

Chapter 7

CABLES AND TWISTS

Cables and twists can be charted quite easily. Their symbols show both how many stitches are involved in the two parts of the cable (the front stitches and the back stitches) and which way the front stitches slant. Because of this, the lie “Each symbol represents one stitch” from the chapter “Basic Knitted Fabrics” is now resolved.¹ Instead of each knitting symbol representing one stitch, **the symbols represent, and are the width of, the number of stitches involved.** For example, a four-stitch cable has a symbol that’s four stitches wide.

If we’re doing an Aran project with multiple cable patterns that cross on different rows, a chart can really help us see and keep track of which stitches are crossed when.

Drawing a Cable Symbol

When we chart a cable,² we need to show two things: which way the cable slants, and how many stitches there are in the two parts of the cable.³

In this book, the cables’ names put the number of front stitches before the slash and the number of back stitches after it, no matter which way the cable leans. So a 4/3 cable has four stitches in the front part and three stitches in the back part, and a 3/3 cable has three stitches in both parts. And not surprisingly, we add the two numbers together to see how many stitches total are in the cable.⁴

Let’s see how to interpret a cable’s written-out instructions when we chart by hand.

An Example Cable

If we had a project whose instructions included a left-slanting cable of four stitches crossing over three stitches, it might be defined like this:

C7L: sl 4 sts to cn and hold to front, K3, K4 from cn

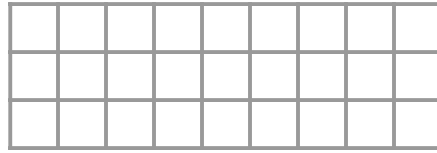
We’ll chart on regular grid paper with square cells, though we would do all the same steps on proportional grid paper as well.

¹ Actually, this is still not the complete truth. One more part of the lie will be resolved later.

² Throughout this section on drawing the symbol by hand, the word *cable* will refer to both cables and twists, so that I avoid typing and you avoid reading “cable or twist” every time.

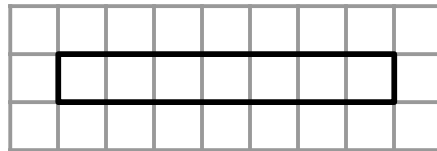
³ The vast majority of cables only deal with two groups of stitches at each crossing, though some, like Barbara Walker’s “[Chain Link Cables](#)” (page 213 of the green book, her fourth treasury), have three groups of stitches that must be manipulated at each crossing.

⁴ Other books may use other conventions, so we need to read the instructions carefully.

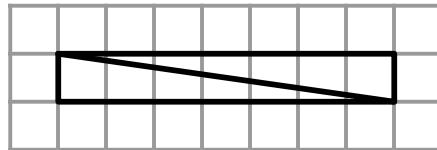


In the earlier chapter “Charting on Paper,” we said the easiest thing to do is to let each grid cell represent one stitch. That technique works fine for any symbol that’s only one stitch wide. But now we need to chart a symbol that represents a knitting operation worked on seven stitches.

For many multi-stitch knitting operations, we may well want to draw a boundary around the stitches involved, just so we are alerted to a knitting stitch beyond a plain old knit or purl. In this case, we need a box seven columns wide.



To show which way the cable slants, we could draw a line from corner to corner diagonally. Since this cable leans left, we’ll draw a diagonal line from the top left to the bottom right.



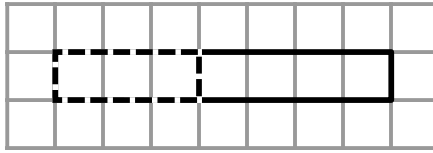
We can see from this preliminary symbol that the cable leans left, but what we don’t know is how to divide the seven stitches into the front, completely visible part of the cable and the back, mainly invisible part of the cable.

We’ll resolve that issue by drawing the final symbol with two diagonal lines instead of just one. We therefore erase that single diagonal line.

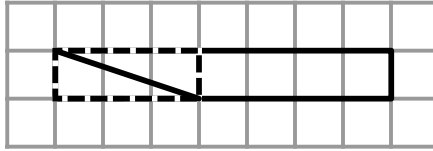
Dividing the Front and Back Stitches

The easiest way to draw the first diagonal line in the proper place is to start by drawing a smaller box at one end the cable’s boundary. This sub-box will be as wide as the number of stitches in the **back** part of the cable.

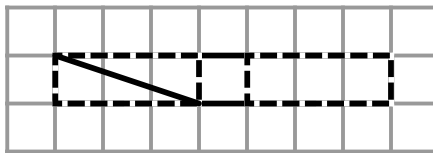
For this cable, there are three back stitches. The sub-box (including the affected portions of the cable’s boundary) has been drawn with the dashed line.



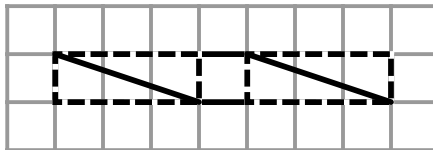
Now, since we're charting a left cable, we draw a diagonal line through the sub-box starting at its upper left corner.



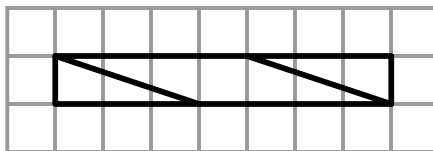
I'll bet you can guess how we'll draw the cable symbol's other diagonal line. Yep, you're absolutely right. We draw the same sub-box at the other end of the cable's outer boundary



and draw a diagonal line starting from its upper left corner.



We remove the sub-boxes and restore the outer boundaries to finalize the cable symbol.

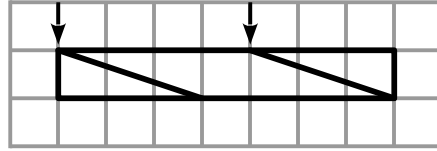


Seeing the Front Stitches

Now, we drew the diagonal lines across the same number of grid columns as there are stitches in the **back** part of the cable. It probably seems kind of odd that our technique is drawing the lines that mark off the stitches we mainly won't see.

Does the symbol in any way show us the four very visible stitches in the front of the completed cable? Well, of course the whole symbol is seven columns wide, and each diagonal line crosses three columns, and the difference between seven and three is four.

But the lines themselves show us explicitly how many stitches are in the front part of the cable. Let's look carefully where the diagonal lines meet the top boundary.



How many grid columns are between the two lines' upper end points? Four. The lower ends of the lines are also four grid columns apart.

The final symbol does directly **show** how wide the front of the cable is, but it's easier to **draw** it based on the number of back stitches.

Cable Symbol Summary

When we need to draw a cable in our chart, we follow just a few simple steps.

1. We draw a boundary around the grid cells that will be involved in the cable. The box will be one row tall, and it will be as wide as the total number of stitches in the cable.
2. At one end of the cable's boundary, we draw a sub-box that's as wide as the number of **back** stitches in the cable. For a left-slanting cable, we draw a diagonal line through the sub-box starting at its upper left corner. For a right-slanting cable, we start the diagonal line at the upper right corner.
3. We draw the same sub-box at the other end of the cable's own boundary, then draw the same diagonal line through the second sub-box, again starting at the sub-box's upper left corner. For a right-slanting cable, we start the diagonal line at the upper right corner.

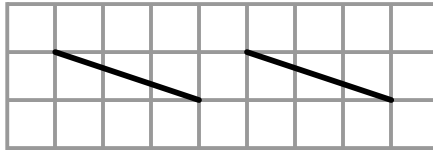
After we've drawn a few cable symbols, we'll be able to just mentally count off the proper number of columns so we don't have to actually draw (and erase) the sub-boxes.

Customizing Cable Symbols

Here are a few suggestions for ways to tweak cables symbols. In some charts, we might like to combine several of these variations together.

Omit the Outer Boundary

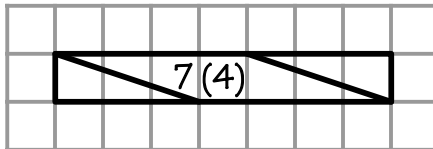
We don't have to draw a box around the cable's grid cells. Or we might choose to draw it in some charts but not in others, or for just a few cables in a chart with several cables. The cable symbol would then consist of just the two diagonal lines.



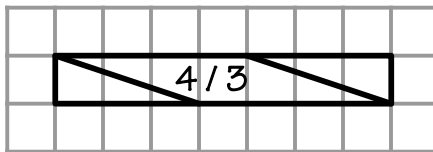
Because the cable's outer boundary isn't there to obscure the lines' end points, it's quite clear that the cable has four front stitches and three back stitches.

Pre-Count the Stitches

If we have lots of different cables in a project, we'll want to make it as easy as possible to read their symbols. In some circumstances, we might be forced to actually count grid cells while we're working with needles and yarn. If we don't want to be slowed down like that, we can put inside each symbol how many total and front stitches are in the cable



or how many front and back stitches there are.

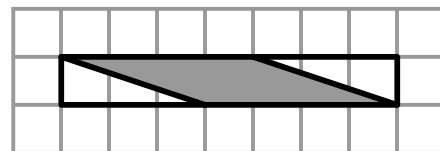
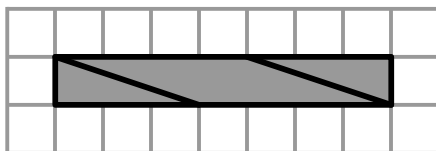


We might also write these numbers in the rows between the crossings, which should allow us to make them much bigger than fits inside the symbol.

If we put these numbers on the chart, we count once and never have to count again.

Use Color

If we have many different cables in a project, we could use a different marker or colored pencil to help make each cable look different. We could fill in the entire cable symbol, or we could color just the area between the diagonal lines.



One color scheme would pair up a color name whose name has the same number of let-

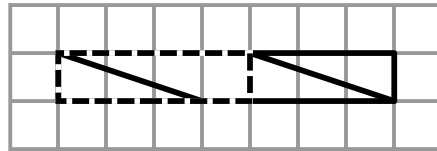
ters as the number of front stitches in the cable. So a red cable would have three front stitches, a blue one would have four front stitches, and green would indicate five front stitches. What could we do for 1/1 and 2/2 cables, which have, respectively, only one and two front stitches? We might leave the 1/1 cables uncolored and make the 2/2 cables gray, thinking of gray as not being a “real” color.

As another way to match colors and numbers, we could use a rainbow’s colors in order for increasing numbers of front stitches: red for one, orange for two, yellow for three, and so on through green, blue, and purple.

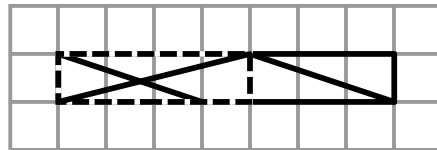
Show the Back Stitches

We can’t really see the cable’s back stitches in yarn, so we didn’t bother making any kind of marks for them in the basic symbol. But it’s easy to add lines to show them explicitly. We repeat the steps that we did to draw the front stitches’ diagonal boundary lines, but we reverse all the details.

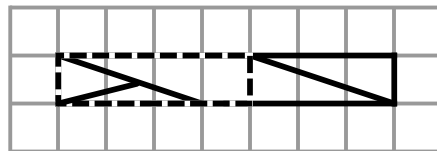
To show the **front** stitches we used sub-boxes that were the width of the **back** stitches and drew the diagonal lines in the **same** direction that the finished cable slants, so to show the **back** stitches we draw sub-boxes that are the width of the **front** stitches and draw the diagonal lines in the **opposite** direction as the finished cable slants. Here’s the first sub-box.



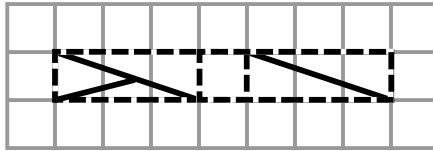
We have to draw the diagonal line so it slants the other way.



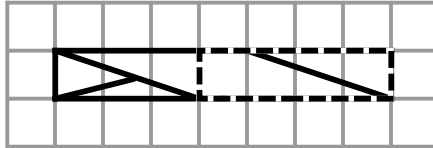
But we don’t actually draw the line all the way from corner to corner in the sub-box. Instead, we start at the corner and stop at the diagonal line we already have.



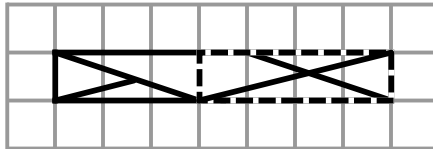
We draw the second sub-box at the other end of the cable.



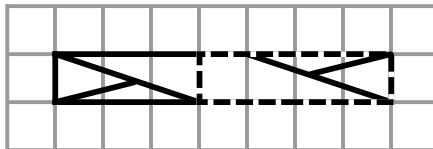
Yuck. Since it overlaps the first sub-box, we'll restore the cable's outer boundary at that end.



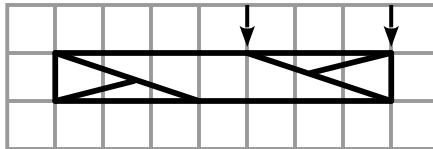
We draw a diagonal line that starts in the corner and slants the opposite direction of the cable



but we again stop it where it runs into the diagonal line.



Here's the final symbol with the cable showing the back stitches explicitly.



If we mentally extend the lines to the outer boundary, the ends of the back stitches' lines are both three columns apart, showing that the back of the cable has three stitches.

Charting Versus Working Cables

MIKs draw the symbols exactly as described above when **charting** written-out instructions, keeping in mind the unwritten assumption that public-side rows are worked from right to left. So if the cable's directions say to hold the cable needle to the front, MIKs will **draw or**

type a left-slanting cable, and when the instructions say to hold the cable needle to the back, the cable must be **drawn or typed** as right-slanting.

But when MIKs **work from** the chart, they will actually put the cable needle in the opposite place than the cable's instructions specify.

Let's gather these details so **all** knitters can see how to correctly **chart** written-out instructions and then **work** from the chart to get the proper result. Handy mnemonics help all of us remember what to do no matter how the cables are named or how the cable instructions are written, whether we're traditional or mirror-image knitters.

Charting Rule

If the cable definition says the cable needle should be held at the **front**, the chart must show a **left**-slanting symbol. If the cable needle must be held at the **back**, the chart must show a **right**-slanting symbol.

Charting Rule for Traditional Knitters

Traditional knitters hold the cable needle to the front for left-slanting cables, because **front** and **left** both contain **f**. They hold the cable needle to the rear for right-slanting cables because **rear** and **right** both start with **r**.

Charting Rule for Mirror-Image Knitters

Mirror-image knitters hold the cable needle to the back for left-slanting cables, because **back** and **left** are both **four** letters long. They hold the cable needle to the front for right-slanting cables, because **front** and **right** are both **five** letters long.

The Unwritten Assumption

Some cable names and/or abbreviations reveal the unwritten assumption that public-side rows are worked right to left. Instead of using an L or R to indicate a left- or right-slanting cable, they contain an F or B, to indicate that the cable needle is held to the front or the back.

As we can see from the mnemonics, the unwritten assumption that public-side rows are worked right to left means that cable names containing F or B are, well, wrong for MIKs. In those cases, MIKs must be sure to correctly interpret the instructions before drawing the chart symbol.

Sample Cable Patterns

The stitch patterns in this section can probably be found in any stitch dictionary.

Cable 3/3 Right

This is a basic, classic cable. The photograph shows three repeats.



multiple of 6

C6R: sl 3 sts to cn and hold to back, K3, K3 from cn.

Rows 1 and 5 (RS): K.

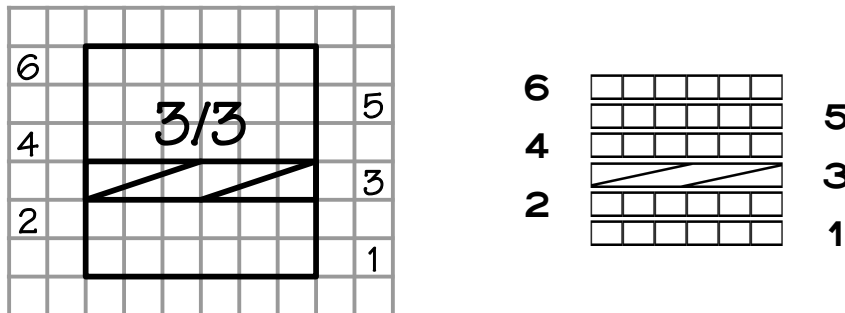
Rows 2, 4, and 6 (WS): P.

Row 3: *C6R*.

Rpt rows 1–6.

Just glancing over the instructions, the only “real” row is row three, where we actually cross the cable’s stitches. The other five rows, public side and private side, just form the column of public-side knits.

The paper chart (here and throughout the rest of the chapter) assumes knit stitches are represented by the grid cells themselves, and since we aren’t confining the number of the front and back stitches to fit inside the symbol itself, we’re able to write them much larger.



Typing Up the Chart

Note that in the knitting font, the cable symbol has only two interior lines, to show us which way the cable slants. It does not include vertical lines that indicate each stitch in the cable.

If we see the typed cable symbol in isolation



we may not be able to tell how many stitches wide it is, but as soon as we put a row of symbols below or above it, we can tell instantly that the cable is made with six stitches and that there are three stitches in each part of the cable.

The five rows of public-side knit stitches are easy to enter. We just type

kkkkkk

in five of the pattern's table cells. The cable itself, though it looks complicated as a symbol, is easy to type.

The most common cables are made on two, four, six, and eight stitches crossing half of those stitches over the other half to either the left or the right, and their symbols are on the first four letters of the alphabet. The lowercase letters slant left, and the uppercase letters slant right.

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

So for this particular cable, the only thing we type in row three of the pattern chart is a capital

C

The Complete Chart

The entire chart is typed as

kkkkkk
kkkkkk
kkkkkk
C
kkkkkk
kkkkkk

It looks like the crossing row is too narrow, but the cable symbol is six stitches wide in the knitting font, so it's the same width as the rows before and after it.

Fishbone

This cable is used in Elizabeth Zimmermann's Aran sweater in the January chapter of her *Knitter's Almanac*. Three repeats are shown in the photograph.

multiple of 9

Cable 1/3 Right (CR): sl 3 sts to cn and hold to back, K1, K3 from cn.

Cable 1/3 Left (CL): sl 1 st to cn and hold to front, K3, K1 from cn.

Row 1 (RS): K.

Rows 2 and 4 (WS): P.

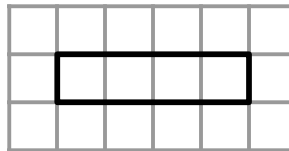
Row 3: CR, K1, CL.

Rpt rows 1-4.

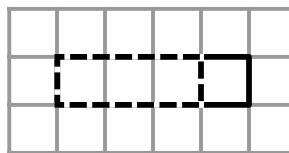


Drawing the Cable Symbol by Hand

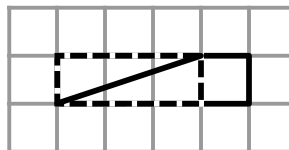
Since the fronts of the paired cables have only one stitch, let's walk through the drawing procedure step by step. We'll again use square-cell grid paper, and since the cable is four stitches wide, we'll use a scrap of grid that's just six stitches wide. We'll draw the right-slanting version this time.



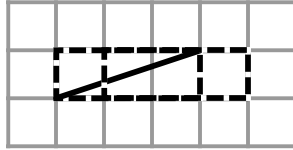
Now we need to draw a sub-box that's the width of the cable's back stitches, which is three.



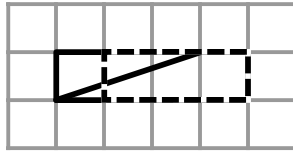
We draw a diagonal line from upper right to lower left, since the cable slants right.



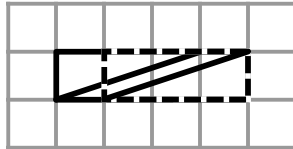
Now we need to draw the second sub-box at the right end of the cable's stitches.



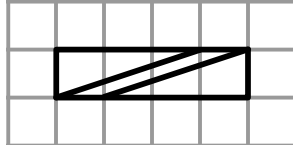
Since the sub-boxes overlap, let's remove the first sub-box.



We draw a diagonal line through the second sub-box in the same direction



and remove the second sub-box.



Back Stitches and Left Cables

We could add the lines for the back stitches in the same way as before, and to make the left-slanting symbol, we draw the diagonal lines through both sub-boxes starting at their upper left corners.

Charting the Entire Stitch Pattern

Fishbone is actually easy, even though we cable twice on row three. The other rows, as with Cable 3/3 Right, just make a field of public-side knit stitches.

On row three, we draw a cable crossing one over three to the right.



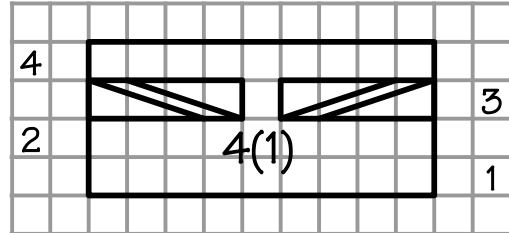
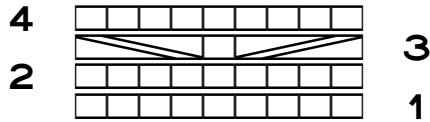
Then we knit the middle stitch of the nine



and finish with a cable that crosses one over three to the left.



The complete Fishbone charts in the computer and on paper are very similar. In the paper chart, each grid cell represents a knit stitch. The stitch counts inside the paper chart show the total number of stitches and the number of front stitches.



Typing Up the Chart: Read Left to Right

The 1/3 cables are not very common, but they have been included in the knitting font because Elizabeth Zimmermann’s books are so popular. The capital G slants to the right, and the lowercase g slants to the left.

Three of the chart rows are just nine knit symbols, made by typing

kkkkkkkkk

If we want to read row three’s instructions in the normal direction, we can do that as long as we move the cursor to the left of each group after we type it. So, since the instructions start with the Cable 1/3 Right, we first type

G

Then we have to move the cursor to the left of the G and add a lowercase

k

to get the plain knit stitch in the middle group. We move the cursor to the left of the knit stitch, and since the final group on row three is for the Cable 1/3 Left, we type a lowercase

g

which gives us

gkG

Typing Up the Chart: Read Right to Left

As before, three rows will contain nine knit symbols, which we chart with

kkkkkkkkk

To type row three without moving the cursor, we read it from the end of the line back toward the beginning. Since the last “group” is the Cable 1/3 Left, we type

g

then we type

k

to add the next-to-last “group,” which consists of a single knit stitch. The very first “group” of the line is the Cable 1/3 Right, which we enter as

G

So our complete row three, as typed, is

gkG

The Complete Chart

The entire chart as typed is

kkkkkkkkk
gkG
kkkkkkkkk
kkkkkkkkk

The crossing row looks like it’s short a few stitches, but both cable symbols are four stitches wide. Combining those eight stitches with the single knit stitch means the crossing row is nine stitches wide in the chart.

Braid

This cable looks exactly like its name. About two and a half repeats are shown in the photo.

multiple of 6

C4F: sl 2 sts to cn and hold to front, K2, K2
from cn.

C4B: sl 2 sts to cn and hold to back, K2, K2 from
cn.

Foundation row (WS): P.

Row 1 (RS): C4B, K2.

Rows 2 and 4 (WS): P.

Row 3: K2, C4F.

Rpt rows 1–4.



This stitch pattern's instructions assume, without actually telling us, that public-side rows are worked right to left, since the cable abbreviations contain F and B instead of the more universal and unambiguous L and R.

All knitters will chart the pattern the same way, but in needles and yarn, MIKs must reverse the locations of the cable needle, putting it to the front for the right-slanting cable and to the back for the left-slanting, according to the mnemonic we saw earlier.

Foundation Rows

This pattern has a new wrinkle, a **foundation row**, which requires a new charting rule.

Foundation row(s) are only worked once, at the very beginning of the piece.

Notice the last line of the written-out instructions. We repeat only rows **one** through four, **not** the **foundation row** through row four. When there are foundation row(s) in a stitch pattern's instructions, once we've worked them, however many there may be, then for the rest of the piece, we will not work the foundation rows again.

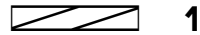
Since we work foundation row(s) only once, it's a good idea to label them with something other than the usual row numbers. Let's use a lowercase a as the row label.

Constructing the Chart

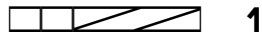
Braid's foundation row is six purl stitches on the private side. Since private-side rows have their row numbers on the left, we'll put the foundation row A label there, then add six knit symbols (because private-side purls are public-side knits).

a

The public-side row one starts with a cable, a balanced or symmetric cable with four stitches, which slants to the right.

**1**

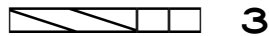
Two knits follow the cable.

**1**

We'll skip row two, since we just purl back (which means the chart shows six knit symbols). Row three starts with two knits

**3**

and ends with the cable crossing in the opposite direction of the cable on row one.

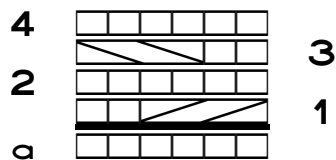
**3**

Row four, like row two, is just purling back.

These cable symbols, as with previous symbols, have only two diagonal lines inside them. Since the tops and bottoms of the two lines are two stitches apart, then the front of the cable is two stitches wide. Since the ends of each line are two stitches away from each other, the back part of the cable is two stitches wide.

The Complete Chart

Here are all four pattern rows put together with the foundation row. All knitters, traditional and mirror-image, must **chart** the instructions this way. MIKs will **work** the crossings by putting the cable needle on the opposite side of what the cables' instructions say.



A thick line separates the foundation row from pattern row one. That dark border helps us remember that after we work the foundation row, we will work only rows one through four for as long as we're knitting this pattern.

That is, the first time we work this pattern, we'll work rows

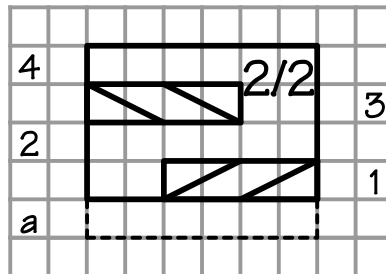
A-1-2-3-4

but from then on, the sequence of the rows we'll work will be

1-2-3-4-1-2-3-4-1-2-3-4-1-2-3-4-1-2-3-4-1-2-3-4...

On Paper

How do we indicate a foundation row on paper? One option is to draw it with a dashed line.



Typing Up Foundation Rows

There are four foundation row labels in the knitting font.

	a	Foundation row A	{	c	Foundation row C
	b	Foundation row B	}	d	Foundation row D

If we need more than four foundation row labels, we can simply repeat them or we might add numbers to them, such that we use “A1,” “B1,” “C1,” “D1,” “A2,” and “B2” if we needed six foundation rows. We can also select from the full set of boxed capital or lowercase letters in the knitting font catalog at the end of part four.

Typing Up the Private-Side Rows

Three rows, including the foundation row, are composed of six public-side knit stitches, so we just type

kkkkkk

in the table cells of those rows.

Typing Up the Crossing Rows: Reading Left to Right

For the two rows with cables, we have plain 2/2 cables slanting left and right, which are typed with a lowercase b and an uppercase B, respectively.

On row one, we read from the beginning of the written-out instructions, which has the cable first, so we type

B

for the cable that slants to the right, then we move the cursor to the left of the cable symbol and type the group

kk

without having to move the cursor between typing the two knits, for a complete row of

kkB

For row three, we again read the instructions in the usual direction, finding the group of two knit stitches first, which we can enter all at once, so we type

kk

before we move the cursor to the left of both symbols, and type

b

for the cable that slants to the left. The complete row is thus

bkk

Typing Up the Crossing Rows: Reading Right to Left

As we read the written-out instructions for row one from right to left, we type

kk

for the last group on the line, then we type

B

for the first “group,” consisting only of the right-slanting cable, which makes the complete row

kkB

For row three, as we read the written-out instructions from right to left, we type

b

for the left-slanting cable, then

kk

for the row’s first group of two knits, for a complete row of

bkk

The Complete Chart

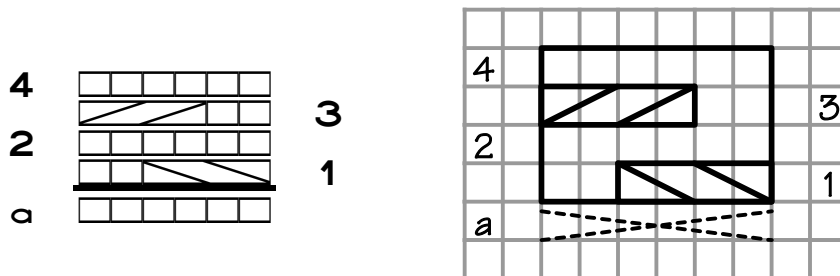
The four rows of the pattern repeat are typed with

kkkkkk
bkk
kkkkkk
kkB

The lines with the crossing symbols are short here in a regular font, but in the knitting font those symbols are four stitches wide. When we add the cables' four stitches to the two knits on those rows, those chart rows are actually six stitches wide.

Upside-Down Braid

Braid has the outer strands crossing alternately over the center strand. To make the center strand cross alternately over the outer strands, we reverse the direction that each cable crosses. An X through the foundation row in the paper chart reminds us to work it only one time.



Try to write out the instructions for Upside-Down Braid, then check yourself against the appendix “Answers.”

Hugs and Kisses Cable

This cable looks complex, but it’s actually very easy to work. Two repeats are shown in the photograph.

multiple of 8

Cable 2/2 Left (C4L): sl 2 sts to cn and hold to front, K2, K2 from cn.

Cable 2/2 Right (C4R): sl 2 sts to cn and hold to back, K2, K2 from cn.

Rows 1, 5, 9, and 13 (RS): K.

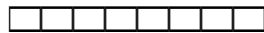
Row 2 and all WS rows: P.

Rows 3 and 15: C4L, C4R.

Rows 7 and 11: C4R, C4L.

Rpt rows 1–16.

These instructions are very short because there are cables in only four of the pattern's sixteen rows. The remaining four public-side rows and all the private-side rows will just be knit symbols. So when we chart twelve of the sixteen rows, they are simply

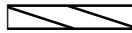


Let's look at each pair of crossing rows.

Rows Three and Fifteen

Using the abbreviation definitions at the top of the instructions, we do a C4L then a C4R.

A C4L will slant to the left, crossing two stitches over two. So the first symbol on these chart rows will be



The C4R slants to the right, again crossing two over two. So we add that symbol to the left of the first one, since on public-side rows, we all, both mirror-image and traditional knitters, keep adding symbols to the left of the symbols already in a public-side chart row.



Rows Seven and Eleven

On these two rows, we do the same two cables as on the other rows, but we switch which one we do first. So rows seven and eleven start with C4R



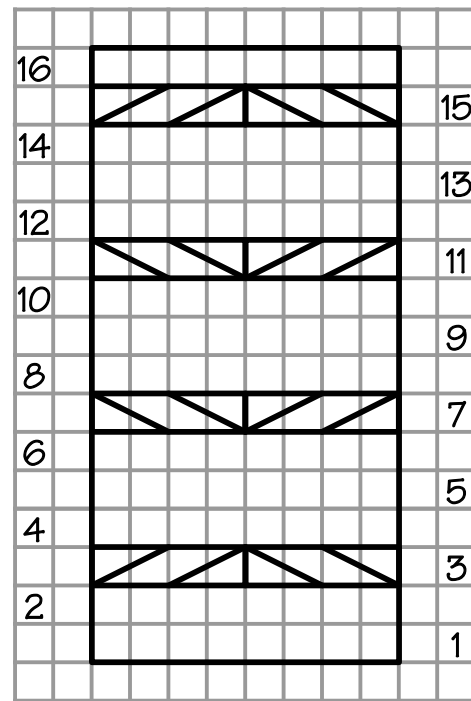
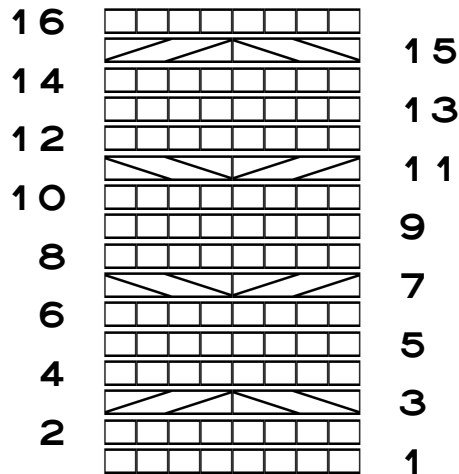
and end with C4L.





The Complete Chart

Let's put all the rows together.



The Xs and Os in the pattern photograph are quite obvious. Can you see them in the charts? Squinting a bit may help. Rows three through seven form the X for the kiss, and rows eleven through fifteen form the O for the hug.

Typing Up the Chart

We've already seen in Braid that 2/2 cables are the symbols on lowercase b and uppercase B, so we just need two unique lines, where the only difference between those two lines is the order of the symbols.

For rows three and fifteen, the order we must have after we type is

Bb

and for rows seven and eleven, we must have

bB

The Complete Chart

The entire chart as typed is

```

kkkkkkkk
  Bb
kkkkkkkk
kkkkkkkk
kkkkkkkk
  bB
kkkkkkkk
kkkkkkkk
kkkkkkkk
  bB
kkkkkkkk
kkkkkkkk
kkkkkkkk
  Bb
kkkkkkkk
kkkkkkkk

```

The four lines containing the cables look short in a normal font, but in the knitting font, those symbols are both four stitches wide.

A Sample Twist Pattern

Twists can have all the variations that ordinary cables have with regard to the number of front and back stitches and which way the front stitches slant, but they add in the extra wrinkle of purling the background stitches.

Wavy Cable

This stitch pattern seems tricky, since we're doing both knit and purl stitches during the crossing rows, but it isn't as difficult to execute as it might seem. About three repeats are shown in the photo, though the bottom repeat starts at row three.

multiple of 7

Twist 3/2 Left (T3L): sl 3 sts to cn and hold to front, P2, K3 from cn.

Twist 3/2 Right (T3R): sl 2 sts to cn and hold to back, K3, P2 from cn.

Foundation row (WS): P3, K4.

Row 1 (RS): P2, T3R.

Row 2 (WS): K2, P3, K2.

Row 3: T3R, P2.

Row 4: K4, P3.

Row 5: T3L, P2.

Row 6: K2, P3, K2.

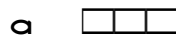
Row 7: P2, T3L.

Row 8: P3, K4.

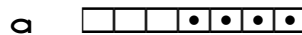
Rpt rows 1–8.



Here again is a stitch pattern with a foundation row.⁵ Since this foundation row is a private-side row, we'll start with the foundation row label at the left. Remembering that we have to switch knits to purls and purls to knits, and that we draw the row's symbols from left to right, we first put in the three purls (but as knits) next to the row label.



Then we knit the last four stitches, but they'll look like purls when we turn the work around to the public side.



In row one, we start with two purl stitches



then we work the crossing to the right. Note that the symbol has marks that remind us to purl the background stitches.

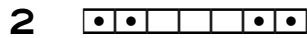


The two diagonal lines in the twist symbol are three stitches from each other at the bot-

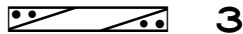
⁵ Even though the foundation rows for two of the stitch patterns in this chapter have both been made on the private side, not all foundation rows are. Some patterns might have two or even more foundation rows, so they would alternate between public- and private-side rows.

tom and top of the symbol. That means the front part of the cable is three stitches wide. Looking at the two diagonal lines one at a time, we see that each one's beginning and ending are two stitches apart, which means there are only two stitches in the back part of the cable.

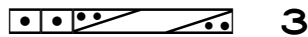
For row two, we knit the first two and last two stitches and purl the center three stitches, but each one must be represented as the other symbol.



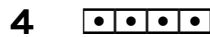
On row three, the right-slanting crossing is worked first



then we purl the last two stitches.



On row four, we knit the first four stitches



and purl the rest.



On row five, we zag the crossing to the left

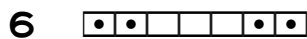


and purl the last two stitches.



Note that this twist symbol, even though it slants the other direction, also has its two diagonal lines three stitches apart while each line's two ends are only two stitches apart.

On row six, another private-side row, we again knit the first and last two stitches and purl the three center stitches. But on the chart, we swap knit and purl.



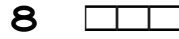
Row seven starts with two purl stitches



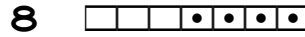
then the left-slanting crossing is back at the left edge again.



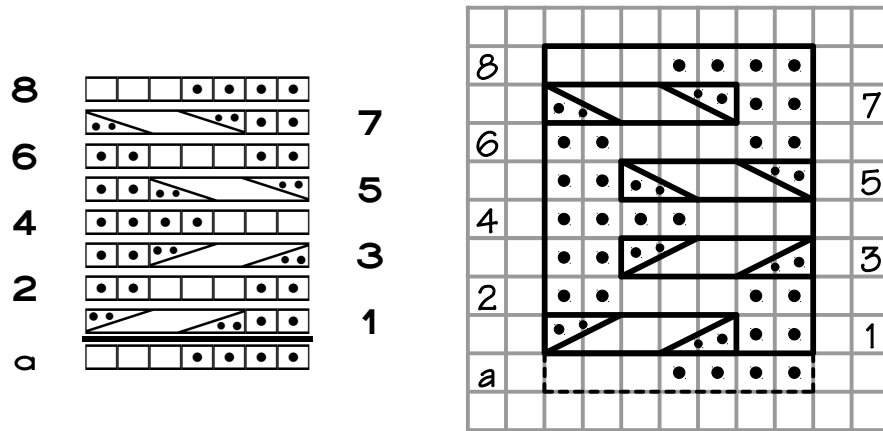
A final private-side row purls the first three stitches, which we must show as knits



and knits the last four, which we show as purls.



The computer and paper charts look less similar than some of the other chart pairs have. And note that the paper chart goes back to a dashed border around the foundation row, since even a dashed-line X would obscure the purl marks somewhat.



If we look closely at the computer chart—maybe, as with Hugs and Kisses Cable, squinting is better—at the knit symbols and the front stitches of all the crossings, we see a path of knit stitches moving sideways back and forth across a sea of purl bumps. This is the usual distinguishing characteristic of twists: a group of knit stitches zigzagging their way across reverse stockinette.

Just as with the chart for Braid, the thick line between foundation row A and row one helps us remember that after we work the foundation row, the rest of the time we repeat only rows one through eight.

The first time we work Wavy Cable, we'll work rows

A-1-2-3-4-5-6-7-8

but from then on, the sequence of rows we'll work is

1-2-3-4-5-6-7-8-1-2-3-4-5-6-7-8-1-2-3-4-5-6-7-8...

(Since this pattern crosses knit stitches over purl stitches, the designer—*cough*—should probably have named it *Wavy Twist* instead of *Wavy Cable*.)

Typing Up the Chart

The full set of cable and twist symbols is shown in the knitting font catalog at the end of part four, and the two we need for the crossings in this stitch pattern happen to be on lowercase u and uppercase U.

So public-side rows will combine two purls, each typed with lowercase p, with either u or U. The private-side rows will combine purls and knits.

The Complete Chart

Omitting the foundation row, the chart is typed as

```

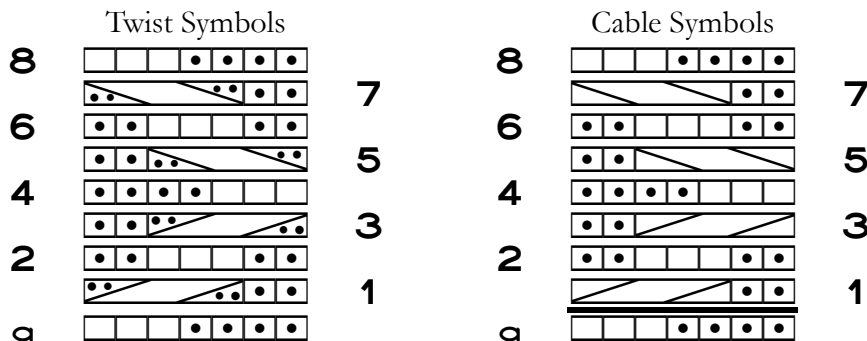
kkkpppp
upp
ppkkkpp
ppu
ppppkkk
ppU
ppkkkpp
Upp
    
```

Note that the public-side rows have only three characters, since the twist symbols, using five stitches, will make the crossing rows seven stitches wide in the knitting font.

Variation in the Computer

The purl dots in the background areas of the twist symbols show us that those stitches lead from and to purl stitches in the rows below and above the crossings. Note that they do **not** mean that we purl four stitches during the crossings.

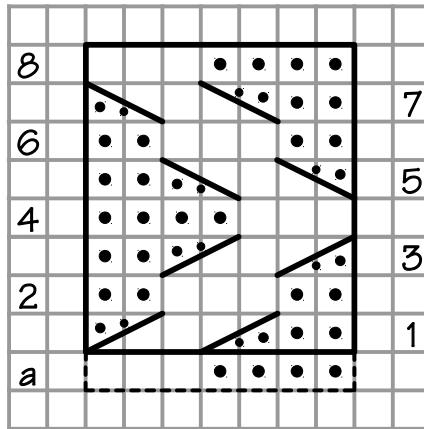
Let's compare the chart with twist symbols with a chart that uses the symbols for the equivalent 3/2 cables, which don't have the purl dots.



Some knitters might prefer the second version of the chart, and we are always free to use the symbols that best suit us. If we use this form of the chart, we'll be prompted to work the two background stitches as purls during the crossings by the fact that they were public-side purls in the previous row.

Variation on Paper

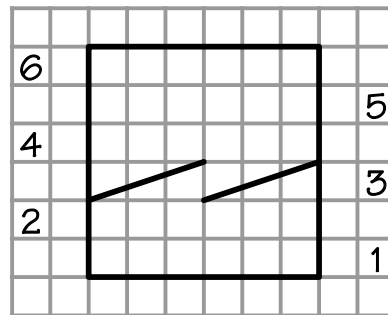
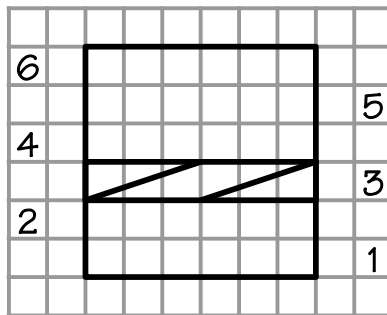
Let's look at the chart without the crossing symbols' dominating outer boundaries.



If I charted on paper, this version would definitely be my choice.

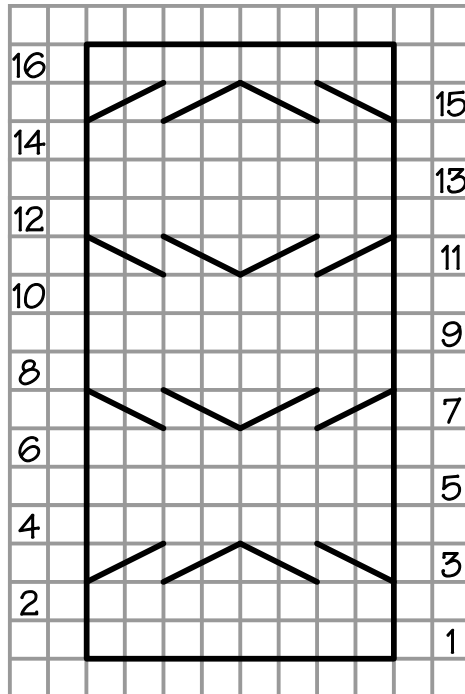
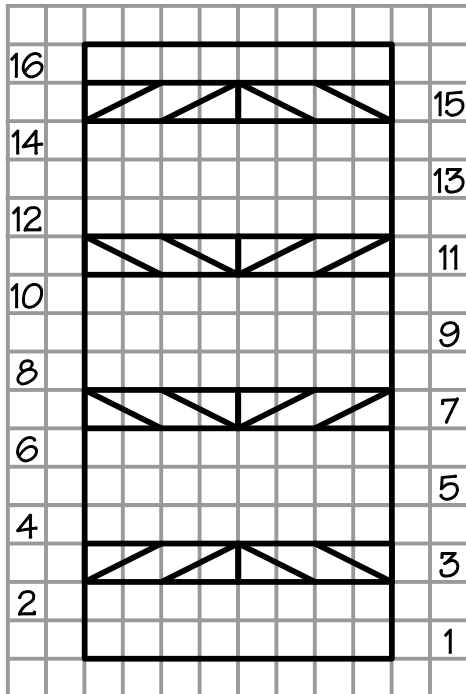
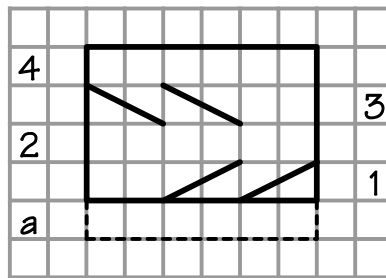
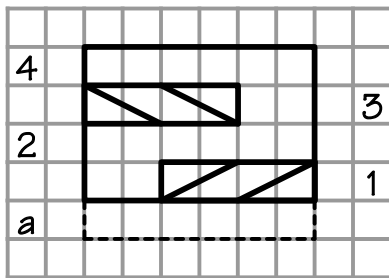
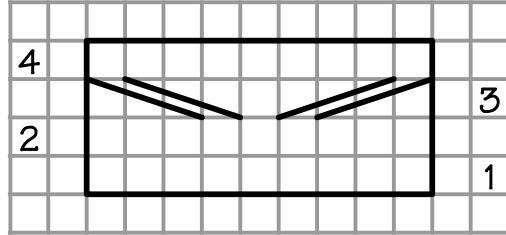
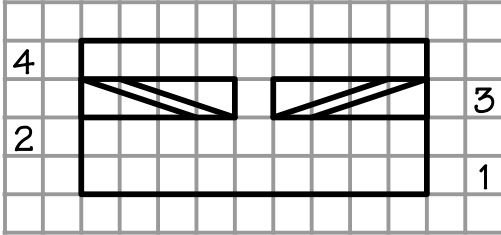
Revisiting All the Paper Charts

Let's compare the other patterns' versions of their charts with and without their crossing symbols' outer boundaries. We'll start with Cable 3/3 Right.



In just a single repeat, the version with the boundary seems clearer, but if we had several repeats of the cable stacked on top of one another, they might look very good without their boundary boxes.

Let's compare both versions of the other three patterns.



As with Cable 3/3 Right, Fishbone, Braid, and Hugs and Kisses Cable might look better in a taller project chart that showed several stacked repeats of each pattern than they do in just the single repeat shown here.

Symbols in the Knitting Font

If we're charting on paper, we can use the symbols exactly as shown in the knitting font catalog, adapt them any way we like, or design our own symbols from scratch.

The font catalog contains symbols for cables and twists in the most common pairings of front and back stitches, from two to ten stitches total.

There is an entire school of knitting called *Bavarian knitting*, which uses no regular knit stitches at all. Instead, every knit stitch is worked through the back loop, which means every knit stitch is twisted.⁶ The knitting font has twisted-knit cable and twist symbols in all the same pairings as regular cables and twists.

If a project needs a special cable or twist (or any other knitting operation) that doesn't have a symbol in the knitting font, we have at least two options.

- ☉ We can redefine an existing symbol to mean something different in a specific chart (which we can of course do with any symbol whenever we want to).
- ☉ We can combine symbols as shown in the chapter "New Knitting Operations" in part four.

⁶ Technically, every knit stitch is worked through the trailing leg, the leg farthest from the source needle's tip.