

Chapter 20-C

BOTTOM-UP SHAPING: IN THE COMPUTER

One key advantage of charts is showing how the various pieces of a project like a sweater are shaped. We could go so far as to chart every knitting operation on every row of the entire item. We don't usually need to do that, but we could if we wanted to.

But there's nothing to stop us from charting the tricky bits: the places where we have to do decreases and increases to get over and around all those body parts that stick out and therefore need something besides a flat expanse of fabric. We already saw simple shaping of mitten fingertips and sock toes in the part one chapters "Decreases" and "Increases." Now we'll look in great detail at the shaping we have to do around arms, necks, and shoulders.

A Few Preliminaries

We'll chart the shaping instructions for "The Basic Vest" in the size small, but let's talk about some big-picture ideas before we dive into the actual charting.

Remember Our Very First Charting Rule!

When we look at shaping charts, we have to remember the very first charting rule, that we're looking at the public side of the work. The chart shows us what we see when we look at someone wearing the finished garment.

That means that when we're working the **back**, the **right** edge of the chart is at the wearer's **right** and the left edge of the chart is at the wearer's left. Think of the chart being held up below the **back** of the wearer's head. (Note **back** and **back** go together.)

But when we're working the **front**, they're reversed. The **right** edge of the chart is at the wearer's **left**, and the left edge of the chart is at the wearer's right. Think of the chart being held up below the wearer's **face**. (Note **front** and **face** both start with **f**.)

Decrease Placement

Throughout this chapter, I'll both say in the text and show in the charts that decreases are done "at the beginning of the row." Generally, we would do decreases at least one stitch from the edge so that the edge is smoother, which usually makes it easier to do the finishing, whether sewing seams or knitting up stitches for ribbings or other edge treatments.

Since we all vary on exactly where we prefer to put decreases (some in the edge itself, some one stitch from the edge, others two or even more stitches from the edge), "at the beginning of the row" will always mean "at your preferred location to do a decrease."

We Have to Handle Bind-Offs Correctly

There's one inescapable reality about knitting the vest: we have to work in rows, and we bind off at the beginning of a row.¹ That means that our vest's underarm bind-offs will be at the beginning of a public-side row for one armhole and at the beginning of a private-side row for the other armhole. Since one underarm will be one row higher than the other, our charts will need to reflect this fact.²

Because the vest has shaped shoulders, we bind off when we're working rows from the armhole edge toward the neck, so that the fabric edges slope upward to match the slant of our shoulders. Shoulder shaping, as with underarm shaping, will begin one row later on one shoulder than on the other shoulder.³

Changes for Mirror-Image Knitters

MIKs must chart written-out instructions according to the unwritten assumption that public-side rows are worked from right to left. That means that MIKs must first chart as though they were traditional knitters. As we saw in part one's "Decreases," MIKs must interpret and chart a "K2tog" in the instructions as a right-leaning decrease and an "SSK" (or "SKP" or similar) as a left-leaning decrease. They then swap the definitions of the decreases in the symbol key, but the decrease symbols shown in the chart don't change.

However, MIKs must make very slight row adjustments to the chart itself before they start working from it, as explained in this chapter's MIK supplements. Those adjustments are necessary because MIKs start all rows at the opposite end compared to traditional knitters.

Charting Choices

We'll use several general options for most of the charts.

Basic Character and Paragraph Settings

Since we're charting existing written-out instructions, we can use the knitting font in the ordinary way, using a big enough font size for us to read easily.

If we want, or need, the chart to show the proper height compared to its width, we do all the same steps, then change two simple settings to make the chart proportional. See the appendix "Designing by Charting" for determining and applying those two values.

¹ This restriction assumes we're working the vest in the flat, not in the round with steeks.

² If we're using bulky yarn or working a color pattern, this one-row difference might be noticeable. Binding off at both ends a row is explained in the chapter "Optional Shaping Tweaks."

³ OK, yes, technically we don't have to bind off at all for either underarms or shoulders. We can just put the underarm stitches on holders, and we can short-row the shoulder shaping. But one complication at a time!

Since the finished armhole depth for the size small is eight inches, we have to work **nine** inches past the underarm bind-off before we begin the shoulder shaping. When the armhole ribbing makes the armhole one inch shorter, then we get the correct finished armhole depth of eight inches for the size small.

For garments with sleeves, we probably just measure the armhole depth from the beginning of the underarm shaping to the beginning of the shoulder shaping, period. We always need to check the project’s schematics and measurements, then work accordingly.

Shoulder Shaping

The shoulder shaping for the size small is very straightforward. We bind off three stitches at the beginning of eight consecutive rows, starting with a public-side row.

Let’s do the same thing we did to chart the underarm decreases, labeling the last row before the shoulder shaping starts as a “foundation row,” since the actual project row number would depend on our row gauge and the armhole depth we need. If we use “foundation row B” as the last row before shoulder shaping begins, we can use “B1” through “B8” as the shoulder shaping row numbers.

We’ll concentrate on fifteen stitches at each shoulder, so we’ll have three stitches remaining at each end when we’ve charted all the bound-off stitches.

b		
	78 77 76 75 74 73 72 71 70 69 68 67 66 65 64	28 27 26 25 24 23 22 21 20 19 18 17 16 15 14

We type up the chart exactly the same way we did for the underarm bind-offs, except that here at the shoulder, we bind off only three stitches at the beginning of row B1.

			b 1
b			
	78 77 76 75 74 73 72 71 70 69 68 67 66 65 64	28 27 26 25 24 23 22 21 20 19 18 17 16 15 14	

If we prefer, we could use some special symbol, like the curve we used before, instead of using blank areas to represent all the stitches we bind off. We work the rest of row B1 evenly.

			b 1
b			
	78 77 76 75 74 73 72 71 70 69 68 67 66 65 64	28 27 26 25 24 23 22 21 20 19 18 17 16 15 14	

We turn to the private side, bind off three stitches at the beginning of row B2, and work the rest of row B2 evenly.

We can again use a blank area

are both twelve stitches wide, the total number of stitches bound off for each shoulder. The central column contains the forty-one stitches that will remain for the back neck.

Lesson Learned: Computer Charts

Put each part of the shaping in its own right- or left-justified table column to automatically move stitches right or left as other stitches are bound off or decreased away.

Succinct Charts

Since there’s no real point in showing all that plain stockinette, we can remove quite a lot of the public-side knit symbols without losing any of the shaping information.

If we put each shaping area in its own table column, exactly the same way we did for part one’s Aran sampler, it’s easy to remove the parts we don’t really need (and equally easy to put them back in if we change our minds).

Here’s the vest back chart with the central stitches and unshaped rows removed.

	Left Back Underarm	Left Back Shoulder	Right Back Shoulder	Right Back Underarm	
b 8		knkn			
b 6		knkn	knkn		b 7
b 4		knkn	knkn		b 5
b 2		knkn	knkn		b 3
b		knkn	knkn		b 1
16	N				
14	N				15
12	N				13
10	N				11
8	N				9
6	N				7
4	N				5
2	knknknkn				3
1	knknknkn				1
a	91906968678665646362618079	787776757473727170696867	252423222120191817161514	13121110987654321	

Let’s look at what this chart is telling us.

- ☉ The increasingly wider blank areas at the left and right edges of the chart indicate where we’ve bound off and decreased away stitches for the underarms.

- ☉ The empty table column and row indicate where stitches and rows have been omitted, because they are not affected by the shaping.
- ✓ The boxed stitch labels indicate that stitches twenty-six through sixty-six have been omitted from the chart, though they would of course be on our needles.
- ✓ The empty table row represents the extra rows we need between rows one and B1 to give us the armhole depth we need.
- ☉ The empty table column shows that when we finish row B8, we're left with stitches sixty-six through twenty-six inclusive, which matches the forty-one stitches we're supposed to have at the back neck according to "The Basic Vest."

Without Special Symbols

There's a reason we looked first at the succinct chart that used explicit bind-off and decrease symbols. Let's switch those symbols to blank areas and public-side knits, respectively, since some of us wouldn't want the extra clutter.

	Left Back Underarm	Left Back Shoulder	Right Back Shoulder	Right Back Underarm	
72					
70					71
68					69
66					67
64					65
16					17
14					15
12					13
10					11
8					9
6					7
4					5
2					3
0					1
	91906968678665646362618079	787776757473727170696867	252423222120191817161514	13121110987654321	

The underarm bind-offs look fine, and so do the decreases for the underarm curves. But the shoulder shaping now looks very odd indeed.

The front shoulders appear to have lost their final rows. If we had all the central symbols in the chart, which represent the stitches at the back neck, we would know instantly that we bind off the first three stitches on rows seventy-one and seventy-two. (That's clear in the chart showing the complete back shaping.)

If this oddity is alarming, or even if we just think we'll forget to do those bind-offs, then

we can use some kind of symbol on just the last row of each shoulder. The No Stitch symbol is handy under the exclamation mark.

	Left Back Underarm	Left Back Shoulder	Right Back Shoulder	Right Back Underarm	
72		■ ■ ■ ■			
		□ □ □ □	■ ■ ■ ■		
70		□ □ □ □	□ □ □ □		71
		□ □ □ □ □ □	□ □ □ □ □ □		
68		□ □ □ □ □ □ □ □	□ □ □ □ □ □ □ □		69
		□ □ □ □ □ □ □ □ □ □	□ □ □ □ □ □ □ □ □ □		
66		□ □ □ □ □ □ □ □ □ □ □ □	□ □ □ □ □ □ □ □ □ □ □ □		67
		□ □ □ □ □ □ □ □ □ □ □ □ □ □	□ □ □ □ □ □ □ □ □ □ □ □ □ □		65

Let's Use Some Real Row Numbers

Suppose that for the size small, we need to work the exact nine inches of underarm depth indicated in the written-out instructions for “The Basic Vest.” We can use as our row gauge swatch the entire back before the underarm shaping starts. Let’s say we’re getting seven rows per inch. Between the underarm bind-off and the start of the shoulder shaping, we therefore need to work evenly nine inches times seven rows per inch, for a total of sixty-three rows. If we like, we can bump that to sixty-four rows so we can start the shoulder shaping on a public-side row. The rest of the charts use this optional convenience.¹⁰

So we would work the sixteen charted rows for the underarm shaping, then work an additional forty-eight rows on the sixty-five stitches we have left. Those rows would be numbered seventeen through sixty-four inclusive if we put them all in the shaping chart.

When we turn at the end of row sixty-four to begin the shoulder shaping on the public-side row, we see that we do the eight rows of shoulder shaping on rows sixty-five through seventy-two inclusive.

¹⁰ My brain greatly prefers to start such major project milestones on the public side if it’s at all possible. In worsted or fingering, the extra row will make no difference. If we’re working with chunky yarn or using a color pattern, we need to double-check that the extra row won’t cause any problems.

	Left Back Underarm	Left Back Shoulder	Right Back Shoulder	Right Back Underarm	
72					
70					71
68					69
66					67
65					65
16					
15					15
14					
13					13
12					
11					11
10					
9					9
8					
7					7
6					
5					5
4					
3					3
2					
1					1
0					
	91908988878685848382818079	787776757473727170696867	252423222120191817161514	13121110987654321	

We could indicate explicitly the rows worked evenly between the two shaping areas.

	Left Back Underarm	Left Back Shoulder	Right Back Shoulder	Right Back Underarm	
72					
70					71
68					69
66					67
65					65
64					17
16					
15					15
14					
13					13
12					
11					11
10					
9					9
8					
7					7
6					
5					5
4					
3					3
2					
1					1
0					
	91908988878685848382818079	787776757473727170696867	252423222120191817161514	13121110987654321	

The double-numbered row between the end of the underarm shaping and the beginning of the shoulder shaping indicates that we work stitches fourteen through seventy-eight evenly on rows seventeen through sixty-four.

Lesson Learned: Computer Charts

Put each part of the shaping in its own table column, then set each column to be left- or right-justified.

Yes, I'm repeating this one, because it makes computer charting so much easier.

Total Shaping of the Vest Front

If we combine this partial chart with the back's underarm and shoulder shapings, we can see exactly how—and where—all of the front's shaping will be worked.

We need forty (technically thirty-nine) rows to complete the V-neck while “at the same time” doing the underarm shaping on the first sixteen rows. When we finish the V-neck shaping, we'll have to work evenly until we've done the same number of **total** rows on each of the front necks as we did on the back between the underarm bind-offs and the start of the shoulder shaping.

The Front with the Same Real Row Numbers

On the back, we figured out the row numbers of all the shaping rows based on the main fabric's nine-inch underarm depth and a working gauge of seven rows per inch. We saw that we started the shoulder shaping on row sixty-five, after starting the underarm shaping on what we called row one. Let's put those numbers in the front's chart as well.

Remember that charts for a garment's front and back reverse which side of the wearer's body is in which half of the chart. Those differences are reflected in the column headings at the top of both charts.

	R Front Underarm	R Front Shoulder	Right Front Neck	Left Front Neck	Left Front Shoulder	Left Front Underarm	
72		AAA			AAA		71
70		AAA			AAA		69
68		AAA			AAA		67
66		AAA			AAA		65
64		AAA			AAA		63
62		AAA			AAA		61
60		AAA			AAA		59
58		AAA			AAA		57
56		AAA			AAA		55
54		AAA			AAA		53
52		AAA			AAA		51
50		AAA			AAA		49
48		AAA			AAA		47
46		AAA			AAA		45
44		AAA			AAA		43
42		AAA			AAA		41
40		AAA			AAA		39
38		AAA			AAA		37
36		AAA			AAA		35
34		AAA			AAA		33
32		AAA			AAA		31
30		AAA			AAA		29
28		AAA			AAA		27
26		AAA			AAA		25
24		AAA			AAA		23
22		AAA			AAA		21
20		AAA			AAA		19
18		AAA			AAA		17
16		AAA			AAA		15
14		AAA			AAA		13
12		AAA			AAA		11
10		AAA			AAA		9
8		AAA			AAA		7
6		AAA			AAA		5
4		AAA			AAA		3
2	AAA	AAA	AAA	AAA	AAA	AAA	1

If we want the V's diagonal edges go all the way up to the top of the shoulder shaping (that is, to rows seventy-one/seventy-two), we have to change which rows have neckline decreases. Several possibilities are explained in "Optional Shaping Tweaks."¹⁴

Working Both Sides of the Front Neck

Once we do the split for the V-neck, we have two choices:

- Work both front necks at the same time with separate balls of yarn.

¹⁴If we fill in completely with public-side knit symbols the three front neck shaping columns, we would have the vest back's entire shaping chart.

☻ Finish one front neck, then work the other one.

Let's not get confused as we do the front neckline and shoulder shaping.

Front Neckline Shaping

After we decrease at the end of the left front neck's row one, we have to decide how we'll finish working the front. Will we turn and work back to the left armhole, or will we join a second ball of yarn to work the right front neck simultaneously?

If we choose to finish the left front neck by itself, then we will probably want to put the right front neck stitches on a holder or spare needle.

Front Shoulder Shaping

On each shoulder we'll have to work rows sixty-five through seventy-two (technically, row seventy-one on the left front), but unlike the back's shoulder shaping, we'll **work evenly every other row on both front shoulders**.

For the left front shoulder (stitches fourteen through twenty-five), we'll bind off at the beginning of public-side rows sixty-five, sixty-seven, sixty-nine, and seventy-one

Left Front Shoulder Bind-Offs		
72		
	☐☐☐	71
70	☐☐☐	
	☐☐☐☐☐☐	69
68	☐☐☐☐☐☐	
	☐☐☐☐☐☐☐☐☐	67
66	☐☐☐☐☐☐☐☐☐	
	☐☐☐☐☐☐☐☐☐☐☐☐	65
	25 24 23 22 21 20 19 18 17 16 15 14	

but we'll work evenly across all the stitches on private-side rows sixty-six, sixty-eight, and seventy. When we bind off three stitches at the beginning of row seventy-one, we finish the left front shoulder, so it doesn't have a row seventy-two.

When There's a Stitch Pattern

The charts in this chapter showed the vest worked in plain, one-color stockinette. If a project fabric has some kind of stitch pattern or design, whether texture or color, we would chart that pattern at the same time we're charting the shaping.

Get the Width on One Page

Since we can't do succinct charts for a project with a stitch pattern, we may not be able to fit the entire chart on one sheet. However, our goal should be to fit the chart's **width** on a single sheet. Then, as we work each row, we don't have to pause partway across to adjust which part of the chart is showing.

Switching pages to work the next group of **rows** is fine, but having to switch between pages "one A" and "one B" for the two halves of each row will get annoying pretty quickly.

See part four's "More Chart Tips" and the appendix "Designing by Charting" for ideas on shrinking a chart to fit its width on one page.

Lesson Learned

If we can't fit the entire chart on one sheet of paper, we should try to fit the entire **width** on the page. Then we can work an entire row without adjusting which part of the chart is showing.

Reminder for Mirror-Image Knitters

You must start with this chapter, drawing your initial chart the exact same way as traditional knitters. Once you complete that version of the chart, you make the changes needed to reflect the fact that you work all rows in the opposite direction.

Those changes are explained and demonstrated in this chapter's MIK supplement. There are actually two versions of the supplement, based on how you want to show shaping in your charts.

- ☉ If you want to use blank areas alone to show shaping, then use the "blank areas" version of the supplement.
- ☉ If you want to use actual bind-off and decrease symbols in addition to the blank areas that naturally occur, then use the "symbols" version of the supplement.

As you'll see in the supplement, I recommend that you use only blank areas to indi-

cate shaping as you type up the traditional knitter chart. Doing so will greatly simplify what you need to do to make the MIK adjustments.

After you've completed the MIK changes, **then** you can quite quickly

- ✓ add explicit bind-off symbols and
- ✓ change non-shaping symbols to decrease symbols.