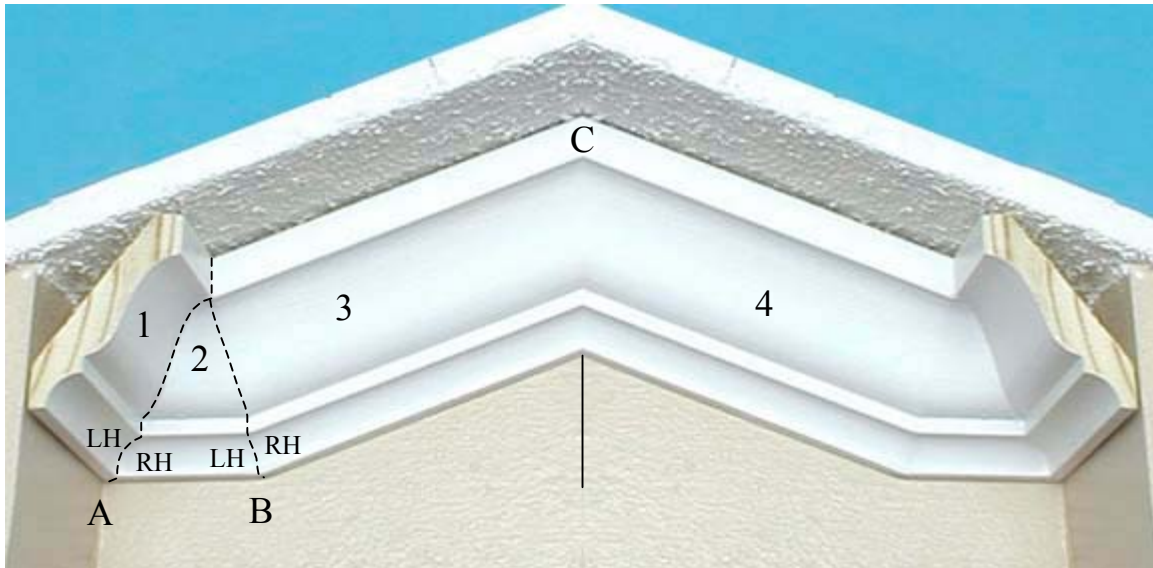# How do I cut the wedge piece that goes in the corner of a cathedral/vaulted ceiling?

These instructions are for cutting your crown laying flat, face up on your **compound miter saw**. These instruction will not work for a miter saw (no blade tilt). Look on page 42 in the book to follow along.

First of all you must know that both surfaces of each and every joint for crown molding and trim are cut with exactly the same saw setting. This means that both surfaces that go together to form a joint will be cut with the same saw settings. The only difference between either mating surface (left-hand or right-hand) is that they are cut as mirror images of each other. This means that if you hold the left-hand side (crown #1) for joint A up to a mirror, you will see the mating surface in the mirror and it will be the right hand side of joint A (the left end of the wedge piece). **Remember this applies to all joints for either crown or trim/baseboards….ALWAYS WITH NO EXCEPTIONS!**   See photo to the right.

RH side of joint A (left end of crown piece #2).
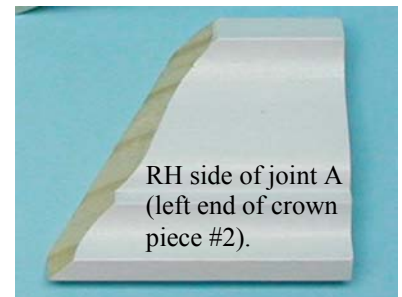
If you hold the left-hand-side of joint A up to a mirror, you will see the above image in the mirror. This is the right-hand side of joint A.

You must know your crown spring angle. Measure it like on page 34. The "CROWN SLOPE ANGLE IS NOT THE SAME AS THE CROWN SPRING ANGLE". All of the charts and tables in the book use crown slope angle……. you must calculate your crown slope angle from the your measured crown spring angle. See page 38…

Also read this FAQ from my web site about measuring your spring angle.

- The most common error in cutting crown molding is using the wrong crown spring angle. Double check your crown spring angle...make sure you know your exact spring angle (see page 34 in the book on how to measure crown spring angle). Please note: There are two common spring angle crowns, 38 degree and 45 degree. However, there are many others. Also, some crowns that are labeled as 38 degree or 45 degree spring angle crown are undercut, when milled at the factory, up to 3 degrees. This

results in an actual crown spring angle of 35 degrees or 42 degrees. This 3 degree difference will result in about a 1.5 degree change in your miter and blade tilt settings. If you are using 5" crown, you will have about a 1/4 inch gap at the ceiling (the larger the crown the wider the gap). I also provide **extra tables for free download (PDF format) that contain 12,000 saw settings** (miter and blade tilt settings vs. corner angle and crown slope angle). See Chapter 5 (page 50) for details of where to download the extra tables.

Here is how you calculate the "Crown Slope Angle"

Crown slope angle for horizontal turns = 90° - crown spring angle. (90° minus the spring angle. This is where you subtract your spring angle from 90° to get your crown slope angle for a horizontal turn). Remember the crown slope angle is what you will use in the charts and tables.

- This is very simple to do….. if you measured your crown spring angle (see page 34) at 38° then to calculate the crown slope angle for a horizontal turn you subtract 38° from 90° and you get 52° as the crown slope angle for your horizontal turn. You will then use the "CROWN SLOPE ANGLE OF 52° FOR ALL HOIRZONTAL TURNS WITH YOUR CROWN"
- Let me give you several examples….. if you measured your crown spring angle at 38°, then the crown slope angle for a horizontal turn is 90°-38° = 52°. ……. For a spring angle of 45°, the crown spring angle for a horizontal turn is 90°-45° = 45°. …… For a spring angle of 32°, the crown slope angle is 90°-32° = 58° (use the extra tables for this crown slope angle).

Crown slope angle for vertical turns = crown spring angle. Remember the definition of crown slope angle…….. the angle from the back of the crown to the plane in which you are making the turn of the crown…. If you are turning vertical such as with joint B, the crown slope angle is the same as the measured crown spring angle.

You should at this point understand how to derive your **crown slope angle** for horizontal and vertical turns.

Make sure that you fully understand what I have provided above… if you do not, it will not do any good to continue on.

For the example of how to cut all of the pieces involved in the 1st photo on page 42, I will use 38° spring angle crown. (If your crown spring angle measures differently, you will just use your measured spring angle in the examples).

Joint A (horizontal turn)…… the measured corner angle for my example is 90° and is an inside horizontal corner. The crown slope angle for a horizontal turn is 90 – spring angle = 90°-38° = 52°. From the crown molding table page 35 (use the extra tables if you have non-standard crown), Miter = 31.6° and BT = 33.9°.

Cut and install crown piece #1, 1st photo, page 42 and also photo at top of this page. The end of crown piece #1 will be cut as an inside corner, horizontal turn left-hand cut and will be placed on your saw as shown in the photo to the right with the top of the crown against the fence (see page 28 in the book). Set your miter counterclockwise to 31.6° and the tilt the blade to the left to 33.9° and make the cut.
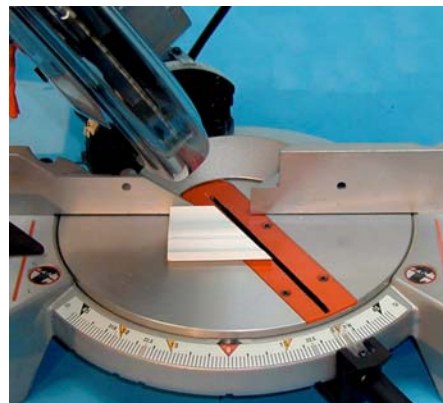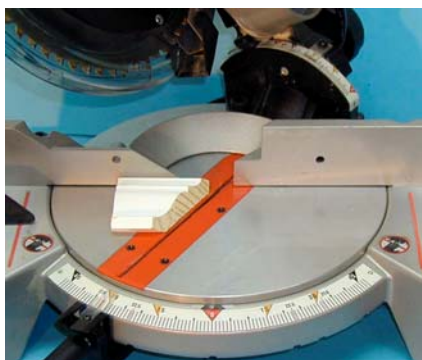

You are now ready to cut the right-hand side of Joint A and will be the left end of the piece of crown for the wedge piece.

This will be the left end of crown piece 2.
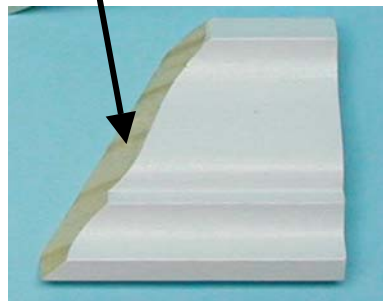
This is the left end of crown piece 2 and is cut as an inside corner, horizontal turn right-hand cut for joint A.
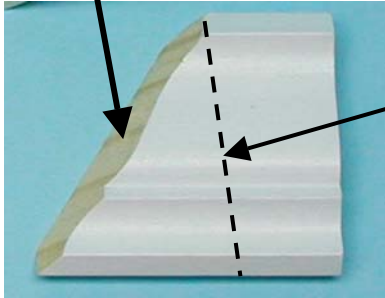

You will place your crown molding for the right-hand side of joint A on your saw with the bottom of the crown against the fence (see photo to the left and page 29 in the book). Set your miter clockwise to 31.6° and tilt the saw blade to the left to 33.9° and make your cut.

You now have the left end of crown piece 2 cut and is one side of the wedge piece.…… You have cut both surfaces that form joint A……..What we will do next is cut the right end of crown piece 2.

Joint B (vertical turn)….. the measured corner angle joint B is (assume the ceiling slope is 20°) 180°+20° = 200° (see bottom of page 42, how to get the corner angle for joint B). The crown slope angle for a vertical turn is 38° (spring angle is 38°, so the crown slope angle for vertical turn is = to the spring angle, see page 38). From the crown molding table, page 36, corner angle = 200°, crown slope angle = 38°……. Miter = 7.9°, and BT = 6.1°

This will be the left end of crown piece 2.

This is the left end of crown piece 2 and is cut as an inside corner, horizontal turn right-hand cut for joint A.
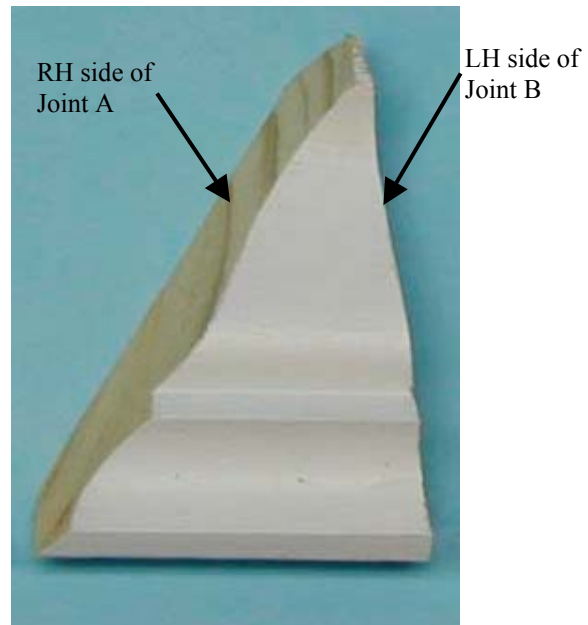
Your crown molding piece 2 should look like this with the right-hand side of joint A already cut.
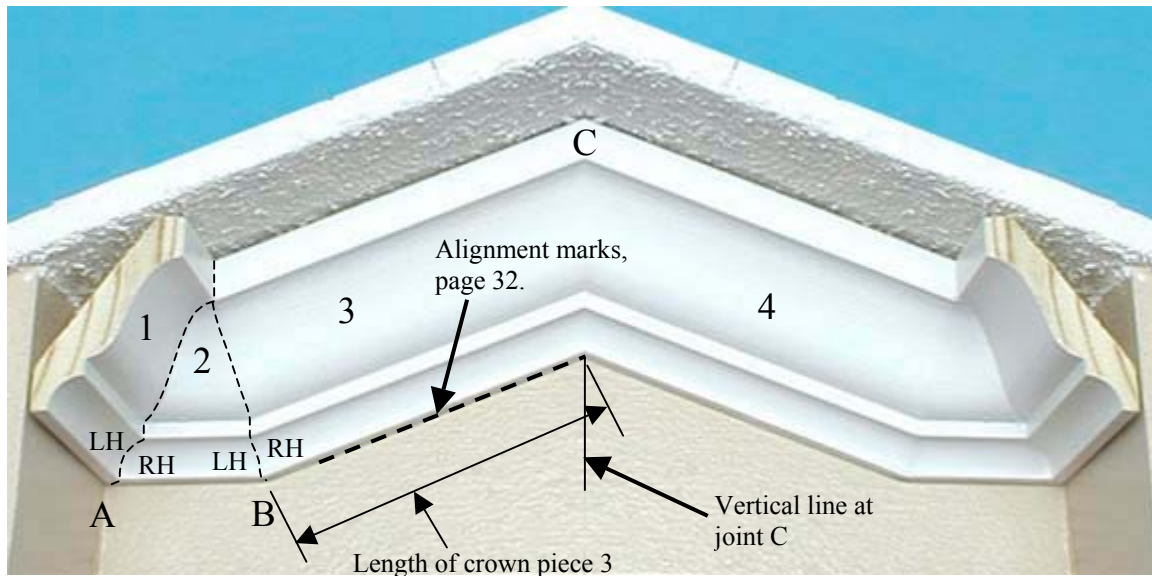
The next cut you will make is the left-hand side of joint B which is an outside vertical plane cut. (I have indicated where the cut will be by the dashed line.) Once you have made this cut you will have the wedge piece completed. Notice that the top of the wedge piece will come to a point. That is how you know where to make the cut. You should have zero length at the top of the wedge…. In other words the tip at the top. Your Miter = 7.9°, and BT = 6.1°
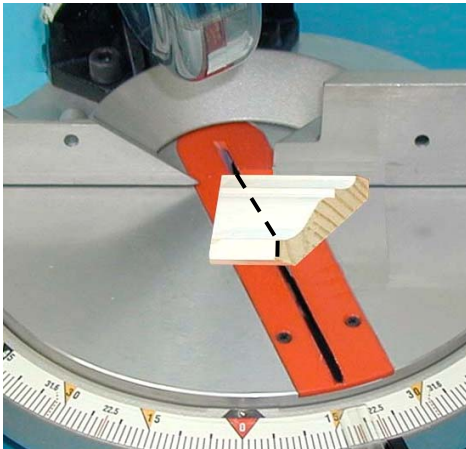
To make the left-hand cut for joint B (dashed line in the photo above) place your crown piece 2 on you saw as though you are cutting an outside corner, vertical plane, left-hand cut. Set the miter counterclockwise to 7.9°, and BT to the left to 6.1°. Align your crown piece 2 so that the blade will cut just the top of the crown to form a point.

Your wedge piece (crown piece 2) should look like the photo to the right. You are now ready to epoxy the wedge piece into place against the end of crown piece 1.

RH side of Joint A

LH side of Joint B

Alignment marks, page 32.

C

3

4

1

2

LH

RH   LH   RH

A   B

Length of crown piece 3

Vertical line at joint C

You now have crown piece 1 and 2 installed. To get the length of crown piece 3 you will need to make a vertical line at joint C and also use the recommended alignment marks as discussed on page 32, 2nd paragraph. Measure the length of crown piece 3 from the bottom tip of crown piece 2 at joint B to the intersection of the alignment mark and the vertical line at joint C.

Joint C is and inside corner, vertical plane turn with a 20° sloped ceiling. The corner angle for joint C is 180° minus twice the ceiling slope = 180°-40° = 140°. The crown slope angle is 38°…. Joint C will then be cut at a Miter = 16.0°, BT = 12.2°.

The rest of the other side of the room is just the opposite but will have the same saw settings.

If you have a vaulted ceiling where the ceiling goes up and butts into a wall (see photo to the right and on page 40). You will cut joint B as we did before except it will now be and inside corner. See page 40 and 41 in the book. You will use the same miter and blade tilt setting as before.