Belt Tensioning

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INFORMATION IS SPECIFIC TO OUR PRODUCTS AND CAN CAUSE DAMAGE IF USED WITH NONE COMPATIBLE PRODUCTS SO PLEASE CHECK WITH YOUR SUPPLIER FOR COMPATIBILITY

These drawings are supplied as a guide no guarantees are implied or given.
Caution when wiring and check with a qualified professional if unsure.
Documentation will be updated amended at the discretion of CNC4YOU Ltd.

V1.00

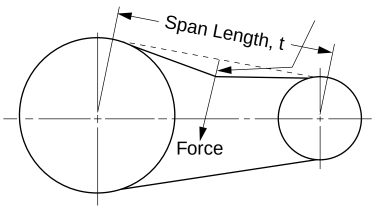
GENERAL DESIGN PRACTICE

- Design with as large pulleys as possible to have more teeth in mesh.
- Keep belts tight, and control tension closely.
- Design frame work and shafting to be rigid under load.
- Use machined pulleys to minimize radial runout and lateral wobble.

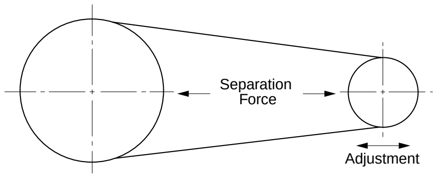
BELT TENSIONING

I f you are looking for motion transfer drive application then by definition, you will require it to carry extremely light torque loads. In these applications, belt installation tension is needed only to cause the belt mesh properly with the pulleys. The amount of tension is the minimum tension, but low torque and have a need for accurate registration requirements. These systems may require additional tension in order to minimize registration error (backlash).

Normal power transmission drives should be designed with adjustable tension if possible to allow tension to be maintained over time and allow the belt to maintain a proper fit with the pulleys while under load, and to prevent belt ratcheting under peak loads. Again proper tension is required to reduce the effects of backlash and required for proper registration.

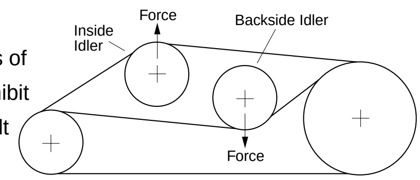


Force Deflection Method



Shaft Separation Method

Drive misalignment is one of the most common sources of drive performance problems. Misaligned drives can exhibit symptoms such as high belt tracking forces, uneven belt tooth wear, high noise levels, and tensile cord failure. The two primary types of drive misalignment are angular and parallel. Discussion about each of these types are as follows:



Idler Forces

Angular misalignment results when the drive shafts are not parallel. As a result, the belt tensile cords are not loaded evenly, resulting in uneven tooth / land pressure and wear. The edge cords on the high tension side are often overloaded which may cause an edge cord failure that propagates across the entire belt width. Angular misalignment often results in high belt-tracking forces as well which cause accelerated belt wear.

Parallel misalignment results from pulleys being mounted out of line from each other. Parallel misalignment will generally free float on the pulleys and essentially self-align themselves as they run. This self-aligning can occur as long as the pulleys have sufficient groove face width beyond the width of the belts. If not, the belts can become trapped between opposite pulley flanges causing serious performance problems. Parallel misalignment is not generally a significant concern with synchronous drives as long as the belts do not become trapped or pinched between opposite flanges. For

Allowable Misalignment In order to maximize performance and reliability, synchronous drives should be aligned closely. This is not, however, always a simple task in a production environment. The maximum allowable misalignment, angular and parallel combined, is ¼ degree.

Belt Installation

During the belt installation process, it is very important that the belt be fully seated in the pulley grooves before applying final tension. Serpentine drives with multiple pulleys and drives with large pulleys are particularly vulnerable to belt tensioning problems resulting from the belt teeth

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