

How to Customize a Repeat Unit

The diagram below shows a quilt whose center portion is 63" wide and 88" long. The fabric borders are 12" wide. Notice that these borders are mitered at the corners, but dashed lines are drawn to show that, when figuring border repeats, the corner is a separate unit, a square. The size of the side borders, then is 12" wide by 88" long. The end borders are 12" wide by 63" long.

Keeping in mind what you learned about design area on page 17, you know that the border motif will need margins to each side so the quilting will not dip into seams. Allowing a 1" margin on each side of the example border strip gives a design width of 10".

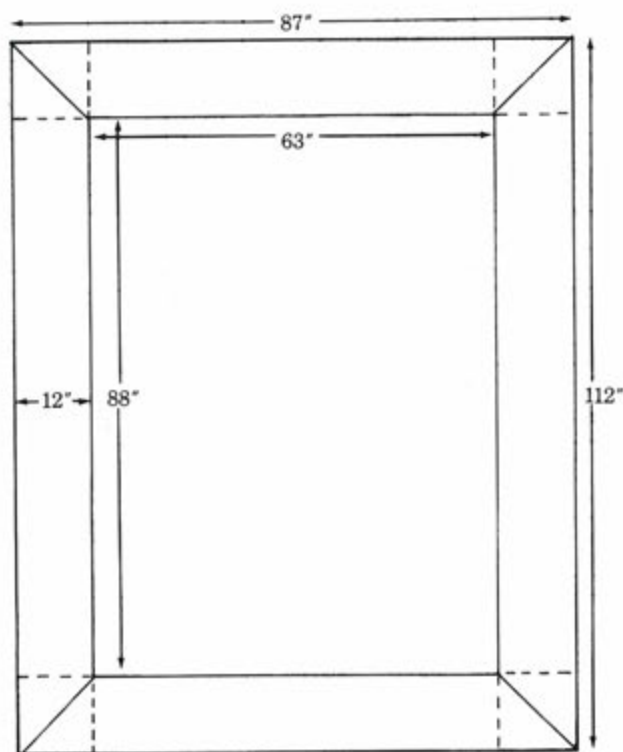
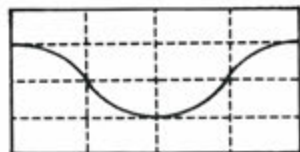
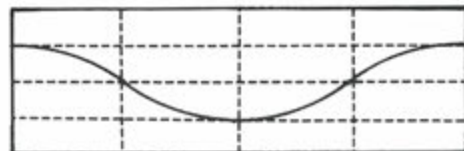


Figure 9



Tighter repeat

Figure 10



Gentler repeat

Now that you know the design width, you need to determine the repeat length. The rule of thumb is: **the approximate repeat length is the design width times two**. In this example, multiply the design width of 10" times two to get an **approximate** repeat length of 20".

Now we know that a repeat unit length of about 20" will work on the border. Before we can determine the **exact** repeat lengths for side and end borders, we must figure out how many repeats will fit in each border. Divide the **approximate** repeat length (20") into the side border length and then into the end border length. Round the fraction off to the nearest whole number.

Side Border

$$88" \div 20" = 4 \frac{2}{5} \text{ repeats}$$

(Round off to 4 repeats.)

End Border

$$63" \div 20" = 3 \frac{3}{20} \text{ repeats}$$

(Round off to 3 repeats.)

Now we know that the side borders will have four repeats and the end borders will have three repeats.

To determine **exact** repeat length for side borders, divide four (for four repeats) into the border length ($88 \div 4 = 22"$). The **exact** side border repeat length is 22". For exact end border repeat length, divide three (for three repeats) into the border length ($63 \div 3 = 21"$). The **exact** end border repeat length is 21".

Now you are ready to use the paper folding techniques described on page 28 to form the two border repeats. For the side border repeat, your tracing paper will be 10" x 22". For the end border repeat, your tracing paper will be 10" x 21". For each of these two papers, follow Steps 1-7 on page 19. If you were working with a square quilt, just one repeat length would work for all four sides.

If after folding paper and drawing your repeats, you feel that your repeat curves look too tight, you can form a gentler repeat. Simply work through the steps for forming repeats again (use the Reference Box on page 23) but determine the approximate repeat length by multiplying the design width by **three** instead of two (Figure 10).

Be aware that the repeats you create for side borders and end borders are not identical, but they are usually close enough to **appear** identical on a completed quilt. Once you have formed the two different tracing paper repeats, be sure to label them "side" and "end" so you won't get them mixed up. Of course, if you are working on a square quilt, just one repeat will work for all sides.

Chapter III will show you how to make templates for transferring your repeats to cloth.

A Few Words About Placing Repeats in Borders

The repeat unit you have learned to form can be placed in a border one of two ways. As you'll learn in the section on corners that follows, the way you place the repeat will affect the style of corner design available to you. Understanding the two placement options is a key to working with repeats.

The repeat has been described as an extended U-shape, and, in the repeat-forming exercise, you became accustomed to viewing it that way. Recalling the drawing exercises you did for undulating plumes in Chapter I, the repeat illustrated in Figure 11 above could also be thought of as a valley with partial hills to each side. Note that this same repeat unit can be flipped over (Figure 12). Then it becomes a hill with partial valleys to each side. With either type of placement, even or odd numbers of these units can be placed end to end to travel around a quilt. Once you decide whether you want the hill or the valley placed to the inside of the quilt, you must place the repeat the selected way consistently. Interwoven repeats, which will be discussed on page 28, are formed when the repeat unit is used both ways at once (Figure 13).

As noted already, these repeat units can be combined in even or odd numbers in quilt borders. Sometimes, the side borders may require an even number of repeats, while the end borders need an odd number. When the repeat is used an odd number of times in a border, the center point of the repeat line must match up with the center point of the quilt border (Figure 14).

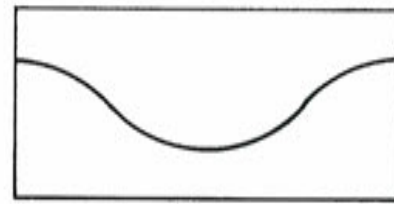


Figure 11

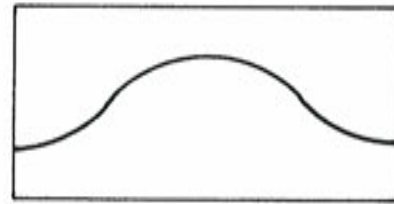


Figure 12

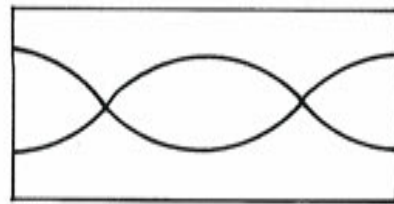


Figure 13

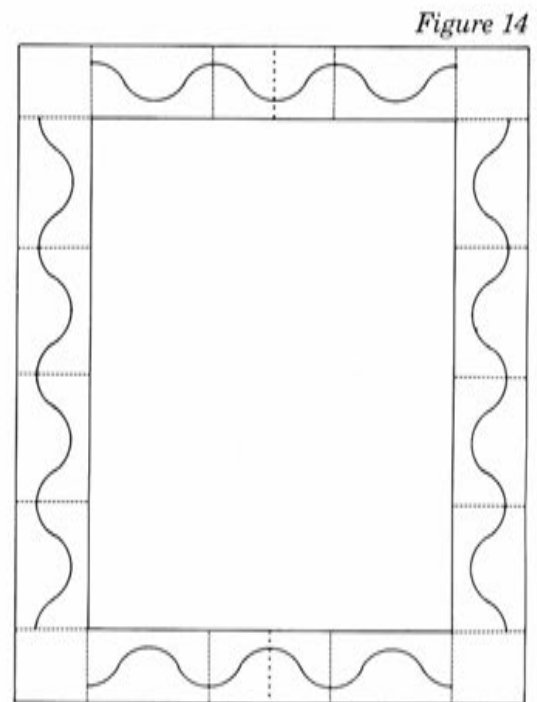


Figure 14

Reference Box for Forming Border Repeats

1. Determine length of borders, excluding corners.
2. Determine design width by allowing $\frac{1}{2}$ " to 1" margin to each side of design.
3. Determine **approximate** repeat length by multiplying design width by two. (If repeats seem too tight, try an approximate repeat length **three** times wider than width instead of **two**.)
4. Determine number of repeats that will fit in border by dividing border length by approximate repeat length.
5. Find **exact** repeat length by dividing border length by number of repeats.
6. Fold paper to form repeats.

Note: Exact repeat length may not always be a nice even number. An alternate method for finding repeat size is to work just through Step 4. Once you know the number of repeats the border will have, use a piece of adding machine tape the length of the border (excluding corners) and simply fold it into the needed number of repeats. Use the folded repeat length to "measure" and cut your tracing paper. You don't really need to know the mathematical measurement of the repeat.

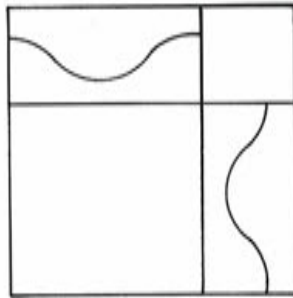


Figure 1

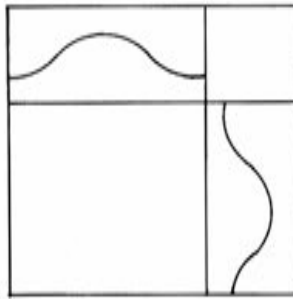


Figure 2

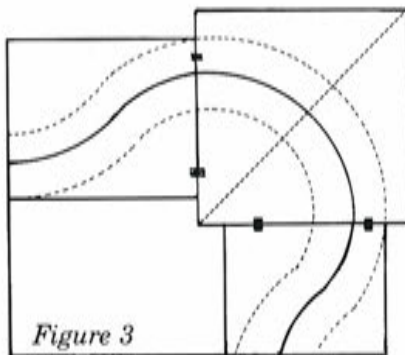


Figure 3

How to Make Corners for Undulating Border Plumes

When planning your own undulating feather borders, one of the decisions you will need to make, once you've formed your repeat, is how the repeat line is going to enter the corner. The type of corner designs available to you will be affected by your decision. Remember that, from a design standpoint, the corner is always a separate unit, a square.

A border repeat can be positioned on the border and enter the corner square in either of two ways. In Figure 1, the repeat is entering the corner area with the repeat line/center vein curving to the **outside** edge of the quilt. Figure 2 shows the repeat line entering the corner with the repeat line/center vein curving to the **inside** of the quilt. Regardless of whether your border requires an even or an odd number of repeats, once you've chosen the way you want the repeat positioned, all the corners will be the same. Just be sure to position the repeat your selected way consistently.

The quilt diagrams below show several corner options. Figure 4 shows the repeats entering the corners to the outside edge of the quilt. A simple curve sweeps across the corner to connect the ends of the adjacent border repeats.

To form this, or any other corner design, first cut out a square of tracing paper exactly the size of the corner area. Fold the square in half diagonally and lightly crease to form a center guide (Figure 3). Use small pieces of tape to connect the side and end border repeats to corner square. Look carefully at Figure 3. Notice that the paper repeats are narrower than the corner square. That's because margin space had to be subtracted before the repeat was formed. If you wish, you can work with a corner square of paper whose sides are equal to the width of your repeat. I prefer using a full finished-size square, remembering as I work that the design must not run into the edge.

Figure 4

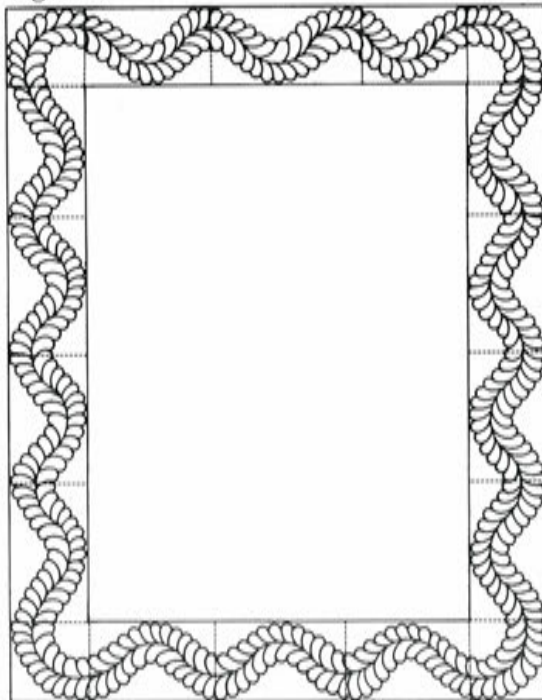


Figure 5

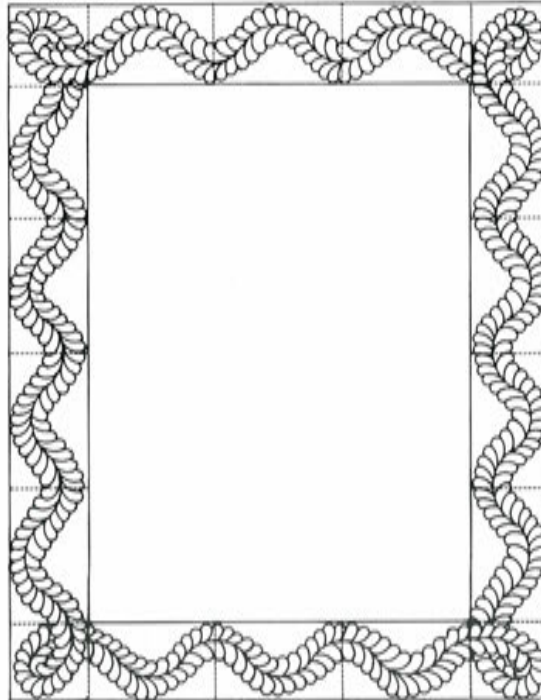
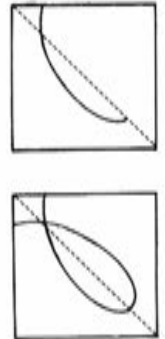


Figure 6



To create a corner like those in Figure 4, draw a curving line that connects the ends of the repeat lines. Remember that the line will be the center vein, so margin space will be needed to each side in order that quilted feathers will not dip into the binding area at the quilt's corners. Notice that the feathering of the corners in Figure 4 is flowing around the quilt in a clockwise direction. You might wish to review "Two Important Rules of Feathering," page 11.

The corner style of Figure 5 shows a corner that is available when the repeat enters the corner with the repeat line to the inside edge of the quilt. The plume twists around and back under itself before continuing on around the quilt in a counterclockwise direction. The procedure for forming this corner design is the same as described above for corners in Figure 4. Make a tracing paper square the finished size of the corner area. Fold it in half diagonally and lightly crease to form a center guide. Work out the center vein arrangement on paper first (Figure 6).

Figure 7 shows yet another corner option. A heart and teardrop are centered in the corner, and the feathers appear to flow out from behind this motif on each side. If you use this kind of corner, the undulating plume cannot flow continuously around the quilt. It must stop at the halfway point on each side of the quilt, be shortened slightly, and be capped with an ending semi-circle bump.

Many more corner styles, both for undulating and straight plumes, are sketched in the **Treasury** appendix. You can customize any of them just as described above for corners 4-7. You can also, of course, make up corner designs yourself. The following chapter will tell you how to transfer these designs to your quilt.

Changing Directions with Hearts and Teardrops

One of the feather variations for filling a sashing strip shown on page 16 was a straight plume with hearts at the middle, also shown in Figure 8 at right. The feathers flow to the right and the left seemingly from behind the hearts.

The practice heart you completed on page 15 also employed a small heart plus teardrop motif at the top of the design. The feathers flow out from the small heart and the teardrop in both directions to form the larger mirror-image feather heart (Figure 9).

Small hearts and teardrops are handy to use whenever you need to change the direction of a line of feathers (straight or curving). One of the corner styles discussed on pages 26 and 27 also utilizes a heart and teardrop motif to enable feathers to move out from the corner in both directions (Figure 10 at right). When working on your own feather designs, use the heart and/or teardrop to change feathering directions.

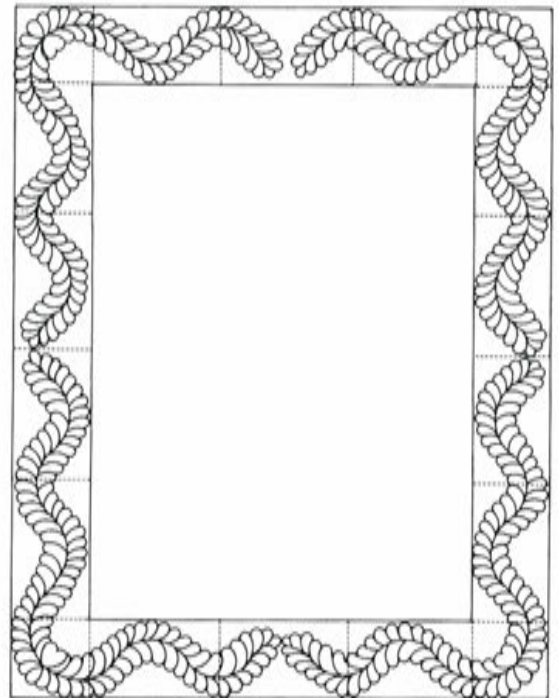


Figure 7

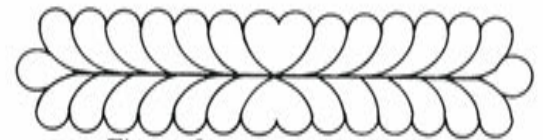


Figure 8

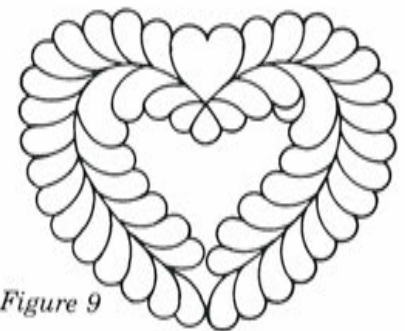


Figure 9

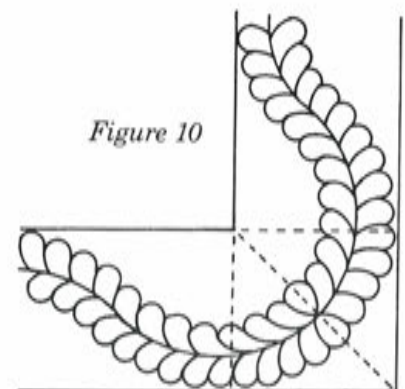


Figure 10

How to Form a Repeat

Look back at exercise F on insert 2. Notice the dashed vertical lines labeled "repeat line." The center vein between those lines is an elongated U-shape. This shape, also drawn at right (Figure 1), is the basic repeat unit that is placed end to end with others just like it to form continuous undulating plumes. You will probably recognize its hill and valley areas from the drawing exercises in Chapter 1.

1. Use a rectangular piece of tracing paper. It should be at least twice as long as it is wide, but the exact size isn't important for this exercise. (If you've been using 11" x 17" sheets to work the exercises in this book, you can just cut or tear a piece in half lengthwise and use one of the halves.)
2. Fold the strip of paper in half twice, to make three vertical folds as shown in Figure 2. Open the paper out again.
3. Fold the strip of paper in half twice the other way, to form three horizontal folds as shown in Figure 3. Open the paper out. You should have 16 small boxes, four columns of four rectangular boxes each.
4. In the far left column, second box from the top, draw a smooth curving line from the top left corner of the box to the lower right corner of the box as shown in Figure 4. Darken the curved line with pencil or black marking pen.
5. Fold the left half of the paper **back**, so that the curved line you drew in Step 4 shows through in the second box from the top on the far right column (Figure 5). Trace the curved line and darken it. When you open the paper out again, it will look like Figure 6.
6. To complete the repeat shape, the paper must be folded again, and the curved line drawn in the lower middle portion of the paper rectangle to form the valley area. To avoid confusion when the paper is folded, make a little "x" in the third box from the top in the middle two columns as shown in Figure 6.
7. Fold the far left and far right columns **back** as shown in Figure 7. Then fold the top half of the paper **back and down**, as shown in Figure 8, so that the curves you drew in Steps 4 and 5 show through the two boxes marked with "x"s. Trace the curve into these boxes.
8. When you open out the paper, you will see the basic repeat unit shape, a smooth undulating curve like Figure 1.

Repeats like this can be placed end to end to form the center vein for continuous feather borders. Whether an odd or an even number of these units is used, the repeat lines will enter the corner consistently. Work through the exercise on page 22 to see how to customize this repeat unit for borders in your own quilts.

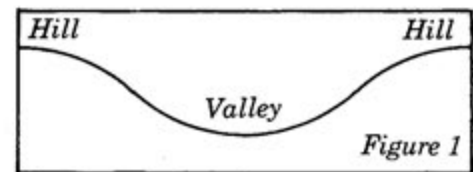


Figure 1

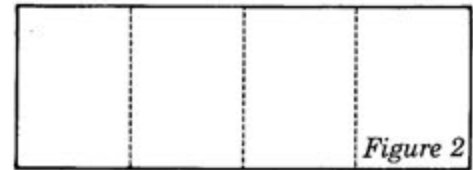


Figure 2

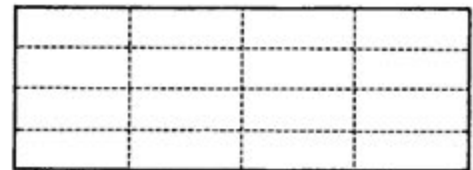


Figure 3

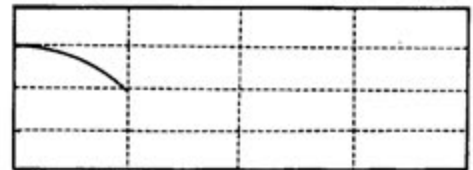


Figure 4

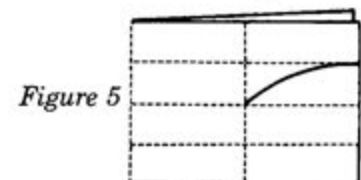


Figure 5

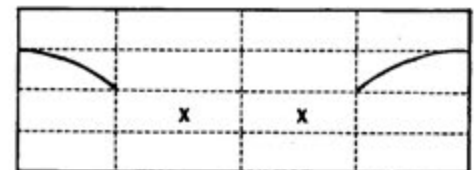


Figure 6

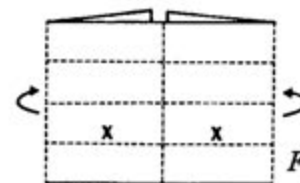


Figure 7

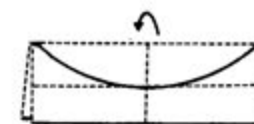


Figure 8