

PT. RBK International (Rubbex Conveyors & Engineering)

INSTRUCTIONS FOR HOT SPLICING OF MULTIPLY BELTING

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1. Determining the belt over length for the splice

The over length of the splice can be determined as follows (see figure 1):



Figure 1. Schematic presentation of the required over length

Over length $Z = 0.3 \times B + (n-1) \times S$ (For normal step splice) $Z = 0.3 \times B + n \times S$ (For Overlap splice)

> Z = Over length (mm) B = Belt width (mm) n = Number of plies S = Step length (mm)

2. General information for building a Multiply splice

The splice is the weakest spot in a conveyor belt, therefore it is important to make the splice with great accuracy. It is necessary to make the splice according to the following procedure and the correct materials are being used. The following names are used for the splicing materials:

- Dundisol : Solution
- Dunlofol : Unvulcanized Adhesion rubber
- Duncover : Unvulcanized Cover rubber

All materials are marked with an expiry date, never use materials which have exceeded the expiry date.

Remark: For splicing Multiply belts in Deltahete quality see also the additional instructions on page 12.



3. Methods for splicing of Multiply belts

For different types of Multiply belting there are different types of splicing:

- Standard Superfort splice
- Overlap splice for 2 ply Superfort, Dunloflex and Trioflex
- Superfort Rigitra splice
- Chevron splice

3.1. Schematic presentation of the standard Superfort Splice $|a|^{30}$



3.2. Two possibilities of an Overlap splice for 2 ply Superfort, Dunloflex and Trioflex





3.3. Schematic presentation of the Superfort Rigitra splice



The splice should be made perpendicular to the belt length.

3.4. Schematic presentation of the Slider belt/Sawmill splice





The step length is given in the table on page 8, please note that the step with the sliderback must be 20 mm longer (S+20)! The rubber at this 20 mm overlap has to be pealed off or buffed until just above the fabric. When building the splice this 20 mm overlap has to be covered with dunlofol as the rest of the step.

3.5. Schematic presentation of a Chevron splice.





3.6. Additional instructions for High tension ratings.

The following additional instructions are to be followed for the belt types: EP 2000/4, 2500/4 and 2500/5, 3150/5 and 3150/6. These instructions can also be used in other cases, for more information please consult our Application Engineering Department.

- After the preparation of the steps in the splice, these surfaces have to be coated with Chemosil 222. Do not dilute!



- Than apply Dundisol as normal
- The splice kit contains special high adhesion Dunlofol
- The filler strips must be made with a special 40 mm wide fabric, see the drawing below. It is a special tacky fabric which can be used without Dundisol.





3.7 Step lengths

The length of the steps varies with the belt type. Fenner Dunlop recommends the following minimum step lengths:

Belt type	Step Length S (mm)	Belt type	Step Length S (mm)	Belt type	Step Length S (mm)
S 125/2	120	S 630/4	200	S 1600/4	315
S 200/3	120	S 630/5	160	S 1600/5	315
S 250/2	160	S 800/3	250	S 1600/6	250
S 250/3	120	S 800/4	250	S 2000/4	350
S 315/2	200	S 800/5	200	S 2000/5	315
S 315/3	160	S 1000/3	315	S 2000/6	315
S 315/4	120	S 1000/4	250	S 2500/5	350
S 400/3	160	S 1000/5	250	S 2500/6	315
S 400/4	160	S 1000/6	200	S 3150/5	350
S 500/3	200	S 1250/4	315	S 3150/6	350
S 500/4	160	S 1250/5	250		
S 630/3	250	S 1250/6	250		

Superfort (Starflex):

Dunloflex and Trioflex:

Belt type	Step Length S (mm)	Belt type	Step Length S (mm)
D 160	120	T 315	160
D 200	160	T 400	160
D 250	160	Т 500	200
D 315	200	T 630	250
D 400	250	T 800	250
D 500	250	Т 1000	315
D 630	315	T 1250	315
D 800	315		



4. Preparation of the splice

The following photo session shows the preparation of a step splice. For the Over length formula see page 3, for the step length see page 7.



Photo 1. Marking the belt

Mark the belt with:

- The step length(s)
- (+ 0.3 x B)
- The filler-strip

The amount of steps depends on the amount of fabric plies.

Follow the same procedure for the bottom cover of the other belt-end.

Cut the top cover until first fabric ply.



Follow the same procedure for the bottom cover of the other belt-end.

Photo 2. Cutting the filler strip



Photo 3. Cutting under an angle of 45°

Cut the cover under angle of at least 45°.

Follow the same procedure for the bottom cover of the other belt-end.





Photo 4. Pealing of the cover rubber



Photo 5. Cutting the fabric plies

Peal off the existing cover- rubber.

Follow the same procedure for the bottom cover of the other belt-end.

Cut through the first fabric ply up to the second fabric ply.

Note!: Do not touch the under laying (second) fabric layer

This has to be repeated when more steps are needed.

Follow the same procedure for the bottom cover of the other belt-end.



Photo 6. Peal of the fabric (1)

Peal off the fabric sufficient far to fit in the frog clamp.

When the frog clamp is not available, peal off the fabric in small strips by hand in the longitudinal direction.

Follow the same procedure for the bottom cover of the other belt-end.





Peal off the steps

Follow the same procedure for the bottom cover of the other belt-end.

Photo 7. Peal of the fabric (2)



Apply solution to the steps

Follow the same procedure for the bottom cover of the other belt-end.

Photo 8. Apply solution



Apply a layer of Dunlofol to one belt-end. Roll the Dunlofol tight onto the splice area to prevent airtraps between the carcass and the Dunlofol. Leave the area of the filler-strip free.

Photo 9. Apply Dunlofol





Align the belt-ends and match them together. The belt-ends have to fit exactly.

Photo 10. Aligning and matching the belt-ends



To prevent air-traps, roll the beltends together from the center to the outside of the belt, to enable the air to come out.

Photo 11. Roll the belt-ends together



Photo 12. Buffing the existing cover-rubber

Buff the existing cover-rubber, over a width of approx. 5 cm directly aside the filler-strip, this allows a higher adhesion.

Follow the same procedure for the bottom cover of the other belt-end.





Apply solution to the area of the filler-strips.

Photo 13. Apply solution

Additional Instruction for ROS-quality: Do not apply solution to the existing cover-rubber.





Bring in one layer of Dunlofol and the needed amount of Duncover and roll it tightly to prevent airtraps.

The thickness should be approx. 0.5 mm thicker than the belt thickness

Photo 14. Bring in the filler strip



Another method of making a filler strip:



4.1 Vulcanisation

The pressure during vulcanisation must be approx. 60 N/cm² (6 bar). The vulcanisation temperature is between 150°C and 155°C. This does not apply for the Deltahete quality, see the additional instructions.



Figure 2. the temperature during vulcanisation

The vulcanisation time starts when a temperature of 150°C is reached (see figure 2). This does not apply for Deltahete quality, see the additional instructions.



Qualities	Belt thickness (mm)				
	to 10	10 - 15	15 — 20	20 - 30	
RA, RS, RE, RES and RAS	20	25	30	40	
Betahete	20	25	30	40	
Starhete	40	45	50	60	
ROM, MORS, ROS	20	25	30	40	
BVX, BV ROM, BV ROS	25	30	35	45	

Table 1. Vulcanising time in minutes



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Temperature	155°-160°C		
Belt thickness (mm)	10	10-15	15-20
Vulcanizing time (min.)	40	45	50

