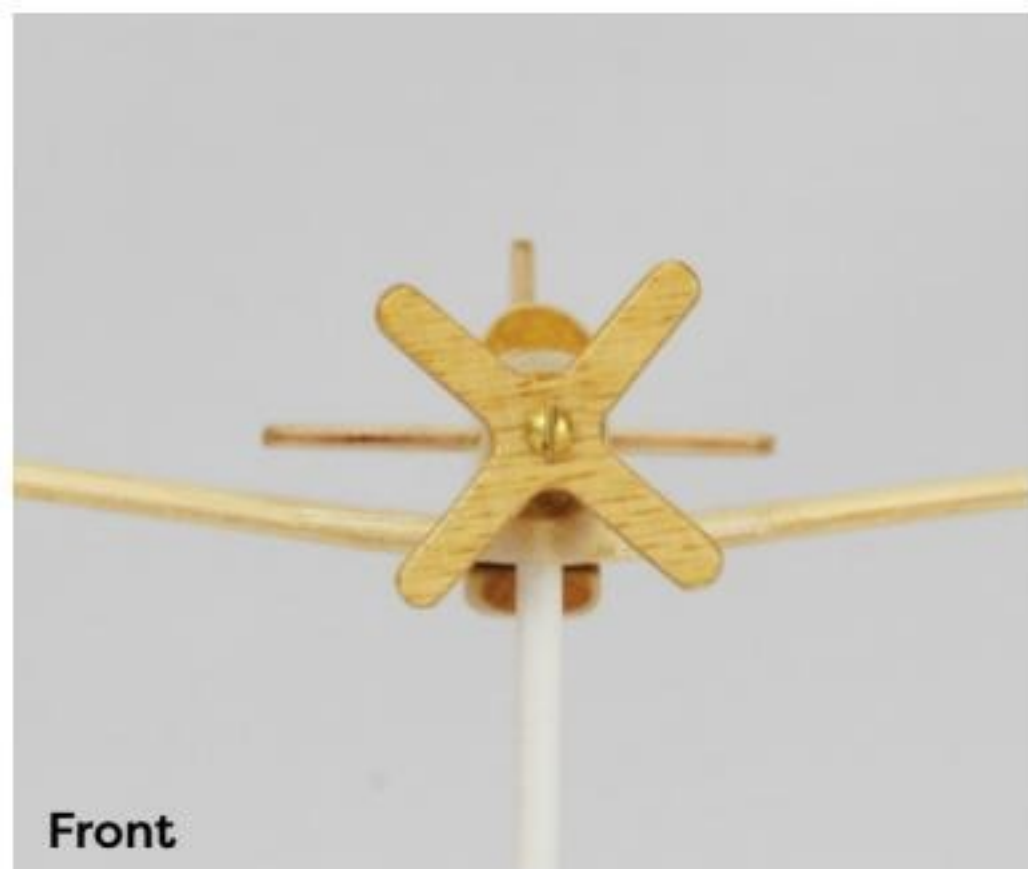
The P-51 Mustang is one of the most accomplished and famous WWII fighter planes. They were first produced in 1940, and were flown by some air forces into the 1980s. They are still a popular civilian racing plane. The distinctive side profile with the under-wing scoop, together with the plane's reputation and popularity, made the P-51 a top-selling die-cast toy as well. Take off from the runway and defend the skies!

CUT LIST

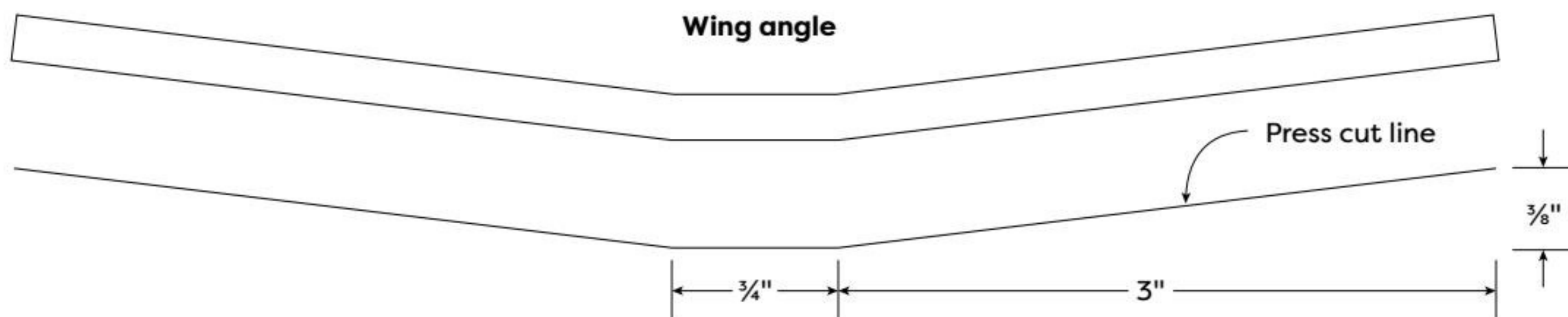
NO. REQ'D	PART NAME	MATERIAL	T"	W"	L"	NOTES
4 to 8	Wing veneers	Veneer (total thickness $\frac{3}{16}$ in.)	$\frac{1}{64}$ to $\frac{1}{32}$	$1\frac{5}{8}$	$6\frac{3}{4}$	Cut veneer oversize. Alternate grain directions. See instructions.
1	Horizontal stabilizer (rear wing)	$\frac{1}{8}$ in. hardwood or veneer (total thickness $\frac{1}{8}$ in.)	$\frac{1}{8}$	$\frac{3}{4}$	$2\frac{1}{2}$	Cut veneer oversize. Alternate grain directions. If using solid wood, note grain direction. See instructions.
1	Vertical stabilizer (tail)	$\frac{1}{8}$ in. hardwood or veneer (total thickness $\frac{1}{8}$ in.)	$\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{5}{8}$	Cut veneer oversize. Alternate grain directions. If using solid wood, note grain direction. See instructions.
1	Fuselage	Hardwood	$\frac{5}{8}$	$1\frac{1}{8}$	$5\frac{3}{8}$	
3 to 5	Propeller veneer	Veneer (total thickness $\frac{1}{8}$ in.)	$\frac{1}{64}$ to $\frac{1}{32}$	$1\frac{1}{2}$	$1\frac{1}{2}$	Cut veneer oversize. Alternate grain directions. See instructions.
1	Air scoop	Hardwood	$\frac{1}{4}$	$\frac{5}{8}$	$1\frac{5}{8}$	

Note: Dimensions are finished sizes. Most parts should be rough-cut oversize. See instructions.

P-51 MUSTANG FIGHTER PLANE



TEMPLATES



CONVERSIONS

In this book, lengths are given in inches. If you want to convert those to metric measurements, please use the following formulas:

FRACTIONS TO DECIMALS

$$\frac{1}{8} = .125$$

$$\frac{1}{4} = .25$$

$$\frac{1}{2} = .5$$

$$\frac{5}{8} = .625$$

$$\frac{3}{4} = .75$$

IMPERIAL TO METRIC CONVERSION

Multiply inches by 25.4 to get millimeters

Multiply inches by 2.54 to get centimeters

Multiply yards by .9144 to get meters

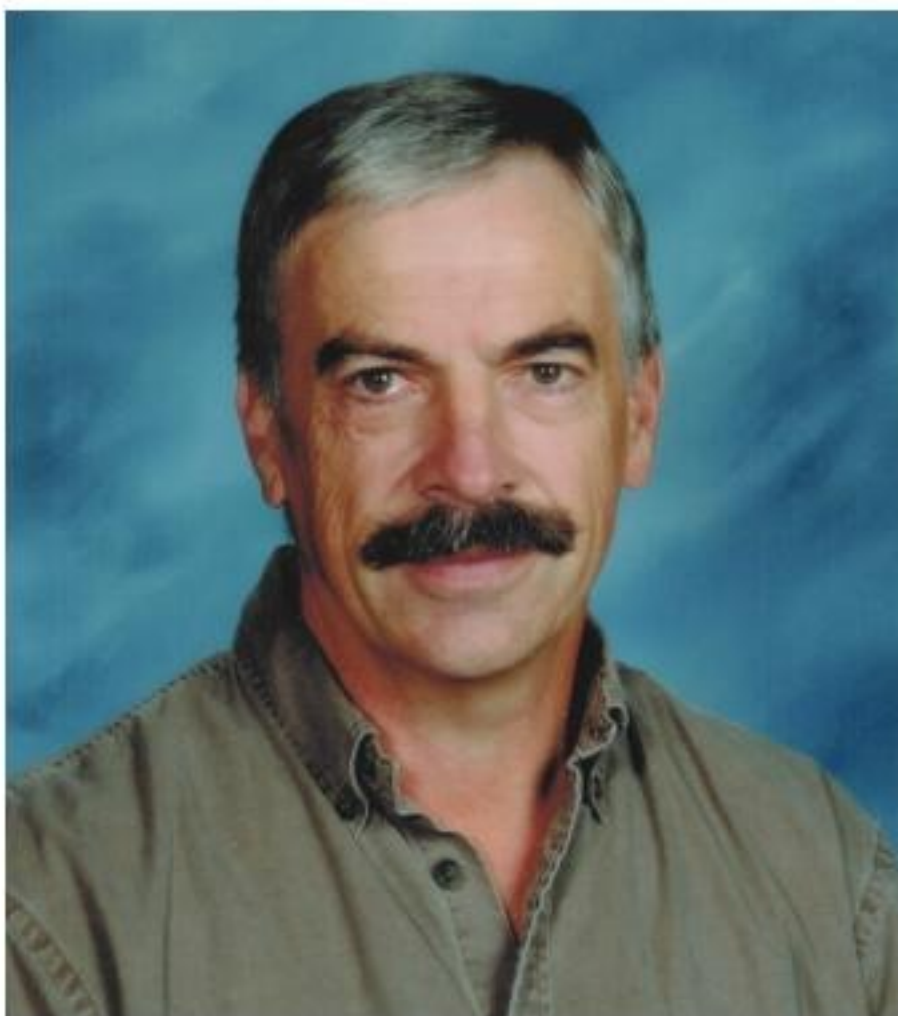
For example, if you wanted to convert $1\frac{1}{8}$ inches to millimeters:

$$1.125 \text{ in.} \times 25.4\text{mm} = 28.575\text{mm}$$

And to convert $2\frac{1}{2}$ yards to meters:

$$2.5 \text{ yd.} \times .9144\text{m} = 2.286\text{m}$$

ABOUT THE AUTHOR



Les Neufeld is the father of three children, now grown. He has been making toys for them since they were toddlers, and in turn they and their friends provided years of toy-testing and feedback. Les's early training as a machinist, then woodworking and design schooling at BCIT, and eventually a master's degree in education added some useful experience as well.

He is the author of three other books:

Tremendous Toy Trucks, *Making Toys that Teach*, and *Great Big Toy Trucks*.

Les and his wife Corrinne live in Kamloops, British Columbia.

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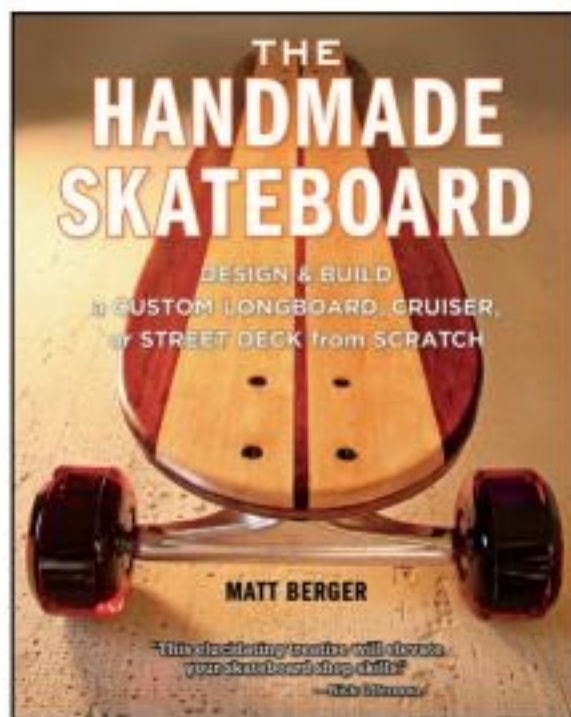
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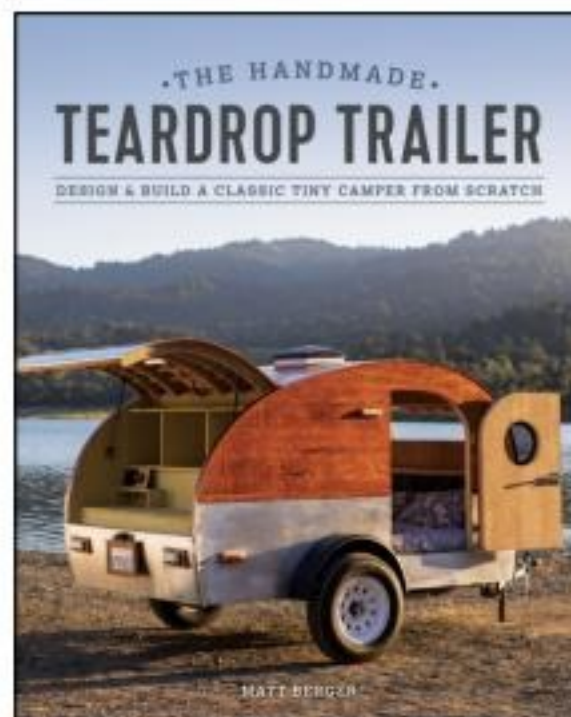
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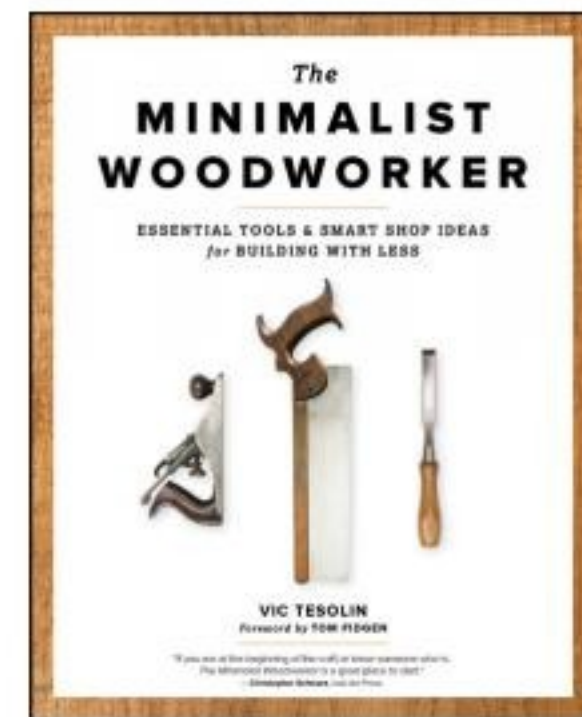
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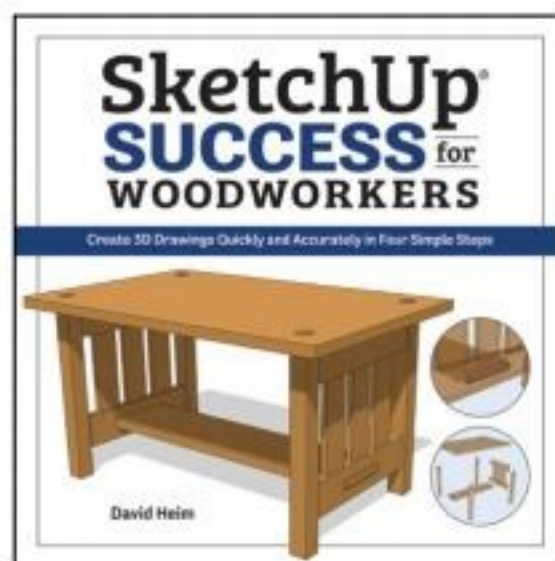
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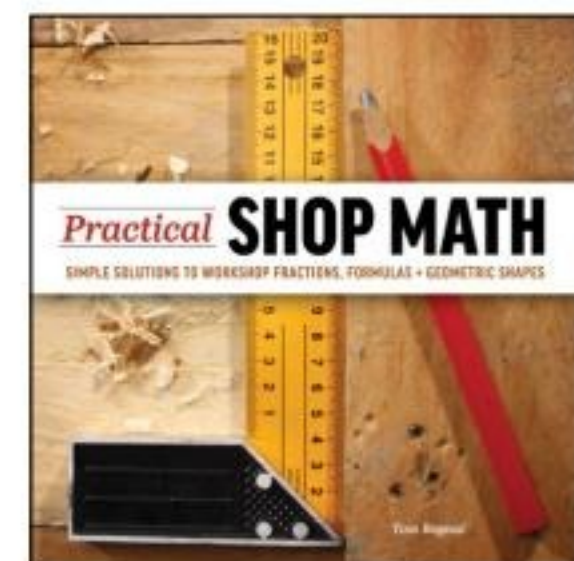
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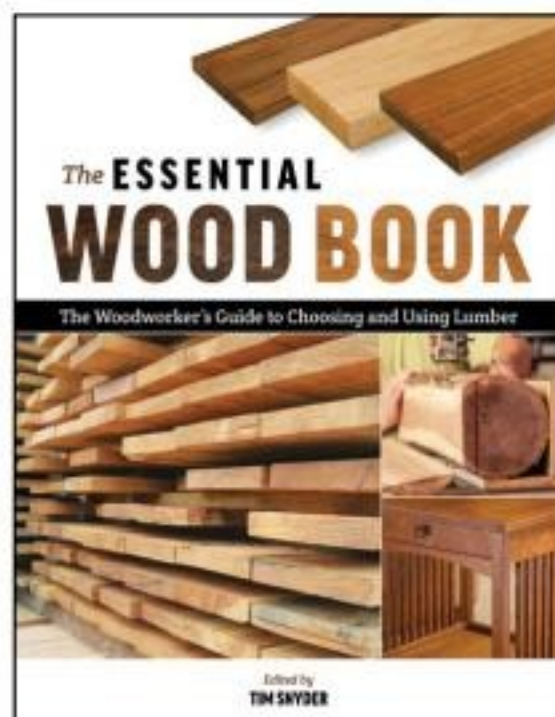
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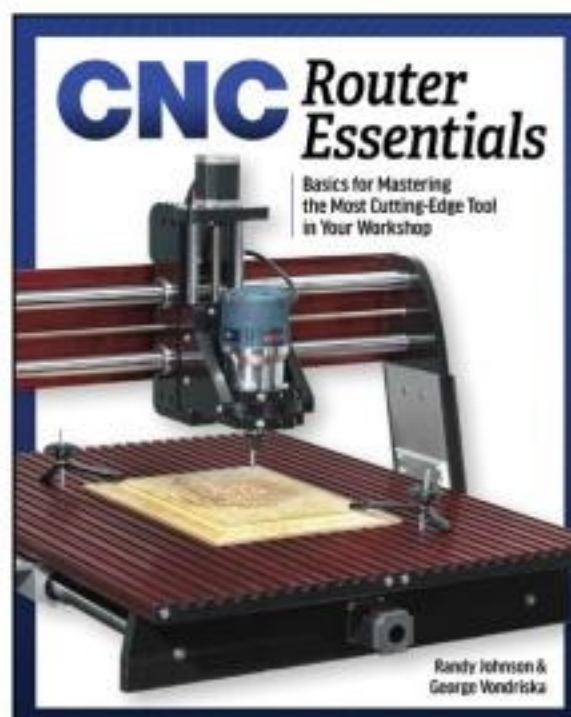
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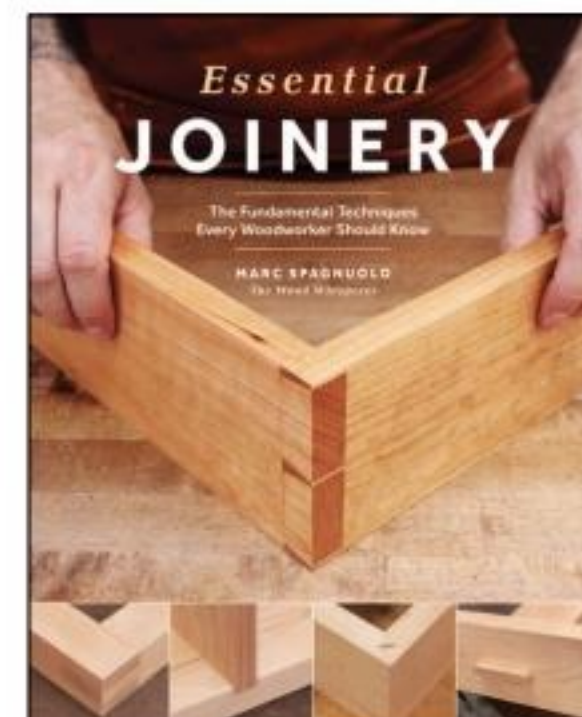
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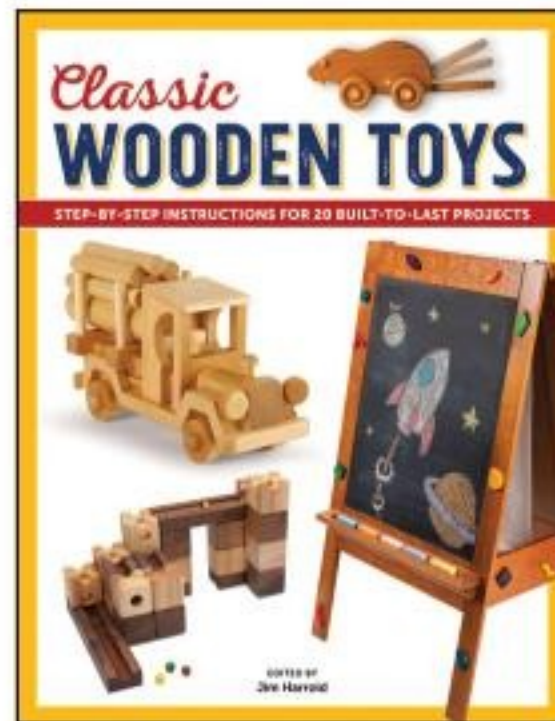
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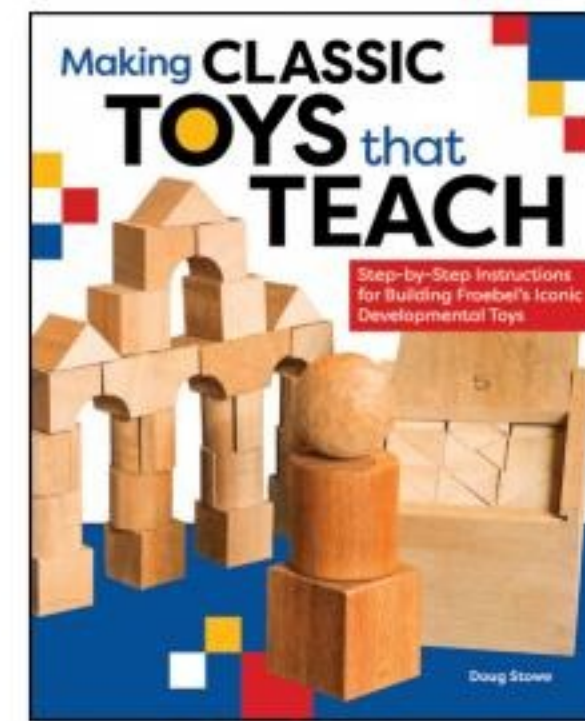
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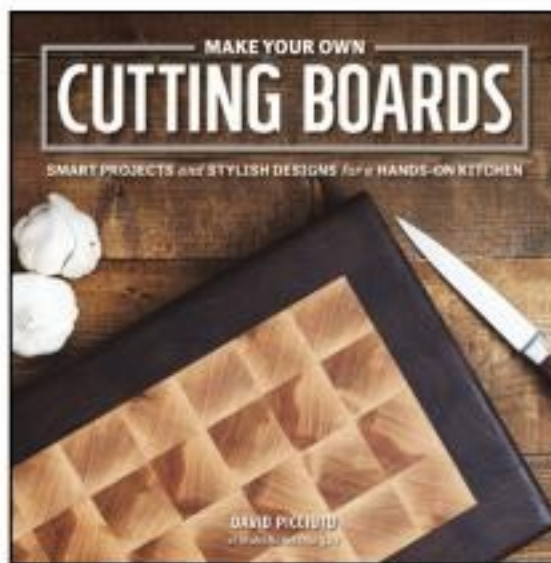
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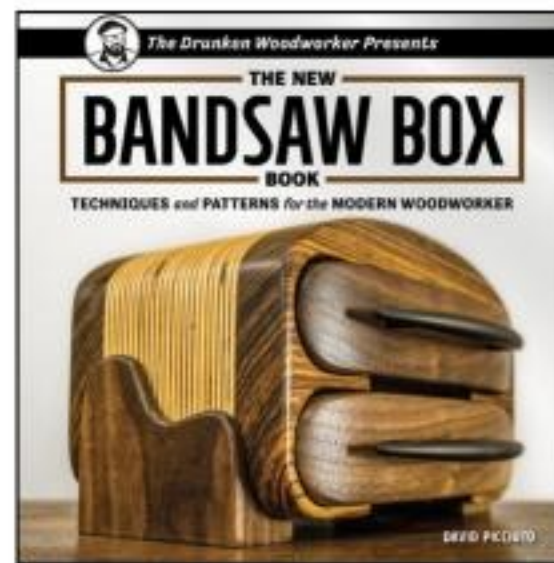
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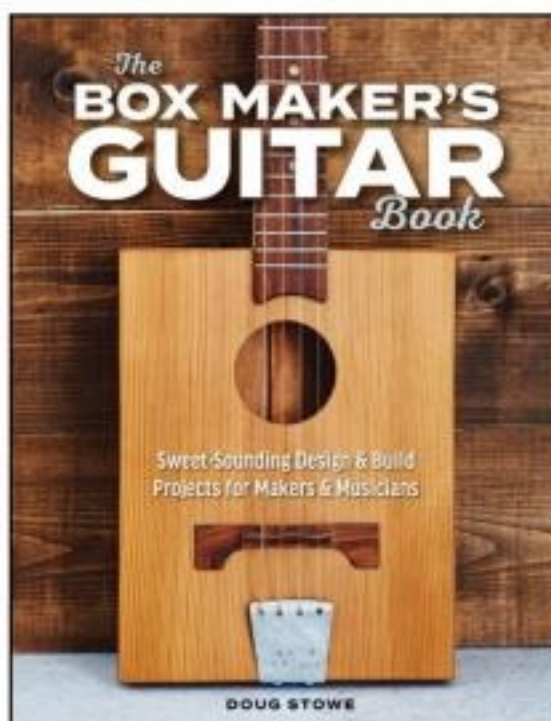
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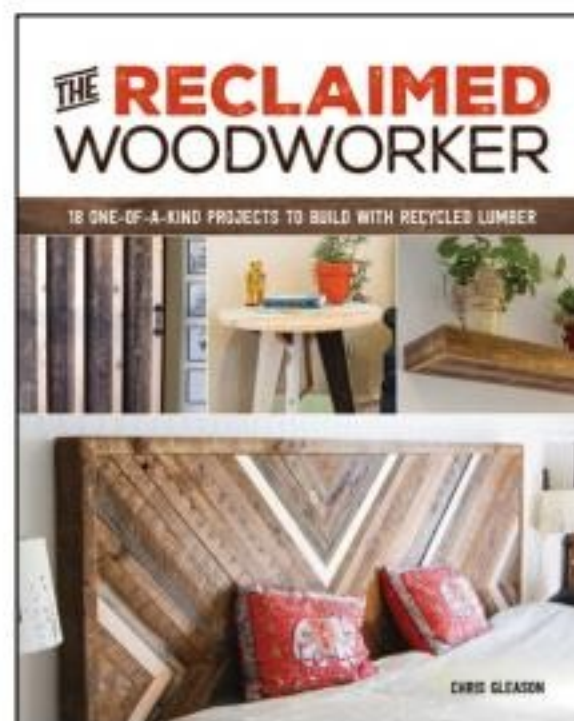
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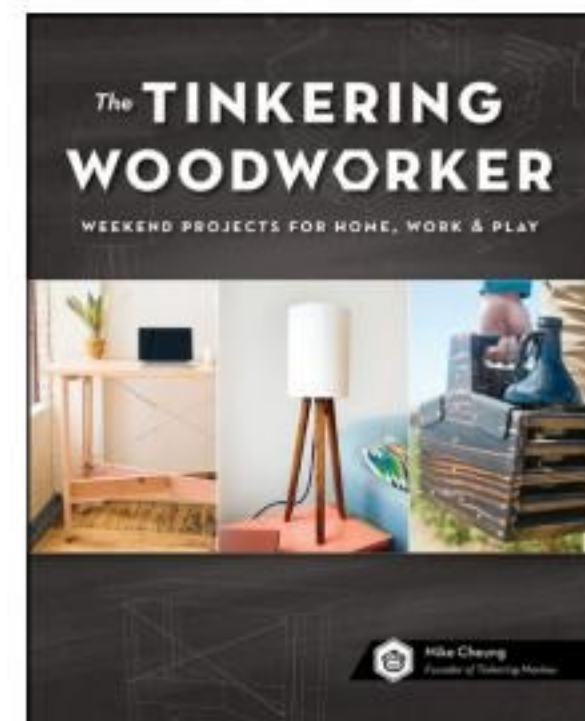
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