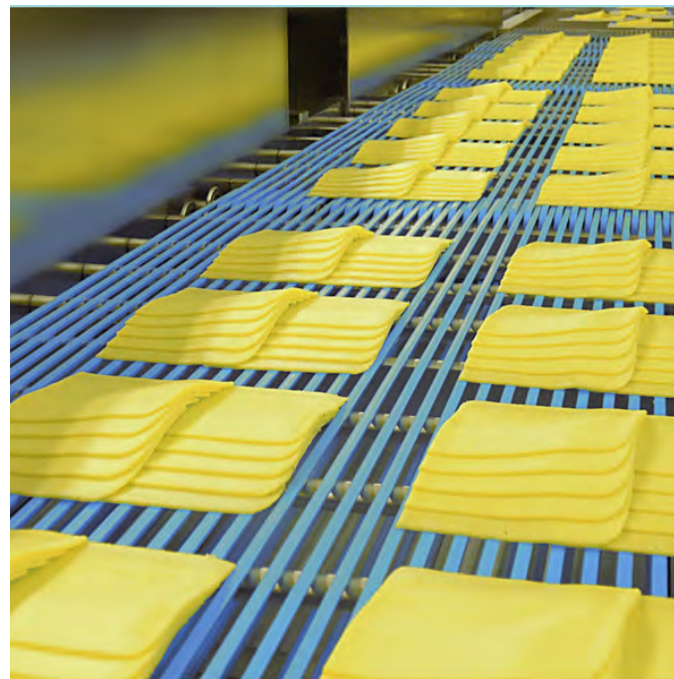
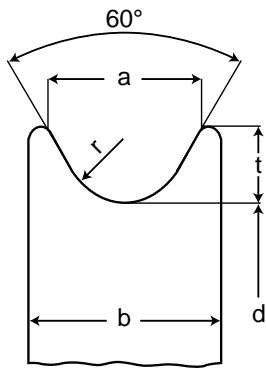


Installation of Solicord Belts



Installation of Solicord Belts

Pulleys for round belts



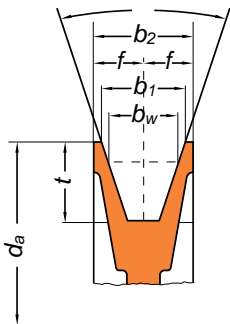
Recommended pulley dimensions – dimensions in mm

Belt Ø	2	3	4	4.8	5	6	6.3	7	8	9.5	10	12	12.5	15	18	20
a	4.5	5.5	7	8	8	10	10	11	12	14.5	15	18	18.5	23	28	30
b	6.5	8	10	12	12	14	14	15	16	19	19	22	23.0	27	32	36
t	2.5	3	3.5	4	4	5	5	5.5	6	7	7.5	9	9	12	14	15
r	1.4	1.9	2.5	3	3	3.5	3.5	4	4.5	5.5	5.5	6.5	7	8	9.5	11

Please select the appropriate minimum pulley diameter according to the datasheets. The best qualified materials for pulleys are steel, high-alloyed steel, aluminum or

Polyamid when it comes to plastic. Please keep in mind the low friction coefficient μ when using plastic material.

Pulleys for V- belts



For Solicord Belts V-belts according to DIN 2215 / ISO 4184 pulleys for V-belts according to DIN 2217 / ISO 4183 have to be used.

Profile acc.to DIN 2215	6	8	10	13	17	22	32
Global Standard acc. to ISO 4184	Y	M	Z	A	B	C	D
Upper width b (mm)	6	8	10	13	17	22	32
Height h (mm)	4	5	6	8	11	14	20
Lower width u (mm)	3.3	4.55	5.9	7.5	9.4	12.35	18.25
Pulley angle	< 36-38°						
Groove width b1	6	8	10	13	17	22	32
Groove depth t (mm)	--> depending on how much the profile should stick out above the upper pulley edge						
	h +1.0 to +1.5 mm						

Note

In the field it is common to see round belts being run in V-belt pulleys. You need to know that this is not a perfect combination regarding geometry and that it is always recommended to use round belt pulleys instead.

The disadvantage of this "combination" is a typical wear in the belt flank where the belt is in contact with the pulley. There is also a risk that the round belt will be clamped by the V-shape of the pulley and thus stick in the V-shape. This often can

lead to additional belt elongation causing the belt to skip or wobble. Under such conditions you will experience reduced lifetime of your Solicord Belt. If you decide to use V-belt pulleys anyhow please choose a V-belt pulley design that allows the round belt also to touch the bottom of the pulley groove to minimize problems.

Regarding selection of pulley material we recommend in general to use for the drive pulleys steel or aluminum

to have good grip with the TPU/ TPE belts. Then you have the best conditions to transmit maximum power to drive the belt. Please note that non-coated aluminum pulleys can lead to a discolouring of the belts. For supporting and deflection pulleys and supporting or guide rails we recommend using low friction materials like PE or HDPE to minimize friction.

You can find values for the coefficient of friction in the table below.

Pulley for round belts and V-belts

Drive pulley and deflection pulley.

The drive pulley and deflection pulley should be designed according to DIN 2217.

Please choose the minimum pulley diameters according to the values listed in tables. We have selected an appropriate shore hardness for conveying at low speeds (one Meter per second).

It is recommended to always place the drive pulley when possible at the head of the conveyor so the product is pulled through the system.

“What impact has the pulley diameter on the belt?”

The pulley diameter has a major impact on the lifetime of a belt. The minimum pulley diameters or larger as specified in the datasheets should be applied.

If the pulley diameter is too small this always reduces lifetime considerably due to resulting extreme bending cycles leading to early material fatigue. The specified minimum pulley diameters always refer to a 180°

wrap. The wrap angle indicates by how many degrees the belt will be guided around the pulley and thus has contact with the pulley.

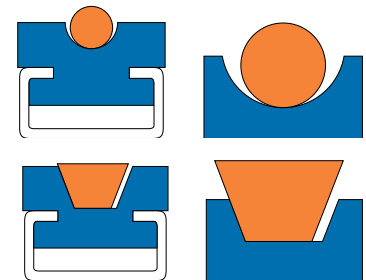
Sliderbeds and connectors

Sliderbeds and supporting rollers.

Grooved pulleys, supporting rolls and sliderbeds are recommended to keep the belting in position to carry the load. When guiding V belts, the V belt groove should be designed so that the belt is being supported on the bottom of the groove and is only allowed to touch one side of the groove at a time to avoid jamming.

The diameter and number of the required supporting rolls depends on

the length of the conveyor as well as on the weight and dimensions of the goods to be conveyed. Supporting sliderbeds with a smooth surface can be grooved to support transport belts. The dimensions of the groove should be such to prevent the belt from jamming. The sliderbeds should be made of materials with good sliding qualities (PE – HDPE). If you are looking for a supplier please contact us, we can give you a recommendation.

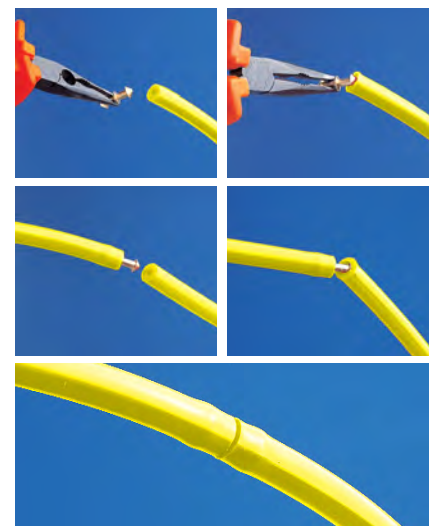


Fitting connectors for hollow round belts

Hollow round belts should be welded just like solid belts. In the case of a breakdown, fitting connectors can be used for a quick repair, until the belt can be welded once again. Another advantage is the flexibility of the belt for small pulley diameters. The hollow round belts can be connected via metal connectors, as shown in the picture. Hollow round belts with connectors can also be used in many applications when the belts are not subject to heavy loads or high speeds. In these cases this type of

joining represents a good alternative to the welded joint (Make sure that the minimum pulley diameter and the pulley form are correct). When applying the metal nipple, special care has to be taken not to damage the belt with the sharp metal edges. This would reduce the tensile strength of the joint. Therefore we recommend the use of pointed pliers.

ATTENTION:
Wear gloves, risk of injury.

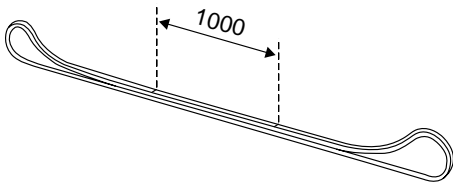


Fitting connectors for quick repairs

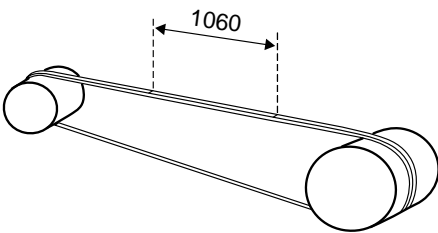
Pretension and tensioning devices

Pretension

Suitable pretension of TPU or TPE belts is required to ensure functional operation. Check the datasheet of your specific Solicord Belt.



Prior to joining the belt, place it on a flat surface and mark two lines 1000 mm apart (for shorter belts, the distance can be reduced to 100 mm).



Mount the belt on the pulleys and tension it to increase the distance between the two marks. Elongate the belt until the distance reaches the requested value according to the marks. At a pretension of e.g. 6%, the marks have to be 1060 mm apart. Have the belt make some revolutions and check the elongation again. If necessary adjust the belt elongation.

„How does the pretension of a belt impact its lifetime?“

The proper pre-tensioning of the belt is just as critical for belt performance as selecting the right belt and the right splicing system. For the recommended pretension please refer to the product tables of each belt in our Solicord delivery program.

What are the effects of wrong pretension? Too low pretension results in slippage of the belt which generates excessive heat. This causes belt deformation, heavy abrasion, breaking and jumping out of the pulley.

Too high pretension may cause damage to pulleys, shafts and bearings. The belt permanently is over-tensioned and will prematurely fail due to material fatigue and formation of cracks. Furthermore the belt loses its (material) resilience.

Tensioning devices

A variety of tensioning devices can be used to accommodate the different amounts of stretch in belts or to make the installation process easier. In addition, for reinforced belts or belts with little pretension required, we recommend the use of take-up systems permanently installed on the conveyor system. Please follow our recommended pretension for each belt to reduce premature wear and failure on our bearings.

Common ways to properly tension a belt are listed below:

- cut the belt to a shorter length than the measured length of the conveyor system
- use a take up pulley or a deflection pulley with a counter weight or a mechanical screw movement
- the drive motor is moved in slotted mounting holes via an adjustment screw
- tensioning sled (the drive motor is mounted on rails and is moved by its own weight or by a screw mechanism).

- tensioning jack (the motor with the drive pulley is mounted on a turnable rocker. If the drive motor is running in the specified direction the backwards engine torque tensions the belt automatically)

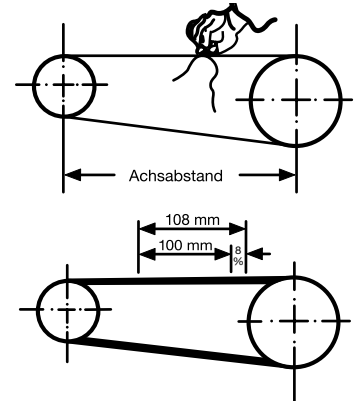
The right positioning of tensioning pulleys is essential for the lifetime and functionality of a belt. The tensioning pulleys always should be located in the return strand right after the drive pulley.

Calculation of belt length

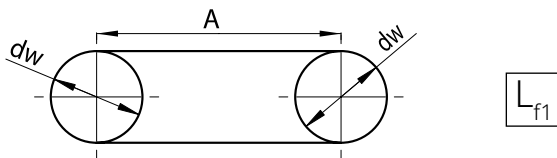
Working out the correct belt length

Use a string or steel tape to make measurements after reducing take-up (if installed) to the minimum. Distance between pulleys should remain fixed. To obtain good driving strength and good belt life, the belt pretension should be 1 to 8%, depending on the belt type. For the advised pretention, please consult the datasheet of your particular belt.

To verify pretension on an installed belt, apply two marks with a pen separated by 100 mm on the belt when it is free from tension. The increase of space between the marks after mounting the belt provides a measure of the pretension in percent.



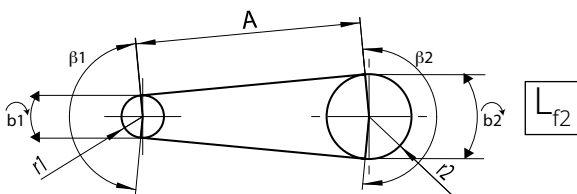
Calculation of belt length



Calculation formulas

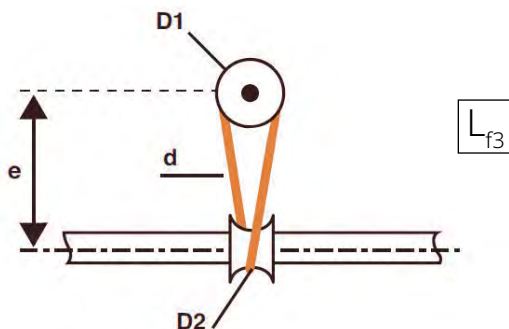
$L_{f1} = dw \times \pi + 2 \times A$
 dw = effective diameter (position of the neutral axis of belt)
 A = center distance for round belts:
 dw = bottom of groove + diameter of belt

The recommended pretension has to be considered in addition!



$L_{f2} = b1w + b2w + 2 \times A$
 $b1w$ = radian measure at effective radius rw = effective radius (position of the neutral axis of belt)
 A = center distance for round belts:
 $b2w$ = radian measure at radius rw = radius at bottom of groove + half belt diameter

The recommended pretension has to be considered in addition!



Lineshaft Conveyor Belts (semi-crossed)
 $L_{f3} = [(D1 + d) + (D2 + d)] \times \pi / 2 + 2 \times \sqrt{[(D1+d)^2 / 4 + e^2]}$

$D1$: pulley diameter at bottom of groove
 $D2$: inner diameter of diablo roller
 d : diameter of belt
 e : center distance

The recommended pretension has to be considered in addition!

Quick reference for V-Belts

Profile according to DIN 2215		6	8	10	13	17	22	32
Profile according to ISO 4184		Y	M	Z	A	B	C	D
Upper width b (mm)		6	8	10	13	17	22	32
Height h (mm)		4	5	6	8	11	14	20
Lower width u (mm)		3.3	4.55	5.9	7.5	9.4	12.35	18.25
Calculation of the belt length L_a and L_w if the inner length L_i is determined or known	$L_a = L_i$	+25	+31	+38	+50	+69	+88	+126
	$L_a = L_a$	+10	+12	+16	+20	+29	+30	+51
	$L_w = L_i$	+15	+19	+22	+30	+40	+58	+75
	$L_w = L_a$	-10	-12	-16	-20	-29	-30	-51

Adhesion factors and profile dimensions

Table for values of the coefficient of friction μ

Material type	Aluminium	Steel	Glass	Wood (veneer)	PE (Polyethylene)	HDPE (High density polyethylene)
PU 65 A	0.90	0.70	0.60	0.80	0.40	0.35
PU 75 A	0.85	0.70	0.50	0.70	0.40	0.35
PU 80 A	0.80	0.65	0.45	0.65	0.35	0.30
PU 85 A	0.75	0.60	0.40	0.60	0.30	0.25
PU 90 A	0.70	0.50	0.30	0.45	0.30	0.25
PU 95 A	0.65	0.45	0.25	0.40	0.25	0.20
Polyester TPE 40 D	0.70	0.50	0.30	0.45	0.30	0.25
Polyester TPE 55 D	0.45	0.35	0.30	0.35	0.15	0.10
Polyester TPE 63 D	0.45	0.35	0.30	0.35	0.15	0.10

Recommended max. belt speed

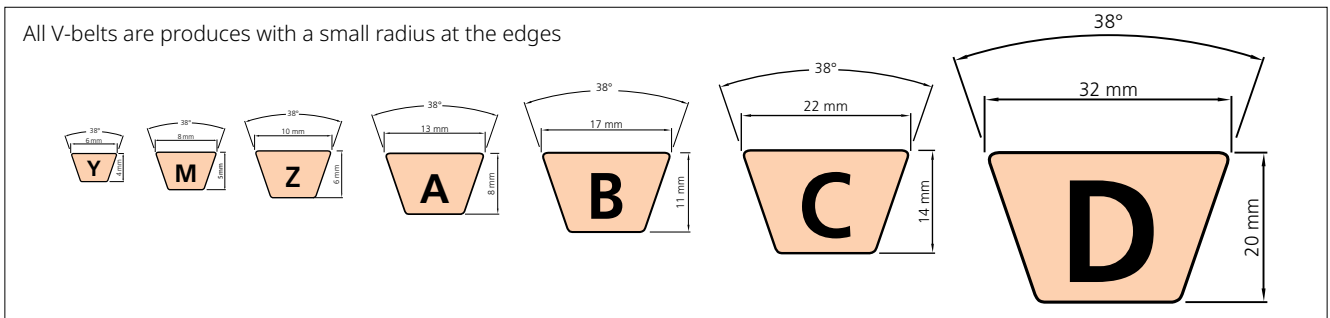
Recommended max. belt speed m/s	Belts used as conveyor belt	Belt used as drive belt
PU 75 A	1.5 m/s	10 m/s
PU 80 A	1.5 m/s	10 m/s
PU 85 A	2.0 m/s	15 m/s
PU 90 A	2.0 m/s	15 m/s
Polyester 55 D	2.5 m/s	20 m/s

Calculation:

$$v = \frac{dw \times n_1}{19100}$$

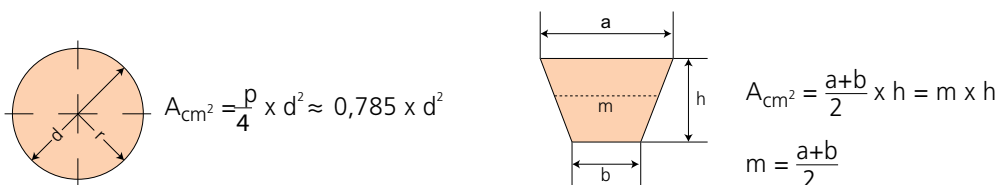
v = belt speed (m / s)
 n_1 = speed of smaller pulley (min. -1)
 dw = effective diameter of smaller pulley (mm)

V-belt dimensions according to DIN 2215 and ISO 4184



Profile acc.to ISO 4184	6	8	10	13	17	22	32
Weltstandard nach ISO	Y	M	Z	A	B	C	D
Upper width b (mm)	6	8	10	13	17	22	32
Height h (mm)	4	5	6	8	11	14	20
Lower width u (mm)	3.3	4.55	5.9	7.5	9.4	12.35	18.25

Calculation of the belt cross section:



Production tolerances

Production tolerances Solicord Belts

Description	Dimension		Tolerance	
	mm	in	≈ mm	in
Round belts				
Type PU 75 A/80 A	Ø 2 - Ø8	(Ø 5/64 - 5/16)	± 0,2	(± 1/128)
Type PU 75 A/80 A	Ø 9 - Ø 15	(Ø 45/128 - 19/32)	± 0,3	-
Type PU 85 A/90 A/95 A	Ø 2 - Ø 8	(Ø 5/64 - 5/16)	± 0,2	(± 1/128)
Type PU 85 A/90 A/95 A	Ø 9 - Ø 15	(Ø 45/128 - 19/32)	± 0,3	-
Type PU 85 A/90 A/95 A	Ø 18 - Ø 20	(Ø 3/4 - 25/32)	± 0,5	(± 1/64)
Type Polyester TPE 40 D/55 D	Ø 3 - Ø 8	(Ø 1/8 - 5/16)	± 0,2	(± 1/128)
Type Polyester TPE 40 D/55 D	Ø 9 - Ø 15	(Ø 45/128 - 19/32)	± 0,3	-
Type Polyester TPE 63 D	Ø 6,3, Ø 9,5, Ø 12,5	(Ø 1/4 - 3/8 - 1/2)	± 0,3	-

Round belts can be produced on request in "-" or "+"-tolerance.

Description	Dimension mm	(ISO)	Tolerance ≈ mm	
			0-width	height
V-belt DIN 2215				
Type PU 65 A	6 - 8 - 10 - 13 - 17 - 22	(Y - M - Z - A - B - C)	- 0.5	+ 0.5
Type PU 75 A	6 - 8 - 10 - 13 - 17 - 22 - 32	(Y - M - Z - A - B - C - D)	- 0.5	+ 0.5
Type PU 80 A	6 - 8 - 10 - 13 - 17 - 22 - 32	(Y - M - Z - A - B - C - D)	- 0.5	+ 0.5
Type PU 85 A	6 - 8 - 10 - 13 - 17 - 22 - 32	(Y - M - Z - A - B - C - D)	- 0.5	+ 0.5
Type PU 90 A	8 - 10 - 13 - 17 - 22 - 32	(M - Z - A - B - C - D)	- 0.5	+ 0.5
Type Polyester TPE 40 D	8 - 10 - 13 - 17 - 22	(M - Z - A - B - C)	- 0.5	+ 0.5
Type Polyester TPE 55 D	8 - 10 - 13 - 17 - 22	(M - Z - A - B - C)	- 0.5	+ 0.5

Productions tolerances for tailoring

Production lengths (lf)	Production tolerance
150 - 1000 mm	± 2 mm
1001 - 4000 mm	± 3 mm
4001 - 10000 mm	± 5 mm
over 10000	± 10 mm

Contact us if more strict tolerances are required!



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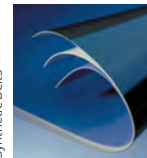
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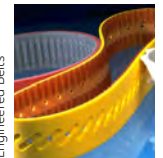
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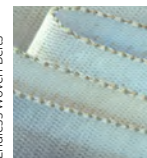
**Expert advice, quality solutions
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for all your belting needs**



Synthetic Belts



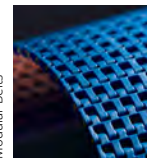
Engineered Belts



Endless Woven Belts



Homogeneous Belts



Modular Belts



Fabrication & Service

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