

Chapter 390

THE HOLLYKNITS KNITTING FONT

My First Steps in Charting

When I first started working from knitting charts, I used a drawing program to create little pictures for knit, purl, yarnover, decreases, cables, and whatever other stitches a particular project required.

To create the project chart, I had to copy each little picture multiple times, put them all on a page, and spend a lot of timing lining them up horizontally and vertically.

I began to think that knitting-book publishers could not possibly spend so much time to make charts, if they bothered to provide charts in the first place.

Then I found a book whose publisher offered a font that knitters could download to make their own charts. I found other knitting fonts elsewhere on the Internet.

But...



Problems with Available Knitting Fonts

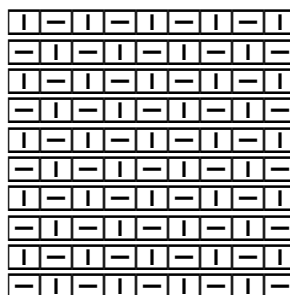
The fonts I downloaded from the Internet (as well as the symbols used in charts in many knitting books) all seemed to be deficient in at least one way.

Some Symbols Were Missing

Some downloadable fonts do not have “all” the necessary symbols. For example, the font might have a symbol for a six-stitch cable crossing three over three to the left, but it doesn’t have the matching symbol for crossing three over three to the right.

The Symbols Made the Charts Busy

Some fonts use a rectangle with a vertical line  for the knit stitch and a rectangle with a horizontal line  for the purl stitch. If the chart is all knit and purl stitches, and especially if the font is small to fit a large chart onto a page, it’s hard to tell the difference between the sides of the rectangles and the lines inside them. For example, this chart for a common knit-ted fabric requires a certain amount of concentration to determine the pattern:



The Symbols Relied on Color

Some books' charts rely on background colors behind the symbols because the symbols are hard to distinguish from one another. If there are many of these colored symbols in a particular chart, they emphasize those parts of the pattern unnecessarily.

And if you want to make a chart for a colorwork project, having to use background colors just to see which symbol is which is going to be confusing. (See the "Shaped Intarsia" section in chapter 190.)

The Symbols Didn't Always Look Like the Work

Some fonts' symbols contain vertical lines even for symbols that pull stitches sideways.

For example, in a three-over-three cable, the symbol will have five vertical lines to indicate the six stitches involved in the cable, which is technically accurate but gives a misleading appearance, since the three front stitches will actually be slanted, not vertical, and the back stitches are essentially invisible after the cable has been worked.

The Symbols Had Very Thin Lines

Some fonts have lines so fine that it is very difficult to read charts made with them. If we need to fit a big chart on a single piece of paper, we will have to make the font size quite small.

The smaller the font size goes, the harder it is to see those fine lines.

The Keys the Symbols Were Assigned to Didn't Always Make Sense

With twenty-six lowercase letters, twenty-six uppercase letters, and lots of punctuation marks, why not put the most commonly used symbols on the keys that are the easiest to type?



The most common symbols of all—for knit, purl, yarnover, slip, K2tog, and SSK—ought to be on the k, p, y, s, /, and \ keys.

Of course, not all symbols can be put on the keys of their starting letters. But the main ones can be.



So I Made My Own Knitting Font

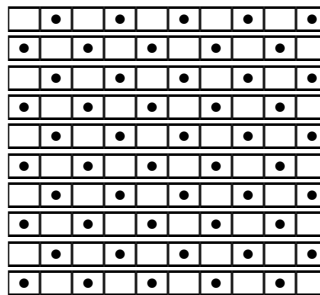
To overcome these difficulties, I decided to make my own knitting font, which is what is used throughout this book.¹ This font tries very hard to eliminate the problems listed above.

Paired Symbols Are Both There

There are matching left and right cable symbols. So three-over-three cables that slant left and right look like  and .

The Symbols Are as Simple as Possible

The most common symbols, those for knit and purl, are as simple as can be. The knit stitch is just an empty rectangle , and the purl stitch is the same rectangle with a dot . Compare the first chart in this chapter with this one, which is made with the simpler versions of knit and purl:



The checkerboard pattern of seed stitch is much clearer here, discernible with just a glance.

The Symbols Do Not Rely on Color

This paragraph is white text on a black background. The symbols, the letters themselves, are white. The background is black.

The knitting font's symbols are simply shapes, just like characters in a regular font. Since they are "letters," we can change both their own color and the color of the background behind them. Since the symbols are mainly blank space, the background color will show through, just like it does inside the shapes of the letters in the previous paragraph.

If we need to, we can set the knitting symbols' font and/or background colors to highlight anything tricky or to chart colorwork (see chapter 190).

¹ I used the wonderful program FontFonge (available at <https://fontforge.github.io/en-US/downloads/>) to create the symbols. You can download the HollyKnits font from [HollyBriscoe.com](https://hollybriscoe.com).

² The symbols may look tilted, but that's just an optical illusion. The top and bottom edges really are horizontal.

The Symbols Try to Show What the Actual Knitting Looks Like

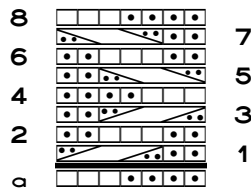
In symbols that span more than one stitch, there are no vertical lines whose only purpose is to show how many stitches the symbol represents.

For example, symbols for cables have only two slanted lines, since the slant is what we see after we work the cable. For the most part, we can't even see the stitches that wind up at the back of the cable, so there is no reason to put in lines for those back, mostly unseen stitches.

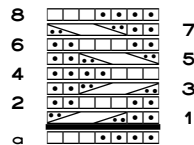
In symbols like those for the cables, it may not be obvious **from the symbols themselves** how many stitches a symbol uses, but in the rows below and above them, there will almost always be symbols for the individual stitches that go into and come out of those symbols. The surrounding rows therefore show us how many stitches a particular symbol represents.

Lines Are Wide for Visibility at Small Font Sizes

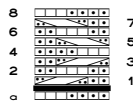
If we have to make a big chart, we're probably going to have to use a pretty small font size so that the printed chart will fit on a single piece of paper. That means the lines have to be fairly thick so that they are still clear at eight,



six,



or even four points.



If We Can Read One Chart, We Can Probably Read Them All

Once we've figured out how to read, work from, and create knitting charts, we usually have no trouble adjusting to a different symbol set in another book.

Worst case, if we find a pattern's symbols too confusing, we can re-chart with the symbols we prefer.

If you don't like the font used in this book, then by all means, find one you do like and use it.

And if you're really crazy, you can make your own knitting font!³

The Font Symbols

The symbol definitions given here are completely arbitrary, though many of them do use mnemonics. Use the symbols any way you want, since your chart should be a help, not a hindrance.

See chapter 350, "More Chart Tips," for additional ideas on using the font.

Direct-Entry Symbols

All the symbols in this section are entered by typing letters, digits, and most punctuation marks, either by pressing a key alone or by pressing Shift while pressing a key.⁴

Basic Stitches

k	<input type="checkbox"/>	Knit (<input type="checkbox"/> on comma)
p	<input checked="" type="checkbox"/>	Purl (<input type="checkbox"/> on period)
y	<input checked="" type="checkbox"/>	Yarnover
s	<input checked="" type="checkbox"/>	Slip knitwise with yarn to private side
z	<input checked="" type="checkbox"/>	Slip knitwise with yarn to public side

K	<input checked="" type="checkbox"/>	Knit thru the back loop
P	<input checked="" type="checkbox"/>	Purl thru the back loop
Y	<input checked="" type="checkbox"/>	Double yarnover
S	<input checked="" type="checkbox"/>	Slip purlwise with yarn to private side
Z	<input checked="" type="checkbox"/>	Slip purlwise with yarn to public side

Note that the slip-stitch symbols assume the chart shows the public side of the work.









³ Be warned, though, that creating fonts is fun and highly addictive!


⁴ The single and double quote marks are not assigned knitting symbols because many people set their word processors to change them to curly (or "smart") quote marks, which would wreak havoc while typing charts.







I have used the Double Yarnover symbol to mean wrapping the yarn twice while making a knit stitch.

Decreases and Increases

If you need a decrease or increase that isn't shown here, use one of the symbols in the “Additional Symbols” section. Or, simply redefine any of the symbols below to mean a particular technique in a particular chart.

/		K2tog	\		SSK	`		P2tog	~		SSP
-		K3tog	_		SSSK	w		P3tog	W		SSSP

=		S2KP: Slip 2 tog knitwise, K1, pass 2 slipped sts over ⁵
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+		Make 1 (any method)	;		Increase in running thread from back
?		Knit in front and back	:		Increase in running thread from front
x		Cat Bordhi's LLinc			
X		Cat Bordhi's LRinc			

In chapter 190, I used the + sign to indicate a reverse yarnover.

Row Numbering

1	1	3	3	5	5	7	7	9	9
2	2	4	4	6	6	8	8	0	0

[a	Foundation row a	{	c	Foundation row c
]	b	Foundation row b	}	d	Foundation row d



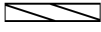
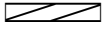
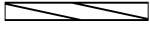









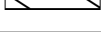
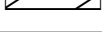




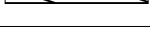
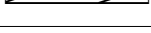
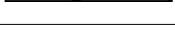
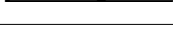


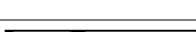
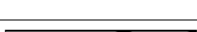
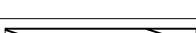
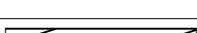
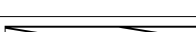



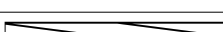

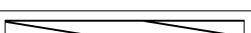
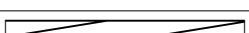






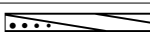



Be sure to check out chapter 350 for additional tips on using the row numbers.

































The “Additional Symbols” section shows boxed numbers zero through one hundred (as well as boxed upper- and lowercase letters), all of which are just one stitch wide and useful for labeling stitches.

⁵ If you type an S2KP as the first symbol in a table cell, it may make your word processor go into “formula mode.” If your word processor behaves this way, type any other symbol before the equals sign, type the equals sign and other stitch symbols, then delete the first symbol.

Cables and Twists

The most common cables are directly available on letters not already in use, with lowercase giving left-slanting cables and uppercase giving right-slanting. The table shows all of the cables and twists for completeness, even though about half of them are not on the regular letter keys. If the table cell to the left of a symbol is blank, the easiest way to add that symbol to your chart is to copy and paste it from this PDF.


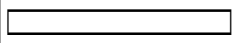

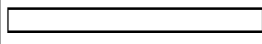

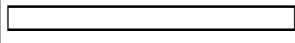

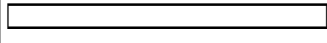

a		Cable 1/1 Left	A		Cable 1/1 Right
b		Cable 2/2 Left	B		Cable 2/2 Right
c		Cable 3/3 Left	C		Cable 3/3 Right
d		Cable 4/4 Left	D		Cable 4/4 Right
e		Cable 1/2 Left	E		Cable 1/2 Right
f		Cable 2/1 Left	F		Cable 2/1 Right
g		Cable 1/3 Left	G		Cable 1/3 Right
h		Cable 3/1 Left	H		Cable 3/1 Right
i		Cable 3/2 Left	I		Cable 3/2 Right
		Cable 2/3 Left			Cable 2/3 Right
j		Cable 4/2 Left	J		Cable 4/2 Right
l		Cable 4/3 Left	L		Cable 4/3 Right
		Cable 3/4 Left			Cable 3/4 Right
		Cable 5/3 Left			Cable 5/3 Right
		Cable 3/5 Left			Cable 3/5 Right
		Cable 6/2 Left			Cable 6/2 Right
		Cable 5/4 Left			Cable 5/4 Right
		Cable 4/5 Left			Cable 4/5 Right
		Cable 5/5 Left			Cable 5/5 Right
		Cable 6/4 Left			Cable 6/4 Right
m		Twist 1/1 Left	M		Twist 1/1 Right
n		Twist 2/2 Left	N		Twist 2/2 Right
o		Twist 3/3 Left	O		Twist 3/3 Right
q		Twist 4/4 Left	Q		Twist 4/4 Right

r		Twist 2/1 Left	R		Twist 2/1 Right
		Twist 1/2 Left			Twist 1/2 Right
t		Twist 3/1 Left	T		Twist 3/1 Right
		Twist 1/3 Left			Twist 1/3 Right
u		Twist 3/2 Left	U		Twist 3/2 Right
		Twist 2/3 Left			Twist 2/3 Right
		Twist 4/2 Left			Twist 4/2 Right
v		Twist 4/3 Left	V		Twist 4/3 Right
		Twist 3/4 Left			Twist 3/4 Right
		Twist 5/3 Left			Twist 5/3 Right
		Twist 3/5 Left			Twist 3/5 Right
		Twist 6/2 Left			Twist 6/2 Right
		Twist 5/4 Left			Twist 5/4 Right
		Twist 4/5 Left			Twist 4/5 Right
		Twist 5/5 Left			Twist 5/5 Right
		Twist 6/4 Left			Twist 6/4 Right

If you're working a project with all twisted-knit cables and twists in the styled called *Bavarian knitting*, the entire set of symbols shown above has twisted-knit counterparts at the end of the chapter.

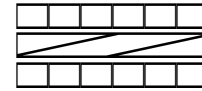
Multiple-Stitch Blocks

Empty blocks can decrease clutter in areas of plain knitting.

@		2-stitch group	&		7-stitch group
#		3-stitch group	*		8-stitch group
\$		4-stitch group	(	9-stitch group
%		5-stitch group)		10-stitch group
^		6-stitch group			

In a Cable 3/3 Right, for example, you may find it easier on the non-cabling rows to see the six knit stitches as

two groups of three or a complete set of six rather than charting them individually



Miscellaneous Symbols

The No Stitch symbol keeps all the other stitches aligned properly in rows below an increase, since there won't be a stitch in that location for several rows to come. It can also be used above stitches that have been decreased away, to keep the stitches that remain in their proper locations relative to one another. It can also be used to represent one of the colors in two-color knitting, as shown in chapter 190.

The knitting font's space character is the same width as the knit stitch and could be used to indicate areas where stitches don't exist, either below an increase or above a decrease, because the darkness of an extended group of No Stitch symbols can overwhelm the adjacent parts of the chart. If the No Stitch symbol keeps tripping you up, see chapter 175, which is devoted to explaining it.

The Repeat Marker separates a pattern's stitch repeat from any plus stitches that come before and/or after the repeat. If you're making your chart in a multi-column table (as described in chapter 310), you can instead change the width and/or color of the proper cell borders or even use an empty column to show the boundaries of a stitch repeat. Both techniques are demonstrated in chapter 210.

The short-row symbols, while explicitly designed in mirror image for wrap and turn, could be used for other styles of short rows also.

!	■	No stitch	<	☞	Wrap stitch and turn (for short rows)
	■	Repeat marker	>	☜	Wrap stitch and turn (for short rows)

Deleting the Repeat Marker

Note that the Repeat Marker has no width, which allows it to float above the symbols on either side of it.⁶ Since it takes up no width in the chart, deleting it can be tricky since we can't see which side of the cursor it's on.



To delete a Repeat Marker, do one of two things:

⁶ If it didn't, then the surrounding symbols would be pushed slightly out of position compared to any rows that didn't contain a Repeat Marker.

1. Click to the **right** of the symbol to the **right** of the repeat marker (between the two knit stitches in the example above), press the **Left Arrow** key, then press **Backspace**.
2. Click to the **left** of the symbol to the **left** of the repeat marker (between the two purl stitches in the example above), press the **Right Arrow** key, then press **Delete**.


Please do note that the key you use to remove the Repeat Marker depends on which side you do the removal from. Pressing Delete removes the character to the **right** of the cursor, but pressing Backspace removes the character to the **left** of the cursor.⁷

Additional Symbols

For the symbols that are one stitch wide but aren't on the regular keys, you can use your word processor's Insert | Symbol or Insert | Special Character menu entry to open a dialog box showing all the characters in the font. You may need to select "HollyKnits" in the font pulldown, because it may default to some other font.

For symbols more than one stitch wide, using the Insert | Symbol dialog box can become a little unwieldy, because in normal alphabetic fonts, the symbols don't have such wildly varying widths. For those symbols, it's probably easiest to simply copy and paste the symbols from this PDF.

Letters, Selected Punctuation, and Numbers

Instead of trying to chart all the short rows and extra stitches for a bobble, you might just use a  to represent its location.

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
a	b	c	d	e	f	g	h	i	j	k	l	m
n	o	p	q	r	s	t	u	v	w	x	y	z
?	!											

Portions of the following rows would be useful as stitch labels at the top or bottom of a chart.

Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
z	y	x	w	v	u	t	s	r	q	p	o	n	m	l	k	j	i	h	g	f	e	d	c	b	a
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z

⁷ This directionality of removing characters with the Backspace and Delete keys applies for all programs and all fonts, in case you've gotten unexpected results in other situations.

These numbers are enclosed in boxes, while the basic digits are not.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Portions of the following rows would be useful as stitch counters at the top or bottom of a chart. Be sure to check out chapter 350 for additional tips on using the boxed letters and numbers.

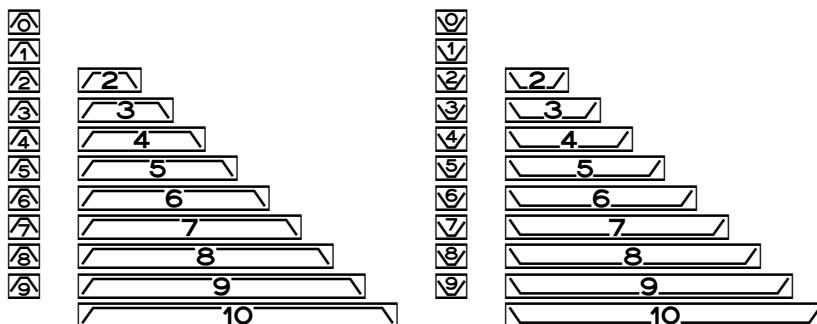
100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65
64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29
28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100								

These digits are enclosed in shapes.

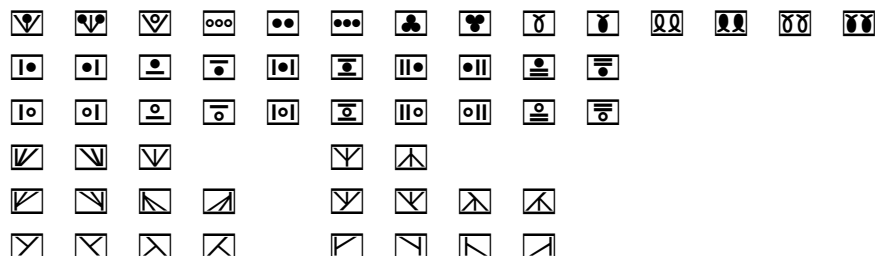
⊙	①	②	③	④	⑤	⑥	⑦	⑧	⑨
△	△	△	△	△	△	△	△	△	△

Numbers with brackets would be useful to represent multiple-stitch decreases using symbols in the first two columns (see examples in chapter 160) and multiple-stitch increases using symbols in the last two columns (see examples in chapter 170).



Variations of the Basic Stitch Symbols

You may prefer to use one of these symbols to represent a particular increase or decrease.



Multi-Stitch Symbols

These stitches work on more than one stitch at a time, but they are not cables.

	In same three stitches, P3tog, K3tog, P3tog
	In same three stitches, K3tog, P3tog, K3tog
	In same three stitches, K3tog tbl, K3tog, K3tog tbl
	In same three stitches, K3tog, K3tog tbl, K3tog
	Amy Detjen's centered eyelet from <i>A Gathering of Lace</i>
	3-into-2 decrease, K2tog first (version A at link below)
	3-into-2 decrease, SSK first (version B at link below)

For the two 3-into-2 decreases, there are lovely swatches detailing the evolution of the technique to achieve symmetric mesh netting at

<http://jolieaelder.blogspot.com/2015/08/symmetrical-yarn-over-net-pattern.html>

Jolie has step-by-step instructions for both versions of the 3-into-2 decreases. Note that the symbols are three stitches wide at bottom but only two stitches wide at top. The top is offset instead of centered so that all symbols above them will be aligned. For the gap created by the decreased stitch, you can use just an ordinary space or the No Stitch symbol under the exclamation point.

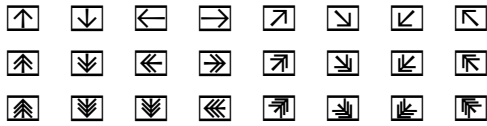
Top- and Bottom-Edge Symbols

The first group might be used to show stitches cast off on part of a row to make, for example, a shaped edging or a buttonhole. The second group would be used to show where stitches should be cast on.

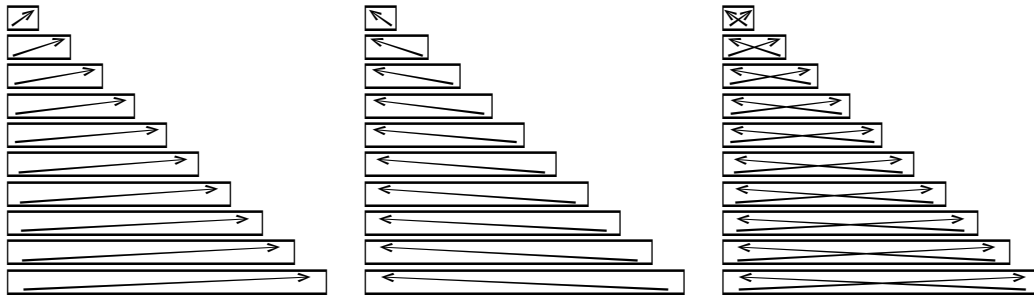


There are half-circle curves in the “Lines” section below which could also be used to indicate bound-off and cast-on stitches.

Arrows



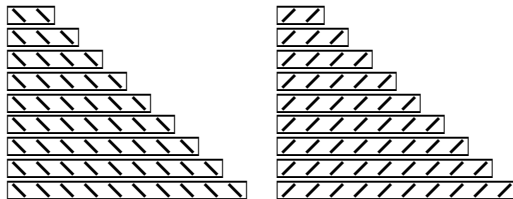
The third column below would be useful in charts where you cable opposite directions on either side of an item’s center line. For example, suppose the back of a sweater is symmetrical about the center. If you do a Cable 3/3 Left on the wearer’s left side, then instead of duplicating the whole chart just to show a mirror-image Cable 3/3 Right on the wearer’s right side, you could just use the six-stitch-wide crossed-arrow symbol to represent both six-stitch cables in a chart that only shows half of the back (which means you should be able to use a bigger font size as well).



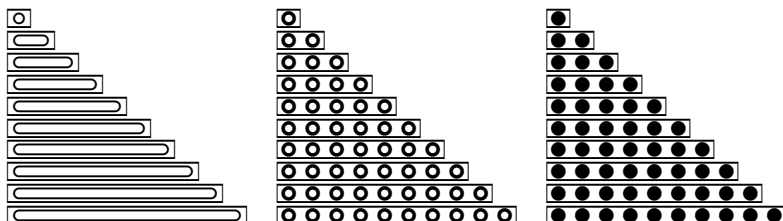
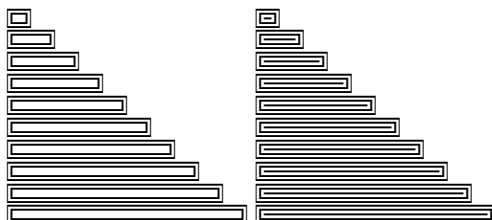
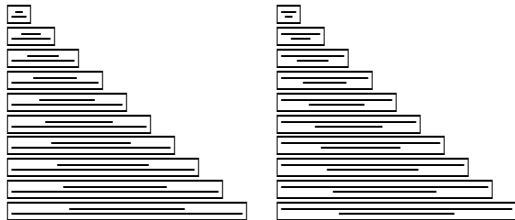
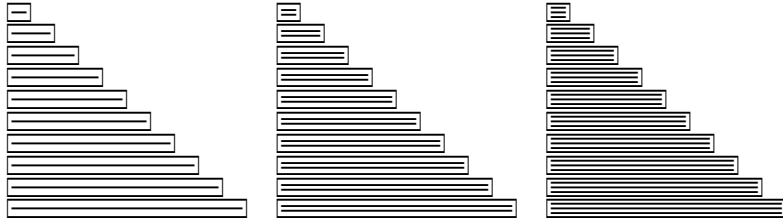
Lines



These multiple-stitch blocks are useful for any special patterns that involve up to ten stitches, like a cable or twist different from the ones already in the font. See chapter 330 for ideas on charting unusual cables.

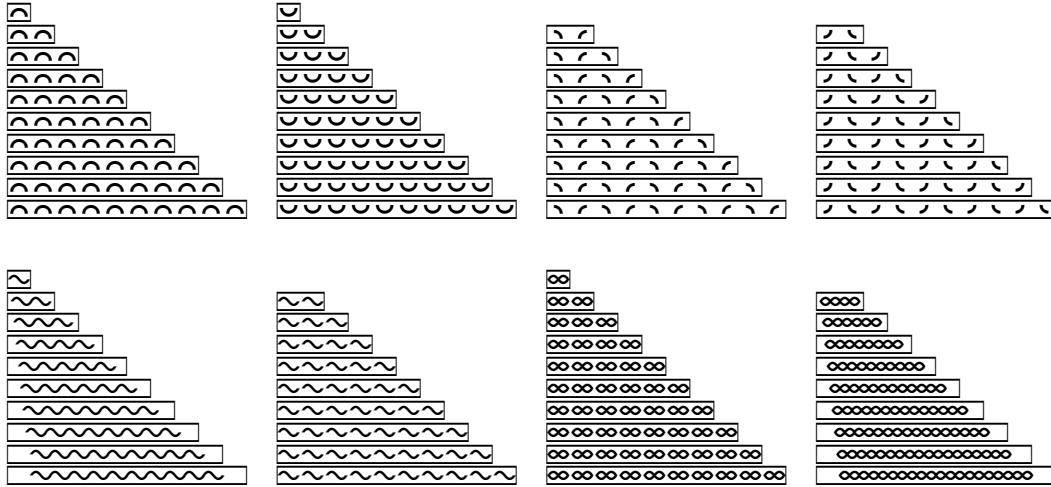


The next set of symbols could be used to indicate smocking worked during the knitting (as opposed to smocking performed after the project has been knitted).



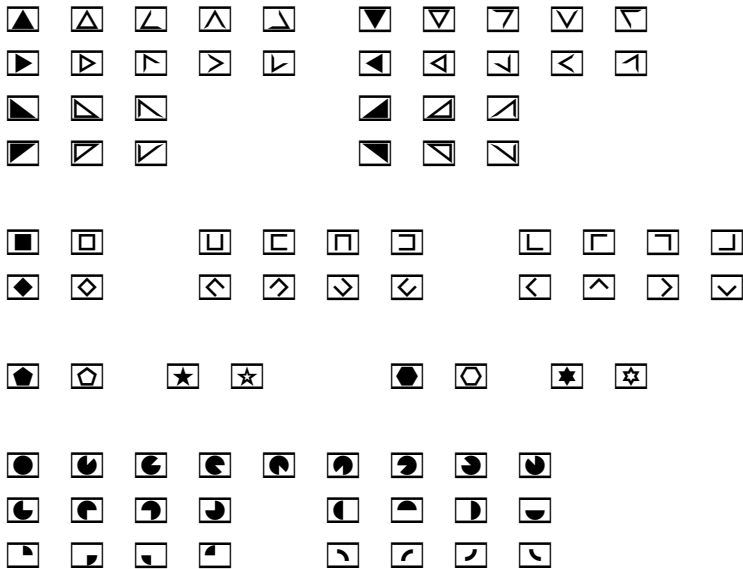
The first two columns below could also be used to indicate bound-off and cast-on stitches,

respectively. Single stitches with the same arcs as in the last two columns are available in the “Geometric Shapes” section.



Geometric Shapes

These might be useful for representing colors if you don't have a color printer. See chapter 190 for other ways of charting colorwork.

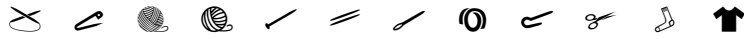


Common Symbols





Knitting Dingbats



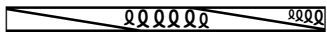


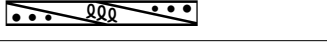
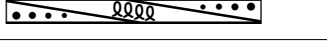




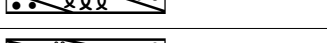
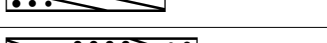
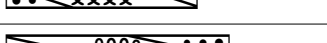
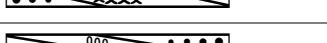
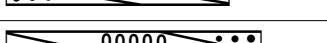
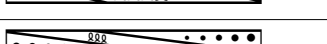
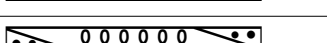
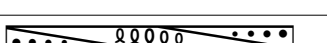
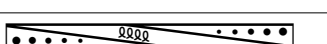
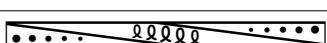
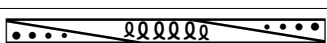

Stylized Stitches

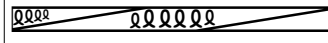



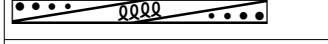





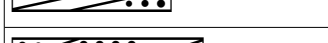
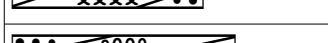
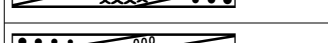
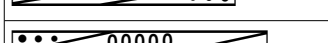
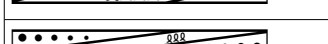
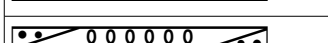
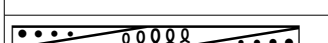
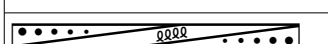
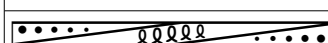
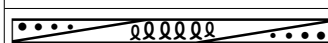



Twisted-Knit Cables and Twists

In Bavarian knitting, there are no regular knit stitches. All knit stitches are made through the back loop, resulting in twisted stitches. You could simply use the regular cable and twist symbols, but if you're afraid you'll forget to work each knit stitch through the back loop (I know I would!), then use these symbols to jog your memory.

	Cable 1/1 Left		Cable 1/1 Right
	Cable 2/2 Left		Cable 2/2 Right
	Cable 3/3 Left		Cable 3/3 Right
	Cable 4/4 Left		Cable 4/4 Right
	Cable 1/2 Left		Cable 1/2 Right
	Cable 2/1 Left		Cable 2/1 Right
	Cable 1/3 Left		Cable 1/3 Right
	Cable 3/1 Left		Cable 3/1 Right
	Cable 3/2 Left		Cable 3/2 Right
	Cable 2/3 Left		Cable 2/3 Right
	Cable 4/2 Left		Cable 4/2 Right
	Cable 4/3 Left		Cable 4/3 Right
	Cable 3/4 Left		Cable 3/4 Right
	Cable 5/3 Left		Cable 5/3 Right
	Cable 3/5 Left		Cable 3/5 Right
	Cable 6/2 Left		Cable 6/2 Right
	Cable 5/4 Left		Cable 5/4 Right
	Cable 4/5 Left		Cable 4/5 Right
	Cable 5/5 Left		Cable 5/5 Right

	Cable 6/4 Left
	Twist 1/1 Left
	Twist 2/2 Left
	Twist 3/3 Left
	Twist 4/4 Left
	Twist 1/2 Left
	Twist 2/1 Left
	Twist 3/1 Left
	Twist 1/3 Left
	Twist 3/2 Left
	Twist 2/3 Left
	Twist 4/2 Left
	Twist 4/3 Left
	Twist 3/4 Left
	Twist 5/3 Left
	Twist 3/5 Left
	Twist 6/2 Left
	Twist 5/4 Left
	Twist 4/5 Left
	Twist 5/5 Left
	Twist 6/4 Left

	Cable 6/4 Right
	Twist 1/1 Right
	Twist 2/2 Right
	Twist 3/3 Right
	Twist 4/4 Right
	Twist 1/2 Right
	Twist 2/1 Right
	Twist 3/1 Right
	Twist 1/3 Right
	Twist 3/2 Right
	Twist 2/3 Right
	Twist 4/2 Right
	Twist 4/3 Right
	Twist 3/4 Right
	Twist 5/3 Right
	Twist 3/5 Right
	Twist 6/2 Right
	Twist 5/4 Right
	Twist 4/5 Right
	Twist 5/5 Right
	Twist 6/4 Right