

MPTA-B11i-R2018

BELT DRIVE MISALIGNMENT



INFORMATIONAL BULLETIN

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Abstract

This informational bulletin provides the maximum misalignment for belt drives. The recommendation accounts for V-belt and synchronous drives.

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Foreword

This foreword is provided for informational purposes only and is not to be construed to be part of any technical specification.

Since the last review (B11i 2013) the format was updated to comply with Standard A1 (Format for MPTA Publications). No other changes were made.

Suggestions for the improvement of, or comments on this publication are welcome. Send your suggestions and/or comments to Andy Solis, MPTA Executive Director, andy@mpta.org

Scope

This informational bulletin applies to V-Belt, V-ribbed and synchronous belt drives. Drives utilizing belts covered under ARPM publications IP-20 (Classical), IP-21 (Double -V), IP-22 (Narrow), IP-23 (Light Duty), IP-24 (Synchronous Belts), IP-26 (V-Ribbed), and IP27 (Curvilinear Toothed Synchronous Belts). This informational bulletin recommends the maximum misalignment angle of the entering and exiting belt span in order to provide optimum belt service life and performance.

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1. V-Belt drives

- 1.1. Maximum misalignment angle is $\frac{1}{2}$ of a degree.
- 1.2. Misalignment offset is measured with respect to the centerline of the driver and driven sheave grooves.
- 1.3. The amount of allowable offset can be calculated by Formula #1

2. V-Ribbed drives

- 2.1. Maximum misalignment angle is $\frac{1}{4}$ of a degree.
- 2.2. Misalignment offset is measured with respect to the centerline of the driver and driven sheave grooves.
- 2.3. The amount of allowable offset can be calculated by Formula #1

3. Synchronous drives

- 3.1. Maximum misalignment angle is $\frac{1}{4}$ of a degree.
- 3.2. Misalignment offset is measured with respect to the centerline of the pulley tooth face.
- 3.3. The amount of allowable offset can be calculated by Formula #1

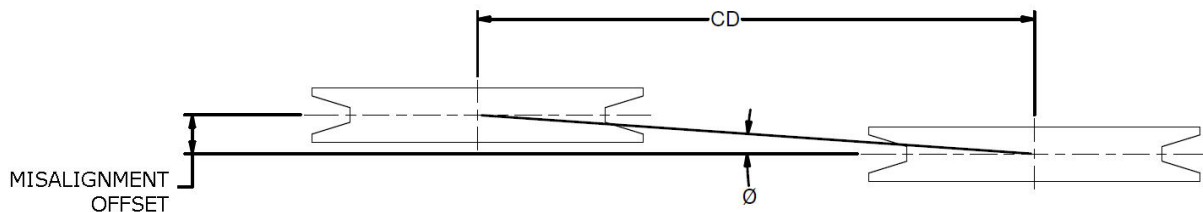


Figure 1

4. Formula #1: Misalignment Offset = $\text{TAN}(\phi) * \text{CD}$ (in)

Where:

ϕ = Maximum misalignment angle

- 0.50° for V-belt drives
- 0.25° for V-ribbed and Synchronous drives

CD = Center Distance in inches

Note: Measuring misalignment offset between the outside edges of sheaves or synchronous pulleys may produce a false reading.

Table #1: Maximum allowable misalignment offset for given center distances

Center Distance, CD (in)	Allowable misalignment offset (in)	
	V-Belt	V-ribbed and Synchronous
12	0.105	0.052
24	0.209	0.105
36	0.314	0.157
48	0.419	0.209
60	0.524	0.262
72	0.628	0.314
84	0.733	0.367
Rule-of-Thumb	0.100" per foot of CD	0.050" per foot of CD

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