The USB Brotherlink 4 - or Cartridge Cable

For DesignaKnit Users

The **USB Brotherlink 4** without interactive knitting capability

The **USB Brotherlink 4 Plus** with interactive knitting capability

What these links do…

1. They download stitch pattern files from DesignaKnit to the knitting machine memory, including patterns of stitch symbols and stitch patterns that have been integrated with garment pieces. From these stitch patterns, DesignaKnit creates the file DesignaKnit_USB_Bro4.bpm, and this file is then written to the Cartridge using the included Cartridge Utility program. The patterns can then be transferred from the Cartridge into the knitting machine memory. This route is available only in DesignaKnit 8.09.00 and later versions, and is primarily intended for use with KH270, KH900, or KH965 machines. It may also be used for the KH965i and KH970, although for these two machines the cheaper USB Brotherlink 5 is adequate and simpler to operate. DesignaKnit 9 is able to download to the KH900 via the Cartridge, but DesignaKnit 8 is not.

2. They enable the upload of all the 900 series patterns from the knitting machine memory to a computer as a single .bpm file. DesignaKnit isn't able to open the .bpm file but the Cartridge Utility program can save the patterns back to the knitting machine memory.

3. The USB Brotherlink 4 Plus enables interactive knitting.

4. They substitute for a PPD cartridge for use with DesignaKnit. For this kind of use, an additional cable link, the USB or serial Brotherlink 3, is required to transfer patterns between DesignaKnit and the USB Brotherlink 4 while it is inserted in a PPD. The Brotherlink 3 connects to the 8-way connector on the PPD, and the 8-way connector on the USB Brotherlink 4 must not be connected to anything. After downloading, the USB Brotherlink 4 can then be disconnected from the computer and moved to the knitting machine and the patterns transferred to the knitting machine memory in the same way as with a Brother PPD cartridge. Here, the USB Brotherlink 4 is serving purely as a replacement for a PPD cartridge, and may be used for any of these machines shown in this window. Here, 950 refers to the KH950i.

Set Mode

1. KH-930
2. KH-900
3. KH-930M
4. KH-940, 950, 270
5. KH-965
6. KH-970
7. CK35

Cancel
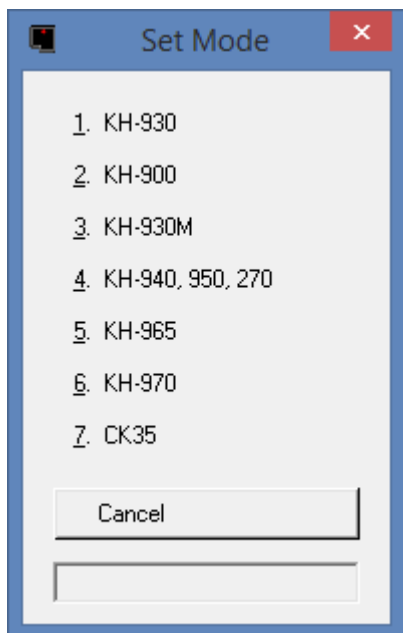
When downloading from DesignaKnit, it is necessary to follow the separate instructions for the Brotherlink 3, or for the Brotherlink 3 Plus, and then after transferring the USB Brotherlink 4 to the knitting machine, follow the knitting machine manual's instructions to transfer the patterns into the knitting machine memory.

5. To substitute for a PPD cartridge for use with the PPD and with the knitting machine without using DesignaKnit and without connecting to a PC.

6. To convert pattern formats between DesignaKnit .pat and other formats such as .bmp using the included Cartridge Utility program.

7. To manage Brother knitting machine pattern files independently of DesignaKnit.

The remainder of this document focuses on using the Cartridge with DesignaKnit. For other possibilities please see the help file that is installed along with Cartridge Utility.

Part List

1. The Cartridge Cable.
2. CD with installer for Cartridge Utility and the USB drivers.
3. In the case of the USB Brotherlink 4 Plus, the KnitLink box.
4. In the case of the USB Brotherlink 4 Plus, the magnetic KnitLink Arm.

Handling the Cartridge

Never plug the Cartridge into a knitting machine or PPD while the power to the machine or PPD is turned on. Nor unplug the Cartridge from the knitting machine or PPD while the power to the machine or PPD is turned on. Otherwise the knitting machine, PPD, or cartridge could be damaged. Soft Byte and its agents cannot be held responsible for any damage caused to your knitting equipment by not following those instructions.

The Cartridge should not be connected to a computer while it is inserted in a knitting machine or PPD, even if the knitting machine or PPD is powered off. Remove the USB cable from the Cartridge before inserting the Cartridge into the knitting machine or PPD. Failing to follow these instructions would not damage your equipment but may produce temporary technical problems.

Excess cable should not be tightly coiled as this can cause electromagnetic effects that can interfere with the operation of the link.
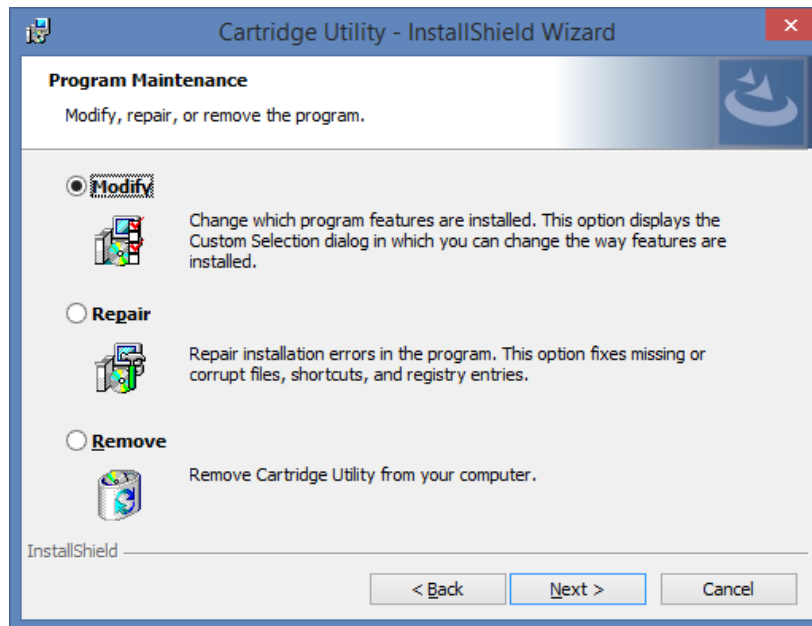
Installing Cartridge Utility

First make sure that the Cartridge is not connected to your computer.

After inserting and opening the Cartridge CD, you will see a window titled Cartridge Utility. It is better to use the Cartridge Utility EN (English) or Cartridge Utility NL (Dutch) link at the bottom of the page to install from the internet, rather than the "here" link at the top of the page to install from CD. That way you will get any recent driver update made by the manufacturer of the chips used in the link.
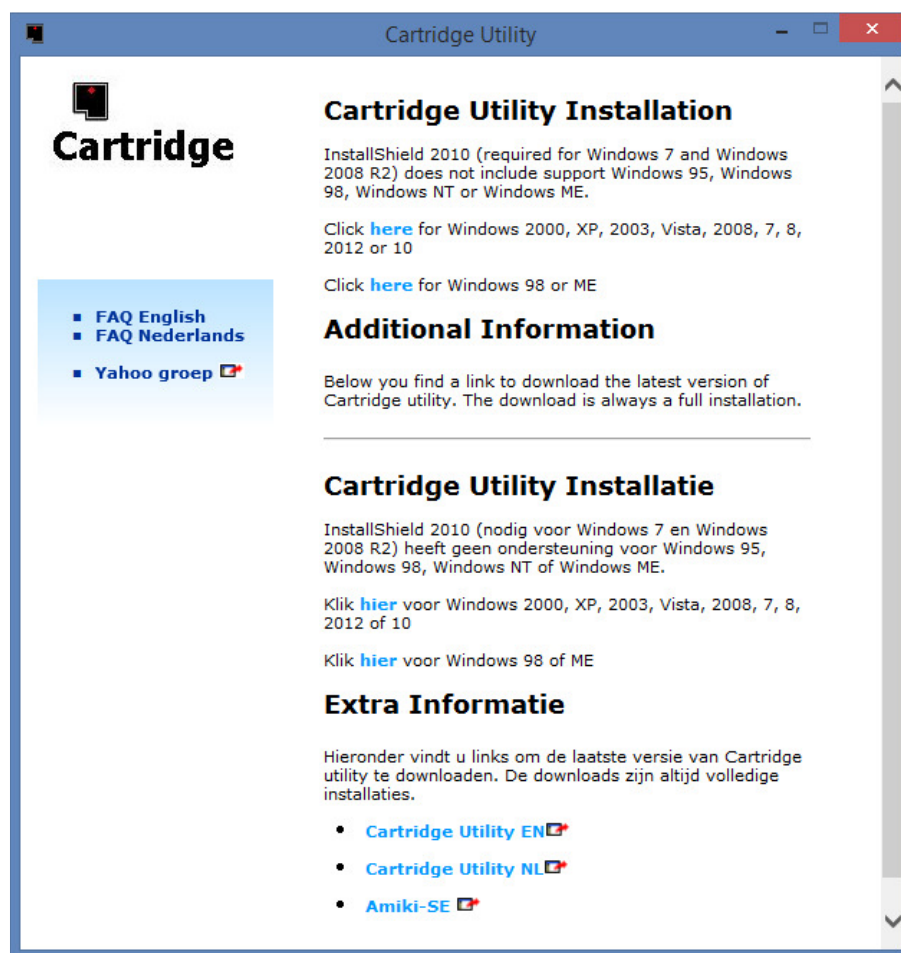

After clicking one of the bottom links, you will be asked if you want to run or save this program. Select Run. If Cartridge Utility has previously been installed on your computer, the following window will appear.

At this window select Modify and Next, then Next, then Install, and finally Finish.

After installing Cartridge Utility, you should find its icon on your desktop. Before running it, connect the Cartridge to a USB port on your computer using the USB connecting cable provided.

Running Cartridge Utility & formatting the Cartridge
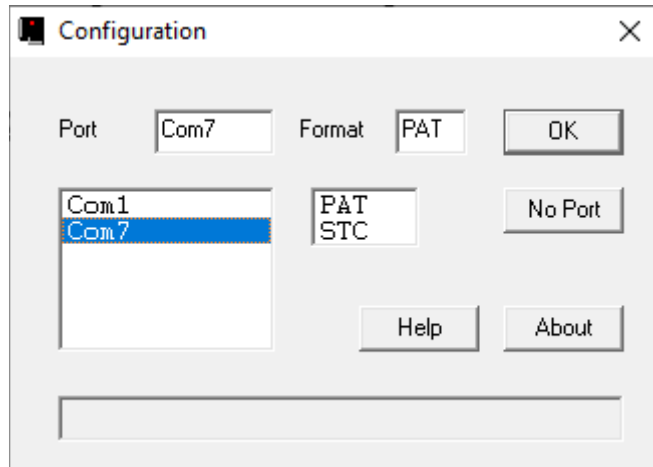
Cartridge Utility displays a list of available com port numbers, one of which is where the Cartridge is connected. If the background of the list pane is yellow, it means that no USB device has been detected. If the background is white, try the Com numbers in turn, selecting OK. It will then take a few seconds performing a more detailed check of the device. If the Cartridge is recognised, the window closes.

If you have the USB Brotherlink 4 Plus, make a note of the port number that the Cartridge is attached to. In DesignaKnit, this same port number must be entered in the setup window for your knitting machine, in order for interactive knitting to work.

Cartridge Utility then shows the first menu: Read, Write, Format, and Edit.
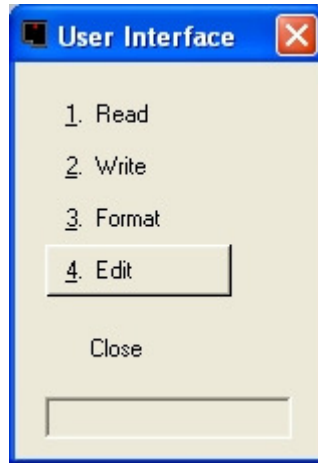
When using the Cartridge for the first time, select Format. It will take a couple of minutes, counting up to 127, then return you to the first menu. Your Cartridge is now ready to be used.

Uploading patterns from the knitting machine to computer

Before downloading patterns to your knitting machine, you may want to save any 900 series patterns that are already in the knitting machine memory onto your computer's hard drive. Proceed as follows…

1. Turn off the knitting machine. Insert the Cartridge (without it being connected to the PC) and turn the knitting machine on.

2. Press the knitting machine's Save button.

3. If the knitting machine's electronic window remains blank, it means that the Cartridge has not yet been formatted, so format it now by keying 888 and STEP. (When a cartridge is in the slot, the 888 procedure applies only to the cartridge and not to the knitting machine memory.) If the Cartridge has been used before, and contains patterns, formatting it is unnecessary and would delete all of the patterns.

4. The machine's window will show a number 1 to indicate that the Cartridge has been formatted. If there are no patterns in the memory of the Cartridge, the number 1 will flash, otherwise it will not flash.

5. Press the EXEC button. The SAVE light starts flashing. Any patterns that were previously in the Cartridge memory will be erased, and the 900 series pattern numbers currently in the knitting machine memory will be transferred to the Cartridge memory.

6. After some seconds, the SAVE light stops flashing, the knitting machine beeps, and the process is complete.

7. Turn the knitting machine off and remove the Cartridge. At this point the 900 series pattern numbers are in the Cartridge memory.

8. The next step is to transfer the Cartridge patterns to the computer hard drive. Connect the Cartridge to the PC and open Cartridge Utility.

9. Select the port number and click OK.

10. At the Read / Write / Format / Edit menu, select Read. Wait while the patterns are read from the Cartridge by Cartridge Utility. It will then ask you for a filename to store the batch of patterns. First navigate to the folder where you want to store the batch, for example Documents / DesignaKnit 9 / Stitch patterns. Enter something like My KH965

and click the Save button. At this point any 900 series patterns that are in the Cartridge memory become stored on your PC's hard drive as a single file.

11. In order to check the patterns that the uploaded file contains, follow the instructions in section titled 'Viewing the Cartridge Patterns in Cartridge Utility', with the following exception. Instead of opening the file DesignaKnit_USB_Bro4.bpm, open the file you have just saved.

Updating your DesignaKnit

In DesignaKnit please use Help / Web Updates / Program Update to make sure you have the latest version. In order for DesignaKnit 8 to work optimally with the USB Brotherlink 4 it is necessary to have version 8.09.00 or later installed. In order for DesignaKnit 9 to work optimally with the KH900, it is necessary to have version 9.03.00 or later installed.

Preparing DesignaKnit for downloading

When you want to use DesignaKnit to make a download file for the Cartridge for a particular knitting machine for the first time, it is necessary to tell DesignaKnit what cable link you want to use with that machine. This can be done as follows. Go into Stitch Designer and select Options / Method of Knitting. Select the correct knitting machine and click Setup. Set the link type to USB Brotherlink 4 (Plus), whether you have the Plus version of the cable or not.

In the following section, instructions are provided for downloading unintegrated and integrated stitch patterns. An integrated stitch pattern is one which has been positioned on a garment piece. There are two methods by which this can be done; either by dragging the outline of the garment piece over the stitch pattern in Stitch Designer, or by dragging the stitch pattern over the garment piece in Original Pattern Drafting. The filename and position of an integrated stitch pattern are stored independently for each piece in a shape file.

Downloading unintegrated patterns

Downloading unintegrated patterns to the KH900, KH965i, KH970…

For these machines, DesignaKnit places only one stitch pattern in the Cartridge. Simply open the stitch pattern in Stitch Designer and select Transfer / Download. Make sure the correct knitting machine is highlighted and click OK. Proceed to the section in this manual titled "Large Stitch Patterns".

Downloading unintegrated patterns to the KH270 & KH965…

For these machines, DesignaKnit places a batch of one or more stitch patterns in the Cartridge. Make a batch as follows.

1. In Stitch Designer, select Transfer / Download. Select the knitting machine you are downloading to.
2. At the Assemble Batch of Patterns window, select More Files until you have the number you want. To remove any you don't want, highlight them and click Cut. Finally select OK.
3. Proceed to the section in this manual titled 'Large Stitch Patterns'.

Downloading integrated patterns

Whichever method is used to integrate a garment piece with a stitch pattern, it is unlikely that row 1 of the garment piece will end up coinciding with row 1 of the repeating stitch pattern unit as shown on the Stitch Designer screen. It is also unlikely that the centre stitch of the garment piece will coincide with the centre stitch of the repeating pattern unit, though the interactive knitting instructions include centring each garment piece on the needle bed. DesignaKnit corrects this situation by automatically shuffling the pattern vertically and horizontally by the required number of rows and stitches before adding it to the file that Cartridge Utility will download. The end result is that the knitted piece exactly matches the display of the integrated piece on the Stitch Designer or Original Pattern Drafting screen.

The garment shaping cannot be downloaded to the knitting machine memory: only the stitch pattern is downloaded.

Downloading integrated patterns to the KH900, KH965i, KH970…

For these machines, DesignaKnit places only one stitch pattern at a time in the Cartridge. Simply open the shape file in Stitch Designer and select Transfer / Integrated Download. Make sure the correct knitting machine is highlighted and click OK. Place a tick next to the garment piece whose integrated stitch pattern you want to download, and select OK. Proceed to the section in this manual titled 'Large Stitch Patterns'.

Downloading integrated patterns to the KH270 & KH965…

For these machines, DesignaKnit places a batch of one or more stitch patterns in the Cartridge. Make a batch as follows.

1. In Stitch Designer, open the shape file that has been integrated and select Transfer / Integrated Download.

2. At the list of knitting machines, make sure that the required knitting machine is highlighted. (If necessary click Setup and set the link type to USB Brotherlink 4 (Plus) and click OK.). Click OK.

3. The Integrate window opens. In the left column, select the required garment piece(s). For the KH900, KH965i and KH970, only one piece may be selected, but for other models multiple pieces may be selected. The filename of the stitch pattern that has been integrated with the selected piece(s) should be shown in the middle column. Note the 900 series pattern number that has been assigned to each integrated garment piece, starting at 901. Make a note of these numbers as you will need them later. Click OK.

Large stitch patterns

Different knitting machines have different memory sizes. The memory space required for a given pattern is roughly proportional to the width in stitches multiplied by the number of rows.

For a given pattern or batch of patterns DesignaKnit calculates whether the total memory required will fit into the knitting machine memory. If there is insufficient memory a warning message is shown and the download will be cancelled. If downloading a batch, then some patterns should be removed from the batch.

It is also possible that a single large pattern is too large for the machine memory - in which case DesignaKnit will give a message showing how many sections it will be divided into, and it will ask which of those sections you want to download now. Dividing into sections is done

automatically - you do not have to decide how to divide the pattern. When a section number is chosen, a message shows how many rows must be knitted before the next section needs to be downloaded. Interactive Knitting will give a countdown and a message reminding when the current section has been knitted and the next section must be downloaded.

File is ready to download

A window like this will then appear. At this point the file DesignaKnit_USB_Bro4.bpm has replaced any previous version of that file. You can then proceed with writing the pattern(s) contained in that file to the Cartridge.
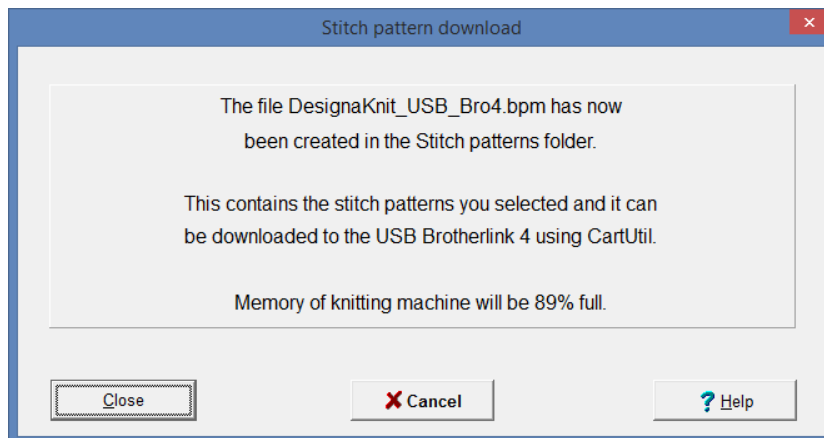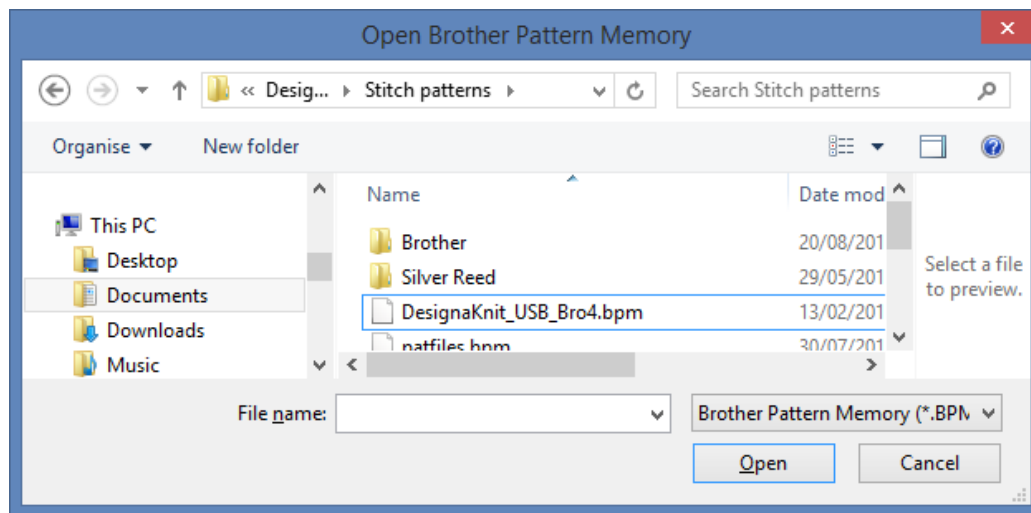

Writing patterns to the Cartridge

1. The next steps are done using the Cartridge Utility program. Make sure the Cartridge is connected by cable to a computer USB port, but NOT inserted into the knitting machine, and open Cartridge Utility. After selecting the port number, select Write at the main menu, because we are about to write the stitch pattern(s) to the Cartridge memory.
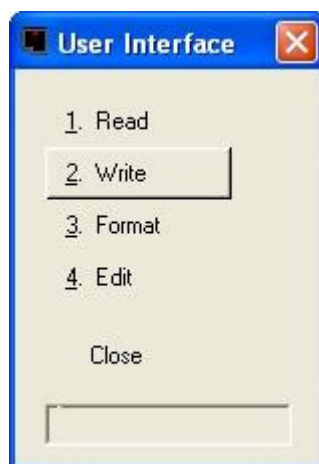

2. A file open window now appears, so that we can tell Cartridge Utility which pattern(s) we want to write to the Cartridge. Choose the file that DesignaKnit has just made. DesignaKnit 8 makes this file in the Documents / DesignaKnit 8 / Stitch patterns folder, and DesignaKnit 9 makes it in the Documents / DesignaKnit 9 / Stitch patterns folder. Navigate to this folder and select the file called DesignaKnit_USB_Bro4.bpm.

3. A counter will then proceed up to 127 as the pattern or batch of patterns is transferred from the .bpm file to the Cartridge memory.

## Viewing the Cartridge patterns in Cartridge Utility

You can check that the patterns have arrived safely in the Cartridge as follows.
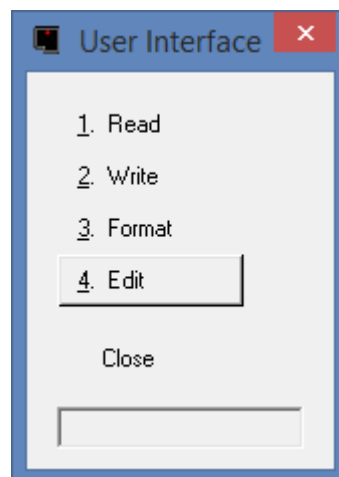
1. Select Edit from the main menu, then select Open, and select the DesignaKnit_USB_Bro4.bpm file as previously.
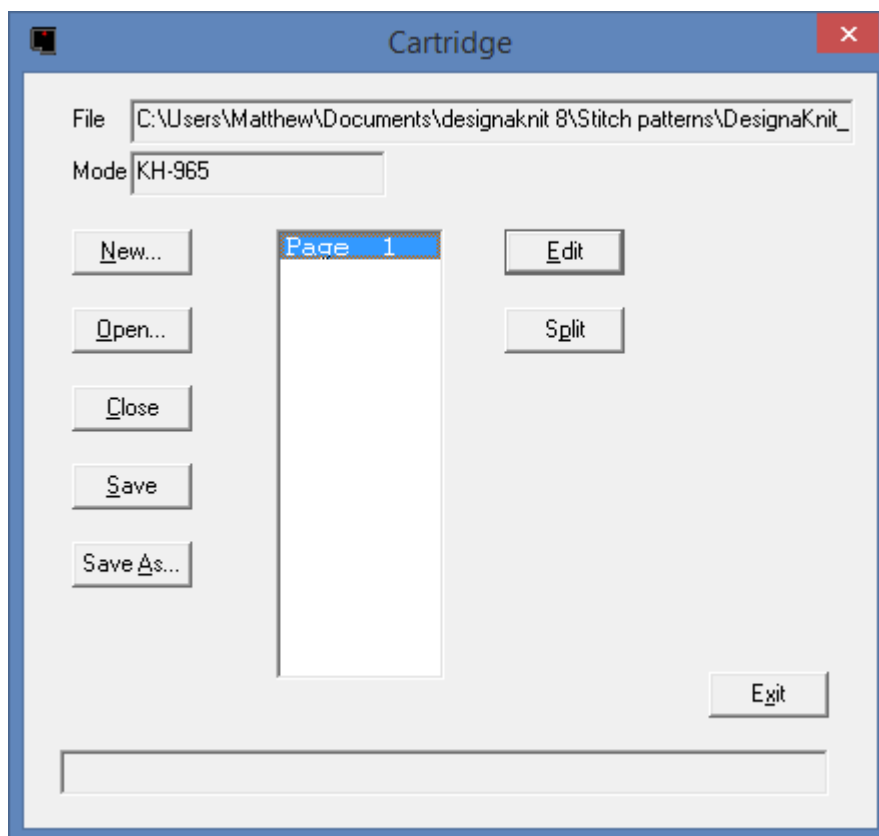
2. Click on Page 1 to highlight it, and then click the Edit button. This produces a list of all the stitch patterns that are in page 1 of the Cartridge's memory. Some knitting machine modes offer a choice of page numbers. DesignaKnit always places your stitch patterns in Page 1, so always select Page 1.
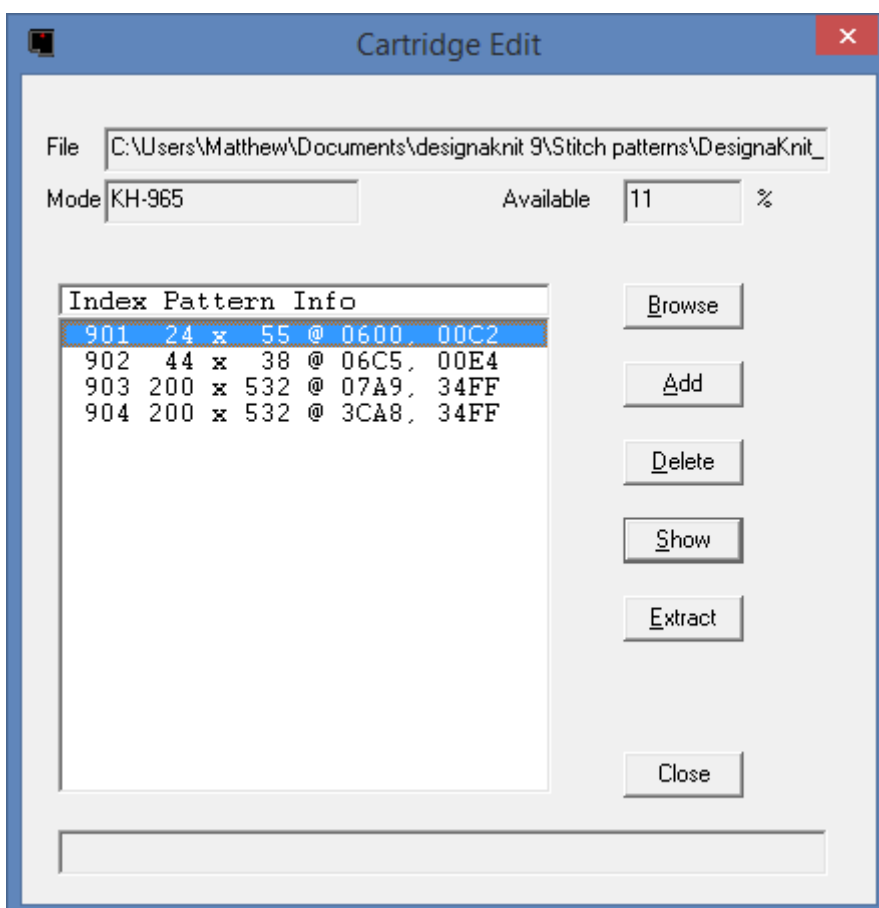
3. Highlight one of the patterns by clicking on it, and select the Show button. Patterns are shown in 2 colours, even if they are multicolour patterns or patterns of slip or tuck. What you are being shown is the needle selection translated into two colours. Jacquard and lace patterns may be hard to recognise here because they will have been expanded in DesignaKnit to include multiple carriage passes. Nevertheless, you will probably be able to work out which pattern is which. DesignaKnit's Interactive Knitting will provide full knitting information - what yarn colours or knitting techniques to use on a row-by-row basis.
4. You might notice that if your pattern contains more than about 200 rows, only the central portion of it will be shown here – but don't worry, the pattern is actually stored in the Cartridge.
5. Use the Previous and Next buttons to view any other patterns that are in the Cartridge memory.

Transferring patterns from the Cartridge to the knitting machine.

Disconnect the USB lead from the Cartridge. The patterns that have been written to the Cartridge can now be transferred from the Cartridge to the knitting machine memory. Do this in the same way that you would use a normal PPD cartridge: turn off the knitting machine power and insert the Cartridge into the knitting machine cartridge slot.

The procedure for the KH270 is different from other machines.

Transferring to the KH270

The pattern(s) are transferred in a batch into the knitting machine memory. In this procedure, any 900 series pattern numbers that are currently in the KH270's memory will be replaced by the new batch of patterns .

Check that the Cartridge is no longer connected to the computer USB port, and turn on the knitting machine power.

On the knitting machine console, press LOAD then EXEC, and wait several seconds for the beep.

Power off the machine and remove the Cartridge. Do not leave the Cartridge inserted in the knitting machine socket after transferring the patterns, as this may result in accidental mechanical damage to the Cartridge or to the machine.

Transferring to KH900, KH965, KH965i, KH970

The pattern(s) are transferred one by one into the knitting machine memory as follows. Check that the Cartridge is no longer connected to the computer USB port, and turn on the knitting machine power.

On the knitting machine console, press LOAD then STEP. If you downloaded 3 patterns, it shows the highest number, so 903 will be displayed at this point. The patterns in the Cartridge are numbered 901 to 903. The highest number possible is 998.

Enter 901 (to select the first of the patterns in the Cartridge) and press STEP again. The machine adds the new pattern as the next free number in its own pattern number list, and this new number will flash in the knitting machine display. Make a note of this number and press EXEC.

If the knitting machine console reports an error, this is likely to mean that there are already some 900 series pattern numbers in the machine memory, and there is not enough space for the pattern you are trying to add. It may be necessary to delete the other 900 series pattern numbers. There is no danger of deleting the built-in Brother patterns that have lower numbers.

Repeat LOAD then STEP for each remaining pattern that you want to transfer to the knitting machine memory, entering 902 for the second pattern and so on.

Power off the machine and remove the Cartridge. Do not leave the Cartridge inserted in the knitting machine socket after transferring the patterns, as this may result in accidental mechanical damage to the Cartridge or to the machine.

## Interactive Knitting with the USB Brotherlink 4 Plus.

Interactive Knitting can be done using the USB Brotherlink 4 Plus. If you have only the USB Brotherlink 4 without the Knitlink box and magnet arm, the extra parts can be purchased separately to convert your cable to the Plus model. (For more info see https://softbyte.co.uk/cablelinksbrother.htm)

Find the shorter cable that is attached at one end to the small black box that has a red spot. Connect the small 8-way connector at the other end of this cable to the set of 8 pins on the USB Brotherlink 4 box. Make sure that the notch on the connector, marked with the red circle below, is pointing upwards.

Fitting the Knitlink box to the knitting machine

1. Move the carriage to the middle of the bed.

2. Place the base of the KnitLink Arm with both layers of the fastening fabric still attached to its underside onto the carriage.

3. Place the KnitLink Box with both layers of the fastening fabric still attached to its underside onto the plastic top surface of your knitting machine. Direct the red spot towards you and the cable pointing away.

4. Make sure that the magnet in the end of the KnitLink Arm lines up with the red spot on the KnitLink Box and passes as closely as possible without actually touching when the carriage is moved.

5. The angle of the Knitlink Arm is adjustable. You can loosen the nut to adjust it, and tighten it when the arm is in the correct position.
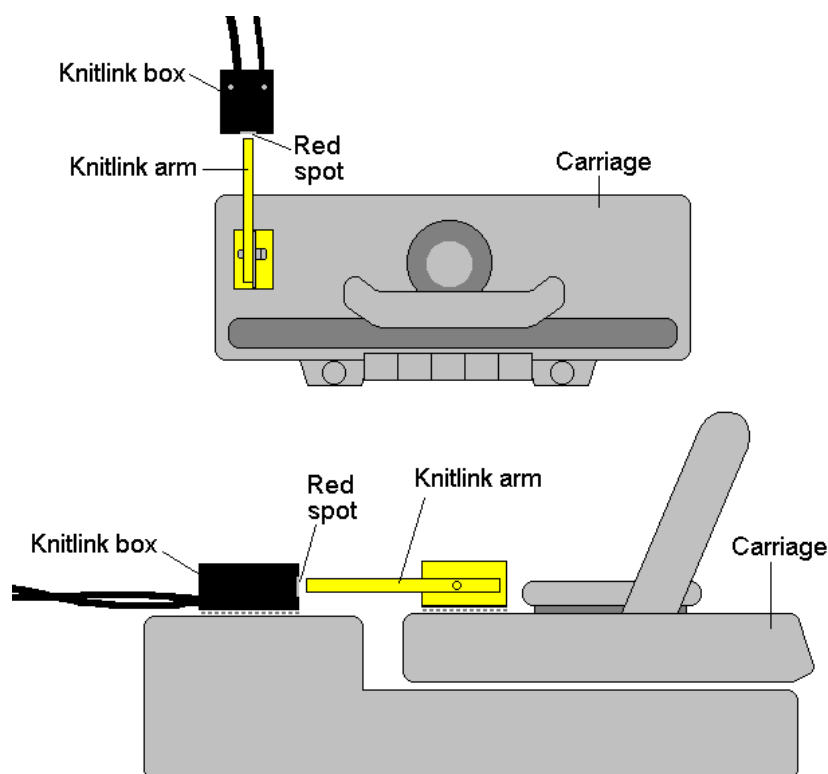
6. When positioned correctly, remove the backing strip of the fastening fabric from the base of the KnitLink Arm and fix to the carriage. Remove the backing strip of the fastening fabric from the base of the KnitLink Box and fix to the plastic top of the knitting machine.

7. Make fine adjustments to the positioning of the arm and box by altering the position in which their fabric fasteners engage. Aim for a clearance of two or three millimetres.

8. Press the arm base and box down firmly to make sure they stay in place.

9. Make sure that the KnitLink Arm does not catch on anything in its path when the carriage is moved, including charting devices.

10. Extra pieces of ordinary fastening fabric may be purchased and attached to other knitting machines, so that the KnitLink arm and box can be moved to whichever machine you need to work with.

11. To pack your knitting machine in its case, simply pull the KnitLink Box upwards so that the two layers of fabric fastener are separated. You might also need to detach the KnitLink Arm from the carriage in the same way.

The magnetic KnitLink Arm attaches to the knitting carriage with Velcro fabric fastener.

Knitters who have pacemakers fitted should be aware that the KnitLink Arm contains a magnet. It is not an especially strong magnet, but please observe the normal guidelines concerning the proximity of magnets to pacemakers.

Please now go to DesignaKnit's Interactive Knitting, and select Options / Knitting machine. Highlight your knitting machine and select the Setup button. Check that the link type for this knitting machine is set to USB Brotherlink 4 Plus. The Port number should be the same number that was selected in the Cartridge Utility program.

After starting Interactive Knitting using the amber or green traffic light button, the screen will be updated to show the next carriage pass (along with any instruction to do shaping or change yarn colour) each time the carriage passes the KnitLink box.

Updates to this manual

The document you are reading was updated in December 2021.

The most recent editions of cable link manuals may be found at
https://softbyte.co.uk/cablelinkmanuals.htm