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Examples for determining  
the ordering length of  
round belts



## Examples for determining the ordering length of round belts

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## Machine with fixed axial distance (without tensioner station)

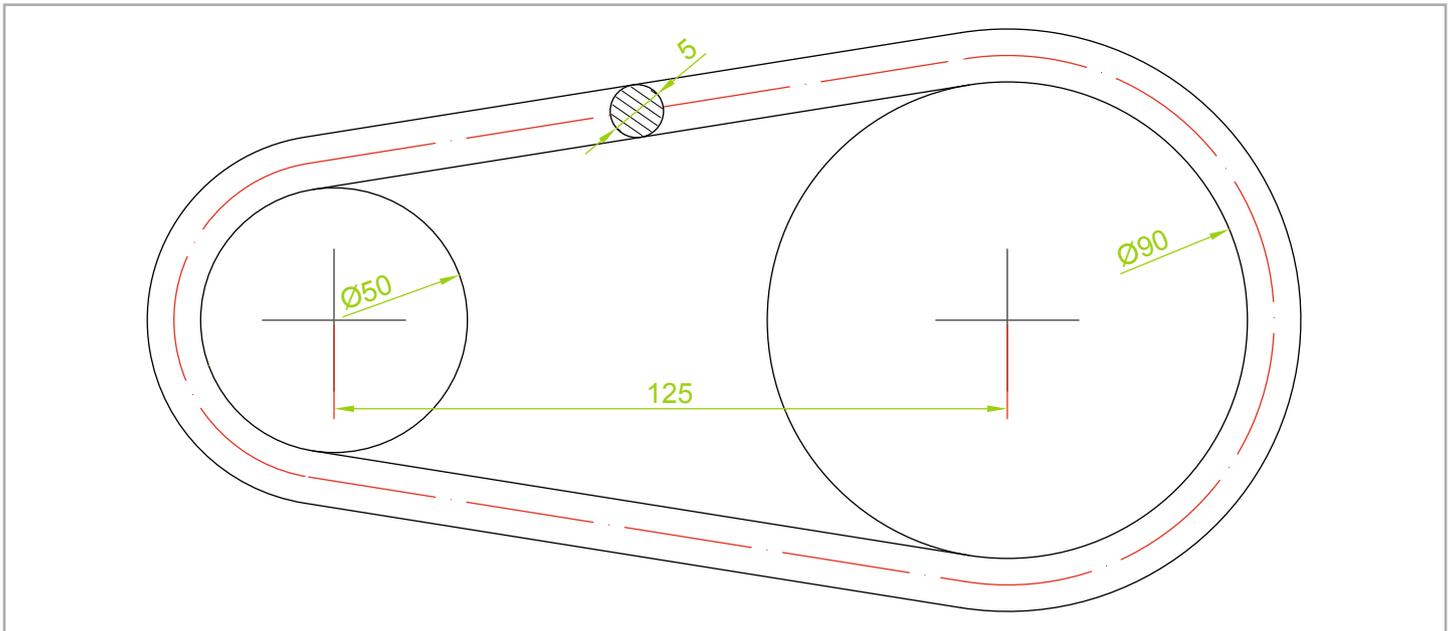


Fig. 1

The ordering length for round belts is calculated as the length of the neutral fibre (middle of the round belt) minus the intended elongation.

To calculate the ordering length for round belts on a 2-pulley drive with parallel axes, mark and copy the following formula to field A8 of your spreadsheet:

`=WENN(((A1+A2)/2)<A5;((2*A5*(SIN(BOGENMASS((GRAD(2*ARCCOS(((A2+A4)-(A1+A4))/(2*A5)))))/2))+((PI()/2)*((A1+A4)+(A2+A4)))+(PI()*((180-(GRAD(2*ARCCOS(((A2+A4)-(A1+A4))/(2*A5))))))*((A2+A4)-(A1+A4))/360))/(1+A6/100);"Achsabstand zu klein!")`

	A	B	
1	50	Pulley 1 Diameter at groove root	[mm]
2	90	Pulley 2 Diameter at groove root	[mm]
3			
4	5	Round belt diameter	[mm]
5	125	Axial distance	[mm]
6	8	Elongation	[%]
7			
8	453	Ordering length	[mm]

Fill in the data in fields A1, A2, A4, A5, A6 and A8 exactly as shown in the table opposite.

Our recommendations for the elongation at fitting can be found in the "Product range" table of our round belt brochure 229.

The ordering length is now calculated in field A8.

## ... Machine with fixed axial distance (without tensioner station)

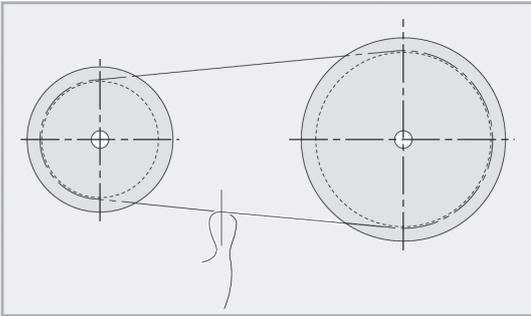


Fig. 2

In practice, the machine dimensions are frequently determined using a thin cord (Fig. 2) and then the desired elongation is deducted from this length.

This can lead to excessive elongation, depending on the round belt diameter and round belt length. The greater the round belt diameter and the shorter the round belt length, the greater the excessive elongation.

Example: You measured 474 mm using the cord

In order to avoid excessive elongation, calculate as follows:

$$(\text{Cord length} + \varnothing_{\text{round belt}} \times \pi) / (1 + \text{elongation} / 100) = \text{ordering length} \quad [\text{specification of the elongation in \%}]$$

Our recommendations for the elongation at fitting can be found in the “Product range” table of our round belt brochure 229.

$$(474 \text{ mm} + 5 \text{ mm} \times 3,14) / (1,08) = \boxed{453 \text{ mm ordering length}}$$

## Machine with adjustable axial distance (with tensioner station)

**Make a measuring mark on the slack round belt, then stretch the belt to the desired elongation by increasing the axial distance.**

Example:

To achieve an elongation of 8%, a measuring mark spacing of 100 mm is stretched to 108 mm.

## Round belts as friction lining/wear lining/damping lining



Fig. 3

If the round belt is fitted to a shaft (Fig. 3), calculate the length as follows:

$(\varnothing \text{ at groove root} + \varnothing \text{ round belt}) \times \pi \text{ minus elongation} = \text{ordering length}$

Example: Shaft with 38 mm at groove root, 5 mm round belt diameter and 2 % elongation

$(38 \text{ mm} + 5 \text{ mm}) \times 3,14 / (1,02) = \text{ordering length}$

To ensure a proper fit, an elongation of less than 2 % is generally selected. If necessary, the elongation or ordering length should be determined by trial.

## How long should the belt be cut for splice welding on site?

**Add 3 mm welding allowance to the ordering length calculated above.**

Please refer also to our detailed joining instructions. (The welding allowance is automatically taken into consideration for belts made up at the factory.)