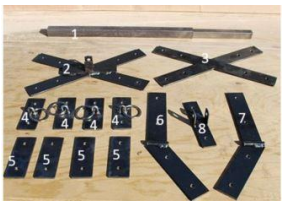
St. Andrews Cross Hardware Kit Instructions

Materials Needed:

One - St. Andrews Cross Hardware Kit from Dungeon Delights



Bag of fasteners:

Quantity	Size	Type
25	4”	3/8” Bolts
4	3½ “	3/8” Bolts
6	1¼”	3/8” Bolts
30	3/8”	Heavy Duty Nuts
5	3/8”	Jam nuts
35	3/8”	Plain Washers
2	2½“	Clevis Pins
3	2”	Clevis Pins

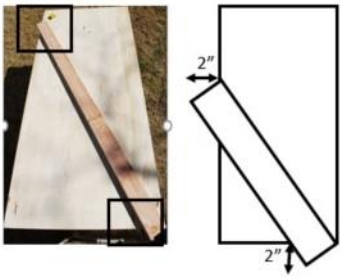
To be provided by customer

One 4’ x 8’ plywood sheet ¾” thick (“plywood”)
Four 2” x 6” 8 feet long studs (“stud”)
11/16 wrench
9/16 wrench
Saw
Drill and 13/32” drill bit
Eight 3/8” wood screws 2½” long (Optional)
Eight 2” x 4” pieces (“spacers”)
Black Marker (“Sharpie”)

Note: It is recommended that any sanding and finishing of the lumber be completed prior to assembly of the cross.

I. Layout Of The Cross:

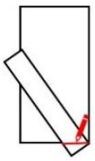
Step 1. Lay the plywood on the ground.



Step 2. Lay one stud (Stud #1) flat diagonally across the plywood with the outside end of the stud on the lower right corner of the plywood. The inside corner of the stud will project 2 inches off the edge of the plywood. Adjust the stud so that the top outside end of the stud projects 2 inches off the edge of the plywood.

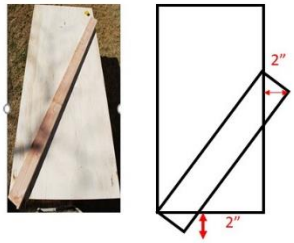
Step 3. Take a marker and draw lines along both sides of the stud on the plywood.

Step 4. Take a marker and draw a line on the stud showing the overhang of the lower right-hand corner.



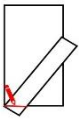
Step 5. Repeat steps two, three and four with a different stud (Stud #2).

Step 6. Lay another stud (Stud #3) flat diagonally across the plywood with the outside end of the stud on the lower left corner of the plywood. The inside corner of the stud will project 2 inches off the plywood. Adjust the stud so that top outside end of the stud projects 2 inches off the edge of the plywood sheet.



Step 7. Draw lines along both sides of the stud on the plywood.

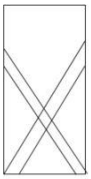
Step 8. Draw a line on the stud showing the overhang of the lower left-hand corner.

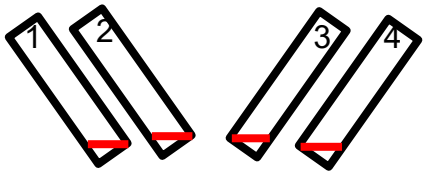


Step 9. Repeat steps six, seven and eight with a different stud (Stud #4).

Results:

a) An outline of the St Andrews Cross on the plywood.
b) Studs have cut lines marked on one end.



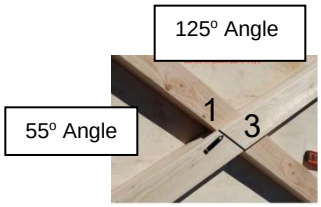


II. Marking the Mid Cut Line.

Step 10. Lay Stud #1 inside the lines on the plywood. Lay Stud #3 diagonally across Stud #1 inside the other set of lines.

Suggestion: Use the spacers to keep Stud #3 stable.

Step 11. Mark where Stud #3 crosses Stud #1 on the side closest to the lower end of the plywood.



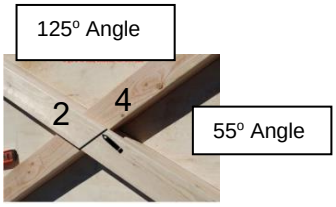
Note: the angles are 55º and 125º.

Step 12. Remove Stud #1 and #3 and set aside.

Step 13. Lay Stud #4 inside the lines on the plywood. Lay Stud #2 diagonally across Stud #4 inside the other set of lines.

Suggestion: Use the spacers to keep Stud #2 stable.

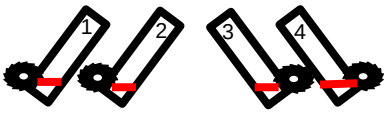
Step 14. Mark where Stud #2 crosses Stud #4 on the side closest to the lower end of the plywood.



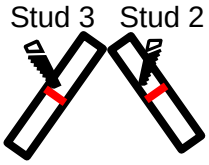
Note: the angles are 55º and 125º.

III. Sawing the Studs.

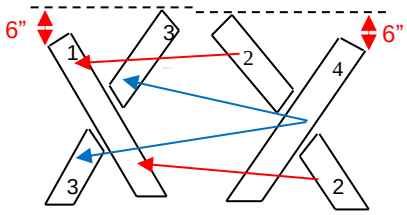
Step 15. Cut each stud along the line marked in Step 4, Step 8, and Step 9.



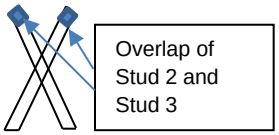
Step 16. Cut Stud #3 and #2 along the line marked in Step 11 and Step 14.



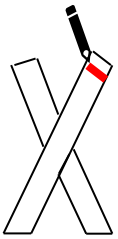
Step 17. Place Stud #1 in the outline of the St Andrews Cross on the plywood. Lay the two halves of Stud #3 on either side of Stud #1 to form the first layer of the cross. Stud #3 will be six inches longer than Stud #1.



Step 18. Place Stud #4 on the two halves of Stud #3 keeping the bottom of the Stud #4 even with the bottom of Stud #3. Lay the two halves of Stud #2 on either side of either side of Stud #4. Stud #2 will be six inches longer than Stud #4.



Step 19. Draw a line on the top half of Stud #3 marking the overlap of Stud #1. Draw a line on the top half of Stud #2 marking the overlap of Stud #4.



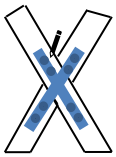
Step 20. Saw the top half of Stud #3 and Stud #2 on the lines drawn in Step 19.

You should now have the form of the finished cross.

IV. Mounting the Hardware.

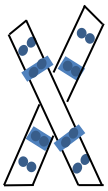
Step 21. Place spacers evenly under the studs. This step will give you room to mount the hardware.

Step 22. Place Part 3, the Steel X, on the center of the cross. Arrange so that the Steel X is evenly placed on the x of the cross. Mark each hole and remove Part 2.



Step 23. Place Parts 4, the five-inch steel pieces with rings attached, at 90 degrees to the edge of the Studs and two inches from each end of the Studs. Mark each hole and remove Parts 4.

Step 24. Place Parts 5, the five-inch steel pieces without rings attached, on each Stud half way between the center of the cross and the marking made in Step 23. Mark each hole and remove Parts 5.



Step 25. Drill all 24 holes marked in Steps 22, 23, and 24, using the 13/32” drill bit. The holes should go all the way through both Studs. These are the Bolt Holes.

Step 26. Bolt Part 4, the five inch the steel piece with rings, to the Studs using one 4” bolt and washer and nut, in each hole marked in Step 23.

Step 27. Bolt Part 5, the five inch the steel piece without rings, to the Studs using one 4” bolt and washer and nut, in each hole marked in Step 24.

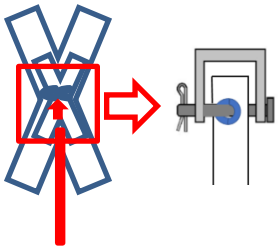
Step 28. Bolt Part 2 and Part 3, the Steel X’s, on the center of the cross, using eight 4” bolts and washers and nuts, in each hole marked in Step 22. Part 3 is on the side facing up, and Part 2, will be on the side facing the plywood. You may need to use a large C clamp to hold both X’s in the correct position to the Studs while you bolt the X’s to the Studs.

Step 29. Flip Cross over.

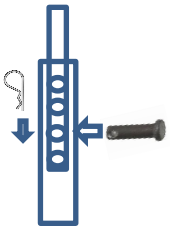
Step 30. Mounting hinges on bottom of cross. The hinges are two parts of the three-part system that holds the cross on its platform.

A. Locate the two bottom legs of the cross. The bottom legs of the cross are the Studs that were sawed in Step 15.
B. Place a hinge on both legs of the cross with the angle leaf of the hinge bolted to the legs, and with the hinge projecting ½" below the end of the leg.
C. Mark each hole on the legs. Remove hinge and drill four holes, two holes on each leg, using the 13/32" drill bit. The holes should go all the way through both Studs. These are the Bolt Holes.
D. Bolt hinges to the legs using 3½" bolts, washers, and nuts.

Step 31. Attach Part #1, the two-piece adjustable square tubing brace, to the bracket at the back center of the cross using a 2½" Clevis Pin.

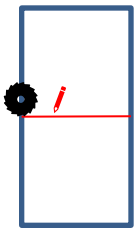


Step 32. Slide the larger square tube piece over the smaller upper piece to a mid-length position and bolt in place with a 2½" Clevis Pin.



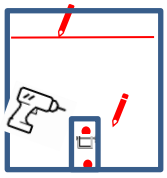
The cross is now complete and ready to be mounted on its base.

V. Preparing the Cross Platform.



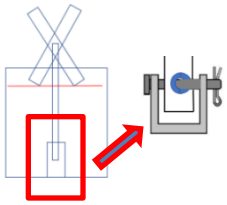
Step 32. Cut the plywood in half creating two are two 4' square pieces. You will need only one piece.

Step 33. Mount the steel base assembly, part #8, on the center rear of the 4' by 4' sheet of plywood. Center the steel base assembly with one end even with the back edge of the plywood. Mark and drill two holes using base assembly as the template. Bolt steel base assembly to the plywood using 1½" bolts, washers, and nuts..

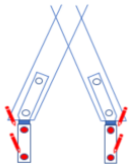


Step 34. Draw a line across the plywood platform/base 12 inches from the front edge of the platform/base. This line is the locating line for the front edge of the cross when it is standing up in place.

Safety Warning! For the next steps you will need to have a helper.



Step 35. Stand the cross up on the platform with its legs on the line drawn in Step 34. Have your helper hold the cross upright. Secure the lower end of the square tubing brace to the steel base assembly using a 2½" Clevis Pin.



Step 36. Fold the two hinge leaves down and mark the holes for drilling on the plywood. Drill two holes for each hinge.

Step 37. Remove the Clevis Pin inserted in Step 35.

Step 38. Remove the cross from the plywood and insert 1¼" bolts with the threaded ends up.

Step 39. Place the cross back in position with the leaves of the hinges over the bolts. Place washers and nuts on the bolts and tighten.

Step 40. Secure the lower end of the square tubing brace to the steel base assembly using the 2½" Clevis Pin.

Your cross is now assembled and ready for use.