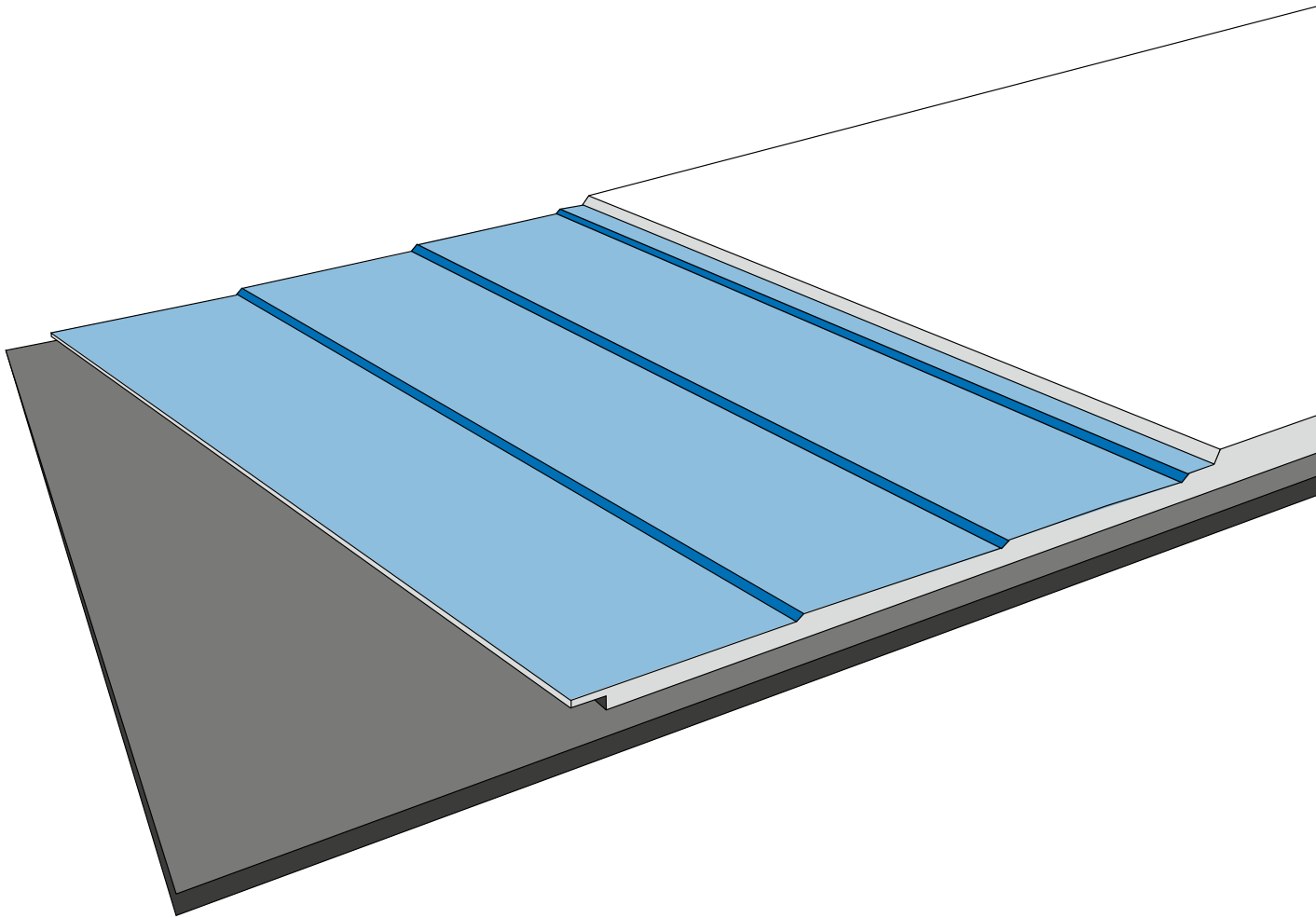




NILOS

Working instructions for splicing fabric belts using a cold process



NILOS GmbH & Co. KG
Reisholzstr. 15
40721 Hilden • Germany
Phone: +49 2103 951 - 0
Fax: +49 2103 951 - 209
info@nilos.de
www.nilos.de

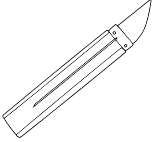
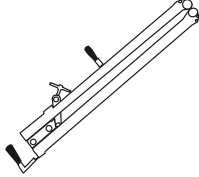
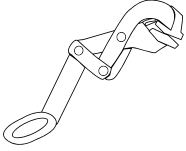
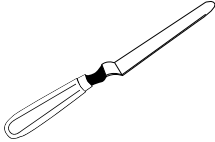
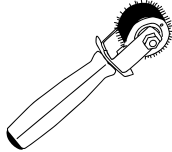
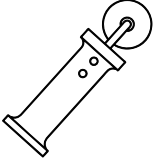

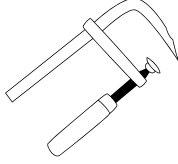


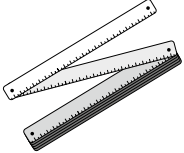
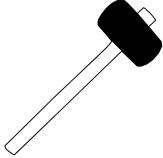
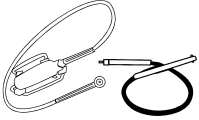
Contents

4 - 5	Material requirements and legend
6 - 7	Safety instructions
9	1. Preparations
	2. Preparing the ends of the belt
10	2.1 Splicing guidelines
10	2.2 Splice lengths in accordance with DIN
10	2.3 Belt slice for conveyor belts
10	2.4 Running direction
11	2.5 Plotting the belt splice
11	2.6 Conveyor belts with three plies
11	2.7 Activating the adhesive
	3. Processing the ends of the belt
12 - 13	3.1 Work steps for producing the splice
14 - 15	4. Splicing report

Working instructions for splicing fabric belts - cold process



Material requirement

Material	Item No.	Material	Item No.	Material	Item No.
	K 0605 Cobbler's knife		K 0623 Pulling hook		K 0482 Stop bracket
	K 0661 + K 0661A Chalked string with powder		K 0745 Pliers		K 0642 - K 0644 Double roller
	K 0646 Wire grip		K 0609 Angled blade		K 0634 Whetstone with wooden handle
	K0792-A + K0731 Rotary sander for working rubber		K 0747 / 62 / 61 Wheel wire brushes		K 0613 Piercing roller
	H 0612 Knurled roller		K 0615 Flat roller		K 0654 Screw clamp
	K 0627 Hand brush		K 0620 Rubber scissors		K 0607 Layer-separating knife
	K 0624 Folding rule		K 0628 Rubber hammer		Available upon request TOPGUM TD / TDG Filling layer with adhesive covering on one side
	K 0740 + k 0748 Sanding machine, flexible shaft				

Working instructions for splicing fabric belts - cold process



Material requirements and legend

Material	Item No.	Material	Item No.	Material	Item No.
	H 0050-K TOPGUM TL-T50, 700 g can Two-component cold adhesive, benzine-based		H 0259-K TOPGUM TL-T60, 700 g can Two-component cold adhesive, benzine-based		H 0257-K TOPGUM TL-T70, 1000 g can Two-component cold adhesive, dichloromethane-based
	H 0315 Type B, 0.5 L Cleaning agent, benzine-based		H 0050-H Universal hardener, 40 g bottle		K 0626 Brush
	K 0658 Safety goggles		K 0662 Protective gloves		

Legend

	Processing time		Stir		Add hardener - activate cold adhesive
	Coat thinly and evenly		Ready for processing		Test on back of hand
	Remove protective film				

Working instructions for splicing fabric belts - cold process



Emergency information
Phone: +49 173 5306827

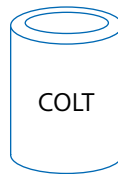
TOPGUM TL-T50/60

Safety instructions:

P 210: Keep away from heating, spark, open flames, hot surfaces. Do not smoke! **P 280:** Wear safety gloves/safety clothes/safety glasses and face mask. **P 273:** Avoid effluent on environment. **P 243:** Avoid electrostatic charging. **P 301+310:** IF SWALLOWED: Contact poison center or doctor immediately. **P 303+361+353:** If contact with skin or hair: Remove all wet clothes and wash/shower skin/hair. **P 305+351+338:** Rinse with water for a few minutes. Remove lenses and rinse again. **P 331:** Do not bring to ana-catharsis.

Danger instructions:

H 225: Liquid and vapours inflammable. **H 315:** Skin irritation possible. **H 319:** Provoke strong irritation of eyes. **H 336:** Can bring sleepiness and numbness. **H 304:** Can bring death if swallowed. **H 410:** Toxic for water organism by longtime effect.



Danger



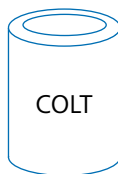
TOPGUM TL-T70

Safety instructions:

P101: If medical advice is needed, have product container or label at hand. **P102:** Keep out of reach of children. **P261:** Avoid breathing dust/fume/gas/mist/vapours/spray. **P280:** Wear protective gloves/protective clothing/eye protection/face protection. **P273:** Avoid release to the environment. **P302+P352:** IF ON SKIN: Wash with plenty of soap and water. **P305+P351+P338:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. **P308+P313:** IF exposed or concerned: Get medical advice/attention. **P391:** Collect spillage. **P405:** Store locked up.

Danger instructions:

H302+H312+H332: Harmful if swallowed, in contact with skin, if inhaled. **H 315:** Skin irritation possible. **H317:** May cause an allergic skin reaction. **H 319:** Provoke strong irritation of eyes. **H336:** Can bring sleepiness and numbness. **H341:** Suspected of causing genetic defects. **H350:** May cause cancer. **H373:** May cause damage to organs (or state all organs affected, if known) through prolonged or repeated exposure. **H412:** Harmful to aquatic life with long lasting effects.



Danger



Working instructions for splicing fabric belts - cold process



Poison Control Center Berlin
Phone: +49 30 19240



Danger

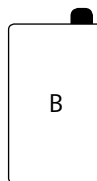
Universal hardener

Safety instructions:

P101: If medical advice is needed, have product container or label at hand. **P102:** Keep out of reach of children. **P232:** Protect from moisture. **P270:** Do not eat, drink or smoke when using this product. **P273:** Avoid release to the environment. **P280:** Wear protective gloves/protective clothing/eye protection/face protection. **P284:** Wear respiratory protection. **P305+P351+P338:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. **P405:** Store locked up.

Danger instructions:

H302+H312+H332: Harmful if swallowed, contact with skin or by inhalation. **H312+H332:** Harmful in contact with skin or by inhalation. **H319:** Causes serious eye irritation. **H332:** Harmful if inhaled. **H336:** May cause drowsiness or dizziness. **H351:** Suspected of causing cancer. **H372:** Causes damage to organs. **H410:** Very toxic to aquatic life with long lasting effects.



Danger

Cleaning agent type B

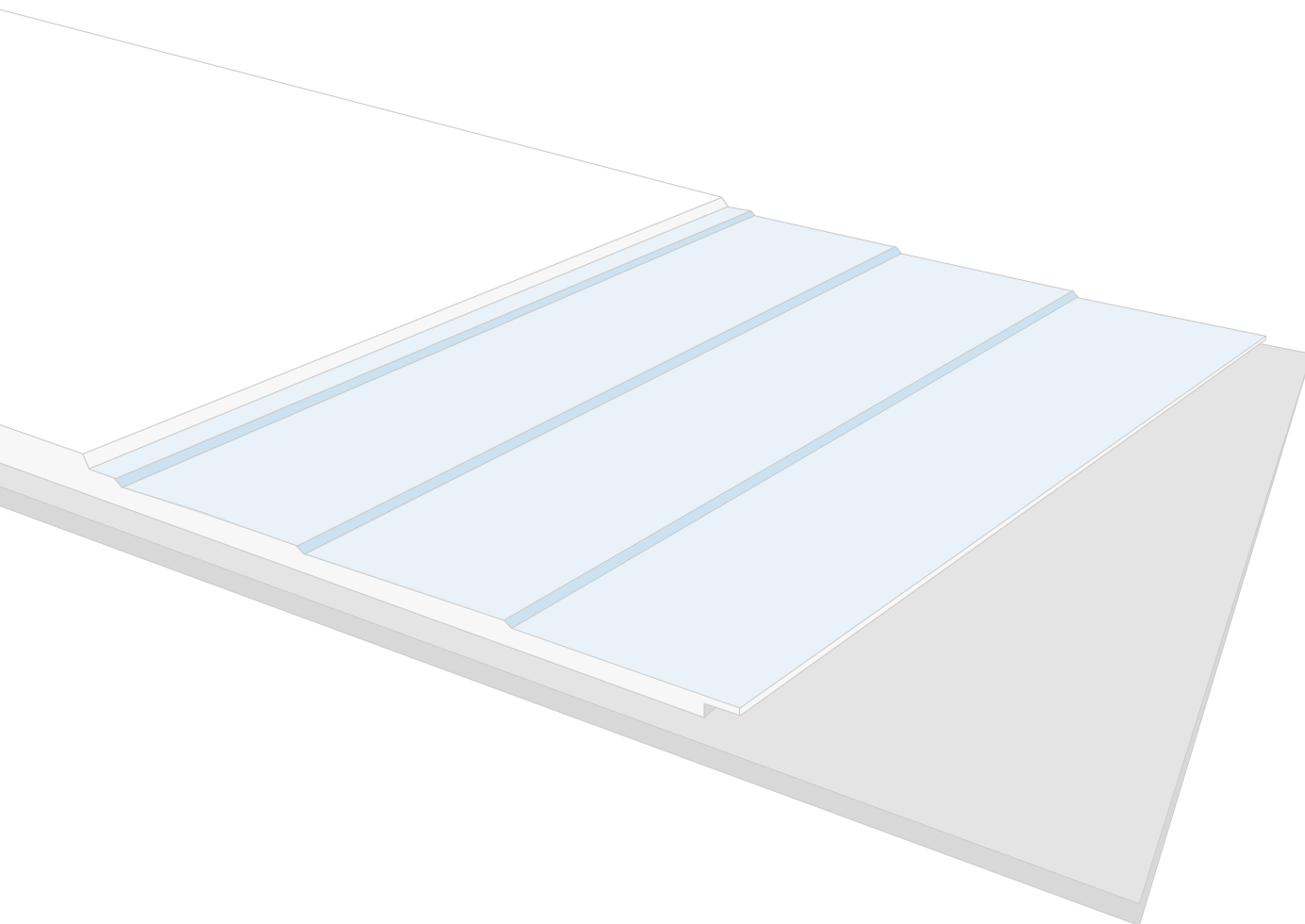
Safety instructions:

P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking. **P243:** Take precautionary measures against static discharge. **P261:** Avoid breathing mist/vapours/spray. **P280:** Wear protective gloves/protective clothing/eye protection/face protection. **P273:** Avoid release to the environment. **P301+P310:** IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. **P303+P361+P353:** IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. **P305+P351+P338:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. **P304+P340:** IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. **P331:** Do NOT induce vomiting.

Danger instructions:

H225: Highly flammable liquid and vapour. **H315:** Causes skin irritation. **H336:** May cause drowsiness or dizziness. **H304:** May be fatal if swallowed and enters airways. **H411:** Toxic to aquatic life with long lasting effects.

Working instructions for splicing fabric belts - cold process





1. Preparations

1.1 Belt transport

For transportation, conveyor belts are usually wound onto wooden cores or, for greater loads, steel cores. (Steel cores are only used in the case of excessive stress and multiple-use, however.) To protect the belt edges and cover plates from excessive sun exposure, you can wrap up the entire belt coil in a film that will also simultaneously protect the belt from transport damage. The belts are often dispatched on drums with no flanged pulleys. This applies specifically to dispatches overseas, as special protection and added security are often desired for the belt edges of transport coils. The belt is then secured against slipping out of place too.

1.2 Loading and unloading

Avoid damaging the belt edges and cover plates when loading and unloading using forklifts, cranes, fixings, etc. Remember before unloading that the belt must be rolled counter to the winding directions. This saves you from having to reposition the belt. If the belt is especially heavy, set distancing beams between the cords and place old belt material or something similar underneath the coil if the surface is sharp-edged.

1.3 Storage

To prevent premature ageing, the formation of cracks, hardening and swelling, protect the belt from the following during storage:

1. Heat and sun exposure
2. Mechanical damage
3. Contact with chemicals, grease and oils
4. Moisture (especially if storing outdoors)

When storing, please observe DIN 7716 for rubber products, guidelines for storage, maintenance and cleaning.

1.4 Jacking up the belt coil

Fit the belt reels and winding shafts to the belt weights and coil diameters. Use cable drum winches with appropriate load-bearing capacity when jacking up. If your belt is heavier, and if it is delivered in a spiral angle, please contact the belt manufacturer regarding the details for jacking up.

1.5 Feeding in the belt

Prepare the start of the belt according to the size. Lift a narrow / short belt using a cable hand winch and in the case of heavy belts, fasten a draw bar at the start of the belt so that it can be connected to a pulling cable. Heavy belts require a motor-driven cable winch or cables in conjunction with a tractor unit such as a lorry or tracked vehicle. Tie up the corners at the start of the belt in the form of a trough before the feed-in or cut them back diagonally.

Safety instructions for descending or ascending areas of the facilities: Install a retaining device. If the brakes should fail or the cord should rupture during the feed-in process, significant damage and safety risks could occur.

2. Preparing the ends of the belt

2.1 Splicing guidelines

When preparing for vulcanisation, pay attention to the corresponding splicing guidelines that apply to the type of belt you are working with. These guidelines can be found in DIN 22102 - 3.

For a better overview, please refer to the following table:

2.2 Splice lengths in accordance with DIN 22103 - 3

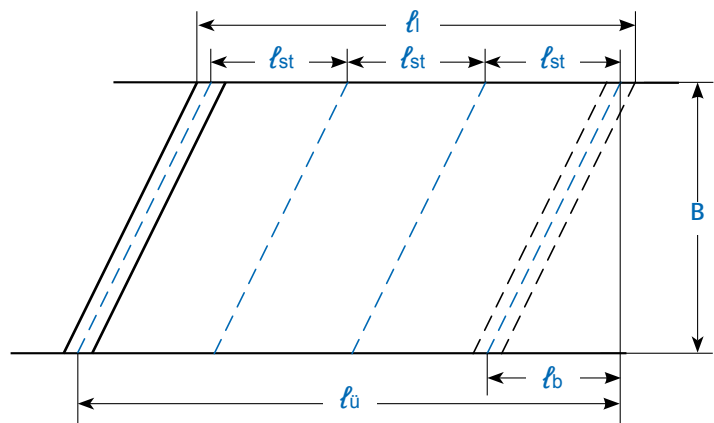
Type of belt as per DIN	No. of steps	Minimum step length ¹ l_{st}	Splice length ¹ l_l	Breaking force of a ply N/mm
315/3	2	150	300	80 - 100
400/3		200	400	125 - 160
500/3		200	400	125 - 160
630/4	3	200	600	125 - 160
800/4		250	750	200 - 250
1000/5		250	1,000	200 - 250
1250/5	4	250	1,000	200 - 250
1,600/5		300	1,200	315 - 400
2,000/5		300	1,200	315 - 400
2,500/5		350	1,400	500 - 630
3,150/5		350	1,400	500 - 630

2.3 Belt splice for conveyor belts (with two or more plies and bonding layers)

l_b = bevel
 l_l = splice length
 l_{st} = min. step length
 B = belt width

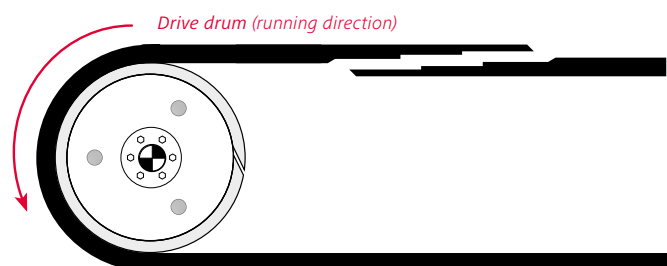
If $b = 16^\circ 42'$ → $l_b \approx 0.3 \cdot B$

If $b = 22^\circ$ → $l_b \approx 0.42 \cdot B$

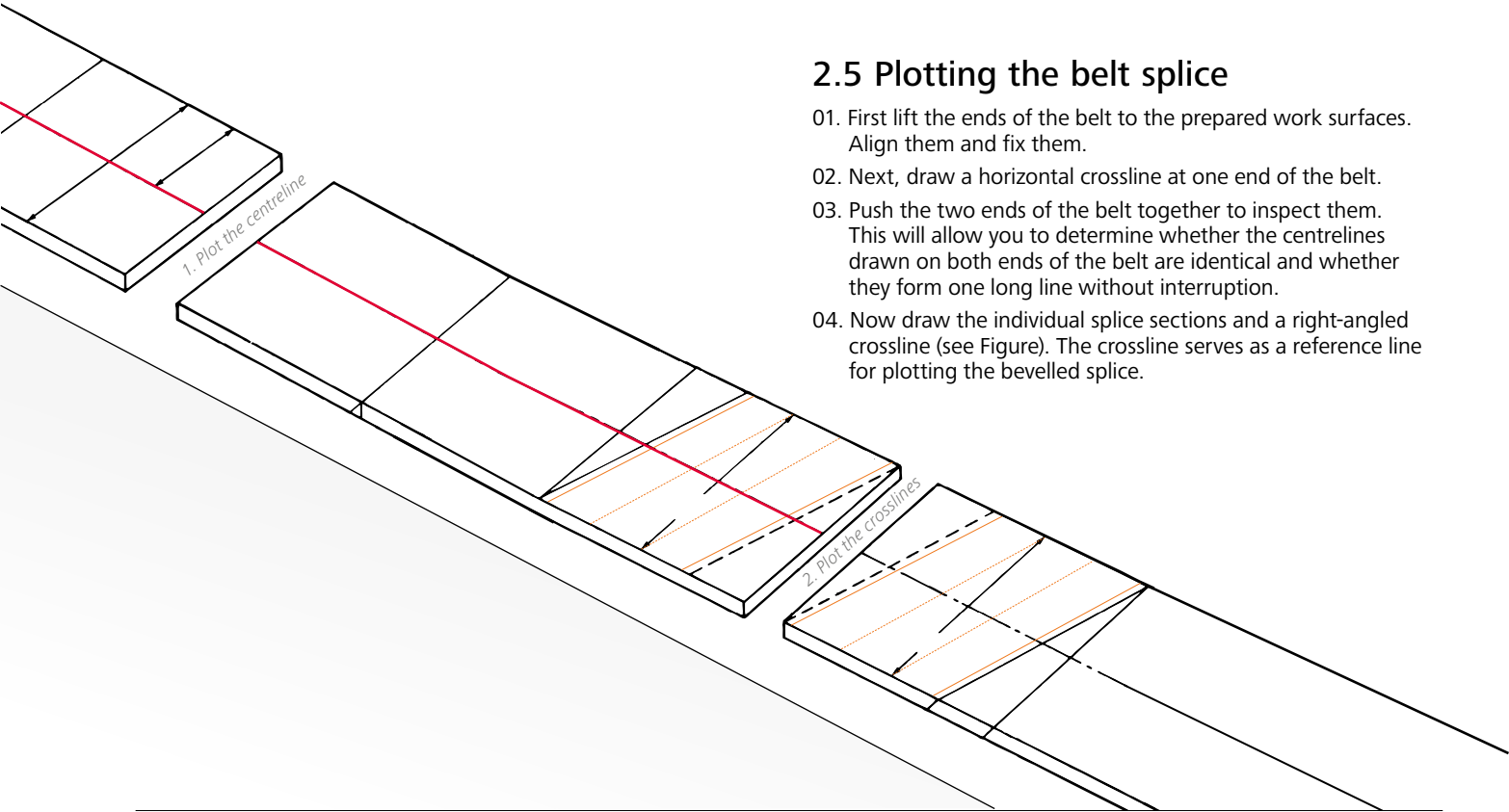


2.4 Running direction

Please observe the running direction of the conveyor belt.



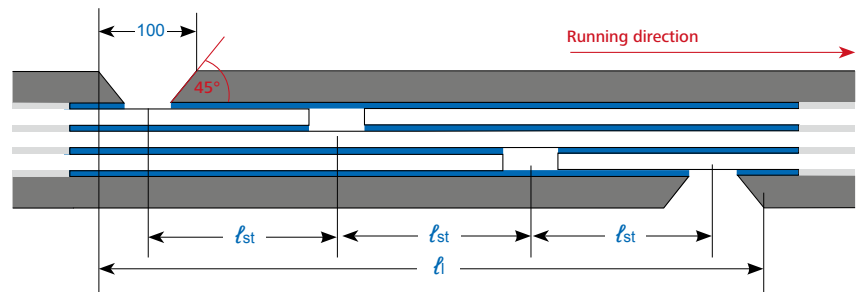
Working instructions for splicing fabric belts - cold process



2.5 Plotting the belt splice

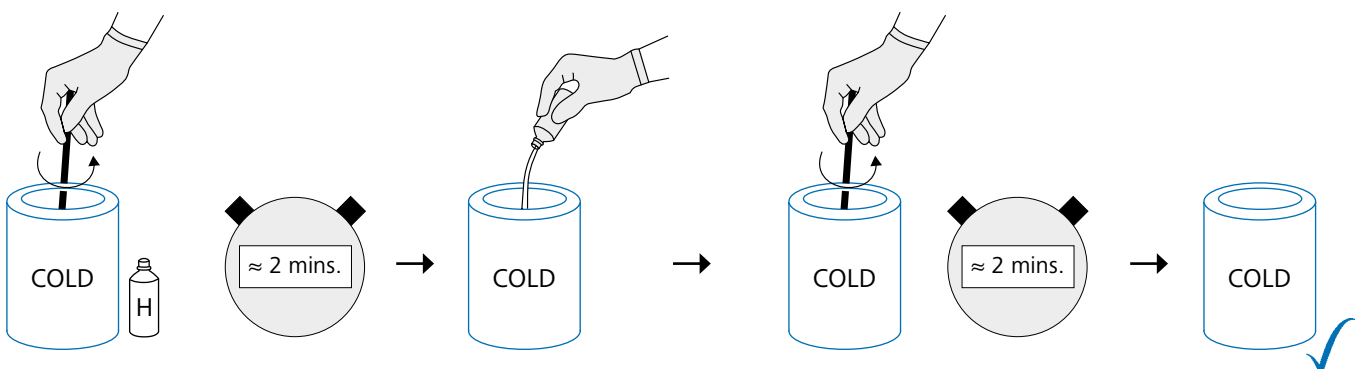
01. First lift the ends of the belt to the prepared work surfaces. Align them and fix them.
02. Next, draw a horizontal crossline at one end of the belt.
03. Push the two ends of the belt together to inspect them. This will allow you to determine whether the centerlines drawn on both ends of the belt are identical and whether they form one long line without interruption.
04. Now draw the individual splice sections and a right-angled crossline (see Figure). The crossline serves as a reference line for plotting the bevelled splice.

2.6 Conveyor belts with three plies: Two-step splice



2.7 Activating the adhesive

Stir the adhesive for 2 mins.
Thoroughly mix the hardener with the adhesive for 2 mins.

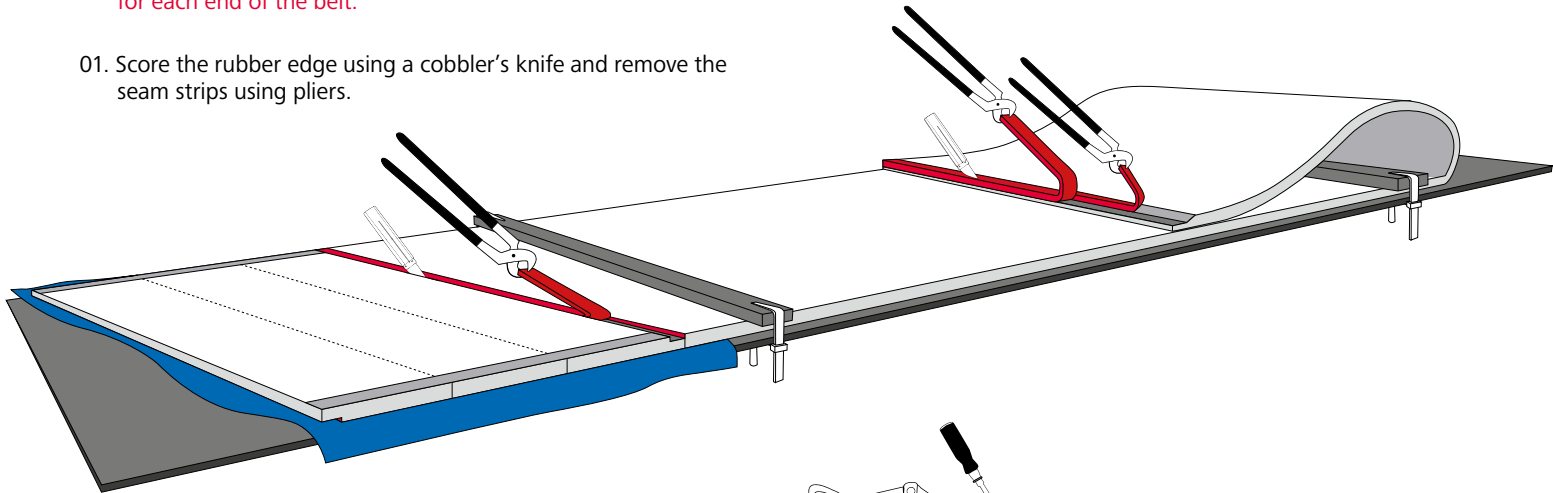


3. Processing the ends of the belt

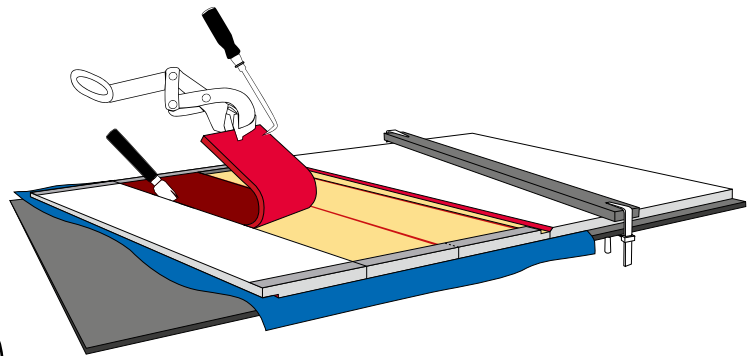
3.1 Work steps for producing the splice

The following work steps must be performed mirror-inverted for each end of the belt.

01. Score the rubber edge using a cobbler's knife and remove the seam strips using pliers.

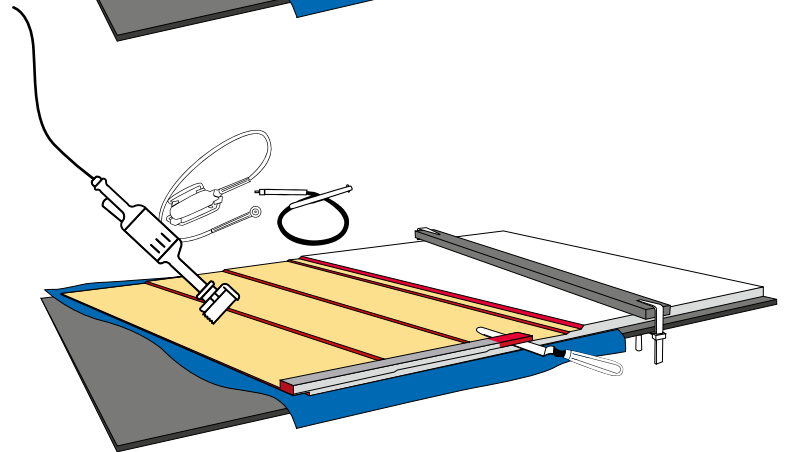


02. Next, score the layer using a layer-separating knife and peel up the steps using a wire grip or a pulling hook.

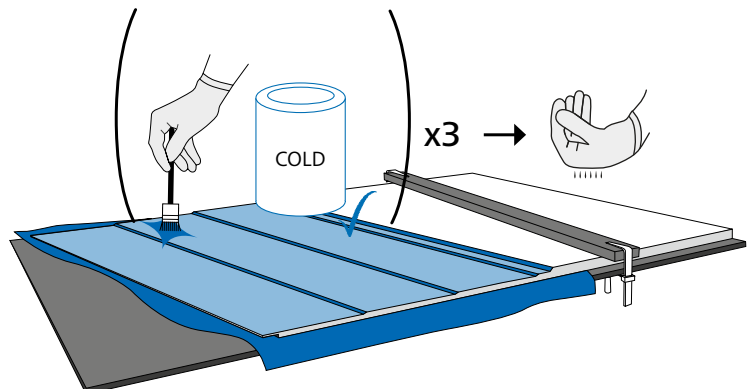


Always take care to ensure that the fabric is not harmed or damaged!

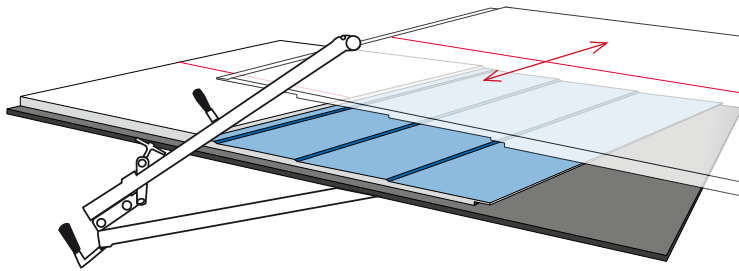
03. Cut the rubber edges off of the step height accordingly using an angled blade. Carefully remove loose rubber material and then clean it up using a hand brush. Thoroughly brush off the dust. Carefully roughen the rubber edge, the spliced bevel and approx. 30 - 50 cm above the splice with a wheel wire brush.



04. Coat both ends of the belt thinly and evenly with the activated hot vulcanisation solution, depending on the respective quality of the rubber, and allow the coating to dry completely. Repeat the procedure at each end of the belt two more times.

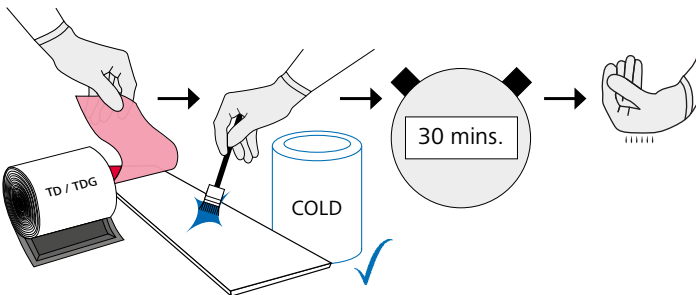


Working instructions for splicing fabric belts - cold process



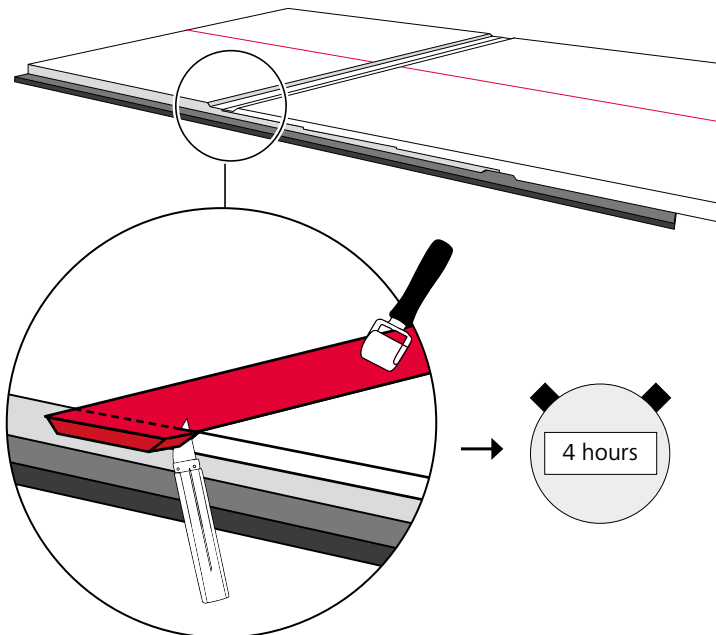
05. Align and bring together both ends of the conveyor belt taking into account the reference line (centre line) and use the hand roller to roll from the centre towards the outside edges in order to expel air cushions.

06. Roll over the entire splice area using the double roller from the centre towards the outside in order to avoid air cushions.



07. Prepare the filling layer strips TD / TDG for the bridges in the rubber cover plate on both the top and bottom sides. Remove the protective film if necessary, and coat the holding surface with adhesive. Allow the adhesive to dry and then test it with the back of your hand. The surface must be tacky.

08. Fill the two bridges with the TOPGUM TD / TDG strips, roll over everything carefully using a hand roller and cut the edges extending past the sides using a cobbler's knife.



Wait at least 4 hours before commissioning the belt. NILOS recommends a curing / hardening time of 12 hours.

3.14 Splice report

Complete the splice report fully and sign it. The customer must countersign the report. You will find the report on the following pages (page 14 - 15).

Allgemeine Informationen / General informations

Kunde / Customer

Herstellungsbeginn / Start of cure

Gerät/Gurttörderer / Belt

Herstellungsende / End of cure

Servicefirma / service company

Auftragsnummer / Order Number

Details der Gurtverbindung / Details about the belt splice

Fördergurt / Conveyor Belt

Gurtnummer / Number of Belt

Hersteller / Producer Company

Anzahl Gewebeeinlagen / Number of plies

Auftragsnummer / Order Number

Deckplattenstärke / Thickness of Top/Bottom-Cover

Materialnummer / Material Number

Gurttyp / Type of Belt

Gurtverbindung / Splice of Belt

Festigkeit EP / Tension of plies

Verbindungstyp / Type of splice

Vulkanisierpresse / Vulcanizing Equipment

Hersteller/ Typ / Producer/ Company

Verbindungslänge / Length of splice _____ mm

Eigentümer / Owner

MPa

Stufenlänge / Step length _____ mm

Hydraulik/ Wasserdruck / Hydraulic/ Air-Bag

Stück / Piece

Äußere Bedingungen / Environmental

Traversenpaare / Number of Cross-beams (pair)

Zelt / Tent

Wetter / Weather

Heizfolge / Heating

Außentemperatur °C / Outside Temperature F

Heizbeginn / Start up time

Uhrzeit / Time

Temperatur °C / Temperature F

Vulk.-beginn / Start of cure

Uhrzeit / Time

Temperatur °C / Temperature F

Vulk.-ende / End of cure

Uhrzeit / Time

Temperatur °C / Temperature F

Qualitätskontrolle/ Unregelmäßigkeiten / Quality Control/ Irregularities

Servicefirma / Service Company

Schicht oder Tätigkeit / Shift or activity

Datum / Date

Unterschrift / Signature

Schicht oder Tätigkeit / Shift or activity

Datum / Date

Unterschrift / Signature

Schicht oder Tätigkeit / Shift or activity

Datum / Date

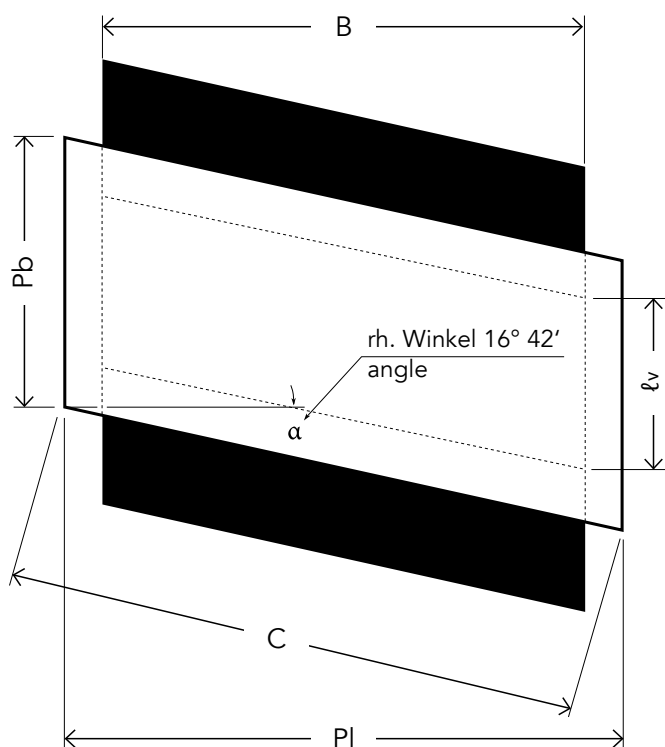
Unterschrift / Signature

Arbeitsvorbereitung / Work preparation

Datum / Date

Unterschrift / Signature

Protokoll über die Herstellung der Fördergurtverbindung *Report of making of a splice*



Größenbestimmung der Heizplatte *Dimensions of the heating plate*

Pb = Plattenbreite / <i>plate width</i>	_____	mm
Pl = Plattenlänge / <i>plate length</i>	_____	mm
C = Kantenlänge / <i>edge length</i>	_____	mm
B = Bandbreite / <i>belt width</i>	_____	mm
lv = Verbindungslänge / <i>splice length</i>	_____	mm



NILOS

The technical information is based on latest state of technology.
We reserve the right to make structural and design changes in the
interest of progress. We ask for your understanding that no liability
can be assumed for printing errors or mistakes. Reproduction or
reprinting, in whole or in part, is not permitted without our
express permission.

NAA-VGG-K_EN
This renders all previous instructions invalid.

NILOS GmbH & Co. KG
Reisholzstr. 15
40721 Hilden • Germany
Phone: +49 2103 951-0
Fax: +49 2103 951-209
info@nilos.de
www.nilos.de