TECHNICAL BULLETIN

# MEASURING OVERDRIVE

***Positive overdrive must exist in order for lotension systems to operate properly. Overdrive is the amount of slippage*** between the belt and the drum or cage. The surface ***MUST*** move faster than the inside edge of the belt in order for proper operation of the lotension system. If there is no overdrive or if the drum surface is moving slower than the belt, the drum acts as a brake and can cause severe damage to the belt.

***Overdrive is expressed as a factor*** of the vertical distance between tiers or tier pitch. In general, the ***minimum*** over drive should be

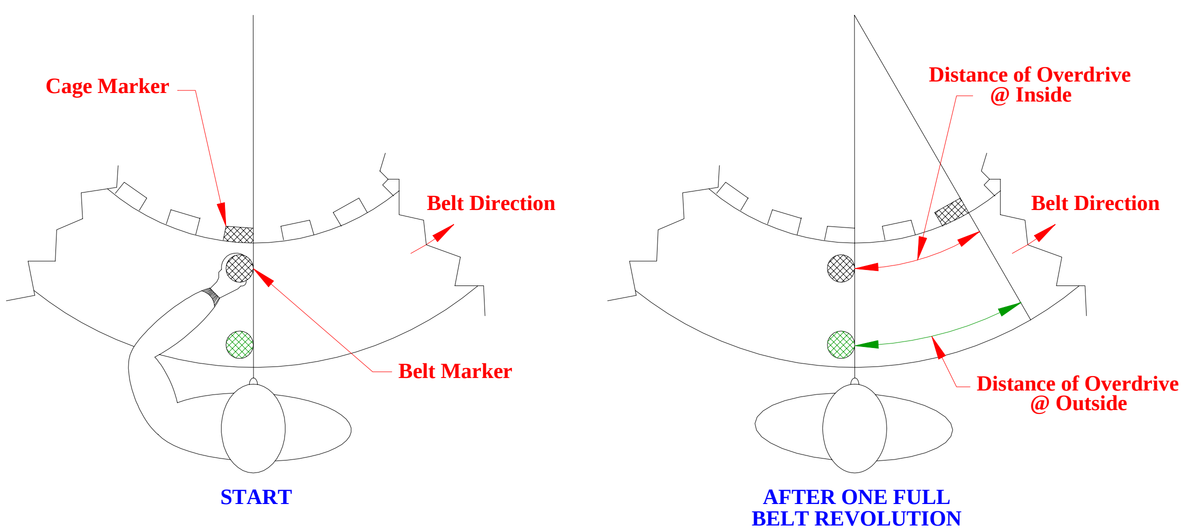
| Belt Construction | Plastic cage | Metal cage |
|---|---|---|
| Belt with metal edge links | 2-4 tier pitches | 1-2 tier pitches |
| Belt with plastic edge links | 4-6 tier pitches | 2-4 tier pitches |

Every system is unique; the above chart represents the minimum recommend setting. Increased over drive may be required for optimal belt performance.

***To measure the amount of overdrive***, stand facing the cage or drum as shown below:

- Mark a cage bar or a spot on the drum so that is easily identifiable
- Place an object on the belt at the inside edge in line with the cage marker
- After the object has made one complete revolution *immediately measure* the distance between it and the cage marker ***along the inside edge of the belt***
- Divide this distance by the tier pitch to convert to number tiers of overdrive (see page 2)
- Overdrive can also be measured at the outside edge, but this distance must be multiplied by the ratio of the inside radius divided by the outside radius (see page 2)

**MEASURING OVERDRIVE**

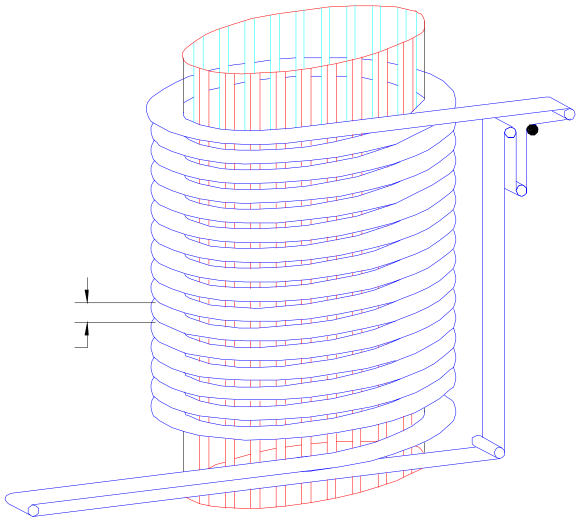


Number Tiers of Overdrive = $\frac{\text{Distance @ inside}}{\text{Tier Pitch}}$

Or

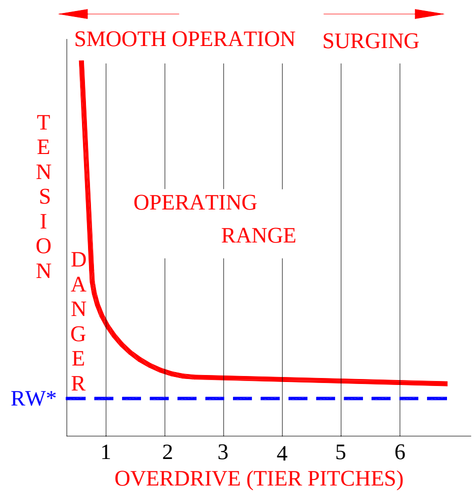
Number Tiers of Overdrive = $\frac{\text{Distance @ Outside}}{\text{Tier Pitch}} \times \frac{\text{Inside Radius}}{\text{Outside Radius*}}$

**Outside Radius = Inside Radius + Belt Width*



Tier Pitch = Change in elevation over one revolution.

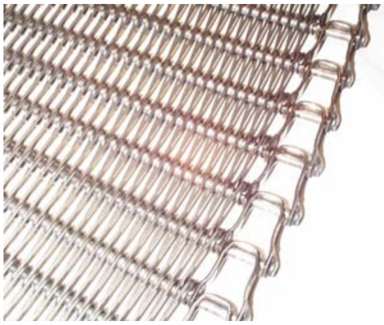
***Note the relationship between overdrive and tension** as shown in the following graph:*

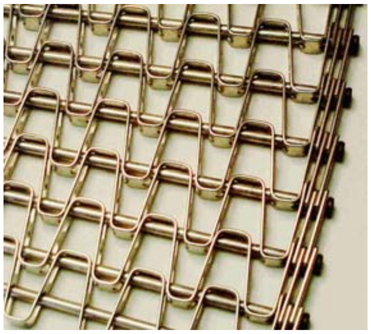



**RW = Radius Weight*

***High overdrive decreases belt tension** while **low overdrive increases belt tension:***

- High overdrive will cause belt surging which can disrupt product flow or cause excessive product movement or marking
- Low overdrive produces smoother operation but the higher belt tension will decrease belt life
- The optimal amount of overdrive, therefore, is a compromise between smooth operation and low tension







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