

BERNINA L 850

User manual

made to create BERNINA



Dear Bernina Customer,

Congratulations on the purchase of your BERNINA Overlocker!

With BERNINA, you have selected a product that will impress you for years to come. For our family has made customer satisfaction our number one priority for more than 100 years. It is my personal goal to offer you Swiss innovation and precision at the highest level of perfection, future-oriented sewing technology, and comprehensive customer service. With the new Overlocker series, BERNINA is launching extremely modern models developed by our engineers in Switzerland. In addition to meeting the highest standards of modern technology, we have also focused on the design. After all, we are selling products to creative people like you, who place great emphasis on the language of design in addition to demanding the best quality. Thus, for the first time, our overlocker models have a free arm as seen in the classic BERNINA sewing and embroidery machines. The new world of overlocking guarantees you all of this and more. Enjoy creative sewing, embroidering and overlocking with BERNINA and stay informed about the various accessories. Visit us at www.bernina.com and allow yourself to be inspired to create new sewing projects. And don't forget to make use of service and maintenance offers from our highly trained BERNINA dealers. I wish you lots of pleasure and many creative hours with your new BERNINA.



H.P. Ueltschi

Owner

BERNINA International AG

CH-8266 Steckborn

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IMPORTANT SAFETY INSTRUCTIONS

DANGER!

To reduce the risk of electrical shock:

- Never leave the machine unattended as long as it is plugged in.
- Always unplug the machine from the electrical outlet immediately after using and before cleaning.

Protection against LED radiation:

- Do not view the LED light directly with optical instruments (e.g. magnifier). The LED light corresponds with protection class 1M.
- When the LED light is damaged or defective, contact your BERNINA specialist dealer.

To reduce risk of injury:

- Attention moving parts. To reduce risk of injury switch off the machine before servicing. Close the covers before operating machine.

WARNING

To reduce the risk of burns, fire, electric shock or injury to persons:

- Do not use the machine outdoor.
- Use this machine only for purposes as described in this manual.
- To operate the machine always use the supplied power cable. USA and Canada only: Do not connect power plug NEMA 1-15 to circuits exceeding 150 volt-to-ground.
- Do not use this machine as a toy. Increased caution is advised when the machine is used by or near children.
- The machine can be used by children older than 8 or by people with reduced physical, sensory or mental capabilities or if there is a lack of experience and knowledge how to operate the machine as long as they are supervised or have been given instruction concerning the responsible use of the appliance and are aware of the involved risks.
- Children are not allowed to play with the machine.
- Never operate this machine if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or dropped into water. Return the machine to your local authorized BERNINA dealer for examination or repair.
- Only use accessories recommended by the manufacturer.

- Don't use this machine when the ventilation openings are blocked. Keep the ventilation openings free from the accumulation of lint, dust and loose cloth.
- Never insert any objects into any openings of the machine.
- Do not operate the machine where aerosol products (sprays) or oxygen are being used.
- Keep fingers away from all rotating and moving parts. Special care is required around the needle, looper and knife area.
- The knife cover insert must be attached continuously while operating the machine.
- Neither pull nor push the fabric while sewing. This can cause needle breakage.
- Never use damaged needles.
- To disconnect, turn power switch to «0» and then remove the plug from the outlet. Always pull on the plug and not the cable.
- Disconnect the plug before removing or opening covers, oiling the machine or performing the cleaning or maintenance work described in this instruction manual.
- Cleaning and maintenance work must not be carried out by children unless they are supervised.
- This machine is provided with double insulation (except USA, Canada and Japan). Use only identical replacement parts. Take note of the instructions for the maintenance of double-insulated products.

Important information

Availability of the instruction manual

The instruction manual is supplied with the machine.

- Keep the instruction manual safe at a suitable place near the machine to have it at hand in case that you need to look up something.
- If you pass the machine to a third party, always include the instruction manual.

Proper use

Your BERNINA machine is conceived and designed for private household use. It answers the purpose for overlocking fabrics as it is decribed in this instruction manual. Any other use is not considered proper. BERNINA assumes no liability concerning consequences resulting from an inappropriate usage.

Equipment and scope of delivery

Example images are used in these operating instructions for the purposes of illustration. The machines shown in the images and the accessories shown therefore do not always match the actual items included with your machine. The supplied accessory can vary depending on the country of delivery. Accessories mentioned or shown which are not included in the scope of delivery can be purchased as special accessories from a BERNINA specialist dealer. Further accessories can be found at https://www.bernina.com.

For technical reasons and in order to improve the product, changes may be made to the equipment of the machine and the scope of delivery at any time and without prior notice.

Maintenance of double-insulated products

In a double-insulated product, two systems of insulation are provided instead of grounding. No grounding means is provided on a double-insulated product nor should a means for grounded be added to the product. Servicing a double-insulated product requires extreme care and knowledge of the system and should only be done by qualified service personnel. Only original spare parts should be used for service and repairs. A double-insulated product is marked with the words: «Double-Insulation »or «double-insulated».



The symbol may also be marked on the product.

Environmental Protection

BERNINA is committed to the protection of the environment. We strive to minimize the environmental impact of our products by continuously improving product design and our technology of manufacturing.



The machine is labeled with the symbol of the crossed-out wastebin. This means that the machine should not be disposed of in household waste when it is no longer needed. Improper disposal can result in dangerous substances getting into the groundwater and thus into our food chain, damaging our health.

The machine must be returned free of charge to a nearby collection point for waste electrical and electronic equipment or to a collection point for the reuse of the machine. Information on the collection points can be obtained from your local administration. When purchasing a new machine, the dealer is obliged to take back the old machine free of charge and dispose of it properly.

If the machine contains personal data, you are responsible for deleting the data yourself before returning the machine.

Explanation of symbols

⚠ DANGER	Designates a high-risk hazard which can lead to serious injuries or potentially even death if not avoided.
⚠ WARNING	Designates a medium-risk hazard which can lead to serious injuries if not avoided.
⚠ CAUTION	Designates a low-risk hazard which can lead to minor or moderate injuries if not avoided.
NOTICE	Designates a hazard which can lead to material damage if not avoided.
	**Tips** from BERNINA **sewing experts** are found next to this symbol.

2 My BERNINA overlocker

2.1 Introduction

Since the introduction of the overlocker for household use in the early 80s, they have become a standard sewing tool and are here to stay. Overlockers not only sew faster than conventional sewing machines, they also achieve more steps in just a single operation, which saves time. Seams are cut back, serged and hemmed simultaneously in one run.

With the differential transport, particularly fine fabrics or very elastic materials can be processed professionally.

Stitches varieties of 18 overlock stitches are available for sewing comfortably with tried-and-tested Swiss quality.

In addition to this instruction manual for your BERNINA L850 the following information products are enclosed:

The current version of your manual as well as many other information about the machine and the accessories can be found on our website www.bernina.com

2.2 BERNINA Quality control

All BERNINA machines are assembled with utmost care and are subjected to an extensive functionality test. The subsequent thorough cleaning does not exclude the possibility that thread remnants may still be found in the machine.

2.3 Welcome to the world of BERNINA

Made to create this is the slogan of BERNINA. Not only with our machines do we support you in the implementation of your ideas. In addition to the offers listed below, we offer you lots of suggestions and instructions for your future projects as well as the opportunity to exchange ideas with other sewing, quilting and embroidery enthusiasts. I wish you lots of pleasure.

BERNINA YouTube Channel

On YouTube we offer a wide range of how-to videos and support concerning the most important functions of our machines. Detailed explanations are also provided as for the various presser feet, so that your projects will succeed completely.

http://www.youtube.com/BerninaInternational

Provided in the languages English and German.

inspiration – the sewing magazine

Are you looking for ideas and instructions for great projects? In that case the BERNINA magazine «inspiration» is exactly what you need. «inspiration» offers extraordinary sewing and embroidery ideas four times a year. From seasonal fashion trends to trendy accessories and practical tips to decorate your home in an original way.

http://www.bernina.com/inspiration

The magazine is available in the languages English, German, Dutch and French. Not available in all countries.

BERNINA Blog

Fancy instructions, free sewing patterns and embroidery motifs as well as many new ideas: all this you can find in the weekly blog by BERNINA. Our experts give valuable tips and explain step by step how you can achieve the desired result. In the community you can upload your own projects and exchange experiences and ideas with other sewing and embroidering enthusiasts.

http://www.bernina.com/blog

Provided in the languages English, German and Dutch.

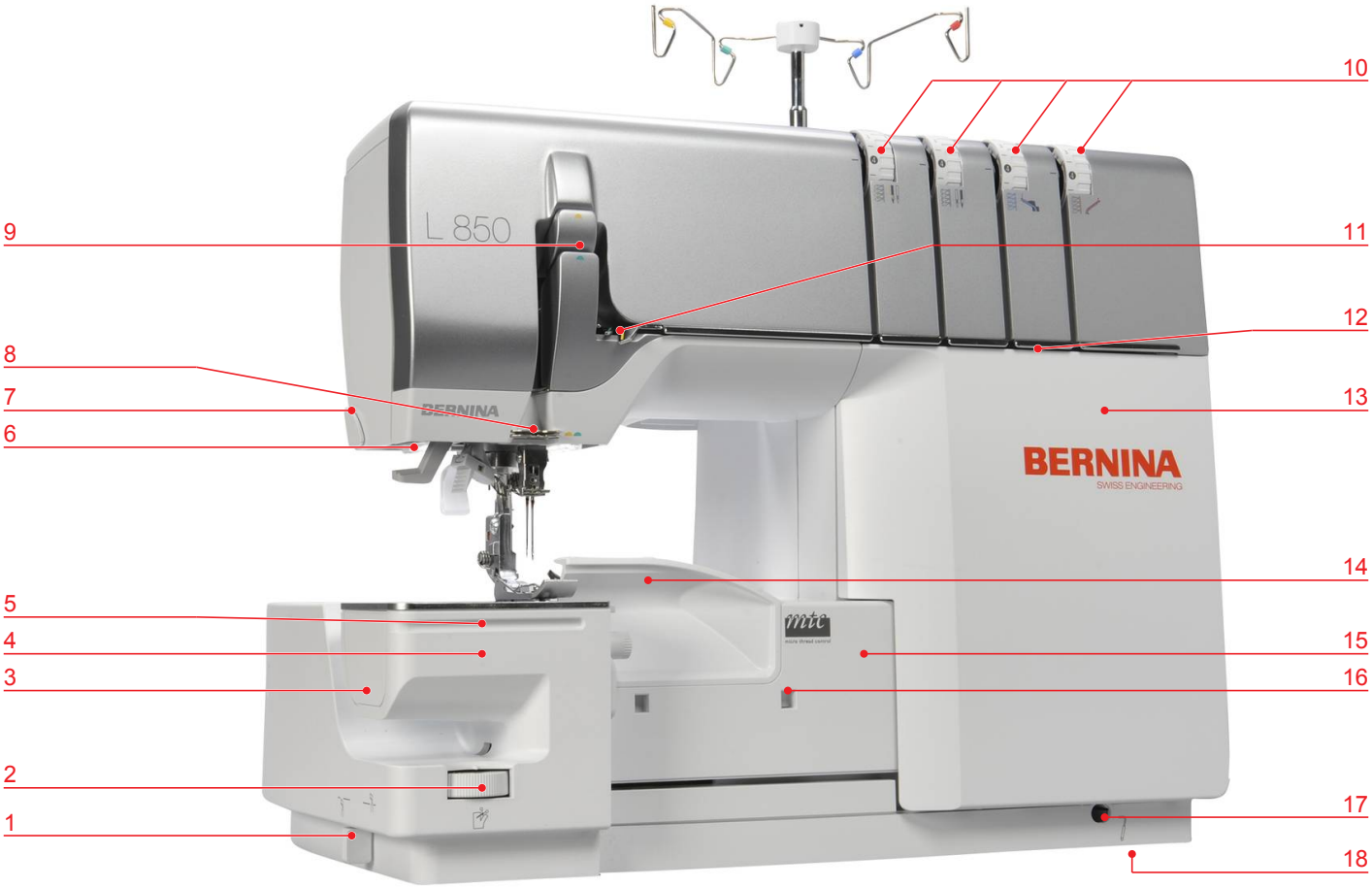
BERNINA Social Media

Follow us on the social networking to learn more about events, thrilling projects as well as tips and tricks all about sewing, quilting and embroidering. We will keep you informed and we are looking forward to presenting you the one or the other highlight from the world of BERNINA.

http://www.bernina.com/social-media

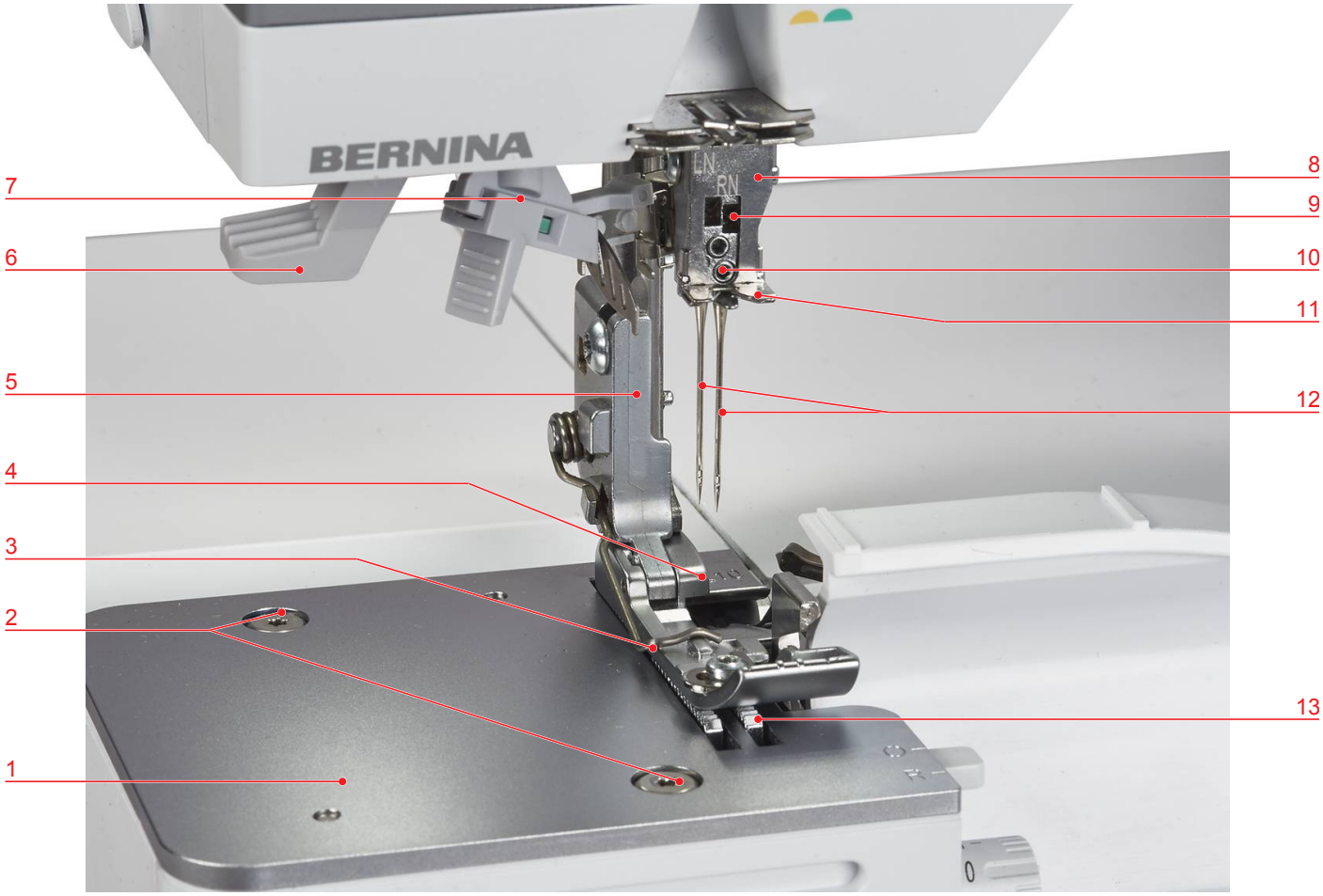
2.4 Machine overview

Overview - Front



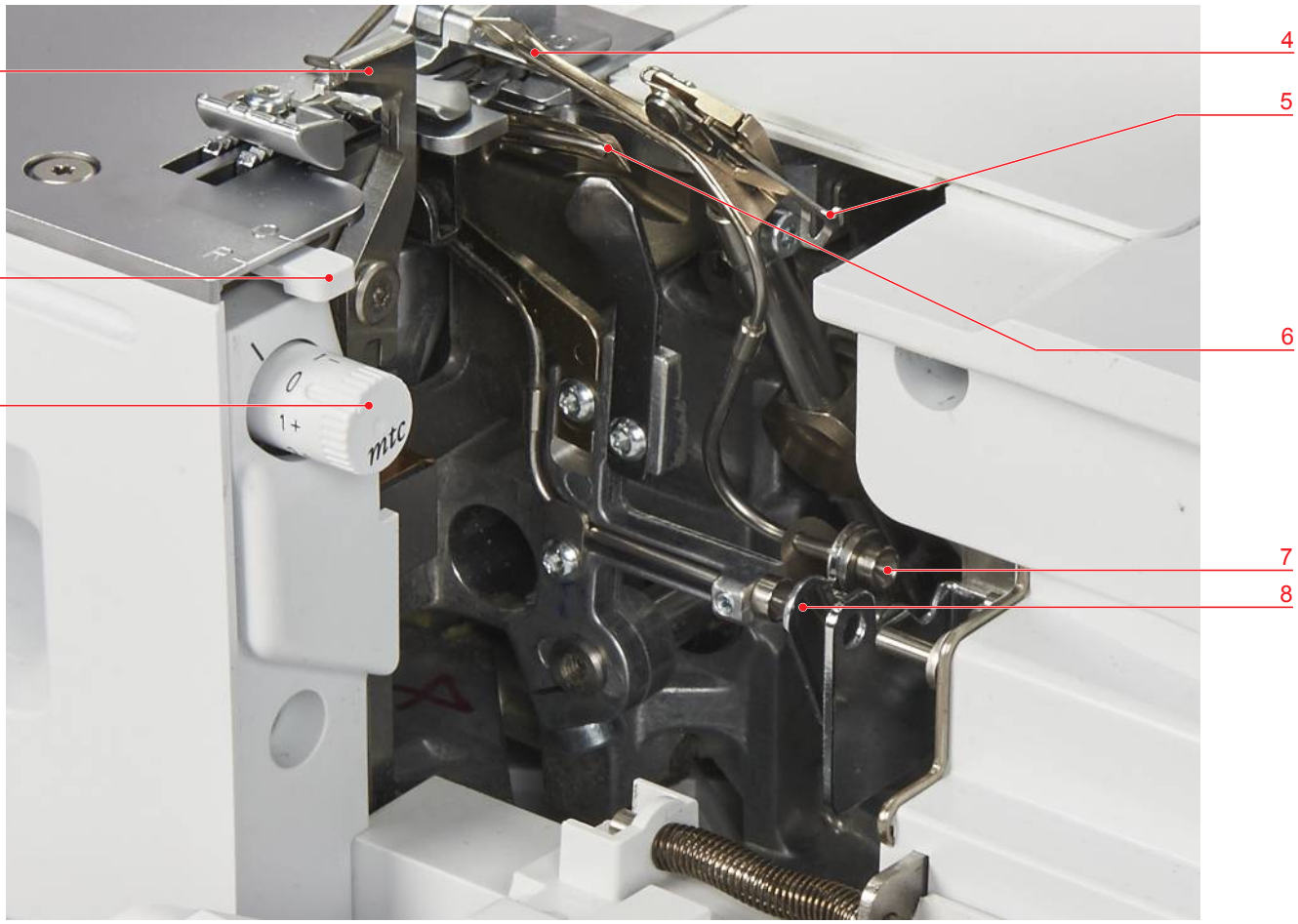
1	Knife on/off	10	Thread tension adjustment dial
2	Cutting width dial	11	Thread deflection fingers
3	Freearm cleaning cover	12	Thread guiding plate
4	Freearm	13	Threader cover
5	Guide rails	14	Knife cover insert
6	Sewing light LED	15	Looper cover
7	Thread cutter	16	Cut-offs bin snap-in opening
8	Thread guide on the headframe	17	Free Hand System connection
9	Needle thread take-up lever cover	18	Suction feet

Overview - Needle area



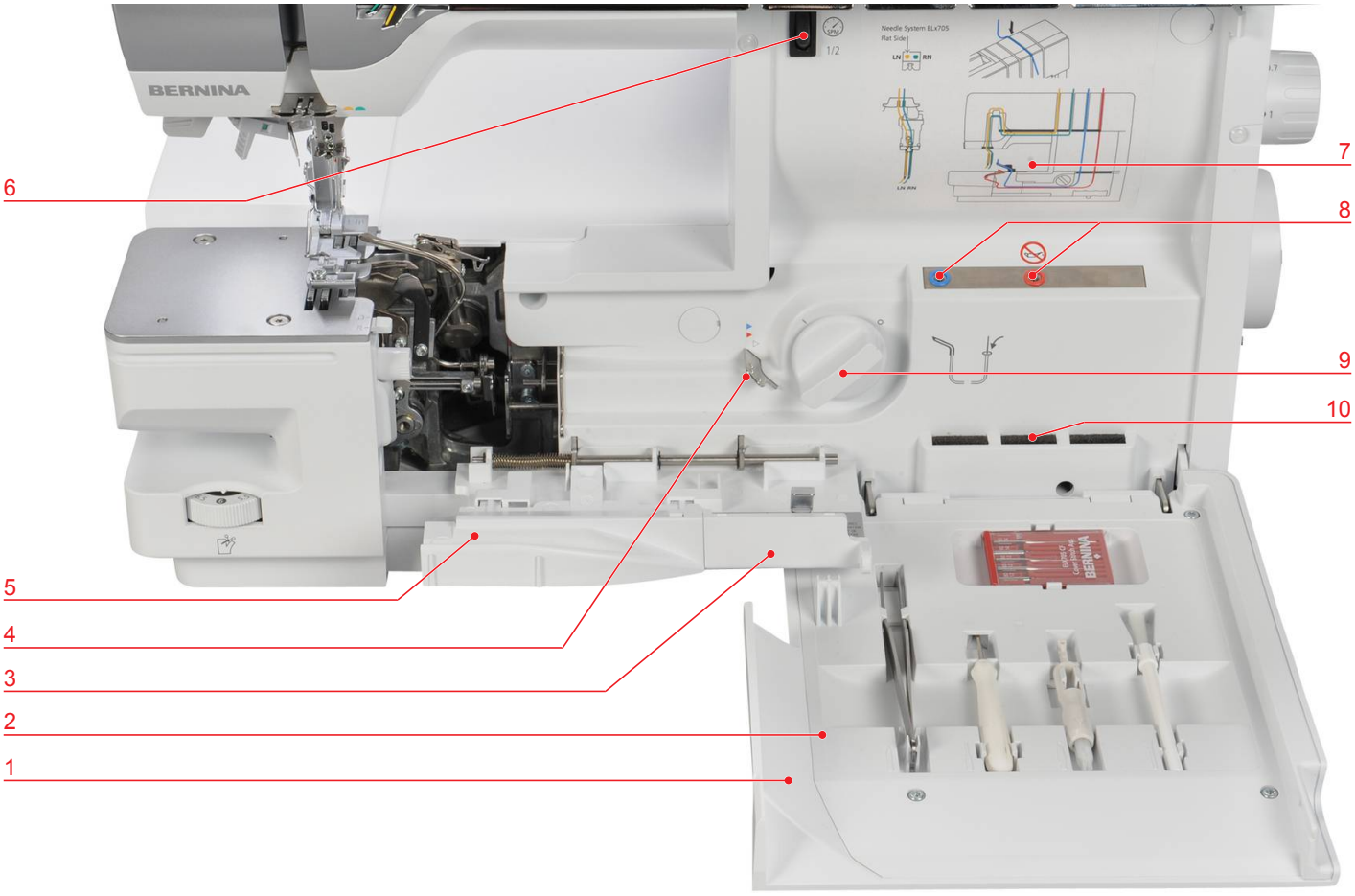
1	Needle plate	8	Needle holder
2	Stitch plate screws	9	Needle checking window
3	Presser foot	10	Needle screws
4	Standard overlock presser foot	11	Thread guide on the needle holder
5	Presser foot shaft	12	Needle ELx705 CF
6	Needle threader lever	13	Feed dog
7	Needle threader selector		

Overview - Looper area



1	mtc micro thread control dial	5	Upper looper converter
2	Rolled hem selection lever	6	Lower looper
3	Knife	7	Upper looper thread air pipe
4	Upper looper	8	Lower looper thread air pipe

Overview - Threading area



1	Threader cover	6	Speed selection switch
2	Accessory mounting bracket	7	Threading chart
3	Looper cover	8	Air threader nozzles
4	Air threader circumvention	9	Air threader connector on/off
5	Knife cover insert	10	Needle pad

Overview - Side panel



1	Transport carry groove	5	Air vent
2	Handwheel	6	Foot control connection
3	Differential feed dial	7	Power switch
4	Stitch length dial	8	Power cable connection

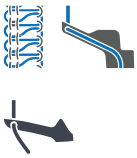
Overview - Back panel

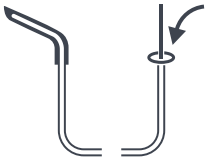


1	Thread stand	6	Thread cutter
2	Spool pin	7	Presser foot lifter
3	Carry handle	8	Presser foot release Lever (red)
4	Retractable thread guide	9	Guide rails
5	Presser foot pressure wheel		

Symbols on the machine

The symbols on the machine are for your guidance and give assistance when adjusting settings and threading the machine.

	LN (Left Needle)	Left needle thread
		Thread path yellow
	RN (Right Needle)	Right needle thread
		Thread path green
	UL (Upper Looper)	Upper looper thread
		Thread path blue
	LL (Lower Looper)	Lower looper thread
		Thread path red
		Thread path not used
	ULC (Upper Looper Converter)	Upper looper converter activated/deactivated
	CW (Cut Width)	Cutting width
	SL (Stitch Length)	Stitch length
	DF (Differential Feed)	Differential feed
	O/R (Overlock/Rollhem)	Rolled hem selection lever

		Knife on/off
mtc	mtc (micro thread control)	mtc micro thread control
	FHS (Free Hand System)	Knee lifter
1  1/2		Adjusting speed
		Presser foot pressure
		Air threader

Tab. 1: Printed characters and symbols

Default values

The basic values of the machine are chosen so that the settings are suitable for most typical applications.

4 ● The basic values are marked on the machine with a gray dot.

The actual values may differ from the stitch chart depending on the fabric, thread and stitch and may need to be adjusted to the result of the sewing sample.

2.5 Overview - standard accessories

Accessories

The machine is ready for operation with the supplied accessories. Special sewing applications may require special accessories.

Visit www.bernina.com for more accessories information.

Figure	Name	Purpose
	Dust cover	To protect the machine from dust and contamination.
	Power cable	To connect the machine with the power supply system.
	Foot control	To start and stop the machine. To control the sewing speed.
	Cut-offs bin	For collecting scraps.
	Knife cover insert	To protect the fingers and to deflect the fabric cut-offs during the sewing process.
	Slide-on table	To increase the sewing surface.
	Free Hand System (FHS)	To raise and lower the presser foot.

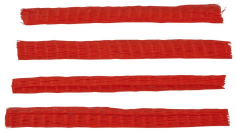
Figure	Name	Purpose
	Standard presser foot overlock #L10	For all overlock stitches. For general sewing projects. To sew on tape up to a width of 12 mm.
	Right seam guide	For an even fabric trim. To sew along a folded edge, without trimming, e.g. for flat joining seams. To guide while creating decorative pintucks with 3-thread overlock.

Accessories in the threader cover

The most frequently used accessories while sewing are stored in the threader cover and ready at any time.

Figure	Name	Purpose
	Needle set ELx705 CF (3 x Nr. 80, 2 x Nr. 90)	In different sizes for the most widely used applications.
	ScrewdriverScrewdriver, hex 1,5 mm	For loosening/tightening the fixing screws on the needle holder.
	Brush	For cleaning the needle-/ looper area.
	BERNINA tweezers	For gripping the thread in tight positions.
	Needle threader/inserter	For threading, inserting and removing the needle.

Accessories box

Figure	Name	Purpose
	Accessories box	To store the supplied accessories as well as the optional accessories.
	Overlocker oil	For oiling the looper components.
	Spool stabilizer (4 x)	To stabilize the thread cone on the thread stand.
	Spool net (4 x)	To support even unwinding of nylon, rayon, silk or metallic threads from the spool.
	Spool disc (4 x)	For evenly pulling thread from a small thread spool.
	Torx T10 screwdriver	To loosen/tighten the stitch plate screws.
	Threading wire	To thread the looper threads manually in the air threader pipe.

3 Sewing preparations

3.1 Preparing the machine

A stable table with a secure stand is a good prerequisite for optimal sewing results. Ergonomics on the sewing table is an important point to protect the muscles and joints of the back, shoulder, arms and hands.The recommendation is to match the table height and body posture to each other.Avoid staying longer in the same position.The machine can also be operated standing up.

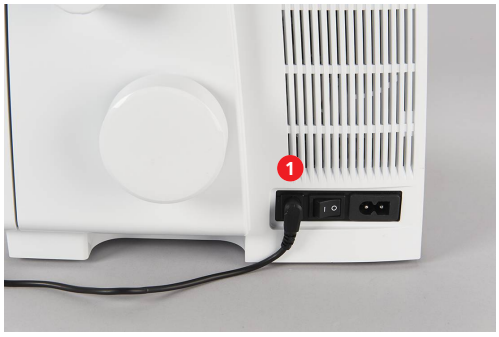
> Place the machine on a stable table.
> Sit comfortably in front of the machine.
> Hold the arms 90 ° across the table, with your fingertips to the machine.
  – The fingertips should touch the stich plate.

Connect the foot control

> Unwind the foot control cable out to the desired length and then reattach the cable to the clamping modules.
  – To ensure the cable stays on the desired side.

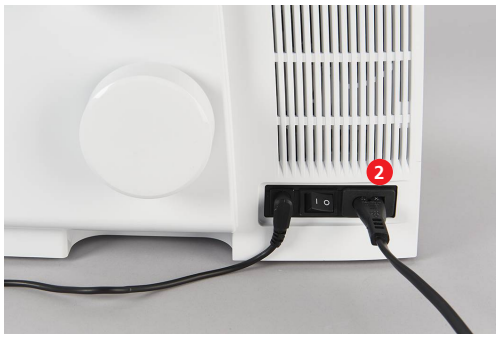


> Insert the cable of the foot control into the foot control connection (1).



Connecting the machine

> Insert the power cable into the power cord connection.



> Plug the power cable into the connection.

Only USA/Canada

The machine has a polarized plug (one contact is wider than the other). To reduce the risk of electric shock, the plug can only be plugged into the socket in one way. If the plug does not fit into the socket, turn the plug. If it still does not fit, contact an electrician to install an appropriate outlet. Do not modify the plug in any way.

Switching the machine and sewing light on/off

By switching the machine on/off the sewing light is also switched on/off. After switching the machine off, the sewing light keeps on glowing for a short while.



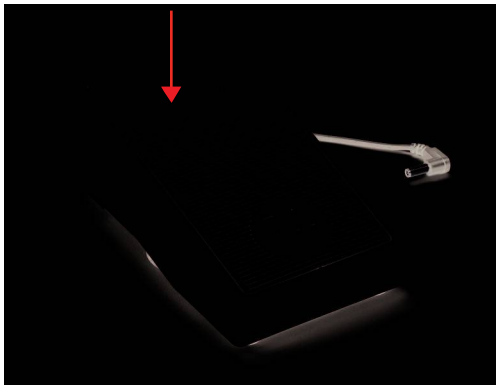
> To switch the machine on, set the main switch to «I».
> To switch the machine off, set the main switch to «0».

3.2 Foot control

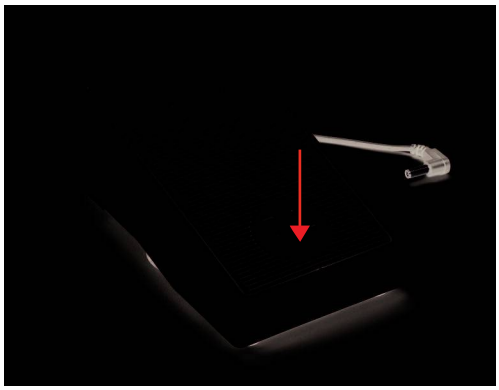
Press the foot control

Pressing the foot control moves the needle and knife. The sewing speed is controlled by applying more or less pressure to the foot control. The maximum sewing speed (pressing the foot control all the way down) can be set. (see page 67)

> To start the sewing process, press the foot control down.
> To stop the sewing process, release the pressure on the foot control.



> To raise/lower the needle sink the heel back on the foot control «Back-kick».



The «Back-kick» is deactivated when the machine covers are open.

Acoustic signal

If the sewing preparation of the machine or the air threading process is not guaranteed, an acustic signal sounds by pressing the foot control. (see page 99)

> Lower the presser foot.
> «Back-Kick» to set needle in topmost position.
> Close the looper cover and the threader cover.

3.3 Handwheel

By turning the handwheel counterclockwise, several activities can be performed.



> Slow, precise placement of the needle.
> Move looper.
> Move knife.
> Mechanically couple the air threader.

3.4 Machine covers

Machine covers prevent injuries from moving components and protect sensitive parts from damage. All covers must be fitted or closed prior to sewing.

- Threader cover
- Looper cover
- Knife cover insert

The machine covers must be open to thread the looper thread or access the accessories integrated into the threader cover. A safety switch blocks sewing operations from occuring when the machine covers are open. A needle movement is still possible in some cases. (see page 70)

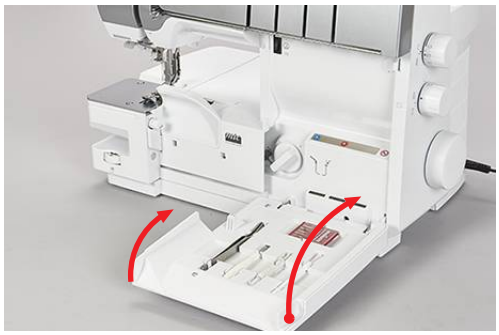
Open/close the threader cover

The threader cover protects the inserted looper threads during sewing operations. The accessory holder on the inside of the threader cover provides quick access to the most frequently used accessories.

> To open the threader cover, hold the groove and lower it forwards.



> To close the threader cover, lift it upwards until it clicks into place.



If the threader cover cannot be closed completely, the air threader connector On/Off may still be switched on.

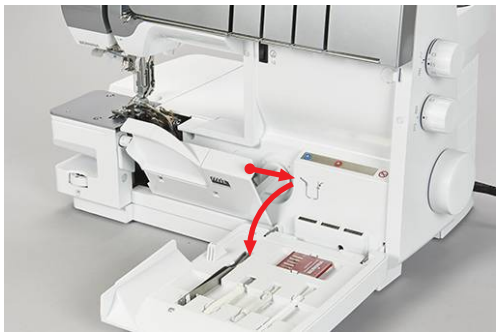
Open/close the looper cover

The looper cover with integrated knife cover insert protects against injuries caused by the movement of the looper and knife movement as well as against dust and fabric scraps.

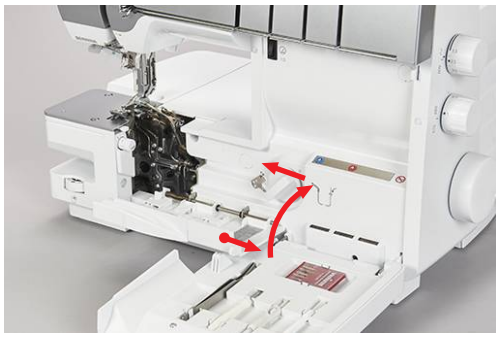
Prerequisite:

- The threader cover is opened.

> To open the looper cover, push the tabbed handle to the right and then lower it to the front.



> To close the looper cover, lift the tabbed handle upwards and let it slide back to the left slowly.



3.5 Thread stand

All sizes of thread cones, foot spools and household spools may be used.

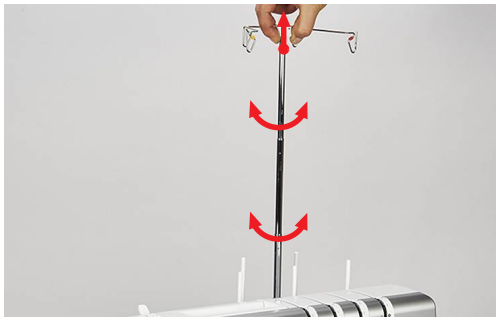


Preparing the retractable thread guide

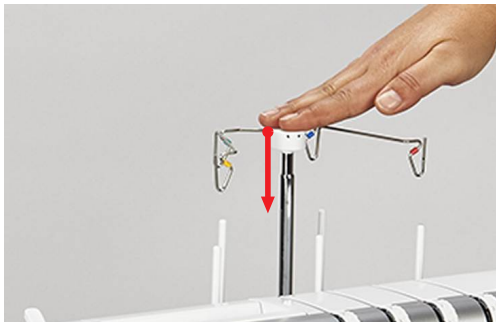
The extendable thread guide is placed on the spool stand. It ensures even unwinding of the thread from the thread cones. Each thread is fed through a wire guide that sits directly over the thread cone. These thread guide wires are color-coded according to the threading path.



> Hold the thread guide attachment and pull up until it stops.
> Turn the thread guide attachment to the left and right until both joints latch in.
  – The outer thread guide wires are parallel to the machine front.



> Engage the thread guide attachment by pressing back.



Attaching the spool stabilizer

When using large thread cones, the spool stabilizer helps to stabilize the thread cone on the thread spool pin.



> For extremely conical spools, place the spool stabilizer onto the thread spool pin with the pointy end up.
> For slightly conical spools, place the spool stabilizer onto the thread spool pin with the pointy end down.



Place the spool disc

Spool discs hold the thread spool in place for proper release of thread from the spool and to stabilize it.



Using the spool net

The spool net prevents polyester or bulky threads from sliding down from the spool.



> Slip the spool net from above over the thread spool and pull the thread end up.



A spool net is recommended for the following threads:

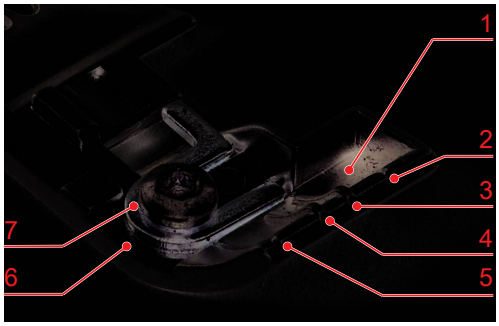
- Thin threads that easily slide from the spool
- Overlock yarn
- Nylon, rayon, silk or metallic threads

3.6 Presser foot

Standard overlock presser foot

The standard overlock presser foot is already attached to your machine and is suitable for all stitches made by this machine.





1	Front of the presser foot	5	1 cm for marking the cutting line
2	Cutting line of the knife in the default value	6	1/2 inch for marking the cutting line
3	Right needle position (RN)	7	Tape Guide
4	Left needle position (LN)		

Adjusting the presser foot up/down

The presser foot lifter is located on the rear of the machine.

> Pull the presser foot lifter lever up until it engages.
  – The presser foot remains in the upper position.
  – The thread tension is released.



> Lower the presser foot lifter.
  – The machine is ready for sewing.
  – The thread tension is active.



Front foot lift

By lifting the presser foot lifter above the latching position, the space between the stitch plate and presser foot increases.

This allows better placement of thick layers of fabric beneath the presser foot.

Prerequisite:

- The presser foot is up.

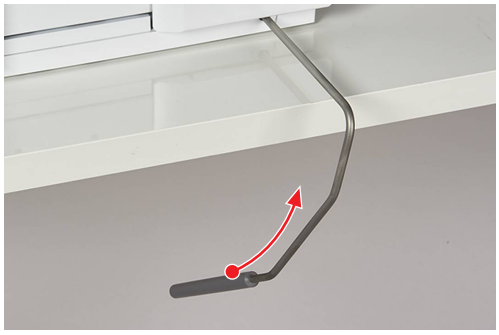
> Pull the presser foot lifter up over the upper latching position and hold it.
  – The presser foot lifts another 3 - 4 mm and the presser foot front is lifted.

> Release the tension on the presser foot lifter.
  – The presser foot is held in the latching position.



Raising/lowering the presser foot using the Free Hand System (FHS)

Temporarily lifting the presser foot using the Free Hand System allows the sewing project to be repositioned using both hands.



Prerequisite:

- The knee lifter of the Free Hand System is attached. (see page 41)

> To raise the presser foot temporarily, press the knee lever with the knee to the right and hold it in place.
> To lower the temporarily raised presser foot, slowly release the pressure on the knee lever.
> To lower the already engaged presser foot, press the knee lever all the way to the right and release slowly.

Swing the presser foot in/out

Swinging out the presser foot makes changing the needle and threading the needle easier.

Prerequisite:

- The needles are at top position.
- The presser foot is up.

> With a little pressure on the tip of the presesr foot, swing the presser foot sideways to the left.



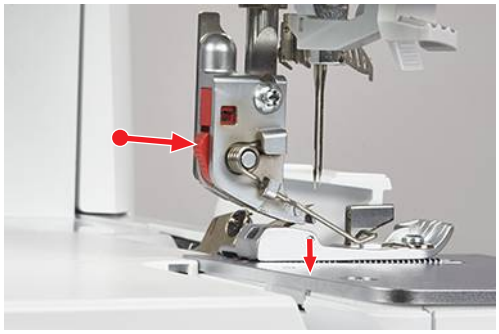
> To set the presser foot in the sewing position, lower the presser foot lifter or swing the presser foot sideways to the right.

Changing the presser foot

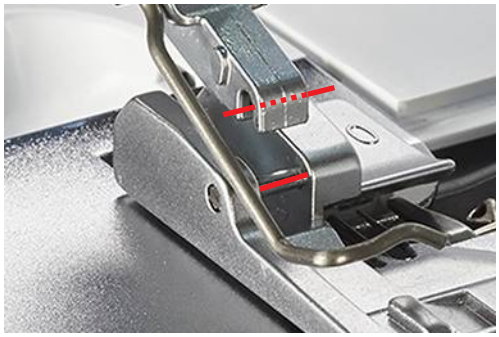
Prerequisite:

- The needles are at top position.
- The presser foot is up.

> Press the release button on the rear side of the presser foot shaft.
  – The presser foot is released.



> Lift the presser foot spring slightly and remove the presser foot .
> Lift the presser foot spring slightly and place the new presser foot beneath the shaft groove so that the shaft groove lies exactly above the presser foot pin.



> Lower the presser foot shaft carefully until the shaft groove engages with the presser foot pin.



> Lift the presser foot.

3.7 Needle area

Needle holder

The needle holder can hold two needles.The machine is designed for needles of the ELx705 system. Needle sizes between 70 – 90 are to be used for this machine. (see page 48)

- Left Needle (LN)
- Right Needle (RN)

The needle holder screws must always be tightened, even if no needles are inserted, so falling out of the needle holder screws is excluded by vibration.Correctly inserted needles are not at the same height.





«LN» left needle for overlockstitches; the thread path is marked yellow.



«RN» right needle for overlockstitches; the thread path is marked green.

Changing the Needle

The needle threader/inserter is located in the accessory holder on the threader cover. Using the needle inserter is recommended when changing the needle. It prevents the needle from falling into the feed dog area. The needle screws must always be tightened, even when a needle is not inserted.

NOTICE

Damage by overtightening the needle screws

The needle screw treads may be damaged. Repair by a BERNINA dealer will be necessary.

> Do not overtighten the needle screws.

Prerequisite:

- The needles are at top position.
- The presser foot is up and swung out.

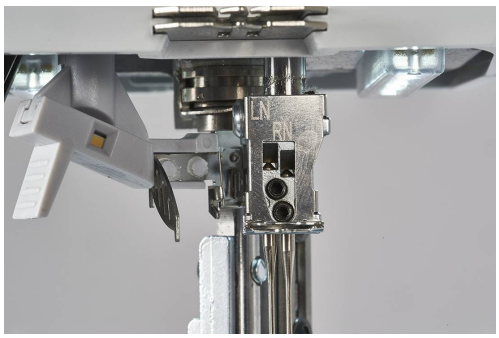
> Guide the needle inserter from below over the needle and loosen the needle screw using the supplied hex screw driver.



> Remove the needle downwards and place it in the needle box or needle pad behind the threader cover.
> Insert the new needle with the flat side to the back into the needle inserter.



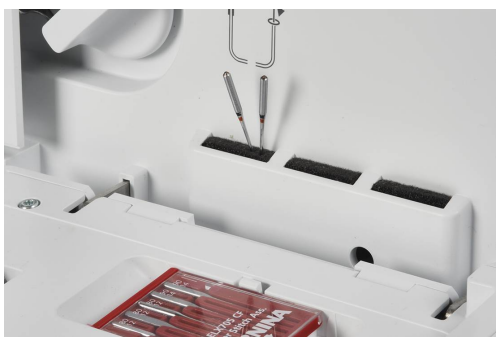
> Push the needle up as far as it will go.
> Check the needle position in the needle checking window.



> Tighten the needle screws.

Needle pad

The needle pad is located behind the threader cover and is used to store needles that are not being used.



Using the Built-in Needle Threader

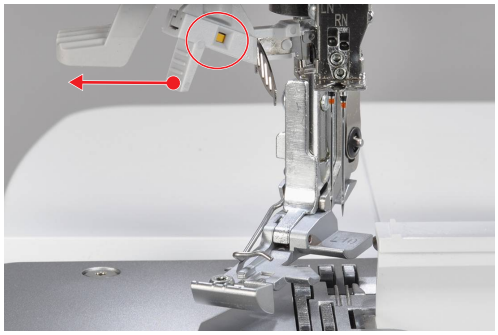
The built-in needle threader serves as the fastest threading method for the needle size 80 – 90 and can be used for the left.

Threading the needles

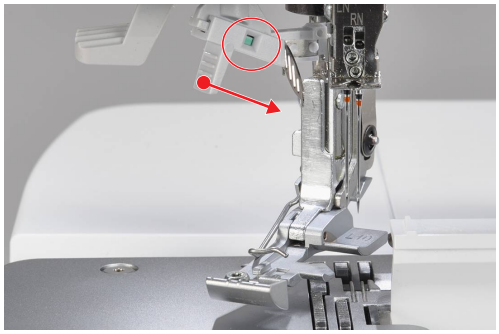
Prerequisite:

- The presser foot is swung out.
- The desired needle is inserted.

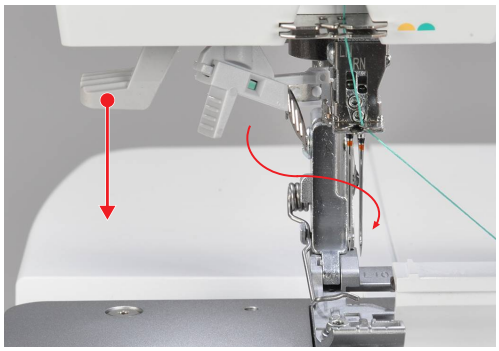
> Move the needle threader selector to the left.
  – The yellow marking can be seen and the built-in needle threader is ready for the left needle.



> Move the needle threader selector to the right.
  – The green marking can be seen and the built-in needle threader is ready for the right needle.



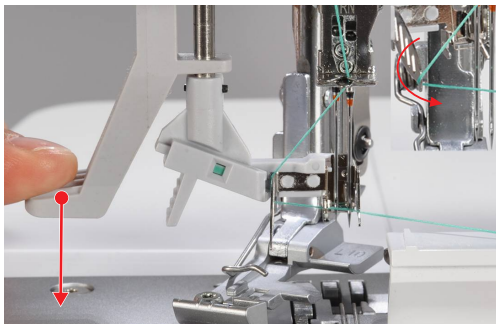
> Press the needle threader lever down and keep pressed.



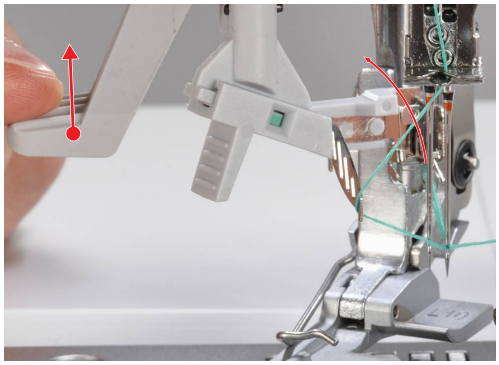
  – The threader head hook is pushed through the prepared needle eye.

> Pull the thread around the thread deflector and through the guide slots at the threader head.

> Extend the thread to the back on the right.



> Release the pressure on the needle threader selector and let it go back to its initial position.



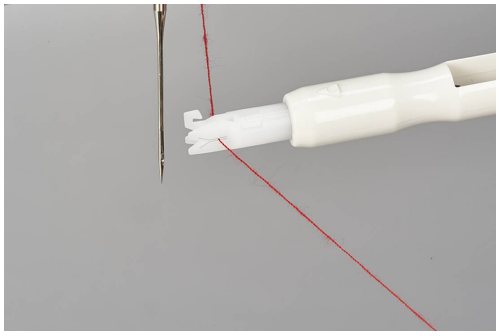
– The thread is pulled through the needle eye by a backward movement of the threader head and behind the needle holder a thread loop is formed.
– Avoid holding the thread too tightly, otherwise the thread loop cannot be formed.

> Pull the thread loop backwards using the needle threader/inserter.
> Place the thread beneath the presser foot to the back left.

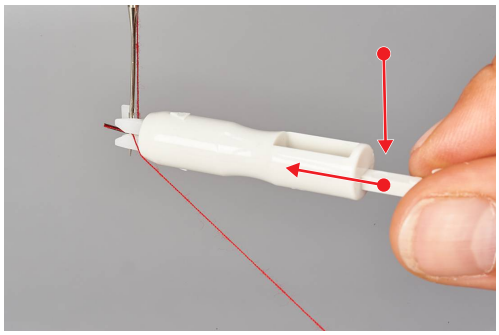
Threading the needle manually

With the needle inserter/threader every needle can be threaded easily.

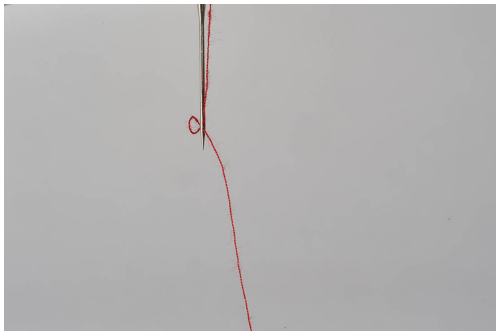
> Hold the needle threader so that the triangular mark points upwards.
> Pull the thread horizontally through the Y-shaped slot and hold the end of the thread.



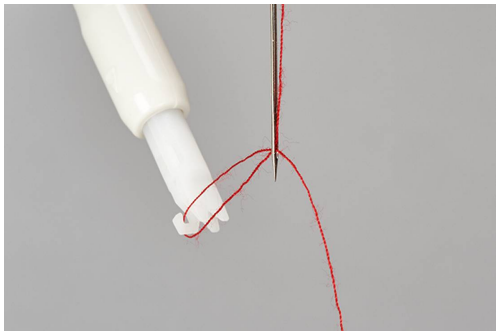
> Place the needle threader with the triangular mark facing upwards on the needle and glide along the needle with light pressure up to the eye.
  – The metal pin presses the thread through the eye of the needle.



> Release the pressure and remove the needle threader from the needle.
  – A thread loop has formed.



> Use the needle threader hook to move the loop of thread to the side and place the thread beneath the presser foot to the left and back.



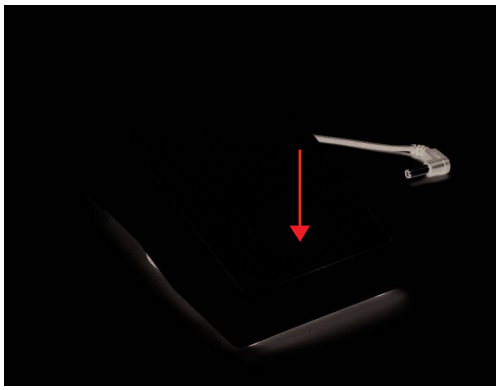
Positioning the needles up/down

The needles always stop in the top position when stopping the sewing process. Turning the handwheel changes the needle position and the top position is not secured. The «Back-kick» is deactivated when the machine covers are open.

The top needle position is required for the following actions:

- Changing the needle
- Threading the needle
- Swing the presser foot out
- Activating the air threader pipes

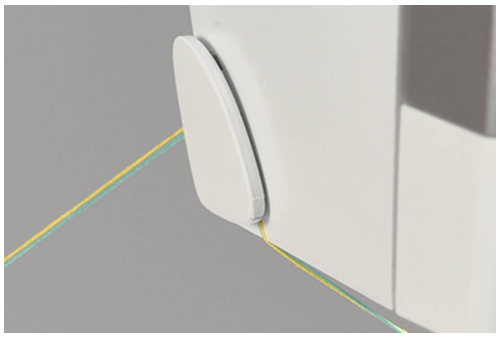
> Back-kick on the foot control.
  – The needles are positioned up/down.



3.8 Sewing Assistance

Using the thread cutter

The thread cutter is used to cut the thread chain.



> Pull the threads/thread chain down from the front into the thread cutter.
  – The threads/thread chains are held after cutting and are ready for sewing.



Attaching/removing the knee lifter (FHS)

Temporarily lifting the presser foot using the Free Hand System allows for the sewing project to be positioned using both hands.

> To attach the knee lifter, push it horizontally into the knee lifter connection as far as it will go.



> To remove the knee lifter, remove it from the knee lifter connection with a little pull without swinging the knee lifter sideways.

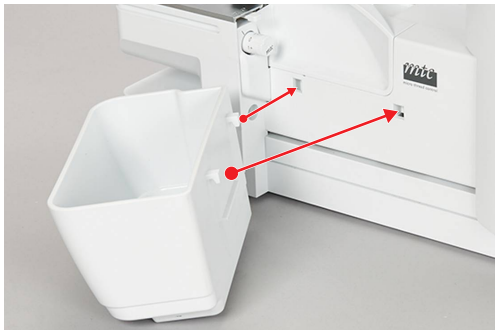
The position and the swinging range of the knee lifter can be adjusted by your local BERNINA specialist, if necessary.

Attaching/removing the cut-offs bin

The cut-offs bin catches the scraps of fabric during the sewing process.



> Hook the cut-offs bin in the opening of the looper cover.

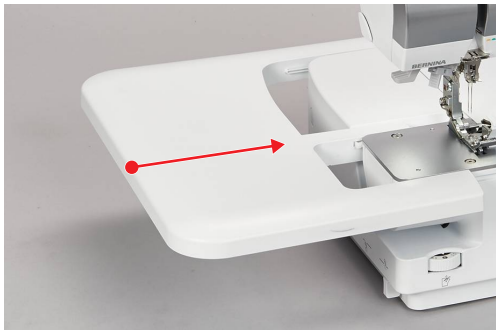


> To discard the scraps unhook the cut-offs bin.

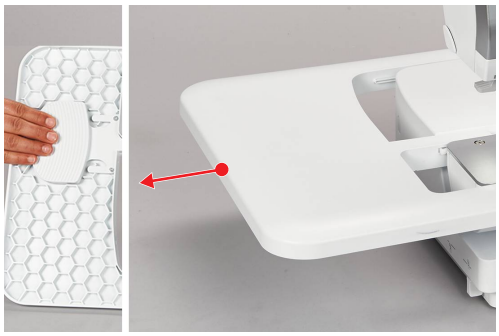
Attaching/removing the slide-on table

The slide-on table increases the sewing surface, especially helpful with larger sewing projects.

> To attach the slide-on table, push it along the guide rails from the left until it engages.

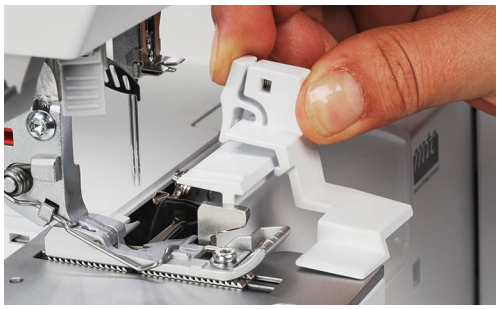


> To remove the slide-on table, press the release mechanism on the bottom side of the slide-on table and pull the table to the left.



Attaching/removing the seam guide

> Press the clamp together at the upper part of the seam guide , place the seam guide on the edge of the knife cover insert and let it engage. Nahtführungslineal befestigen



> To remove the seam guide, press the upper part of the clamp together and pull it away from the knife cover insert.

4 Sewing start

4.1 Check before starting to sew

In order to start a project successfully, the following steps must be performed.

- The machine is switched on and the presser foot is raised.
- The fabric and the application have been selected. (see page 43)
- The thread has been selected. (see page 46)
- The needle size is matched with the thread type and the sewing project. (see page 48)
- The stitch has been selected. (see page 55)
- The machine settings basing on the stitch selection have been performed. (see page 55)/ (see page 57)
- Threading has been performed according to the stitch chart. (see page 69)
- All needle threads and looper threads as well lie under the presser foot to the back left.
- The threader cover is closed.

> Lower the presser foot.

> Press the foot control to start the sewing process.

  – A thread chain is formed.

  – If no thread chain is formed, the settings on the machine for the stitch must be checked.

4.2 Selecting the fabric

For a perfect sewing result, the quality of needle, thread, fabric and the optimal stitch play a vital role.

This combination can have an effect on the sewing result.

> It is recommended to perform a test sample. (see page 80)

Fabric/stitch/application

The stitch recommendation serves the purpose, first and foremost, of obtaining a stitch selection for the current fabric and application. The suggested stitch can be preset according to the stitch chart or the quick reference card.

	Sewing	Finishing	Sewing and finishing	Rolled hem	Gathering	Decorative seam	Decorative hem
 **Lightweight woven**	#1 4-Thread Overlock	#4 3-Thread Overlock (RN)	#7 3-Thread Narrow Seam	#8 3-Thread Rolled Hem	#1 4-Thread Overlock	#6 3-Thread Flatlock Narrow (RN)	#10 2-Thread Wrapped Overlock Narrow (RN)
 **Medium weight woven**	#1 4-Thread Overlock	#4 3-Thread Overlock (RN)	#1 4-Thread Overlock	#8 3-Thread Rolled Hem	#1 4-Thread Overlock	#6 3-Thread Flatlock Narrow (RN)	#10 2-Thread Wrapped Overlock Narrow (RN)
 **Heavyweigh t woven**	#1 4-Thread Overlock	#3 3-Thread Overlock Wide (LN)	#1 4-Thread Overlock	–	–	#5 3-Thread Flatlock Wide (LN)	#9 2-Thread Wrapped Overlock Wide (LN)
 **Light knits**	#4 3-Thread Overlock (RN)	#4 3-Thread Overlock (RN)	#4 3-Thread Overlock (RN)	#8 3-Thread Rolled Hem	#1 4-Thread Overlock	#12 2-Thread Flatlock Narrow (RN)	#10 2-Thread Wrapped Overlock Narrow (RN)
 **Medium weight knits**	#1 4-Thread Overlock	#4 3-Thread Overlock (RN)	#3 3-Thread Overlock Wide (LN)	–	–	#11 2-Thread Flatlock Wide (LN)	#9 2-Thread Wrapped Overlock Wide (LN)
 **Heavy knits**	#1 4-Thread Overlock	#3 3-Thread Overlock Wide (LN)	#1 4-Thread Overlock	–	–	#11 2-Thread Flatlock Wide (LN)	#9 2-Thread Wrapped Overlock Wide (LN)

	Sewing	Finishing	Sewing and finishing	Rolled hem	Gathering	Decorative seam	Decorative hem
 **Fabric with a piled texture**	#1 4-Thread Overlock	#4 3-Thread Overlock (RN)	#1 4-Thread Overlock	–	–	–	–
 **Jeans**	#1 4-Thread Overlock	#3 3-Thread Overlock Wide (LN)	#1 4-Thread Overlock	–	–	#5 3-Thread Flatlock Wide (LN)	#9 2-Thread Wrapped Overlock Wide (LN)
 **Terry cloth**	#1 4-Thread Overlock	#4 3-Thread Overlock (RN)	#1 4-Thread Overlock	–	–	–	–
 **Tulle and lace**	#7 3-Thread Narrow Seam	#4 3-Thread Overlock (RN)	#7 3-Thread Narrow Seam	#8 3-Thread Rolled Hem	#1 4-Thread Overlock	#12 2-Thread Flatlock Narrow (RN)	#10 2-Thread Wrapped Overlock Narrow (RN)
 **Leather and vinyl**	–	#3 3-Thread Overlock Wide (LN)	–	–	–	#5 3-Thread Flatlock Wide (LN)	–
 **Fur**	–	–	#3 3-Thread Overlock Wide (LN)	–	–	–	–

Tab. 2: Fabric/stitch/application combination

4.3 Selecting the thread

A wide range of sewing and special overlock threads are manufactured in various sizes and in different fiber combinations.

- The purchase of quality threads is recommended to achieve good sewing results.
- Use thread cones/spools which are suitable for overlock machines.

⚠ WARNING

Thread breakage due to incorrect needle/thread or thread/looper proportion

The thread needs to glide smoothly through the respective thread guide.
The thread should be able to be threaded easily through the looper and the needle eye.
Thread thick decorative threads exclusively into the loopers, use the air threader circumvention if necessary.
In the case of thick threads, elongate the stitch length and reduce the thread tension.

Needle thread

Needle size and thread type must be carefully matched. The correct needle thickness depends on the selected thread as well as the fabric being used. The fabric weight and type determine the thread weight, needle size and point form.

Needle thicknesses of 70/9 - 90/14 can be used in the machine.

Thread type	Needle thickness
Polyester overlock thread no. 120	80 – 90
Polyester multifilament < no. 120	70 – 90
Overlock yarn	80 – 90
Decorative thread/yarn	80 – 90
Metallic thread	80 – 90

Needle/thread combination

	The needle/thread combination is correct, when the thread fits perfectly into the long groove and goes easily through the needle eye.
	The thread can break and skipped stitches can occur when there is too much clearance in the long groove and the needle eye.
	The thread can break and get stuck when the thread scrapes against the edge of the long groove not fit well into the needle eye optimally.

Looper thread

A wide variety of thread types can be used as looper threads. They can be threaded using the air threading system. The air threading circumvention must be used for thicker threads. (see page 72)

NOTICE

Damage by coated or waxed threads

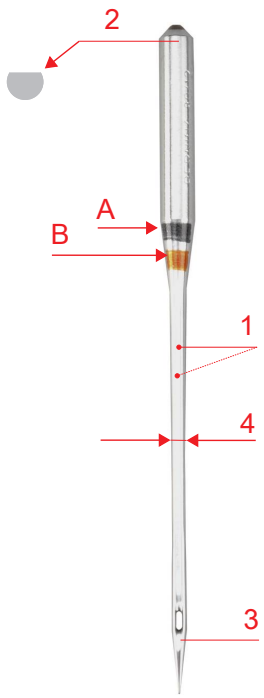
Coated or waxed threads may lose some of their coating in the air threader pipes, resulting in permanent blocking of the pipes. Repair by a BERNINA dealer will be necessary. Avoid use of coated or waxed threads.

4.4 Selecting the needle

This machine is designed for needles of the system ELx705 as well as for needle sizes 70 – 90. It is recommended to use the ELx705 CF (Chrome Finish) version, as it is more durable. The machine runs most reliably with these needles due to the second groove.

If required, needles of the 130/705 H system can also be used. These can provide good results in certain applications and are available with different points and in different needle sizes.

A coverstitch needle ELx705 CF/80 is explained by the following graph as an example.



A	■ **Coverstitch needle ELx705 CF/80**
1	two thread grooves
2	**705** = Flat shank
3	**CF** = chrome finish
4 / B	**80** = Needle size

The needles should be replaced regularly. Only a flawless needle point can achieve a clean stitch.

- Needle size 80: For any common applications. for mid-weight to heavy fabrics.
- Needle size 90: for heavy fabrics.
- Needle size > 80: In exceptional cases, only for light fabrics.

Select needle using the chart

Figure	Designation	Size	Characteristic	Material/Application
 ■	**Coverstitch needle** ELx705 CF	80/12 90/14	Needle with two thread grooves	Overlock and cover applications universal.
 ■	**Jersey needle** ELx705 SUK CF	80/12 90/14	Mid-sized ball point	Overlock and cover applications in knits and knitwear.
 ☒	**Universal needle** 130/705 H	70/10 80/12 90/14	Slightly rounded point	For nearly all natural and synthetic fabrics (woven and knitted).
 ■	**Stretch needle** 130/705 H-S	75/11 90/14	Mid-sized ball point, special eye shape and groove	Jersey, tricot, knit and stretch fabrics.
 ■	**Jersey/Embroidery needle** 130/705 H SUK	70/10 80/12 90/14	Mid-sized ball point	Knitwear, embroidery.
 ■	**Jeans needle** 130/705 H-J	80/12 90/14	Point, narrow point, reinforced shaft	Heavy-weight fabrics such as jeans, canvas.
 ■	**Microtex needle** 130/705 H-M	70/10 80/12 90/14	Especially sharp, narrow point	Mircro fiber fabrics and silk.
 ■	**Quilting needle** 130/705 H-Q	75/11 90/14	Slightly rounded, narrow point	Straight and topstitching.
 ☒	**Fine material needle** 130/705 H SES	70/10 90/14	Small ball point	Fine knitwear, embroidering on fine, delicate fabrics.
 ■	**Metafil needle** 130/705 H METAFIL	80/12	Long needle eye (2 mm) in all needle thicknesses	Sewing projects with metallic threads.

*Not all needle sizes are available as BERNINA needles.

Detect defective needles

The needles should be checked before sewing every time and replaced if necessary.

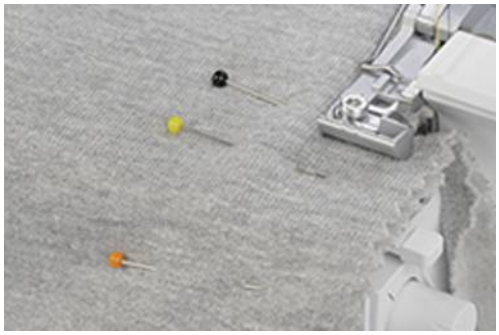


1. Bent needle
2. Damaged needle point
3. Blunt needle

4.5 Fixing fabric layers

If several layers of fabric are sewn together, they can be fixed by basting stitches with the sewing machine or by pins.

> To prevent damage to the knife or pins, place the pins approximately 2 cm from the edge of the fabric or remove them continuously while sewing.



5 Stitch selection

5.1 Stitch type

With this machine, 18 different stitch formations can be set. They are achieved by various configurations of needles and mechanical settings, as summarized in the stitch chart.

Overlockstitch

The 3- and 4-Thread Overlock are standard overlockstitches, e.g. for sewing 2 fabric layers together. The 2-Thread Overlock is ideal for finishing a fabric edge.

4-Thread Overlock

The 4-Thread Overlock is the most durable stitch thanks to the safety seam. The left and right overlock needle thread as well as the upper and lower looper thread are required for this stitch.

The overlock needle threads form two parallel stitch rows, which on the front side look like step stitch rows of a sewing machine. On the wrong side, the overlock needle threads form «dots» to catch the under looper thread when the fabric is pierced, whereby the right overlock needle thread also serves as a safety seam.



3-Thread Overlock

The 3-Thread Overlock is more stretchable than the 4-Thread Overlock as the safety seam is missing and is therefore ideal for seams on knitted fabrics (LN wide) or fine fabrics (RN narrow).

Both stitch types are ideal for finishing cut edges, e.g. facings, hem edges and seam allowances which are ironed .



2-Thread Overlock

The 2-Thread Overlock is formed with an overlock needle thread (LN wide or RN narrow) and the under looper thread. The lower looper thread is guided to the right side of the fabric by means of the hooked-in upper looper converter. This overlock stitch is only suitable for edge finishing.



5.2 Select stitch by application

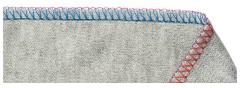
Seam

Seams are 2 or more fabric layers, which are usually placed right side on right side and sewn together.

Closed seam

3-Thread or 4-Thread Overlock stitches are suitable for closed seams, which loop around and sew together both finishing edges.

Only the 4-Thread Overlockstitch with safety seam forms a reliable seam. This stitch is mainly chosen for garments made of knitted fabrics and for wide cut garments made of woven fabrics.

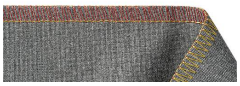
No.	Name	Stitch pattern
1	4-4-Thread Overlock with safety seam	
2	3-Thread Super Stretch	
3	3-Thread Overlock Wide (LN)	
4	3-Thread Overlock Narrow (RN)	
7	3-Thread Narrow Seam	

Tab. 3: Recommended stitches for a closed seam

Flatlock

The flatlock forms loops on the upper side of the seam and stretch stitches on the underside.

> Thread and set the machine for 2- or 3-Thread Flatlock.
> Sew two layers of fabric together (wrong side on wrong side).
> Carefully separate the two layers of fabric.
  – The two fabric edges now lie flat on top of each other at the stitch width of the flatlock.

No.	Name	Stitch pattern
5	3-Thread Flatlock Wide (LN)	
6	3-Thread Flatlock Narrow (RN)	
11	2-Thread Flatlock Wide (LN)	
12	2-Thread Flatlock Narrow (RN)	

Tab. 4: Recommended stitches for a flatlock

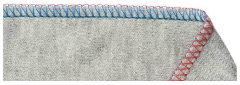
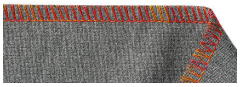
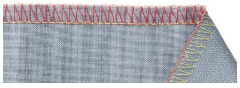
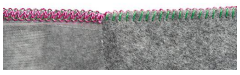
Open seam

An open seam cannot be produced with the overlocker without the help of a coverstitch or sewing machine.

Finish the fabric edge with the overlocker and then sew the finished fabric layers together, right side on right side.

Edge serging

Finishing edges are usually used as preparation for open seams.

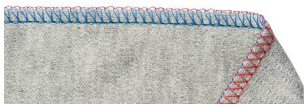
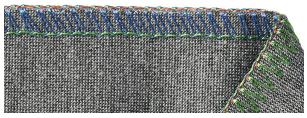
No.	Name	Stitch pattern
3	3-Thread Overlock Wide (LN)	
4	3-Thread Overlock Narrow (RN)	
8	3-Thread Rolled Hem	
9	2-Thread Wrapped Overlock Wide (LN)	
10	2-Thread Wrapped Overlock Narrow (RN)	
13	2-Thread Rolled Hem	
14	2-Thread Overlock Wide (LN)	
15	2-Thread Overlock Narrow (RN)	
28	2-Thread Blanketstitch Wide (LN)	
29	2-Thread Blanketstitch Narrow (RN)	
30	3-Thread Picot Stitch	

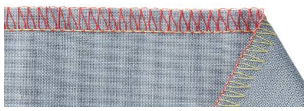
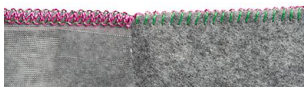
Tab. 5: Recommended stitches for serging a finishing edge

5.3 Stitch chart

These default values may vary depending on the used material. (see page 80)

> Remove all the needles which are not required.
> Set the mtc micro thread control to «0».

No.	Name	Stitch pattern									
1	4-Thread Overlock with Integrated Safety Seam		4	4	4	4	6	O	2.5	1	
2	3-Thread Super Stretch		4	4	–	4	6	O	2.5	1	
3	3-Thread Overlock Wide (LN)		4	–	4	4	6	O	2.5	1	
4	3-Thread Overlock Narrow (RN)		–	4	4	4	6	O	2.5	1	
5	3-Thread Flatlock Wide (LN)		2	–	4	7	6	O	2.5	1	
6	3-Thread Flatlock Narrow (RN)		–	2	4	6	6	O	2.5	1	
7	3-Thread Narrow Seam		–	4	4	4	7,5	R	2	1	
8	3-Thread Rolled Hem		–	4	4	5,5	5,5	R	R	1	
9	2-Thread Wrapped Overlock Wide (LN)		4	–	–	4	6	O	2.5	1	

No.	Name	Stitch pattern									
10	2-Thread Wrapped Overlock Narrow (RN)		–	4	–	4	6	O	2.5	1	
11	2-Thread Flatlock Wide (LN)		1.5	–	–	4.5	6	O	2.5	1	
12	2-Thread Flatlock Narrow (RN)		–	2	–	4	6	O	2.5	1	
13	2-Thread Rolled Hem		–	4	–	4	5,5	R	R	1	
14	2-Thread Overlock Wide (LN)		2	–	–	4	6	O	2.5	1	
15	2-Thread Overlock Narrow (RN)		–	2	–	4	6	O	2.5	1	
28	2-Thread Blanketstitch Wide (LN)		2	–	–	4	6	O	4	1	
29	2-Thread Blanketstitch Narrow (RN)		–	2	–	4	6	O	4	1	
30	3-Thread Picot Stitch		–	3,5	3,5	5	6	R	2.5	1	

Tab. 6: Settings overview

6 Machine settings

6.1 Knife

Knife on/off

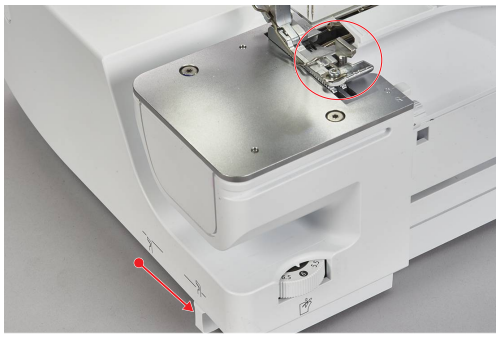


For better visibility and access into the sewing area, e.g. for threading, the knife can be lowered (off) and then reactivated (on). The knife can also be lowered during a sewing project if a clean cutting edge already exists and it just needs to be serged. The best sewing results are achieved by cutting and serging in a single process.

> Push the «Knife on/off» to the back.
  – The knife is lowered.



> Pull the «Knife on/off» to the front.
  – The knife raises to the cutting position.



Setting the cutting width

The cutting width for the knife position can be adjusted between 5 - 9 mm.

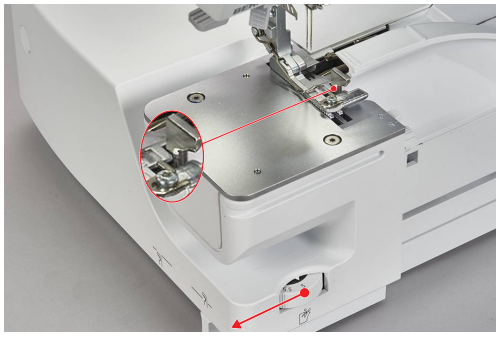
The numbers on the scale correspond with the actual cutting width in mm from the left overlock needle «LN» to the cutting edge. The cutting width is used to determine the stitch width. The set cutting width is indicated at the cutting width dial. (see page 63)



> To increase the cutting width, turn the cutting width dial (1) to the a higher value.
  – The set cutting width is visible on the cutting width dial.



> To reduce the cutting width, turn the cutting width dial (1) to a lower value.



If the cutting width changes, the knife, stitch finger and looper cover move in the corresponding direction.

6.2 Upper looper converter hooked in/hooked out

By attaching the upper looper converter, the upper looper grabs the lower looper thread so that it covers the entire fabric edge.

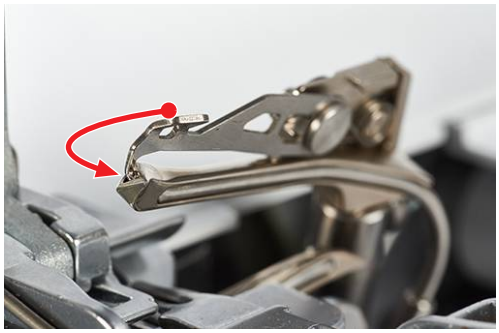
Prerequisite:

- The needles are in their top position.
- The upper looper thread is removed.
- The lower looper thread is below the upper looper.

> To hook in the upper looper converter, swing it to the left at the retaining bracket.



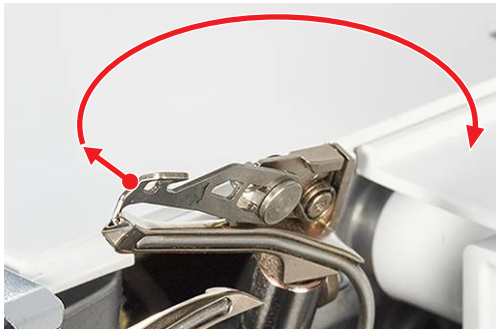
> Lightly press back on the retaining bracket and hook the snap-in lug into the eye of the looper.



> Make sure the snap-in lug is fully engaged.

> To remove the upper looper converter, press the retaining bracket of the upper looper converter back slightly and remove the snap-in lug from the looper eye.

> Swing the upper looper converter all the way back to the right.



6.3 Rolled hem selection lever «O/R»

The adjustment positions for overlocking «O» and rolled hems «R» are marked in the stitch plate and can be set there for the desired application.

Overlocking «O»

During overlocking, the upper looper thread is laid along the stitch finger to form a constant distance from the finishing edge.

> Move the rolled hem selection lever to position «O».
  – Overlocking is activated.

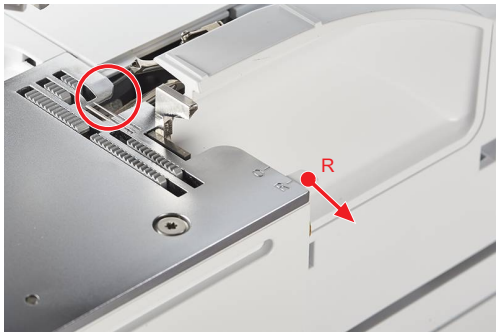


If the thread quantity at the fabric edge is too much or too little, this thread quantity can be corrected by the mtc micro thread control. (see page 61)

Rolled hem «R»

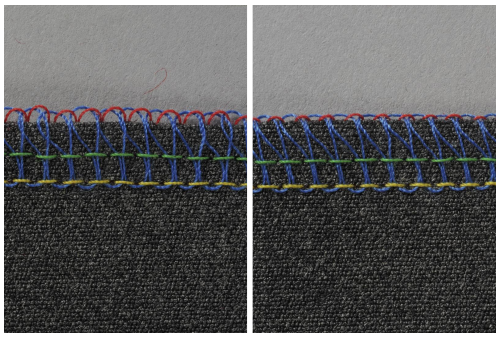
By retracting the stitch finger, the loops of the upper and lower loopers thread are reduced and the fabric edge is rolled up. Roll hems are the ideal edge finishing for fine and medium-weight fabrics. These are particularly suitable for decorative finishings on scarves, evening gowns, lingerie, home textiles and as lining seams.

> Move the rolled hem selection lever to position «R».
  – The rolled hem is activated.



6.4 Setting the mtc micro thread control

mtc By default mtc micro thread control is always set to position «0». The mtc micro thread control affects the amount of looper threads around the fabric edge and can be adjusted continuously during sewing. With this unique feature, a well balanced stitch can be easily achieved at any given cutting width.



The mtc is most effective when used for a cutting width of 6 – 8 mm.

Between 5 – 6 mm the adjustment towards the minus «-» direction is limited.

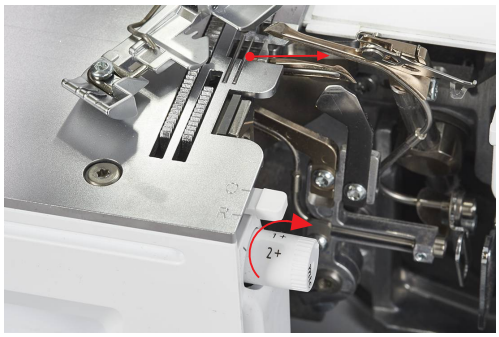
Between 8 – 9 mm the adjustment towards the plus «+» direction is limited.

Prerequisite:

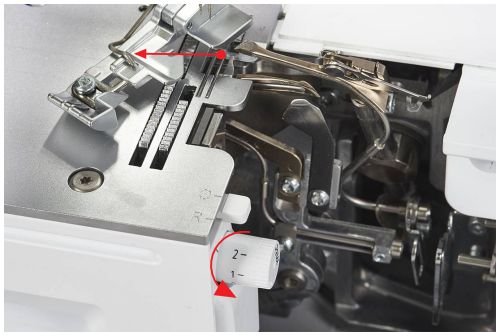
- The thread tension is set correctly.
- The knife position is set correctly.
- The mtc (micro thread control) set to «0».
- The sewing test is performed.

> To enlarge the loops of the looper at the fabric edge, turn the mtc micro thread control during sewing in «+» direction.

> In order to adjust the mtc thread control in «+» direction when the machine is at rest, the thread loops must be pushed off the stitch finger so that the movement of the stitch finger is not limited.



> To minimize the loops of the looper at the fabric edge, turn the mtc micro thread control in «-» direction during sewing.



6.5 Setting the presser foot pressure

The presser foot pressure of this machine is set in the default value «4» such that it is suitable for sewing medium-weight fabrics.

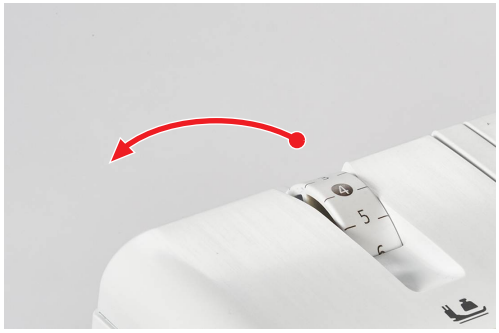
Most materials do not require adjustment of the presser foot pressure. However, there are some cases where adjustment may help, such as when sewing very light and heavy fabrics.



1	Extra light	4	Standard setting
2	Light	5	Medium high
3	Medium light	6	High

Tab. 7: Presser foot pressure adjustments

> Reduce the presser foot pressure for light fabrics.
> Increase the presser foot pressure for heavy fabrics.
> Perform a sewing test to adjust the optimum sewing foot pressure for your sewing project.
> To increase the presser foot pressure, set the presser foot pressure wheel to a higher value.



> To reduce the presser foot pressure, set the presser foot pressure wheel to a lower value.



6.6 Adjusting the stitch width

Influence by the needle position

The stitch width can vary by the choice of needle position by 2 mm.

> To sew a wide stitch, insert the left needle.
> To sew a narrow stitch, insert right needle.

Influence by the knife position

The stitch width can vary by adjusting the knife position. The scale of the cutting width dial determines the distance between the left overlock needle (LN) and the knife in mm. For the right overlock needle, the set scale value is reduced by 2 mm.

> To adjust the stitch width, set the cutting width dial between 5 – 9 mm.

(see page 58)

6.7 Adjusting the thread tension

The thread tension has a considerable influence on each individual thread and its task to perform the stitch formation. The stitch chart provides a recommended default value for each stitch. This recommendation can be optimized for different thread/fabric combinations. (see page 80)



> To reduce the thread tension, turn the thread tension adjustment dial down to a lower value.
> To increase the thread tension, turn the thread tension adjustment dial up to a higher value.

6.8 Setting the differential feed

Differential feed prevents unwanted puckering or wavering in knitted or stretch fabrics as well as shifting of fabric layers. The two fabric feed dogs can be geared to each other so that the fabric is fed evenly while sewing and that neither wavering nor unintended gathering occurs. The differential feed is variable while sewing.

When the machine is running, the adjustment ranges are shown larger to allow «blind operation».

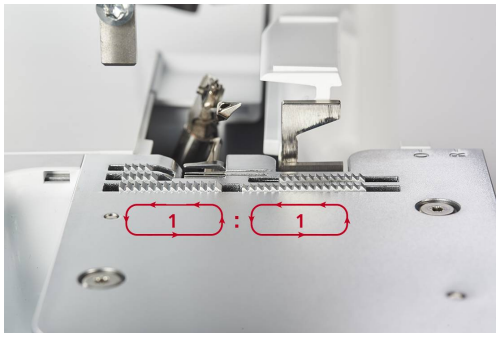
> Adjust the feeding ratio of the two feed dogs using the Differential feed setting.



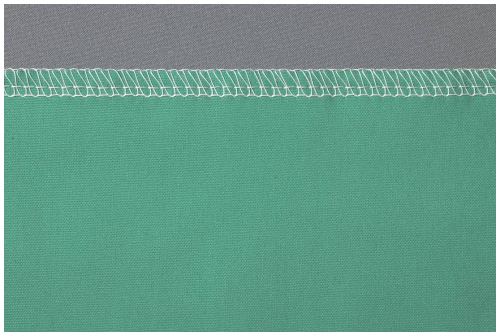
Value	Fabric	Result
2	highly elastic materials hand-knitted and thick wool fabrics	gathering, ruffle, gather
1,5	Jersey, sweatshirt, knits	slight ruffling, prevent seam waving
1	Woven fabric	Standard setting
0,7	Fine nylon tricots, densely woven fabric, lining, satin	stretching, prevent seam puckering

The settings describe the movement ratio of the front to the rear feed dog. For default value 1, both feed dogs move by the same distance.

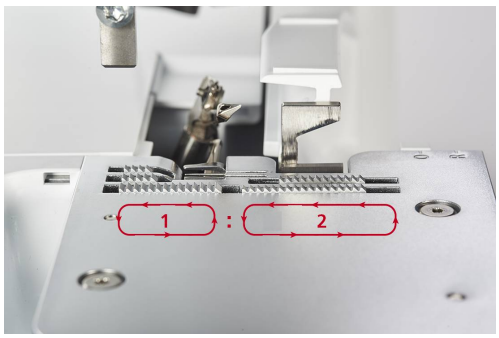
Default value 1



In a default value of 1, the machine achieves optimum sewing results with most applications. The Differential Feed in default setting 1 for flat and even seams.



Ruffling/Gathering 1.5 - 2

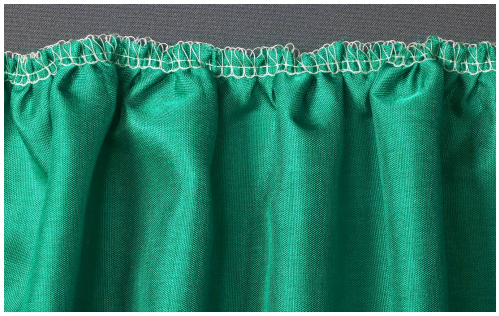


At a setting of 1.5 - 2 the front feed-dog (2) covers a longer distance than the rear feed-dog (1).

Gathering

This setting can also be used to deliberately ruffle the material.

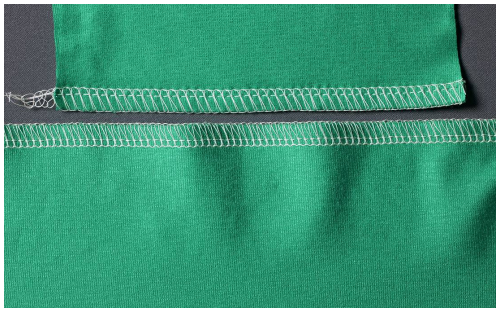
> To gather intentionally, increase Differential Feed to a value between 1.5 and 2.An elongated stitch length enhances the gathering effect.



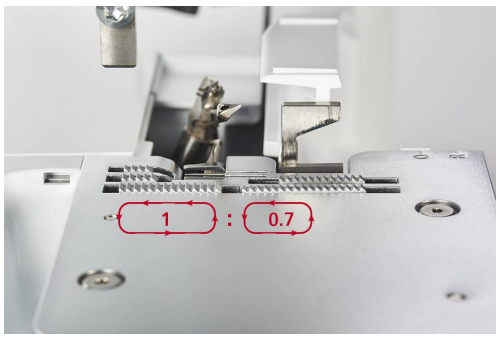
Gather to fitGather to fit

The material is compressed under the presser foot which helps to reduce waving.

> To prevent waving increase Differential Feed to a value between 1 and 2.

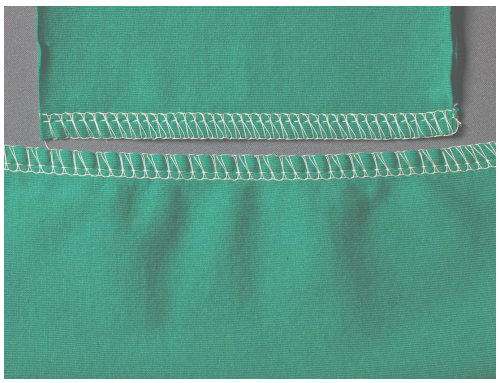


Stretching 0.7



The front feed dog (0.7) covers a shorter distance than the rear feed dog (1). The material is stretched under the presser foot which helps to reduce puckering. This setting can also be used to deliberately stretch the material.

> To prevent seam puckering, reduce differential feed to a value between 0,7 and 1.



6.9 Setting the stitch length

The stitch length can be infinitely adjusted between 0.8 – 4.5 mm while sewing. The default stitch length is 2.5. A stitch length value recommendation for each stitch is shown in the stitch chart. A value of 1.5 and less is used for rolled hems. The default roll hem is «R».

> To elongate the stitch, set the stitch length knob upwards to a higher value.
> To shorten the stitch, set the stitch length knob down to a lower value.



6.10 Adjusting speed

1

The sewing speed is infinitely adjustable and can be controlled by applying more or less pressure on the foot control.

The maximum sewing speed can be preset at 2 speed levels.

1/2



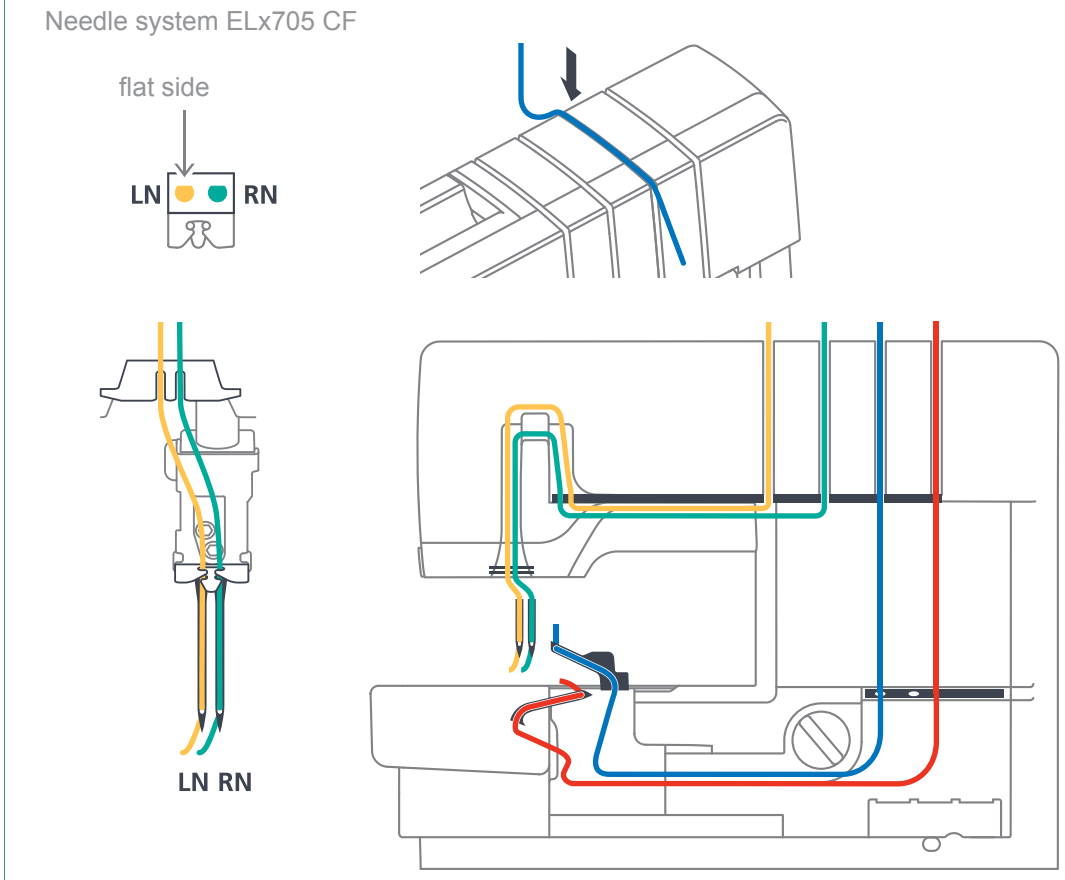
Prerequisite:

- The threader cover is opened.

> To reach the maximum sewing speed (1500 U/min), set the speed switch to «1» (factory setting).
> To reduce the maximum sewing speed, set the speed switch to «1/2».
> Close the threader cover.

7 Threading

Due to the one-step BERNINA air threader, no specific sequence is required for threading the machine.



7.1 Preparing for threading

Before threading, make sure that the device is mechanically adjusted to the required stitch. Perform the required mechanical settings e.g. for needle, rolled hem selection lever and upper looper cover.The machine has color-coded threading paths. Correct threading is ensured when following the color markings.

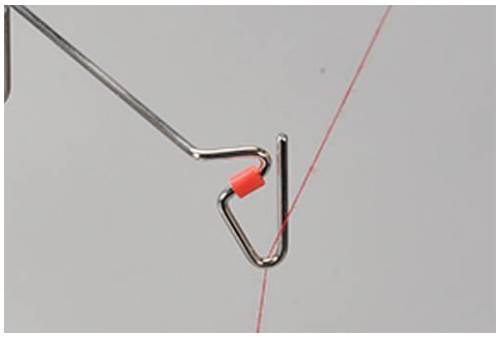
Prerequisite:

- Retractale thread guide extracted.
- The needles are at top position. (see page 40)
- All threads that are not needed for the particular stitch have been removed.

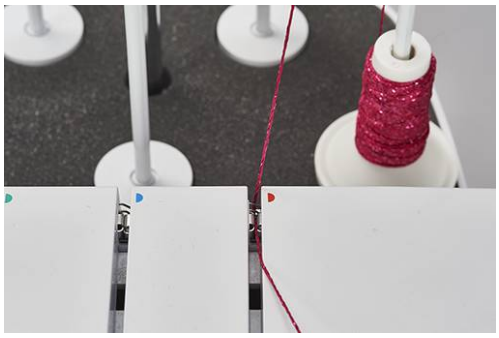
> Raise the presser foot.
  – The thread tensions are released. The thread can be inserted without resistance.

> Place the thread cones on the respective spool pin.

> Place the thread from the back through the color-coded thread guide.



> Engage the thread by pushing downwards into the thread pre-tension with both hands and check by pulling it upwards to the back that it does not slide out of the thread pre-tension.



> Place the thread along the slot into the thread tension discs.



7.2 One-step BERNINA air threader

NOTICE

Damage by coated or waxed threads

Coated or waxed threads may lose some of their coating in the air threader pipes, resulting in permanent blocking of the pipes. Repair by a BERNINA dealer will be necessary. Avoid use of coated or waxed threads.

Air threading adjustment is accomplished by turning the air threader connector in two possible positions. The ait threader connector should always be turned to the stop in the required direction.

The lower looper thread (red) is needed for each stitch. Depending on the stitch, the upper looper thread (blue) must be additionally threaded.

Detailed information can be found in the stitch chart.

Pulse drive

If the needles are not in the uppermost position, the one-step BERNINA air threader cannot be coupled.

> By pressing the foot control, the coupling is first carried out by moving the needles in «Pulse drive» to the uppermost position.
> Pressing the foot control again starts the air threading process.

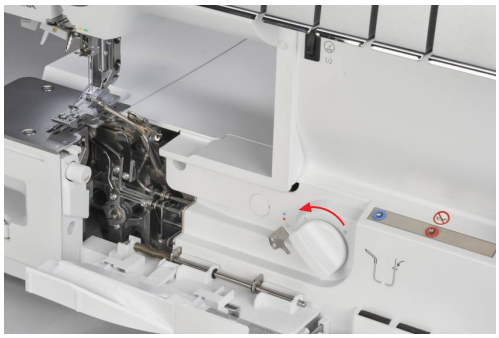
Threading the looper threads UL/blue, LL/red

With the one-step BERNINA air threader, both looper threads can be threaded in one simple step.

Prerequisite:

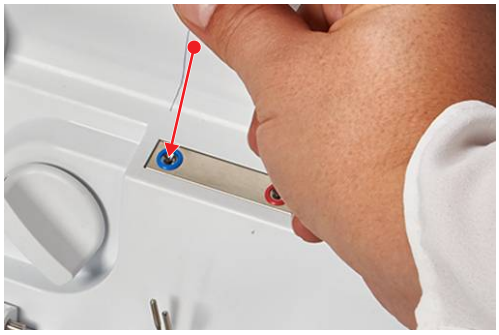
- «The threading preparation» has been performed. (see page 69)

> Open the threader cover and the looper cover.
> Set the air threader connector to «I».



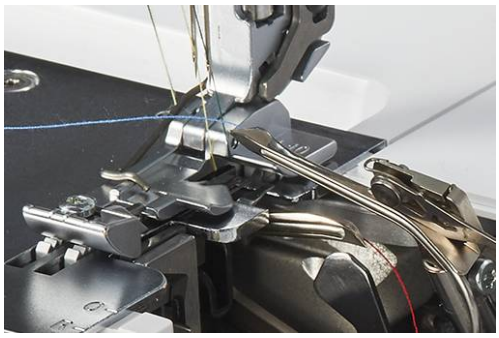
– The air threader pipes are coupled.

> Hold the thread end above the respective air threader nozzle.



> Pull a thread reserve of approx. 40 cm so that the thread can be completely drawn through the threading path.

> Press the foot control.
  – Automatic thread feed into the air threader starts.
  – The looper thread is shot through the air threader pipe and exits at the looper tip.
> Release the foot control as soon as the looper thread emerges from the looper eye.



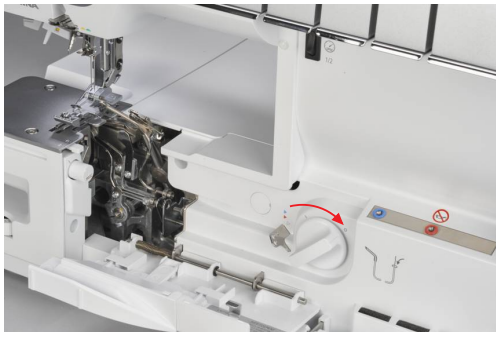
NOTICE

Pulse drive

If the air threader pipes are not coupled, the Puls Drive will be performed by pressing the foot control.

The needles are brought into the top position and the coupling is complete.
Press the foot control again.
Threading can continue.

> Place the looper threads under the presser foot to the rear left.
> Repeat the process with the other looper thread if required.
> Set the air threader connector to position «0».



> Close the looper cover and the threader cover.

Threading the looper thread with an auxiliary thread

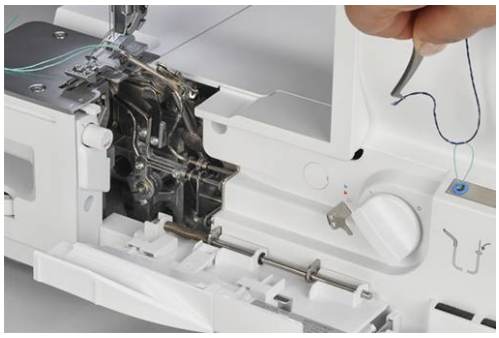
The use of an auxiliary thread makes sense if a looper thread cannot be threaded automatically with the air threader.

Prerequisite:

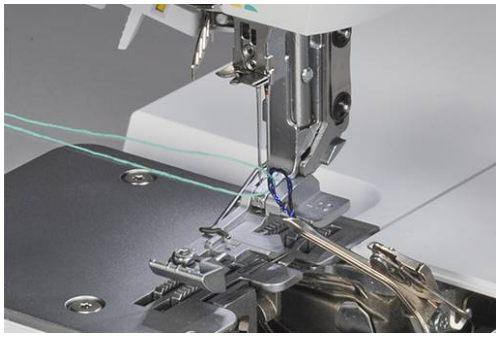
- The «Threading preparation» has been performed. (see page 69)

> Open the threader cover and the looper cover.
> Set the air threader connector to «I».
> Prepare an auxiliary thread at a length of about 60 cm.
> Fold the auxiliary thread in half, hold the thread end with the loop in your hand and position the two thread ends above the respective air threader nozzle.
> Start the air threader process by pressing the foot control until the thread ends of the auxiliary thread emerge from the looper eye.

> Place the looper thread end at the length of about 20 cm through the loop of the auxiliary thread.



> Pull the auxiliary thread ends until the thread comes out of the looper eye.



> Remove the auxiliary thread.
> Place the looper threads under the presser foot to the rear left.

Circumventing the air theader pipes

Some thick or decorative threads can not be threaded through the air threader nozzle or don't provide optimal stitching when these threads are threaded through the air threader pipes.

Alternatively, such threads may be threaded through the air threader circumvention. This reduces the friction in the thread path and results in a lower thread tension.

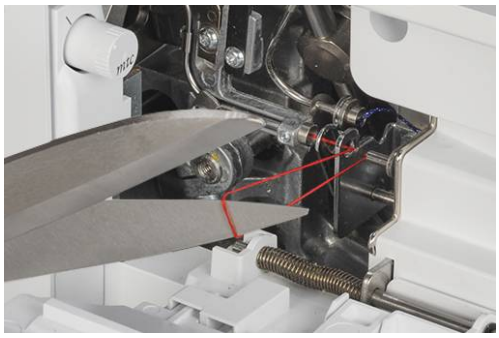
Prerequisite:

- The looper thread is threaded and can serve as an auxiliary thread.

> Open the threader cover and the looper cover.
> Set the air threader connector to «0».
> Pull the looper thread as a loop out of the air threader pipe exit using the tweezers.



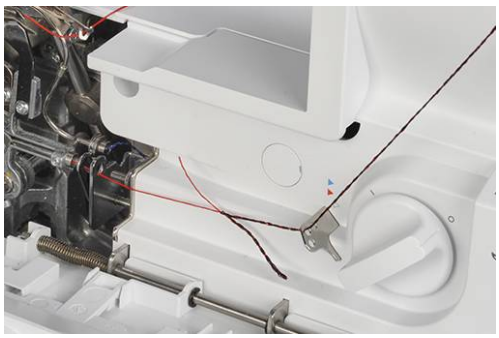
> Cut the loop with scissors.



> Replace the looper thread on the thread stand by the desired special thread.
> Thread the special thread and guide it through the respective colored eyelet of the air threader circumvention.



> Tie the end of the auxiliary thread to the special thread from the air threader circumvention eye.



> Pull the auxiliary thread until the knot emerges from the looper eye.
> Cut the knot.
  – The special thread is threaded as the new looper thread.



> Place the looper threads under the presser foot to the rear left.

Using the threading wire

The supplied threading wire can be used as a threading aid for the looper thread. The threading wire is a wear part and not designed as a permanent threading or cleaning aid.

NOTICE

Damage by improper use of the threading wire

The air threader pipes may be damaged. Repair by a BERNINA dealer will be necessary.

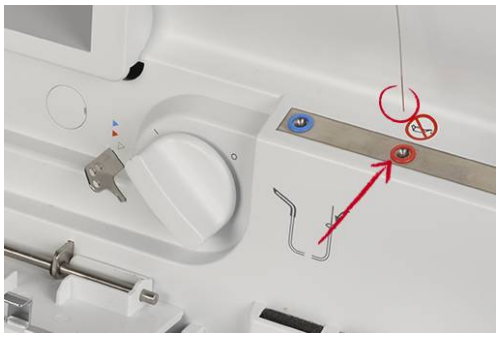
> Insert and pull through the threading wire only in the thread flow direction.

Prerequisite:

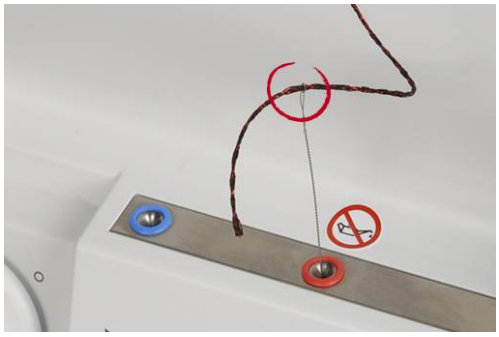
- There is no thread in the respective air threader pipe.
- «Threading preparation» (see page 69)

> Open the threader cover and the looper cover.

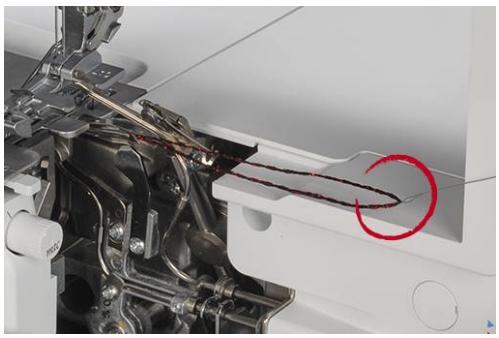
> Guide the threading wire with the gummed end (threading wire loop up) through the corresponding air threading tip until it emerges from the eye of the looper.



> Place the wanted looper thread through the loop of the threading wire.



> Pull the end of the threading wire until the looper thread emerges from the eye of the looper.



> Place the looper threads under the presser foot to the rear left.

In case of a malfunction of the one-step BERNINA air threader must be repaired by a specialized BERNINA dealer.

7.3 Threading the needle thread

For the needles inserted in the needle holder, color-coded threading paths are assigned.

Detailed information can be found in the stitch chart.

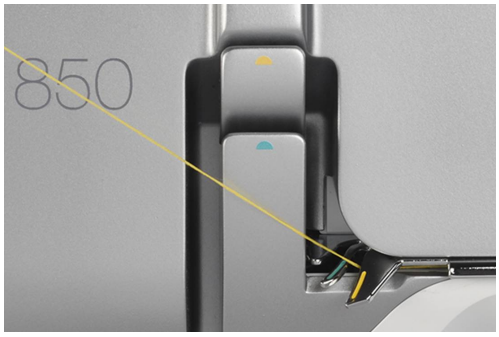
Threading the left needle thread LN/yellow

The left needle thread path is marked yellow.

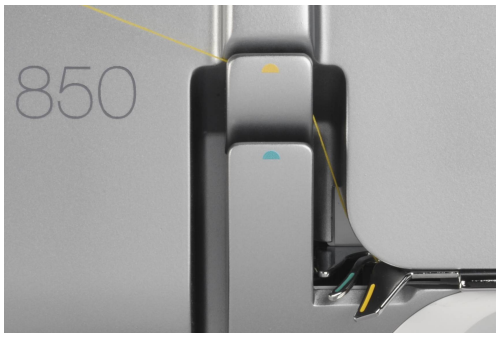
Prerequisite:

- The «Threading preparation» has been performed. (see page 69)
- Swing out the presser foot.

> Pull the thread beneath the thread guide plate to the left and up behind the yellow marking of the thread deflection finger.



> Place the thread over the upper needle thread take-up lever cover and pull it down.



> Insert the thread into the left thread guide.
> Hook the thread into the left thread guide of the needle holder.



> Thread the left overlock needle (LN).
> Place the thread beneath the presser foot to the back left.

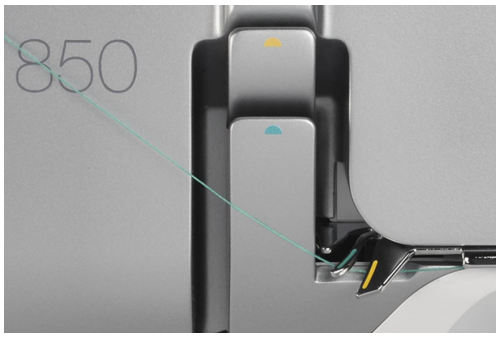
Threading the right needle thread RN/green

The right needle thread path is marked green.

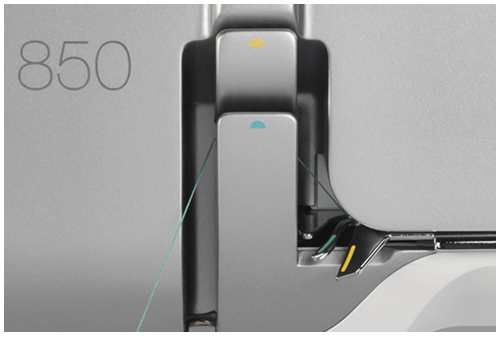
Prerequisite:

- The «Threading preparation» has been performed. (see page 69)
- Swing out the presser foot.

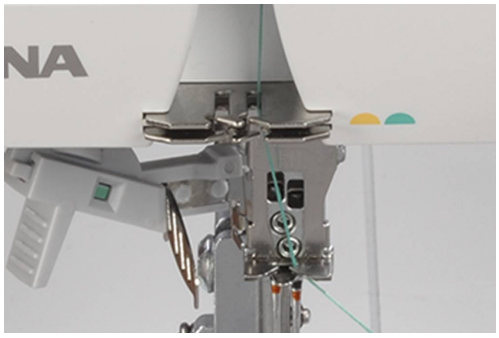
> Pull the thread beneath the thread guide plate to the left and up behind the green marking of the thread deflection finger.



> Place the thread over the upper needle thread take-up lever cover and pull it down.



> Insert the thread into the right thread guide.
> Hook the thread into the right thread guide of the needle holder.



> Thread the right overlock needle (RN).
> Place the thread beneath the presser foot to the back left.

7.4 Thread change

Tying thick thread

Tying on threads is often used for changing needle thread or looper thread. (see page 79)

To reduce friction, keep knots as small as possible.

NOTICE

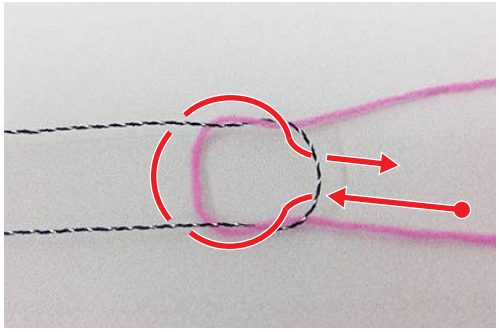
Pulling a thread tie through the needle eye

The needle can be bent. A bent needle affects the stitch formation.

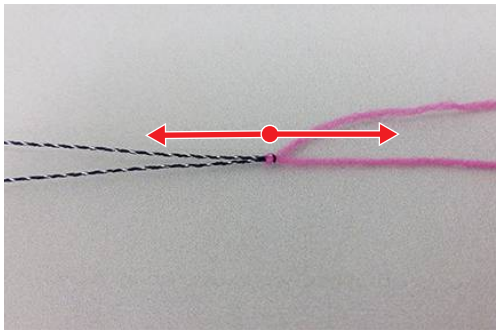
> Cut the tie in front of the needle eye and thread the needle individually.

Example of tying

> Form a loop with the dark thread.
> Thread the pink thread end from beneath into the dark thread loop.
> Guide the pink thread to the back around the two dark threads and from above through the loop.



> Hold both thread ends and pull them apart.



Changing the needle thread

NOTICE

Pulling a thread tie through the needle eye

The needle can be bent. A bent needle affects the stitch formation.

> Cut the tie in front of the needle eye and thread the needle individually.

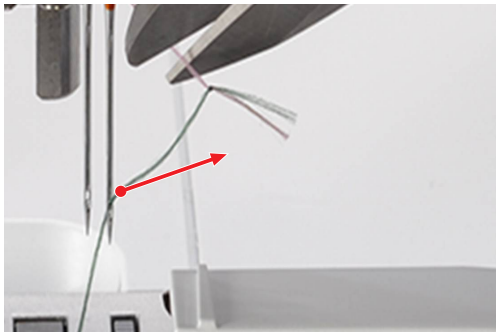
> Cut the thread above the thread cone.



> Change the thread cone.
> Tie the threaded thread to the new thread.



> Pull the threaded end of the thread until the newly knotted thread is in front of the needle eye.
> Cut off the new thread behind the knotting.



> Remove the excess thread from the eye of the needle.
> Thread the needle eye.
> Place the thread beneath the presser foot to the back left.

Changing the looper thread

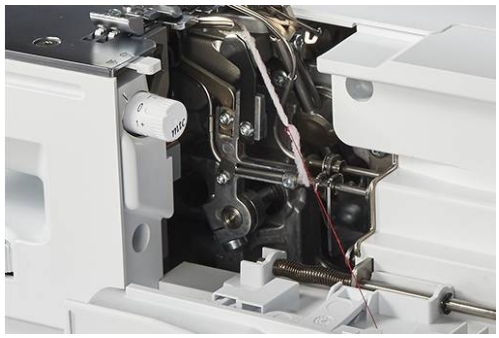
> Cut the thread above the thread cone.
> Change the thread cone.



> Tie the inserted looper thread to the new thread.



> Pull the end of the thread from the eye of the hook until the knot emerges.



> Cut off the new thread behind the knotting.
> Place the thread beneath the presser foot to the back left.

8 Perform a sewing test

To determine the optimal setting, a test sample should be sewn on a spare piece of the fabric to be used for your project.

The default values of the stitches represent recommendations that work for most standard applications. Depending on your material combination (fabric, stitch, thread, needle) fine tuning may be possible to further optimise a stitch.

8.1 Overlockstitch sewing test

Prerequisite:

- The «Sewing start» has been performed. (see page 43)

> Raise the presser foot.
> Push the fabric under the presser foot to the front of the knife so that the desired seam allowance is cut off.
> Start sewing slowly. Guide the fabric gently as the machine automatically transports the material.
> Sew beyond the fabric end so that a thread chain is formed.
> Pull the thread chain over the thread cutter.
> Assess the sewing test and make any necessary fine adjustments until the stitch setting matches the material combination. (see page 57)
> Repeat the sewing test until you are satisfied with the stitch - then start your project.

8.2 Stitch optimizing

Optimizations of stitches should be made systematically.In the following, recommendations are listed for each stitch type, which optimize the stitch pattern through specific changes to the machine setting.

> Perform one reducing thread tensions step after the other from the top.
> Alter the thread tensions only by half or one digit at a time.
> A thread tension reduction should be carried out before trying to increase.
> Perform a sewing test.

4-/3-Thread Overlock

With a balanced stitch formation, the looper thread (blue/red) are intertwined at the fabric edge.

The needle threads (green/yellow) create two straight lines of stitches on the top side of the stitch and appear as dots on the bottom side of the stitch.





Stitch pattern	Recommendation
The looper threads are intertwined on the wrong side of the fabric.	> Reduce the lower looper thread tension (red). > Increase the upper looper thread tension (blue).
The looper threads are intertwined on the right side of the fabric.	> Reduce the upper thread tension (blue). > Increase the lower looper thread tension (red).
The left needle thread forms loops on the wrong side of the fabric.	> Increase the left needle thread tension (yellow). > Reduce the lower looper thread tension (red).
The right needle thread forms loop on the wrong side of the fabric.	> Increase the right needle thread tension (green).
The fabric edge curls.	> Reduce the upper thread tension (blue). > Reduce the lower looper thread tension (red). > Increase the mtc micro thread control. > Reduce the cutting width «CW». > Check the rollhem selector lever position «O».
The seam puckers.	> Reduce the left needle thread tension (yellow). > Increase the right needle thread tension (green). > Set the Differential feed between 1 and 0.7 (Stretching). > Shorten the stitch length «SL».

Tab. 8: Optimizing the stitch: 4-/3-Thread Overlock

3-Thread Narrow Seam

With a balanced stitch formation, the looper thread (blue/red) are intertwined at the fabric edge.

The needle thread (green) is identifiable on the top side of the stitch as a straight line and on the bottom side of the stitch as points.



Stitch pattern	Recommendation
The looper threads are intertwined on the wrong side of the fabric.	> Reduce the lower looper thread tension (red). > Increase the upper looper thread tension (blue).
The looper threads are intertwined on the right side of the fabric.	> Reduce the upper thread tension (blue). > Increase the lower looper thread tension (red).
The right needle thread forms loop on the wrong side of the fabric.	> Increase the right needle thread tension (green).
The fabric edge doesn't curl as intended.	> Increase the upper looper thread tension (blue). > Increase the lower looper thread tension (red). > Increase the cutting width «CW». > Shorten the stitch length «SL». > Check the rollhem selector lever position «R».

Tab. 9: Optimizing the stitch: 3-Thread Narrow Seam

3-Thread Super Stretch / 2-Thread Wrapped Overlock

With a balanced stitch formation, the looper thread (red) loops around the cutting edge.

The needle threads (green/yellow) create two straight lines of stitches on the top side of the stitch and appear as dots on the bottom side of the stitch.

The elasticity of the 3-Thread Super Stretch can be increased by shortening the stitch length or by reducing the needle thread tension depending on the material and application.





Stitch pattern	Recommendation
The looper thread is too loose around the fabric edge.	> Increase the lower looper thread tension (red). > Increase the mtc Mircro Thread Control.
The looper thread is too tight around the fabric edge.	> Reduce the lower looper thread tension (red). > Increase the mtc micro thread control. > Reduce the cutting width «CW». > Check the rollhem selector lever position «O».
The needle thread forms loops on the wrong side of the fabric.	> Increase the needle thread tension (yellow, green). > Reduce the lower looper thread tension (red).
The fabric edge forms a tunnel or curls.	> Reduce the lower looper thread tension (red). > Increase the mtc micro thread control. > Reduce the cutting width «CW». > Check the rollhem selector lever position «O».
The seam puckers.	> Reduce the left needle thread tension (yellow). > Increase the right needle thread tension (green). > Set the Differential feed between 1 and 0.7 (Stretching). > Shorten the stitch length «SL».

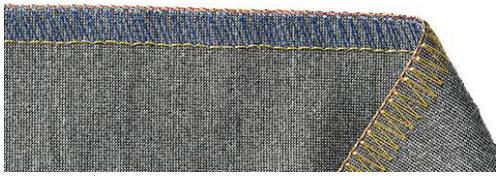
Tab. 10: Optimizing the stitch: 3-Thread Super Stretch / 2-Thread Wrapped Overlock

3-Thread Flat Seam

With a balanced stitch formation, the upper thread (blue) is on the top side of the stitch related to the insertion into the fabric edge.

The lower looper thread (red) is parallel to the fabric edge.

The needle thread (yellow or green) forms a «V» on the bottom side of the stitch related to the insertion into the fabric edge.



Stitch pattern	Recommendation
The lower looper thread overedges the fabric edge towards the wrong side of the fabric.	> Reduce the left or the right needle thread tension (yellow or green). > Increase the upper looper thread tension (blue).
The upper looper thread doesn't reach to the fabric edge.	> Increase the needle thread tension (yellow or green). > Reduce the upper thread tension (blue).
The lower looper thread is not parallel to the fabric edge.	> Increase the lower looper thread tension (red). > Reduce the left or the right needle thread tension (yellow or green). > Reduce the upper thread tension (blue).
The seam puckers, the lower looper thread is overstretched.	> Reduce the lower looper thread tension (red).
The needle thread doesn't reach to the fabric edge.	> Reduce the left or the right needle thread tension (yellow or green). > Increase the upper looper thread tension (blue).
The lower looper thread overedges the fabric edge towards the wrong side of the fabric.	> Increase the needle thread tension (yellow or green). > Reduce the upper thread tension (blue).
The fabric edge curls.	> Reduce the left or the right needle thread tension (yellow or green). > Reduce the upper thread tension (blue). > Increase the mtc Micro Thread Control. > Reduce the cutting width «CW». > Check the rollhem selector lever position «O».

Tab. 11: Optimizing the stitch: 3-Thread Flat Seam

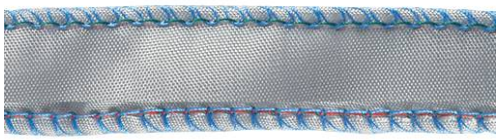
3-Thread Rolled Hem / 3-Thread Picot Stitch

With a balanced stitch formation, the upper looper thread (blue) loops around the cutting edge.

The lower looper thread (red) lies straight along the needle thread on the bottom side of the stitch.

The needle thread (green) is identifiable on the top side of the stitch as a straight line and on the bottom side of the stitch as points.





Stitch pattern	Recommendation
The looper thread is too loose around the fabric edge.	> Increase the upper looper thread tension (blue). > Increase the cutting width «CW». > Shorten the stitch length «SL».
The fabric edge doesn't curl as intended.	> Increase the cutting width «CW». > Increase the upper looper thread tension (blue). > Elongate the stitch length «SL».
The upper looper thread is too tight around the fabric edge.	> Reduce the upper thread tension (blue). > Shorten the stitch length «SL».
The lower looper threads are not parallel to the needle thread.	> Increase the lower looper thread tension (red). > Increase the right needle thread tension (green).
The seam puckers, the lower looper thread is overstretched.	> Reduce the lower looper thread tension (red).
The needle thread forms loops on the wrong side of the fabric.	> Increase the right needle thread tension (green).
The seam puckers.	> Reduce the lower looper thread tension (red). > Set the Differential Feed between 1 and 0.7 (Stretching). > Increase the right needle thread tension (green). > Shorten the stitch length «SL».

Tab. 12: Optimizing the stitch: 3-Thread Rolled Hem / 3-Thread Picot Stitch

2-Thread Rolled Hem

With a balanced stitch formation, the looper thread (red) loops around the cutting edge. The needle thread (green) is identifiable on the top side of the stitch as a straight line and on the bottom side of the stitch as points.



Stitch pattern	Recommendation
The looper thread is too loose around the fabric edge.	> Increase the lower looper thread tension (red).
The looper thread is too tight around the fabric edge.	> Reduce the lower looper thread tension (red). > Reduce the cutting width «CW».
The fabric edge doesn't curl as intended.	> Increase the cutting width «CW». > Elongate the stitch length «SL». > Increase the lower looper thread tension (red).
The needle thread forms loops on the wrong side of the fabric.	> Increase the right needle thread tension (green).
The seam puckers.	> Reduce the right needle thread tension (green). > Set the Differential Feed between 1 and 0.7 (Stretching). > Shorten the stitch length «SL».

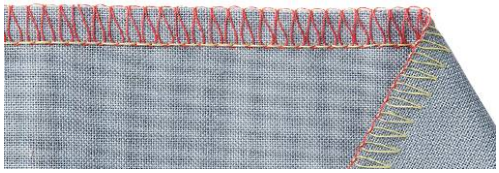
Tab. 13: Optimizing the stitch: 2-Thread Rolled Hem

2-Thread Flatlock / 2-Thread Overlock / 2-Thread Blanketstitch

With a balanced stitch formation, the lower looper thread (red) lies on the top side of the stitch from the needle penetration point to the fabric edge.

The needle thread (yellow or green) forms a «V» on the bottom side of the stitch related to the insertion into the fabric edge.







Stitch pattern	Recommendation
The lower looper thread overedges the fabric edge towards the wrong side of the fabric.	> Increase the lower looper thread tension (red). > Reduce the left or the right needle thread tension (yellow or green).
The lower looper thread doesn't reach to the fabric edge.	> Reduce the lower looper thread tension (red). > Increase the needle thread tension (yellow or green).
The needle thread doesn't reach to the fabric edge.	> Increase the lower looper thread tension (red). > Reduce the left or the right needle thread tension (yellow or green).
The lower looper thread overedges the fabric edge towards the wrong side of the fabric.	> Reduce the lower looper thread tension (red). > Increase the needle thread tension (yellow or green).
The fabric edge forms a tunnel or curls.	> Increase the mtc micro thread control. > Reduce the cutting width «CW». > Shorten the stitch length «SL». > Check the rollhem selector lever position «O».

Tab. 14: Optimizing the stitch: 2-Thread Flatlock / 2-Thread Overlock / 2-Thread Blanketstitch

9 Practical overlocking

In this chapter the most important applications for a successful sewing project are described.

Further applications are described in the separately available BERNINA overlocker reference book.

9.1 Securing overlock stitches

The stitches are secured when they are overstitched.

Securing stitches is particularly important when seam ends are not integrated with other seams or hems.

Sewing in the thread chain at the start of the seam

> Form a thread chain at a length of 5 - 8 cm.
> Place the fabric under the presser foot and sew a stitch into the fabric.
> Lower needles with the back-kick function.
> Raise the presser foot.
> Now pull the newly formed thread chain carefully forward and place it on the sewing line to be sewn.
> Lower the presser foot.
> Sew approx. 4 cm over the thread chain.



Sew the thread chain in at the end of the seam

> At the end of the seam, sew one stitch over the fabric edge.
> Raising the needle.
> Raise the presser foot.
> Pull the fabric a bit backwards.
> Turn the fabric so that the wrong side points upwards.
> Place the fabric beneath the presser foot so that the needles pierce the fabric at the first stitch.
> Lower the presser foot.
> Sew approx. 1.5 - 2.5 cm over the thread chain and make sure that the existing thread chain is not cut.
> Finish the seam by sewing into the air.



Securing the thread chain

> Sew a thread chain of about 10 cm beyond the end of the seam.
> Pull the thread chain end through the looper threads using a loop flip, an awl or a sewing needle with a large eye.



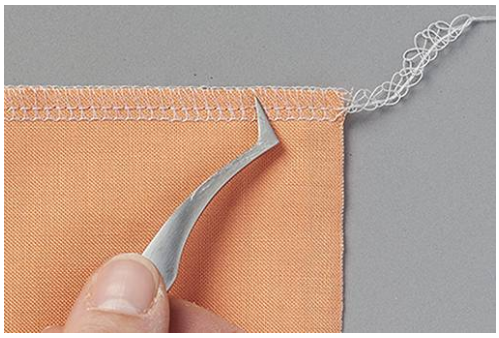
Tie on thread chain

> Tie on the thread chain at the seam end, close to the fabric.

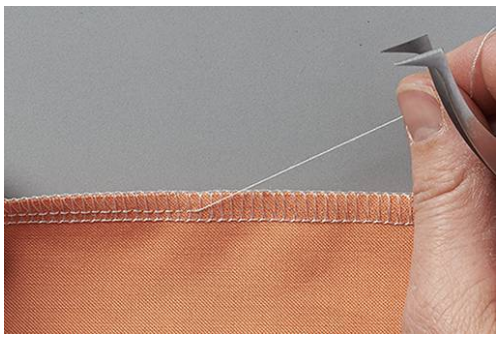
9.2 Removing a stitch

The thread loops of the looper and needle threads can be removed easily.

> Pull the right overlock needle thread (RN) out of the thread chain with tweezers, starting from the seam end.

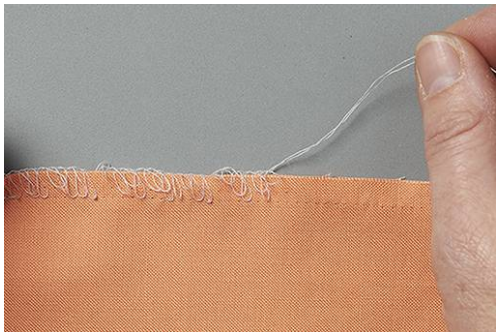


> Pull the needle thread out of the seam.



> With very long seams, cut the thread in the stitch and remove it step by step.
> Remove the left overlock needle thread in the same way.

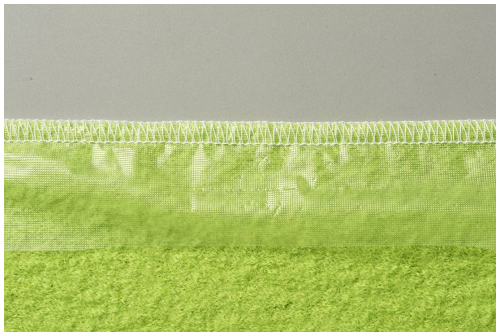
> The looper threads lie around the fabric edge and can be removed easily.



9.3 Sew blanket stitch

This technique allows you to create a stitch similar to the popular blanket or Parisian stitch as an edge finish on woollen blankets, scarves or thick materials.

> Preferably thread decorative thread into the looper and the needle.
> Place water-soluble stabilizer on top of the fabric along the edge to be sewn.
> Sew along the fabric edge.



> After sewing, pull the stabilizer away from the fabric (to the right), pulling the needle thread to the edge of the fabric.
  – This makes the seam look like the typical hand-stitched blanket stitch.



> Wash out the water-soluble stabilizer.

9.4 Gathering

Ruffling is a gathering or wrinkling of a seam.

By pulling the needle thread

Slightly different colors of the needle/looper threads facilitates separating the needle threads.

The needle threads are usually the shorther ones in the thread chain.

> Set the machine for a 3- or 4-Thread Overlock.
> Set the Differential Feed at default.
> Sew the fabric with this side up on which the ruffling is wanted.
> Leave a long thread chain at seam end.
> Separate the needle thread/threads from the thread chain.
> Pull the needle thread(s) and evenly spread the wrinkles along the seam.



By adjusting the Differential Feed



> Set the machine for a 3- or 4-Thread Overlock.
> Set the Differential Feed to «2».
> Set the stitch length to «4».
> Sew the fabric with this side up on which the ruffling is wanted.
> Sew beyond the end of the fabric.

9.5 Sew outer corners

Method 1



> Set the machine for a 2-, 3- or 4-Thread Overlock.
> Sew along the edge of the fabric beyond the corner.
> Start a new edge and sew over the previously sewn edge.
> Secure the thread chain. (see page 89)

Method 2

> Trim the allowance for the cutting width of the following corner in the sewing direction (presser foot length).



> Sew one stitch over the fabric edge and stop.
  – The needles are at the top position.
> Raise the presser foot.
> Push the rolled hem selection lever to position «R».
  – The loops are loosened from the stitch finger.
> Turn the fabric counterclockwise.
  – The trimmed edge of the fabric is in the sewing direction under the presser foot.
> Push the rolled hem selection lever to position «O».
> Use the back-kick function to pierce the fabric with the needle.
> Pull back and tighten loose threads of the thread spools on the thread spool stand.
> Lower the presser foot and continue sewing.



9.6 Sew inner corners

> Set the machine for a 2-, 3- or 4-Thread Overlock.



> Draw sewing lines on both sides of the corner about 5 cm long with the fabric pen.



> Sew the seam until the knife reaches the corner.



> Use the back-kick function to place the needle in the fabric.
> Raise the presser foot.
> Carefully pull the corner to a straight line and fold the fabric forwards.
> Lower the presser foot.
> Continue sewing until the needles reach the corner.
> Lay the folds back and continue sewing.



9.7 Sew inner curves



Inner curves appear on necklines, facings and armholes. Time-consuming clipping or trimming can be avoided by overlocking the fabric edge.

Prerequisite:

- The 4- or 3-Thread Overlock stitch is set..

> While sewing, stretch the curve carefully so it is straight.

9.8 Sew outer curves and circles

Due to the Differential Feed, the overlock seam can be pulled or pushed into shape for flat, round edges.

> Cut away the seam allowance at one point in the length of the sewing foot .



> Start and end the seam at the cut seam allowance.
  - Wavering; Set the Differential Feed to 1.5 – 2.
  - Ruffling; Set the Differential Feed to 0.7 – 1.

> At the seam end sew 1 – 2 stitches over the seam beginning.

> Pierce with the needle and lift the presser foot.

> Turn the fabric away from the presser foot to the left.



> Lower the presser foot and sew over and beyond the fabric.

9.9 Using the tape guide

This presser foot provides an adjustable tape guide which can hold ribbons and elastics up to 12 mm in width. It is optimal to integrate ribbons as seam reinforcements or to attach elastics to lingerie and swimwear seams.



Prerequisite:

- The 4- or 3-Thread Overlock stitch is set.
- The presser foot is raised and swung out.
- The needles are raised.

> Place the tape beneath the presser foot and insert it into the tape guide from the right.
> Swing in and lower the presser foot to fix the tape.
> Sew a few stitches on the tape.
> Loosen the screw at the ribbon guide lightly.
> Adjust the width of the tape guide so that at least one needle can stitch the tape.
> Tighten the screw.
> Raise the presser foot toe and place the material under the presser foot.
> Continue sewing on the tape.

10 Appendix

10.1 Care, cleaning and maintenance

NOTICE

Damage by cleaning with compressed air

Cleaning using aerosol sprays or compressed air may cause permanent damage to your machine. Repair by a BERNINA dealer will be necessary.

> Remove fabric scraps and thread remnants using a vacuum cleaner with soft top piece.

Care of the machine

The operational life span depends on the maintenance of the machine. The machine can be dusted off with a moist cloth without cleaning agents.

Based on normal household use, an annual service at a certified BERNINA dealer is recommended.

> Free the sewing area from fabric and thread scraps regularly after sewing.

- Needle, needle bar
- Presser foot
- Feed dog (from above)
- Knife

> Free the looper area from fabric and thread scraps. (see page 97).

- Brush
- Tweezers
- Vacuum with soft attachment

Cleaning the air threader pipes

NOTICE

Damage by fluids in the air threader system



The air threader pump may be damaged permanently if liquids infiltrate the system. Repair by a BERNINA dealer will be necessary.

> Protect the air threader nozzles from liquids.

Now and then, dust and thread remnants must be removed from all air threader pipes.

Prerequisite:

- Use a thick thread (e.g. Amann Saba C size 30) at a length of about 1 m.

> Thread the thread in the air threader nozzle.
> To clean the air threader pipe, hold the thread at both ends and pull it to and fro.
> Remove the thread at the looper end in thread feed direction.
> Repeat this process for the other air threader nozzles using a clean thread.

Cleaning the looper area

While overlocking, fabric and thread remnants remain in the looper area, remove these remnants regularly.

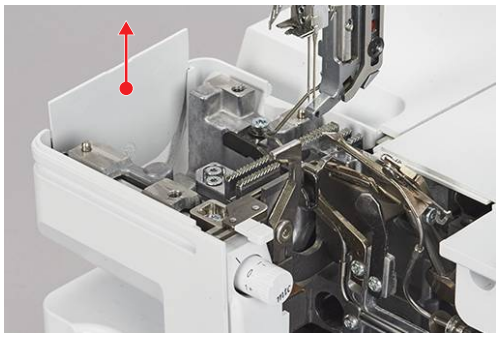
Prerequisite:

- The presser foot is up.
- The needles are at top position.

> Remove the presser foot .
> Remove the screws of the stitch plate with the Torx screwdriver.
> Remove the stitch plate from the freearm.



> For thorough cleaning, remove the freearm cleaning cover.



> Use the brush to remove all dust particles and fabric scraps.



> Attach the freearm cleaning cover after cleaning again.
> Screw the stitch plate back on place.
> By slowly turning the handwheel, ensure that the knife, needle and feed dogs are not impair in their movement.

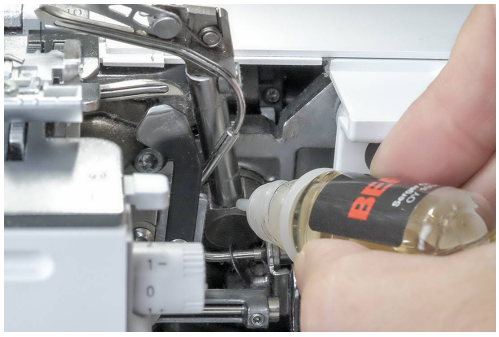
Cleaning the suction feet

Regular cleaning of the suction feet prevents the machine from shifting on the table at high sewing speed.

> Use a damp cloth to remove dust and threads remnants.

Oiling the machine

> After frequent use, lubricate the upper looper joint with 1 – 2 drops of the supplied BERNINA serger oil.



10.2 Storing and transporting the machine

Storing the machine

The correct storage of the machine over a longer period of time has an influence on its lifespan and functionality.

> To store the machine, the original packaging supplied must be used.
> Don't store the machine outdoor.
> Protect the machine against climatic influences.
> Before operating the machine again after storage, leave the machine unpacked for approx. 1 h at room temperature.

Transporting the machine

For a relocation or a longer transport of the machine, the following actions should be carried out.

> Retract the spool reel stand completely downwards.
> Lower the presser foot.
> Remove all connecting cables.
> Lift and transport at the carry handle and the transport carry groove under the handwheel.
> For a longer transport, protect the machine and transport it in its original packaging.

10.3 Troubleshooting

Failure	Cause	Recommendation
Irregular stitch	Incorrect thread tension.	> Adjust the thread tension. (see page 63)
	Incorrect needle size.	> Match needle size with fabric/thread. (see page 48)
	Threading incorrect.	> Rethread the machine. (see page 68)
	Fabric has been pulled.	> Don't pull the fabric; guide lightly.
	Loose presser foot.	> Attach the presser foot properly. (see page 34)
	Air threader pipes dirty.	> Clean the air threader pipes. (see page 96)
Needle breaks	Needles are defective.	> Replace needles. (see page 35)
	Fabric has been pulled.	> Don't pull the fabric; guide lightly.
	Incorrect needle size.	> Replace the needle. (see page 35)
	Needle fit incorrect.	> Match needle size with fabric/thread. (see page 48)
	Loose presser foot.	> Attach the presser foot properly. (see page 34)
	Needle system incorrect.	> Insert needle of the system ELx705 CF. (see page 48)
Unintended seam gathering	Incorrect thread tension.	> Adjust the thread tension. (see page 63)
	Needles are defective.	> Insert a new needle. (see page 35)
	Differential feed incorrect.	> Set the Differential feed to 0.7 – 1. (see page 63)
Unintended seam waving	Differential feed incorrect.	> Set the Differential feed to 1 – 2. (see page 63)
Skipped stitches	Incorrect needle size.	> Match needle size with fabric/thread. (see page 48)
	Threading incorrect.	> Rethread the machine. (see page 68)
	Defective needle	> Insert a new needle. (see page 35)
	Needle fit incorrect.	> Insert the needle correctly. (see page 35)

Failure	Cause	Recommendation
Thread breakage	Threading incorrect.	> Thread correctly. (see page 68)
	Needle damaged.	> Insert a new needle. (see page 35)
	Incorrect needle size.	> Replace the needle. (see page 35)
	Incorrect thread tension.	> Adjust the thread tension. (see page 63)
	Thread tangles above the thread cone.	> Check whether the thread cone can unwind freely. (see page 28) > Use the spool net.
	Retractable thread stand is not fully extended.	> Raise the retractable thread stand fully. (see page 28)
The machine doesn't sew	No power supply.	> Connect the machine. (see page 24)
	Power switch off.	> Switch the machine on. (see page 24)
	Machine is overheated.	> Switch the machine off and let it cool down for 10 15 min. (see page 24)
	Air threader connector	> Set the air threader connector to «0».
Machine runs slowly and then stops	Pulse drive	> Close the threader cover. (see page 26)
Fabric piles up	Incorrect presser foot pressure.	> Reduce the presser foot pressure. (see page 62)
Acoustic signal	The air threader doesn't work.	> Swing the presser foot in. (see page 33)
	Machine is not ready for sewing.	> Lower the presser foot. (see page 32)
		> Close the threader cover and the looper cover. (see page 26)
		> Set needle to topmost position. (see page 40)

10.4 Specifications

Designation	Value	Unit
Number of stitches	18	
Number of loopers	2	
Number of needles	1 – 2	
Needle system	ELx705 CF	
Needle thickness	70 – 90 (10 – 14)	
Differential feed	0.7 – 2	
Maximum fabric thickness	6,0 (0,23)	mm (in)
Stitch length	0,8 – 4,5 (0,03 – 0,16)	mm (in)
Cutting width of the left overlock needle LN	5 – 9 (0,19 – 0,35)	mm (in)
Cutting width of the right overlock needle RN	3 – 7 (0,11 – 0,27)	mm (in)
Sewing light	8	LED
Minimum sewing speed	400	Stitches per minute
Maximum sewing speed	1 500	Stitches per minute
Safety features	Safety switch for threader cover and presser foot lifter	
Dimension without retractable thread stand	43 x 28 x 35 (16,92/11,02/13,77)	cm (in)
Dimensions with sewing table / cut-offs bin	57 x 35 x 35 (22,44/13,77/13,77)	cm (in)
Weight of the machine	12,3 (27,1)	kg (lb)
Boxed weight	≈17 (37,5)	kg (lb)
Foot control	BERNINA LV 1	
Energy consumption	140	Watt
Input voltage	100 – 240 (50 – 60)	Volt (Hz)
Protection class (Electrical engineering)	II	
Production date	To be seen on the type label under «Code»	

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