

4 Sun 53 Step

Kit Inventory

- Box Left and Right End Panels
- Box Base Panel
- Outer Front and Back Panels
- Two (2) Top Rails
- Two (2) Bottom Rails
- Two (2) Left End Rails
- Two (2) Right Ends Rails
- Right End Keyway, Holder Panel 1 (right), Holder Panel 2 (right)
- Left End Keyway, Holder Panel 1 (left), Holder Panel 2 (left)
- Slider Holder (right), Slider Holder (left)
- Upper Runner (left), Lower Runner (left)
- Upper Runner (right), Lower Runner (right)
- Outer Upper (right), Outer Slider (right) and Outer Lower (right)
- Outer Upper (left), Outer Slider (left) and Outer Lower (left)
- Bottom Panel Pieces
 - Outer Bottom Panel
 - Two (2) Long Runner Strips (bottom), Two (2) Short Runner Strips (bottom)
 - Two (2) Holder 1 Long Strips (bottom) , Two (2) Holder 1 Short Strips (bottom)
 - Two (2) Holder 2 Long Strips (bottom) , Two (2) Holder 2 Short Strips (bottom)
- Top Panel Pieces
 - Outer Top Panel
 - Two (2) Long Runner Strips (top), Two (2) Short Runner Strips (top)
 - Two (2) Holder 1 Long Strips (top) , Two (2) Holder 1 Short Strips (top)
 - Two (2) Holder 2 Long Strips (top) , Two (2) Holder 2 Short Strips (top)
- Two (2) unmarked (long rectangles) that can be used as plugs if desired
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- Green (.370") alignment pegs (16+)
- Red (.400") alignment pegs (8+)
- Blue (.220") alignment pegs (4+)
- Orange (.150") alignment pegs (4+)
- 1/8" dowels (2)

Other Items Needed

- Glue – I use a “craft” type tacky glue such as “Aleenes Tacky Glue” which can be found at craft stores like Michael’s.
- Sandpaper - to smooth any rough edges and make parts slide easier.
- Wax/paraffin – also to make parts slide better.

General Notes:

- All writing on parts is oriented the same way (upright) on the front, back left & right sides with the writing side facing outwards from the box/inside.
- All writing is oriented towards the center for the top and bottom panels and the writing side of the piece is facing away (towards inside) of those panels.
- The alignment pegs are of different lengths depending upon the number of layers that are being placed together. Be careful to use the correct length. The pegs are easier to push through the holes if you start them on the side of the piece that has writing. If they are still hard to insert, then use an awl/ice pick to make the hole on one side larger.
- Check the fit before gluing and sand/file any pieces that do not slide smoothly
- I find that light sanding of the faces of sliding pieces makes for better boxes. I also use paraffin/candle wax on the surfaces to get smoothly moving pieces.
- I use Aleene’s tacky glue for gluing parts. I glue the pieces and then hold them together for ~15 seconds and they will stay in place until the glue dries.
- Be careful when attaching outer sides, spacers and covers to keep glue away from areas where it might squeeze out underneath and get on any of the sliding parts. If possible glue those parts without the sliding pieces in place so you can clean up any glue squeeze out.
- Clean up glue squeeze out while the glue is still soft as it is much harder after it dries.
- When sanding flat sides it is better to place the sheet of sandpaper on a flat surface and move the puzzle piece over the sandpaper. This keeps the face flat and prevents rounding over the edges.
- If tabs seem too fat to fit in slots then sand the tabs thinner with a couple of passes of 100 grit sandpaper on each side of the tabbed piece.
- If tabbed pieces do not seat fully in the pocket areas, then sand the ends of the tabs .

Assemble Inner Box

Start by gluing the top, bottom, left and right rails to the front and back outer panels as shown below. When adding the rail pieces make sure that glue squeeze out under the rails is cleaned out before it dries. After the rails are in position, lay the assembly face down on a flat surface and put a little weight on it in order to make sure the rails are in the same plane with each other and let dry.



Next by glue the front, left, back, right and inner base panels together.



Next, sand the face of the two keyway pieces with 180/220 grit sandpaper to make it easier for the holder panel to slide over it. Then, using the blue (.220") pegs, glue the left end keyway to the left box end and the right end keyway to the right box end.



Assemble Top

Glue the runner long strips (top) to the top outer panel using the green (.370") pegs making sure they are in the correct orientation as shown in the picture below (the runner short strips should just fit between the long strips).

The Middle Section included in the full plans.

Apply Finish

If you are going to apply finish to the puzzle that should be done now. Sand the box, lid and end panels with 180/220 sandpaper and put on your favorite stain/finish or apply the paper decoration from Bruce's plan and finish with a clear coat. The top, bottom, left and right panel assemblies can be removed and finished separately. Many light coats of finish and making sure the sliders still move between coats works best. After the finish is dry you can assemble your puzzle and you are done. If you want to lock the left and right end panels into the puzzle you can glue the unmarked rectangular pieces onto the inner box ends after the end panels are in their correct positions.

