

MACHINE
EMBROIDERY





K. MANN & SÖHNE

INNOVATION
SINCE 1854

THE COMPANY

Since 1854, AMANN has been one of the leading global producers in the field of high-quality sewing and embroidery threads. Its technical expertise, reliability and flexibility in production and service makes AMANN a strong partner worldwide. In close cooperation with its customers, AMANN develops sewing and embroidery threads, as well as smart yarns for tomorrow's market requirements.

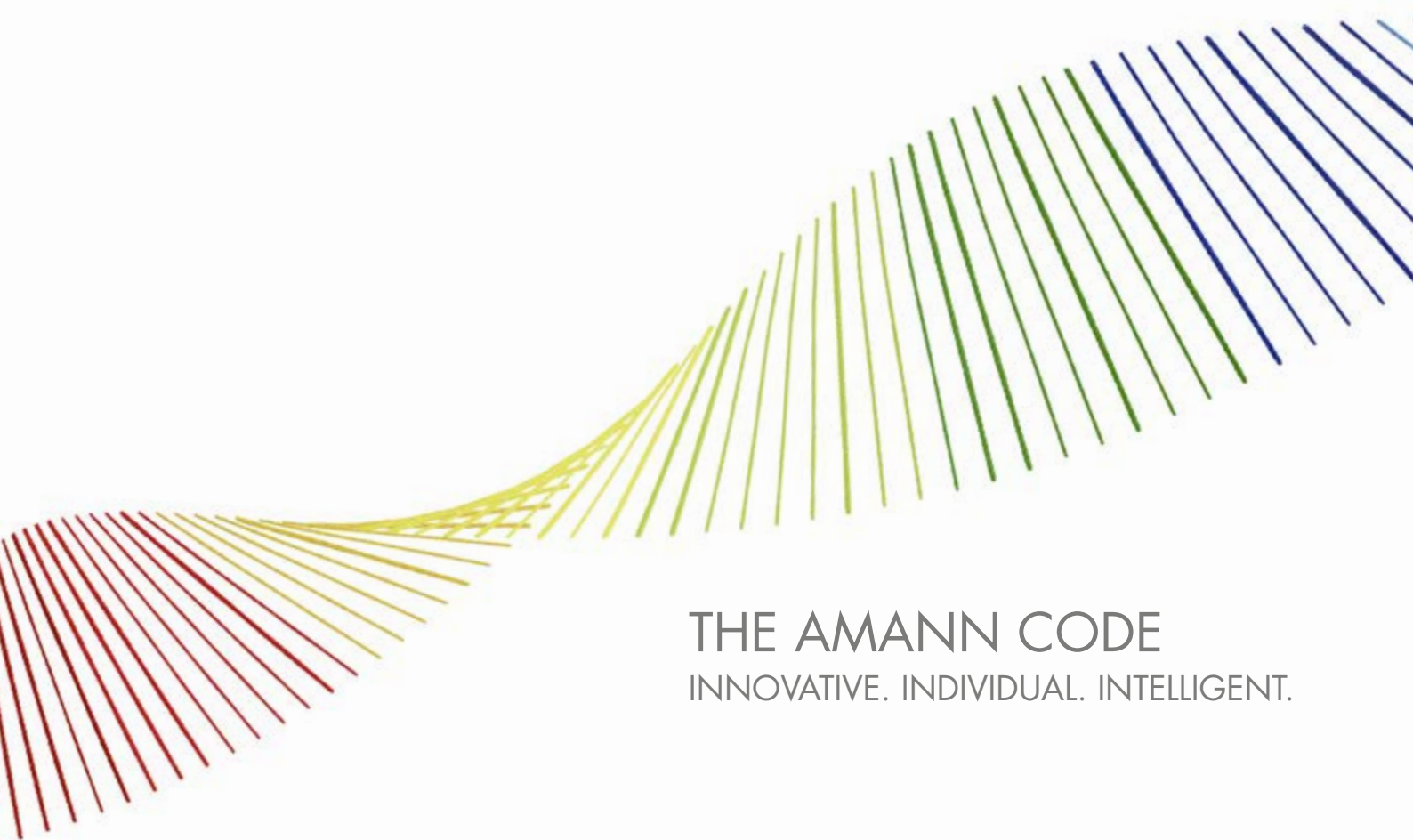
More than 2,600 motivated employees in more than 100 countries worldwide make AMANN's success possible. AMANN Group exclusively produces at its own production sites. The company headquarters are located in Bönningheim, Germany.

THE AMANN CODE

Success has a secret. Intelligent products, individual solutions and innovative concepts: the amann code. AMANN produces threads meeting the highest standards, and develops ideas for creating seams that make your products even safer, more efficient, comfortable and beautiful. Developing new ideas is a tradition at AMANN.

We utilise the know-how from various industries and combine knowledge and expertise for the development of intelligent, modern products. Our customers' wishes and demands serve as our standards. Individual solutions are our strength – in product and colour management, and in service and logistics.

State-of-the-art technology is a prerequisite for innovative products. Through constant communication with our customers, partners and vendors, we develop sewing and embroidery threads as well as functional yarns and technical threads – always one step ahead, always at the highest technical level.



THE AMANN CODE
INNOVATIVE. INDIVIDUAL. INTELLIGENT.

UN GLOBAL
COMPACT



COMMITMENT TO THE PRECEPTS OF THE UN GLOBAL COMPACT

As a global company, AMANN has made the conscious decision to enter into the UN Global Compact. "The United Nations Global Compact is the world's biggest and most important initiative for responsible corporate management. Based on ten universal principles and the Sustainable Development Goals, it pursues the vision of an inclusive and sustainable global economy to the benefit of all people, communities and markets, today and in the future."¹ It is AMANN's ambition not only to be a pioneer in terms of high-quality, sophisticated products, but also in activities in the spirit of sustainability.

Learn more about our sustainable achievements and targets in our annually published Sustainability Report.

In 2020, we have been awarded by United Nations as one of the TOP 50 sustainability & climate leaders worldwide.

CERTIFICATION & SAFETY

At AMANN, customer expectations regarding performance, reliability and technical expertise, as well as the quality and environmental compatibility of the products are an obligation and a motivation at the same time. Continuous compliance with the high-quality standards at AMANN Group is ascertained by the certification for quality management according to DIN EN ISO 9001.

ENVIRONMENTAL MANAGEMENT

AMANN's resource-friendly approach and its strive to keep the environmental impact as low as possible is documented by the certification in accordance with the DIN EN ISO 14001 environmental management system.

QUALITY COMMITMENT

The fulfilment of the process-oriented quality commitment for a safe production environment is proven by the certification under the strict IATF 16949 standards.

PRODUCT CERTIFICATIONS

The compliance with REACH guarantees that AMANN's products are not harmful. Moreover, they are certified according to STANDARD 100 by OEKO-TEX®, and a large number of the products are even certified to the stricter criteria of appendix 6.

AMANN products Saba, Sabatex, Sabaflex, Isacord, Serafil, Serafil Recycled, Serafil fine Recycled, N-tech and N-tech CS have been examined concerning the industrial wash resistance according to DIN EN ISO 15797, and have received the PRO-Label certification according to DIN EN ISO 30023.

The products from our Lifecycle line are Cradle to Cradle Certified® Gold and the products from our Recycled line are available as Global Recycled Standard (GRS) certified.

¹ German Global Compact Network office: United Nations Global Compact

SERVICE & CONSULTING



SERVICE

From development to production and everyday customer support, quality, precision and a great deal of creativity and passion characterise AMANN's performance.

RELIABILITY

Based on its vast expertise in the production of sewing and embroidery threads, AMANN has been serving the global textile industry for decades. AMANN is a reliable partner for all industries and offers professional product solutions, from fashionable to technical applications.

INTERNATIONAL SALES TEAM

Direct points of contact all over the world facilitate a more personal communication and have comprehensive understanding for the procedures within the sewing and embroidery industry.

COLOUR COMPETENCE

Colour is a crucial topic within the textile industry. The AMANN colour competence center utilises state-of-the-art technologies and employs experienced experts. A huge colour range that is available worldwide covers the most diverse requirements of all industries: from fashion to shoes & leather, from automotive industry to technical applications.

LOGISTICS AND WAREHOUSING

As an internationally leading producer of high-quality sewing and embroidery threads, shipping and warehousing are a part of AMANN's daily business. Just-in-time-delivery, flexibility in meeting customer requirements and efficient logistics management – this is what AMANN stands for.

AMANN TECHNICAL ADVISORY SERVICES (TAS)

As strong and reliable as our yarns: Advice on sewing and embroidery technology is one of our core competencies, which we are continuously expanding with the aid of various test and analysis procedures. In our ultra-modern AMANN Technical Advisory Services (TAS), we put our products through their paces and analyse them down to the smallest fibre. This puts us in a position to keep our quality promise and enables us to constantly expand our specialist knowledge.

The team at our technology centre provides solid and reliable advice for all issues relating to applications and products. We are happy to pass on our knowledge to you in individual customer workshops, technical seminars or specialist lectures. Based on decades of experience and cutting-edge know-how, we support you in all questions concerning your business, whether you want to increase your productivity or precisely calculate your material requirements. You can also count on us for special topics – from the development of sewing technology to processing testing.

Our application-oriented consulting knows literally no limits: our experts are at your side worldwide. We are always up to the minute when it comes to the processing of new materials.



SUSTAINABLE
PRODUCT
RANGE

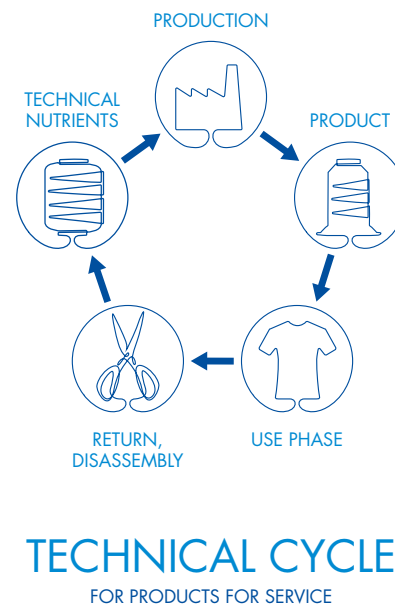
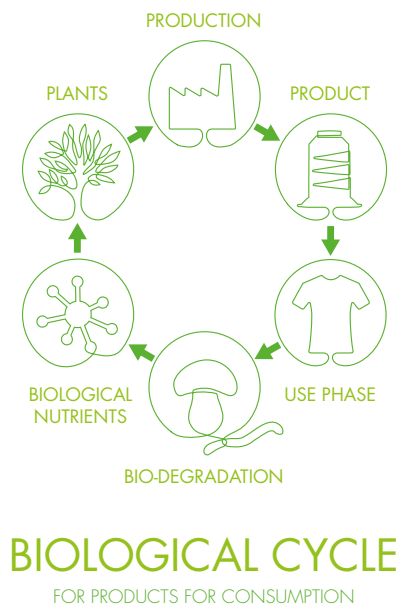
LIFECYCLE OR RECYCLED.

AMANN'S SUSTAINABLE SEWING AND EMBROIDERY THREADS

AMANN develops its products in a targeted manner in order to make them not only more sustainable, but also more environmentally friendly through the use of selected recycled and natural materials. Our sustainable product range consists of two product lines: the Cradle to Cradle Certified® Gold Lifecycle line and the GRS-certified Recycled line. The finish of our sewing threads is also systematically optimised. For example, in the production of water-repellent sewing threads, we have replaced environmentally harmful perfluorocarbons (PFCs) with environmentally compatible alternatives. Our eco-friendly WRe finish is available for Serafil WRe, Onyx WRe and Saba WRe. As a globally operating company, we also focus on sustainable, fair and safe production processes worldwide.

LIFECYCLE LINE

Cradle to Cradle®, stands for a consistent, continuous recycling management, where no waste is generated, as the Cradle to Cradle® products are either used as biological nutrients in biological cycles, or they are continuously kept in technical cycles as technical nutrients. With our Lifecycle line, we can offer Cradle to Cradle Certified® Gold sewing threads for both cycles: Lifecycle Cotton for the biological cycle and Lifecycle Polyamide for the technical cycle.



RECYCLED LINE

Our high-quality sewing and embroidery threads from the Recycled line are made from 100% recycled, transparent PET bottles and are available as Global Recycled Standard (GRS) certified. They have the same quality features as our excellent range products, for instance in terms of breaking strength, abrasion resistance and sewability.



BRILLIANT & FASHIONABLE

Our embroidery thread recommendation:
Isacord



MATT

Our embroidery thread recommendation:
Saba, Rasant, Mercifil



CHENILLE

Our embroidery thread recommendation:
Sabatex Embroidery



DYEABLE

Our embroidery thread recommendation:
MercifilGD



GLOW-IN-THE-DARK

Our embroidery thread recommendation:
Isa Texlight



TECHNICAL & FUNCTIONAL

Our embroidery thread recommendation:
Silver-tech, Silver-tech+, Steel-tech, Serafil complil



METALLIC

Our embroidery thread recommendation:
Isamet



SUSTAINABLE

Our embroidery thread recommendation:
Lifecycle Cotton, Recycled range for embroidery



FILIGREE & MONOGRAMS

Our embroidery thread recommendation:
Serafil fine



COARSE DECORATIVE EMBROIDERY

Our embroidery thread recommendation:
Serafil



FLAME-RETARDANT

Our embroidery thread recommendation:
N-tech, N-tech CS, A-tech, A-tech CS



BOBBIN THREAD


Our embroidery thread recommendation:
Isa, Isabob, Saba

ISACORD

POLYESTER CONTINUOUS FILAMENT, TRILOBAL

- universal machine embroidery thread for all brilliant and fashionable embroidery
- great in colour, great in function
- abrasion-resistant, robust, perfect embroidery properties
- excellent colour fastness
- classic on work & corporate wear
- extremely durable – also for jeans and automotive

Ticket no.	Tex no.	Needle size Nm	Needle size No.	Make-up
40	27	65-90	9-14	10x1.000 m KS 5.000 m KS
40 multicolor	27	65-90		10x1.000 m KS "snap"

FS/KS = 


Care instructions:     



POLYESTER CONTINUOUS FILAMENT

- the ideal embroidery thread for all fine materials
- filigree, silk-like, adaptive
- for embroidering monograms and precise details (lettering down to 2 mm)
- ideally suited to fix sequins

Ticket no.	≅ Embroidery ticket	Tex no.	Needle size	Make-up
120	40	24	Nm 70-80	4.000 m FS
150	50	21	Nm 65-75	5.000 m FS
180	60	16	Nm 60-70	5.000 m FS
300	75	10	Nm 55-65	5.000 m FS
420	100	7	Nm 55	10.000 m FS

FS/KS = 

Care instructions:     



SUSTAINABLE ALTERNATIVE:

Serafil fine Recycled is made from 100% recycled PET bottles!



ISAMET

POLYESTER/POLYAMIDE WRAPPED YARN

- the metallic embroidery thread
- classic thread in uniform and emblem embroidery
- brilliant accent for elegant clothes
- available in gold, silver and many other metallic colours

Isamet Gold/Silver

Ticket no.	Tex no.	Needle size	Make-up
40	27	Nm 75-90	10x1.000 m FS 5.000 m FS
50	15	Nm 70-90	10x1.000 m FS

Care instructions:     

Isamet Fashion

Ticket no.	Tex no.	Needle size	Make-up
40	27	Nm 75-90	10x1.000 m FS

Care instructions:     


Isamet Colour

Ticket no.	Tex no.	Needle size	Make-up
40	27	Nm 75-90	10x1.000 m FS

Care instructions:     

Isamet New

Ticket no.	Tex no.	Needle size	Make-up
40	27	Nm 75-90	10x1.000 m FS

FS/KS = 

Care instructions:     



PBT (POLYBUTYLENE TEREPHTHALATE)/PP (POLYPROPYLENE), CONTINUOUS FILAMENT

- the phosphorescent embroidery thread
- glows in the dark
- for special effects for example on children's nightwear or clothes that are worn in bars or clubs

Ticket no.	Tex no.	Needle size	Make-up
40	30	Nm 70-80	10x800 m KS "snap"

FS/KS = 

Care instructions:      








Serafil

POLYESTER CONTINUOUS FILAMENT

- the coarse embroidery thread for decorative seams
- outstanding, also on leather
- subtle sheen
- special finishing process
- best embroidery performance with perfect stitch formation
- made from 100% recycled PET bottles:
Serafil is also available as recycled version

Ticket no.	△ Embroidery ticket	Tex no.	Needle size	Make-up
40	15	70	Nm 90-120	1.200 m FS 5.000 m FS
60	25	45	Nm 80-110	1.800 m FS 5.000 m FS
80	35	30	Nm 70-110	2.400 m FS 10.000 m FS

FS/KS = 

Care instructions:     



SUSTAINABLE ALTERNATIVE:

Serafil Recycled is made from 100% recycled PET bottles!



POLYESTER/POLYESTER CORE SPUN

- the matt embroidery thread with outstanding processing properties
- abrasion-resistant, robust, perfect embroidery properties
- excellent colour fastness
- great in tickets and colours
- textile appearance
- good resistance properties
- Saba 150 as a coloured bobbin thread in more than 535 colours
- made from 100% recycled PET bottles:
Saba is also available as recycled version

Ticket no.	△ Embroidery ticket	Tex no.	Needle size	Make-up
50	15	60	Nm 90-110	10x500 m XW 2.500 m Co
80	30	40	Nm 90-100	10x1.000 m XW 5.000 m Co
80 multicolour	30	40	Nm 90-100	10x1.000 m XW
100	35	30	Nm 80-90	10x1.000 m XW 5.000 m Co
120	40	24	Nm 70-80	10x1.000 m XW 5.000 m Co
150	60	21	Nm 60-70	10x1.000 m XW 5.000 m Co

Co =  XW = 

Care instructions:



SUSTAINABLE ALTERNATIVE:

Saba Recycled is made from 100% recycled PET bottles!



POLYESTER/COTTON CORE SPUN

- the matt embroidery thread with outstanding processing properties
- textile appearance
- the classic embroidery thread on traditional costumes

Ticket no.	△ Embroidery ticket	Tex no.	Needle size	Make-up
50	15	60	Nm 100-110	10x1.000 m XW 5.000 m Co
75	30	40	Nm 90-100	10x1.000 m XW 5.000 m Co 10.000 m Co
120	40	24	Nm 70-80	10x1.000 m XW 5.000 m Co 10.000 m Co

Co =  XW = 


Care instructions:



POLYESTER CONTINUOUS FILAMENT, TEXTURED

- the perfect thread for chenille/moss and chainstitch embroidery
- excellent colour fastness
- suitable for industrial laundry, PRO-care certified
- huge variety of brilliant colours
- high running length guarantees high productivity
- the ideal alternative to fuzzy wool yarns

Ticket no.	Tex no.	Needle size		Make-up
		Nm	No.	
60	58	90-110	16-19	6.000 m FS

FS/KS = 

Care instructions:



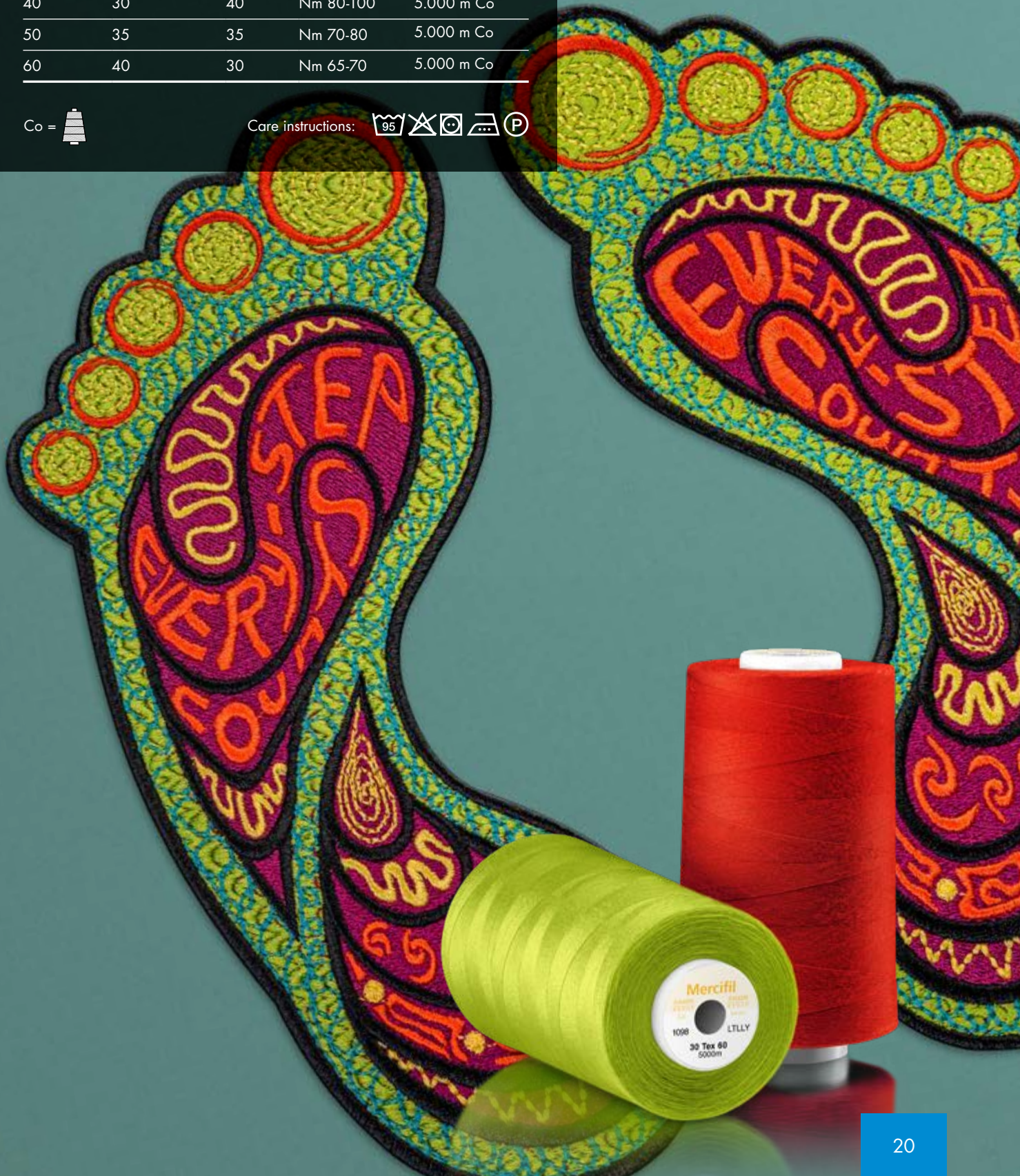
COTTON SPUN, MERCERISED

- the classic cotton embroidery thread
- made from long-staple mercerised cotton
- optimal dyeing properties
- MercifilGD also available for garment dyeing

Ticket no.	△ Embroidery ticket	Tex no.	Needle size	Make-up
30	15	60	Nm 100-120	5.000 m Co
40	30	40	Nm 80-100	5.000 m Co
50	35	35	Nm 70-80	5.000 m Co
60	40	30	Nm 65-70	5.000 m Co



Care instructions:     



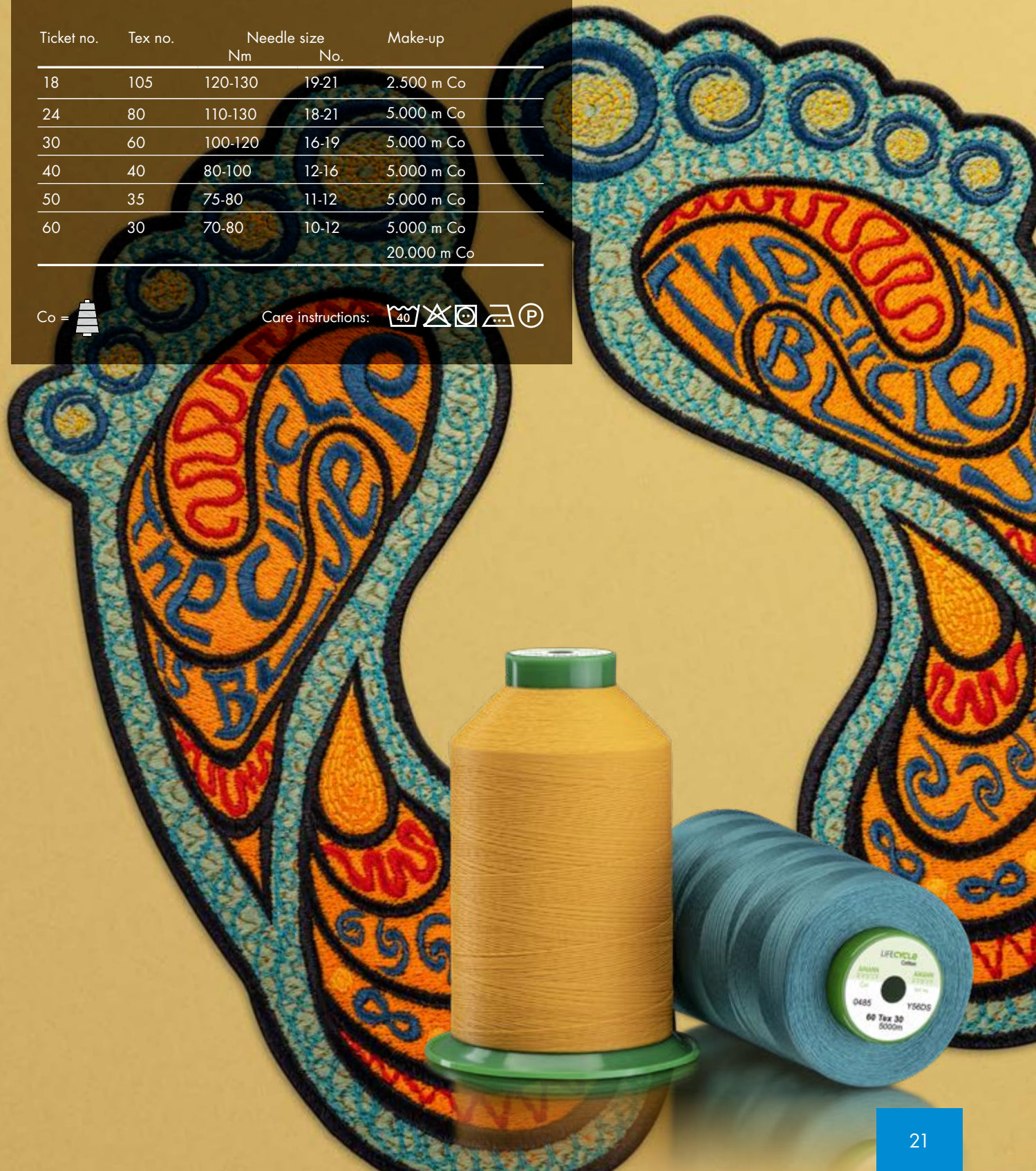
COTTON SPUN, MERCERISED, 100% ORGANIC

- Cradle to Cradle Certified® Gold
- made from extra long-staple mercerised organic cotton
- specially developed for the biological cycle
- only dyed with compostable dyes
- optimal dyeing properties if using as a garment dyeing thread
- ideal choice for manufacturing sustainable products

Ticket no.	Tex no.	Needle size		Make-up
		Nm	No.	
18	105	120-130	19-21	2.500 m Co
24	80	110-130	18-21	5.000 m Co
30	60	100-120	16-19	5.000 m Co
40	40	80-100	12-16	5.000 m Co
50	35	75-80	11-12	5.000 m Co
60	30	70-80	10-12	5.000 m Co
				20.000 m Co

Co = 

Care instructions:



ISA ISABOB

POLYESTER BOBBIN THREADS FOR EMBROIDERY

- bobbin thread range for machine embroidery
- Isa combines excellent thread running properties, high strength and large bobbin volumes
- Isabob provides outstanding unwinding properties, long running lengths and all benefits of prewound bobbin threads




Isa

Ticket no.	Tex no.	Needle size	Make-up	Colour no.
150	18	-	10.000 m Co	2
180	16	-	20.000 m Co	2

Isabob

Ticket no.	Tex no.	Needle size	Make-up	Colour no.
190	17	-	144 bobbins	2

Co = 

Care instructions:     

META-ARAMIDE SPUN THREADS

- for flame-retardant and heat-protective applications
- self-extinguishing and non-melting
- N-tech CS 120 also as bobbin thread for flame-retardant embroidery
- burning behaviour tested according to DIN EN ISO 15025

N-tech

Nomex® DuPont™ meta-aramide,
schappe spun

Ticket no.	△ Embroidery ticket	Tex no.	Needle size	Make-up
70	30	40	Nm 80-100	10x1.000 m XW 5.000 m Co



N-tech CS

Nomex® DuPont™ meta-aramide,
cut staple spun

Ticket no.	△ Embroidery ticket	Tex no.	Needle size	Make-up
70	30	40	Nm 80-100	10x1.000 m XW 5.000 m Co
120	40	25	Nm 70-90	5.000 m Co



A-tech
A-tech CS

NEWSTAR® YANTAI META- ARAMIDE SCHAPPE SPUN (A-TECH)

NEWSTAR® YANTAI META-ARAMI- DE, CUT STAPLE SPUN (A-TECH CS)

- meta-aramide special sewing & embroidery thread for flame-retardant and heat-protective applications
- self-extinguishing and non-melting
- the powerful alternative to Nomex®
- permanent temperature resistance up to approx. 200°C
- decomposition temperature at approx. 370°C
- burning behaviour tested according to DIN EN ISO 15025

A-tech

Ticket no.	Tex no.	Needle size		Make-up
		Nm	No.	
70	40	80-100	12-16	1.000 m Co 5.000 m Co

A-tech CS

Ticket no.	Tex no.	Needle size		Make-up
		Nm	No.	
40	75	100-120	16-19	3.000 m Co
70	40	80-100	12-16	5.000 m Co

Co = 



SILVER COATED POLYAMIDE/ POLYESTER HYBRID THREAD (SILVER-TECH)


- special sewing and embroidery thread with a silver coating
- for conductive seams and surfaces
- textile electrodes as sensors and actuators
- for seam positions that require antimicrobial characteristics
- no cell damaging effect in the Cytotoxicity Test according to DIN EN ISO 10993-5 for Silver-tech 120

Ticket no.	Tex no.	Needle size		Make-up	Electric resistance
		Nm	No.		
30	96	120-130	19-21	500 m FS	< 85 Ω/m
50	62	90-100	14-16	1.500 m FS	< 150 Ω/m
120	28	75-90	11-14	2.500 m FS	< 530 Ω/m

SILVER COATED POLYAMIDE CONTINUOUS FILAMENT (SILVER-TECH⁺)

- special sewing and embroidery thread with a silver coating
- for conductive seams and surfaces
- maximum conductivity
- fully conductive surface
- textile electrodes as sensors and actuators
- for seam positions that require antimicrobial characteristics

Ticket no.	Tex no.	Needle size		Make-up	Electric resistance
		Nm	No.		
100	33	75-90	11-14	2.000 m KS	< 200 Ω/m
150	22	70-75	10-11	2.500 m KS	< 300 Ω/m

FS/KS = 

Care instructions:     






STAINLESS STEEL/POLYESTER HYBRID THREAD

- conductive thread based on stainless steel
- excellent wash resistance, also for industrial washing
- for heating applications and RFID antennas
- the multifunctional smart yarn for knitting, weaving and embroidery

Ticket no.	Tex no.	△ Embroidery ticket	Needle size Nm	No.	Make-up	Electric resistance
100	93	35	90-110	14-18	1.500 m FS	< 100 Ω/m

Linear density dtex	Tex no.	Make-up	Resistance
930	93	5.000 m Sp	ca. 90 Ω/m
450	45	10.000 m Sp	ca. 230 Ω/m

Sp =  Co =  FS/KS = 

Care instructions:     



POLYESTER CONTINUOUS FILAMENT WITH SPECIAL FINISH

- thread with finish that is specially developed for composites
- optimised sewing/embroidery performance without adhesion-inhibiting properties towards composite matrix
- for fixing carbon or fibreglass rovings by TFP embroidery method (Tailored Fibre Placement)

Ticket no.	△ Embroidery ticket	Tex no.	Needle size	Make-up	Colour no.
60	25	45	Nm 80-110	5.000 m FS	7822 (orange)
180	60	16	Nm 65-75	10.000 m FS	1000 (raw)
300	75	10	Nm 60-70	15.000 m KS	1000 (raw)

FS/KS = 



A photograph of an embroidery machine in a factory setting. The machine is a long, white, industrial-grade device with multiple heads. In the foreground, a row of colorful spools of thread is mounted on a green plastic tray. The spools are in various colors: black, white, grey, yellow, red, orange, and blue. The background shows the machine's structure and other spools, slightly out of focus. A semi-transparent black box with white text is overlaid on the upper part of the image.

EMBROIDERY BASIC KNOWLEDGE

2

EMBROIDERY BASIC KNOWLEDGE

STITCH TYPES

- **RUNNING STITCHES** proceed linearly, one after the other – just like a conventional sewn seam. They may become shorter or longer and their thickness can be emphasised by multiple over stitching.



- **SATIN STITCHES** are closely spaced zig-zag stitches, and both their width and density can be altered to create the desired effect. This makes the satin stitch the most versatile of all embroidery stitches. The use of large underlay stitches can create texture and relief.



- **FILL STITCHES** fill surfaces. Depending on the stitch rhythm and stitch length, the surface can have an increased or decreased glance and show relief-like structures. Selecting the correct stitch length can help to reduce the number of stitches required, thus reducing production time.



THE DIGITIZER

- is mainly responsible for the quality of the embroidery.
- arranges the embroidery pattern from the previously described three stitch types.
- converts the artwork into the embroidery.
- must exactly know the embroidery materials and customer requirements to set the correct parameters.
- creates the necessary underlay stitches under the embroidery to achieve contour definition and volume and minimise distortion.
- is able to consistently create attractive embroidery by using advanced digitizing software.
- can achieve different shades of colour through using different stitch directions and stitch lengths.

THE EMBROIDERY MACHINE

The data created by the digitizer is converted from the embroidery machine in conjunction with the yarn, embroidery base and backing to the final embroidery. One distinguishes between:

- Number of heads: per head, one embroidery pattern can be completed at the same time.
Common machine sizes vary from 1 to 72 heads.
- Number of needles per head: the needle number gives the maximum number of colours that can be threaded in a single pattern without having an intermediate changeover. Needle numbers between 1 and 18 are common, although the focus is on approx. 12 needles.
- The work area and frame size dictates the maximum size of the embroidery.

Further properties that may affect the potential applications:

- Embroidery speed currently between 200 and 1800 stitches per minute
- Additional equipment such as devices for sequins, boring or cord embroidery

Generally, finely adjustable and accurate thread tension discs are required:

- the thread tension should always be set as low as possible
- Isacord with its low and very consistent sliding friction values enables an even finer adjustment of the thread tension
- Isacord's consistent coefficients of sliding friction across all colours prevent from readjusting the thread tension when the colour is changed

Generally, the thread balance is correct, if on the backside of the stitch, 1/3 of the surface is formed by the bobbin thread.

THE BACKING

- is used to achieve a distortion-free, sharp-contoured embroidery.
- gives the embroidery base the necessary dimensional stability in conjunction with the underlay stitches.
- may be removed after the embroidery process by tearing, cutting or dissolving.
- can be supported with a soluble film on the upper side of the embroidered material, if materials with nap are used.
The stitches are prevented from sinking into the nap by a water- or heat-soluble backing or a respective foil.

The following table offers general guidelines for the selection of the correct backing fabric. Exceptions are possible.

Material	Backing
Fine knitwear, very fine woven fabrics	Cut away backing, in order to avoid material damages while tearing away the backing
Woven fabric, stable knitwear	Tear away backing
Transparent materials, embroideries which are visible as well from the reverse side	Water- or heat soluble backing for the purpose of complete removal
Terry cloth, velvet, velours, fleece	Tear or cut away backing + water-soluble film on the top

THE NEEDLE

The DB x K5 needle system is established worldwide for machine embroidery. Machines by the brand Fortron® constitute an exception.

With the DB x K5 system, the needle eye is 1-2 needle sizes larger than usual. Thus, a size 70 needle has the needle eye of a size 80 or size 90 needle, which brings along several advantages:

- a smaller needle diameter can be selected, better protection of the material
- better protection of the embroidery thread, due to more space in the needle eye
- simplified threading of the needle

The needle size indicates the diameter of the part of the needle that penetrates the material, given in mm/100. Therefore, a size 70 needle has a diameter of 0.7 mm.

- on conventional embroidery machines, needle sizes between 55 and around 120 can be used.

The needle point is selected according to the required embroidery application. The small ball point may be used as a starting point

Real cutting points (SD or DH needle points) are avoided during machine embroidery to prevent perforation of the material.

The following table offers general guidelines for the selection of needle point and needle size. Exceptions are possible.

Material	Needle size Nm	Needle size Size	Needle point	Needle brand Groz-Beckert	Organ	Needle brand Schmetz
Knitwear						
Knitwear & jersey	65-80	9-12	medium or small ball point	FFG / RG	J / Q	SES
Finely knitted fabric	60-75	8-11	medium or small ball point	FFG / RG	J / Q	SES
Woven fabric						
Fabrics for shirts/blouses	55-70	7-10	sharp or small ball point	R / RG	R / Q	R
Denim	70-110	10-18	sharp or small ball point	R / RG	R / Q	R
Terry cloth	65-90	9-14	sharp or small ball point	R / RG	R / Q	R
Micro-fibre	60-90	8-14	sharp or small ball point	R / RG	R / Q	R
Silk	60-80	8-12	sharp or small ball point	R / RG	R / Q	R
Leather goods						
Leather	70-110	10-18	sharp ball point	R	R	R
Synthetic leather	65-90	9-14	sharp ball point	R	R	R
Coated materials	65-100	9-16	sharp or small ball point	R / RG	R / Q	R

The different embroidery thread tickets can be allocated to the following needle sizes. Exceptions are possible.

Embroidery thread ticket	Article examples	Recommended needle size Nm	Recommended needle size No.	Recommended needle system (except Fortron®)
100	Serafil fine 420	55	7	DB x 1
75	Serafil fine 300	55-65	7-9	DB x 1(55), DB x K5
60	Serafil fine 180, Saba 150	60-70	8-10	DB x K5
40	Isacord, Saba 120, Rasant 120	65-90	9-14	DB x K5
35	Serafil 80	70-110	10-18	DB x K5
30	Saba 80, Rasant 75	75-100	11-16	DB x K5
25	Serafil 60	80-110	12-18	DB x K5
20	Saba 50	90-110	14-18	DB x K5
15	Serafil 40	90-120	14-19	DB x K5

EMBROIDERY TIPS

Problem	Potential cause	Suggested solution
THREAD BREAKS	Needle thread tension is too high.	Reset needle thread tension, 125 cN is considered as the highest standard value for general embroidery work.
	Wrongly or incompletely threaded.	Check thread path and correct it, if necessary.
	Thread guiding elements have sharp edges or show burrs.	Polish thread paths.
	Hook shows burr (e.g. caused by hitting the needle).	Polish hook.
	Stitch density is too high/too many stitch layers on top of each other.	Change the stitching programme and digitize less densely.
	Stitching speed is too fast with large stitches.	Especially for long stitches, reduce machine speed.
	Insufficient thread quality.	Use branded thread featuring a high tensile strength such as Isacord.
THREAD BULGING IN FRONT OF THE NEEDLE	Needle size is too small, eyelet is too small.	Use thicker needle, use DB x K5 system needle with a larger eye in order to keep the needle size as small as possible.
	Unfavourable stitching direction (for example satin stitch backwards).	Reverse stitching direction with underlay stitches, if necessary.
	Poor thread quality.	Use branded thread featuring high tensile strength such as Isacord.
	Embroidery base material is very densely woven or knitted.	If possible, digitize longer stitches or use a stronger needle.
SKIP STITCHES	Needle is defective (bent).	Replace needle.
	Incorrect needle size.	Select needle size that matches the embroidery material and the thread. If the needle eye is too big in relation to the thread size, skip stitches may occur.
	Needle is not set correctly into the machine.	Check needle position. The needle must be fully inserted to the needle bar and must be threaded vertically from front to back (twelve o'clock position).
	Threading path is incorrect.	Check if correctly threaded and if a thread loop may got caught somewhere.
	Unfavourable stitching direction on difficult base material.	First, rotate the pattern and base material by 90°. If necessary, change stitching direction of fill and satin stitches in digitizing programme.
	Hook setting is incorrect.	Adjust hook so that the tip of the hook can safely take up the needle thread loop.
MATERIAL DAMAGES	Needle (point) broken.	Replace needle.
	Wrong needle point used.	Select needle point according to the material.
	Stitch density is too high for material/too many stitches are in the same place.	Reduce stitch density, work with shorter stitch lengths on inner radiuses, offset placement of penetration points.
LOOPS IN THE EMBROIDERY	Thread tension is too low.	Increase thread tension.
	Stitch length is too long.	In digitizing programme, set the maximum stitch length correctly (usually not more than 7 mm).
	Stitch length is too short.	In digitizing programme, use minimum stitch length.

EMBROIDERY TIPS

Problem	Potential cause	Suggested solution
FABRIC PUCKERS AROUND THE EMBROIDERY	Embroidery hoop is too big.	Use smallest possible embroidery hoop.
	Woven material is not framed sufficiently tight.	Material and backing must be tightly clamped like a drum.
	Knitted fabrics were stretched, when clamped into the frame.	For knitted fabrics, frame only the backing and then fix the material by using a temporary adhesive avoiding distortion.
	Backing is not tight enough.	Double thin backing or use heavier backing.
	Fabric puckers despite backing.	Bond backing and fabric with a temporary or permanent adhesive in order to further reduce puckering.
	Thread tension is too high.	Check needle thread and bobbin thread tension.
	Fabric is too dense.	Puckering due to displacement. Use smaller needle size and less stitches.
IMPROPER APPEARANCE OF THE EMBROIDERY	Unfavourable stitching direction (for example diagonally backwards).	Change stitching direction (either by digitizing or by framing and embroidering the material offset by 90°).
	Stitch length is too long or too short.	Adjust minimum and maximum stitch length in digitizing programme.
	Stitch density and thread size do not match.	Select actually used thread size in digitizing programme or adjust the stitch density accordingly.
	Underlay stitches are missing or do not fulfil their purpose.	Check underlay stitches in digitizing programme. Contour underlay stitching is recommended for letters, while box-type underlay stitching is recommended for area embroideries. Please consider: false underlay stitching is useless.
	Stitches sink into the material (for example terry cloth, velour or velvet).	The application of a water- or heat-soluble film on the top side prevents the stitches from sinking.
	Thread tension balance is incorrect.	Reset thread tension. In a row of satin stitches, the bobbin thread should cover 1/3 of the width of the stitch.
CONTOURS ARE NOT SYNCHRONISED	Too much stretching of the material in the embroidery hoop.	Improve framing method.
	Pull is not considered in digitizing process.	Apply pull compensation in digitizing programme.
	Hoop has loosened.	Tighten frame screw further, wrap frame with textile tape for more stability.
	Digitizing fault.	Check digitizing programme on the computer (for example, if the outline segment can be offset completely).
EMBROIDERY IS STIFF	Backing is too stiff.	Use thinner backing or less layers of backing.
	Stitch density is too high/thread is too thick.	Synchronise stitch density and thread size.
UNFAVOURABLE FRAME MARKS	Frame is too smooth/too hard for the material.	Wrap inner hoop with textile tape. Slight marks can be removed with steam.
	Material is too delicate (for example tuft fabrics).	Work with temporary adhesives or Filmoplast so that the material itself does not need to be framed in the hoops, but only the backing.

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