

The Denver Observer's Seat



This observer's seat, which is fully adjustable in height and folds compactly for transport, can be built in two or three evenings at a cost of about \$35.

This project was designed by Charles P. Carlson, following a concept developed by Dave Trott. Both are members of the [Denver Astronomical Society](#). A special thanks to Bert Harless.

At the bottom of this page are [diagrams](#) of the seat supports and cross brace.

Materials List

1 - 8' 2X4 stud; premium grade recommended (should be straight and not subject to splintering)

3/4" plywood scraps: 1 - 10" X 13", 2 - 7" X 14"

1 - 1" X 1/8" aluminum bar, length at least 28"

1 - 3" door hinge

6 - 1" screws to fit door hinge

1 - 2 3/4" chest handle

4 - 1" screws to fit chest handle

1 - 3/8" X 5 1/2" hex bolt

1 - 3/8" locknut

2 - 3/8" X 2 1/2" lag screws

2 - 3/8" washers

2 - 3/8" X 2" lag screws

8 - 2" X 10 flathead wood screws

5 - flathead nails, at least 1" long

24" length of 4" wide adhesive-backed stair safety tread (3M product)

4" length of 3/4" rubber fuel tubing (from automotive store)

Velcro strips, approx. 12" long (from fabric store)

4 - large thumb tacks or similar fasteners, to fasten Velcro strips

1 - piece scrap cardboard, approx. 2" X 3"

Assembly Instructions

1. Cut the 2X4 into four lengths, as follows: 2 pieces 34" for front and back uprights, 1 piece 24" for lower crosspiece; leftover block to be used for seat assembly will be approximately 3 1/2" in length.

2. Bevel one end of each of the 34" 2x4 uprights to 22 1/2 degrees.

3. Center and glue bottom crosspiece flush with the beveled end (long dimension edge) of one of the uprights; secure with the two 3/8" X 2 1/2 lag screws and 3/8" washers.

4. Cut the two seat supports as shown in diagram, and drill the 3/8" holes; this piece should be cut and drilled to precise dimensions for proper fit (this is the only piece where exact dimensions are critical).

5. Cut or trim the 10"X13" plywood piece to form seat; bevel one long edge to match angle of seat supports (approx. 30 degrees); round corners.

6. Center and glue the 3 1/2" 2X4 piece on the bottom of the seat, about 1 1/2" from back (beveled) edge as shown in diagram; fasten from the bottom of the 2X4 block with four of the 2" X 10 FH woodscrews in a square pattern, approx. 2" by 2".

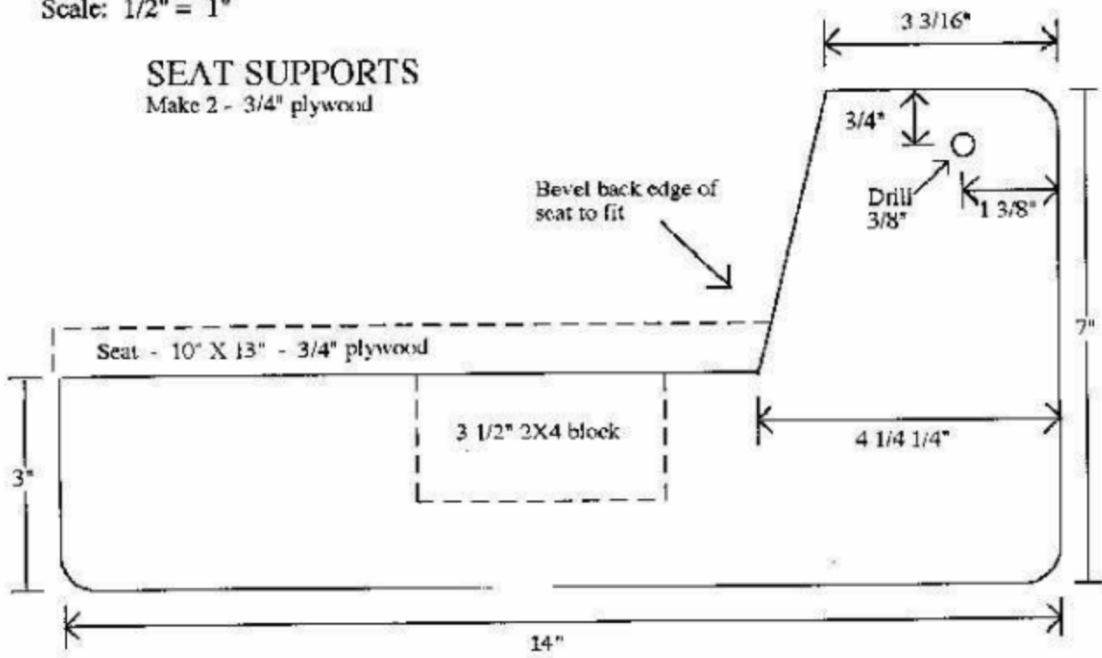
7. Cut and glue a piece of cardboard to one side of the 2X4 block (the purpose of this step is to form a shim which will prevent the seat assembly from binding on the front upright).
8. Assemble seat as shown in photo and diagram, aligning seat supports and fastening them to the 2X4 block with the remaining four 2"X10 wood screws.
9. At this point, it is recommended that the wood parts be finished with several coats of a good quality polyurethane varnish or similar waterproof finish.
10. Lay out the front and back uprights, butting them at the square ends and with the shorter dimension formed by the bevels facing up; install door hinge to join square ends.
11. Close the uprights to a 45 degree angle; install the aluminum crossbrace on one side of the rear upright, using one 3/8" X 2" lag screws; install screw 2" from bottom end of upright, leaving slight slack so that the crossbrace freely rotates; install the other 3/8" X 2" lag screw at the corresponding location on the front upright, leaving enough slack so that the slotted end of the crossbrace snaps down to a snug fit.
12. Install chest hinge at top of front upright.
13. Trim the 4" stair safety tread to 3" wide; install on the front upright, starting about 3" from the top.
14. Slit 3/4" fuel tube; spread and install on rear edge of the seat between the seat supports using the flathead nails to secure; hammer nails to tight fit against rubber to prevent rubbing against stair safety tread.
15. Slip the seat assembly in place against the front upright as shown in photo and install the 3/8" X 5 1/2" hexbolt through the holes provided; fasten with 3/8" locknut (but be careful not to overtighten the locknut so as to bend the seat supports and cause binding).
16. Overlap about 3" of the Velcro strips and fasten to the back of the rear upright; fit so that these form a strap to secure the seat in the folded position (Note: Some other arrangement with leather or cloth straps could be substituted).
17. Test procedure: Take the chair out under a dark sky, place behind the eyepiece of your telescope, adjust to a comfortable height, and enjoy the view!

Diagrams

Scale: 1/2" = 1"

SEAT SUPPORTS

Make 2 - 3/4" plywood



CROSS BRACE - 1/8" X 1" aluminum bar

