SWAROVSKI ELEMENTS

application MANUAL

designers' choice SINCE 1895

application MANUAL

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SWAROVSKI AND THE SWAROVSKI ELEMENTS BRAND

Swarovski is the world leader in the production of precision-cut crystals that are used in the fashion and jewelry industry, as well as in the world of lighting design, architecture, and the interior sector. The company, which has remained in family hands since its foundation in 1895, in Wattens, Austria, employs 20,000 people and is present in more than 120 countries.

SWAROVSKI ELEMENTS is the premium brand for the finest crystal elements produced by Swarovski. For over one hundred years, leading designers and producers have employed these innovative and inspiring elements in their creations. SWAROVSKI ELEMENTS are available in an incredible variety of shapes, cuts, colors, and effects, and captivate through their creative potential. The “MADE WITH SWAROVSKI ELEMENTS” label identifies design pieces that incorporate high-quality crystal elements, and serves as a certificate of authenticity for consumers around the world.

SWAROVSKI ELEMENTS represents:

INDIVIDUALITY AND CREATIVITY

SWAROVSKI ELEMENTS are the small, sparkling crystals that make all the difference in the development of unique design pieces. They set first-class creations apart from everyday designs. In addition, Swarovski is the only company to provide the possibility of customized editions

INNOVATION LEADERSHIP

SWAROVSKI ELEMENTS set new standards in both technology and design. Through intense trend research and new developments in the field of the raw materials used, their composition, and their application, new innovations of the highest quality are developed, continually inspiring and revolutionizing the industry. In line with the spring/summer and fall/winter trends, SWAROVSKI ELEMENTS launches a package of innovations twice a year, with new colors, effects, and cuts, as well as semi-finished products.

VARIETY OF PRODUCTS

SWAROVSKI ELEMENTS are available in the largest variety of shapes and cuts, sizes, colors, and effects on the market. The assortment ranges from classic gemstone cuts right up to contemporary, avant-garde cuts, and from the classically elegant crystal colors to the latest trend colors. It goes without saying that the crystal colors and surface effects are consistent throughout the entire assortment.

HIGHEST QUALITY & BRILLIANCE

Swarovski has developed the crystal cut with the highest level of brilliance: the XILION cut. XILION elements stand out because of their clearly differentiated star shape cut, which, thanks to precision workmanship and the perfect positioning of the facets, creates the ideal distribution of light and the highest level of brilliance. The unique Platinum Foiling further supports these quality characteristics because it protects the crystal during further processing (e.g. plating or soldering) thus ensuring the permanent brilliance of the crystal element.

SUSTAINABILITY

Customers selecting SWAROVSKI ELEMENTS opt for the very highest crystal standard, as well as supporting environmental protection and sustainable development. New, groundbreaking crystal compositions from Swarovski meet regulatory and safety requirements, as well as our own strict, independent standards. SWAROVSKI ELEMENTS sees itself as a dependable partner and works to constantly supply its customers with the highest quality crystal, while taking responsibility for consumers and for the environment.

An overview of the SWAROVSKI ELEMENTS product assortment can be found in the Collection Summary. The full range, along with product details, is listed in the product catalog (Collection) as well as on the Business website WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS..

APPLICATION SERVICES

Thanks to their outstanding quality and with the help of specially developed application techniques, SWAROVSKI ELEMENTS can be processed easily and quickly to produce a high quality finished product. This manual contains information concerning all the usual application techniques, including photos and detailed explanations, as well as the Application Services offered by Swarovski. Through comprehensive Application Services, customers profit from the extensive experience of internal and leading international technical specialists. Each of Swarovski’s regional offices is available at any time for further information.
In addition, a wide range of continually updated information and application support in multimedia format can be found on the Swarovski Business website WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS.

SWAROVSKI ELEMENTS

SWAROVSKI® is a registered trademark.

benefit FROM OUR EXCLUSIVE
INGREDIENT *branding program*

WWW.SWAROVSKI-ELEMENTS.COM/PARTNER

designers' choice SINCE 1895

INFORMATION ON CERTIFICATES AND COMPLIANCE OF SWAROVSKI ELEMENTS

MORE THAN 100 YEARS OF INNOVATION AND EXPERIENCE

Swarovski has been dedicated to perfection in all aspects of crystal creativity since 1895. Today, Swarovski is an inspiration to the entire design world in terms of high-quality, precision-cut crystal.

RESPECT AND RESPONSIBILITY

All Swarovski products reflect the values of the company: respect, integrity, and a sense of responsibility toward people and the environment. SWAROVSKI ELEMENTS are synonymous with the spirit of innovation not only from a design perspective but also with regard to certificates and compliance with laws governing health and safety.

OEKO-TEX® CERTIFICATE

SWAROVSKI ELEMENTS are certified according to class II of the Oeko-Tex® Certificate 100, an international quality label for harmless textiles. The class II standard for the textile industry regulates textiles that are in direct, lasting contact with human skin. The standard regulates thresholds for specific health damaging substances, and is even stricter than present laws.

EN 71/3 AND ASTM F963-03 CERTIFICATE

SWAROVSKI ELEMENTS fulfill the EN71/3 and ASTM F963-03 norms with reference to the permissible solubility of substances for children's toys.

PLATINUM FOILING AND M-FOILING FREE OF HAZARDOUS SUBSTANCES

The foilings used for SWAROVSKI ELEMENTS are compliant according to 16 CFR 1303 and do not exceed the lead limit for surface coatings.

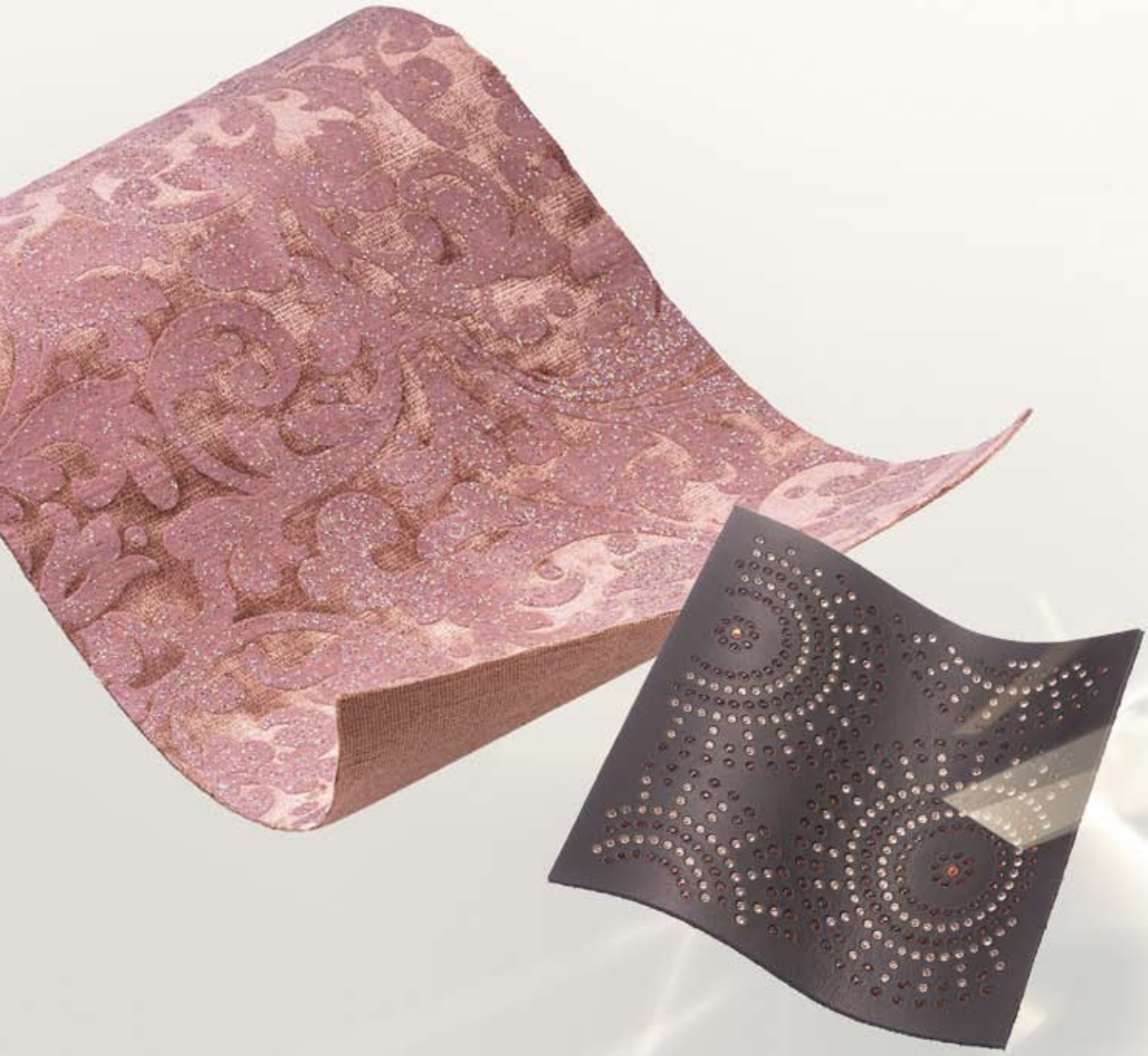
ROHS COMPLIANCE

The RoHS directive which has been in effect since July 1, 2006 regulates the use of certain hazardous substances (e.g. lead, cadmium, mercury) in connection with electrical and electronic equipment.
Due to the exception granted to the glass industry for bound lead in crystal glass, the majority of our crystal range* (including effects and Crystal Pearls) can be employed in electric and electronic devices..

REACH

The Registration, Evaluation, and Authorization of Chemicals is a new EU regulation that came into force on June 1, 2007. Under this regulation, manufacturers or importers of chemicals must pass on information about chemicals that are contained in the products they provide. This information needs to be provided both to customers and to the European Chemicals Agency (ECHA). Swarovski fulfils all the requirements of REACH regulations. For further information regarding compliance and/or application recommendations, please refer to our Business website WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS or to our Application Manual.

*At the time of printing, the following colors did not conform to RoHS regulations: Citrine, Dark Red Coral, Fire Opal, Garnet, Hyacinth, Light Siam, Palace Green Opal, Siam, and Sun



WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS

GENERAL *information*

Swarovski offers a comprehensive range of services, tailored to customers' requirements, for the application of SWAROVSKI ELEMENTS.

APPLICATION MANUAL <<<

This Application Manual offers extensive information on the various Application Services and Advanced Solutions provided by Swarovski.

In addition, thanks to their outstanding quality and with the help of specially developed application techniques, SWAROVSKI ELEMENTS can be processed easily and quickly to produce a high-quality finished product. The processes involved are described in this manual on a step-by-step basis, with photos and illustrations.

Each application method contains detailed information on the following areas:

Products	SWAROVSKI ELEMENTS that are suitable for the application technique in question
Machines, Tools, and Aids	List of machines, tools, and aids necessary for application
Suppliers	Selection of suppliers that sell these machines, tools, and aids
Application	Detailed description of the entire application process and the product-specific procedure Furthermore, the Hotfix Selector outlines extensive application parameters for suitable product and carrier material combinations
Useful Information	Advice and tips on working with SWAROVSKI ELEMENTS
Quick Assistance	A checklist of typical application problems, along with possible causes and recommendations on avoiding them (in each chapter these are marked with a ?!)

Extensive care instructions and further information on certificates, norms and regulations are featured at the end of the manual.

APPLICATION ONLINE: WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS <<<

All the information contained in this manual is regularly updated on the SWAROVSKI ELEMENTS business website (WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS). In addition, application techniques are demonstrated through animations and videos. The site is an excellent way to find out about Swarovski's Application Services and application techniques.

To gain access to the restricted section of the business website, please contact your local Swarovski representative.

APPLICATION SERVICES <<<

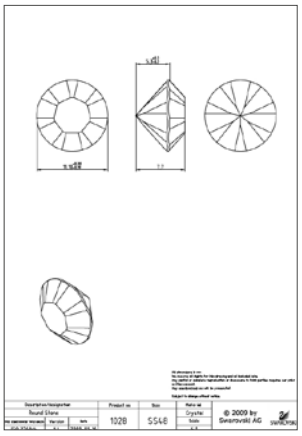
Swarovski offers a comprehensive range of services, tailored to your requirements, for applying SWAROVSKI ELEMENTS. In doing so, the company aims to meet the needs of each industry, and to jointly offer flexible and integrated solutions.

- Technical inquiry service
- Training courses
- Application partner network

Technical inquiry service

Available worldwide, the technical inquiry service can help you in the following areas:

- Product information
- Technical drawings
- Information on standards and regulations
- Care instructions
- Certificates
- Individual application tests based on customer samples
- Information on machines, tools, and aids



For further information, please contact your local Swarovski office.

Training courses

Swarovski can pass on its application expertise through training courses, which can be carried out locally in the form of demonstrations, workshops or individual production consultancies on site. According to the target group and industry, you receive an overview of the extensive application possibilities of SWAROVSKI ELEMENTS, in both theory and practice. The focus is on the efficient use of aids, the optimum choice of application techniques, and quality assurance.

For further information, please contact your local Swarovski office.

Application partner network

As a company with a global sales network and deep understanding of the market, Swarovski has comprehensive knowledge of various application companies and their services from around the world.

Based on this knowledge, Swarovski has developed a global partner network, made up of “Recommended” and “Certified” application partners. They offer a wide range of technical and product-related services, as well as tailored production solutions.

RECOMMENDED CERTIFIED APPLICATION CENTER

SWAROVSKI ELEMENTS

CERTIFIED APPLICATION CENTER

SWAROVSKI ELEMENTS

Application partners can assist you with a variety of application techniques, such as Hotfix application, sewing, embroidery, and mechanical application. In addition, many partners can carry out technically complex solutions, such as Flat Back Leather and the automated, mechanical application of Rivets. The services offered by our partners range from product and design consultancy, to prototyping and carrying out production, and make up a key component of our customer focus.

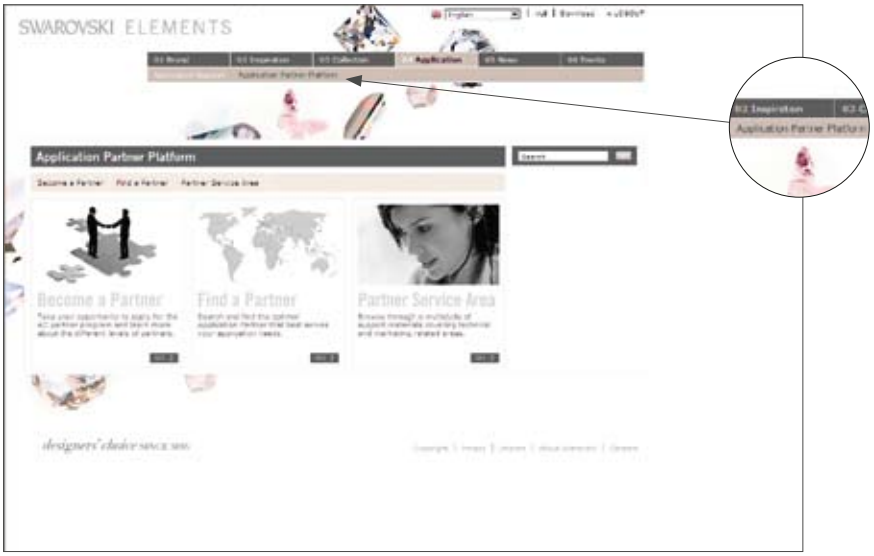
Should you require a professional partner to assist you in applying items such as Transfer Motifs onto t-shirts, Rivets onto belts, or Plastic Trimmings onto jeans, the “Application Partner Platform” or your local Swarovski office can offer guidance.

Application Partner Platform (APP)

The “Application Partner Platform” enables you to find the right application partner swiftly and easily, wherever in the world production may be taking place. Through a tailored “pitch function”, you can send out a specific, detailed application request (e.g. to apply XILION Transfers onto 500 t-shirts at a target price of €5) to select partners around the world.

The platform is made up of three core areas – “Find a Partner”, “Become a Partner”, and “Partner Service Area”:

- Find a Partner
  Using the search function, this area enables you to locate the best Application Center for your application work. You are immediately provided with a list of application partners, which you can download and save. If you use the “pitch function” for a specific inquiry regarding an application service, you receive detailed quotes from the application partners contacted.
- Become a Partner
  If you are interested in becoming an application partner yourself, the “Become a Partner” section contains key information on the requirements and an application form to complete. Your local Swarovski office will then contact you as soon as possible.
- Partner Service Area
  The “Partner Service Area” provides application partners with exclusive access to specially developed, tailored information, communication materials, and “Service Tools”. Through the “Partner Service Area”, Swarovski partners are regularly kept up to date with new information and features, to simplify working with SWAROVSKI ELEMENTS and expand the application possibilities.



Access to the Application Partner Platform:

The “Application Partner Platform” is located in the restricted area of the business website:
WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS. Under “Application”, you will find direct access to the “Application Partner Platform”.

For access to the restricted area of the business website, and for further information, please contact your local Swarovski office.

ADVANCED SOLUTIONS

Swarovski classifies Advanced Solutions as innovative technical solutions that involve both specialized product and application knowledge. These may be the result of long-term internal research and development, or a fruitful partnership with an external partner. Swarovski has developed Advanced Solutions for certain areas and segments, whereby specific demands and requirements must be met. The following chapter presents a selection of application innovations and solutions available, which should be considered among the many application possibilities of SWAROVSKI ELEMENTS.

Chaton Leather

Chaton Leather is one of two innovative application solutions developed specially for the leather industry. The technique requires a considerable amount of technical know-how and is offered **exclusively by Swarovski.**

In general, smooth leather is one of the most captivating and challenging carrier materials for applying SWAROVSKI ELEMENTS. Because of the unique structure of leather, and its sensitive, treated surface, a standard Hotfix application is not recommended. Therefore, Swarovski has developed and patented a technique that allows **Diamond Transfers to be applied to smooth leather.**

Article explanation

SWAROVSKI ELEMENTS

- The Chaton Leather technique is suitable for applying Diamond Transfers of crystal sizes PP 12 and PP 17.
- The two crystal sizes can also be combined, if desired.

Colors and motif selection

- This technique can be used for standard motifs and special motifs, and offers all the standard colors and effects of the Diamond Transfer range.

Diamond Transfer motif size

- The maximum size of the Diamond Transfer motif is a Chaton Leather application on 480x197 mm.
- In general, there is no minimum size for a Diamond Transfer motif.

Geometric Chaton Leather motif on nappa lambskin

Specification of the carrier material

Leather types

- As leather is a natural product, each individual hide is unique. Leather can react differently to heat and pressure, depending on natural properties, as well as the processing and finishing methods.
- Swarovski therefore checks each individual hide before beginning the application process to ensure optimum results.
- In addition, Swarovski recommends a selection of standard leathers that are particularly suitable for applications using the Chaton Leather technique.

Size of the leather

- The maximum size of the leather is 490x207 mm.
- In general, there is no minimum size, though there may be some restrictions in individual cases.

Leather thickness

- For crystals of size PP 12, the leather should be between 0.7 and 1.0 mm thick.
- For crystals of size PP 17, the leather should be between 1.0 and 1.3 mm thick.
- If both crystal sizes are to be combined in a single motif, the leather must be 0.9 – 1.1 mm thick. These thickness recommendations should be followed to achieve optimum application results.

Care instructions

- Chaton Leather features natural leather as the carrier material. As leather can be sensitive and react differently to mechanical and chemical stresses, we recommend cleaning it with a soft cotton cloth.
- In general, mild, pH-neutral leather cleaners produced by the leather industry can also be used, though these should be tested before the first application.
- Please obtain further information from your leather supplier in order to achieve the required results.

Sample and order information

Process

- Testing and approving the customer's leather for suitability
- Developing the Chaton Leather motif required and drawing up the quotation
- Placing and producing the sample order
- Placing and producing the production order
- Sending the final cut Chaton Leathers to the customer

Tailored sample and production orders can be requested at your nearest Swarovski sales organization.

Developing the Chaton Leather motif

- Sending images and files in an accessible format (JPG, BMP, DXF), that reflect the actual size of the design and are of a good quality, is a major advantage in transforming the design into a Chaton Leather motif.
- In your design instructions, please include the motif size as well as the dimensions of the leather, respecting the final maximum dimensions of 490x207 mm.

Sending the customer leather

- To ensure the best possible use of the carrier material, please cut the leather into shape before sending it. Please add an extra 25 mm border on each side, to ensure optimum production results. (Example: if the final piece of leather is to be 100x50 mm, it must be sent at a size of 150x100 mm.)

Please note

Due to technical/production-related tolerances when working with Chaton Leather, the final design may differ slightly to the original. As such, the design or the application (in the wider sense) may be subject to slight variation in each reproduction. As these variations are not considered a defect, no warranty claims can be made against Swarovski.

Alongside the general terms and conditions, special conditions also apply to Chaton Leather, which are sent with each quotation.

Flat Back Leather

Flat Back Leather is the second innovative application solution developed specially for the leather industry. The technique is based on a great degree of technical know-how, and is offered **exclusively by Certified Application Centers**.

In general, smooth leather is one of the most captivating and challenging carrier materials for applying SWAROVSKI ELEMENTS. Because of the unique structure of leather, and its sensitive, treated surface, a standard Hotfix application is not recommended. Swarovski has therefore developed and patented a technique that enables **XILION Transfers and Pearl Transfers to be applied to smooth leather.**

Article explanation

SWAROVSKI ELEMENTS

- The Flat Back Leather technique is suitable for applying XILION Transfers with crystal sizes of SS 12, 16, 20, 30, and SS 34, and Pearl Transfers of sizes SS 16 and SS 34.
- Different crystal sizes can also be combined if desired.

Colors and motif selection

- This technique can be used for standard motifs as well as special motifs, and offers all the standard colors and effects of the XILION Transfer and Pearl Transfer ranges.

Motif size

- The maximum size of the motif is 500x322 mm.
- Motifs that are larger than this can easily be joined together during the application process on the leather.
- In general, there is no minimum size for a Flat Back Leather motif.

Floral Flat Back Leather motif on nappa lambskin with additional Rivets

Specification of the carrier material

Leather types

- As leather is a natural product, each individual hide is unique. Leather can react differently to heat and pressure, depending on natural properties, as well as the processing and finishing methods.
- To ensure optimum results, your application partner will check each individual hide before beginning the application process.
- In addition, Swarovski recommends a selection of standard leathers that are particularly suitable for application using the Flat Back Leather technique.

Size of the leather

- In general, there is no maximum leather size. However, the size of the heat press (standard size: 500x400 mm), the transfer design, and the roughness of the leather can lead to restrictions. Before the start of production, a sample run should always be applied.
- There is no minimum size for the leather.

Leather thickness

- To achieve optimum results, a minimum leather thickness of 0.5 mm is recommended.
- A maximum thickness cannot generally be given, as it depends on the structure and elasticity of the leather. Before the start of production, a sample run should always be applied.

Care instructions

- Flat Back Leather features natural leather as the carrier material. As leather can be sensitive and react differently to mechanical and chemical stresses, a soft cotton cloth is recommended for cleaning.
- In general, mild, pH-neutral leather cleaners produced by the leather industry can also be used, though these should be tested before the first application.
- Please obtain further information from your leather supplier in order to achieve the required results.

Sample and order information

Certified Application Center

- Due to extensive technical requirements, Flat Back Leather is supplied exclusively by trained, Certified Application Centers. A list of partners around the world can be found on the business website, WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS, in the Application Partner Platform area.
- Please contact your nearest Swarovski sales organization for more information.

Process

- Testing and approving the customer's leather for suitability (Certified Application Center)
- Developing the Flat Back Leather motif and drawing up the quotation for the exclusive application (Swarovski)
- Drawing up the quotation for the application (Certified Application Center)
- Placing and producing the sample order (customer with the Certified Application Center)
- Placing and producing the production order (customer with the Certified Application Center)
- Sending the final Flat Back Leather to the customer (Certified Application Center)

Developing the Flat Back Leather motif

- Sending images and files in an accessible format (JPG, BMP, DXF), that reflect the actual size of the design and are of a good quality, is a major advantage in implementing the design into a Flat Back Leather motif.
- In your design instructions, please include the motif size, respecting the final maximum dimensions of 500x322 mm.

Please note

The sample and production order is placed directly with the Certified Application Center. In line with this, all order and delivery conditions, as well as conditions of business, are agreed directly with the Application Partner. Swarovski will be happy to assist you throughout the order process.

Due to technical/production-related tolerances when working with Flat Back Leather, the final design may differ slightly to the original. As such, the design or the application (in the wider sense) may be subject to slight variation in each reproduction. No warranty claims can be made against Swarovski in this respect.

Flocking service with SWAROVSKI ELEMENTS

Flocking with SWAROVSKI ELEMENTS is an innovative application technique, which offers a wide range of options for large-format application on high-quality textile carrier materials. This application process is offered **exclusively by Swarovski,** and is based on a standard textile finishing technique, combined with comprehensive printing and application expertise.

Article explanation

- Flocking with SWAROVSKI ELEMENTS has been developed specially for the decorative interior sector. Curtains, wall coverings and decorative accessories, to name just a few, can be transformed into an interior high point using this process.
- A wide selection of different flock colors, along with combination possibilities involving crystals in Crystal Aurore Boreale and Jet Hematite, offer the spectrum necessary to create first-class effects.
- Crystal integration: high or low density
- Color combinations: a flock color can be combined with a crystal color
- Pattern repeat: vertically, 64 cm or 92 cm; horizontally, 35 cm to a maximum of 140 cm
- Minimum width of an individual flock line: 5 mm
- Minimum distance between individual lines: 2 mm

Crystal in Jet Hematite

Crystal in Crystal Aurore Boreale

Specification of the carrier material

Before finishing, fabrics should not be treated with silicone, Teflon® or any other surface waterproofing. For industrial production, very light or wide-meshed fabrics require an additional support material (e.g. water soluble) on the rear side.

Care instructions

In general, fabrics flocked with SWAROVSKI ELEMENTS should be treated as follows:

- Hand wash
- Lint brush
- Dry cleaning (P) and professional wet cleaning (W)

Sample and order information

- Tailored sample and production orders can be requested at your nearest Swarovski sales organization.
- Please ensure that all dimensions (e.g. pattern repeat) are included with the request. Pictures or drawings, preferably in black and white, must be the exact same size as the design required. Alternatively, high-quality scans in TIF or DXF format can be provided. High-quality files must be supplied to ensure a swift, accurate process.
- Upon receipt of your request you will be provided with a quotation, detailing the number of items, the fixed costs for the pattern and cylinder, and the price per meter for the crystal density (high or low). Having received your confirmation, the order is given to produce the hand-made samples (80x80 cm for each design) on the materials provided.
- When producing the hand-made samples, it is important that no less than 2 meters of the material for each design are provided. As every industrial production process requires a certain start-up period to reach the required finish quality, it is important to bear in mind that around 1–2 meters of the material provided will be regarded as scrap.
- The minimum order quantity for industrial production is 35 meters. The delivery time for an average production process (around 300 meters) can in special cases take up to six weeks. Materials flocked with SWAROVSKI ELEMENTS are rolled up and wrapped in protective film before being delivered.

Please note

Due to technical/production-related tolerances when applying flock and crystals onto fabric, the final design may differ slightly to the original and prints with regard to the outline. As such, the design or the application (in the wider sense) may be subject to slight variation in each reproduction. As these variations are not considered a defect, no warranty claims can be made against Swarovski.

Special production processes are offered to all customers, provided they are feasible and our general terms of business are applied.

GENERAL PRODUCT INFORMATION

This list offers an overview of the SWAROVSKI ELEMENTS that are suitable for the application methods described. Product categories/ descriptions are based on the 2010 Collection.

Round Stones

Flat Backs No Hotfix

Flat Backs Hotfix

Sew-on Stones

Fancy Stones & Settings

Beads

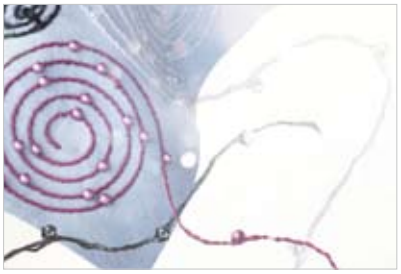
Crystal Pearls

Pendants

Self-adhesive Elements

Transfers

Synthetics Hotfix



Crystal Yarn

Plastic Trimmings

Buttons, Fasteners & Zippers

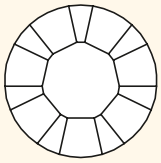
Metal Trimmings

Crystal Mesh

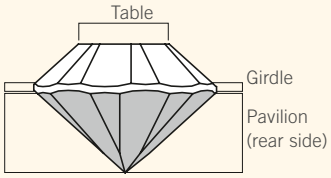
Cupchains & Findings

Knobs, Handles & Co

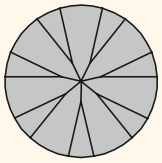
Crystal specifications



View from above (table)



Side view



View from below (pavilion)

Foiling

Foiling is the mirror coating on the back of jewelry stones that increases their brilliance. Since the introduction of XILION in 2004, Swarovski has offered its exclusive Platinum Foiling, which offers a previously unobtainable level of brilliance and enables crystals to be adapted to a variety of setting colors. In addition, products are also available with an aluminum reflector, and without foiling.

Platinum foiling (F)
A silver reflector, coated with a newly developed platinum-colored protective layer of the highest quality.

Aluminum foiling (M)
An aluminum reflector, which is technically a vapor coating.

Unfoiled (U)

Effects

Special surface or translucence effects are created through the vapor coating of the crystal surface (depending on the type of vaporization used). These can be applied to both clear crystal and colors ("Open to See Colors & Effects"). Special color and effect cards for individual product groups are located at the start of each section in the Collection. A list of all Swarovski effects follows, along with an explanation of the special vapor coating types.

Surface effects
(Vapor coating of the exposed side of the crystal)

Effect code	*Name*
AB	Aurore Boreale
CAL	Comet Argent Light
COP	Copper
DOR	Dorado
GSHA	Golden Shadow
HEM	Hematite (only on Jet)
METBL	Metallic Blue
METSI	Metallic Silver
MLGLD	Metallic Light Gold
MOL	Moonlight
NUT	Nut (only on Jet)
REDM	Red Magma
SAT	Satin
SSHA	Silver Shade
TRA	Transmission

Translucence effects
(Vapor coating of the rear side, effect appears through transparent crystal)

Effect code	*Name*
BBL	Bermuda Blue
HEL	Heliotrope
MBL	Meridian Blue
SAG	Sage
SAH	Sahara
TAB	Tabac
VL	Vitrail Light
VM	Vitrail Medium
VOL	Volcano

Special vapor coating types

V
The effect is applied in an inverted manner. The surface effect is employed like a translucence effect (e.g. CALV = Comet Argent Light on the rear side), or vice-versa (e.g. VMV = Vitrail Medium on the exposed side).

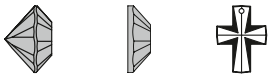
Z
The crystal is only partially vapor coated (e.g. HELZ)

B
Especially for cubes, three surfaces are coated (e.g. ABB)

2x
Both sides of the crystal are coated (e.g. AB2)

Special surface effects
Through the special chemical and mechanical treatment of the crystal surface, Swarovski can create unique surface effects.

Effect code	*Name*
MAT	Matt Finish
FRO	Frosted
COS	Cosmojet



The Matt Finish effect is produced by chemically matting the entire crystal surface. Through the chemical treatment of the crystal, small variations in dimensions cannot be ruled out after matting. Through the mechanical matting of the crystal surface, the Frosted effect can be produced. For technical reasons, this is only possible for Flat Back Roses. The blackening of individual facets creates the Cosmojet effect.

Colors


Crystal
001


White Opal
234


White Alabaster
281


Rose Water Opal
395


Vintage Rose
319


Light Rose
223


Rose
209


Indian Pink
289


Fuchsia
502


Ruby
501


Padparadscha
542


Hyacinth
236


Light Siam
227


Indian Siam
327


Dark Red Coral
396


Siam
208


Dark Siam
308


Garnet
241


Burgundy
515


Light Amethyst
212


Violet
371


Provence Lavender
283


Tanzanite
539


Cyclamen Opal
398


Amethyst
204


Purple Velvet
277


Dark Indigo
288


Montana
207


Capri Blue
243


Sapphire
206


Light Sapphire
211


Air Blue Opal
285


Aquamarine
202


Light Azore
361


Indian Sapphire
217


Pacific Opal
390


Turquoise
267


Indicolite
379


Caribbean Blue Opal
394


Blue Zircon
229

Chrysolite
238

Peridot
214

Fern Green
291

Erinite
360

Emerald
205

Palace Green Opal
393

Olivine
228

Khaki
550

Light Topaz
226

Sunflower
292

Jonquil
213

Silk
391

Light Peach
362

Light Colorado Topaz
246

Topaz
203

Light Smoked Topaz
221

Smoked Topaz
220

Mocca
286

Smoky Quartz
225

Sand Opal
287

Light Grey Opal
383

Greige
284

Black Diamond
215

Jet
280

Effects

Crystal Aurore Boreale
001 AB

Crystal Satin*
001 SAT

Crystal Matt Finish***
001 MAT

Crystal Moonlight
001 MOL

Crystal Silver Shade
001 SSHA

Crystal Golden Shadow
001 GSHA

Crystal Copper*
001 COP

Crystal Red Magma*
001 REDM

Crystal Comet Argent Light*
001 CAL

White Opal Sky Blue/*****
234 SBL

White Opal Star Shine/*****
234 STS

Crystal Bermuda Blue**
001 BBL

Crystal Heliotrope**
001 HEL

Crystal Metallic Blue*
001 METBL

Crystal Vitrail Light**
001 VL

Crystal Vitrail Medium**
001 VM

Crystal Sahara**
001 SAH

Crystal Tabac**
001 TAB

Crystal Volcano**
001 VOL

Crystal Metallic Light Gold*
001 MLGLD

Crystal Dorado*
001 DOR

Jet Nut*
280 NUT

Crystal Silver Night
001 SINI

Jet Hematite*
280 HEM

Jet Metallic Silver*
280 METSI

Classic colors: This palette features a wide selection of traditional Swarovski crystal colors.
Exclusive colors: This color palette is offered exclusively by Swarovski.

The standard selection of colors and effects can vary between product groups.

Slight variations between color tones are unavoidable. Colors can vary depending on the cut and shape.

Swarovski has tested the plating resistance of effects according to its own guidelines (WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS). However, customers are asked to carry out their own tests if their plating requirements are different to those of Swarovski.

* Crystals are not suitable for plating or similar processes.
** Crystals are not suitable for plating if they feature foiling.
*** Effects are only available as special finishes.

Sizes

Stones are measured in various units, according to their shape.

PP, SS
Pearl Plate (PP), Sieve Size or Stone Size (SS) for round crystals.

mm
Metric figures in millimeters for crystal components and geometric forms.

PP 1 (SS 000)
0.80–0.90 mm

PP 2 (SS 00)
0.90–1.00 mm

PP 3 (SS 0)
1.00–1.10 mm

PP 4 (SS 1)
1.10–1.20 mm

PP 5 (SS 2)
1.20–1.30 mm

PP 6 (SS 2)
1.30–1.35 mm

PP 7 (SS 3)
1.35–1.40 mm

PP 8 (SS 3)
1.40–1.50 mm

PP 9 (SS 4)
1.50–1.60 mm

PP 10 (SS 4)
1.60–1.70 mm

PP 11 (SS 5)
1.70–1.80 mm

PP 12 (SS 5)
1.80–1.90 mm

PP 13 (SS 6)
1.90–2.00 mm

PP 14 (SS 6)
2.00–2.10 mm

PP 15 (SS 7)
2.10–2.20 mm

PP 16 (SS 7)
2.20–2.30 mm

PP 17 (SS 8)
2.30–2.40 mm

PP 18 (SS 8)
2.40–2.50 mm

PP 19 (SS 9)
2.50–2.60 mm

PP 20 (SS 9)
2.60–2.70 mm

PP 21 (SS 10)
2.70–2.80 mm

PP 22 (SS 10)
2.80–2.90 mm

PP 23 (SS 11)
2.90–3.00 mm

PP 24 (SS 12)
3.00–3.20 mm

PP 25 (SS 13)
3.20–3.30 mm

PP 26 (SS 13)
3.30–3.40 mm

PP 27 (SS 14)
3.40–3.50 mm

PP 28 (SS 14)
3.50–3.60 mm

PP 29 (SS 15)
3.60–3.70 mm

PP 30 (SS 15)
3.70–3.80 mm

PP 31 (SS 16)
3.80–4.00 mm

PP 32 (SS 17)
4.00–4.10 mm

PP 33 (SS 17)
4.10–4.20 mm

SS 18
4.20–4.40 mm

SS 19
4.40–4.60 mm

SS 20
4.60–4.80 mm

SS 21
4.80–4.90 mm

SS 22
4.90–5.10 mm

SS 23
5.10–5.27 mm

SS 24
5.27–5.44 mm

SS 25
5.44–5.61 mm

SS 26
5.61–5.78 mm

SS 27
5.78–5.96 mm

SS 28
5.96–6.14 mm

SS 29
6.14–6.32 mm

SS 30
6.32–6.50 mm

SS 31
6.50–6.68 mm

SS 32
6.68–6.87 mm

SS 33
6.87–7.07 mm

SS 34
7.07–7.27 mm

SS 35
7.27–7.48 mm

SS 36
7.48–7.70 mm

SS 37
7.70–7.93 mm

SS 38
7.93–8.16 mm

SS 39
8.16–8.41 mm

SS 40
8.41–8.67 mm

SS 41
8.67–8.95 mm

SS 42
8.95–9.23 mm

SS 43
9.23–9.53 mm

SS 44
9.53–9.85 mm

SS 45
9.85–
10.19 mm

SS 46
10.19–
10.54 mm

SS 47
10.54–
10.91 mm

SS 48
10.91–
11.30 mm

SS 49
11.30–
11.72 mm

SS 50
11.72–
11.97 mm

SS 55
12.97–
13.22 mm

SS 60
14.22–
14.47 mm

SS 65
15.47–
15.72 mm

SS 70
16.72–
16.97 mm

SS 75
17.97–
18.22 mm

SWAROVSKI ELEMENTS AND SUITABLE APPLICATION TECHNIQUES <<<

		Soldering	Plating	Setting	Gluing	Sealing	Hotfix Application	Sewing	Embroidery	Hand application	Mechanical Application
Round Stones			✓	✓	✓	✓					
Flat Backs No Hotfix				✓	✓	✓					
Flat Backs Hotfix	XILION Rose						✓				
	Creation Stones						✓				
	Creation Stones Plus						✓				
	Ringed Roses						✓				
	Cabochon Round						✓				
Sew-on Stones								✓	✓[1]	✓	
Fancy Stones & Settings	Fancy Stones			✓		✓					
	Settings	✓	✓					✓		✓	
Beads								✓		✓	
Crystal Pearls					✓			✓		✓	
Pendants								✓		✓	
Self-adhesive Elements					✓						
Transfers	XILION Transfers						✓				
	Creation Transfers						✓				
	Creation Transfers Plus						✓				
	Pearl Transfers						✓				
	Diamond Transfers						✓				
	Metallic Transfers						✓				
	Mezzo Transfers						✓				
	Crystaltex Motives Transfers						✓				
	Transfers No Hotfix				✓						
Synthetics Hotfix	Crystal Fabric				✓	✓	✓				
	Crystal Rocks				✓	✓	✓				
	Crystal Transfabric				✓	✓	✓				
	Crystaltex				✓	✓	✓	✓[2]			
Crystal Yarn								✓	✓	✓	
Plastic Trimmings	Basic Bandings				✓	✓		✓	✓[3]	✓	
	Fishnet Bandings				✓	✓		✓		✓	
	Decorative Bandings				✓	✓		✓		✓	
	Plastic Components				✓	✓		✓		✓	
Buttons, Fasteners & Zippers	Crystal Buttons							✓		✓	
	Buttons with Plastic Shank							✓		✓	
	Snap Fasteners & Decorative Buttons										✓
	Jeans Buttons										✓
	Buttons with Metal Shank							✓		✓	
	Magnet Fasteners							✓			✓
	Zippers							✓			
Metal Trimmings	Chaton Bandings				✓	✓		✓		✓	
	Flat Back Bandings				✓			✓		✓	
	Rivets										✓
	Roses & Chaton Montées							✓		✓	
	Crystal Pearl Rivets										✓
	Rose Pins										✓
Crystal Mesh					✓	✓	✓	✓			
Cupchains & Findings		✓	✓			✓		✓		✓	
Knobs, Handles & Co					✓						

[1] Art. 3129 P288
[2] Not suitable for Crystaltex Chaton Bandings
[3] Art. 50002, 50003, and 50004 (single row)

SOLDERING, *plating*, AND STONE SETTING

SWAROVSKI ELEMENTS offers an ideal product selection for soldering, allowing for simple and problem-free production of state of the art jewelry pieces and accessories.
Further techniques such as plating and stone setting complement the comprehensive and diverse application options offered by SWAROVSKI ELEMENTS.

PRODUCT OVERVIEW

The following products are suitable for soldering, plating, and stone setting:

	SOLDERING	PLATING	STONE SETTING
Round Stones			✓
Flat Backs No Hotfix			✓
Fancy Stones			✓
Cupchains & Findings	✓	✓	
Settings	✓	✓	

MACHINES, TOOLS, AND AIDS

The following machines, tools, and aids are necessary for soldering SWAROVSKI ELEMENTS.

Micro soldering kit

Propane gas burner

Blow torch

Solder wire
It is recommended that solder wire with a flux core is used, which guarantees an even flow of solder.

Solder paste
Solder paste containing flux must be applied at exactly the right spot to create a clean solder joint.

Solder pellets
Solder pellets should be placed in an acid flux before being used. This ensures that the solder will flow correctly.

Soldering molds
J-board, express cement

Gloves

Protective eyewear

SUPPLIERS <<<

This list provides an overview of select suppliers worldwide.

MACHINES / TOOLS / AIDS	SUPPLIER	CONTACT
Micro soldering kit	Rio Grande	www.riogrande.com
Propane gas burner	Rio Grande	www.riogrande.com
	Horbach	www.horbach-giesstechnik.de
Blow torch	Rio Grande	www.riogrande.com
	SRA - Stan Rubinstein Association	www.sra-solder.com
	Siegfried Remschnig	www.remschnig.at
Solder wire	Adola	www.adola.com
	Ögussa	www.oegussa.com
	SRA - Stan Rubinstein Association	www.sra-solder.com
Soldering paste	Rio Grande	www.riogrande.com
	Ögussa	www.oegussa.com
	SRA - Stan Rubinstein Association	www.sra-solder.com
Solder pellets	Rio Grande	www.riogrande.com
	Ögussa	www.oegussa.com
	SRA - Stan Rubinstein Association	www.sra-solder.com
Flux	Rio Grande	www.riogrande.com
	Ögussa	www.oegussa.com
	SRA - Stan Rubinstein Association	www.sra-solder.com
J-board (solder mold)	SRA - Stan Rubinstein Association	www.sra-solder.com
Express cement (solder mold)	3M	www.3m.com
Settings	Swarovski	www.swarovski-elements.com/business
	Josef Bergs GmbH & Co. KG	www.josef-bergs.de
	Simm Metall- und Druckvergusswaren GmbH	www.simm-metallwaren.de
	Rio Grande	www.riogrande.com
	Jablonex Group	www.jablonexgroup.com
	E.H. Ashley & Company, Inc.	www.ehashley.com

APPLICATION

SOLDER MOLD PRODUCTION | SOLDERING PREPARATION | SOLDERING | CLEANING | PLATING | STONE SETTING

A solder mold is required to reproduce jewelry pieces. First the original model of the jewelry piece is soldered. This is then used to make an impression in a suitable medium. Depending on the size of the jewelry piece and mold medium, this impression can be made several times.

1 Soldering the original model

2 Strengthening the rear of the original model with wire

3 Pressing the original model into a suitable impression material

4 Once the material hardens, the original model can be removed

Note: The solder mold must be designed in such a way that hardly any pressure is needed to position the Cupchain segment into the mold. The crystals may be damaged if there are high levels of mechanical stress on the cups, or if they are deformed.

?!

Materials and aids should be clean, and particularly **free of any grease**, to ensure proper application. When soldering and plating, adequate ventilation is essential. In addition, it is recommended that protective eyewear and protective gloves are worn in line with the manufacturer's safety information sheets. Wearing protective gloves also prevents aids from getting dirty. ?!

Selecting the optimum solder and flux

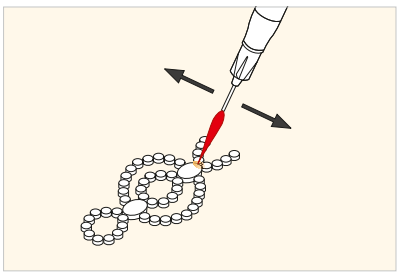
When selecting solder, the working temperatures and flow characteristics are particularly important. Solder is available from various manufacturers in wire form, with or without a flux core, as a paste and as pellets.

When using lead-free solder (Silox 227; tin/copper solder Sn 99/Cu 1), the high working temperature means precise workmanship and exact temperature control are necessary.

When soldering cupchains, solder wire with a flux core is more suitable. If solder pellets are being processed, or the wire used does not have a flux core, the flux should be adapted according to the solder manufacturer's instructions, while any corrosive effects on the foiling should be checked via pre-testing. These effects should be assessed after plating, as damage done during soldering is often only visible at this point. ?!

Soldering time and temperature

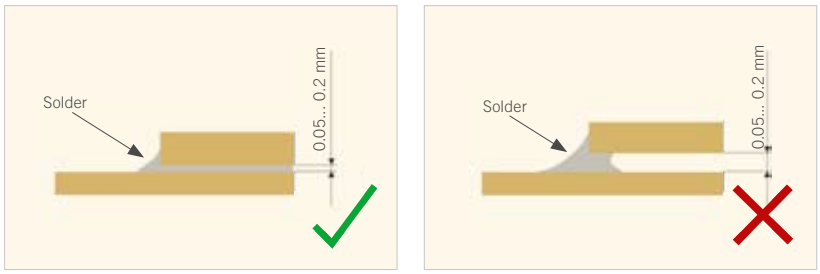
The right flame size and the time it is applied are important criteria when manufacturing soldered cupchain pieces. The size of the flame must comply with the instructions for use provided by the tool's supplier. Only heat the part of the jewelry piece in which the solder should flow. If the flame is held too long on the jewelry piece, the piece and the crystals may become overheated and therefore damaged or destroyed. ?!



Note: A sudden drop in temperature during the soldering process can cause tension in the crystals. This can result in the crystal being damaged, for example by chipping. Avoid extreme differences in temperature during and after the soldering process. ?!

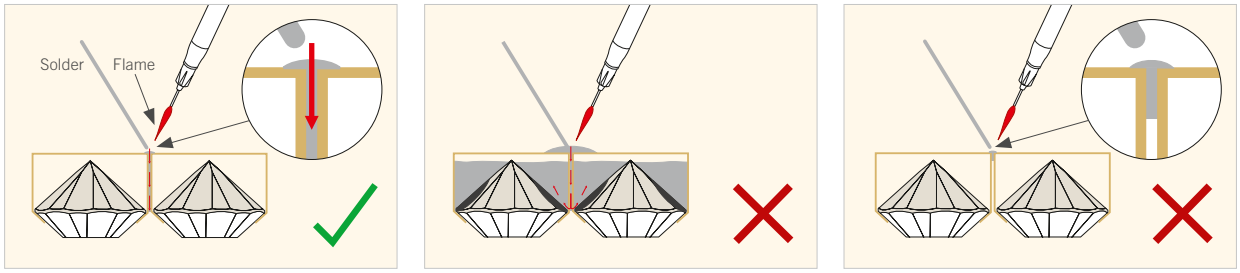
Optimum soldering joint

The width of the joint to be soldered should be between 0.05 mm and 0.2 mm. If the joint is wider than 0.5 mm, the solder will not fill the joint sufficiently. A joint that is too narrow will also not contain enough solder to make it strong and neat.



Optimum solder quantity

The right amount of solder ensures strong and clean soldered joints, which can then be cleanly plated. Correctly applied solder flows into the joints of the jewelry piece and provides a strong connection. Either too much or too little solder can damage the creations or result in unwanted discoloring of the crystal.



Exact amount of solder
The solder is drawn into the solder gap via capillary action.

Too much solder
Too much solder results in the cup backfilling, with the hot solder damaging the foiling. This damage creates a corroding surface following plating, and the foiling is destroyed. As such, these types of soldering errors are only really visible after plating.

Too little solder
Too little solder means the soldering gap is not completely filled, and the joint is weakened.

Soldering

1 Cut the Cupchain to the required length.

2 Put the Cupchain in the solder mold.

3 Solder the required spots.

4 Remove the soldered Cupchain from the mold.

Soldered items should be cleaned as soon as possible after the soldering process, to avoid corrosion. This will make the plating process significantly easier. Care must be taken when using mechanical polishing devices. Polishing media that are too hard or drums that rotate too quickly can damage the items and the crystals. Check the quantity, the polishing agents and time, the rotating speed and the height of the fall, in order to keep mechanical stress levels as low as possible.

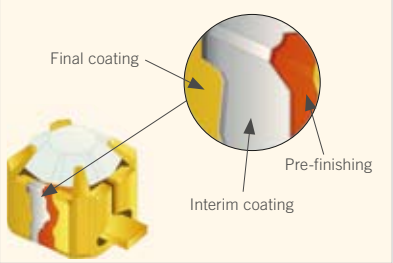
In order to preserve the high quality of the creations, we recommend not using organic solvents and not exceeding a maximum temperature of 100°C (212°F).

Plating serves to finish the jewelry piece. Here, metallic coatings are electrolytically added to the surface of the material. The process can only be carried out if the material to be plated is conductive. During the design process, please ensure that individual colors and coating effects can withstand plating. For further information, see the color overview in the SWAROVSKI ELEMENTS collection.

The most important criteria for an excellent finishing process are:

- Selecting reliable electrolyte suppliers who offer good service and who can provide detailed operating instructions
- Selecting suitable high performance electrolytes
- Careful care and maintenance of the unit and the electrolytes
- Using the recommended settings for plating cupchains

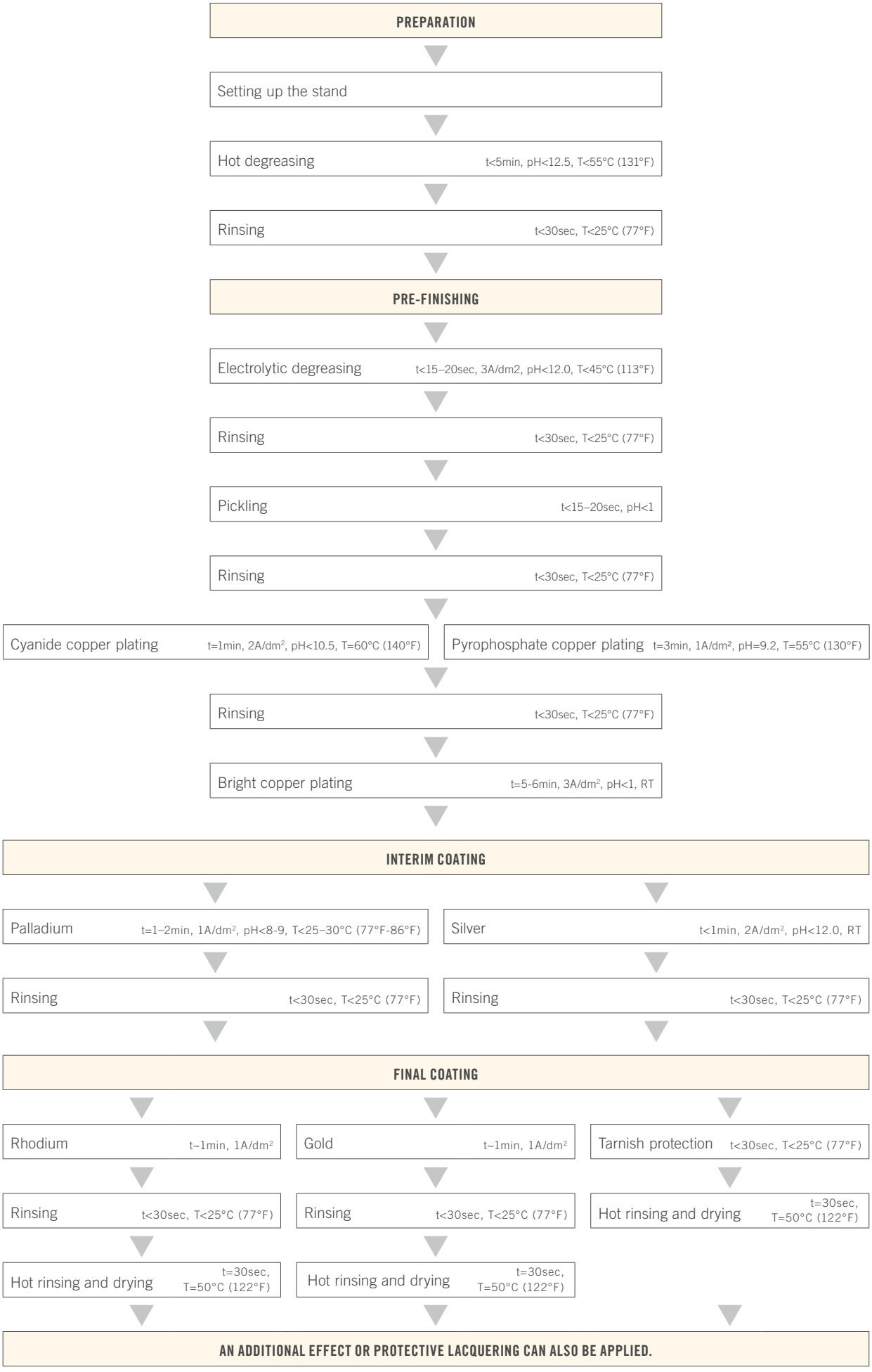
Note: Strong alkaline solutions, long exposure times in alkaline baths, the incorrect use of ultrasound, and high current densities usually lead to chemical and/or mechanical damage to crystals.



Short descriptions of the processing steps

- **Hot degreasing:** Here, most of the dirt, grease, and soldering flux is removed.
- **Electrolytic degreasing:** Only cathodic degreasing, suitable for brass and non-ferrous metals, is recommended for fine cleaning Cupchain jewelry.
- **Pickling:** This part of the process serves to remove oxidization from the metal and also the remains of any scale left from the soldering process.
- **Cyanide copper plating:** This processing step serves to improve adhesive strength and conductivity, above all when using solder containing lead.
- **Pyrophosphate copper plating:** Like cyanide copper plating, this process improves adhesive strength and conductivity. The advantage is that the process does not involve cyanide, though the disadvantage is that higher current densities and longer exposure times are required.
- **Bright copper plating:** The use of sulfuric bright copper plating is recommended because of its excellent ability to cover surface flaws and create an even finish.
- **Palladium:** Palladium is presently the only recommended replacement for nickel since the bronze electrolytes currently available on the market can, through their extreme alkalinity, lead to damage to the foiling.
- **Silver coating:** Shiny silver coatings are usually separated from cyanide solutions that contain alkali silver (I)-cyanide, alkali cyanide, alkali carbonate, and organic and/or inorganic additives.
- **Anti-tarnish treatment**
  - **Temporary protection against tarnishing:** These are based either on wax mixtures in organic solvents or long chained sulfuric organic compounds, which can be used as wet-on-wet aqueous emulsions.
  - **Permanent tarnishing protection systems:** Cataphoretic lacquering systems have been proven especially effective as a longer lasting protective system for Cupchain jewelry. They have the advantage over conventional dipping and spray lacquers based on acrylic or zapon varnish (cellulose lacquer) in that only the conductive surfaces are very evenly coated while the isolated facets of the crystals remain uncoated.
- **Gold coating:** It is recommended to use phosphorus or citric acid electrolytes (pH ~3–4), which contain potassium gold (I)-cyanide.
- **Rhodium coating:** Sulfur or phosphoric acid based electrolytes are used for rhodium plating, from which shining, nearly silver-white layers can be applied.

Parameter settings for plating Cupchains

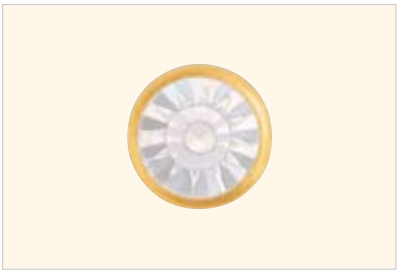


Alongside the application methods outlined in this manual, SWAROVSKI ELEMENTS can also be employed using metal settings. Crystals can be set manually (using pliers, metal spatulas or punching tools) or by machine.

According to how the crystals are integrated into the metal settings, there are various types of setting, both plated and un-plated. Whenever possible, the settings should be plated before the stones are set. The SWAROVSKI ELEMENTS range also features crystal elements (Cupchains & Findings) that have already been set, as well as settings for Fancy Stones.

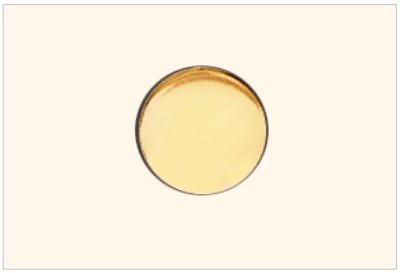
For further information on this, see the SWAROVSKI ELEMENTS Collection.

Setting types



Bezel settings
With bezel settings, the crystals are bezelled in to remain in the cup.

Prong settings
With prong settings, the SWAROVSKI ELEMENTS are held in position by claws. In most cases there are four prongs. If the setting has more than four prongs it is referred to as a “Tiffany setting”. Settings with flaps have significantly broader claws. The advantage here is that the broader claws are much less likely to damage very sensitive carrier material.



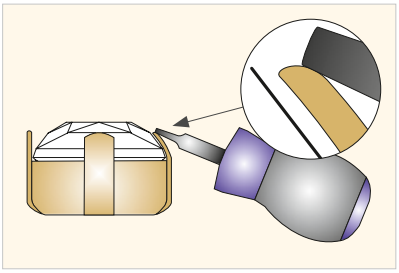
Settings for gluing
In this type of setting crystal elements are glued in.

Setting by hand

1. Depending on the shape and size, the cup is held using tweezers, flat nose pliers, or flat head pliers, without deforming it.
2. Place the crystal in the setting using a pair of tweezers or vacuum tweezers.

3a. Bezel setting: Press the cup shut using a setting closer. Setting closers are available from jewelry suppliers.

3b. Prong setting: The prongs of round cups can be pressed in place using a suitable setting closer. For all other forms, the prongs are individually closed in opposite positions, using a suitable pressing tool.



Note: After setting, the crystal should still be slightly movable in the setting.
The setting must be constructed so that the crystal can be entered into it without damaging the foiling. When settings are too tight or prongs are bent, the foiling or the protective lacquering can be damaged, possibly resulting in corrosion. If the setting is closed too strongly, the crystal can be damaged.

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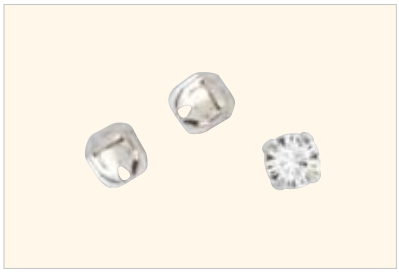
Application methods

The following application possibilities are available for set crystals:



Sewing
Sew-on cups are applied by sewing onto textiles and leather. There are holes in the cups for the thread to pass through.

Soldering
These types of settings are suitable for soldering together with other cups and/or with Cupchains. They are mostly used in the jewelry segment.

Mechanical application
With this special type of setting, the set crystal is applied onto the textile using claws.

Threading
Settings that can be used as a pendant have an eyelet at the top, to which a chain can be attached. Settings with two eyelets can be attached to other elements.

Working with end connectors (brass components)

Plated Cupchains & Findings can easily be combined with end connectors (brass components) in order to create striking pieces of jewelry.

The end connectors can be attached to the end of the Cupchain with flat-nosed pliers and interconnected by either jump rings or lobster claws.

DIRECTIONS FOR JEWELRY MANUFACTURING

This section offers a brief overview of the ways in which SWAROVSKI ELEMENTS can be integrated into jewelry design software, and a summary of the two most important production techniques for jewelry: rubber mold and lost wax.

Jewelry design software

Leading software manufacturers offer special programs with 3-dimensional display possibilities for the design of jewelry and accessories. These 3D-design programs feature a whole range of functions that simplify and support the design process and therefore also the entire production process.
Special software solutions that have integrated a range of digitally processed SWAROVSKI ELEMENTS in their programs are already available (www.3design.com). These can be simply and quickly integrated into any design, thus allowing the designer to work with SWAROVSKI ELEMENTS right from the beginning of the design phase.

Production process

Rubber mold processes

This process is very widely used in the production of fashion jewelry. Tin alloys are mostly used here, and the biggest advantage of this procedure is that the required tools are favorably priced.

1 Several original models are shaped out of metal, which must already exhibit an excellent surface quality. The expected shrinkage during casting must be taken into account.

2 A rubber mold is vulcanized from these models and then a rubber casting model is made.

3 Channels are cut in this rubber plate for the casting process.

4 The completed rubber molds are filled with the molten metal alloy (centrifugal casting procedure).

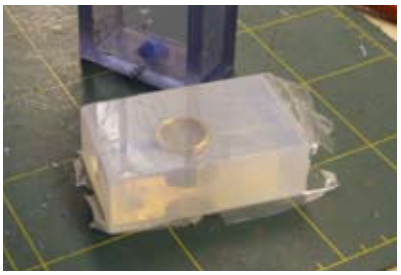
5 After cooling and removing from the mold, the casting channels are cut off.

6 The cast model achieved by this process is ground and polished in preparation for the plating process.

Lost wax process

The lost wax process is used for metals with a higher melting point, for example brass, silver, and gold. It is mainly used for the manufacture of high-quality fashion jewelry and fine jewelry.

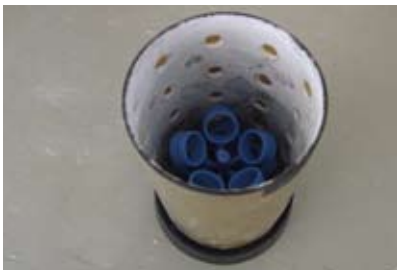
1 Production of a prototype, e.g. through rapid prototyping; the better the surface quality is here, the better the casing will be later. The expected shrinkage during casting must be taken into account.



2 This prototype is either formed with silicone or vulcanized between raw rubber plates.

3 The mold that has already been produced is injected with molten wax with a wax injector (production of the wax component).

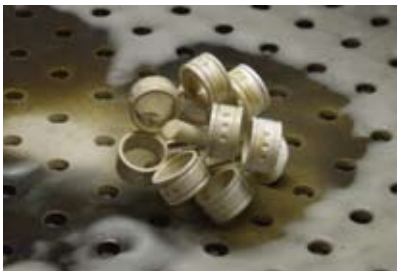
4 The wax forms created this way are each melted onto a wax tree format with a wax welding device. The trunk of the wax tree later serves as the casting channel.



5 The tree is now placed into a cuvette, the holes are glued up and it is embedded in implantation paste under vacuum and vibration.

6 The wax is melted out after the implantation paste has hardened. Remaining wax is burnt out in a kiln. The wax must be completely burnt out, leaving only the clean cavities.

7 While it is still hot, the cuvette is filled, under vacuum, with the molten, liquid metal. Because of the porosity of the form, the molten metal fills every part of it.



8 After casting, the still hot cuvette is plunged into cold water (except for when crystals have been cast at the same time). The casting tree is then cleaned.

9 After the jewelry pieces are removed from the casting tree, they are finished by grinding and polishing.

QUICK ASSISTANCE <<<

The following table outlines common problems and causes when soldering, plating, and stone setting SWAROVSKI ELEMENTS, and offers advice on how to avoid them. Further details and more extensive descriptions can be found in the section marked with a ?!

?!

PROBLEM	CAUSE
Metal components	
Cracked solder joints	**1, 2, 3, 4**
The jewelry piece has restricted movement	**2, 5**
Overall defective metal surface	**2, 6**
Uneven surface	**7**
Defective finishing on the soldered areas	**8**
Corrosion	**9**
Crystal	
Chipped crystal	**10, 11, 12, 13**
Discolored crystal	**14, 15, 16, 17**

CAUSE		RECOMMENDATION
1	Too little solder	Using too little solder weakens the solder joint, as the soldering gap is not completely filled.
2	Too much solder	The use of too much solder can result in cracks. The solder joint is too large, which means that any force applied to the piece directly affects the solder. The thicker the layer of solder, the weaker it is, which can result in it cracking. Special attention should be paid not to use too much solder near the moving parts.
3	Insufficient flow of solder	Various factors can contribute to an insufficient flow of solder. ▪ If the flame is too small, the solder and the cup do not heat up enough. ▪ If the soldering temperature is too high, the flux can vaporize. This means that the solder is not able to cover the metal surface. ▪ The melting temperature of the solder is too high.
4	Dirty metal surface, solder, flux or solder mold	Special attention must be paid to having clean (and above all grease free) metal surfaces.
5	Exposure to the finishing process has been too long	The exposure time for functional and flexible elements should be kept as short as possible. Optimizing the polishing processes and the use of high quality electrolytes is also recommended.
6	Insufficient cleaning	Insufficient or incorrect cleaning after soldering has a negative impact on the finishing processes. Carefully check the cleaning processes.
7	Faults in the finishing process	If there are irregularities in the metal surface, such as burns, pores or orange peel, this is generally a result of poor quality polishing or the processor plating baths not being correctly set up.
8	Faults in soldering, cleaning or finishing processes	Unsightly finishing on the solder areas can be the result of incorrect soldering, insufficient cleaning after the soldering process, or – if solder containing lead has been used – by the use of sulfuric acid in the pickling process or by the absence of or incorrect use of copper plating.
9	Faults in the finishing process	Tarnishing or corrosion is often caused by insufficient rinsing or by contaminated rinsing water. The transfer times between the individual stages of the process should be kept as short as possible. Rapid tarnishing of silver can be prevented by using effective tarnishing protective systems (e.g. coatings, wax, lacquer etc.).

CAUSE		RECOMMENDATION
10	Faulty solder mold	The solder mold must be designed in such a way that hardly any pressure is needed to position the Cupchain segment into the mold. The crystals may be damaged if there are high levels of mechanical stress on the cups, or if they are deformed.
11	Thermal shock	A sudden drop in temperature during the soldering process can cause tension in the crystals. This can result in the crystal being damaged, for example by chipping. Avoid extreme differences in temperature during and after the soldering process.
12	Use of polishing drums	Hard polishing components in a rotating polishing drum can damage the surface of the crystals. Check the quantity, the polishing agents and time, the rotating speed and the height of the fall. Mechanical stress levels should be kept as low as possible.
13	Use of barrel plating	In general it is recommended that Cupchain jewelry should be finished on a plating rack. Please note however that crystals incorporated into heavy or sharp designs may be damaged if barrel plating is used, due to the size or shape. Choose the best type of drum and optimize the rotation and the fall height. When the drum is between the different stages of the finishing process and contains no liquid, the items being plated inside the drum may damage each other.
14	Soldering temperature too high	Soldering temperatures that are too high (e.g. soldering flame too high, soldering times too long) can lead to an overheating of the solder joints and damage to the crystals. It may be helpful to use a solder that melts at a lower temperature.
15	Too much solder	The use of too much solder can lead to damage to the foiling on the crystals and their subsequent discoloring. In this case one crystal should be removed to ascertain whether there is any solder left in the cup and the amount of solder being used should be reduced. This can be achieved by using a solder wire with a maximum diameter of 1 mm.
16	Cleaning with ultrasound	The foiling on the crystals may be damaged if ultrasound is used too intensively or too long.
17	Faults in the finishing process	Possible causes of discolored crystals may lie with the individual steps in the finishing process. Things to check include the alkalinity, currency density, exposure times, and temperatures of the plating baths used. Other causes may be the use of ultrasound, incorrect rinsing techniques, and post processing techniques.

gluing

SWAROVSKI ELEMENTS can be glued to a wide range of materials in a variety of application areas. The greatest quality is ensured by following the entire application process.

PRODUCT OVERVIEW

The following products are suitable for gluing:

	GLUING
Round Stones	✓
Flat Backs No Hotfix	✓
Fancy Stones	✓
Crystal Pearls	✓
Self-Adhesive Elements	✓
Transfers No Hotfix	✓
Crystal Fabric	✓
Crystal Rocks	✓
Crystal Transfabric	✓
Crystaltex	✓
Plastic Trimmings	✓
Flat Back & Chaton Bandings	✓
Crystal Mesh	✓
Knobs, Handles & Co	✓

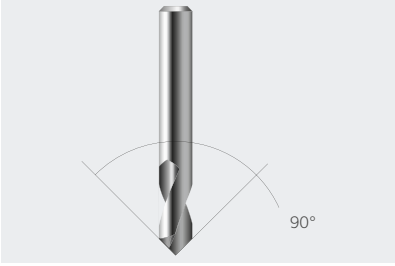
MACHINES, TOOLS, AND AIDS

The following machines, tools and aids are necessary for the various processes involved in gluing SWAROVSKI ELEMENTS.

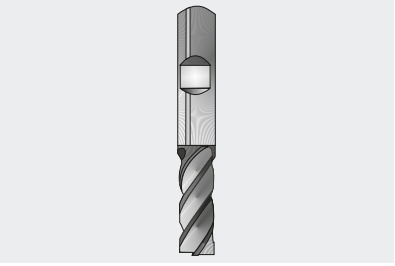
CNC milling machine

Box column drill

Hand drill



Twist drill 90°/ NC drill 90°



Milling cutter

Test pen Art. 9030/000

Isopropyl alcohol/Acetone

Blow torch

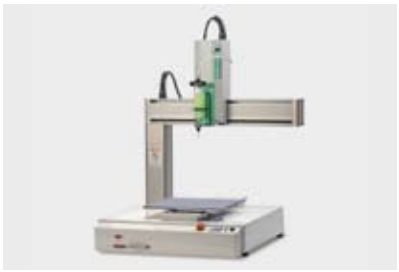
Corona

Plasma cleaner

Precision balance

Gloves

Protective eyewear



Dispensing robot

Courtesy of I&J Fisnar Inc.

Fluid dispenser

Dispensing gun

Dispensing syringes with dispensing tips

CG 500-35 (A+B)
Two-component epoxy resin glue cartridge
(2x25 g cartridge – Art. 9030/125, /225, /325)

CG 500-35 (A+B)
Two-component epoxy resin glue
(2x50 g tube – Art. 9030/150, /250, /350)

CG 500-35 (A+B)
Two-component epoxy resin glue
(2x1 kg tin – Art. 9030/110, /210, /310)

Different glues

Courtesy of I&J Fisnar Inc.

Vacuum pick-up system

Tweezers

Wax stick

UV light

Drying oven

SUPPLIERS

This list provides an overview of select suppliers worldwide.

MACHINES / TOOLS / AIDS	SUPPLIER	KONTAKT
90° NC drill/milling cutter	Hahn & Kolb	www.hahn-kolb.de
	Hoffmann Group	www.hoffmanngroup.de
	Dixi	www.dixi.ch
	Reich	www.reich.at
	Wedco	www.wedco.at
Test pen	Swarovski Art. 9030/000	www.swarovski-elements.com/business
Fluid dispenser (with/without vacuum suction) Vacuum pick-up system	I & J Fisnar, Inc.	www.ijfisnar.com
	Epoxy & Equipment Technology PTE., Ltd.	www.eetdispensing.com
	Hottemp (M) SDN. BHD.	www.hottemp.com.my
	PT.SKT International	www.sktisolution.com
Dispensing syringe/dispensing gun	I & J Fisnar, Inc.	www.ijfisnar.com
	DELO Industrie Klebstoffe	www.delo.de
CG 500-35 Two-component epoxy resin glue	Swarovski 2x25 g cartridge: European version: Art. 9030/125 American version: Art. 9030/225 Asian version: Art. 9030/325 2x50 g tube: European version: Art. 9030/150 American version: Art. 9030/250 Asian version: Art. 9030/350 2x1 kg box: European version: Art. 9030/110 American version: Art. 9030/210 Asian version: Art. 9030/310	www.swarovski-elements.com/business
Araldite 2011 Two-component epoxy resin glue	Huntsman International LLC.	www.huntsman.com/advanced_materials
UHU Plus endfest 300 Two-component epoxy resin glue	UHU GmbH & Co. KG	www.uhu.com
Araldite 2028 Two-component polyurethane glue	Huntsman International LLC.	www.huntsman.com/advanced_materials
Scotch Weld DP610 Two-component polyurethane glue	3M	www.3m.com
Instant adhesive cyanacrylate glue	UHU GmbH & Co. KG	www.uhu.com
Cyanacrylate glue	Cyberbond Europe GmbH	www.cyberbond.eu.com
Photobond GB 368 UV glue	DELO Industrie Klebstoffe	www.delo.de
Photobond GB 345 UV glue	DELO Industrie Klebstoffe	www.delo.de
Elastosil N2199 Silicone glue	Wacker Chemie AG	www.wacker.com
Konstruvit Dispersions glue	Geistlich Ligamenta AG	www.geistlich.com
Chrisanne Dispersions glue	Chrisanne	www.chrisanne.com
Bostik 1475 Contact glue	Bostik	www.bostik.com
Araldite AV 170	Huntsman International LLC.	www.huntsman.com/advanced_materials
UV light	Dr. Hönle AG	www.hoenle.de
	Waldmann GmbH	www.waldmann.com
	Heraeus Holding GmbH	www.heraeus.com
Drying oven	Heraeus Holding GmbH	www.heraeus.com
	VWR International	www.vwr.com

APPLICATION

When gluing SWAROVSKI ELEMENTS, optimal results are obtained by **coordinating the entire application process**. Following the application steps in the right order is very important. Experience has shown that the most common reasons for crystals becoming detached are inappropriate areas of application, poorly produced cavities, unsuitable gluing systems, and insufficient quantities of glue. **Product-specific application instructions** are detailed later in this section.

CAVITY PRODUCTION	CHECKING SURFACE TENSION AND PRE-TREATMENT	CHOICE OF GLUE	DOSAGE AND SETTING	POST-CLEANING AND CURING

Many SWAROVSKI ELEMENTS require cavities in order to be applied to materials. A properly produced cavity in combination with a suitable gluing system ensures a stylish, long-lasting application. The cavity makes it easy to glue properly and ensures a higher **protection of the crystal against mechanical and chemical stress**.

There are several different production methods and cavity types. Always take into consideration the requirements and base material of the finished product when choosing the appropriate cavity, pre-treatment method and right kind of glue.

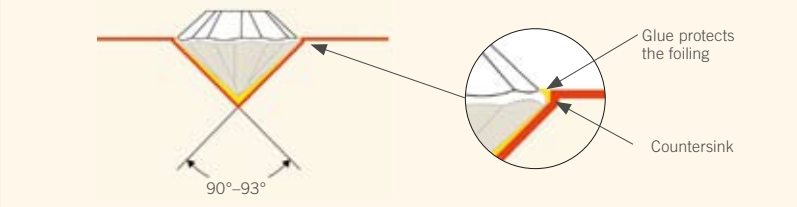
Production methods

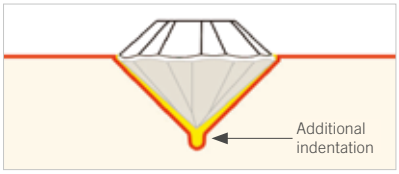
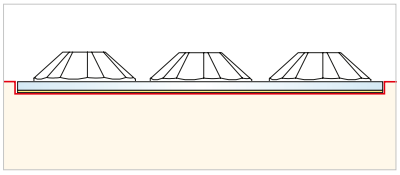
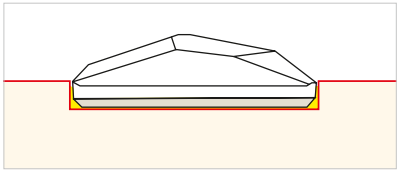
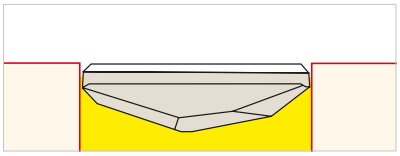
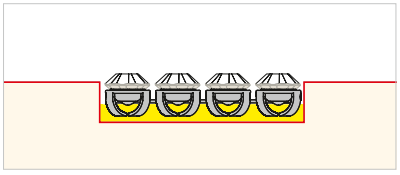
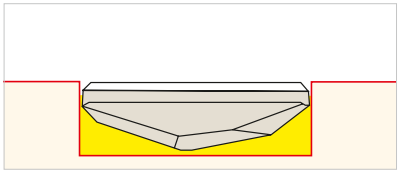
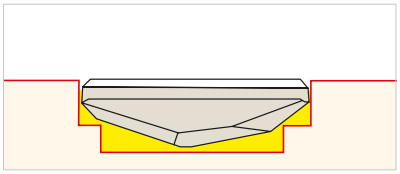
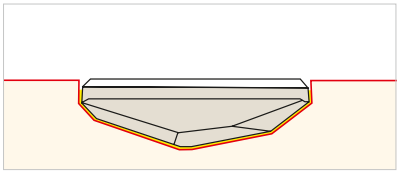
- **Drilling** is when materials are machined using a power drill and drilling tool.
- **Milling** is when materials are machined using a milling machine and milling cutter. Milling machines can be fitted with appropriate tools depending on the materials, e.g. for working with metal and plastic, wood or natural stone. Modern CNC machining centers offer the greatest precision and can be used to produce **cavities of every shape** necessary. Please note that when machining natural stone, ceramic or glass, for example, special diamond-tipped tools must be used.
- **Water jet cutting** allows materials to be separated via a high-pressure jet of water. Economic reasons make water jet cutting machines ideal for certain crystal shapes that are integrated into flat materials. Please note that only **end-to-end cavities** can be produced in this way. In addition, materials which swell through water cannot be worked with. Absorbent materials must be fully dried before gluing the crystal.
- **Casting:** To reproduce cavities, particularly in the jewelry sector, the cavities can be made when the metal component is cast. When following this process, the cavities must be cut into the original model. To prevent the bottom of the cavity being rounded off, which would result in the crystal sitting too high, it is recommended that an additional indentation is made when producing the original model.

  Further instructions on jewelry production can be found on p. 38.

Cavity types

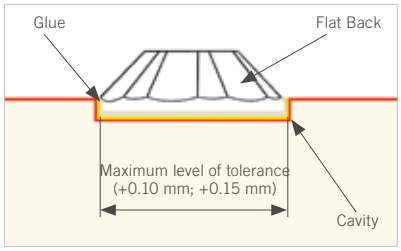
Depending on the SWAROVSKI ELEMENTS used, various cavity types can be made using the different production methods.

SWAROVSKI ELEMENTS	PRODUCTION METHOD	CAVITY TYPE
Round Stones	Drilling Milling	 The optimal cavity for the XILION Chaton is produced at an **angle of 90°–93°**. The cavity should have the same maximum diameter and size as the crystal plus at least 0.1 mm. The stone sizes available for SWAROVSKI ELEMENTS can be found on page 24. For particularly large crystals with a prominent girdle, it is advisable to use an additional countersinking process.

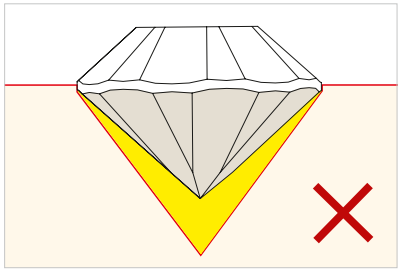
SWAROVSKI ELEMENTS	PRODUCTION METHOD	CAVITY TYPE
Round Stones	Casting	 For jewelry manufactured by casting, an **additional indentation** at the bottom of the cavity can be drilled to avoid a rounded tip, therefore preventing the crystal from being raised out of the cavity.
Flat Backs No Hotfix Crystal Fabric Crystal Transfabric Crystaltex Self-adhesive Elements Transfers No Hotfix	Milling Casting	**Indentation**   When gluing SWAROVSKI ELEMENTS with a **flat back**, it is also advisable to create a cavity as shown here. This cavity ensures the crystal is better protected against mechanical and chemical stress. The depth of the cavity depends on the height of the girdle and/or the strength of the base material.
Round Stones Flat Backs No Hotfix Fancy Stones	Drilling Milling Water jet cutting	**End-to-end cavity**  An end-to-end cavity is the **simplest option** when producing cavities. When selecting the glue (p. 53), please note the additional instructions regarding the gluing gap.
Flat Backs No Hotfix Crystal Rocks Plastic Trimmings Flat Back & Chaton Bandings Crystal Mesh	Milling Casting	**Blind hole**   A blind hole is another option when producing cavities. It allows SWAROVSKI ELEMENTS in a variety of heights to be set and protected in the material. When selecting the depth of the cavity, ensure that, there is still a **gap** between the lowest point of the crystal and the base material. When selecting the glue (p. 53), please note the additional instructions regarding the gluing gap.
Flat Backs No Hotfix Fancy Stones	Milling Casting	**Step milling**  Compared to a simple blind hole, step milling offers **better hold** of the crystal with the least amount of glue. When selecting the depth of the cavity, ensure that there is still a gap between the lowest point of the crystal and the base material. When selecting the glue (p. 53), please note the additional instructions regarding the gluing gap.
Flat Backs No Hotfix Fancy Stones	Milling Casting	**3D milling**  3D milling offers the **best possible fit** with the smallest gluing gap. Due to the fact that the cavity is adapted to the contours of the crystal, CNC milling machines are required.

Production tolerances for cavities

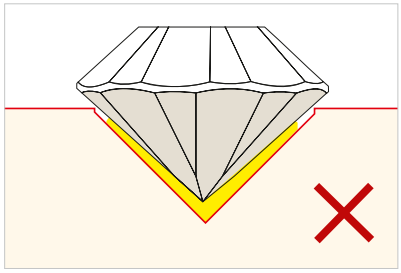
When producing cavities, the dimensions should be based on the main dimensions, including the maximum tolerance for the crystal components used, and the production tolerance. These dimensions can be requested from your Swarovski sales organization.



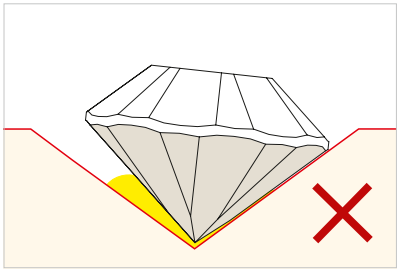
Incorrect cavities



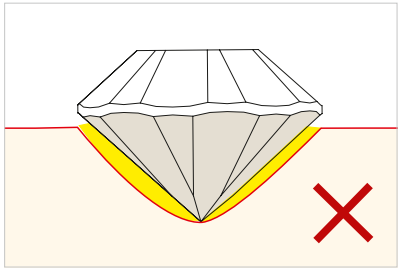
Angle too small



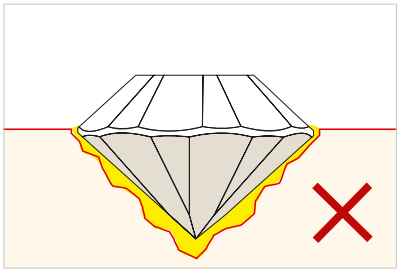
Crystal too large/cavity too small



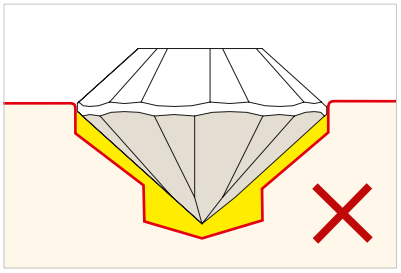
Angle too large



Rounded cavity



Cavity with uneven surface



Gap too great

Checking the surface tension

The surface tension is an indicator for the wetting properties of the surface to be glued. A surface tension of **at least 38 mN/m** is recommended for gluing SWAROVSKI ELEMENTS. It should also be randomly tested during production. ?!

It is best to use the test pen (Art. 9030/000) to measure the surface tension.

1 Before gluing, mark the surface.

2 If the ink remains visible for 2 seconds, the surface is suitable for gluing.

3 If the ink disappears or forms bubbles, the surface is not suitable for gluing. In this case, the pre-treatment cleaning methods should be checked.

Note: On porous or absorbent materials, the surface tension cannot be checked with the test pen.

Pre-treatment

If the surface tension is below 38 mN/m, the following pre-treatment cleaning methods, applied in the correct order, can be effective in reaching the right level. ?!

	TYPES OF CLEANING	PRE-TREATMENT CLEANING METHODS
1	**Mechanical cleaning** This involves sanding, blasting or brushing but is not usually necessary for jewelry.	▪ Removal of dirt, residues of varnish, rust, scale ▪ Roughening the surface
2	**Washing and degreasing** Here it is important to ascertain that the tensides contain no silicone, as this would impair adhesion. When using solvents it is advisable to test the durability of the surface to be cleaned beforehand to avoid any damage. **Solvents containing substances with a high boiling point should not be used** due to the high risk of residue. If using cleaning agents, wait a few minutes to allow them to evaporate.	▪ Cleaning with tenside solutions, rinsing with de-ionized water ▪ Cleaning with isopropyl alcohol/ethanol ▪ Cleaning with acetone (MEK/ethyl acetate) ▪ Cleaning with a cleaning solvent: does not contain high boiling point substances (risk of residue)

	TYPES OF CLEANING	PRE-TREATMENT CLEANING METHODS
3	**Physical cleaning and activation** These cleaning methods can be applied if mechanical cleaning or washing and degreasing are either not possible or have not resulted in a surface tension of > 38 mN/m. Therefore the pre-treatment cleaning method used should be done on a case-by-case basis.	▪ **Flame treatment via a blow torch** The surface to be treated is exposed to the flame of a torch very briefly. When using special gas mixtures, surface silication can also be carried out, so as to apply a more adhesive coating. ▪ **Corona treatment** An electric corona discharge is briefly applied to the surface. ▪ **Plasma treatment** Plasma treatment offers precise cleaning and activates the surface via an ionized gas.
4	**Chemical cleaning and primers** Applying a primer improves adhesion and helps to prevent corrosion.	▪ Applying small amounts of solvent and activating the surface. ▪ Applying a primer.

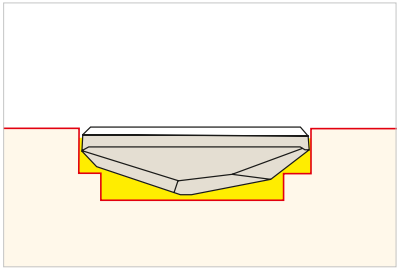
The selection of the best gluing system is the next stage in ensuring a long-lasting application. When selecting the most suitable glue, the following factors should be considered: ?!

- The type of cavities/the resulting gluing gap
- The size of the crystals/gluing surface
- The gluing properties and finish required
- The type of base material

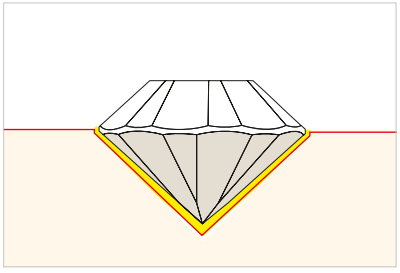
The type of cavities/the resulting gluing gap

When selecting an adhesive, it is also important to consider the gluing gap that results from the type of cavity chosen. For cavities offering a **large gluing gap, soft, gap-filling** glues such as silicone glue are recommended, to avoid tension in the glue joint.

Epoxyethane/polyurethane glues offer **greater strength**, and can be used for cavities with a **small gluing gap**.



Large gluing gap



Small gluing gap

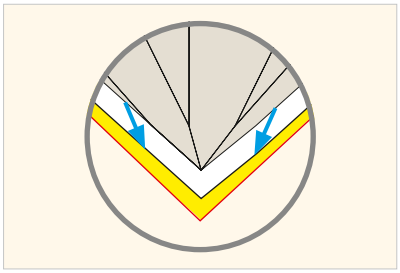
The size of the crystals/gluing surface

Please note that when gluing small crystals, glues with higher shearing strengths (e.g. epoxy resin glue CG 500-35) should be used. Further information can be found in the manufacturer's technical data sheets.

The gluing properties and finish required

When selecting glues, it is important to consider properties such as **pot life, viscosity, color, curing time, ease of dosing and shrinkage**. Further information can be found in the manufacturer's technical data sheets.

Adhesives tend to shrink during curing. There will be a greater amount of **shrinkage** if the wrong glue has been chosen, it is hardened under the wrong conditions or if there is an incorrectly sized cavity (too much space around the crystal). The tension thus created can damage the foiling and the crystals may even detach. Glues that are very hard after curing and shrink considerably are not suitable for SWAROVSKI ELEMENTS with foiling.



The foiling (shown in black) is torn from the crystal because of excessive **glue shrinkage** (shown in yellow).

The type of base material

The following table provides a selection of commonly known and globally available adhesives that are suitable for different uses and materials. It should also serve as a guide to find the optimal glue for the chosen application.

		TWO-COMPONENT EPOXY RESIN GLUES			POLYURETHANE GLUES		CYANACRYLATE GLUES		UV GLUES		SILICONE GLUES	DISPERSION & CONTACT GLUES			ONE-COMPONENT SYSTEMS
		CG 500-35	UHU Plus endfest 300	Araldite 2011	Araldite 2028	Scotch Weld DP 610	UHU Sekundenkleber	Cyberbond 2999	Photobond GB 368	Photobond GB 345	Elastosil N2199	Konstruvit	Chrisanne	Bostik 1475	Araldite AV 170
INORGANIC MATERIALS	Crystal	✓			✓	✓			✓	✓	✓				
	Glass	✓			✓	✓			✓	✓	✓				
	Ceramics	✓	✓	✓							✓				
	Stone	✓	✓	✓	✓						✓				
METALS	Aluminum	✓	✓	✓							✓				✓
	Brass	✓	✓	✓							✓				✓
	Silver	✓	✓	✓							✓				✓
	Steel	✓	✓	✓							✓				✓
GLUABLE SYNTHETIC MATERIALS	PC	✓	✓	✓	✓	✓	✓	✓							
	PS	✓			✓		✓								
	PVC/ABS	✓	✓	✓	✓	✓	✓	✓			✓				
	Rubber	✓			✓		✓	✓							
ORGANIC MATERIALS	Paper	✓					✓	✓			✓	✓	✓	✓	
	Cork	✓									✓	✓	✓	✓	
	Wood	✓	✓	✓							✓	✓	✓	✓	
	Textiles					✓						✓	✓	✓	

CG 500-35 Two-component epoxy resin glue

High-performance gluing system for both foiled and unfoiled SWAROVSKI ELEMENTS, exclusively distributed by Swarovski for professional use within the jewelry segment and other industries such as accessories, interiors, and electronics.

Main advantages of CG 500-35

- Ideal mechanical resistance
- Ideal chemical resistance
- Future-oriented solution
- Diverse areas of application

Ideal mechanical resistance

CG 500-35 **absorbs impacts and withstands distortion**. In addition, maximum elasticity protects the crystal foiling.

XILION Chatons that have been glued with CG 500-35 remain in the cavities after extreme mechanical stress due to **optimal shock absorbance** (up to 500%).

XILION Chatons that have been glued with a **standard epoxy resin** fall out of their cavities after extreme mechanical stress due to its **poor shock absorbance** (around 10%).

Ideal chemical resistance

CG 500-35 OFFERS EXCELLENT CHEMICAL RESISTANCE AGAINST:	
Humidity	CG 500-35 prevents infiltration of humidity into the glue and thus any corrosion. E.g. Jewelry pieces can be stored and worn in places with high humidity.
Perspiration	CG 500-35 prevents infiltration of perspiration into the glue and thus avoids corrosion. E.g. The glued SWAROVSKI ELEMENTS are not damaged by perspiration.
Salt and chlorinated water	CG 500-35 protects SWAROVSKI ELEMENTS when they are exposed to salt or chlorinated water. E.g. The glued SWAROVSKI ELEMENTS are not damaged during swimming.

Future-oriented solution

CG 500-35 contains only high-grade ingredients. Compared to standard gluing systems the following warning notices **do not apply for** CG 500-35: It is only evaluated as Xi irritant and not Xn harmful.

E
Explosive

F
Highly flammable

T
Toxic

Xn
Harmful

C
Corrosive

N
Dangerous for the environment

UN 3082
Environmentally hazardous product, liquid, n.o.s.

Diverse areas of application

CG 500-35 OFFERS IDEAL ADHESION FEATURES ON:	
Metals	E.g. Application of SWAROVSKI ELEMENTS on plated surfaces, brass, stainless steel, titanium, gold and silver within the jewelry industry
Gluable synthetics & rubbers	E.g. Application of SWAROVSKI ELEMENTS on ABS, PMMA, PVC etc. within the accessories and electronics industries
Glass, crystal, wood, stone, cork & porcelain	E.g. Application of SWAROVSKI ELEMENTS in the interior and home décor industries

CG 500-35 technical data

Mixture ratio (A : B)	1 : 1 (or proportion of weight)
Pot life at room temperature (23°C/73.4°F) – quantity applied 1 g	15 min.
Complete curing time at room temperature (23°C/73.4°F)	24 h
Complete curing time in oven (40°C/104°F)	12 h
Complete curing time in oven (70°C/158°F)	2 h
Complete curing time in oven (100°C/212°F)	1 h
Handling time at room temperature (23°C/73.4°F)	3 h
Elasticity	500%
Viscosity (mixed)	20000 +/- 5000 mPa*s

Mixing CG 500-35 two-component glue

The exact mixing of the two-component glue is especially important. Only a fully homogenous mixture leads to the desired results. Care must be taken to follow the manufacturer's instructions.

1 Weigh out the two glue components at a ratio of 1 : 1.

2 Mix the two components well for at least one minute.

3 Put the glue in a dispenser.

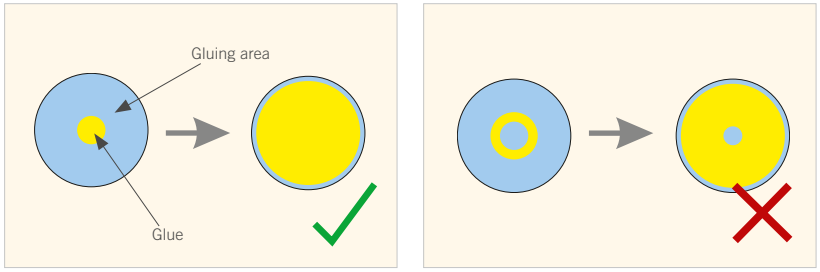
4 Attach the dispensing tip to the syringe.

Dosage

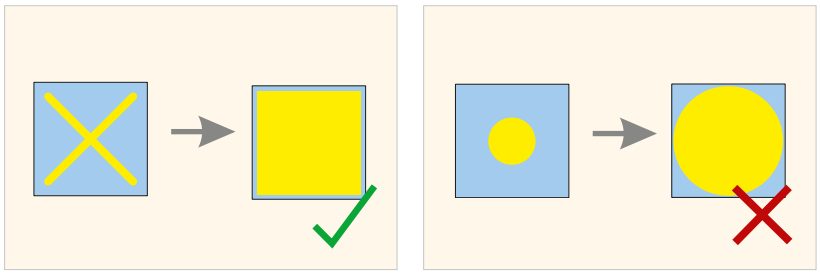
The glue can be precisely dispensed via a variety of dosage systems. Dispensers with a vacuum connection prevent the glue from dripping and reduce the amount of cleaning needed. The correct amount of glue will additionally protect the foiling from external influences. Attention must be paid to the application and quantity of the glue.

Glue application

Irrespective of the shape of the gluing area, the glue should be applied as follows:



With a **round** gluing area, a dot of glue in the centre is sufficient. When the crystal is applied, the glue will be evenly distributed in the gluing gap. To glue a single spot, aim the dispensing needle just above the spot to be glued and lift it slowly upward to avoid any glue spreading out sideways.

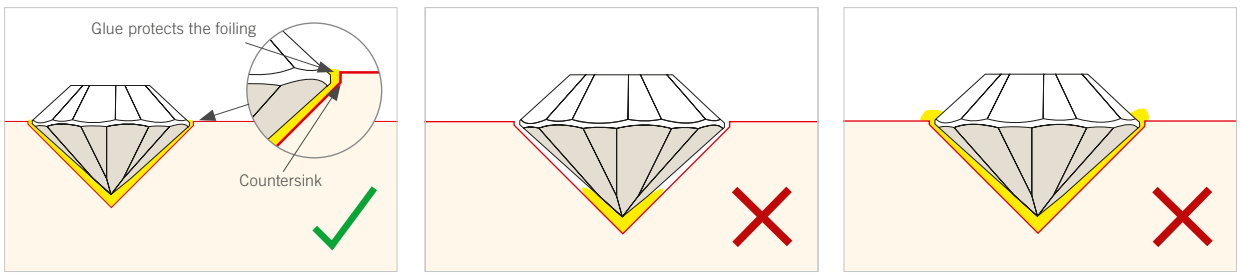


With a **square or rectangular** gluing area, apply a cross of glue to ensure it is evenly spread into the corners.

Glue quantity

When selecting the amount of glue to dispense, ensure that when setting and pressing down on the crystal, the glue spreads to the edges, thus offering additional protection for the foiling.

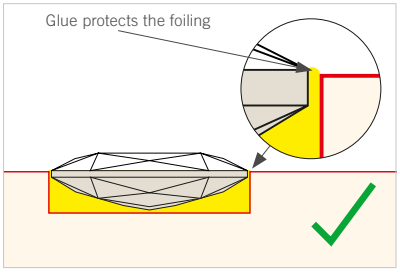
Round Stone

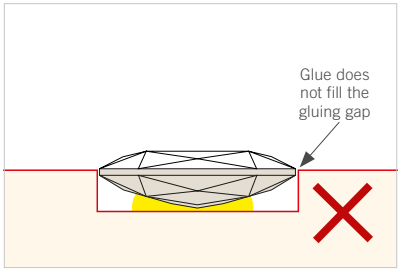


Too little glue

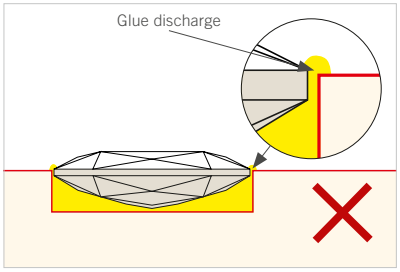
Too much glue

Fancy Stone





Too little glue



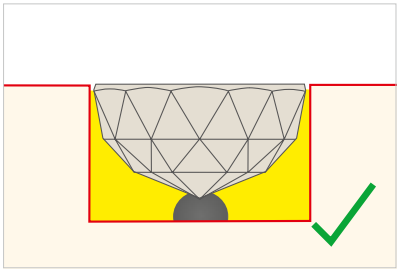
Too much glue

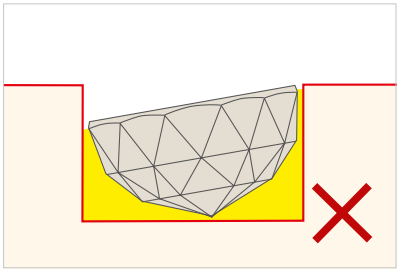
Setting

Once the glue has been dispensed the SWAROVSKI ELEMENTS are positioned. Pick up the crystals e.g. with a wax stick, tweezers or a vacuum pick-up system, apply them to the gluing position and press down gently. The use of a silicone wax stick is not recommended as this can impair the adhesion and the brilliance of the crystal.

When working with cavities **with large gluing gaps**, the following aids assist in ensuring the optimum positioning:

A cross (or similar) prevents the crystal from tipping over; press the crystal down flat on the material using the cross (or similar).





To prevent the crystal from sinking or tipping during the hardening process, a small **plasticine ball** can be used to fix it in place.

Post-cleaning

Excess glue that escapes during setting can be carefully removed using a cotton wipe that has been soaked in a solvent, e.g. isopropyl alcohol. It must be removed **while the glue is hardening**, as dried glue cannot be fully removed.
Remember to follow the glue manufacturer's instructions, as well as considering the resistance of the base material. ?!

Curing

The curing time of the glue depends mainly on the **temperature**, or on the **humidity** in the case of silicone glues. Please note the glue manufacturer's instructions.
To minimize shrinking and tension during hardening, we recommend a **maximum curing temperature of 50°C (122°F)**, with the exception of two-component epoxy resin glue CG 500-35.
CG 500-35 can be cured at a maximum temperature of **100°C (212°F)**, without any changes to its properties. ?!

OVERVIEW OF THE APPLICATION PROCESSES <<<

1 The surface must be correctly pre-treated before gluing (e.g. cleaning, degreasing, sanding).

2 The glue should be applied with a dispenser.

3 Pick up the crystal with the wax stick, for example.

4 Carefully place the crystal in the cavity and press it down gently; post-clean and cure.

Applying UV-transparent materials

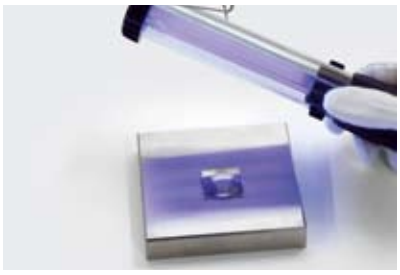
When using UV glue, **at least one part** of the materials must be translucent for **UV light**. On a metal surface for example, only crystals without foiling can be applied. Similarly, foiled crystals can only be glued to UV-transparent materials.

Please note that some crystal and glass colors and UV-stabilized plastics absorb UV light and are thus unsuitable for UV glues.

1 The surfaces to be glued must be properly pre-treated to achieve a sufficient surface tension. This can be tested via a test pen.

2 Dispense the UV glue.

3 Press down on the crystal, until the glue completely covers the gluing area.



4 Cure the glue for a few seconds using a UV light (following the manufacturer's instructions), and remove any excess glue using a cleaning agent. The curing process can then be continued, according to the manufacturer's instructions.

Note: It is recommended that UV-protective eyewear is worn during curing, to prevent injury. Please follow the manufacturer's instructions.

Applying Transfers No Hotfix

1 Peel off the white protective film.

2 Apply the correct amount of glue.

3 Position the motif on the pre-treated surface.

4 Use soft foam rubber to compensate for uneven surfaces. Apply weight to the foam rubber and motif while the glue is hardening.

5 After the glue has hardened, remove the transparent film (taking into account the technical data of the glue).

Applying Self-Adhesive Elements

Applying Crystal Tattoos

Crystal Tattoos are coated with a **dermatologically tested** glue that poses no threat to health and can therefore be applied directly to the skin.

1 Cleanse the skin with soap.

2 Peel off the white protective film at an acute angle.

3 Position the motif in the location desired and press down firmly for around 10 seconds.

4 Carefully remove the transparent film at an acute angle and press down on the motif again.

Note: Please read the additional instructions on working with Crystal Tattoos at the end of this manual.

Applying Crystal-it

1 Press the crystals onto the transparent film.

2 Peel off the white protective film at an acute angle.

3 Position the motif in the location desired and press down firmly for around 10 seconds.

4 Carefully remove the transparent film at an acute angle and press down on the motif again.

Applying other Self-Adhesive Elements

Dry application

1 The surfaces to be glued must be properly pre-treated, so as to achieve sufficient surface tension.

2 Press the motif onto the transparent film.

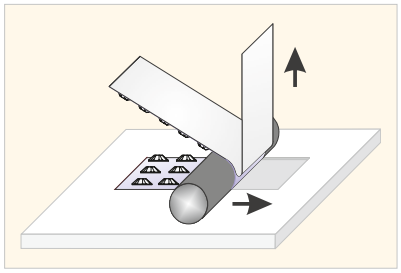
3 Peel off the white protective film at an acute angle.

4 Position the motif in the location desired and press down firmly for around 10 seconds.

5 Carefully remove the transparent film at an acute angle and press down on the motif again.

Note: Prevent the self-adhesive back from sticking together, as separating it can cause damage. The minimum application temperature is 18°C (64°F), with the glue fully hardening after 24 hours.

For applications on surfaces subject to high mechanical stresses, it is recommended that a cavity is produced.



When applying Crystal Fabric-it and Crystaltex-it Bandings, remove the white protective film during application in the pre-produced cavity.

Wet application

For larger motifs and those that must be positioned accurately on surfaces, a wet application is recommended. It is essential, however, that the base does not absorb the soap water that is used here.

1 Moisten the cleaned surface with soap water.

2 Carefully peel off the white protective film at an acute angle, and carefully position the product on the wet surface. After positioning it, press down on the soap water beneath the motif, e.g. using a rubber roller.

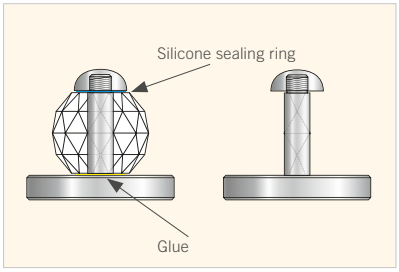
3 Carefully remove the transparent film at an acute angle and leave the surface to dry.

4 After drying, press down firmly on the motif again, e.g. using a rubber roller.

Applying Center Parts and Lever Handles

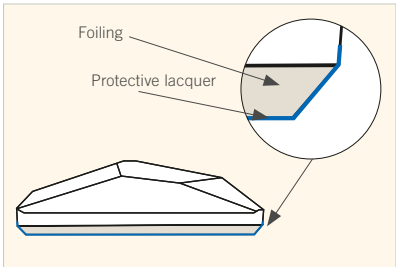
Center Parts and Lever Handles can be glued on the side of the foiling, and screwed down for additional security. When screwing, it is important to ensure that direct contact between the crystal and metal is avoided via the use of a **silicone sealing ring**.

Center Parts/Lever Handles



Applying Flat Backs No Hotfix for mosaic tiles

Due to their dimensions (outer dimensions and height) and coating (protective lacquer), select Flat Backs No Hotfix have been tailored specially for use in tiles and mosaics.



Protective lacquer is applied to the foiling of all crystals, and fully covers the reflective surface. Protective lacquer prevents moisture, cleaning agents, etc. from coming into direct contact with the reflective layer, which can lead to corrosion and damage it.

Long-term, satisfactory solutions can only be achieved with **paper-glued** mosaic tiles and the use of recommended tile glues and joint sealers. When working with **net-glued** mosaics, their absorption and storage of moisture means the **support net** must be **completely removed** in the areas where the crystals are to be applied.

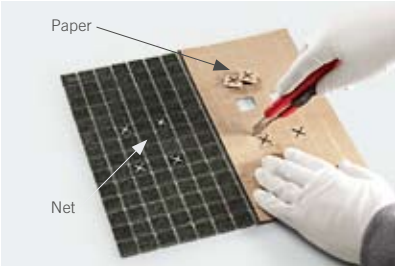
Select tile glues and joint sealers

PCI Durapox NT plus	www.pci-augsburg.de
Kerakoll Superflex R2	www.kerakoll.com
Ardex Ardipox WA R2	www.ardex.com

Solvent-resistant and alkaline tile glues and joint sealers are not recommended.

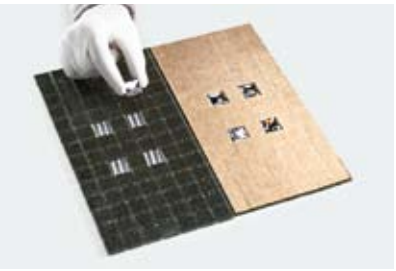
Unsuitable areas of application

- In swimming baths and steam rooms
- In contact with chlorine and other aggressive cleaning agents
- In saunas, due to the high temperatures and moisture
- Outside



1 Cut out the marked tile area and remove it from the mosaic.

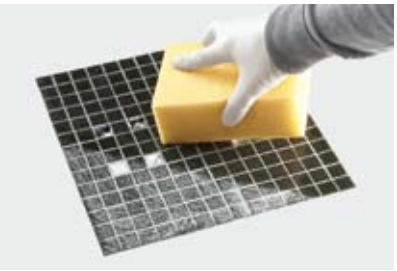
2 Apply the tile glue to the prepared base according to the manufacturer's instructions, then carefully position the mosaic tile and press down.



3 Place the individual crystals in the gaps and lightly press down.

4 Before curing, remove any excess glue with a damp sponge; follow the manufacturer's information regarding curing.

5 After curing, remove the paper support. Following this, the mosaic can be grouted with a soft rubber scraper.



6 Excess joint sealer can be removed with a wet sponge during curing.

Note: Please be aware that many tile glues and joint sealers can contain abrasive materials, which can lead to scratching of the crystal. To avoid damaging the crystal, these parts should be carefully cleaned with mild, pH-neutral cleaning agents, and cleaning sponges.

Applications on silver jewelry

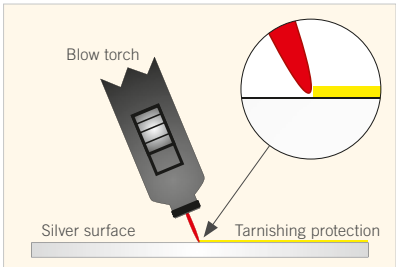
Without protection, silver jewelry can turn yellow or black with time due to chemical reactions. To slow or stop these reactions the surface of silver jewelry is often covered with a temporary (wax-based) or permanent protective coat (varnish-based). Tarnishing on the surface of the metal often results in a decline in the surface tension to under the recommended 38 mN/m.

TARNISHING PREVENTION SYSTEMS	
Temporary protection against tarnishing:	**Permanent protection against tarnishing:**
▪ Wax-based	▪ Varnish-based
▪ Low surface tension	▪ Surface tension depends on varnish
Recommendation: Protect the rest of the piece after gluing	**Recommendation:** Use a tarnishing protection system with sufficient surface tension

Remove the temporary tarnishing protection

Please note that all SWAROVSKI ELEMENTS in plated silver and all elements in the Metal Trimmings product group (gold 081, silver 082 and gun metal 086) are supplied with temporary wax-based tarnishing protection. As such, these elements do not offer the right properties for gluing. This tarnishing protection can be removed prior to gluing via **flame treatment** (e.g. a blow torch), however, it must be reapplied once the process is complete. The exception here is Crystal Mesh in silver, which is coated with a transparent lacquer and thus is ideal for gluing.

Temporary tarnishing protection can also be removed via alkaline baths.



Protective film

A self-adhesive film can protect against dirt during the application process and aid in positioning.

Blind hole

1 To protect the surface of the material used (e.g. metal, tiles, etc.) from dirt, a self-adhesive film can be applied.

2 It is then cut out along the previously produced cavities.

3 The crystal can now be glued into the cavity. Once any excess glue has been removed, the adhesive film can be removed following curing.

End-to-end cavities

1 Apply self-adhesive film to the **front** of the material.

2 Place the Flat Backs No Hotfix elements into the end-to-end cavity from the **back**.

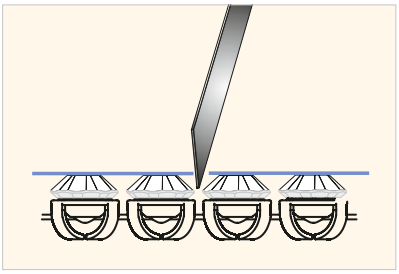
3 Now fill the cavity with glue. The glue should cover the entire foiling of the crystal, so as to avoid corrosion. The self-adhesive film **prevents the glue spreading** onto the front.

4 Once the glue has cured, the film can be removed.

Note: Highly viscous glues are best suited for end-to-end cavities, as they do not spread through the cracks at the front.

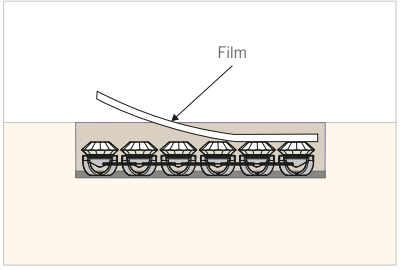
Cutting and gluing Crystal Mesh

Before gluing, the transparent film should not be removed. The film allows the individual crystals to be aligned perfectly, and provides Crystal Mesh with the stability necessary for flawless application.



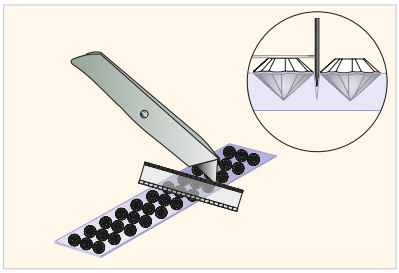
Cut the transparent film between the rows of crystals with a Stanley knife, though do not pull it away – otherwise the stability of the crystals will be lost..

When gluing flexible Crystal Mesh products, do not remove the transparent film until the glue has cured, to ensure the proper alignment of the mesh.

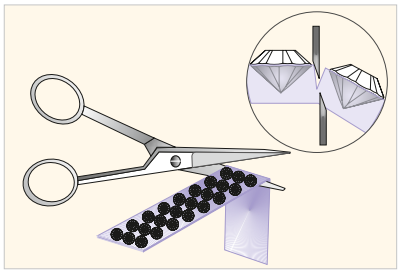


Cutting Crystaltex Chaton Bandings

When working with Crystaltex Chaton Bandings, the lack of space between crystals means great care must be taken during cutting, so as to avoid damaging the crystal.



1 Cut into the support film between the crystal rows with a Stanley knife.



2 Snap and cut off the Crystaltex Chaton Banding along the scored edge.

Applications on plastics

There are many types of synthetic materials. The following table contains information regarding the adhesive qualities of a selection of plastics.

?!

PLASTICS	USUAL COMMERCIAL NAME	ADHESIVE QUALITIES
ABS	Abselex, Lacqran, Tynrene	good
ASA	Luran S, Geloy	good
CA	Ultraphan, Saxetat, Thodialite	good
EP	Araldite, Ferropox, Duroxyn	good
PA	Degamid, Nylon, Perlon	very difficult
PC	Polycarbafil, Lexan, Andoran	good
PE	Geberit, Hostalen G, Ferrozell	difficult
PET	Cardura, Atlas, Eralyt	difficult
PF	Formanyl, Holoplast, Kerit	good
PIB	Parapol, Oppanol, Vistanex	good
PMMA	Plexiglass, Resartglass	good
POM	Delrin, Kematal, Ertacetal	difficult
PP	Moplefan, Proplex, Verelite	difficult
PS	Hostyrene, Styropor, Noblen	good
PTFE	Teflon, Gaflon, Ferrotron	very difficult
PVC	Marcoproplat, Ravinil, Sumilit	good
SAN	Litac, Tuf-Flex, Vestoran	good
SILICONE	Silopren, Contiduct, Corotex	difficult
UP	Celipal, Sirester, Vestopal	good

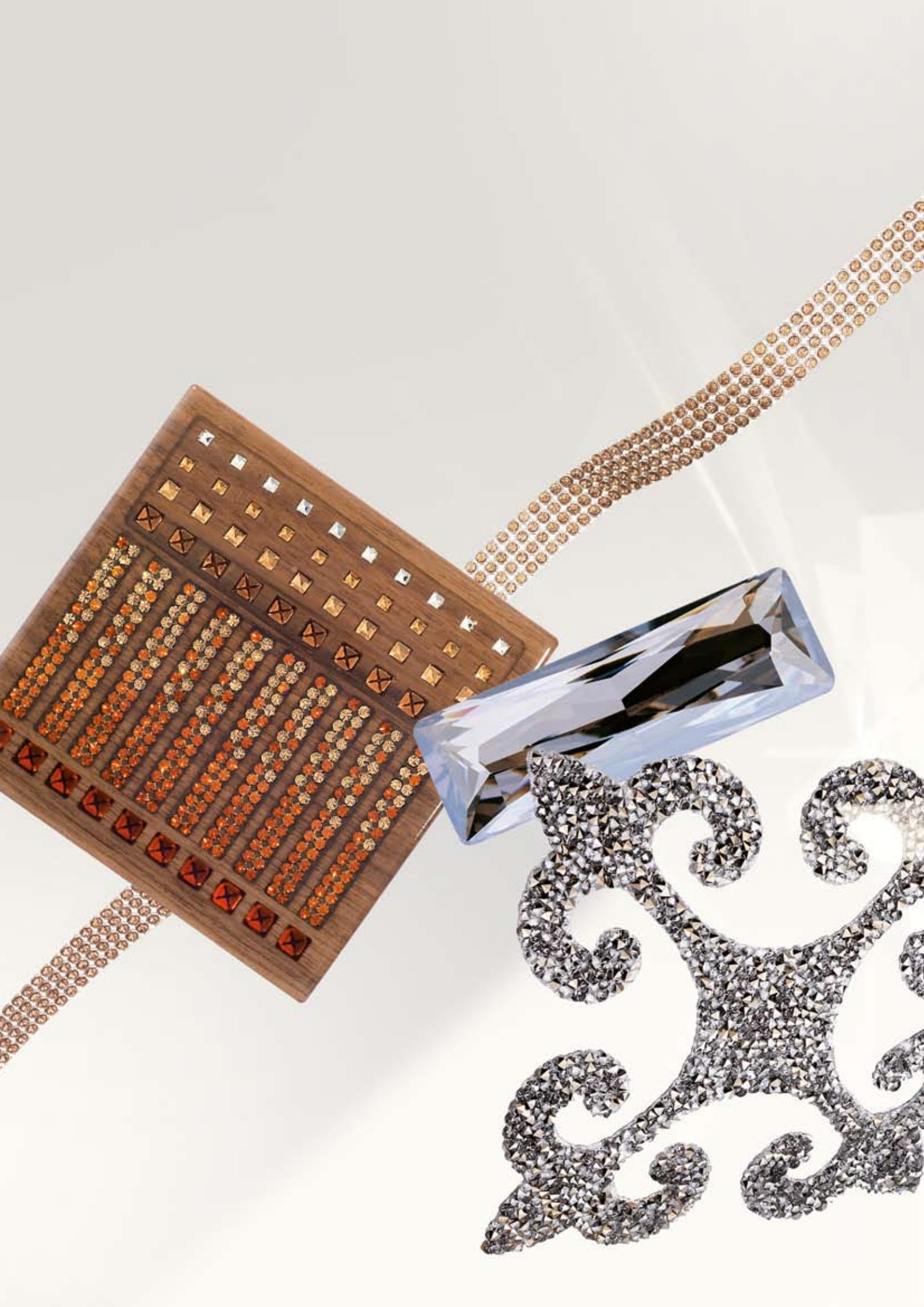
QUICK ASSISTANCE <<<

The following table outlines common problems and causes when gluing SWAROVSKI ELEMENTS, and offers advice on how to avoid them. Further details and more extensive descriptions can be found in the section marked with a ?! ?!

PROBLEM	CAUSE
The crystal has become discolored	
The crystal is matt or yellowed	**1, 2**
The crystal seems black and dull compared to the surrounding crystals	**3**
The crystal has been plated	**4**
The crystal has come away from the cavity	
The crystal has detached without the foiling	
▪ The crystal has become discoloured	**5, 6**
▪ The crystal has detached with the mirror coating but without the platinum foiling or the glue	**7, 8, 9**
The crystal has detached with the foiling	
▪ Glue is attached to the crystal	**10, 11, 12, 13, 14**
▪ No glue is attached to the crystal anymore	**15, 16, 17**
Excess glue	
Before hardening	**2**
After hardening	**18**

CAUSE		RECOMMENDATION
1	Glue residues have not been completely removed and have been smeared over the crystal.	Use a suitable dispenser to apply exactly the right amount of glue. Dispensers with a vacuum connection prevent the glue from dripping and reduce the amount of cleaning needed.
2	Too much glue was used.	Be sure to use the exact recommended dosage and to carefully remove any excess glue using e.g. acetone or isopropyl alcohol.
3	The axis of the cavity was already off-centre in the original model or the cavity was not drilled straight in the unfinished casting.	Use a special bit when drilling the original model. This offers more precise control of the direction and depth of the drilling.
4	The jewelry was only plated after the crystals had been glued to it.	It is recommended to complete the plating before gluing the crystals.
5	A gluing gap that has not been completely filled is causing corrosion.	Make sure the exact dosage of glue is used.
6	Tensile stresses are reducing the adhesion of the mirror coating. Oxygen is penetrating between the stones and the mirroring and causing oxidization.	Use glue that is more elastic and that does not shrink as much.
7	An incorrect glue system was used.	Carry out tests with other glue systems.
8	Incorrect proportions of resin and hardener were used.	Follow the glue manufacturer's mixing instructions.
9	Cleaning agents have affected the glue and/or the protective coating.	Use less solvent or a different type of solvent.
10	Residues of polishing agent were not completely removed before plating.	Double check the type of cleaning process used.
11	A varnished piece of jewelry has not been correctly pre-treated before gluing.	Improve the adhesion of the glue, e.g. with low-pressure plasma treatment or flame treatment if necessary.
12	Too little glue was used.	Make sure the exact dosage of glue is used.
13	The cavity is the wrong shape after plating	Re-work the original model to improve the cavity shape.

CAUSE		RECOMMENDATION
14	Electrolyte residues have not been completely removed.	Double check the type of cleaning process used.
15	The specified processing time was exceeded and as a result the glue has already hardened.	Reduce the processing time.
16	Too little glue was used	Make sure the exact dosage of glue is used.
17	General glue problems	Follow the manufacturer's instructions. Check the conditions under which the glue is stored. Excess solvent could have corroded the glue and/or the foiling.
18	The jewelry piece was put under stress before the glue had hardened.	Make sure the glue has hardened before e.g. transporting the jewelry.



sealing

SWAROVSKI ELEMENTS can be sealed in a variety of ways, ensuring they are ideally protected against chemical and mechanical stress. This innovative application technique has been further developed by Swarovski, and can now be employed at the highest level in countless industries. Crystal Gloss is a specially developed two-component sealing compound, and enables the brilliance of set SWAROVSKI ELEMENTS to be maintained better than ever before.

PRODUCT OVERVIEW

The following products are suitable for sealing:

	SEALING
Round Stones	✓
Flat Backs No Hotfix	✓
Fancy Stones	✓
Crystal Fabric	✓
Crystal Rocks	✓
Crystal Transfabric	✓
Crystaltex	✓
Plastic Trimmings	✓
Chaton Bandings	✓
Crystal Mesh	✓
Cupchains & Findings	✓

This type of application is particularly well-suited to SWAROVSKI ELEMENTS in transparent colors and with surface effects that offer **a sense of depth** through a faceted back.

MACHINES, TOOLS, AND AIDS

The following machines, tools, and aids are necessary for sealing SWAROVSKI ELEMENTS.

Crystal Gloss (A+B)
Two-component epoxy resin sealing compound
(1 kg box – Art. 9030/100, /200, /300)

Crystal Gloss (A+B)
(100 g sample set – Art. 9030/120, /220, /320)

Mixing equipment and dispensing syringes

Vacuum system or desiccator

Drying oven

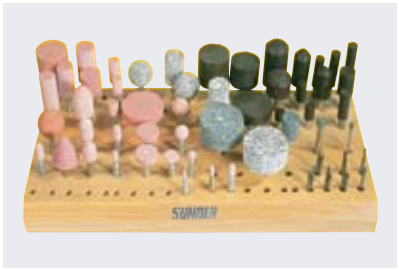
Precision balance

Level

Gloves

Protective eyewear

Polishing machine



Various abrasives

SUPPLIERS

This list provides an overview of select suppliers worldwide.

MACHINES / TOOLS / AIDS	SUPPLIER	CONTACT
Crystal Gloss (A+B) Two-component epoxy resin sealing compound	Swarovski 1 kg box: European version*: Art. 9030/100 American version*: Art. 9030/200 Asian version*: Art. 9030/300 100 g sample set: European version*: Art. 9030/120 American version*: Art. 9030/220 Asian version*: Art. 9030/320	www.swarovski-elements.com/business
Dynamic mixing and dispensing devices	Thonauer GmbH Bartec GmbH	www.thonauer.at www.bartec.de
Vacuum system	VWR Mercateo Reiss Laborbedarf	www.vwr.com www.mercateo.com www.reiss-laborbedarf.de
Silicone	Wacker	www.wacker.com
Clear lacquer	dupli-color	www.dupli-color.de
Abrasion and polishing materials	Amann Bernhard	www.amann-technik.at
Adhesive tape	3M	www.3m.com

***Note:** The make-up of the sealing compound is exactly the same for all three types of Crystal Gloss. However, local legislation means different descriptions are required on the packaging. As such, it is recommended that you order the correct version for your region. For further information, please contact your local Swarovski representative.

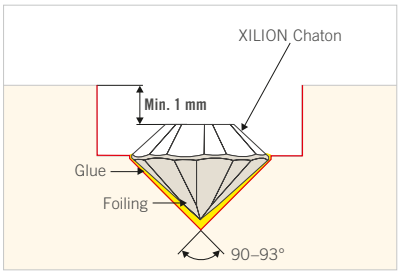
APPLICATION

To ensure the best possible results, it is essential that the materials to be sealed with Crystal Gloss are properly prepared. The points below contain useful instructions for pre-treating and sealing all the products listed in the product overview, and therefore should be followed exactly.

The following application stages apply to **direct sealing**. Information on **other sealing methods** can be found at the end of this chapter.

CAVITY PRODUCTION | BASE MATERIAL PREPARATION | GLUING | SEALING | FINISHING

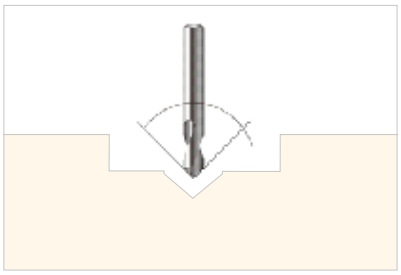
When sealing SWAROVSKI ELEMENTS, the right cavity is essential. To be able to use Crystal Gloss to seal the crystals, they must be fixed in an additional cavity. The depth of this cavity depends on the height of the SWAROVSKI ELEMENTS used, though it should allow a Crystal Gloss coating of at least 1 mm to cover the crystals.



Optimum cavity for a XILION Chaton

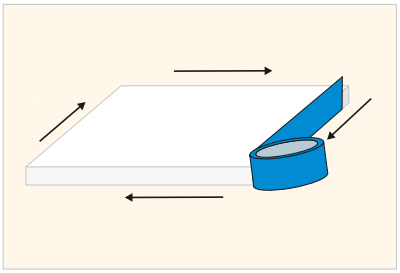
Cavities can be produced via several different methods. Further information and instructions on preparing cavities can be found in the “Gluing” chapter.

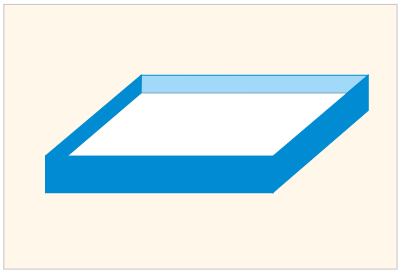
Milling an additional cavity for Crystal Gloss



Drilling or milling the cavity for the SWAROVSKI ELEMENTS

Reinforced adhesive tape (e.g. 3M) can also be used to produce a sealing cavity.





Wrap tape around the outside of a base plate made of wood, glass, etc. (any shape can be used).

Checking surface tension and pre-treatment

The surface tension is an indicator for the wetting properties of the surface to be sealed. The surface must meet general gluing requirements, i.e. it must be **clean, dry, and oil and grease free**. The surface tension must be **at least 38 mN/m**. This should also be randomly tested during production.

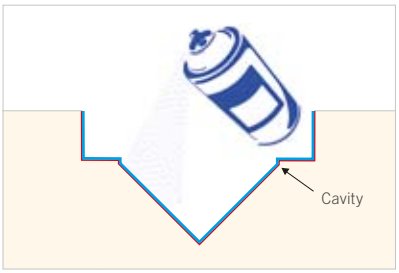
It is best to use the test pen (Art. 9030/000) to measure the surface tension.

If the surface tension is below 38 mN/m, various pre-treatment cleaning methods can be used to reach the right level.

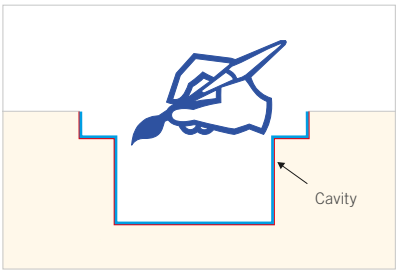
For further information and instructions on surface tension and **pre-treatment cleaning methods**, see the “Gluing” chapter.

Pre-sealing

Porous base materials, such as wood and MDF boards, should be pre-lacquered or sealed, in order to minimize their absorbency, and therefore the amount of Crystal Gloss required. Clear lacquers or covering lacquers can be used, provided they offer sufficient surface tension.



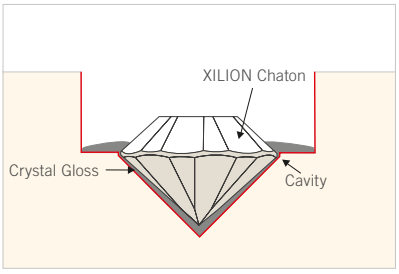
Pre-lacquering



Pre-sealing with Crystal Gloss

Before sealing, the SWAROVSKI ELEMENTS must be fixed in place. Further information and instructions on selecting the right glue and the gluing process can be found in the “Gluing” chapter.

Alternatively, crystals **from the size of PP 24 upwards** can be fixed with Crystal Gloss. It is important to ensure that the Crystal Gloss flows over the edge of the cavity, so that no air bubbles form around the crystal during the curing process later on. The SWAROVSKI ELEMENTS can then be sealed immediately.



Pre-fixing with Crystal Gloss

Main advantages of Crystal Gloss

- Future-oriented solution
- Ideal mechanical and chemical resistance
- Diverse areas of application
- Optimized especially for SWAROVSKI ELEMENTS

As a result of its many advantages, Crystal Gloss is the ideal application solution to protect SWAROVSKI ELEMENTS on all solid, gluable surfaces.

Future-oriented solution

Crystal Gloss is a specially developed epoxy resin modification, and contains only high-grade ingredients. It has been formulated in such a way that the “resin” and the “hardener” components do not represent hazardous materials, in line with GGVS/E-ADR and ICAO/IATA transport regulations. This offers a host of transportation advantages, such as dispatching by air.

Crystal Gloss does not contain any relevant toxic ingredients, and can thus be classed as non-poisonous. When hardened, Crystal Gloss does not contain any ingredients capable of emigration. Crystal Gloss contains no auxiliary materials such as accelerators or stabilizers.
Compared to standard sealing systems, the following warning notices **do not apply for** Crystal Gloss.
Crystal Gloss is only evaluated as Xi irritant and not as Xn harmful.

E
Explosive

F
Highly flammable

T
Toxic

Xn
Harmful

C
Corrosive

N
Dangerous for the environment

UN 3082
Environmentally hazardous substance, liquid, n.o.s.

Ideal Mechanical and Chemical Resistances

CRYSTAL GLOSS OFFERS IDEAL MECHANICAL AND CHEMICAL RESISTANCE AGAINST:	
Mechanical stress	Crystal Gloss absorbs impacts and withstands distortion; in addition, the exceptional elasticity of the sealing compound prevents the material from breaking.
Humidity	Crystal Gloss prevents infiltration of humidity and thus any corrosion.
Perspiration	Crystal Gloss prevents infiltration of perspiration and thus any corrosion.
Cleaning agents and solvents	Crystal Gloss is resistant against standard cleaning agents and solvents, such as acetone, ethanol, isopropyl alcohol, cleaning creams, soapy water and butyl glycol.
Salt and chlorinated water	Crystal Gloss protects SWAROVSKI ELEMENTS against salt and chlorinated water.
Moisture and temperature	Crystal Gloss protects SWAROVSKI ELEMENTS against extreme temperatures ranging from -40°C to +80°C (-104°F to +176°F).

Diverse areas of application

Crystal Gloss offers ideal adhesion properties on many solid, flat materials, such as metal, plastic, wood, glass and porcelain. As such, it is an excellent application method for SWAROVSKI ELEMENTS used in the interior and home décor sectors. In addition, it also offers many innovative possibilities for segments such as fashion accessories and the jewelry industry.

Crystal Gloss is suitable for all solid, gluable surfaces, and can be applied in a wide variety of thicknesses, offering excellent hold against both cold and hot stress. Furthermore, Crystal Gloss provides first-rate resistance to chemicals, as well as a perfectly balanced combination of resilience and surface strength.

Specially optimized for SWAROVSKI ELEMENTS

Crystal Gloss is a specially developed two-component sealing resin, and enables the brilliance of SWAROVSKI ELEMENTS to be maintained better than ever before.
Crystal Gloss is exclusively distributed by Swarovski, and is available worldwide without minimum order quantities.

Crystal Gloss technical data

Mixture ratio (A : B)	1 : 0.33 ± 1% per cent by weight
Pot life at room temperature (23°C/73.4°F) – 1 kg	3 h
Pot life at room temperature (23°C/73.4°F) – 0.1 kg	3.5 h
Complete curing time at room temperature (23°/73.4°F)	72 h
Time required in oven at 60°C (140°F) before surface is dry and can be handled	6 h
Complete curing time in oven 60°C (140°F)	12 h
Surface tension (23°C/73.4°F)	33.0 mN/m
Mixed density (23°C/73.4°F)	1.14 ± 0.05 g/cm³
Crystal Gloss viscosity (mixed)	300 ± 100 mPa*s
Polymerization shrinkage (23°C/73.4°F)	4%
Polymerization shrinkage (60°C/140°F)	6%

Crystal Gloss processing stages

Mixing and venting

The exact mixing of the two-component sealing compound is important. Only a fully homogenous mixture leads to the desired results. Care must be taken to follow the manufacturer's instructions.

?!

Mixing can be done by hand, using a stirring tool, or using a dynamic mixing device. For mixing tools where the revolution speed can be selected, a minimum number of revs should be chosen, to ensure that less air gets into the sealing compound during mixing.

1 Place component A and component B in a mixing container, at a ratio of 1 : 0.33 by weight (accurate to within 0.01 g).

2 Mix the components by hand or using a mixing tool, until they form a clear, homogenous fluid. It is recommended that at least two minutes are spent mixing. At room temperature, the compound offers a pot life of around 3 h.

3 Wait until all air bubbles that are introduced during mixing disappear. Depending on the quantity used, this takes around 5–15 mins. This process can be accelerated by using a vacuum system.

WARNING: If the whole mixture (1 kg) remains in the mixing container for longer than the pot life, chemical reactions mean that very high temperatures of around 150°C (302°F) are reached. Great care must therefore be taken.

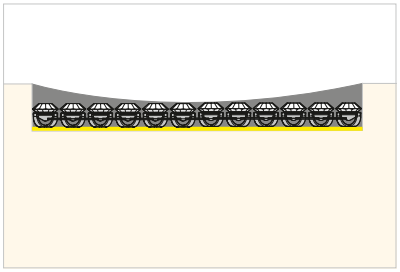
Sealing

Once the air has disappeared fully from the Crystal Gloss, the compound can be used for sealing. The pot life of 1 kg of mixed compound is 3 hours at 23°C (73.4°F).
Ensure that the surface to be sealed is leveled horizontally and is free of dust and dirt. Always apply the sealing compound slowly from a single point, to avoid air bubbles. ?!

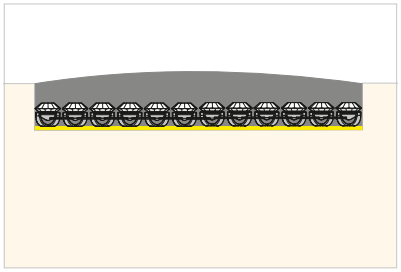
When sealing smaller cavities, a dispensing syringe is most appropriate. For larger areas, a small container can also be used.

If **air bubbles** form in the mold during sealing, these can be easily removed using a syringe with a fine tip.

In general, two-component epoxy resin sealing compounds tend to shrink during curing. When large areas are sealed or thin molds are used, the shrinkage might lead to deformations. To compensate for this **shrinkage**, a little more sealing compound than necessary should be applied.

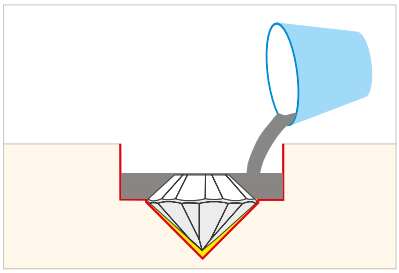


Potential shrinkage after curing.

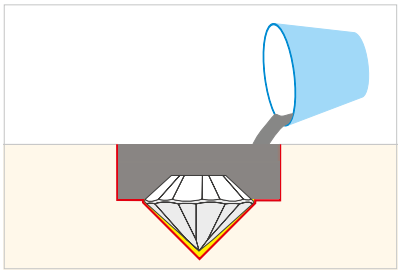


Avoidance of shrinkage by adding extra sealing compound.

Alternatively, the sealing compound can be applied in several stages (layered sealing). This is advisable for larger surfaces, as it better compensates for surface structures affected by shrinking. ?!



1 Apply the first layer of Crystal Gloss so that it just covers the top of the crystal, then cure.



2 Apply the second layer of Crystal Gloss and cure again.

Curing

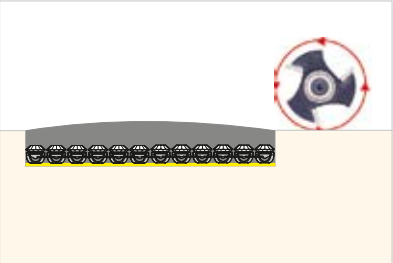
After sealing, the product must be stored in a **horizontal position in a dry, dust-free environment,** until it has fully cured. A dust-proof cover or a dust-free room (painting room) are ideal, as they prevent any impurities such as dust or dirt from settling on the Crystal Gloss. ?!

The curing time and final strength are dependent on temperature, and the amount of sealing compound used. Curing can be accelerated through heat by using a drying oven. For ideal curing results (crystal clear, largely non-yellowed seal), an **optimum curing temperature of <60°C (140°F)** should be selected. In all cases, tests should be carried out from the start of production, to ensure the ideal combination of settings for the design.

Once the Crystal Gloss has been completely cured, the material can be employed with practically no mechanical restrictions.

Milling and abrasion

To ensure optimum milling results, use the standard settings for working with metal and plastic, and select the standard milling cutter.



To deliver optimum abrasion results, a multi-stage process should be followed (pre- and post-abrasion). For pre-abrasion, depending on the surface properties, an abrasive should initially be used with a grit size of P320. The grit size of the abrasive should be halved for each stage (P320 – P600 – P1200).

To prepare properly for the polishing process, the surface can be further refined by post-abrasion of the product. The grit size is halved again (P2400 – P4000).

Polishing

If, following post-abrasion, the surface brilliance does not meet the necessary requirements, further polishing can be carried out.

When using an angle grinder or polishing machine, ensure that it is continuously adjustable up to a maximum of 3000 rpm. Polishing wax or polishing paste can be used as a polishing agent.

Please ensure that the temperature of the surface is kept as low as possible (max. 70°C/158°F) throughout the abrasion and polishing process. Otherwise there is a risk of overheating and of damaging the Crystal Gloss surface. By polishing and sanding at intervals, the surface has the opportunity to cool down and stay below 70°C (158°F).

Finishing/further processing of the surface

To make the Crystal Gloss surface even more resistant against external stresses, and to further protect the surface of the base material, they can be covered with a clear lacquer. The surface can be lacquered immediately after the abrasion process. Additional high-gloss polishing is not necessary.

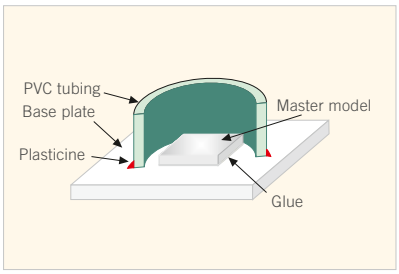
OTHER SEALING METHODS

If a cavity cannot be produced in the material, or it is not possible to incorporate one, a silicone mold can be produced to achieve the shape requested. There are two types of silicone molds that can be used: open and closed.

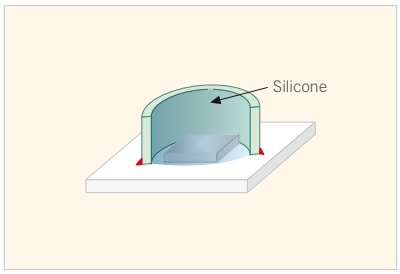
Open silicone molds

This method enables simple, efficient production of **precisely fitting inlays,** which can be integrated into the final product. Any shape can be selected for the master model of an open silicone mold. However, there must be no indentations, as the model can then not be removed from the mold.

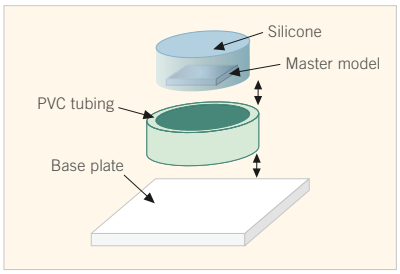
Producing an open silicone mold



1 Affix the master model to a base plate (e.g. plastic or MDF board), with a glue that is easily soluble. Place a frame centrally on the base, and secure it against slipping using glue or plasticine. Metal, PVC tubing, wood or chipboard is ideal for the frame material.

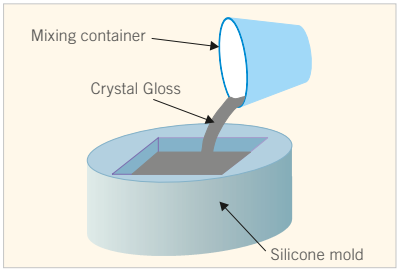


2 Pour the silicone into the mold, either automatically using a mixing system, or manually from a mixing beaker, and cure.

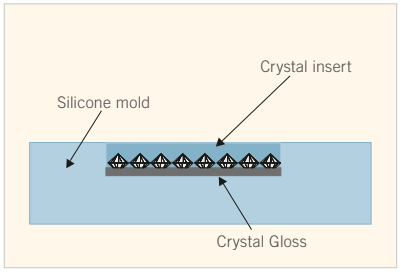


3 The master model is removed by extracting it from the individual components.

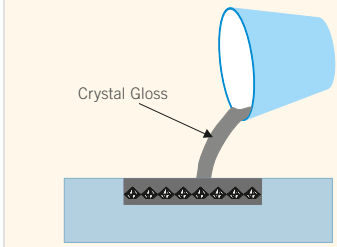
Sealing with Crystal Gloss



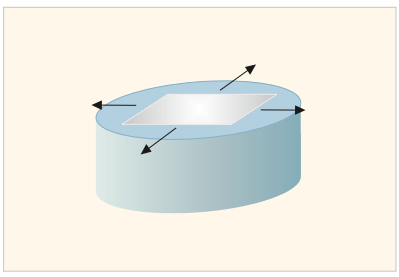
1 Pour the first layer of Crystal Gloss into the silicone mold and cure.



2 Position and fix in place the SWAROVSKI ELEMENTS on the cured Crystal Gloss layer.



3 Fill the silicone mold completely with Crystal Gloss and cure.

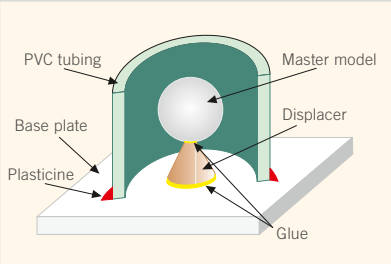


4 Remove the Crystal Gloss sample by carefully separating it from the silicone mold.

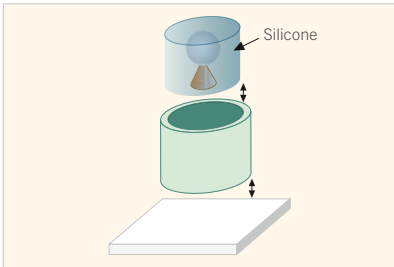
Closed silicone mold (3D mold)

Any shape can be selected for the master model of a closed silicone mold.

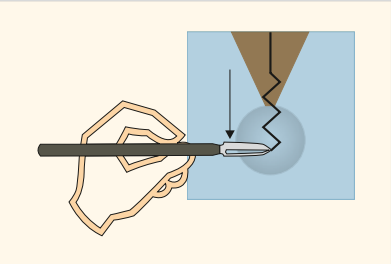
Producing a closed silicone mold



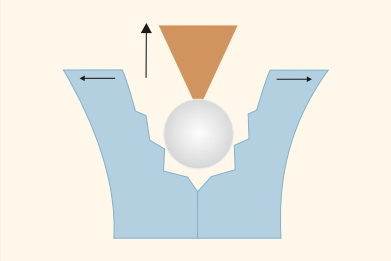
1 A conical displacer is attached to the master model using soluble glue. This is then fixed onto a base plate using a glue that is easily soluble. Place a frame centrally on the base, and secure it against slipping using plasticine.



2 After sealing and curing, the master model is removed by gradually extracting it from the individual components.

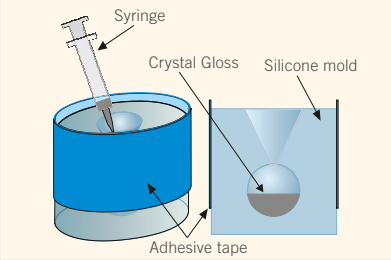


3 The master model should be cut out of the silicone mold via a zigzag or wave cut. This allows the silicone mold to be reconstructed.

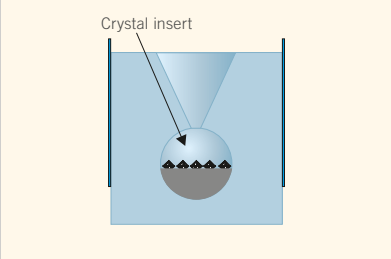


4 The master model is carefully removed from the silicone mold that has been cut open.

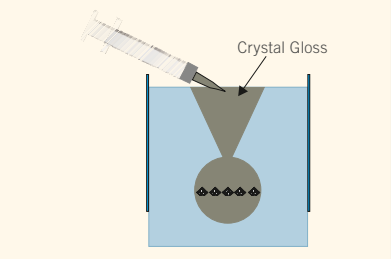
Sealing with Crystal Gloss



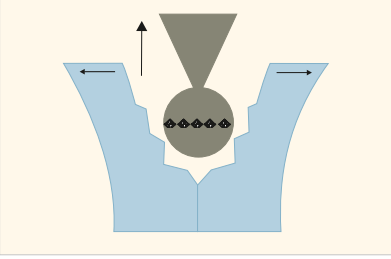
1 Hold the silicone mold together with adhesive tape, pour in the first layer of Crystal Gloss, and cure.



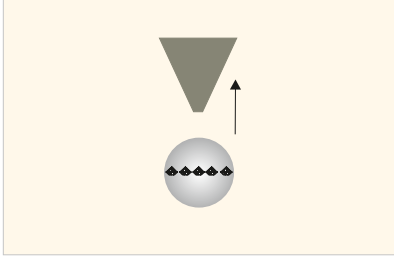
2 Fix in place the SWAROVSKI ELEMENTS on the cured Crystal Gloss layer.



3 Fill the silicone mold completely with Crystal Gloss and cure.



4 Remove the Crystal Gloss sample by carefully separating it from the silicone mold.



5 Separate the Crystal Gloss sample from the displacer, and remove any mold flash through abrasion and polishing.

Cavity size

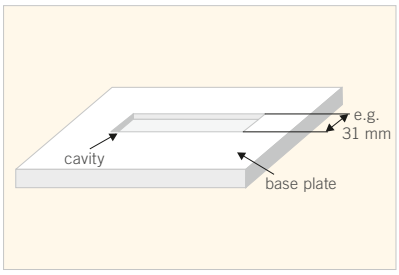
The size of the cavity depends on the SWAROVSKI ELEMENTS (Crystal Mesh Standard, Crystal Mesh XL) used and the number of rows (n).

Crystal Mesh Standard

The formula to calculate the width and length of the cavity is as follows: **n • 3 + 1 mm**
Depth: 4.5 mm

Crystal Mesh XL

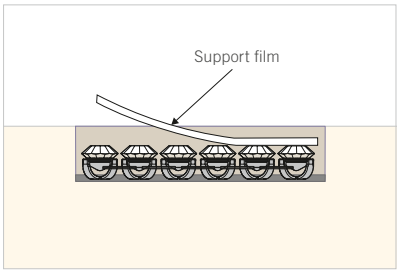
The formula to calculate the width and length of the cavity is as follows: **n • 6 + 1 mm**
Depth: 6 mm



e.g. 10-row mesh: 10 • 3 + 1 = 31 mm
(10-row Crystal Mesh XL: 10 • 6 + 1 = 61 mm)

Pre-fixing Crystal Mesh

When gluing flexible Crystal Mesh products, do not remove the support film until the glue has cured, so as to ensure the proper alignment of the crystals.



QUICK ASSISTANCE <<<

The following table outlines common problems and their causes when sealing, and offers advice on how to avoid them. Further details and more extensive descriptions can be found in the section marked with a ?!

PROBLEM	CAUSE
Crystal Gloss does not cure.	**1**
Crystal Gloss is not bonding with the base material.	**1, 2**
Crystal is not fully covered.	**3**
Too much Crystal Gloss has been applied.	**4**
Air bubbles.	**5, 6**
Crystal Gloss looks yellow.	**1, 7, 8**
Poor surface finish after curing.	**1, 2, 9**

CAUSE		RECOMMENDATION
1	An error has occurred during the calculation of the right mixing ratio between the two components (resin/hardener).	Do not deviate from the recommended mixing ratio of the components (resin/hardener), 1 : 0.33.
2	Adhesives do not adhere to the base material, or it has been incorrectly cleaned.	Check the surface tension (see “Gluing” chapter).
3	Too little Crystal Gloss has been applied.	Either lightly seal the mold in advance, or fill it up afterwards.
4	An incorrect amount of Crystal Gloss sealing compound has been chosen.	While still in liquid form, remove excess material with a syringe; when hardened, mechanically work the surface (e.g. abrasion and milling, followed by polishing).
5	Incorrect pouring of Crystal Gloss.	Always pour the sealing compound from a single point, so that no air can get into the Crystal Gloss. Remove any bubbles from the Crystal Gloss by using a syringe with a fine tip.
6	When using a porous base material, air can enter the sealant.	Applying a thin pre-sealing or pre-lacquering layer can close the pores in the base material.
7	Use of contaminated Crystal Gloss.	When producing the seal, cleanliness is essential throughout the process.
8	UV rays are too intense.	When using outside, an additional UV-protective lacquer is recommended.
9	Curing in an unclean environment.	When producing a seal, cleanliness is essential (e.g. no dust or dirt).

hotfix APPLICATION

The SWAROVSKI ELEMENTS assortment includes a wide range of Hotfix products. These can be applied simply, quickly and securely. Hotfix technology is ideal for application in the fields of textiles, interior décor and accessories.

HOTFIX APPLICATION

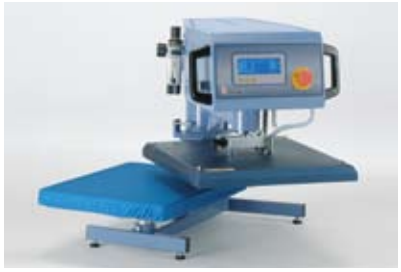
PRODUCT OVERVIEW

The following products are suitable for Hotfix application:

	HOTFIX APPLICATION
Flat Backs Hotfix	✓
Transfers	✓
Crystal Fabric	✓
Crystal Rocks	✓
Crystal Transfabric	✓
Crystaltex	✓
Crystaltex Chaton Bandings	✓
Crystal Mesh	✓

MACHINES, TOOLS, AND AIDS

The following machines, tools and aids are necessary for the Hotfix application of SWAROVSKI ELEMENTS:



Heat press

Double heat press

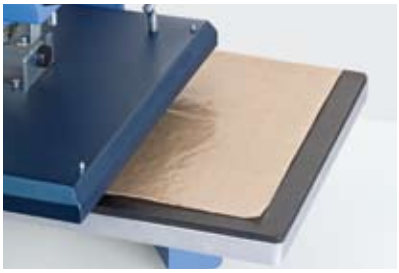
Continuous fusing press

Ultrasonic device

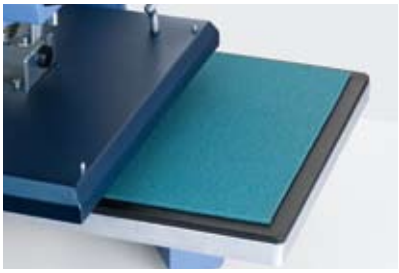
Stone setting machine

Applicator

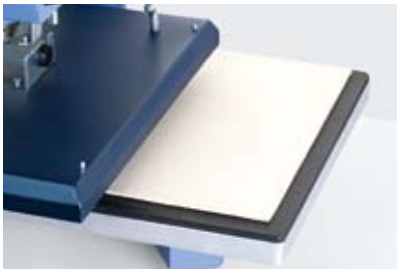
Iron



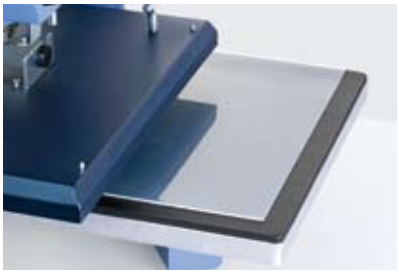
Teflon®
Art. 9010/003



Silicone foam
Art. 9010/002



Felt
Art. 9010/001



Silicone pad
Art. 9010/005

Normal cardboard

Normal pressing cloth

Temperature measuring strips
Art. 9010/007

Laser temperature measuring device

Transfer film

SUPPLIERS

This list provides an overview of select suppliers worldwide.

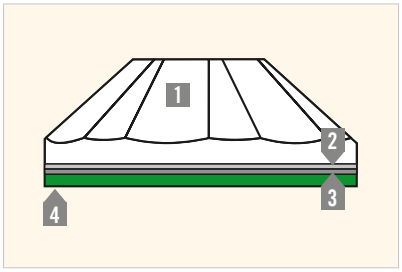
MACHINES / TOOLS / AIDS	SUPPLIER	CONTACT
Heat press	Bestblanks	www.bestblanks.com
	CSC Screen Process	www.cscscreen.com
	Elna SMP Singapore	www.elnasingapore.com
	Fukutomi Equipment & Supplies	www.fukutomi.net
	Hix Corporation	www.hixcorp.com
	Huangyan Garment Machinery company	www.ji-feng.com
	Jess J. Heap & Son, Inc.	www.jesseheap.com
	Nagel & Hermann	www.nundh.com
	OSHIMAKK Co., Ltd.	www.oshima.com.tw
	Pro World	www.proworldinc.com
	Rhinestone Machine	www.rhinestonemachine.com
	RPL Supplies, Inc.	www.rplsupplies.com
	Stahl's	www.stahls.de
	Teva	www.teva-organisation.com
	Thermopress Europe	www.thermopressen.de
Double heat press	Teva	www.teva-organisation.com
Continuous fusing press	Maschinenfabrik Herbert Meyer GmbH	www.meyer-machines.com
Ultrasonic device	Ever Green Ultrasonic Co., Ltd.	www.evergreen-taiwan.com
	Huangyan Garment Machinery company	www.ji-feng.com
	Teva	www.teva-organisation.com
	Jess J. Heap & Son, Inc.	www.jesseheap.com
	Nagel & Hermann	www.nundh.com
	Perfecta Schmid Produkte AG	www.perfecta.ch
	Pessani s.r.l.	www.pessani.com
	Rhinestone Machine	www.rhinestonemachine.com
	Shanghai Exing industry Co., Ltd.	www.exingsh.com.cn
Stone setting machine	Dairo Machine Co.	www.dairomc.com
	Nagel & Hermann	www.nundh.com
	Pessani s.r.l.	www.pessani.com

MACHINES / TOOLS / AIDS	SUPPLIER	CONTACT
Applicator	Creative Crystal® Company	www.bejeweler.com
	Donwei Machinery industry Co., Ltd.	www.donwei.com.tw
	Dreamtime Creations	www.dreamtimecreations.com
	Hobbyring	www.hobbyring.de
	Kandi Corp.	www.kandicorp.com
	Shanghai Exing industry Co., Ltd.	www.exingsh.com.cn
Teflon® (100x50 cm, 40x20 inches)	Swarovski, Art. 9010/003	www.swarovski-elements.com/business
Silicone foam (134x100 cm, 54x40 inches)	Swarovski, Art. 9010/002	www.swarovski-elements.com/business
Felt (100x100 cm, 40x40 inches)	Swarovski, Art. 9010/001	www.swarovski-elements.com/business
Silicone pad (50x50x0.2 cm, 20x20x0.08 inches)	Swarovski, Art. 9010/005	www.swarovski-elements.com/business
Temperature measuring strips	Swarovski, Art. 9010/007	www.swarovski-elements.com/business
Laser temperature measuring device	PCE Instruments	www.industral-needs.com
Silicone plate for designing transfers (50x25x0.1 cm, 20x10x0.05 inches)	Swarovski, Art. 9010/006	www.swarovski-elements.com/business
Transfer film	Nagel & Hermann	www.nundh.com

APPLICATION <<<

Basic Hotfix Principles

Hotfix elements have a coating of hot-melt glue on the back, enabling swift, simple application. This glue is activated by **heat** (applied either directly or indirectly via ultrasound), and bonds with the carrier material. When cooling, the glue hardens and securely and permanently fixes the elements in place. The Swarovski Hotfix adhesive is characterized by its **wash resistance** and **easy-care** properties. The temperature, application time and pressure can be varied according to the carrier material.
Further details and information can be found in the “Care Instructions” chapter and in the Hotfix Selector table at the end of this chapter.



1 Crystal
2 M-Foiling: This specially developed coating guarantees optimal brilliance and an excellent bond with the primer.
3 Primer: The primer improves the bond between the glue and the foiling.
4 Hotfix glue: This transparent glue, developed by Swarovski, allows crystals to be applied onto various carrier materials.

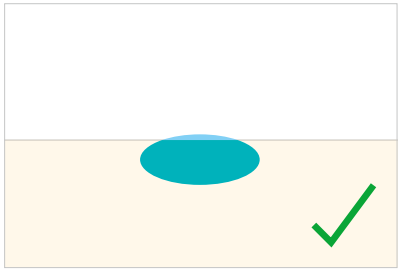
Before beginning the application process, you should always check whether the carrier material is suitable for Hotfix application. Please check the following criteria:

- heat resistance (min. 120°C/250°F)
- resistance against pressure
- application area of the product
- suitability of surface properties and absorbency

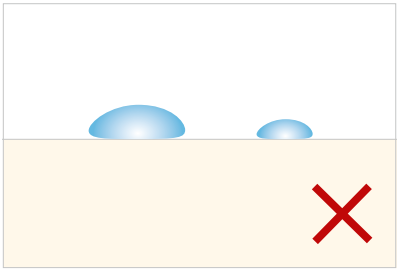
Checking absorbency via the water drop test

The water drop test is a quick and easy way to get an initial idea of the absorbency of the carrier material.

Apply a couple of drops of water onto the carrier material. If the material quickly absorbs the drops, it offers good absorbency. If the water pearls off the carrier material, or if it takes a long time to be absorbed, the material offers insufficient absorbency. This can impair the effectiveness of Hotfix application.



Good absorbency
Drops are absorbed



Insufficient absorbency
Drops pearl off

Some textiles and special finishes are **unsuitable** for Hotfix application, due to a **lack of absorbency**.

This is a list of **unsuitable** carrier materials and finishes:

- very tightly woven textiles
- very thin fabrics, e.g. organza
- smooth leather and smooth imitation leather (Swarovski application solutions such as Chaton Leather and Flat Back Leather are featured in the “General Information” chapter)
- hydrophobic or water-repellent treatments (silicone, synthetic resin as a waterproofing agent)
- Teflon coatings
- stain-resistant treatments
- easy-to-care treatments
- fluorocarbon finishes
- softening agents
- select dyes (dyes with metal pigments)
- enzymatic treatments

It can sometimes be helpful to wash the carrier material before application, in order to remove any unsuitable finishes (particularly softening agents), and thus improve absorbency.

Generally, the following parameters are most important when carrying out Hotfix applications of SWAROVSKI ELEMENTS:

- Temperature
- Pressure
- Application time
- Application side

A detailed summary of all application parameters can be found in the Hotfix Selector table at the end of this chapter.

Temperature

Swarovski Hotfix adhesive is activated within a temperature range of 120°C to 170°C (250°F to 340°F). A suitable application temperature can be selected from this range according to the carrier material and its sensitivity to heat.

With heat presses, the temperature selected on the display does not always reflect the actual temperature on the surface of the press. Often, the temperature can be distributed unevenly, or one heat plate may be defective.

It is therefore recommended to regularly check the temperature with a laser measuring device or temperature measuring strips at various points on the heating surface, to ensure the temperature is distributed evenly across it.
Checks should be carried out regularly (once per week), particularly during production.

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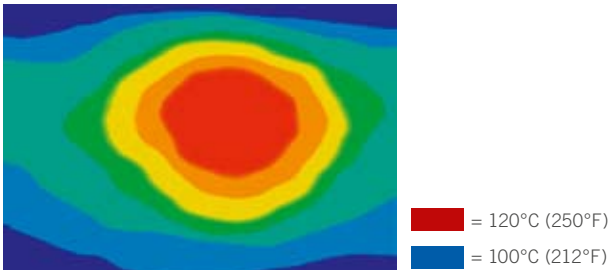
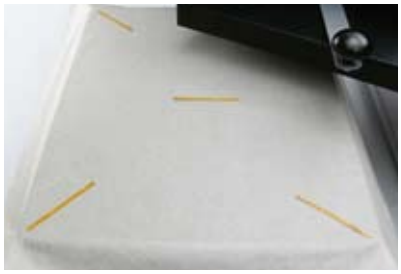


Uneven heat distribution in the central area of the heat press



Test with temperature measuring strips

Pressure

The pressure setting depends on the Hotfix elements to be applied, the carrier material, and the technical equipment (machines, etc.) available.

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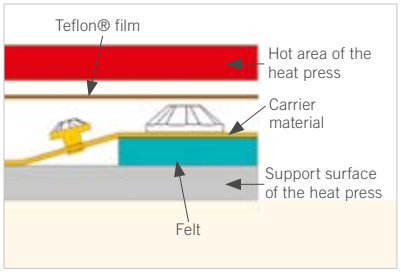
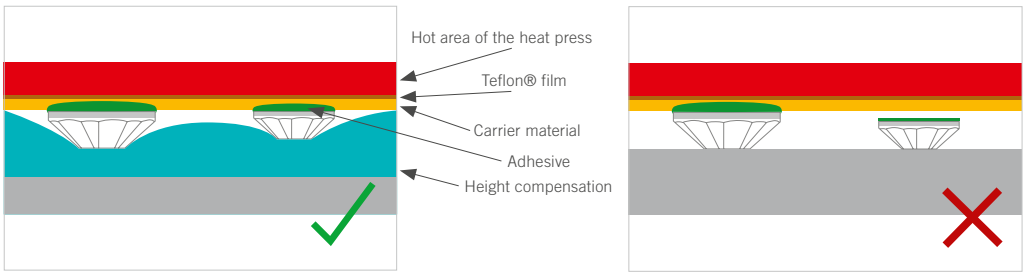
Too much pressure can cause the adhesive to be spread out and can also affect the surface of the carrier material. Too little pressure, however, can result in a weak and insufficient bond between the crystal and the carrier material.

In general, the pressure should be applied **directly to the crystal elements** (e.g. Flat Backs Hotfix, Transfers, Crystal Mesh).
It is therefore necessary to check if there are any buttons, zippers or other raised parts surrounding them. Always use a **compensating pad** to even out the surface.

Jean pocket



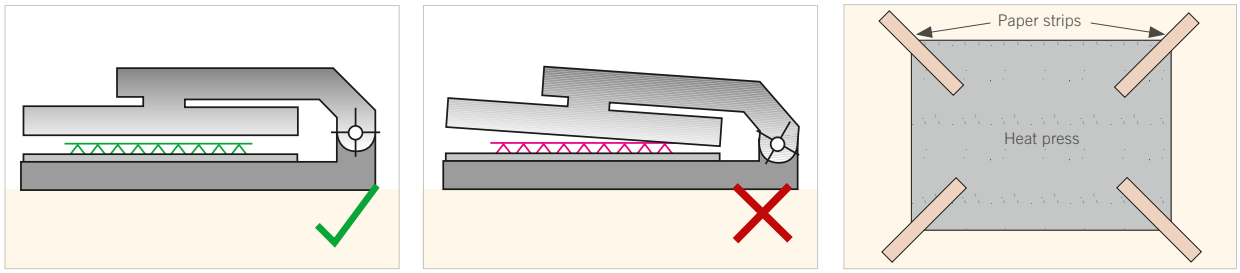
When applying SWAROVSKI ELEMENTS of different heights, a **compensating pad** should always be used. Silicone foam or foam rubber can be used here.



Height compensation with different Hotfix elements

The parallel plane of the heat press

Take great care to apply pressure evenly when using a heat press with a scissor mechanism. The upper plate of the heat press must be completely horizontal in order to effectively and evenly distribute pressure and temperature. ?!



Checks should always be carried out to make sure the plates are parallel. This can be done by placing paper test strips into the press and closing it with the least possible pressure. After this, if it takes the same force to pull out each strip, the plates are parallel.

Application time

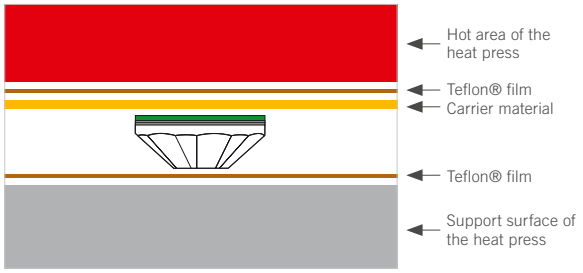
In general, the application time should be sufficient to allow the hot-melt glue to be fully activated, and then to penetrate the carrier material.
The application time necessary depends on the Hotfix elements, the temperature selected, the machine used, the carrier material and the application side.

A detailed summary can be found in the Hotfix Selector table at the end of this chapter. Please note that the times stated are intended as a guideline. When adapting them to your application, it is recommended to carry out tests on the original material.

Application side

Hotfix elements can usually be applied from the front and the back. A shorter application time can be achieved with thinner fabrics by applying crystals from the back, as the heat reaches the adhesive through the carrier material faster, activating it immediately. ?!

Application from the back

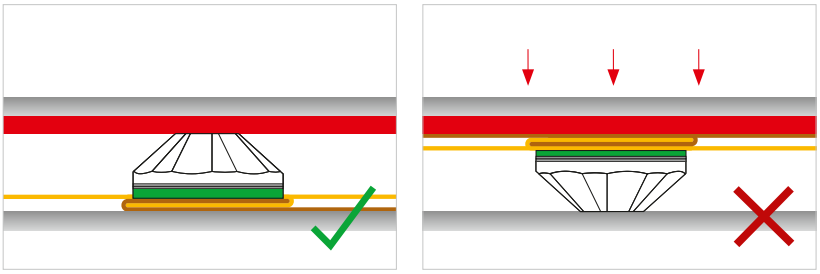


Rear (reverse) side of fabric is exposed to heat

Application from the front

Front (right) side of fabric is exposed to heat

When applying Hotfix products on **thick or multi-layered** fabrics (such as seams) the application side selected should be the one that allows the heat to be transferred to the hot-melt adhesive quickest. This ensures fast, optimum activation.



Selecting the optimum application side

Note that the shape and size (causing irregular temperature penetration) of many items (e.g. Pearls, Creation Stones Plus) will only allow an application **from the back**. Further information can be found in the Hotfix Selector table at the end of this chapter.

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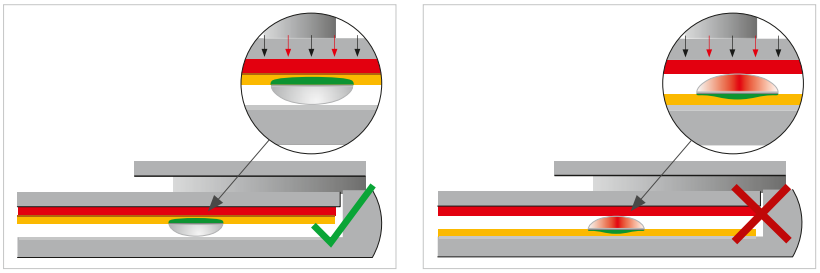

Certain SWAROVSKI ELEMENTS can only be applied from the back.

Defining the optimum application parameters

Adhesive has been successfully activated when, using a magnifying glass, it is possible to see a thin edge of glue formed around the crystal. On thin fabrics, the optimum application parameters are chosen when the glue will have lightly penetrated through the fabric and is lightly visible at the reverse.

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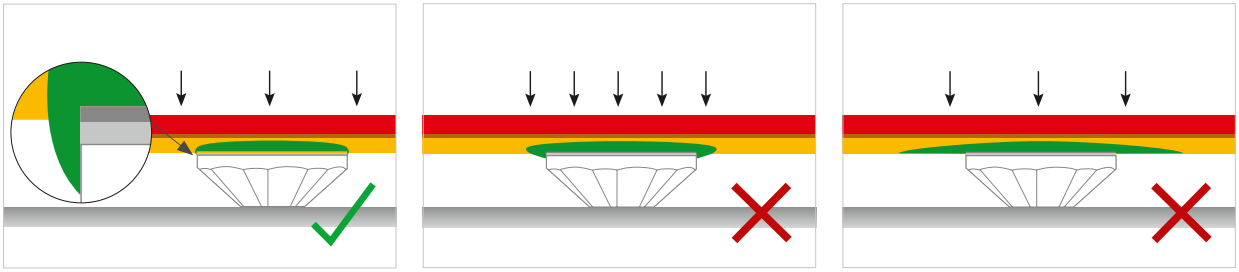


Optimum application result

Huge excess of glue – too much pressure exerted with heat press

Huge excess of glue – heat press temperature too high, or applied too long

When parameters have been incorrectly selected, such as an extreme application temperature, pressure, or application time, significant amounts of glue can spread out.

When the application temperature or pressure is too low, or the application time too short, the adhesive cannot be sufficiently activated, leading to problems with adhesion.

Application using a heat press

A heat press is the ideal tool for applying Hotfix products as it can be used to apply even, adjustable pressure. All SWAROVSKI ELEMENTS mentioned in the product overview can be applied using the following steps. Please also note the helpful hints concerning the application of Crystal Mesh and Diamond Transfers.

To adjust the application parameters and the aids to achieve an ideal balance, it is strongly recommended that tests are carried out with the original material.

1 Peel off the white protective film*.

2 Place the product in the desired position.

3 Make sure to apply the elements from the recommended side and use the correct pressing aid. To protect the heating surfaces from any glue residue, it is best to cover them with Teflon® film.

4 After the pressure, time and temperature is set, close the heat press.

5 After the application is finished, use a pressing cloth to apply additional pressure to the product.

6 Once the product is at least hand warm, the transparent film can be removed at an acute angle.

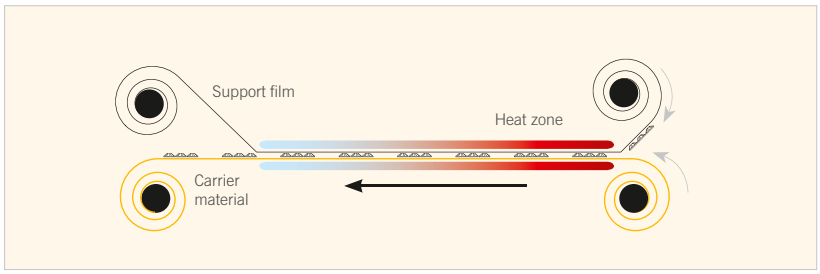
* Not all Hotfix products are provided with a protective or support film (e.g. Crystaltex).

If adhesion is insufficient following the application process, it can be repeated, adjusting the parameters (such as pressure, time and temperature). Please ensure that the application process is repeated from the very beginning, and that the initial application time is combined with the additional time. ?!

For example: After application, it is clear that the application time of 10 seconds was insufficient. Pressure should not just be applied for a further 5 seconds—the process must be repeated in its entirety, with an application time of 15 seconds.

Application using a continuous fusing press

Transfers, Transfers on Roll, and other Hotfix Banding variants can be applied using a continous fusing press. This type of application offers a simple, efficient way of joining the carrier material and the Hotfix product as part of a continuous application process.



Continuous fusing press operation

With most continuous fusing presses, heat is generated on both sides. The speed of the press, pressure and temperature should be selected to ensure that the time in the heat zone corresponds to the figures in the Hotfix Selector table (see the end of this chapter). This time can be calculated using the length of the heat zone and the speed selected.

Application using an ultrasonic device

XILION Flat Backs Hotfix in sizes SS 6 – SS 34 can be quickly and easily applied using an ultrasonic device, with high-quality results. In this process, the hot-melt adhesive is activated via **friction heat**, created through the quick vibrations and simultaneous pressing down of the Flat Backs on to the carrier material.
A device with a vacuum pump is best for correctly positioning the crystals. Alternatively, they can also be positioned using transfer film or tweezers, and then applied via ultrasound.

The frequency of the ultrasonic device must be precisely set according to the manufacturer's instructions.
Some manufacturers also offer devices with automatic frequency setting. The application time is then selected according to pretests.

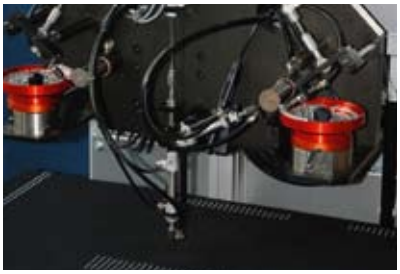
1 Choose an adapter to match the size of the crystal.

2 Position the crystal on the carrier material, which should be resting on a solid base (e.g. glass, metal).

3 Press the adapter firmly onto the crystal at a perpendicular angle and activate the device.

Application using a stone setting machine

Hotfix crystals can be secured with a stone setting machine using either ultrasound or heat. The feed and application of the crystals is either fully or semi-automatic.



Stone setting machine

Application using an applicator

Applicators are a cost-effective way to apply XILION Flat Backs Hotfix (SS 6 to 34) onto the carrier material.

1 Choose an applicator point to match the size of the crystal, so that the crystal cannot tilt out of place.

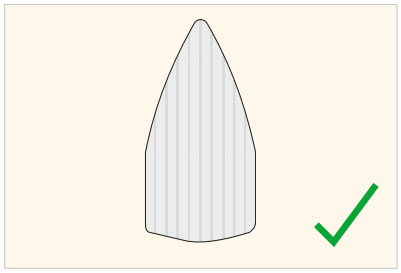
2 Heat the applicator to a suitable temperature and pick up the crystal.

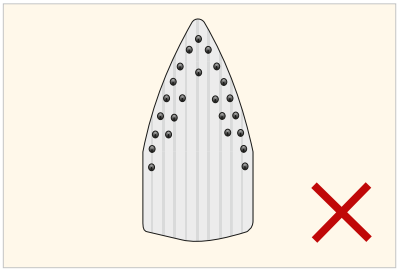
3 As soon as the Hotfix adhesive on the rear of the crystal has melted, position the element on the carrier material, which should be resting on a solid base (e.g. glass, metal).

Application using an iron

In general, an iron can be used for the application of all Hotfix elements. However, as pressure and temperature can only be controlled to a **limited extent,** the use of a heat press is recommended.

Always make sure that there are no **steam vents** on the soleplate of the iron. Pressure cannot be applied at these vents, and water droplets and steam have a negative effect on the application results. Always iron on a firm, flat and even base.





Explanation of dot system according to DIN EN ISO 3758

- • Soleplate temperature 110°C (230°F)
- •• Soleplate temperature 150°C (302°F)
- ••• Soleplate temperature 200°C (392°F)

1 Select symbol •• (max. 150°C/302°F).

2 Use felt or cardboard to prevent the crystal elements from marking the fabric.

3 A Teflon® underlay protects the soleplate of the iron from any glue residue.

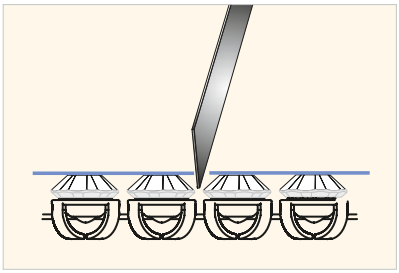
Hot-melt adhesive generally requires 24 hours to cure completely. Any washing or quality assurance should take place after this period.

Pre-cut fabric

Experience has shown that the best results are obtained with applications on pre-cut fabric. In order to obtain optimum adjustment of all application parameters, advance testing on the materials to be used is strongly recommended before production begins.

Cutting Crystal Mesh

Before Hotfix application, the transparent film must not be removed. The film allows the individual crystals to be aligned perfectly, and provides Crystal Mesh with the stability necessary for flawless application.

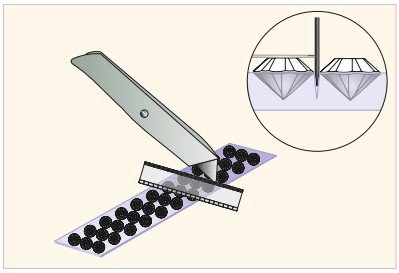


1 Cut between the rows of crystals with a Stanley knife, but do not pull them apart, otherwise the stability of the crystals will be lost.

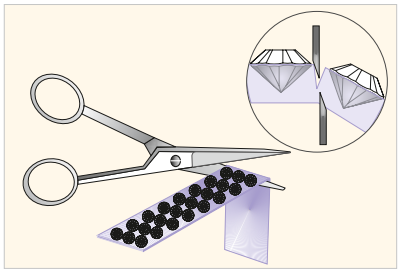
2 Cut the metal mesh with scissors along the scored line, and remove the excess link rings. The Crystal Mesh is now ready for Hotfix application.

Cutting Crystaltex Chaton Bandings

When working with Crystaltex Chaton Bandings, the lack of space between crystals means great care must be taken during cutting, so as to avoid any damage.



1 Cut into the carrier material between the crystal rows with a Stanley knife.

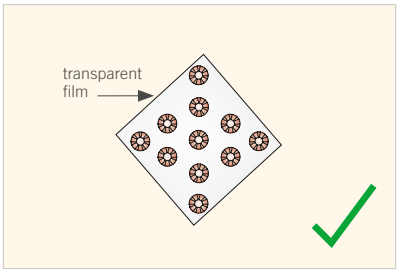


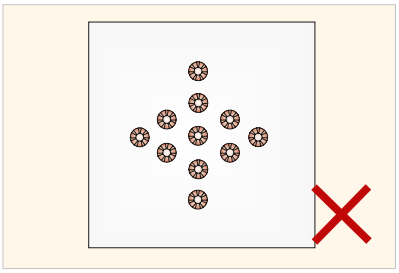
2 Snap and cut off the Crystaltex Chaton Banding along the scored edge.

Avoiding film marks

Undesired film marks on sensitive fabrics can be avoided by cutting the transparent film close **to the edge of the motif**. Apply the product for a short time, using a small amount of pressure. Then remove the transparent film and press again following the recommended time and pressure settings.

?!

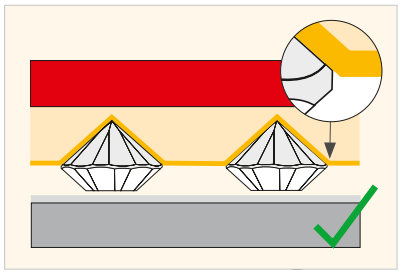




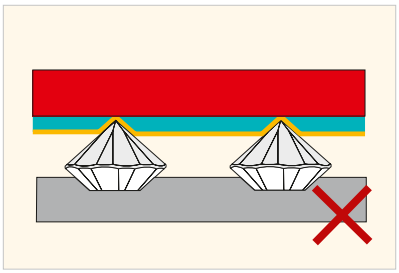
If the film has already left marks, the surface structure of the carrier material can usually be restored by brushing, using a steam iron or by re-pressing it in the heat press.

Application instructions for Diamond Transfers

When applying Diamond Transfers (Transfers with high-brilliance XILION Chatons), a **soft, compensating underlay** (e.g. silicone pad) should always be used. This soft pad encloses the crystal points, and allows the optimum distribution of pressure, thus improving the bond between the carrier material and the Diamonds (adhesion right up to the girdle). Cardboard prevents the crystals from sinking into the soft support surface of the heat press, and ensures the proper application of pressure.



A soft silicone pad offers optimum distribution of pressure and allows adhesion right up to the girdle.



Without a pressure compensator, adhesion only occurs at the contact points with the heated plate.

Hotfix application on other materials

The Hotfix glue was specially developed for use with textiles. However, experience shows that Hotfix applications can also be carried out on other materials such as wood, paper or metal. In such cases it is very important to carry out application tests beforehand, and to check the surface properties (see surface tension in the “Gluing” chapter).

QUICK ASSISTANCE

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The following table outlines common problems and their causes when applying Hotfix elements, and offers advice on how to avoid them. Further details and more extensive descriptions can be found in the section marked with a ?!

PROBLEM	CAUSE
The product does not adhere to the fabric.	**1, 2, 3, 4, 5, 6**
Glue is oozing out around the crystals.	**7, 8, 9, 10**
The support film leaves marks on delicate fabrics.	**7, 8, 9, 10, 11, 12**
The product does not adhere to seams or multi-layered fabric.	**1, 2, 3, 4, 5, 6, 13**

CAUSE		RECOMMENDATION
1	The application temperature is too low.	Increase the temperature to at least 120°C (250°F). See the Hotfix Selector table for further assistance.
2	Uneven distribution of heat on the heated surface.	Check the temperature with a temperature measuring strip or a laser measuring device, and set up the heat press again.
3	The application time is too short.	Increase application time; it takes longer for the heat to activate the Hotfix glue on layered fabric and seams; if necessary apply from the front. See the Hotfix Selector table for further assistance.
4	The pressure is too low.	Thick fabrics and certain products need higher pressure. See the Hotfix Selector table for further assistance.
5	The heat press does not close evenly.	Adjust the heat press.
6	The ironing pad is unsuitable.	Carry out tests with different ironing pads to establish the most suitable.
7	The temperature is too high.	Choose a lower temperature, between 120°C and 170°C (250°F–340°F). See the Hotfix Selector table for further assistance.
8	The application time is too long.	Reduce the application time. See the Hotfix Selector table for further assistance.
9	The pressure is too high.	Reduce the pressure on the heat press. See the Hotfix Selector table for further assistance.
10	The ironing pad is too hard.	Use a soft silicone pad.
11	The fabric is extremely sensitive.	Iron the fabric with a steam iron.
12	The transparent support film leaves marks.	Cut away more of the film, closer to the edge of the motif, to reduce marking.
13	Hotfix elements are not being affected by the heat plate.	Balance out the different thicknesses of seams, buttons, zippers etc. by using pieces of felt, which have been cut to exactly the right size and placed under the Hotfix element.

SWAROVSKI HOTFIX SELECTOR

The Hotfix Selector table contains information on the application parameters

- temperature
- pressure
- application time
- application side

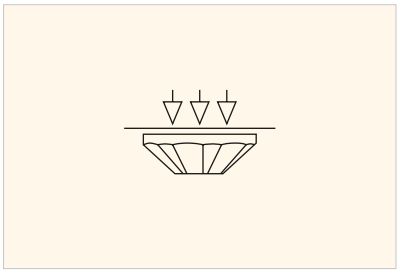
for various SWAROVSKI ELEMENTS and material combinations. The figures given are for Hotfix application using a heat press.

Note: The temperature/time combinations in the Hotfix Selector table are only guidelines. Pressure cannot be specified more exactly, as this depends on the setting options of the press closure system (manual, pneumatic, hydraulic or electromagnetic). In all cases, tests should be carried out from the start of production, to ensure the ideal combination of settings for the design. The figures listed are valid until further notice.

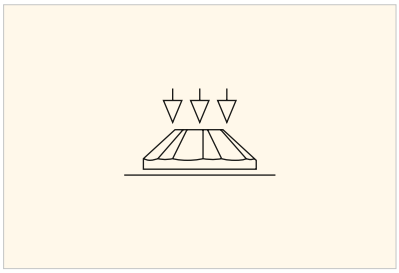
Transfers	XILION Transfers	Transfers with XILION Flat Backs Hotfix (Art. 2028 and 2029)
	Creation Transfers	Transfers combined with Creation Stones (Art. 2200, 2300, 2400, 2510, 2512/3, 2610, 2711, 2728) or Pearl Cabochons
	Creation Transfers PLUS	Transfers combined with Creation Stones PLUS (Art. 2493, 2555, 2720, 2770, 2035, 2520)
	Pearl Transfers	Transfers with Pearls
	Diamond Transfers	Transfers with Diamonds
	Metallic Transfers	Transfers with Metallics
	Mezzo Transfers	Metallic Transfers combined with XILION Flat Backs, Pearls or Creation Stones
	Crystaltex Motives Transfers	Transfers with Crystaltex Motives
Synthetics Hotfix	Crystal Fabric	
	Crystal Rocks	
	Crystal Transfabric	
	Crystaltex Bandings	
	Crystaltex Chaton Bandings	
Crystal Mesh	Crystal Mesh Standard	
	Crystal Mesh XL	
	Crystal Mesh Metallisée	
	Crystal Pearl Mesh	
	Crystal Aerial Mesh	

FABRIC CATEGORY	FABRIC EXAMPLE	MATERIAL	WEIGHT
Reference fabric	Cotton/polyester blend	65% cotton, 35% polyester	190 g/m²
Natural fibers	Batiste, Vichy fabric, cotton jersey, interlock, linen fabrics, etc.	Cotton, linen	100–200 g/m²
	Silk fabrics, toile, etc.	Silk	100–200 g/m²
	Jeans, denim, cord, velvet, damask, gabardine, sweatshirt fabrics, etc.	Cotton	300–400 g/m²
	Cloth, tweed, bouclé, loden, boiled wool, felt, knitted fabrics, etc.	Wool	300–400 g/m²
Cellulose and synthetic fibers	Viscose, satin, organza, chiffon, taffeta, tulle, lace, etc.	Viscose, acetate, triacetate, polyester, polyamide, polyacrylics and various fiber blends	20–120 g/m²
	Lycra, neoprene, etc.		150–250 g/m²
Pile fabrics	Artificial leather, alcantara, suede, fleece, artificial fur, plush, toweling, etc.	Cottons, various fiber blends	200–350 g/m²

As most SWAROVSKI ELEMENTS can be applied from the front or back, the Hotfix Selector table features the application parameters both for the **recommended** and the **alternative application side.** Extensive information on optimum application, depending on the production process and the application type (e.g. on trouser pockets), is available.



Back: The back (reverse) of the fabric is exposed to the heat press.



Front: The front (right side) of the fabric is exposed to the heat press.

A shorter application time is usually required when applying from the back. The temperature settings selected depend on the heat resistance of the carrier material, and should be judged by the customer. The higher the temperature, the less time is required to activate the Hotfix adhesive (see table/chart). The application time depends primarily on the textile used and its thickness.

Aids

Teflon® (100x50 cm, 40x20 inches, Art. 9010/003)
Silicone foam (134x100 cm, 54x40 inches, Art. 9010/002)
Felt (100x100 cm, 40x40 inches, Art. 9010/001)
Silicone pad (50x50x0.2 cm, 20x20x0.08 inches, Art. 9010/005)
Standard pressing cloth (cotton)
Normal cardboard
Transfer film (www.nundh.com)

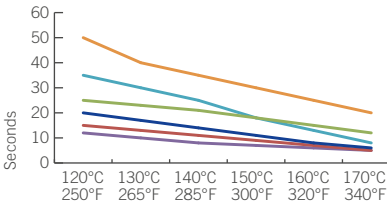
RECOMMENDED APPLICATION SIDE

ALTERNATIVE APPLICATION SIDE

XILION TRANSFERS

	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	20	17	14	11	8	6
Silk, batiste, cotton jersey, thin linen fabrics, etc.	15	13	11	9	7	5
Jeans, cord, loden, cloth, knitted fabrics, etc.	25	23	21	18	15	12
Viscose, satin, chiffon, organza, taffeta, etc.	12	10	8	7	6	5
Lycra, neoprene, etc.	35	30	25	18	13	8
Artificial fur, artificial leather, fleece, suede, etc.	50	40	35	30	25	20

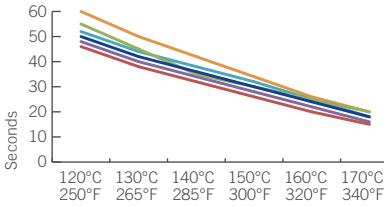
Pressure: low
Aids: Teflon®, pressing cloth, silicone foam



	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	50	42	36	30	24	18
Silk, batiste, cotton jersey, thin linen fabrics, etc.	46	38	32	26	20	15
Jeans, cord, loden, cloth, knitted fabrics, etc.	55	45	35	30	25	20
Viscose, satin, chiffon, organza, taffeta, etc.	48	40	34	28	22	16
Lycra, neoprene, etc.	52	44	38	32	25	18
Artificial fur, artificial leather, fleece, suede, etc.	60	50	42	34	26	20

Pressure: low
Aids: Teflon®, pressing cloth, silicone foam

Note: The application time depends primarily on the size of the crystal. To offer an average, figures are given for crystal size SS 20 (Art. 2028).

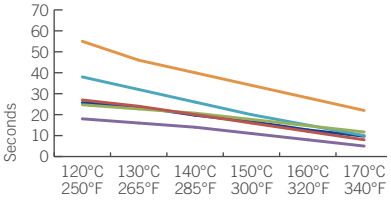


CREATION TRANSFERS, PEARL TRANSFERS, METALLIC TRANSFERS & MEZZO TRANSFERS

Pearl Transfers are **NOT** suitable for application from the front!

	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	25	23	19	16	12	9
Silk, batiste, cotton jersey, thin linen fabrics, etc.	27	24	20	16	12	8
Jeans, cord, loden, cloth, knitted fabrics, etc.	25	23	21	18	15	12
Viscose, satin, chiffon, organza, taffeta, etc.	18	16	14	11	8	5
Lycra, neoprene, etc.	38	32	26	20	15	10
Artificial fur, artificial leather, fleece, suede, etc.	55	46	40	34	28	22

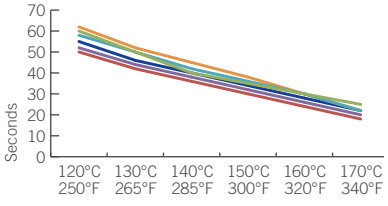
Pressure: medium
Aids: Teflon®, pressing cloth, silicone foam



	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	55	46	40	34	28	22
Silk, batiste, cotton jersey, thin linen fabrics, etc.	50	42	36	30	24	18
Jeans, cord, loden, cloth, knitted fabrics, etc.	60	50	40	35	30	25
Viscose, satin, chiffon, organza, taffeta, etc.	52	44	38	32	26	20
Lycra, neoprene, etc.	58	50	42	36	30	22
Artificial fur, artificial leather, fleece, suede, etc.	62	52	45	38	30	22

Pressure: medium
Aids: Teflon®, pressing cloth, silicone foam

Note: The application time depends primarily on the largest element in the motif.



RECOMMENDED APPLICATION SIDE

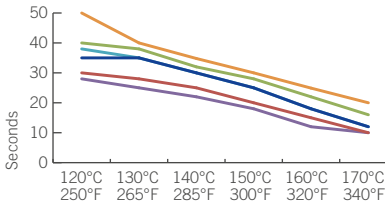
ALTERNATIVE APPLICATION SIDE

These items are **NOT** suitable for application from the front!

CREATION TRANSFERS PLUS

	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	35	35	30	25	18	12
Silk, batiste, cotton jersey, thin linen fabrics, etc.	30	28	25	20	15	10
Jeans, cord, loden, cloth, knitted fabrics, etc.	40	38	32	28	22	16
Viscose, satin, chiffon, organza, taffeta, etc.	28	25	22	18	12	10
Lycra, neoprene, etc.	38	35	30	25	18	12
Artificial fur, artificial leather, fleece, suede, etc.	50	40	35	30	25	20

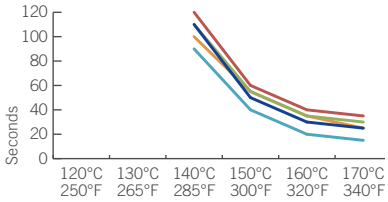
Pressure: medium
Aids: Teflon®, pressing cloth



DIAMOND TRANSFERS

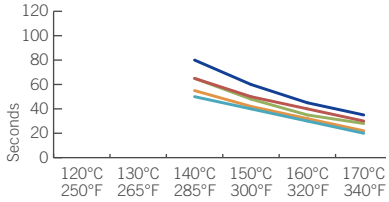
	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	–	–	110	50	30	25
Silk, batiste, cotton jersey, thin linen fabrics, etc.	–	–	120	60	40	35
Jeans, cord, loden, cloth, knitted fabrics, etc.	–	–	110	55	35	30
Viscose, satin, chiffon, organza, taffeta, etc.	–	–	–	–	–	–
Lycra, neoprene, etc.	–	–	90	40	20	15
Artificial fur, artificial leather, fleece, suede, etc.	–	–	100	55	35	25

Pressure: high
Aids: Teflon®, pressing cloth, cardboard, preheated silicone pad
Note: Diamond Transfers are best suited to soft, voluminous fabrics.



	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	–	–	80	60	45	35
Silk, batiste, cotton jersey, thin linen fabrics, etc.	–	–	65	50	40	30
Jeans, cord, loden, cloth, knitted fabrics, etc.	–	–	65	48	35	28
Viscose, satin, chiffon, organza, taffeta, etc.	–	–	–	–	–	–
Lycra, neoprene, etc.	–	–	50	40	30	20
Artificial fur, artificial leather, fleece, suede, etc.	–	–	55	42	32	22

Pressure: high
Aids: Teflon®, pressing cloth, cardboard, preheated silicone pad
Note: Diamond Transfers are best suited to soft, voluminous fabrics.



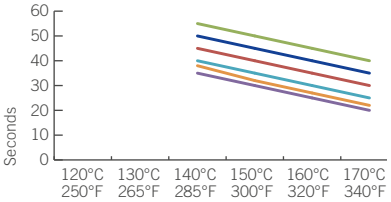
RECOMMENDED APPLICATION SIDE

ALTERNATIVE APPLICATION SIDE

CRYSTAL FABRIC, CRYSTALTEX TRANSPARENT, CRYSTALTEX CHATON BANDINGS & CRYSTAL TRANSFABRIC

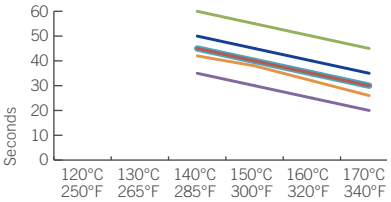
	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	–	–	50	45	40	35
Silk, batiste, cotton jersey, thin linen fabrics, etc.	–	–	45	40	35	30
Jeans, cord, loden, cloth, knitted fabrics, etc.	–	–	55	50	45	40
Viscose, satin, chiffon, organza, taffeta, etc.	–	–	35	30	25	20
Lycra, neoprene, etc.	–	–	40	35	30	25
Artificial fur, artificial leather, fleece, suede, etc.	–	–	38	32	27	22

Pressure: medium
Aids: Teflon®, pressing cloth



	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	–	–	50	45	40	35
Silk, batiste, cotton jersey, thin linen fabrics, etc.	–	–	45	40	35	30
Jeans, cord, loden, cloth, knitted fabrics, etc.	–	–	60	55	50	45
Viscose, satin, chiffon, organza, taffeta, etc.	–	–	35	30	25	20
Lycra, neoprene, etc.	–	–	45	40	35	30
Artificial fur, artificial leather, fleece, suede, etc.	–	–	42	38	32	26

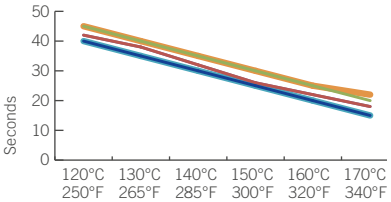
Pressure: medium
Aids: Teflon®, pressing cloth



CRYSTALTEX BANDINGS & CRYSTALTEX MOTIVES

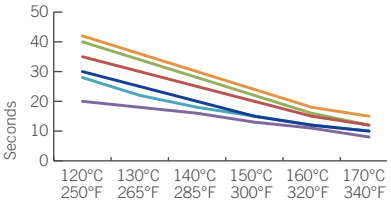
	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	40	35	30	25	20	15
Silk, batiste, cotton jersey, thin linen fabrics, etc.	42	38	32	26	22	18
Jeans, cord, loden, cloth, knitted fabrics, etc.	45	40	35	30	25	20
Viscose, satin, chiffon, organza, taffeta, etc.	42	38	32	26	22	18
Lycra, neoprene, etc.	40	35	30	25	20	15
Artificial fur, artificial leather, fleece, suede, etc.	45	40	35	30	25	22

Pressure: medium
Aids: Teflon®, pressing cloth



	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	30	25	20	15	12	10
Silk, batiste, cotton jersey, thin linen fabrics, etc.	35	30	25	20	15	12
Jeans, cord, loden, cloth, knitted fabrics, etc.	40	34	28	22	16	12
Viscose, satin, chiffon, organza, taffeta, etc.	20	18	16	13	11	8
Lycra, neoprene, etc.	28	22	18	15	12	10
Artificial fur, artificial leather, fleece, suede, etc.	42	36	30	24	18	15

Pressure: medium
Aids: Teflon®, pressing cloth



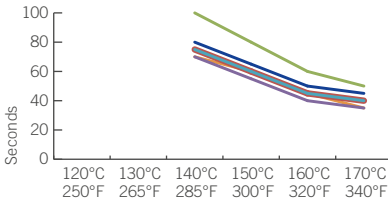
RECOMMENDED APPLICATION SIDE

ALTERNATIVE APPLICATION SIDE

CRYSTAL ROCKS

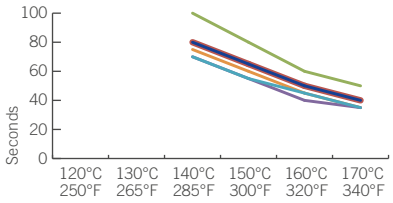
	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	–	–	80	65	50	45
Silk, batiste, cotton jersey, thin linen fabrics, etc.	–	–	75	60	45	40
Jeans, cord, loden, cloth, knitted fabrics, etc.	–	–	100	80	60	50
Viscose, satin, chiffon, organza, taffeta, etc.	–	–	70	55	40	35
Lycra, neoprene, etc.	–	–	75	60	45	40
Artificial fur, artificial leather, fleece, suede, etc.	–	–	70	60	45	35

Pressure: medium
Aids: Teflon®, pressing cloth



	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	–	–	80	65	50	40
Silk, batiste, cotton jersey, thin linen fabrics, etc.	–	–	70	55	45	35
Jeans, cord, loden, cloth, knitted fabrics, etc.	–	–	100	80	60	50
Viscose, satin, chiffon, organza, taffeta, etc.	–	–	70	55	40	35
Lycra, neoprene, etc.	–	–	80	65	50	40
Artificial fur, artificial leather, fleece, suede, etc.	–	–	75	60	45	35

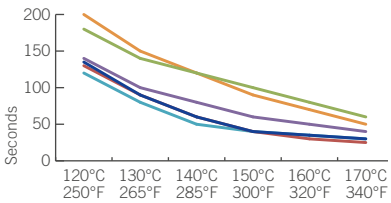
Pressure: medium
Aids: Teflon®, pressing cloth



CRYSTAL MESH (STANDARD, AERIAL, METALLISÉE, CERAMICS)

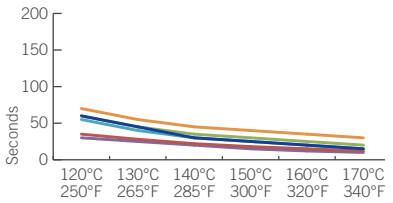
	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	135	90	60	40	35	30
Silk, batiste, cotton jersey, thin linen fabrics, etc.	130	90	60	40	30	25
Jeans, cord, loden, cloth, knitted fabrics, etc.	180	140	120	100	80	60
Viscose, satin, chiffon, organza, taffeta, etc.	140	100	80	60	50	40
Lycra, neoprene, etc.	120	80	50	40	35	30
Artificial fur, artificial leather, fleece, suede, etc.	200	150	120	90	70	50

Pressure: high
Aids: Teflon®, pressing cloth



	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	60	45	30	25	20	15
Silk, batiste, cotton jersey, thin linen fabrics, etc.	35	28	22	18	15	12
Jeans, cord, loden, cloth, knitted fabrics, etc.	60	45	35	30	25	20
Viscose, satin, chiffon, organza, taffeta, etc.	30	25	20	15	12	10
Lycra, neoprene, etc.	55	40	30	25	20	15
Artificial fur, artificial leather, fleece, suede, etc.	70	55	45	40	35	30

Pressure: high
Aids: Teflon®, pressing cloth, transfer film to fix in place



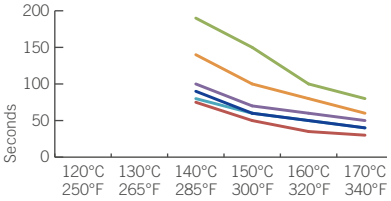
RECOMMENDED APPLICATION SIDE

ALTERNATIVE APPLICATION SIDE

CRYSTAL MESH XL, CRYSTAL PEARL MESH

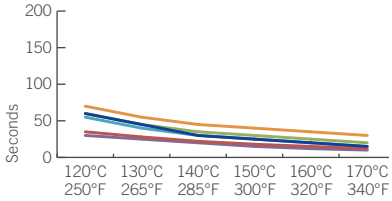
	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	–	–	90	60	50	40
Silk, batiste, cotton jersey, thin linen fabrics, etc.	–	–	75	50	35	30
Jeans, cord, loden, cloth, knitted fabrics, etc.	–	–	190	150	100	80
Viscose, satin, chiffon, organza, taffeta, etc.	–	–	100	70	60	50
Lycra, neoprene, etc.	–	–	80	60	50	40
Artificial fur, artificial leather, fleece, suede, etc.	–	–	140	100	80	60

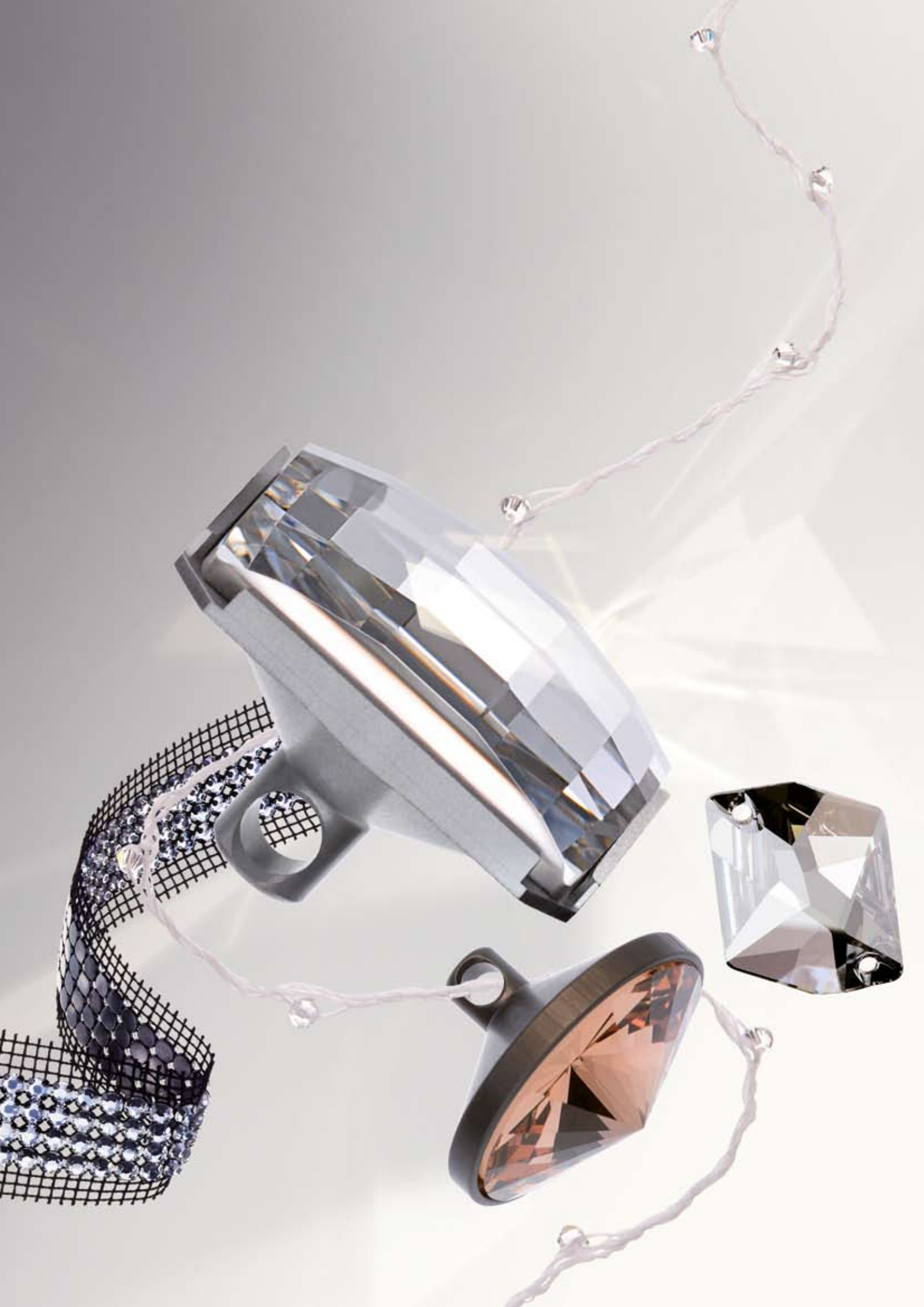
Pressure: high
Aids: Teflon®, pressing cloth



	Temperature/time required (in seconds)					
	120°C 250°F	130°C 265°F	140°C 285°F	150°C 300°F	160°C 320°F	170°C 340°F
Reference fabric	60	45	30	25	20	15
Silk, batiste, cotton jersey, thin linen fabrics, etc.	35	28	22	18	15	12
Jeans, cord, loden, cloth, knitted fabrics, etc.	60	45	35	30	25	20
Viscose, satin, chiffon, organza, taffeta, etc.	30	25	20	15	12	10
Lycra, neoprene, etc.	55	40	30	25	20	15
Artificial fur, artificial leather, fleece, suede, etc.	70	55	45	40	35	30

Pressure: high
Aids: Teflon®, pressing cloth





sewing, embroidery AND HAND APPLICATION

There are a wide variety of SWAROVSKI ELEMENTS that are suitable for sewing and embroidering. These products can be easily applied either by hand, or with standard domestic or industrial sewing and embroidery machines. SWAROVSKI ELEMENTS also offers an ideal selection of products for a variety of creative techniques by hand.

PRODUCT OVERVIEW

The following products are suitable for sewing, embroidery or hand application:

	SEWING	EMBROIDERY	HAND APPLICATION TECHNIQUES
Sew-on Stones	✓	✓[1]	✓
Beads	✓		✓
Crystal Pearls	✓		✓
Pendants	✓		✓
Crystaltex[3]	✓		
Crystal Yarn	✓	✓	✓
Plastic Trimmings	✓	✓[2]	✓
Buttons	✓		✓
Zippers	✓		
Chaton & Flat Back Bandings	✓		✓
Roses & Chaton Montées	✓		✓
Crystal Mesh	✓		
Cupchains & Findings	✓		✓
Settings	✓		✓

[1] Art. 3129 P288
[2] Art. 50002, 50003 and 50004 (single row)
[3] Not suitable for Crystaltex Chaton Bandings

MACHINES, TOOLS, AND AIDS

The following machines, tools and aids are necessary for sewing and embroidering SWAROVSKI ELEMENTS.

Various **fully automatic embroidery machines** can be used for application, depending on the product.

The **lock stitch head** is ideal for applying Crystal Yarn and single-row Plastic Trimmings.

Using the **Crystal Stone Head** for Schiffli embroidery machines, Lochrose 3129 P288 can be applied fully automatically.

Embroidery interfacing stabilizes the fabric.

Spray glue is used to fix the fabric on the interfacing.

A **frame** serves to stabilize thin and elastic fabrics during industrial embroidery processes.

A **household sewing machine** offers a range of stitch types such as straight stitch, zigzag stitch and a program for sewing on buttons, and is therefore well suited to applying SWAROVSKI ELEMENTS.

An **industrial sewing machine** is suitable for most sewing applications. However, a machine with a zigzag stitching program is necessary for some elements.

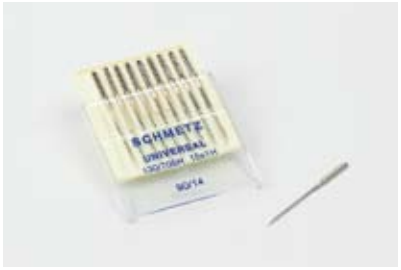
A **button sewer** can also be used for the application of special Buttons.

Adapted presser feet are available from Swarovski (for Pfaff models) and other manufacturers.

In addition, by gluing on **small metal plates**, an adapted presser foot can be made.

Application aid for Sew-on Stones 3265 26x21 mm (Art. 9040/060) and 20x16 mm (Art. 9060/061)

For zippers and products with net-edge, a **zipper foot** is helpful.
A **button foot** can be used for the application of Crystal Buttons and Sew-on Stones.



Sewing and embroidery machine needles sizes Nm 70–100.

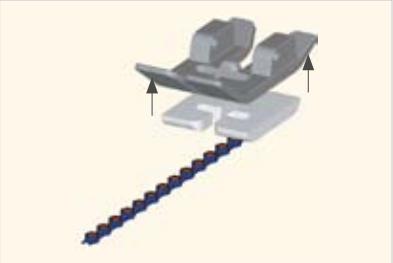
Sewing thread (minimum strength 50); stronger synthetic thread is more suitable for sewing on items.

It is recommended that **protective eyewear** is worn when using a sewing machine, so as to prevent injury.

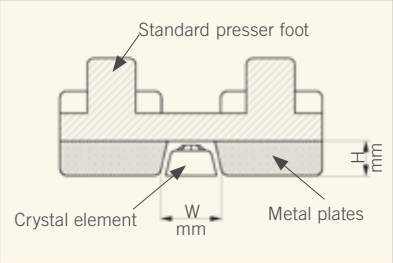
Adapted presser foot

To adapt a sewing machine's standard presser foot, affix two small plates to the underside with epoxy resin. This makes sewing Plastic Trimmings and Crystal Yarn onto garments much easier.

The plates should be tailored to the height of the relevant crystal element. When gluing, you should be aware of the recommended width.



The **metal plates** are glued to the left and right of the standard presser foot.



Adapted presser foot

ADAPTED PRESSER FEET AND METAL PLATES AVAILABLE FROM SWAROVSKI				
	Width	**Height**	**Adapted presser foot (Pfaff)**	**Metal plates**
Plastic Trimmings				
50 002	2.7 mm	2.3 mm	Art. 9040/033	Art. 9040/055
50 003	3.4 mm	2.5 mm	Art. 9040/034	Art. 9040/056
50 004	4.4 mm	3.5 mm	Art. 9040/035	Art. 9040/057
Crystal Yarn				
59 000	4.4 mm	3.5 mm	Art. 9040/035	Art. 9040/057
59 100	4.4 mm	3.5 mm	Art. 9040/035	Art. 9040/057
59 200	2.7 mm	2.3 mm	Art. 9040/033	Art. 9040/055

SUPPLIERS

This list provides an overview of select suppliers worldwide.

MACHINES / TOOLS / AIDS	SUPPLIER	CONTACT
Industrial embroidery machines (for Crystal Yarn and Plastic Trimmings)	Tajima Tokai industrial Sewing Machine Co. Machine types: TMLH 1, TMLH 2	www.tajima.com
	ZSK GmbH Machine types: YCZ, XGZ, MGZ, SCZ, JCW (special sewing head only)	www.zsk.com
	Meca S.p.A. Machine types: Multi Tech 65” Ecording	www.meca.it
	Barudan America, Inc. Machine types: HIZ1210, BEVS-HIZ1206, BEVX-HICIZ1104	www.barudan.com
Crystal Stone Head for Schiffli embroidery machines	Lässer AG	www.laesser.ch
Sewing machines	Pfaff	www.pfaff.com
	Elna international corp. S.A.	www.elna.com
Button sewer	Pfaff	www.pfaff.com
Adapted presser foot	Elna international corp. S.A. For Plastic Trimming 50002: Elna Art. 495265-20	www.elna.com
	For Plastic Trimmings 50003, 50004 and Crystal Yarn 59000, 59100, 59200: Elna Art. 495260-20	
	Swarovski (for Pfaff sewing machines) For Plastic Trimming 50002 and Crystal Yarn 59200: Art. 9040/033	www.swarovski-elements.com/business www.pfaff.com
	For Plastic Trimming 50003: Art. 9040/034	
	For Plastic Trimming 50004 and Crystal Yarn 59000, 59100: Art. 9040/035	
Metal plates	Swarovski For Plastic Trimming 50002 and Crystal Yarn 59200: Art. 9040/055	www.swarovski-elements.com/business
	For Plastic Trimming 50003: Art. 9040/056	
	For Plastic Trimming 50004 and Crystal Yarn 59000, 59100: Art. 9040/057	
Application aids	Swarovski For Sew-on Stone 3265 20x16 mm: Art. 9040/061	www.swarovski-elements.com/business
	For Sew-on Stone 3265 26x21 mm: Art. 9040/060	
Machine needles	Prym	www.prym-consumer.de
	Ferd. Schmetz GmbH	www.schmetz.com
	Groz-Beckert Group	www.groz-beckert.de
Sewing threads	Coats	www.coats.com
	Amann & Söhne GmbH & Co. KG	www.amann.com
	Madeira Garnfabrik KG	www.madeira.de
	Rayher Hobby GmbH	www.rayher-hobby.de

APPLICATION

When sewing SWAROVSKI ELEMENTS, particularly Sew-on Stones and Beads, **synthetic threads with a thread count of Nm 50–60** are most suitable, due to their abrasion resistance. Monofilament and pure cotton yarns are not recommended due to their limited abrasion resistance.

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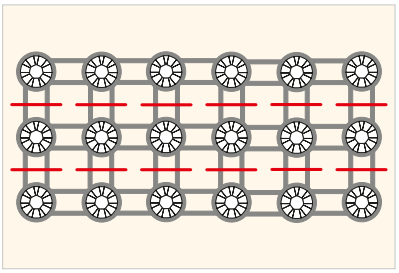
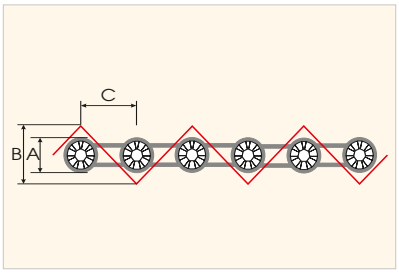
SELECTING THE OPTIMUM THREAD | SELECTING THE STITCH TYPE | ADJUSTING THE UPPER THREAD TENSION | APPLICATION

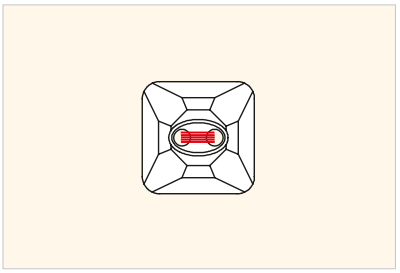
In general, SWAROVSKI ELEMENTS can be sewn on using a variety of stitch types.



Multi-row products
Straight stitch



Single-row products
Zigzag stitch



Crystal Buttons and Sew-on Stones
Button sewing program or zigzag stitch

Straight stitch

A stitch length should be selected that allows the stitches to fall in the spaces between the cups.

Zigzag stitch

The length and width of the stitch must be adjusted to suit the element being applied. The width of the stitch (B) should be 0.5 mm –1 mm broader on both sides than the crystal element (A) being applied. The length of the stitch (C) should be equal to about 2/3 of the width of the stitch. In some cases the tension of the upper thread must be reduced.

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When applying products using a zigzag stitch, the use of an adapted presser foot is recommended.

Button sewing program

Crystal Buttons and Sew-on Stones can be applied using a button sewing program. Here the hole spacing must be selected.

If the upper thread tension is too tight or too loose, the resulting seam is not strong. The tension of the thread must therefore be adjusted accordingly.

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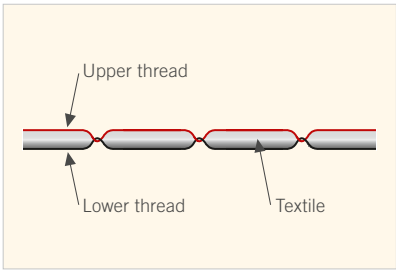
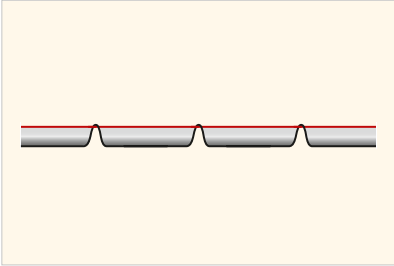
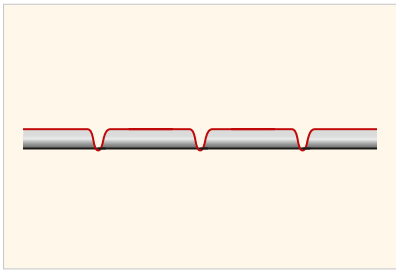


If the **tension is correct,** the threads cross in the middle of the textile.



If the **tension is too tight,** then the lower thread is visible on the upper surface of the fabric and the fabric can become gathered.



If the **tension is too loose,** the crossing of the threads is visible on the upper surface of the fabric.

Alongside sewing by hand, the following table provides a summary of all machine application techniques.

Machine application

SWAROVSKI ELEMENTS		MACHINE	TOOL/AID	PROGRAM	NOTE
Sew-on Stones		Sewing machines	Button foot or application aid for Sew-on Stone 3265 (26x21 mm Art. 9040/060 and for 20x16 mm Art. 9040/061)	Button sewing program or zigzag stitch without feed function	Switch off the lower feed, adjust the stitch width to the product. The use of the application aid in some makes of sewing machines can require some readjustment of the tension release
	3129 P288	Schiffli embroidery machine	Lässer Crystal Stone Head		
Crystaltex		Sewing machines	Standard presser foot	Straight stitch, zigzag stitch (single row)	
Crystal Yarn	59000 59100 59200	Sewing machines	Adapted presser foot	Zigzag stitch	Adjust the stitch width to the product
	59000 59100 59200	Embroidery machine	Lock stitch head	Zigzag stitch	
				Coiling technique	
Plastic Trimmings	Basic Bandings (single row)	Sewing machines	Adapted standard presser foot	Zigzag stitch	Adjust the stitch width to the product
			Zipper foot	Straight stitch	When working with net-edge
	Basic Bandings (single row)	Embroidery machine	Lock stitch head	Zigzag stitch	
	Basic Bandings (multi row)	Sewing machines	Standard presser foot	Straight stitch, zigzag stitch	Adjust the stitch width to the product
			Zipper foot	Straight stitch	When working with net-edge
	Fishnet Bandings	Sewing machines	Adapted standard presser foot	Straight stitch	
	Decorative Bandings	Sewing machines	Zipper foot	Straight stitch	When working with net-edge
		Special sewing machine	Special presser foot	Programmed stitch	
	Plastic Components	Sewing machines	Button foot	Zigzag stitch	Switch off the lower feed, adjust the stitch width to the product
Zippers		Sewing machines	Zipper foot	Straight stitch	
Buttons & Fasteners	Crystal Buttons	Sewing machines	Button foot	Button sewing program or zigzag stitch without feed function	Switch off the lower feed, adjust the stitch width to the product
		Button sewer		Button sewing program	Holding clamps must be adjusted to the shape of the button
	Buttons with Plastic Shank / Metal Shank	Button sewer		Button sewing program	Holding clamps must be adjusted to the shape of the button
	Magnet Fasteners	Sewing machines	Standard presser foot	Straight stitch	
Metal Trimmings	Chaton & Flat Back Bandings	Sewing machines	Standard presser foot	Straight stitch	
			Zipper foot	Straight stitch	When working with net-edge

SWAROVSKI ELEMENTS		MACHINE	TOOL/AID	PROGRAM	NOTE
Crystal Mesh		Sewing machines	Standard presser foot	Straight stitch	Remove the transparent support film before sewing
Cupchains & Findings	Cupchains	Sewing machines	Adapted standard presser foot	Zigzag stitch	Adjust the stitch width to the product

Application using a sewing machine

The right choice of needle (strength Nm 70–100), sewing thread and thread tension (upper and lower thread) are particularly important for applications with a sewing machine. The fabric must not become gathered and the upper and lower thread should run easily and smoothly.

Tests should be conducted on the original material before beginning production.

Before sewing on Crystal Buttons with a machine it is essential to set the sewing machine to the correct hole and stitch length, and stitch width. This prevents the crystal from being damaged during application and reduces the risk of injury.

When sewing high, multi-row products, there can be problems with the sewing machine feed, caused by a slanting presser foot. To avoid this, position a **height compensator** beneath the presser foot to ensure it sits parallel to the material, allowing the fabric to feed through properly.

The foot lies flat due to the **height compensator**.

A slanting presser foot can cause problems with the feed of the base material.

Sew-on Stones
Switch off the lower feed and adjust the stitch width to the product.

Place the aid for the Sew-on Stone 3265 underneath the foot and choose a button sewing program or a zigzag stitch. The lower feed must be turned off.

Crystaltex Bandings
Sew between the rows of stones.

Crystal Yarn
Make sure that the Crystal Yarn runs parallel to the foot.

Basic Bandings (single row)
Make sure that the Basic Banding runs parallel to the foot.

Basic Bandings (multi row)
Stitch the banding between the first and second rows of crystals and if necessary strengthen the corners with a zigzag stitch.

Fishnet Bandings
Adjust the needle bar so that the stitches are next to the crystals.

Zippers
It is possible to sew very close to the teeth of the zipper when using a zipper foot. In some cases, it can also be very helpful to adjust the needle bar.

Crystal Buttons
Switch off the lower feed and adjust the stitch width to the product.

Magnet Fasteners
Thread the material through the eyelet and stitch next to the fastener.

Chaton & Flat Back Bandings
Stitch the banding between the first and second rows of crystals.

Crystal Mesh
Stitch the banding between the first and second rows of crystals.
Note: Please be aware of useful information for sewing with support film.

Cupchains
Make sure that the Cupchain runs parallel to the foot.

Application using a button sewer

Amongst other elements, Crystal Buttons, Buttons with Plastic Shank and Buttons with Metal Shank can also be applied using a button sewer.

Crystal Buttons

Before application, it is essential to set the button sewer according to the product being used. This prevents the Crystal Button from being damaged during application and reduces the risk of injury.

Buttons with Plastic Shank and Buttons with Metal Shank

Just like Crystal Buttons, Buttons with Plastic Shank and Buttons with Metal Shank can be efficiently and easily affixed using a button sewer. To do this, they must be positioned in the application slot of the button holder, and the machine must be adjusted beforehand.

Application using an embroidery machine

The industrial application of Crystal Yarn, single-row Plastic Trimmings and 3129 P288 Lochrose can be carried out on fully automatic embroidery machines.

Crystal Yarn

1 Design the motif and choose the desired type of Crystal Yarn, the embroidery thread and the embroidery technique (coiling or zigzag stitch).

2 A lock stitch head can be used for applying Crystal Yarn because it allows the Crystal Yarn to be fixed to the carrier material by means of either zigzag stitch or coiling.

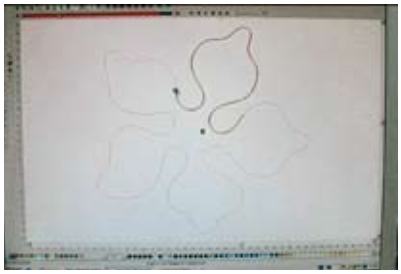
3 After the spool and thread are in place, the material to be embroidered is temporarily fixed into place with spray glue and correctly positioned.

4 Stitching process (in this case a coiling technique has been applied).

5 The customized material is now ready for further processing.

A comprehensive video about working with Crystal Yarn can be found on the website WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS.

Plastic Trimmings

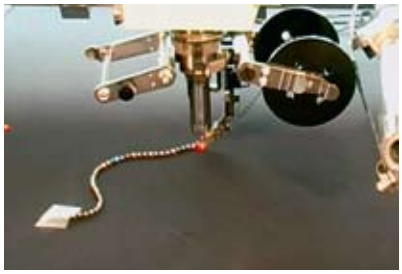


1 Design the motif and choose the desired type of Plastic Trimming and the embroidery thread.

2 A lock stitch head can be used for applying Plastic Trimmings because it allows the Plastic Trimmings to be fixed to the carrier material by using zigzag stitch.

3 Wind the Plastic Trimming onto a suitable spool.

4 After the spool and thread are in place, the material to be embroidered is fixed into place with spray glue.



5 Stitching process.

6 The customized material is now ready for further processing.

A comprehensive video about working with Plastic Trimmings can be found on the website WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS.

3129 P288 Lochrose

An innovative product application solution has been developed in conjunction with the company Lässer for the industrial application of Lochrose. The Lochrose 3129 P288 was specially designed for fully automatic application using Schiffli embroidery machines, with the help of the new LÄSSER CRYSTAL STONE HEAD. The application is based on standard embroidery technology and allows the unique combination of first-class Schiffli embroidery yarns (e.g. SETAFIL®) and crystal applications in a single production stage.

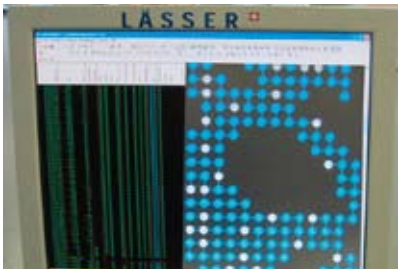
The majority of Lässer Schiffli embroidery machines can be adapted with the new LÄSSER CRYSTAL STONE HEAD:

LÄSSER MD (Multi Drive) with LC (LÄSSER CONTROL)	ATC CUT ATC MTC CUT MTC
LÄSSER CHALLENGE SYSTEM (base body to attach the LÄSSER CRYSTAL STONE HEAD)	The CHALLENGE SYSTEM is compulsory

The Lässer Crystal Stone Head for Schiffli embroidery machines can be ordered directly from Lässer AG.

Orders for the **Lochrose 3129 P288,** as well as sample and production orders, can be placed directly with your Swarovski sales partner.

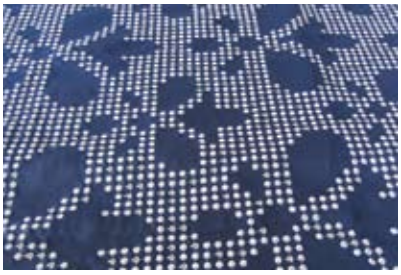
1 Drawing of the desired motif or design.



2 Enter the design into the embroidery software.

3 Fill the embroidery machine with Lochrose 3129 P288.

4 Embroidery is carried out automatically using the Lässer Challenge Crystal Stone system.



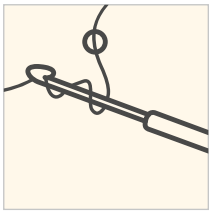
5 The embroidered material is now ready for further processing.

Picture source: S. Jurkowitsch

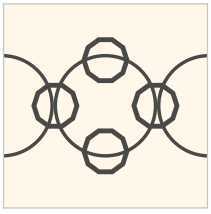
Hand application techniques

All of the SWAROVSKI ELEMENTS listed in the product overview at the beginning of this chapter can alternatively also be applied by hand. A range of further creative application techniques in addition to sewing and embroidery can be used.

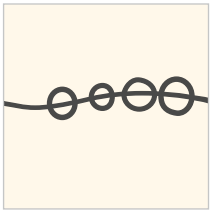
Knitting



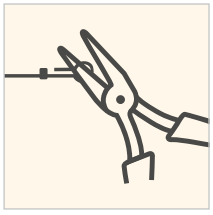
Crocheting



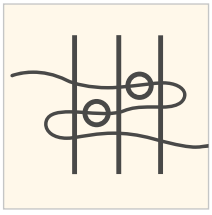
Beading



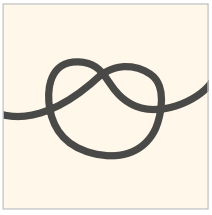
Threading



Wire working



Weaving



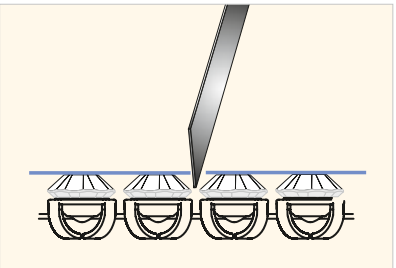
Knotting

Please note that Crystal Pearls larger than 6 mm must be either knotted or attached with suitable wire (steel, French).

Detailed instructions for these techniques and information concerning the necessary tools and aids required for the work are given on WWW.CREATE-YOUR-STYLE.COM.

Cutting and sewing Crystal Mesh

Before cutting and sewing, the transparent film must not be removed. The film allows the individual crystals to be aligned perfectly, and provides Crystal Mesh with the stability necessary for flawless application.



Pre-scoring: Score the transparent film between the rows of crystals with a Stanley knife, though do not pull them apart – otherwise the stability of the crystals during cutting and sewing will be lost.

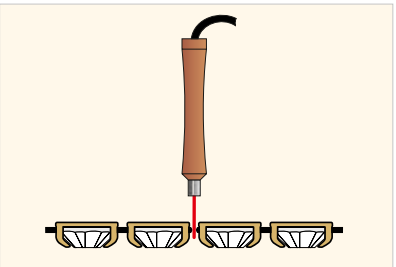
Cutting: Cut the metal mesh with scissors along the scored line, and remove the excess link rings. The Crystal Mesh is now ready for sewing.

Sewing: When sewing Crystal Mesh, it is recommended that the film is scored along the course of the stitching beforehand (see illustration).

Cutting Metal Trimmings

When cutting down Metal Trimmings, to avoid the support fabric entering the cutting point and consequently reducing the rigidity of the product, it is recommended that the frayed ends are removed using heat.

Alternatively, the cutting and removal can be carried out in a single process using a hot knife fabric cutter (www.brennpeter.eu).



Cutting and removal of ends in a single process.

QUICK ASSISTANCE <<<

The following table outlines common problems and their causes when sewing, and offers advice on how to avoid them. Further details and more extensive descriptions can be found in the section marked with a ?!

PROBLEM	CAUSE
Product or fabric is not fed through correctly.	**1, 2, 3**
The machine misses out stitches.	**4, 5, 6, 7**
The thread breaks.	**4, 6, 8, 9**
The needle breaks.	**10, 11, 12, 13**
The crystals break out of the cups.	**14**

CAUSE		RECOMMENDATION
1	The foot pressure may be too low.	Increase the foot pressure according to the instructions.
2	There may be dust between the feeder teeth.	Clean the teeth.
3	Upper feed is faulty.	Replace the upper feed.
4	The needle may be bent or damaged.	Replace the needle.
5	The needle is not fitted correctly.	It must be pushed right up to the top.
6	The machine may be threaded wrongly.	Rethread the machine.
7	The tension of the threads may be incorrect.	Check the thread tension.
8	There may be knots in the thread or it may be too thin.	Check the thread for faults and if necessary, change it.
9	The components that form the stitches may be damaged.	Have the sewing machine checked by a specialist technician.
10	The wrong needle may have been chosen.	Choose a needle that is the correct size for the carrier material.
11	The bobbin may not be fitted correctly.	Check the bobbin case.
12	The needle is too thick and gets stuck in the product.	Use a thinner needle.
13	The needle hits the crystal.	Sew more slowly and feed the product through the machine more carefully.
14	The needle damages the cup.	Check the length of the stitch and the thickness of the needle.

mechanical APPLICATION

Many SWAROVSKI ELEMENTS, such as Rivets, Jeans Buttons, Snap Fasteners, Decorative Buttons and Magnet Fasteners, can be applied manually or mechanically, using either semi- or fully automated machines. This simple application technique is used primarily in the textile and accessories fields.

MECHANICAL APPLICATION

PRODUCT OVERVIEW <<<

The following products are suitable for mechanical application:

	MECHANICAL APPLICATION
Snap Fasteners	✓
Decorative Buttons	✓
Jeans Buttons	✓
Magnet Fasteners	✓
Rivets	✓
Crystal Pearl Rivets	✓
Rose Pins	✓

MACHINES, TOOLS, AND AIDS <<<

The following machines, tools and aids are necessary for the mechanical application of SWAROVSKI ELEMENTS:

The **fly press** represents an easy way to mechanically apply the products.
Art. 9040/017

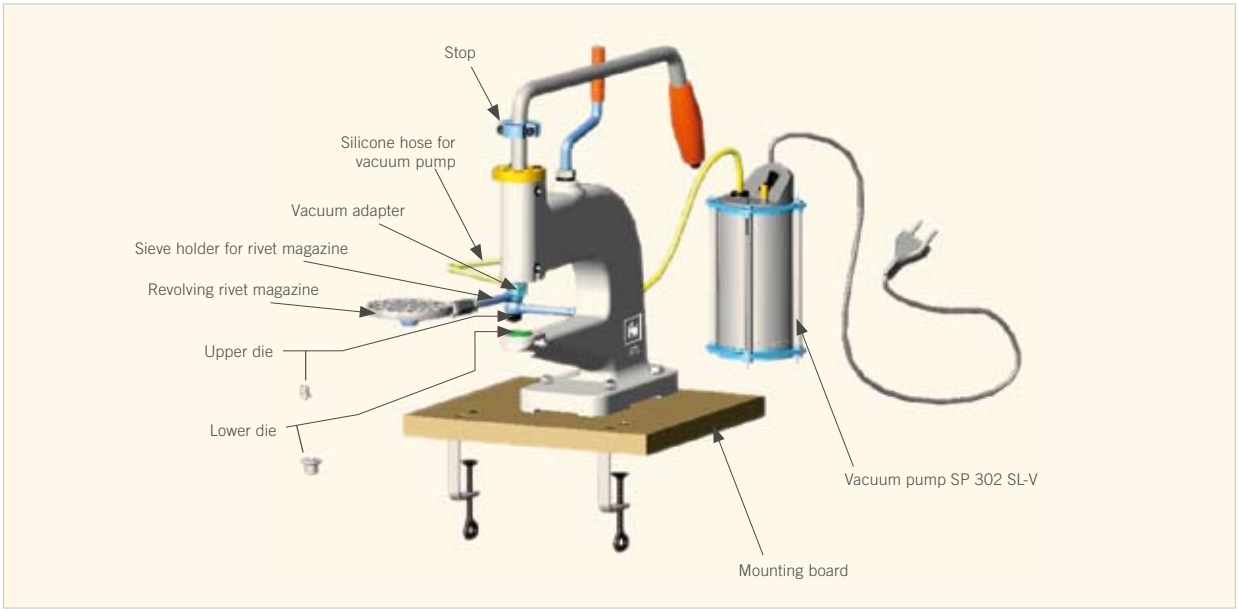
The **pneumatic press** enables quick application of crystal elements.

Some SWAROVSKI ELEMENTS can be applied using fully **automatic attaching machines** (e.g. Rose Pins). In this process, the feed on the machine must be adjusted to the element being processed.

Vacuum pump SP 302 SL-V with silicone hose allows Rivets and Rose Pins to be easily held in place for the fly press.
Art. 9040/022

It is recommended that **protective eyewear** is worn during mechanical application, to prevent injury.

Swarovski offers a variety of different tools for the fly press, depending on the product employed.



Fly press including possible dies and aids for application (in this case, of Rivets)

Rose Pins

A vacuum pump allows Rose Pins to be easily picked up and applied. The vacuum connection is integrated directly into the upper die. An additional vacuum adapter is not necessary.

	53301 SS 10	53302 SS 16	53303 SS 20	53304 SS 34
UPPER DIE 	Art. 9040/090 (M6)	Art. 9040/091 (M6)	Art. 9040/092 (M6)	Art. 9040/093 (M6)
SPARE PART FOR UPPER DIE* 	Art. 9040/094	Art. 9040/095	Art. 9040/096	Art. 9040/097
LOWER DIE 	Art. 9070/013	Art. 9070/014		Art. 9070/016

* The spare part is integrated into the upper die as standard. This should be changed when it becomes worn.

?!

The **centering aid** for Rose Pins 53301 (SS 10) Art. 9070/017 allows the product to be easily positioned in the upper die.

Rivets

Rivets can be applied to various materials **with or without** Back Parts. The **correct die combination** must be chosen accordingly. Please ensure that the recommended fabric strengths, listed in the “Application” subsection (p. 136), are followed.

A vacuum pump and adapter allow Rivets and Crystal Pearl Rivets to be easily picked up and applied. Upper dies are thus available with different thread strengths. When using the Swarovski vacuum adapter, dies with an M8 thread are required. Alternatively, dies with M6 threads are available for presses from other manufacturers, or when not using a vacuum adapter. ?!

POSSIBLE DIE COMBINATIONS		BACK PART	WITH BACK PART		WITHOUT BACK PART	
			53007 	53009 	RIVET CASING 088	RIVET CASING 081; 082; 086
		LOWER DIE	Art. 9070/010 	Art. 9070/012 	Art. 9070/011 	Art. 9040/015 
RIVETS	UPPER DIE 	Spare part for upper die* 				
53008 PP 24	Art. 9040/083 (M8) Art. 9040/085 (M6)	Art. 9040/084		✓	✓	
53002 SS 18 (SHORT SHANK)	Art. 9040/005 (M8) Art. 9040/014 (M6)	Art. 9040/008				✓
53000 SS 18	Art. 9040/005 (M8) Art. 9040/014 (M6)	Art. 9040/008	✓	✓	✓	✓
53001 SS 29	Art. 9070/005 (M8) Art. 9070/009 (M6)	Art. 9070/008	✓	✓	✓	✓
53005 SS 34	Art. 9040/064 (M8) Art. 9040/063 (M6)	Art. 9040/062	✓	✓	✓	✓
53006 SS 39	Art. 9040/067 (M8) Art. 9040/066 (M6)	Art. 9040/065	✓	✓	✓	✓
53400 6 MM	Art. 9040/068 (M8) Art. 9040/071 (M6)	Art. 9040/074	✓	✓		✓
53401 8 MM	Art. 9040/069 (M8) Art. 9040/072 (M6)	Art. 9040/075	✓	✓		✓
53402 10 MM	Art. 9040/070 (M8) Art. 9040/073 (M6)	Art. 9040/076	✓	✓		✓

* The spare part is integrated into the upper die as standard. This should be changed when it becomes worn. ?!

Vacuum adapter with M6 outer thread for fixing to the fly press and M8 inner thread to hold the upper die.
Art. 9040/023

Custom aids (revolving magazine, setting frame, sieve holder for rivet magazine) facilitate the mechanical application of Rivets.

Jeans Buttons

	1790/100 1790/114	1790/104	1790/140	1791/120	1792/100
					
TOOL SET	—	Art. 9060/020 			
UPPER DIE	Art. 9060/001 	Art. 9060/009 			
SPARE PART FOR UPPER DIE	—	Art. 9060/011 	Art. 9060/010 	Art. 9060/012 	Art. 9060/013 
LOWER DIE	Art. 9060/016 				
THREAD ADAPTER	— [2]	Art. 9060/014 [1] 			
CHANGING PIN	—	Art. 9060/015 			

[1] When using die Art. 9060/009, please employ the specially developed thread adapter Art. 9060/014.
[2] The appropriate thread adapter is supplied with the fly press.

Decorative Buttons, Snap Fasteners, and Magnet Fasteners

	1780/100 1780/114 1781/100 1781/114	1780/100 1780/114	86200 200 86201 200 86202 200 86203 200
			
UPPER DIE	Art. 9060/005 	Art. 9060/006 	Art. 9040/052 
LOWER DIE	Art. 9060/004 	Art. 9060/007 	Art. 9040/053 

SUPPLIERS <<<

This list provides an overview of select suppliers worldwide.

MACHINES / TOOLS / AIDS	SUPPLIER	CONTACT
Automatic attaching machines	Jiuzhou Machinery Co., Ltd.	www.dg-jz.com
	Prym-Fashion	www.prym-fashion.com
	Seung Min Industrial Co., Ltd.	www.seungminsm.co.kr
	S.P.S. Tecnologia Meccanica Srl	www.spstecnologiameccanicasrl.it
Pneumatic attaching machines	Prym-Fashion	www.prym-fashion.com
Fly press	Swarovski fly press without mounting board, Art. 9040/017	www.swarovski-elements.com/business
	Fly press with mounting board*, Art. 9040/019	
	Jiuzhou Machinery Co., Ltd.	www.dg-jz.com
	Seung Min Industrial Co., Ltd.	www.seungminsm.co.kr
	Standard Rivet Company	www.standardrivet.com
Upper die (M6) for Rose Pins (fly press)	Swarovski For Rose Pin 53301, Art. 9040/090	www.swarovski-elements.com/business
	For Rose Pin 53302, Art. 9040/091	
	For Rose Pin 53303, Art. 9040/092	
	For Rose Pin 53304, Art. 9040/093	

MACHINES / TOOLS / AIDS	SUPPLIER	CONTACT
Lower die for Rose Pins (fly press)	Swarovski For Rose Pin 53301, Art. 9070/013 For Rose Pin 53302 and 53303, Art. 9070/014 For Rose Pin 53304, Art. 9070/016	www.swarovski-elements.com/business
Spare part for upper die for Rose Pins (fly press)	Swarovski For Art. 9040/090 (Rose Pins 53301), Art. 9040/094 For Art. 9040/091 (Rose Pins 53302), Art. 9040/095 For Art. 9040/092 (Rose Pins 53303), Art. 9040/096 For Art. 9040/093 (Rose Pins 53304), Art. 9040/097	www.swarovski-elements.com/business
Centering aid for Rose Pin 53301	Swarovski, Art. 9070/017	www.swarovski-elements.com/business
Basic fly press set for Rivets (components identified with *)	Swarovski, Art. 9070/018	www.swarovski-elements.com/business
Vacuum pump SP 302 SL-V* with silicone hose	Swarovski, Art. 9040/022	www.swarovski-elements.com/business
Vacuum adapter for Rivets*	Swarovski, Art. 9040/023	www.swarovski-elements.com/business
Sieve holder for Rivets*	Swarovski, Art. 9040/021	www.swarovski-elements.com/business
Upper die (M8) for Rivets (fly press)	Swarovski For Rivet 53000 and 53002, Art. 9040/005 For Rivet 53001, Art. 9070/005 For Rivet 53005, Art. 9040/064 FFor Rivet 53006, Art. 9040/067 For Rivet 53008, Art. 9040/083	www.swarovski-elements.com/business
Upper die (M6) for Rivets (fly press)	Swarovski For Rivet 53000 and 53002, Art. 9040/014 For Rivet 53001, Art. 9070/009 For Rivet 53005, Art. 9040/063 For Rivet 53006, Art. 9040/066 For Rivet 53008, Art. 9040/085	www.swarovski-elements.com/business
Upper die (M8) for Crystal Pearl Rivets (fly press)	Swarovski For Crystal Pearl Rivet 53400, Art. 9040/068 For Crystal Pearl Rivet 53401, Art. 9040/069 For Crystal Pearl Rivet 53402, Art. 9040/070	www.swarovski-elements.com/business
Upper die (M6) for Crystal Pearl Rivets (fly press)	Swarovski For Crystal Pearl Rivet 53400, Art. 9040/071 For Crystal Pearl Rivet 53401, Art. 9040/072 For Crystal Pearl Rivet 53402, Art. 9040/073	www.swarovski-elements.com/business

MACHINES / TOOLS / AIDS	SUPPLIER	CONTACT
Lower die for Rivets and Crystal Pearl Rivets (fly press)	Swarovski For Rivet application with a Back Part 53007, Art. 9070/010 For Rivet application with a Back Part 53009, Art. 9070/012 For Rivet application without a Back Part, (Rivet casing 088), Art. 9070/011 For Rivet application without a Back Part, (Rivet casing 081, 082 and 086), Art. 9040/015	www.swarovski-elements.com/business
Spare part for upper die for Rivets (fly press)	Swarovski For Art. 9040/005 and 9040/014 (Rivets 53000 and 53002), Art. 9040/008 For Art. 9070/005 and 9070/009 (Rivets 53001), Art. 9070/008 For Art. 9040/064 and 9040/063 (Rivets 53005), Art. 9040/062 For Art. 9040/067 and 9040/066 (Rivets 53006), Art. 9040/065 For Art. 9040/083 and 9040/085 (Rivets 53008), Art. 9040/084	www.swarovski-elements.com/business
Spare part for upper die for Crystal Pearl Rivets (fly press)	Swarovski For Art. 9040/068 and 9040/071 (Crystal Pearl Rivet 53400), Art. 9040/074 For Art. 9040/069 and 9040/072 (Crystal Pearl Rivet 53401), Art. 9040/075 For Art. 9040/070 and 9040/073 (Crystal Pearl Rivet 53402), Art. 9040/076	www.swarovski-elements.com/business
Setting frame for revolving magazine	Swarovski, Art. 9040/009	www.swarovski-elements.com/business
Revolving magazine for Rivets*	Swarovski For Rivets 53000, 53001, 53005 and 53006, Art. 9040/002 For Rivet 53008, Art. 9040/082	www.swarovski-elements.com/business
Sieve plate for Crystal Pearl Rivets	Swarovski, Art. 9040/080	www.swarovski-elements.com/business
Rotary plate for Crystal Pearl Rivets	Swarovski, Art. 9040/081	www.swarovski-elements.com/business
Tool set for Jeans Buttons 1790/104, 1790/140, 1791/120 and 1792/100	Swarovski, Art. 9060/020	www.swarovski-elements.com/business
Upper die for Jeans Buttons 1790/100 and 1790/114	Swarovski, Art. 9060/001	www.swarovski-elements.com/business
Upper die for Jeans Buttons 1790/104, 1790/140, 1791/120 and 1792/100	Swarovski, Art. 9060/009	www.swarovski-elements.com/business
Lower die for Jeans Buttons 1790/100, 1790/114, 1790/104, 1790/140, 1791/120 and 1792/100	Swarovski, Art. 9060/016	www.swarovski-elements.com/business

MACHINES / TOOLS / AIDS	SUPPLIER	CONTACT
Spare part for upper die	Swarovski For Jeans Button 1790/104, Art. 9060/011 For Jeans Button 1790/140, Art. 9060/010 For Jeans Button 1791/120, Art. 9060/012 For Jeans Button 1792/100, Art. 9060/013	www.swarovski-elements.com/business
Thread adapter for Jeans Buttons 1790/104, 1790/140, 1791/120 and 1792/100	Swarovski, Art. 9060/014	www.swarovski-elements.com/business
Changing pin for upper die spare part	Swarovski, Art. 9060/015	www.swarovski-elements.com/business
Upper die for Decorative Buttons 1781/100 and 1781/114 and Snap Fasteners 1780/100 and 1780/114 (1st stage)	Swarovski, Art. 9060/005	www.swarovski-elements.com/business
Upper die for Snap Fasteners 1780/100 and 1780/114 (2nd stage)	Swarovski, Art. 9060/006	www.swarovski-elements.com/business
Lower die for Decorative Buttons 1781/100 and 1781/114 and Snap Fasteners 1780/100 and 1780/114 (1st stage)	Swarovski, Art. 9060/004	www.swarovski-elements.com/business
Lower die for Snap Fasteners 1780/100 and 1780/114 (2nd stage)	Swarovski, Art. 9060/007	www.swarovski-elements.com/business
Upper die for Magnet Fasteners (fly press)	Swarovski, Art. 9040/052	www.swarovski-elements.com/business
Lower die for Magnet Fasteners (fly press)	Swarovski, Art. 9040/053	www.swarovski-elements.com/business

APPLICATION

Various SWAROVSKI ELEMENTS can be applied using mechanical force, creating a lasting bond with the carrier material.

CHECKING MATERIAL STRENGTH | PRODUCT AND DIE SELECTION

It is very important to carefully check the thickness of the fabric or leather before beginning the application process. With very thick fabrics, a hole can be punched beforehand for the application of Jeans Buttons and Rivets. The fabric should not crinkle or become gathered after application. To check this, carry out tests on fabric or leather scraps before going ahead with the application process. It is also important to make sure that the die sits straight and firmly in the fly press, as this can often cause application problems. It is recommended that you carry out a few test runs to identify the ideal pressure. The offset/pressure can be regulated using an adjustable stop that is fastened to the handle of the fly press. ?!

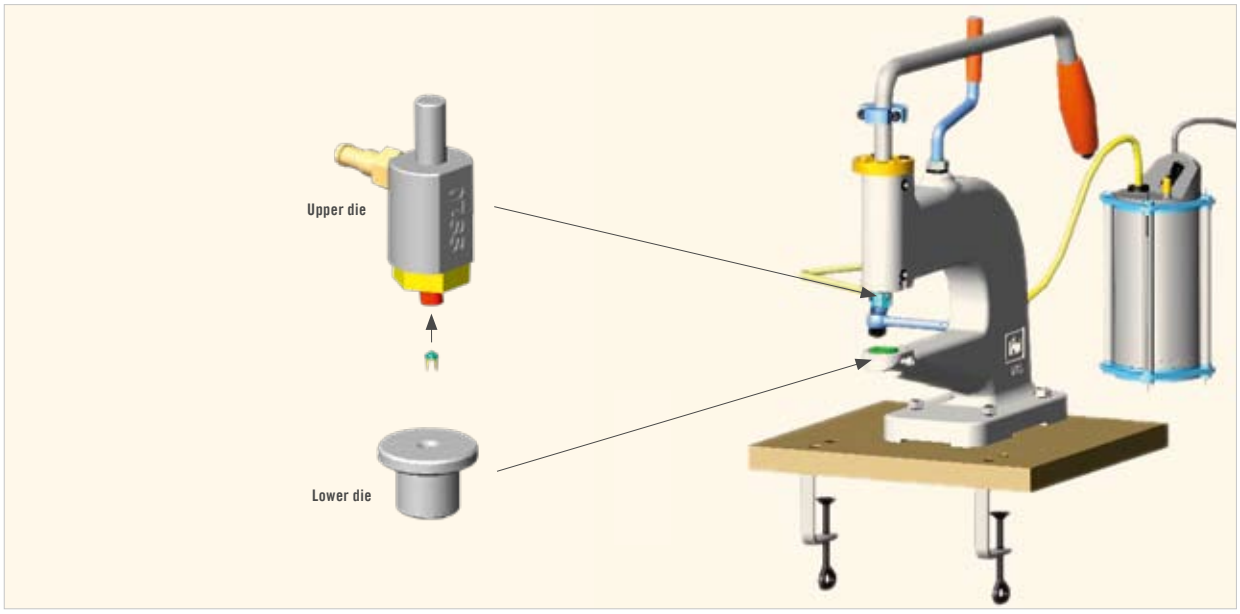
CHECKING MATERIAL STRENGTH | PRODUCT AND DIE SELECTION

Rose Pins

Rose Pins can be easily applied either using the fly press or with a semi-automatic attaching machine.
Please note the material thickness when selecting Rose Pins.

ROSE PINS	SIZE	MATERIAL THICKNESS*
53301	SS 10	1–2 mm
53302	SS 16	1–2 mm
53303	SS 20	1–2 mm
53304	SS 34	1–2 mm

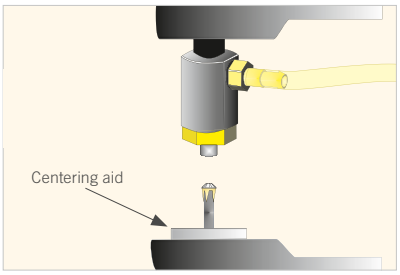
* This can vary according to the roughness and production of the carrier material.



To apply Rose Pins, attach the appropriate die to the fly press.

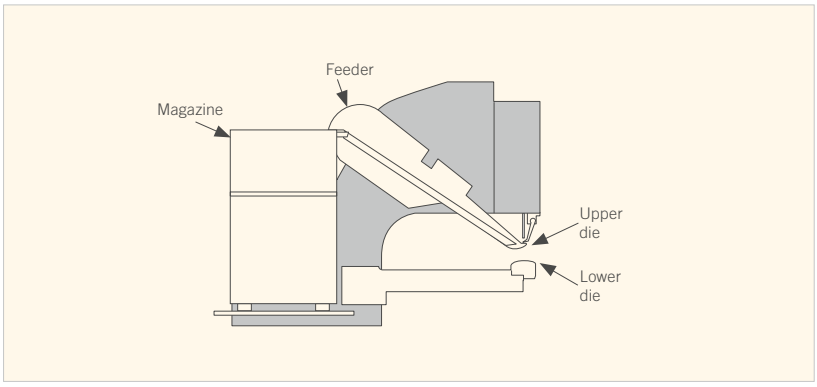
1 Place the Rose Pin in the upper die.

2 Position the carrier material and apply. Regulate the offset/pressure using the adjustable stop.



To facilitate the positioning of the Rose Pin 53301 (SS 10) in the upper die, the centering aid can also be used. This must be removed before applying the Rose Pin.

Semi-automatic attaching machine



To apply Rose Pins, the semi-automatic attaching machine must be adjusted to the Rose Pin size and carrier material (dies, feed and magazine). Please follow the machine manufacturer's instructions (S.P.S. Tecnologia Meccanica).

1 Set up the machine.

2 Add the Rose Pins.

3 Position the carrier material and apply.

Note: when applying Rose Pins motifs, it is helpful to have a corresponding template or marking on the carrier material so as to ensure the correct positioning.

Rivets

To apply Rivets, attach the appropriate die to the fly press.
Rivets can be processed in various materials with or without Back Parts. Rivet 53002 is designed especially for application without a Back Part. For applications on leather, Stainless Steel Rivets (color code 088) and Back Parts are recommended.

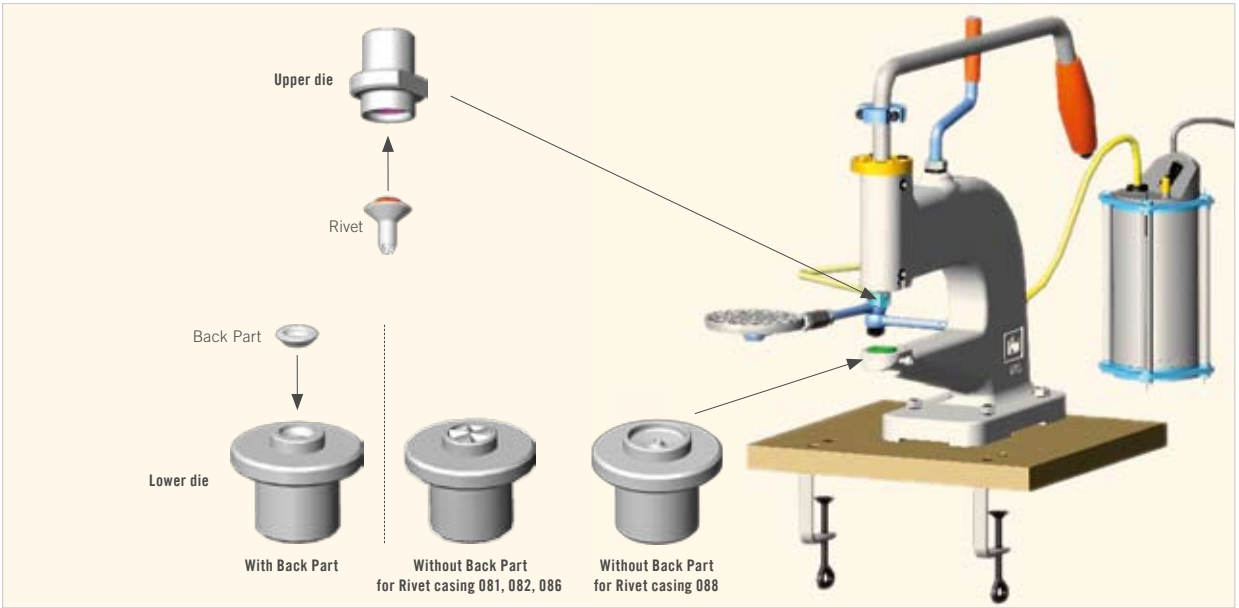
Please note the material thickness when selecting Rivets. The dies should be selected accordingly.

RIVETS	SIZE	MATERIAL THICKNESS*	POSSIBLE BACK PARTS
53008	PP 24	1.5 to 2.0 mm	53009
53000	SS 18	2.0 to 2.5 mm	53007 and 53009
53001	SS 29	2.0 to 2.5 mm	53007 and 53009
53005	SS 34	2.0 to 2.5 mm	53007 and 53009
53006	SS 39	2.2 to 2.7 mm	53007 and 53009
53400	6 mm	2.0 to 2.5 mm	53007 and 53009
53401	8 mm	2.0 to 2.5 mm	53007 and 53009
53402	10 mm	2.2 to 2.7 mm	53007 and 53009

* This can vary according to the roughness and production of the carrier material.

It is often possible to select between both versions of the Back Part. For applications on **thinner fabrics**, it is better to use the **larger** Back Part (Art. 53007). Its size means this Back Part can better hold the split Rivet shaft, avoiding any damage to the crystal.

For **multi-layered or thicker** materials, the **smaller** Back Part (Art. 53009) can be used. To create a lasting bond, this requires less space for the split Rivet shaft. If the carrier material proves too thick, or is made up of several layers, it is recommended to punch a hole before application.



The use of a revolving magazine and setting frame makes it easier and faster to apply the Rivets.

1 Place the revolving magazine in the setting frame.

2 Gently shake the Rivets into the openings provided.

3 Place the magazine with the Rivets into the holder.

4 The Rivets are taken up by means of the vacuum.

5 Position the carrier material and apply. Regulate the offset/pressure using the adjustable stop.

Jeans Buttons

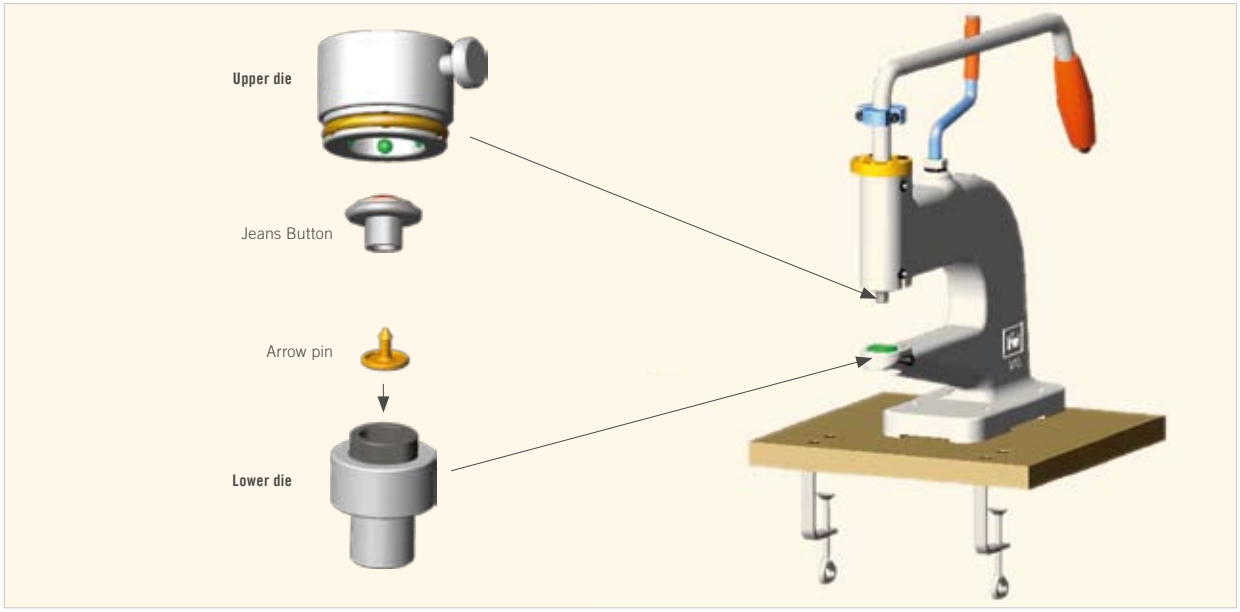
To apply Jeans Buttons, first fix the required dies into place in the fly press. When applying Jeans Buttons 1790/140, 1790/104, 1791/120 and 1792/100, the corresponding plastic insert has to be changed.

Changing the plastic insert

1 To change the insert according to the SWAROVSKI ELEMENTS used, you will need the changing pin and the new plastic insert.

2 Use the changing pin to slowly slide the plastic insert out of the attaching die from above, through the hole.

3 Press the new plastic insert into the attaching die right up to the top.



1 Place the top part of the Jeans Button in the upper die.

2 Place the arrow pin in the lower die.

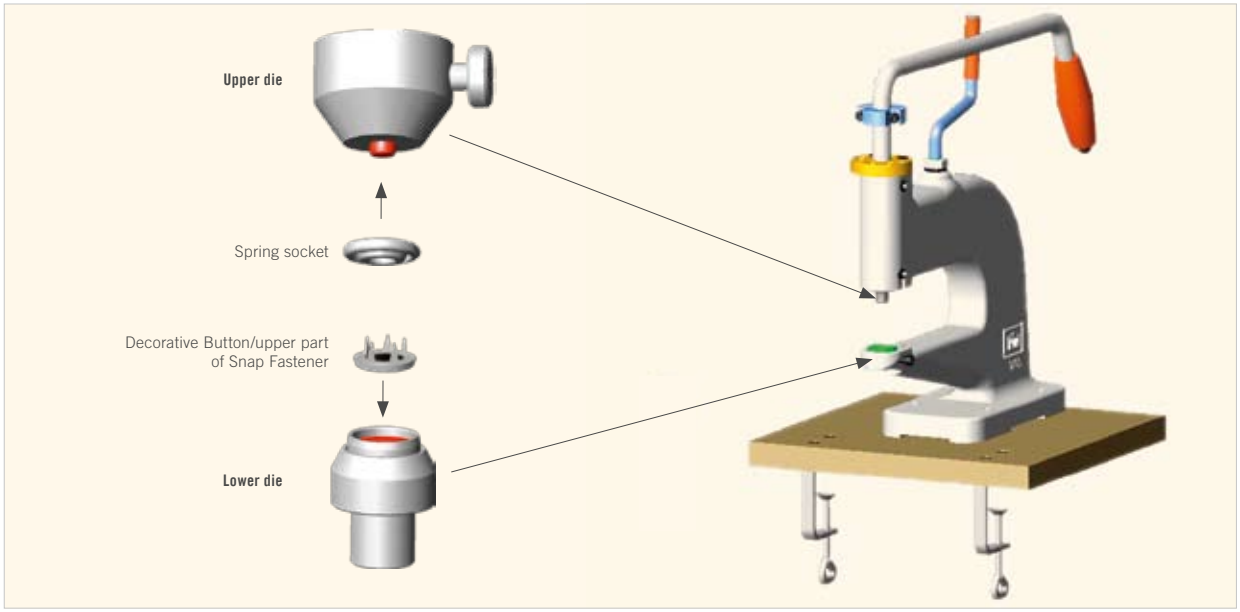
3 Carry out the application in the desired position. Regulate the offset/pressure using the adjustable stop.

Snap Fasteners & Decorative Buttons

To apply Snap Fasteners and Decorative Buttons, first fix the required dies into place in the fly press. A Decorative Button is the upper part of a Snap Fastener, which is applied purely for decorative purposes and thus does not require a closure. When applying Snap Fasteners, a second stage is required in order to fix the closure in place.

Decorative Buttons/upper part of Snap Fasteners

Stage 1:



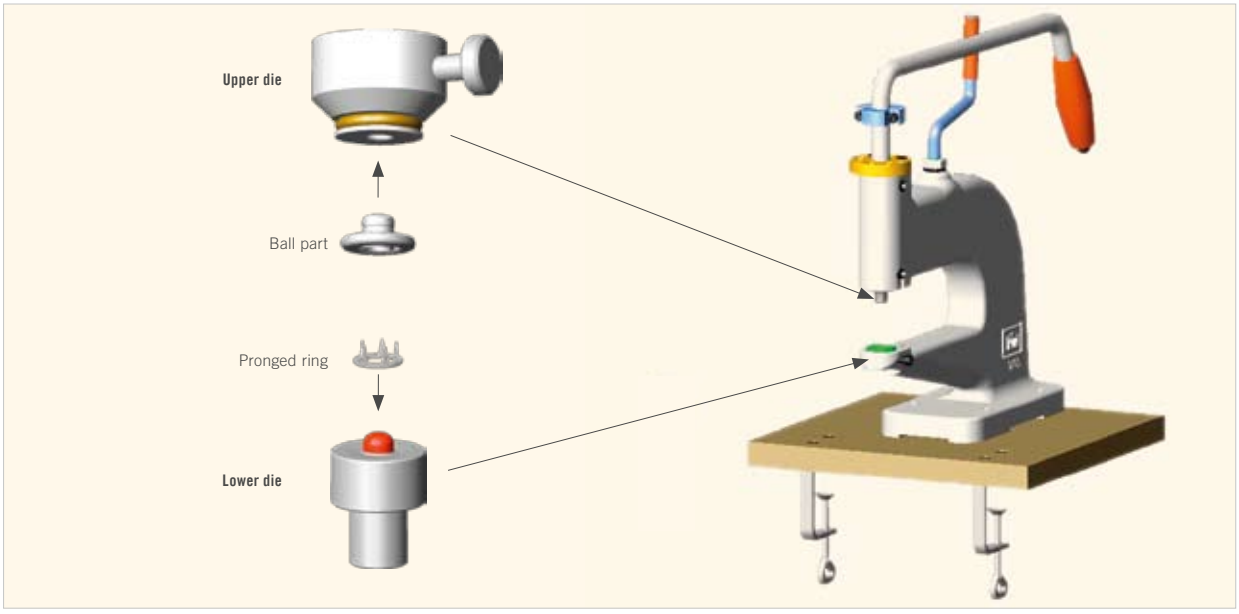
1 Place the Decorative Button/upper part of the Snap Fastener in the lower die, with the claws pointing upwards.

2 Place the spring socket in the upper die.

3 Apply the product to the textile in the previously marked position. Regulate the offset/pressure using the adjustable stop.

Snap Fastener closure

Stage 2:



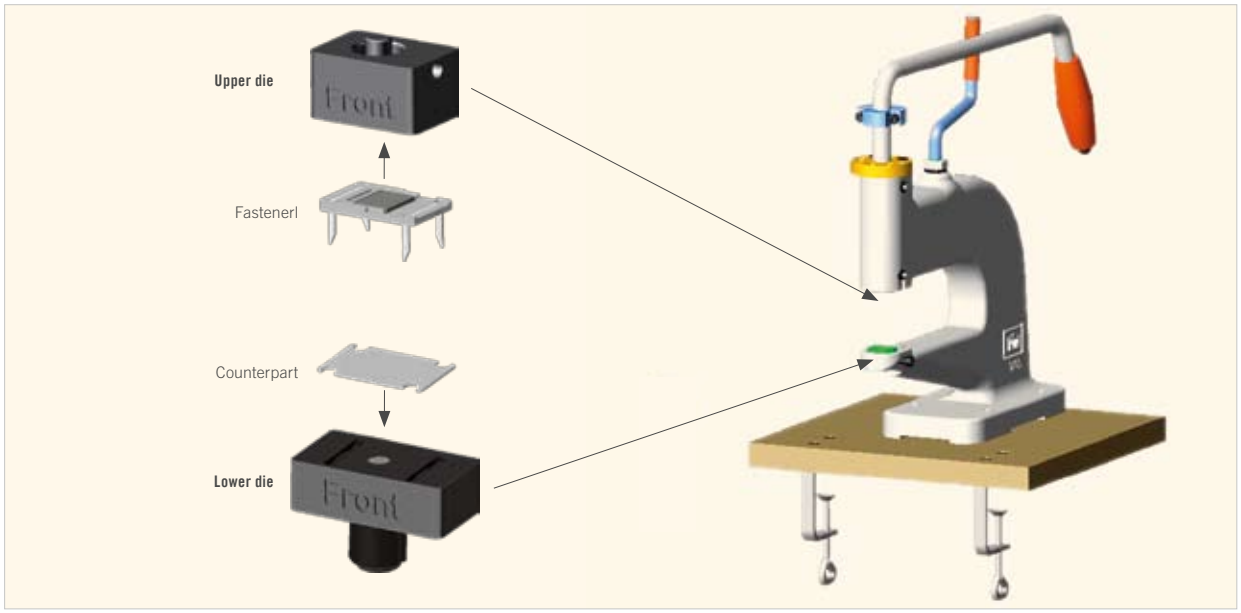
1 Place the pronged ring in the lower die, with the prongs pointing upwards.

2 Place the ball part in the upper die.

3 Apply the product to the textile in the previously marked position, ensuring it is on the right side of the fabric. Regulate the offset/pressure using the adjustable stop

Magnet Fasteners

To apply Magnet Fasteners with the Rivet Fastener (200) configuration, first fix the required dies into place in the fly press.



1 Place the dies into the fly press, ensuring that they are positioned in the correct direction (“Front” is facing the front).

2 Put the fastener part with the claws into the upper die and the back part into the lower die, making sure that it is positioned correctly so that the claws fit into the recesses.

3 Insert the carrier material and position it correctly.

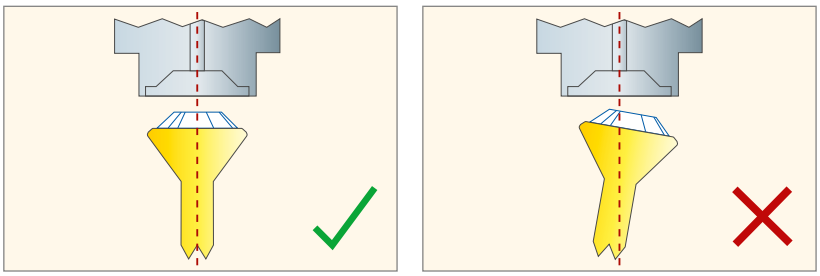
4 Press the fly press together and the claws will close. Regulate the offset/pressure using the adjustable stop.

5 Turn the lower die 180° and close the fly press again. Regulate the offset/pressure using the adjustable stop.

6 The second closure presses the claws as flat as possible.

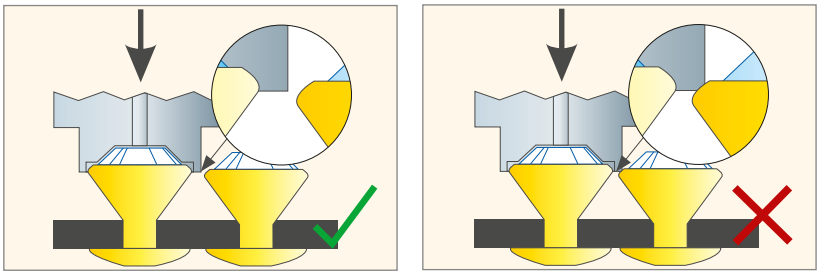
Optimum product/die alignment

In general, when carrying out mechanical applications it is important to ensure the proper alignment of products in the dies, so as to avoid any problems. ?!



Minimum gaps

Please note that during application, the product is entirely surrounded by the upper die. To prevent neighboring products from being damaged, check the minimum space required by the die when calculating the gap between each item. ?!



Die maintenance

Please randomly check the dies used before and during production, and change them when they become worn.
For machines with vacuum connections, blockages in the upper die can be released using a needle.

QUICK ASSISTANCE <<<

The following table outlines common problems with mechanical applications and their causes, and offers advice on how to avoid them. Further details and descriptions can be found in the section marked with a ?!

PROBLEM	CAUSE
The product is not ideally affixed onto the carrier material.	**1, 2, 3, 4, 5**
The fabric ripples or crinkles.	**2, 3, 4, 5**
The dies cannot be inserted in the fly press.	**3, 6, 7, 8**
It is not possible to unscrew the dies.	**6, 8, 9**
The crystals break.	**2, 3, 4, 5, 10**
The crystals do not hold in the upper die.	**12, 13**

CAUSE		RECOMMENDATION
1	The pressure may be too low.	Apply the product again using increased pressure; adjust the stop.
2	The carrier material is too thick or consists of too many layers.	With Rivets, select the smaller Back Part. With Rivets and Jeans Buttons a hole can be pre-punched.
3	The dies/spare parts for the upper die are defective or have been wrongly inserted.	Check the dies and if necessary, replace or repair them.
4	The product has been applied using the wrong dies.	Check to make sure that the right dies are being used for the product.
5	The dies have not been inserted correctly.	Make sure that the products are placed exactly in the right position on the dies. By turning the fly press handle slowly, it is possible to see if the upper and lower parts of the tool meet exactly.
6	The fly press and dies do not fit together.	Make sure that the fly press and the upper die have the same thread size (M6 or M8).
7	The upper die cannot be fitted.	Check the fastening screw on the upper die; it may have been screwed too tightly.
8	The die/spare part may be damaged.	Check the dies; if they are faulty use a new die or spare part.
9	The screw on the upper die has broken off.	Carefully try to loosen the screw using pliers. Oil from time to time; it may be necessary to center-drill the die.
10	The pressure may be too high.	Apply the product again using slightly less pressure; adjust the stop.
11	The die damages the crystal.	Check the dies and if necessary replace the upper die or the spare parts.
12	The vacuum hose is blocked or damaged.	Check and if necessary change the vacuum hose.
13	The vacuum hole in the upper die (Rivet) is blocked.	Clean the vacuum hole and if necessary change the spare part.

CARE INSTRUCTIONS

To ensure the highest quality and longest lasting SWAROVSKI ELEMENTS applications, proper care is essential.
The Swarovski Hotfix adhesive is characterized by its wash resistance and easy-care properties.

CARE INSTRUCTIONS

								
General Recommendations		Turn inside out, choose a gentle wash cycle and use mild laundry detergent To protect the crystals as much as possible, the use of a soft wash bag is recommended.			Turn inside out and use mild laundry detergent	Do not wash!	Chlorine bleach may be used	Do not use chlorine bleach!
Round Stones		✓						✓
Flat Backs No Hotfix		✓						✓
Flat Backs Hotfix	XILION Rose	✓						✓
	Creation Stones	✓						✓
	Creation Stones Plus*				✓			✓
	Ringed Roses	✓						✓
	Cabochon Round	✓						✓
Sew-on Stones		✓						✓
Fancy Stones		✓						✓
Beads		✓						✓
Crystal Pearls					✓			✓
Pendants						✓		✓
Self-adhesive Elements						✓		✓
Transfers	XILION Transfers	✓						✓
	Creation Transfers	✓						✓
	Creation Transfers Plus				✓			✓
	Pearl Transfers	✓						✓
	Diamond Transfers	✓						✓
	Metallic Transfers	✓						✓
	Mezzo Transfers	✓						✓
	Crystaltex Motives Transfers		✓					✓
Synthetics Hotfix	Crystal Fabric		✓					✓
	Crystal Rocks					✓		✓
	Crystal Transfabric		✓					✓
	Crystaltex/Crystaltex Chaton Bandings		✓					✓
Crystal Yarn					✓			✓
Plastic Trimmings	Basic Bandings	✓						✓
	Fishnet Bandings	✓						✓
	Decorative Bandings		✓					✓
	Plastic Components		✓					✓
Buttons, Fasteners & Zippers	Crystal Buttons	✓						✓
	Buttons with Plastic Shank		✓					✓
	Snap Fasteners & Decorative Buttons		✓					✓
	Jeans Buttons		✓					✓
	Buttons with Metal Shank		✓					✓
	Magnet Fasteners					✓		✓
	Zippers			✓				✓
Metal Trimmings	Chaton & Flat Back Bandings				✓			✓
	Rivets		✓					✓
	Stainless Steel Rivets		✓					✓
	Roses & Chaton Montées		✓					✓
	Crystal Pearl Rivets				✓			✓
	Rose Pins		✓					✓
Crystal Mesh					✓			✓
Cupchains & Findings						✓		✓
Knobs, Handles & Co						✓		✓

*see page 102

								
Turn inside out and dry at reduced temperature	Do not tumble dry!	Iron inside out using a silk/ polyester/viscose setting Ironing the textile inside out and using a pressing cloth is recommended	Iron inside out using a wool setting	Do not iron! Do not iron directly over the crystals	The textile can be gently dry-cleaned using perchlorethylene. Turn inside out To protect the crystals as much as possible, the use of a soft wash bag is recommended	The textile can be gently dry-cleaned using hydrocarbon. Turn inside out	The textile will withstand gentle professional wet cleaning. Turn inside out	The textile may not be dry-cleaned
✓				✓		✓	✓	
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GENERAL CARE INSTRUCTIONS

A light layer of dust is most easily removed with a clean, dry, antistatic cloth. It is best to also wear white cotton gloves, so as to avoid unsightly fingerprints. For heavier dirt, lukewarm water with a little dishwashing detergent will suffice. Ideally you should use a damp and clean microfiber or thin, lint-free cotton cloth. Gently wipe each individual crystal and dry with a clean cloth. It is also best to wear white cotton gloves here.

Please ensure that when cleaning with moisture, only cleaning agents that do not damage the surrounding material are used. By correctly cleaning them, you will restore the full reflectivity of your SWAROVSKI ELEMENTS.

Cloth

Certificates, Norms, Regulations, and Warning Notices

SWAROVSKI ELEMENTS satisfy the most important industry standards and norms:

Oeko-Tex® Certificate
All jewelry and textile components from our SWAROVSKI ELEMENTS product assortment (all product groups with exception to product group 20: knobs, handles & co.) conform to Class II (direct contact to skin) of the Oeko-Tex standard, an international safety standard for the textile industry with regard to specific health damaging substances.

EN71/3 and ASTM F963-03 Certificate
SWAROVSKI ELEMENTS fulfill the EN71/3 and ASTM F963-03 norms with reference to the allowable solubility of substances defined in aforementioned norms for children's toys.

Platinum Foiling and M-Foiling free of hazardous substances
The foilings used for SWAROVSKI ELEMENTS comply with CPSC 16 CFR 1303 regulations and do not exceed the lead limit for surface coatings.

Nickel Directive 94/27/EC
All standard SWAROVSKI ELEMENTS items fulfill the directive relating to testing processes for products that come in direct, intense contact with the skin and that release an amount of nickel below 0.5 µg/cm²/week, as prescribed by the European Parliament and Directive 94/27/EC from 30 June 1994, relating to restrictions on the marketing and use of defined substances.

⚠ General Warning
Loose crystals may present a small parts hazard to young children, particularly children under three years old. Depending on the size of the crystal and any attached material (such as glue, fabric, etc.), children may choke on, inhale, swallow or insert the crystal into their noses. With crystal-applied magnets, ingestion poses a particular risk of serious intestinal injuries.
The application techniques detailed in the Application Manual do not guarantee that crystals will not become detached after application. For each application, the manufacturer must determine whether the product meets the relevant requirements related to small parts hazards and assess any risk it may pose to small children.
Failure to follow Swarovski's care instructions may result in damage to the crystal, which could pose a risk of injury or other harm.

RoHS compliance
The RoHS Directive which is in effect since July 1, 2006 regulates the use of certain hazardous substances (e.g. lead, cadmium, mercury) in connection with electrical and electronic equipment.
Based on the exemption granted to the glass industry for bound lead in crystal glass, the majority of our crystal assortment* (including effects and Crystal Pearl coatings) may be continued to be used in the area of electric and electronic devices.

REACH
The Registration, Evaluation, and Authorization of Chemicals is a new EU directive that came into force on June 1, 2007. Under this regulation, manufacturers or importers of chemicals must pass on information about chemicals that are contained in the products they provide. This information needs to be provided both to customers and to the European Chemicals Agency (ECHA). Swarovski fulfils all the requirements of the REACH regulation.

Notice for Application on Packaging
The use of crystal that may contain substances like lead, cadmium or hexavalent chromium, on packaging is subject to legal restrictions in specific countries, including but not limited in regard to the total content of substances based on the proportion between crystal mass to the remaining weight of packaging. Customers are fully responsible for complying with these country-specific provisions and for passing on this information to their customers.

Consumer Product Safety Improvement Act H.R.4040 from 2008 (better known as the CPSIA)
The USA's Consumer Product Safety Improvement Act H.R.4040, better known as the CPSIA 2008 (Consumer Product Safety Improvement Act; http://www.cpsc.gov/about/cpsia/cpsia.html) was signed on August 14, 2008.
This American law restricts in stages the level of lead and six phenols permitted in children's products for the US market. Under the law, children's products are defined as consumer goods manufactured or intended for children aged 14 or under.
Since August 14, 2009 (one year after the law came into force) lead has been limited to 300 mg/kg (0.03%), and the restriction will be further reduced to 100 mg/kg (0.01%) from August 14, 2011.
For coatings and paints, the CPSIA has prescribed a limit of 90 mg/kg as of August 14, 2009, though this regulation was already well known due to the legislation of individual US states.
For customers who produce products that fall under the CPSIA, Swarovski offers a range of products that conform to the act.

* Colors not to be used: Citrine, Dark Red Coral, Fireopal, Garnet, Hyacinth, Light Siam, Palace Green Opal, Siam, and Sun

⚠ Warning for Crystal Tattoos
Crystal Tattoos may be applied on healthy skin only. Do not adhere to eyes or on mucous membranes. Crystal Tattoos are not recommended for young children. Loose crystals may present a small parts hazard to young children, particularly children under three years old. Depending on its size, if a crystal comes away, children may choke on, inhale, swallow or insert it into their noses.

⚠ Warning for magnetic products
Loose crystals may present a small parts hazard to young children, particularly children under three years old. Crystal-applied magnetic products pose a particular risk of serious intestinal injuries if ingested. Manufacturers must ensure that for every application where magnets applied with crystals are employed, the product fulfills the relevant requirements in terms of the danger of small parts, and that the risks posed to small children by such products are properly identified.

⚠ Warning for tableware
Application of loose crystals to tableware presents a potential risk of aspiration, choking, swallowing, or tooth damage should crystals become loose. To reduce this risk, crystals should never be applied to any surface likely to come in contact with food or the mouth, and crystals should never be placed on any tableware intended for use by children. Tableware with crystals intended exclusively for decorative use should be marked as such. To avoid dishwasher damage, tableware decorated with crystals should be washed by hand. The application techniques or suggestions in this manual do not guarantee that crystals will not come loose.
For each application, the manufacturer must determine whether the product meets relevant requirements related to small parts hazards or use in food contact items and assess any risk it may pose to users.
The use of crystals (which may contain substances defined as dangerous in local legislation) as well as adhesives on tableware is subject to regulatory restrictions in certain countries. The customer is fully responsible for complying with these country-specific provisions and shall defend, indemnify, and hold Swarovski harmless from any and all third-party claims based on product liability or otherwise relating to uses of Swarovski products and waives all its own claims against Swarovski.

Unsuitable Applications
SWAROVSKI ELEMENTS are intended for use in the fields of fashion, jewelry, accessories, textile products, and for interior décor. Due to their physical properties, SWAROVSKI ELEMENTS are unsuitable for other uses (e.g. gluing onto teeth, using crystals on or near mucous membranes and other unsafe uses). The customer shall defend, indemnify, and hold Swarovski harmless from any and all third party claims based on product liability or otherwise relating to uses of Swarovski products purchased by customer, and waives all its own claims.

Responsibility of user
Any oral, written or test-based advice that Swarovski provides regarding techniques for application of its products are recommendations based on Swarovski's current knowledge and the information provided by its suppliers. Such advice does not discharge customers from carrying out their own tests of techniques they propose to use and their suitability for the intended application. The application, use, and processing of these techniques and products are solely the user's responsibility.

Care instructions
Not following Swarovski care instructions can damage the product and thus lead to damage of textiles or other damage.

Please note that with all standard washing processes (whether carried out by a household washing machine or via dry cleaning) the rotation of the drum places significant mechanical forces on the textiles. The most important factor in ensuring a secure wash is correctly applying the product, without compromising its adhesion. The larger the product employed, and the more products are applied next to each other, the greater the risk of damage. SWAROVSKI ELEMENTS are made out of crystal or contain crystal and must thus be handled with suitable care.

In general, it is recommended that a soft wash bag is used and that the washer drum is filled to protect against damage. To maintain the quality of SWAROVSKI ELEMENTS, the following is also important: before washing, turn items of clothing inside out, select a gentle wash cycle, and use a mild detergent. According to DIN EN ISO 3758, our care instructions list all product groups, meaning each product used by customers must be assessed separately with regard to its washability and suitability for its purpose/the end product. The recommendations given by Swarovski reflect our current level of knowledge. Swarovski uses these recommendations to decide on the suitability of the product for textile applications. Customers are solely responsible for defining the recommended cleaning process for the end product, and must consider the care advice of Swarovski and any other manufacturers in doing so. The type of shape, cut, surface effect, and size, as well as the weight of the application and the quantity of SWAROVSKI ELEMENTS used has a significant impact on the cleaning process to be followed.

To avoid all risks, customers/textile cleaning companies should remove any large crystal stones, buttons and similar that have been stitched on before cleaning, and stitch them back on again afterwards.

Please visit our website for contact information: WWW.SWAROVSKI-ELEMENTS.COM/BUSINESS