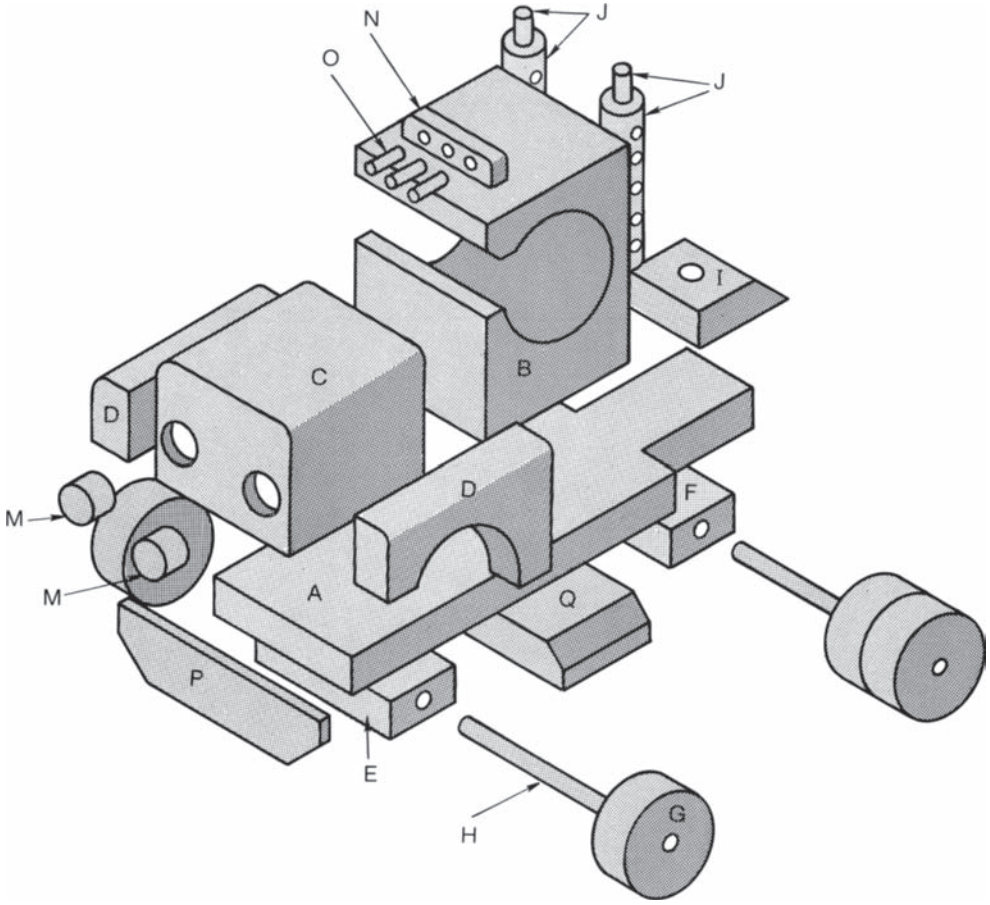
TRACTOR CAB

Trucks move America. They haul everything from raw materials to finished goods in flatbeds and tankers. Two types of trucks provide the power to pull these trailers—the tractor cab and cab-over-engine, which follows this project.

Most of the parts of this truck are interchangeable with the parts for the cab-over-engine truck, so it's easy to build both at the same time. Also, the trailers that follow can be hauled by either style of cab. The main differences between the trucks are the sizes of the chassis and engines.

The design of this truck is simple and straightforward, with a sense of realism. And, by making the base of the truck a little longer, you can make a variety of intermediate trucks.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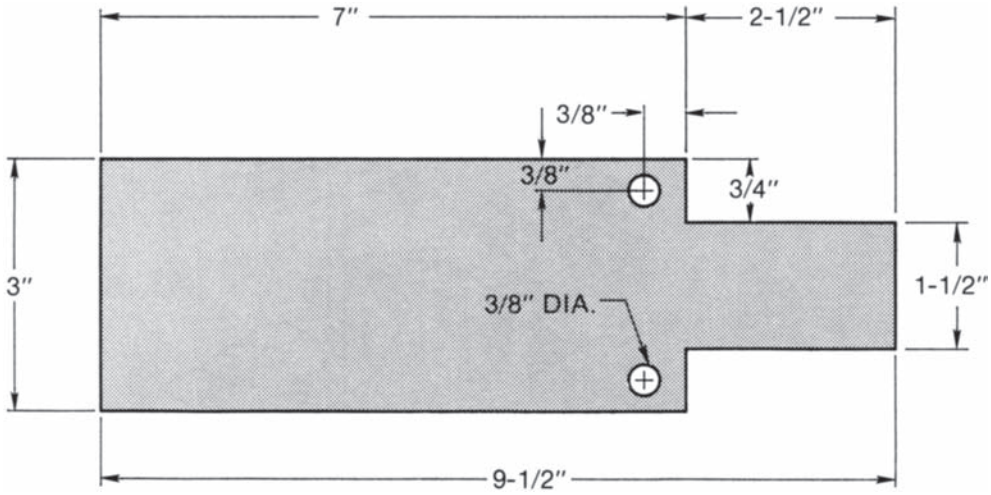
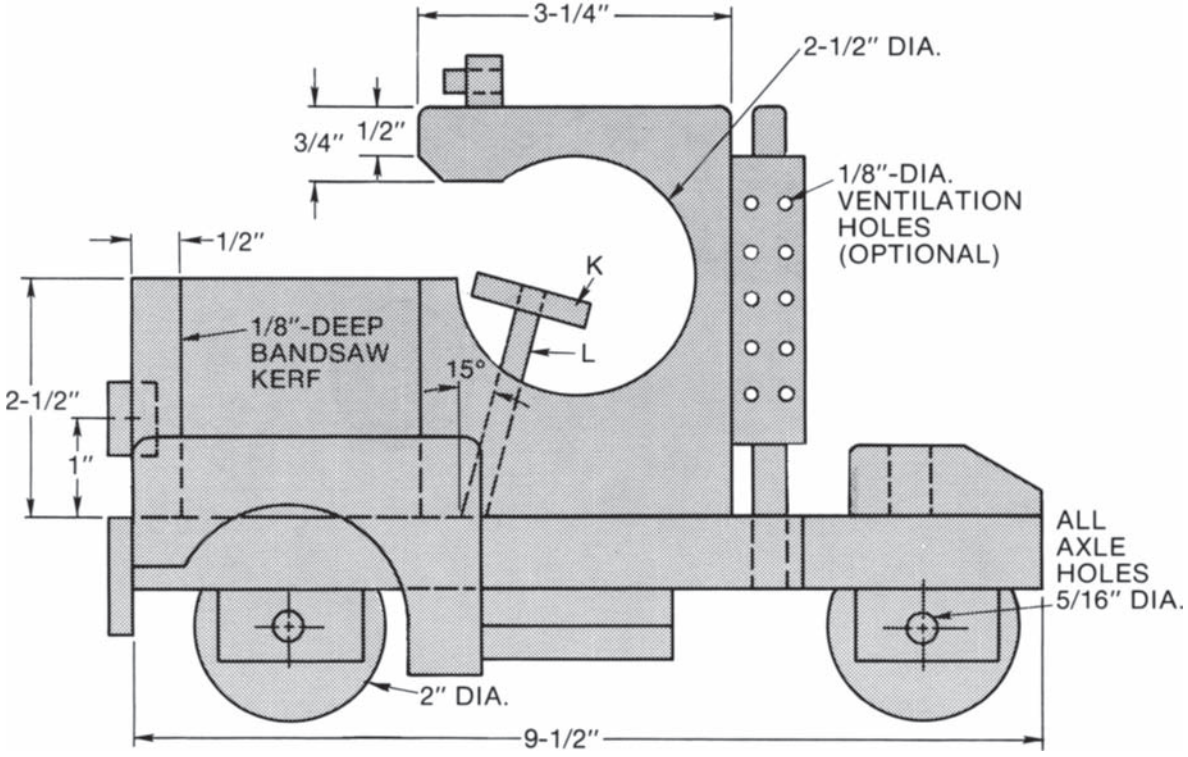
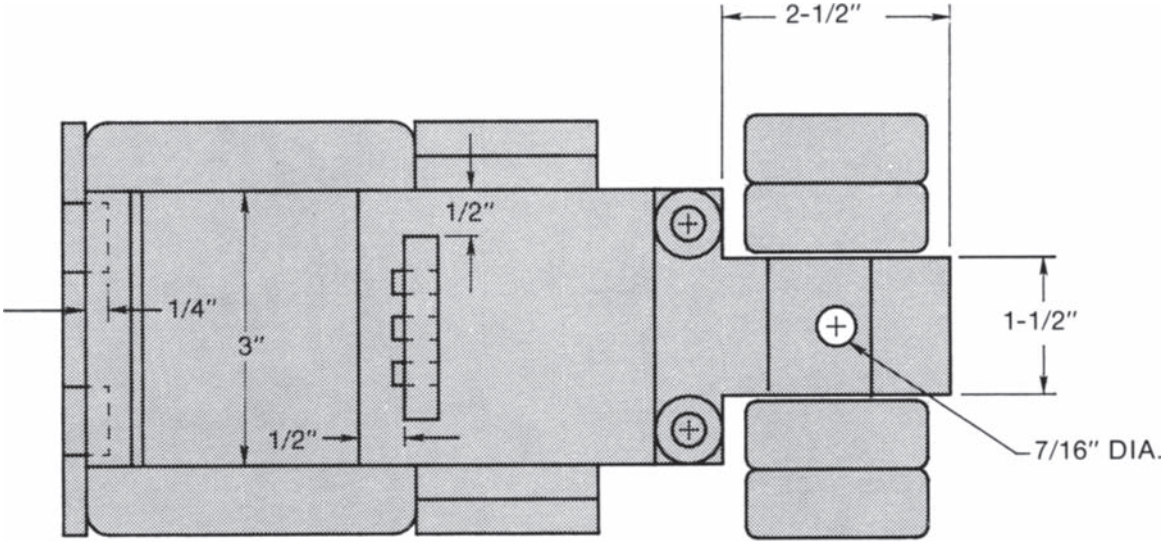


BASE DETAIL

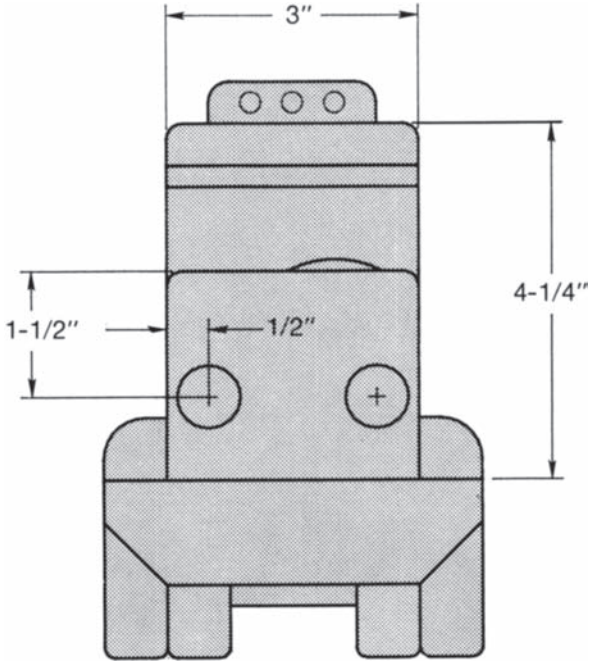
TOP VIEW



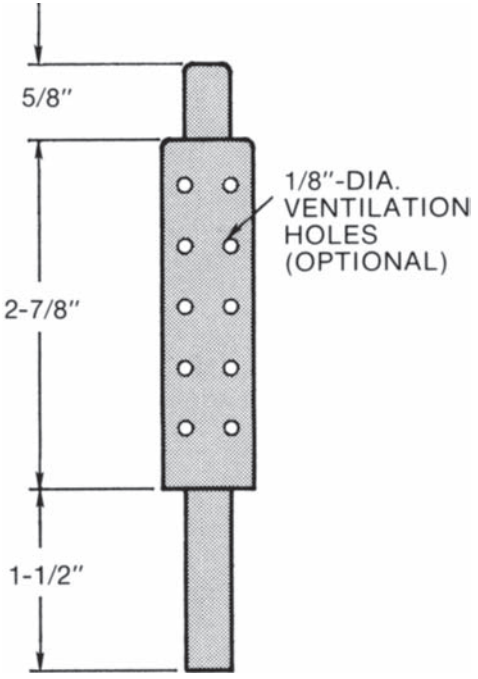
SIDE VIEW



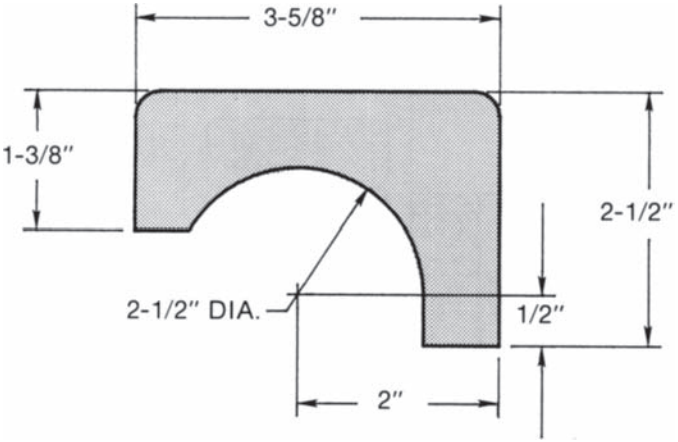
TOP VIEW



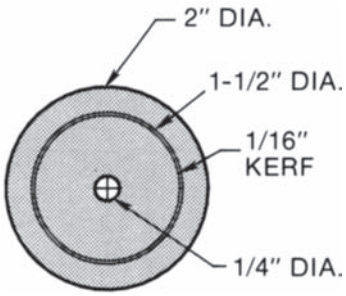
FRONT VIEW



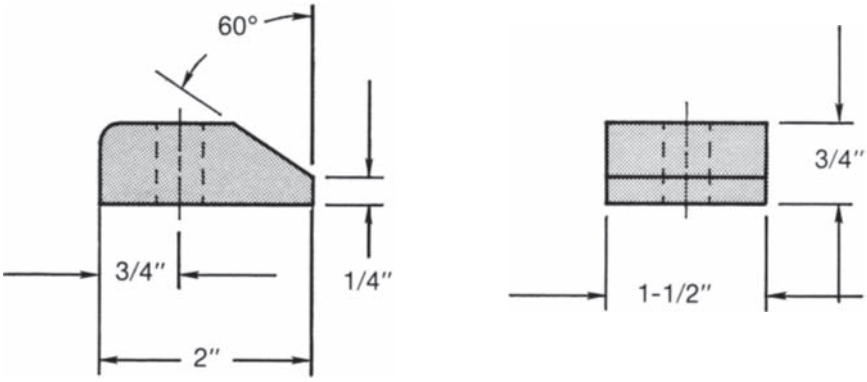
EXHAUST STACK DETAIL



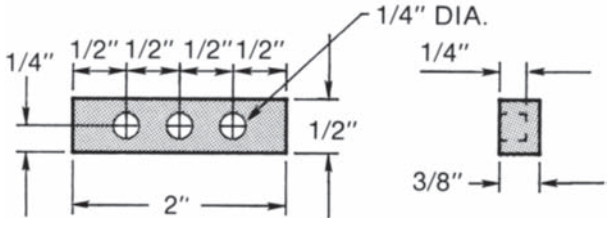
FENDER DETAIL



WHEEL DETAIL

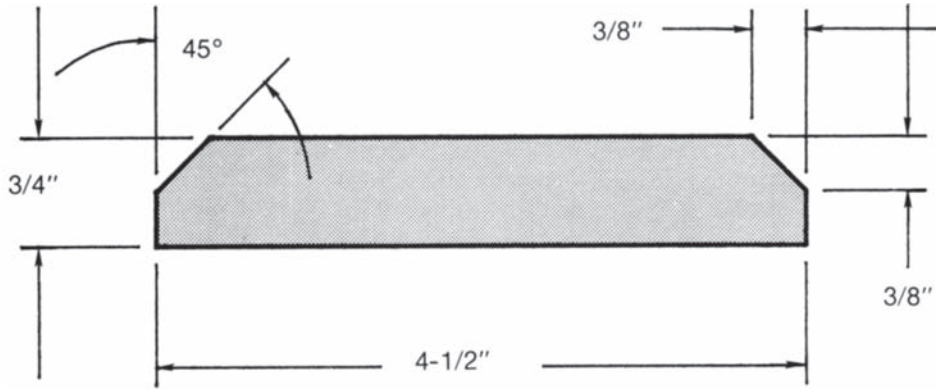


TRAILER HITCH

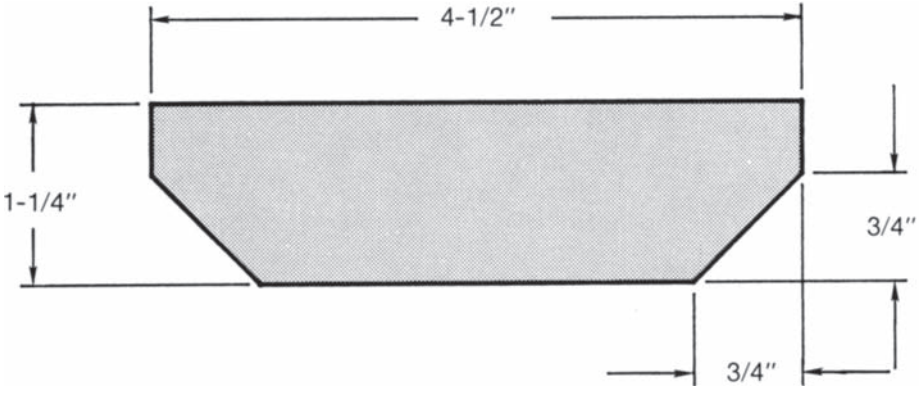


FRONT VIEW SIDE VIEW

LIGHT BLOCK DETAIL



STEP DETAIL



FRONT BUMPER DETAIL

PROCEDURE

1. BASE

Cut the base (A) to shape as shown. If you're making a longer truck for a customized design, continue to use the same wheel cutout configuration at the rear of the base.

After cutting out the rear wheel notches, drill the 3/8"-diameter exhaust stack holes as indicated. Finish the base assembly by drilling the 5/16"-diameter axle holes through the axle holders (E, F), then gluing and clamping them to the base.

2. CAB

Glue and clamp together four pieces of 3/4" × 3-1/4" × 4-1/4" stock to form the cab block (B). After the glue dries, sand the block square and transfer the cab pattern to it. Cut out the cab using a bandsaw, scroll saw, or coping saw.

NOTE: Most hole saws will not cut through the 3"-thick stock.

Drill a 1/4"-diameter hole for the steering column (L); then insert the steering column into the hole, but don't glue it in place yet.

(The steering wheel will be added later.) Finally, glue and clamp the cab to the chassis and check the steering column to make sure it still turns. Set the assembly aside.

3. ENGINE

Glue four pieces of 3/4" stock to form a 3" × 2-1/2" × 3" block for the engine (C). Sand the block square after the glue dries; then round off the edges according to the plans.

Using a bandsaw or scroll saw, form the outline of the grill by making a 1/8"-deep saw kerf 1/2" from the front of the engine. Next, drill the 3/4"-diameter holes for the headlights; then glue the lights in place. Finally, glue and clamp the engine to the chassis. After the glue dries, power-sand the sides of the truck flush.

4. FENDERS

Cut the stock for the fenders (D) to size. Then use a 2-1/2"-diameter hole saw and cut the circular profile as shown. Round off the top and front outside edges.

NOTE: There is a right and left fender, and they are not interchangeable. Be sure to mark the edges you're going to round.

Glue and clamp the fenders to the truck assembly flush with the front.

5. WHEELS

Make the wheels (G) with a 2-1/8"-diameter hole saw. Before you cut them out of the stock, use a 1-1/2"-diameter hole saw to make a 1/16"-deep kerf to define the rim and tire. Next, cut out the wheels using the larger hole saw; then mount them on an arbor and sand them. Assemble the wheels and axles (H) to the truck assembly with glue.

While the hole saw is set up, cut out the 1-1/4"-diameter steering wheel (K) from 1/4" stock with a 1-3/8"-diameter hole saw. Sand the steering wheel and glue it in place.

6. TRAILER HITCH

Cut the trailer hitch (I) to size according to the list of materials. Drill the 7/16"-diameter hole as indicated in the plans; then power-sand the bevel on the top. Glue and clamp the hitch to the truck assembly.

7. EXHAUST STACKS

The exhaust stacks (J) are composed of two parts—a 3/4" dowel and a 3/8" dowel. First, drill a 3/8" hole through the length of the 3/4" dowel. To do this, make sure the 3/4" dowel is securely clamped to the drill press table. Next, glue the 3/8" dowels into place. For a realistic touch, add ventilation holes by drilling a series of 1/8"-diameter holes on each stack.

8. ROOF LIGHTS

Drill three 1/4"-diameter holes in a 1/2" × 3/4" × 2" piece of stock as shown. Cut the stock in two to form the light holders (N). (Save one of the holders for another truck.) Next, glue the 1/4"-diameter lights (O) into place; then glue and clamp the light block assembly to the roof.

9. STEP

Make the step (Q) according to the drawings. Cut 3/4" stock to width, then crosscut it to length. Chamfer the ends and sand the piece. Glue and clamp the step to the truck assembly.

10. FRONT BUMPER

The easiest way to make the front bumper (P) is to form a 3/4" × 1-1/4" × 4-1/2" block of stock with the proper profile. Next, cut the block into 1/4"-thick pieces. (Save extra bumpers for other trucks.) Glue the bumper in place.

Your tractor truck is now complete and ready for a trailer. Roll on to the trailer section and build the kind of trailer (or trailers) you want.

MATERIALS

Part	Description	Pieces	Dimensions (finished dimensions in inches)
A	Base	1	3/4 × 3 × 9-1/2
B	Cab	1	3 × 3-1/4 × 4-1/4
C	Engine	1	3 × 2-1/2 × 3
D	Fenders	2	3/4 × 2-1/2 × 3-5/8
E	Front axle holder	1	3/4 × 1-1/2 × 3
F	Rear axle holder	1	3/4 × 1-1/2 × 1-1/2
G	Wheels	6	2 dia. × 3/4
H	Axles	2	1/4 dia. × 4-5/8
I	Trailer hitch	1	3/4 × 1-1/2 × 2
J	Exhaust stacks	2	3/4 dia. × 3
		2	3/8 dia. × 5-1/4
K	Steering wheel	1	1-1/4 dia. × 1/4
L	Steering column	1	1/4 dia. × 2-1/2
M	Headlights	2	3/4 dia. × 1/2
N	Roof light holder	1	3/8 × 1/2 × 2
O	Roof lights	3	1/4 dia. × 1/2
P	Front bumper	1	1/4 × 1-1/4 × 4-1/2
Q	Step	1	3/4 × 2 × 4-1/2

CONSTRUCTION NOTES

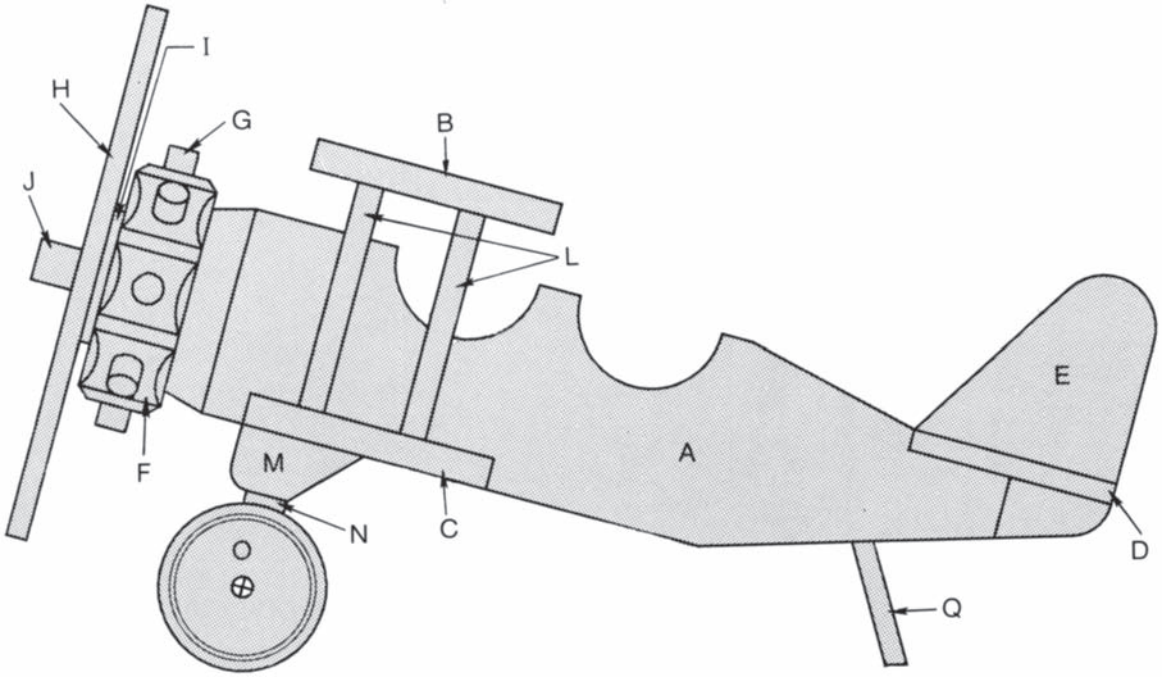
1. There are two fenders (D), left and right. Double-check the position of the fender on the chassis before rounding.
2. The radiator on the engine (C) is formed by a thin saw kerf.

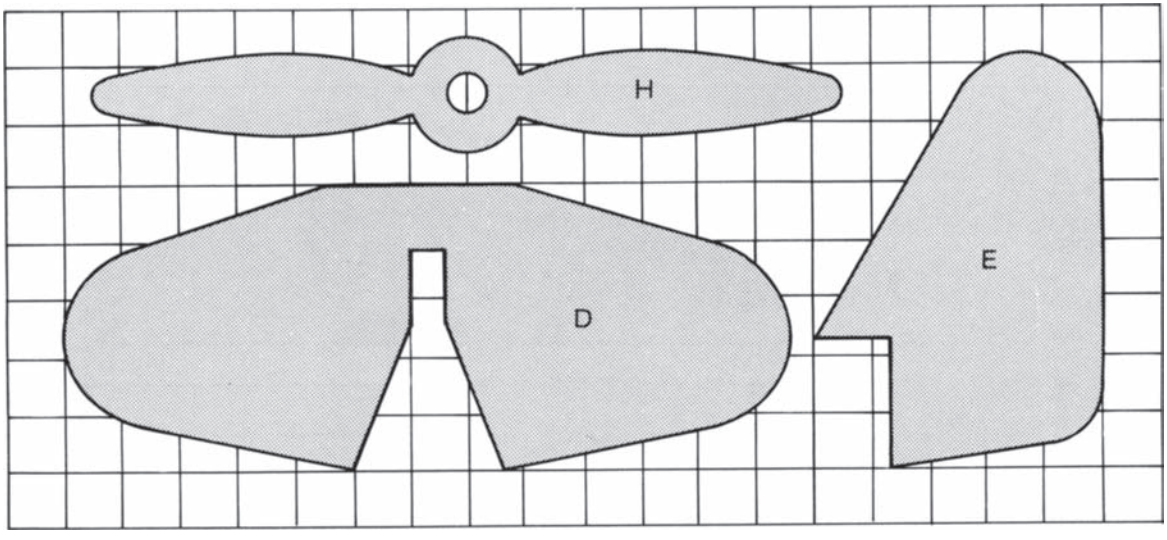
BIPLANE

The Stearman Trainer Biplane was the standard training plane for the Air Force and Navy prior to and during World War II. Because the original color of the plane was yellow and so many students scared so many instructors during training flights, the aircraft picked up the nickname *Yellow Peril*.

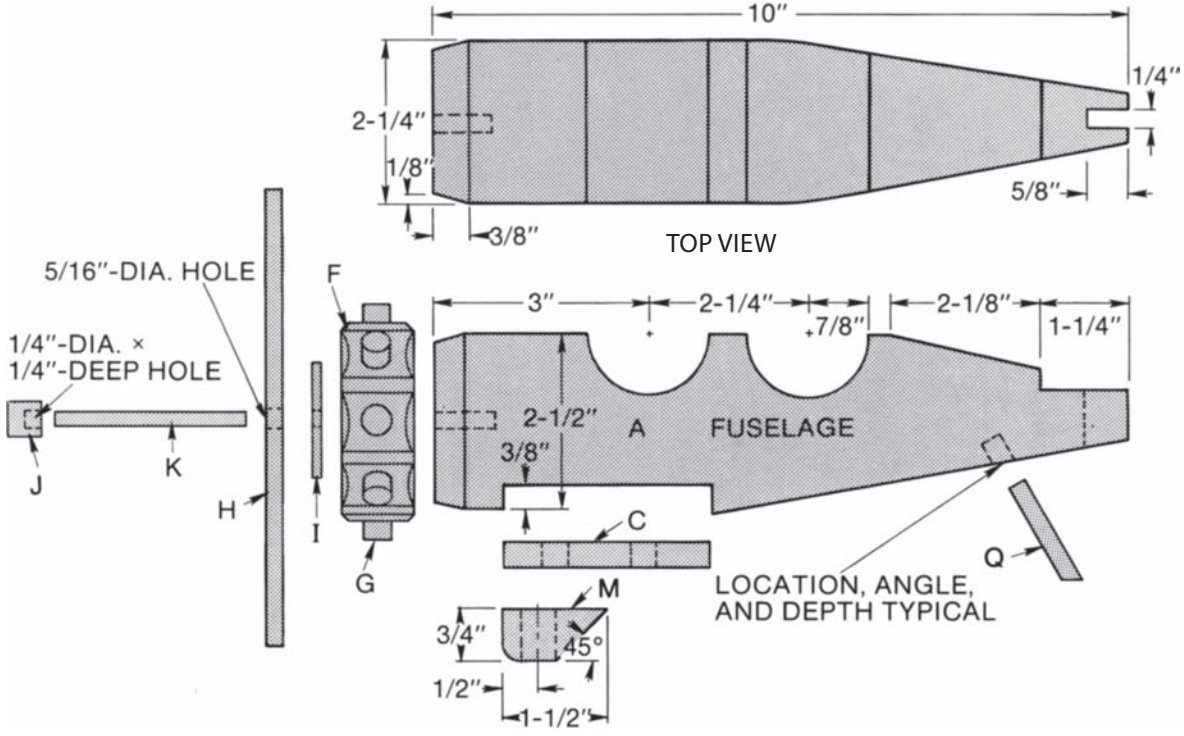
This biplane design is generic and uses only the general features of the Stearman Trainer. Since special construction techniques are required for this toy, read all the instructions before making any cuts. Also, it's quite easy to make more than one of these planes at a time.

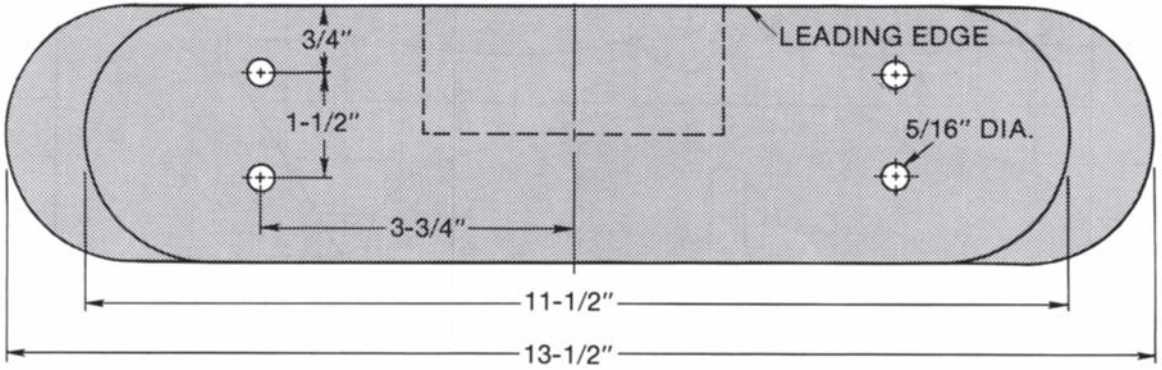
Here is the flight plan for the biplane.



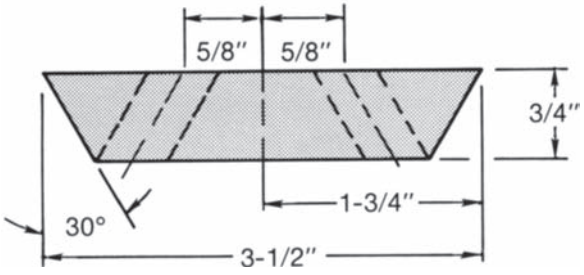


ONE SQUARE = 1/2"

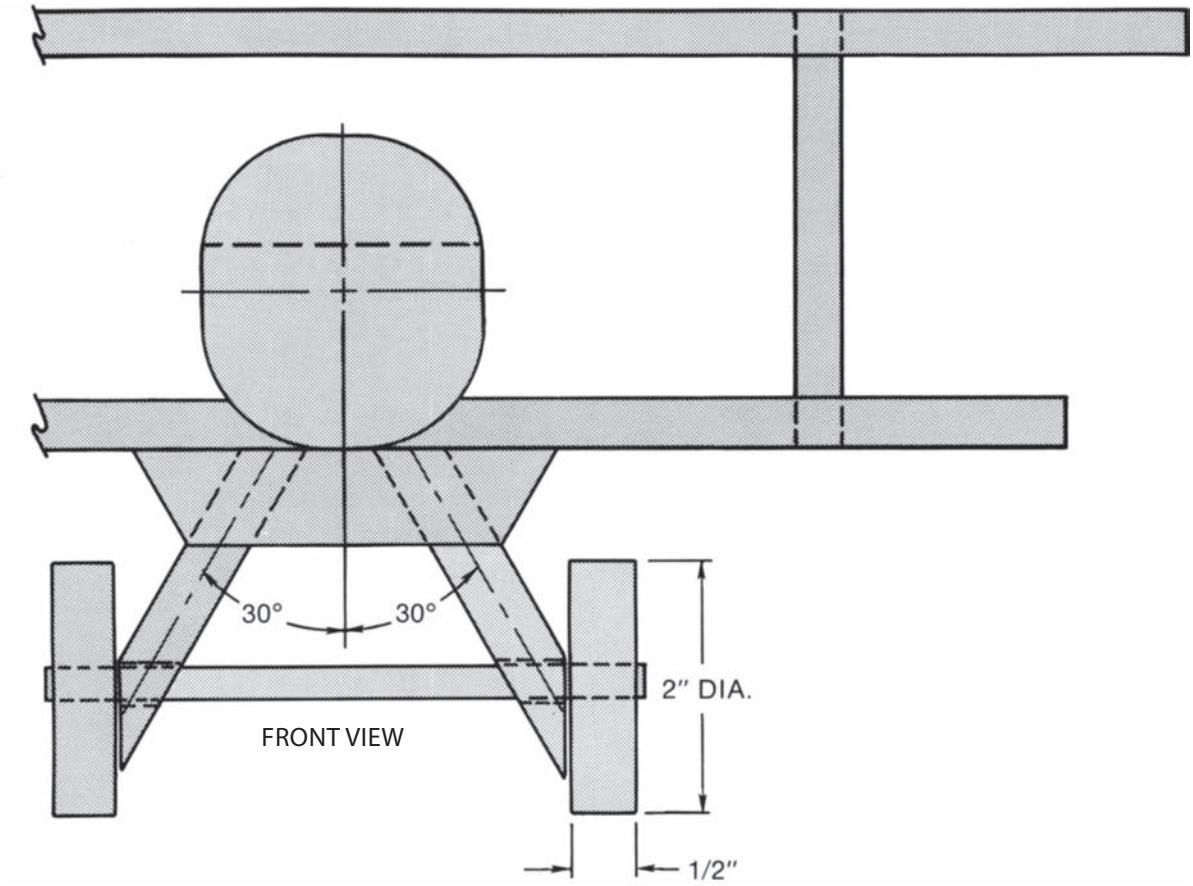


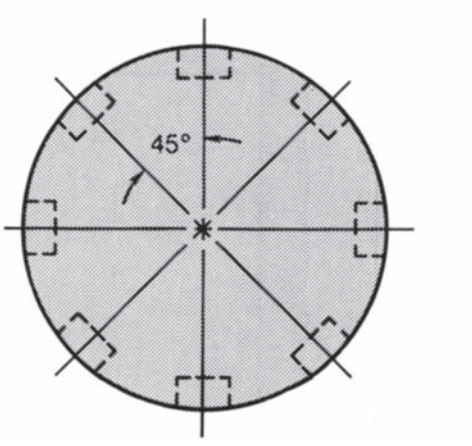


WING DETAIL



WHEEL STRUT BLOCK DETAIL

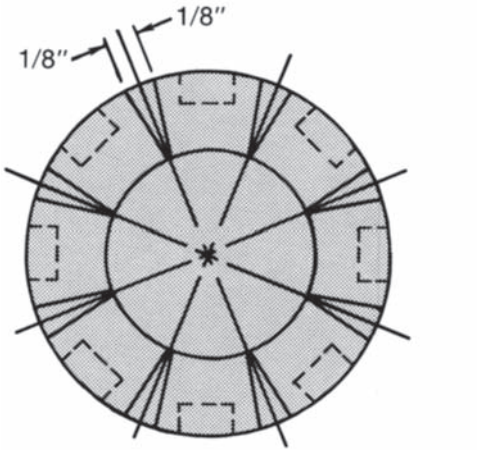

30°
30°
2" DIA.
FRONT VIEW
1/2"



DETAIL A

MARK OFF LINES EVERY 45°

DRILL 7/16"-DIA. × 1/4"-DEEP HOLES FOR CYLINDER HEADS



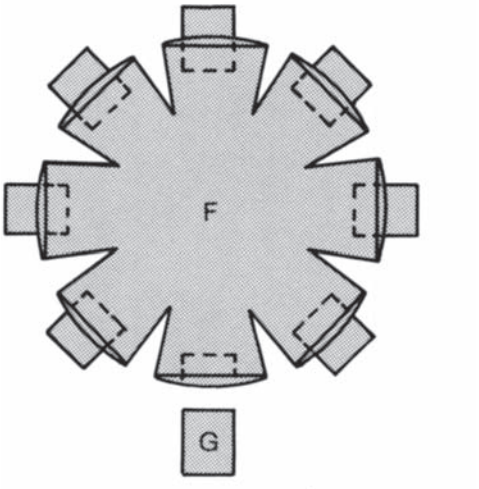
DETAIL B

DIVIDE THE 45° ANGLES

MARK 1/8" ON EACH SIDE OF LINE

DRAW A 1-5/8" CIRCLE

CONNECT MARKS TO INTERSECTION



PROCEDURE

1. FUSELAGE

Glue and clamp three pieces of 3/4" × 2-1/2" × 11" stock to form the fuselage block. If making more than one plane, allow about 11" length for each fuselage. Cut the block to finished dimensions; then draw the top and side profiles on it.

Cut out the wing notch on the bottom and the rear tail notches. Taper the sides of the fuselage with a scroll saw or bandsaw. Tape back the scrap pieces. Place the fuselage on its side and cut the side profile.

Finally, with a rasp or power sander, round off the edges of the fuselage; then bevel the nose.

Set the fuselage aside.

2. WINGS

Make the upper and lower wings (B, C) at the same time. Begin with a piece of stock at least 3/4" thick and 13-1/2" long. The proper width of the wings is determined by the notch already cut on the fuselage. Remove the excess width of the wing stock until it fits the notch.

Lay out the location of the wing strut holes and drill them with a 5/16"-diameter drill bit. Resaw the stock into two 3/8"-thick wing blanks. Form the round contour on the wing tips as shown; then sand the tips smooth.

Glue and clamp the lower wing (C) to the fuselage. Assemble the upper wing (B) to the fuselage with the wing struts (L). Sand the wing struts flush with the wings; set the assembly aside.

3. HORIZONTAL AND VERTICAL TAILS

Make a cardboard template as in the previous step and transfer the design to 3/4" stock. Cut out the contours with a bandsaw or scroll saw; sand the edges smooth. Resaw the stock to yield 1/4"-thick parts.

Glue and clamp the horizontal tail (D) to the fuselage; then glue and clamp the vertical tail (E) in place. Set the assembly aside.

4. ENGINE

Glue and clamp two pieces of stock to form a 1-1/2"-thick piece. Next, resaw the stock to a 1-1/4" thickness. With a compass and straightedge, draw the outside circumference of the block and locate the piston and cylinder positions. To do this, draw a 2-3/4"-diameter circle; then draw lines from the center of the circle to the circumference every 45°. These lines locate the centers of the cylinders. Next, draw a 1-5/8"-diameter circle and bisect each of the 45° angles with another line to the outside circumference. Mark 1/8" on each side of these bisection marks and connect them to the 1-5/8"-diameter circle (see detail in the plans).

Now it's time to start machining. Use a scroll saw or bandsaw to cut the block round. Sand the edge smooth; then drill the 7/16"-diameter cylinder holes 1/4" deep. After drilling the holes, form the pistons with a scroll saw or bandsaw (see Fig. 1).

Finish the engine block by chamfering the edges with a power sander or rasp. Glue the cylinder heads (G) into place; then set the engine block aside.

Fig. 1. Cut out the wedges in the engine block to create the cylinders. Make the cuts with a bandsaw or scroll saw.

5. PROPELLER

Lay out the profile of the propeller (H) on a piece of 1/4" plywood or clear stock. Drill the 5/16"-diameter shaft hole in the center of the piece; then cut out the propeller with a scroll saw. Sand the edges smooth.

Drill a 1/4"-diameter hole into the end of a length of 1/2" dowel stock to make the propeller hub (J). Cut the hub to length; cut and glue the propeller shaft (K) into the hub.

With a 1-3/4" diameter hole saw, cut a 1-5/8"-diameter blank from 1/8"-thick stock to make the propeller spacer (I). Glue and clamp the spacer to the engine block.

To assemble the engine and the propeller parts to the fuselage, glue the engine block to the fuselage assembly. The spacer has a 1/4"-diameter hole that can be used as a guide for drilling the propeller shaft hole through the engine and into the fuselage. Use a 1/4"-diameter drill bit and make the hole according to the plans. Glue the propeller shaft and propeller into place, being careful not to get glue on the propeller.

6. WHEEL STRUT ASSEMBLY

This plane has a wheel strut block that goes under the fuselage. To fabricate the piece, cut stock to the proper length and width. Set up a drill press to drill holes in the block at a 30° angle as shown. After drilling the holes, form the contours by tapering the sides 30° and the trailing edge 45°. Round the bottom front edge with a power sander or a rasp to contour.

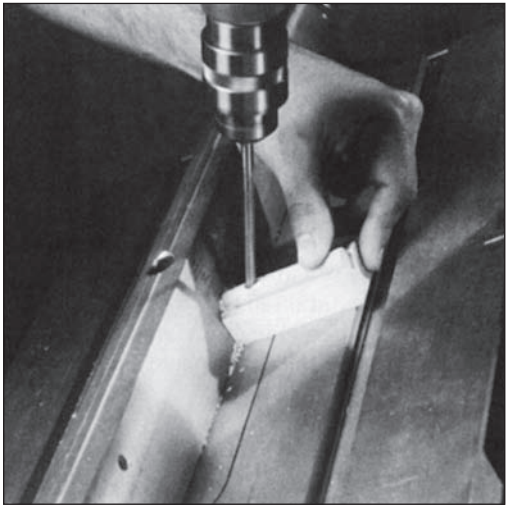


Fig. 2. With the table tilted 30°, secure the wheel strut in a V-block to drill the axle hole.

Make a V-block to hold round stock, and drill the 5/16"-diameter axle holes in the wheel struts (N) at 30° (see Fig. 2). After drilling the holes, glue the struts into the wheel strut block, using the axle to keep the struts aligned. When the glue dries, sand any excess strut sticking through the block. Glue and clamp the block to the fuselage.

7. WHEELS

With a 1-1/2"-diameter hole saw, make 1/8"-deep kerfs on 1/2"-thick stock. Use a 2-1/8"-diameter hole saw to cut out the wheels; sand them smooth; glue the wheels and the axle to the struts.

8. FINAL TOUCHES

To finish, put the tail skag (Q) on the plane; its location and angle are not critical. Drill the 5/16"-diameter holes and glue the skag in place.

If painting is your finishing choice, paint the entire aircraft yellow, engine and tires flat black, and the propeller silver. Make insignias out of contact paper and vinyl lettering.

MATERIALS

Part	Description	Pieces	Dimensions (finished dimensions in inches)
A	Fuselage	1	2-1/4 × 2-1/2 × 10
B	Upper wing	1	3/8 × 3 × 13-1/2
C	Lower wing	1	3/8 × 3 × 11-1/2
D	Horizontal tail	1	1/4 × 2-1/2 × 6-1/4
E	Vertical tail	1	1/4 × 2-1/2 × 3-5/8
F	Engine block	1	2-3/4 dia. × 1-1/4
G	Engine cylinder heads	8	7/16 dia. × 1/2
H	Propeller	1	1/4 × 1 × 6-1/2
I	Propeller spacer	1	1-5/8 dia. × 1/8
J	Propeller hub	1	1/2 dia. × 1/2
K	Propeller shaft	1	1/4 dia. × 2-3/4
L	Wing struts	4	5/16 dia. × 3-1/2
M	Wheel strut block	1	3/4 × 1-1/2 × 3-1/2
N	Wheel struts	2	1/2 dia. × 3
O	Wheels	2	2 dia. × 1/2
P	Wheel axle (not shown)	1	1/4 dia. × 5
Q	Tail skag	1	5/16 dia. × 1-1/2