

MAKE IT YOURSELF  
BIRD FEEDER



*Skill Development:  
Marking and Measuring*

 Lee Valley

# MAKE IT YOURSELF

## BIRD FEEDER

#LVMadeByMe #LVLetsDoSomething

### **Skill Development: Marking and Measuring**

There's a famous saying that says something along the lines of "If you build it, they will come." This bird feeder project will not only attest that the saying applies to birds, but also provide a satisfying opportunity to develop your marking and measuring skills in one fell swoop. You will begin by lightly sanding the Douglas-fir lumber pieces before using different measuring and marking techniques to make the bird feeder. You will also learn the importance of drilling pilot holes, how to cut wood with a Japanese utility saw, as well as install assorted hardware. Since no finish is required, you can fill your bird feeder with bird seed as soon as you have completed building it... and watch them flock to your feeder.

**Skill Level:** Beginner to intermediate. 14+

**Time to Complete:** 3 1/2 to 5 1/2 hours



# CONTENTS

- Feeder sides, 6 3/4" × 10 3/4" × 1" (2)
- Fixed roof, 6 3/4" × 12 3/4" × 1"
- Roof flap, 7 1/2" × 12 3/4" × 1"
- Base sides, 14 3/4" × 1 1/4" × 1" (2)
- Base front/back, 9 1/4" × 1 1/4" × 1" (2)
- Base bottom, 9 1/4" × 8 3/4" × 1"
- Dowels, 3/4" × 12" (2)
- Plexiglas, 8" × 6 1/2" × 1/16" thick (2)
- Japanese utility saw
- #8 × 1 1/2" Deck screws (22)
- #8 Countersink bit
- #2 Square-recess driver bit
- Small stainless-steel hinges, pair
- #4 × 5/8" Stainless-steel screws (13)
- Brass screws (5)
- 7/64" HSS brad-point drill bit
- Veritas 1 1/2" pocket layout square
- 12" Stainless-steel ruler
- Sandpaper (one piece each: 180x and 220x)
- Pencil
- Stainless-steel loop hooks (2)
- Chain, 3'



**Note:** This bird feeder is made of Douglas-fir lumber. Although it is a softwood, Douglas-fir could easily be mistaken for a hardwood since it has excellent resistance to decay and abrasion, is dimensionally stable and has excellent strength properties. For outdoor woodworking projects, such as this bird feeder, Douglas-fir is one of the best lumber choices. It is lightweight and has great stability and strength. Even when left untreated/painted, as is recommended for this project, it can endure extreme environmental conditions.

**Other items you should have on hand (not included):**

- Safety goggles
- Hand drill
- Small slot screwdriver
- Small Phillips screwdriver
- Respirator/Dust mask
- Clamps or masking tape
- Sanding Block
- Mallet
- Pencil sharpener
- Eraser

***DAY 1: COVERS STEPS 1 TO 4, AND TAKES APPROXIMATELY 1 TO 1 1/2 HOURS TO COMPLETE.***

## **1 SETTING UP YOUR WORKSPACE**

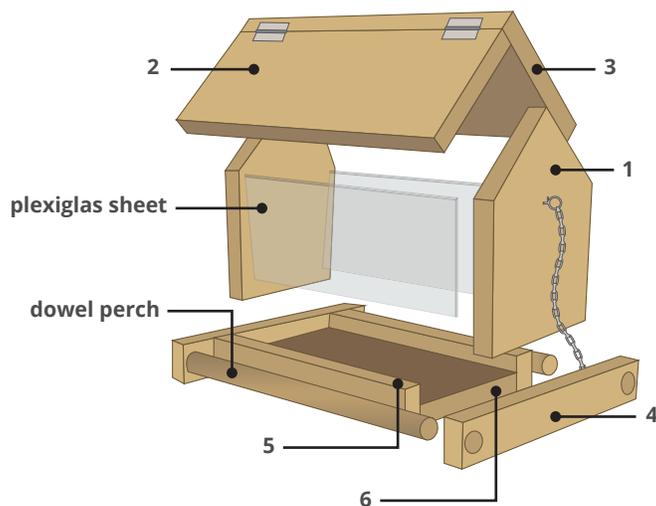
- a. Select a clean, open work area.
- b. Remove the contents of the kit from the box and set them aside, but close at hand. Unfold the empty box (or any empty box you have around the house) and place it on top of your worksurface to protect it.

## 2 SANDING THE WORKPIECES



**Caution:** Be sure to wear a mask when sanding to reduce the risk of developing respiratory problems.

- Lightly sand all the pieces of wood smooth with the 180x sandpaper in the direction of the grain as much as possible.
- Repeat the sanding with the 220x sandpaper.
- Wipe all the workpieces with a dry cloth to remove the sanding dust.



### Legend

1. Feeder sides
2. Fixed roof
3. Roof flap
4. Base sides
5. Base front/back
6. Base bottom

**Tip:** The parts are numbered so that you can easily tell them apart when they are needed. Before you start, it is a good idea to do a mock assembly for two reasons: to familiarize yourself with where the parts should go, and to verify that you have all the pieces that you need.



### 3 FASTENING THE BASE FRONT/ BACK TO THE BASE BOTTOM

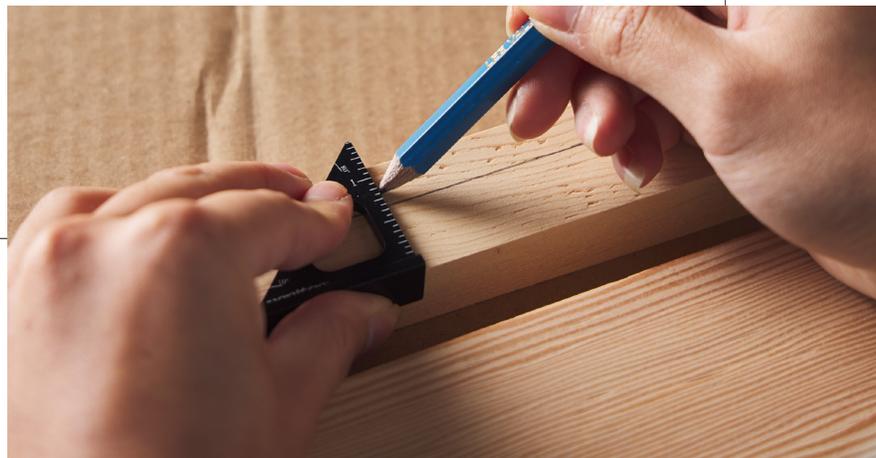
- a. Start with a freshly sharpened pencil; a fine pencil line will go a long way to ensure accurate marking. Re-sharpen the pencil as necessary throughout.

***Tip:** It is widely accepted that the accuracy of the layout will directly affect the outcome of the overall project. It is important to take your time during the layout phase to obtain fitting results.*

- b. To mark a  $\frac{3}{4}$ " reference line lengthwise across the  $9\frac{1}{4}$ "  $\times$   $1\frac{1}{4}$ "  $\times$  1" base front piece (part #5), place the  $1\frac{1}{4}$ " wide face upright against the base bottom (part #6) and draw a line across, ensuring your pencil remains flush with both pieces. This reference line will serve as a guide for marking and positioning.



- c. Use the ruler and make a mark in the center ( $4\frac{5}{8}$ ").
- d. Place the **1 1/2" pocket layout square's** blade on the center mark, such that the square's body is flush with the long edge of the workpiece. Draw a line across the width of the face.



- e. Place the square flush with the short edge of the front piece. Measure and make a pencil mark 1" inset from one end. Turn the square 90° and extend the line. Place the square on the other short edge, measure and mark 1" inset from that end, then extend the line.



- f. To mark the center between the 3/4" reference line and the bottom edge of the front piece, place the square flush with the long edge and near the 1" inset mark and draw a line 3/8" up from the bottom edge. Make another 3/8" mark on the other end. Align the ruler with both marks and draw a line to cross the 1" and 4 5/8" lines.



- g. The intersection of the 3/8" lines with the 1" and 4 5/8" lines indicates the center of the three pilot holes.

**Tip:** A pilot hole is a hole that is predrilled into the wood in order to guide the screw into the hole. It not only avoids splitting the end grain as the screw is driven in, but a pilot hole also reduces the chance of stripping the screw head as you're trying to drive it in.

- h. Repeat these markings on the base back piece (part #5).



**Caution:** Always wear proper eye protection when drilling.

**Tip:** While the combination countersink drill bit allows you to drill a pilot hole and a countersink for the screw head in one step, you do need to adjust the bit's projection to ensure you drill the pilot hole to the correct depth. Loosen the set screw with the hex key provided, raise or lower the bit so it is slightly shorter than the length of the screw you are using, then lock the setting with the hex key.

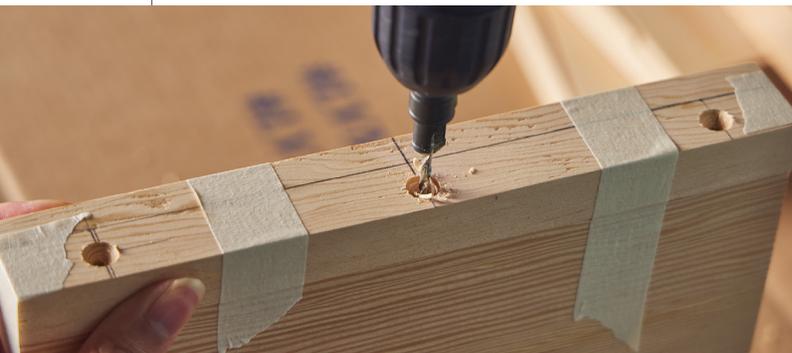


- i. Adjust the projection of the 1/8" drill bit within the #8 countersink as required for the deck screw. (For the 1 1/2" long deck screws, the drill bit should project about 1".) Install the countersink bit in a hand drill.

**Tip:** Since you will be drilling all the way through the workpiece, position it such that the section to be drilled overhangs your worksurface. This will ensure that you do not inadvertently drill into your worksurface. Also, to prevent breakout on the exit side of the hole, use a piece of scrap wood under the workpiece to provide support as the drill bit is pushing through.

- j. Hold the workpiece down with one hand and position the tip of the drill bit where the lines intersect. Drill each pilot hole all the way through the workpieces, making sure to drill the holes at right angles as much as possible. Stop drilling when the countersink portion has cleared a cavity deep enough for the screw head to sit flush with the wood.
- k. Align the front/back pieces with the 9 1/4" edge of the base bottom (part #6) and transfer the pilot hole locations on the front/back pieces onto the base bottom. (This will align the pieces when you insert the screws.) Drill a shallow hole, about 3/8" deep into the base bottom (part #6), for each screw (being careful not to drill the countersunk portion any deeper).

**Tip:** You can use masking tape or clamps, if you have these available, to help you hold the pieces together while you transfer the pilot hole locations.



- l. Insert a #8 screw into each of the six pilot holes and drive it in using the #2 square-recess driver bit.

## 4 FASTENING THE BASE SIDES

- a. To mark a  $\frac{3}{4}$ " reference line lengthwise across the base side pieces (part #4), place the  $1\frac{1}{4}$ " wide face against the base bottom (part #6) and draw a line across.
- b. Use the ruler and make a mark in the center ( $7\frac{3}{8}$ "). Place the square's blade on the mark, and draw a line across the width of the face.
- c. Measure and mark a line  $4\frac{3}{4}$ " on either side of the center line. Place the square's blade on the mark, and draw a line across the width of the face.
- d. To mark the lengthwise center between the  $\frac{3}{4}$ " reference line and the bottom edge of the base side piece, place the square flush with the long edge and near one of the  $4\frac{3}{4}$ " marks and make a mark  $\frac{3}{8}$ " up from the bottom edge. Make another  $\frac{3}{8}$ " mark on the other end. Align the ruler with both marks and draw a line to cross each line.
- e. Repeat these markings on the other base side piece (part #4).
- f. Install the #8 countersink bit in a hand drill, hold the workpiece down with one hand and drill each pilot hole all the way through the workpieces, again, making sure to drill the holes at right angles as much as possible.
- g. On the  $8\frac{3}{4}$ " edge of the base bottom (part #6), mark the center ( $4\frac{3}{8}$ ") and carry the line onto the underside of the base.



- h. Align the center mark on one of the side pieces with the center mark on the 8 3/4" edge of the base, and transfer the pilot hole locations on the side piece onto the base bottom. Drill a shallow hole, about 3/8" deep into the base bottom, for each screw.
- i. Insert a #8 screw into each of the pilot holes and drive them in using the #2 square-recess driver bit.
- j. Press fit a dowel into the 3/4" hole on each end of the base side that is fastened to the base bottom.



- k. Slip the other base side over the other end of the dowels, line up the pilot holes and fasten in place with three #8 screws.
- l. Even out the ends of the dowels so they protrude the same amount of each side. (Alternatively, you can cut the dowel ends flush with the base sides.)



***END OF DAY 1***

**DAY 2: COVERS STEPS 5 TO 13 AND  
TAKES APPROXIMATELY 2 1/2 TO 4 HOURS.**

## 5 CUTTING THE ROOF PITCH ON FEEDER SIDES

**Note:** The two feeder sides (part #1) have pre-routed grooves on one face. These slots will hold the Plexiglas in place. They are tapered to allow the bird seed to cascade downward as it is consumed. The top of the feeder sides will need to be cut to provide a 90° roof pitch.



- a. Measure and mark the center (3 3/8") of one feeder side (part #1).
- b. On the left edge of the workpiece, measure 3 3/8" down from the top.
- c. Use the ruler to line up the center mark with the mark on the left edge and draw a line to join them.
- d. On the right edge of the workpiece, measure 3 3/8" down from the top, line it up with the center mark and draw a line.
- e. Repeat these marks on the other feeder side.

- f. Use the outer-facing lines to guide your saw.

**Tip:** The Japanese utility saw cuts on the pull stroke, which refers to the direction of the cutting action. When you pull the saw towards you, the saw is cutting wood. When you push the saw away from you, the saw is not cutting any wood. The motion of pulling the saw towards you rather than pushing it away gives you more control over each upward stroke of the saw, thereby making it easier to cut in a straight line.

*When starting a cut, use your thumb's knuckle on your non-dominant hand to guide the blade on the line, and bring the saw down to come into contact with the wood. Make five to ten slow downward strokes until you create a small grooved starting point. If the saw keeps slipping or binding, use less pressure, not more. Move your thumb out of the way, and take long strokes to cut along the line. When you are nearing the end of a cut, be sure to support the waste wood for a clean finish.*



- g. Hold the workpiece down with one hand. Position it such that the section to be cut overhangs your worksurface, and cut away the peaks with the **Japanese utility saw**.
- h. You can clean up any saw whiskers with the 180x sandpaper, and erase any pencil lines.



## 6 ASSEMBLING THE FEEDER SIDES

- a. Use the square and pencil to make a mark  $\frac{3}{4}$ " up from the bottom of each groove on the feeder sides.
- b. Install the  $\frac{7}{64}$ " drill bit into your drill and drill a shallow pilot hole, about  $\frac{1}{4}$ " deep, into the groove.
- c. Use a small slot screwdriver to install a brass screw into each pilot hole. This screw will act as a stop for the Plexiglas to ensure it doesn't slide to shut the opening for the bird seed.



- d. At the bottom of the outer face of the feeder sides, mark the center ( $3 \frac{3}{8}$ ").
- e. On each base side, mark the center ( $7 \frac{3}{8}$ "), and carry the line to the underside of the base assembly.
- f. Make a mark  $2 \frac{3}{8}$ " to the left of the center mark, and another one  $2 \frac{3}{8}$ " to the right of the center mark.
- g. On each side of the  $2 \frac{3}{8}$ " marks, measure a  $1 \frac{1}{8}$ " inset from the edge of the base assembly, and draw a line so that the two marks intersect.

**Note:** The center mark on the base assembly will not require a pilot hole. No screw will be inserted there, since it would interfere with the screw that holds the base sides to the base bottom.

- h. Repeat these marks on the opposite side of the base assembly.



- i. Drill each of the four pilot holes all the way through the underside of the base with the #8 countersink bit.



- j. Align the center mark on the feeder side with the center mark on the base, and transfer the pilot holes onto the feeder side. This might be a bit tricky to do by yourself, so you might need to call for a helper. Repeat for the other feeder side.
- k. Drive a #8 screw into each hole.

## 7 INSTALLING THE PLEXIGLAS

- a. Peel the protective film off of the pieces of Plexiglas.
- b. Slide each piece of Plexiglas into the grooves in the feeder sides.



## 8 INSTALLING THE ROOF

**Note:** The 6 3/4" wide fixed roof (part #2) is permanently fastened to the feeder with screws and the 7 1/2" wide roof flap (part #3) is connected to the fixed roof with a pair of hinges so you can open the flap and fill the feeder with bird seed.

- a. To mark the location of the pilot holes on the 6 3/4" × 12 3/4" × 1" fixed roof (part #2), start by marking the center of the thickness of the feeder side, at its peak.
- b. On the thickness edge of the 12 3/4" length of the fixed roof, measure and mark a line 2 1/8" inset from each end, and carry that line onto the face of the fixed roof.

- c. From the top edge of the workpiece, near the lines that were carried over, measure and make two intersecting marks on each end: one 1" down; the other, 3 3/4" down.
- d. Drill each of the four pilot holes all the way through the fixed roof.



- e. Align the center marks on the fixed roof with the center marks on the feeder sides, and transfer the pilot holes drilled on the top face of the fixed roof into the feeder sides.



- f. Drive a #8 screw into each hole.



## 9 INSTALLING THE HINGES

**Note:** The two hinges are surface mounted on the outside of the roof flap and the fixed roof.

- a. Position the roof flap (part #3) on the feeder and transfer the lines from the fixed roof onto the thickness edge of the roof flap.
- b. Align the left side of the hinge leaf to the right of the mark on the left edge of the roof flap. Fold the hinge at 90° and position the knuckle on the outer edge of the roof flap.



- c. Use the point of a screw to mark the center of each hole on the thickness edge.
- d. Drill shallow pilot holes, about 1/4" deep, with the 7/64" drill bit.
- e. Attach one leaf to the edge of the roof flap with three of the stainless-steel screws, but do not fully tighten the screws at this time.
- f. Repeat these last four steps for the other hinge, this time, aligning the right side of the hinge leaf to the left of the mark on the right edge of the roof flap.



- g. Align the roof flap with the lines on the fixed roof, and use the point of a screw to mark the center of each hole in the remaining hinge leaves.
- h. Drill shallow pilot holes, and attach the hinge leaves with the remaining stainless-steel screws to the fixed roof. Adjust the position of the hinges to ensure the roof closes, then tighten the screws.



- i. Erase any visible pencil marks.
- j. Optional: Lightly sand the outside of the feeder with 220x sandpaper, and round off any sharp edges. Wipe any sanding dust off with a clean cloth.

## 10 INSTALLING THE HOOKS AND CHAIN

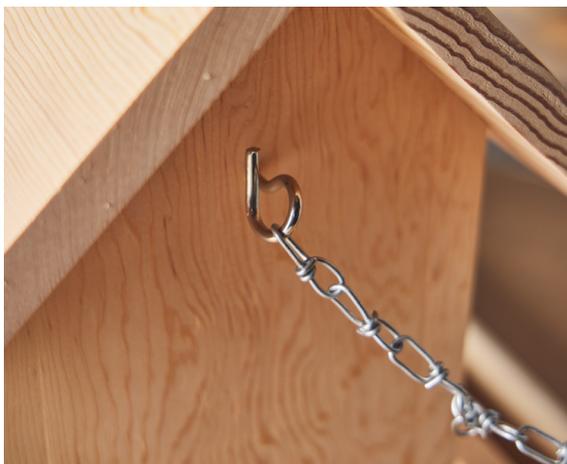
- a. Since using the 12" ruler will be tricky here, you can rely on referential measurements to determine the location of the **loop hooks**. Place one of the leftover pieces of wood from forming the 90° peak and position it at a right angle under the roof. Draw a line at the bottom and in the center (3 3/8") of the feeder sides.
- b. Drill a 3/8" deep pilot hole (with the 7/64" drill bit) at the intersection of these lines. Erase any pencil marks.
- c. Secure a loop hook on each side. Keep twisting the hook until the straight end points up.



*Tip:* Use the shank of a screwdriver as a lever to help twist the hook into the wood.



- d. Loop each end of the chain into a loop hook.



- e. Fill your feeder, and hang it outside in a suitable spot, away from squirrels. (Adjust the length of the chain to suit your feeder's location.)

### *END OF DAY 2*

## **PERSONALIZING YOUR BIRD FEEDER**

Painting Douglas-fir is not necessary, even though it will be exposed to the elements. Natural, unpainted/untreated wood is best for the health and safety of birds. Should you decide to apply any finish, be mindful to leave any surfaces that come into contact with seed, such as the interior and the seed tray, untreated and use only a non-toxic, food-safe finish on the exterior.

To make this bird feeder stand out, you can customize the wood surfaces, such as the roof and sides, with text, designs or even faux shingles with a wood-burning tool.



You can also add a whimsical knob on the roof flap.

What other ways can you think of to make your bird feeder unique?

## WHERE TO HANG YOUR BIRD FEEDER

Adding a bird feeder in your yard not only allows you to see birds up close, but once you have a seed feeder, you may notice more species than before. Hang your bird feeder in a quiet area of your yard, away from predators and out of the leap reach of squirrels, such as trees, fences and other structures. A heavy-duty shepherd's hook outfitted with a baffle and placed at least 10 feet away from trees and other structures provides a nice balance between safety and visibility for the birds, at the same time as it renders the bird feeder inaccessible to even the most persistent of squirrels. The birds will readily see the feeder, but will also be able to retreat quickly if they feel threatened. Nevertheless, it may take several days before birds notice a new feeder. Be patient, they will come.

## FILLING YOUR BIRD FEEDER

In the summertime, seed feeders are not necessary since nature and flower gardens provide an abundance of food. In the fall and winter, seed feeders provide non-migratory birds with a much-appreciated supplement when other food supplies are low.

Pre-mixed seed blends are convenient to start, but you can make your own by offering one type of seed on its own, or in combination with others. Try a 50/50 mix of peanut bits and black-oil sunflower seeds, or mix equal proportions of millet, safflower seed, black-oil sunflower and cracked corn. Black-oil sunflower seeds are smaller than common white-striped sunflower seeds and are easier for smaller birds to crack open. Their higher fat content also makes them suitable for winter feeding.

## CARING FOR YOUR BIRD FEEDER

When you do set out a seed feeder, it is important to keep the seeds dry and to clean the feeder regularly in order to prevent bacterial infections due to seed spoilage and bird droppings from inadvertently being transmitted to birds.

Seed feeders should be cleaned and disinfected every two weeks. Be sure to wear gloves, and wash your hands afterwards. Begin by emptying any remaining seeds and removing any dried clumps of seed, then wash the feeder using a 50/50 mixture of vinegar and hot water. Rinse thoroughly and air dry before refilling.

It is also important to keep the area under and around the bird feeder clean to deter unwanted guests.

## NOW WHAT?

The tools and supplies in this kit are reusable. The more you make, the more the tools will be of continued service. We hope that you will be inspired to continue practicing your measuring and marking skills. If you would like to make another bird feeder with the lumber of your choice, you can use the dimensions noted in the contents list as a cutting guide.

What other small outdoor project could you make? A pollinator house? A bird house? A dog house, perhaps?



## CREATED BY LEE VALLEY. MADE BY ME.

Now that you have completed your bird feeder, we would love to hear about your experience and see the finished project.

#LVMadeByMe #LVLetsDoSomething



MK108 Bird Feeder

Lee Valley Tools Ltd. Ottawa ON K2H 1C2 Canada [leevalley.com](http://leevalley.com)

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