



TECHNICAL BULLETIN

B3W Belt Tension

9900-9182_00

I notice a slight vibration or belt tooth effect in the B3W, what is that?

The B3W product family was designed to accommodate the extreme peak forces required by many of today's applications while maintaining repeatable accuracy and high precision. Because of this effort, numerous design changes were implemented in order to create a belt drive product that would ultimately provide up to 96% more thrust capacity than Tol-O-Matic's previous belt drive, the B3B

One of the changes implemented was belt material. The HTD style belt selected for the B3W application is a polyurethane matrix with steel reinforcing strands. This construction offers increased tensile strength and life at elevated thrust forces. Another change was to the level at which the belt is pre-tensioned at time of assembly. The increase in thrust capabilities of the actuator demands a corresponding increase in belt tension. This is necessary to prevent cogging or slippage of the belt with respect to the drive pulley of the actuator.

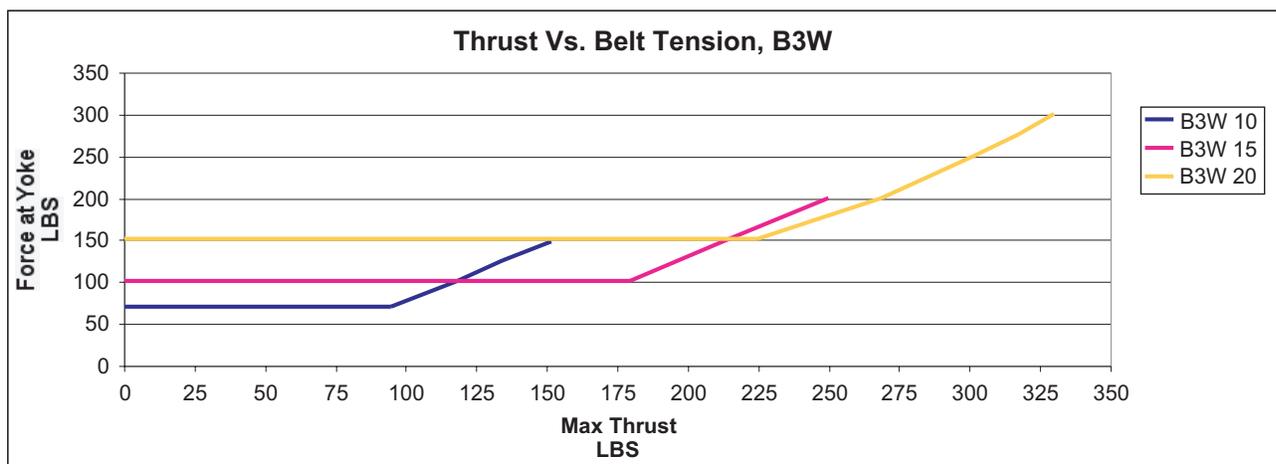
Both of these changes result in an actuator that may exhibit a slight vibration in low speed applications. This condition is

most apparent when the carrier is back driven by hand without load on the carrier. This is often described as the feeling of the belt teeth engaging or disengaging with the pulley teeth. This is a normal condition and will not present an issue in most applications.

What can be done if I do not need max thrust and need a lower vibration motion profile?

Belt tension can be reduced in an application that does not require the catalog level of thrust capability and a smooth motion profile of the carrier. Below is a chart you can reference to determine the minimum required belt tension based upon the maximum required thrust. The tension values listed in the chart are defined as the amount of force applied to the idle pulley yoke. The actual level of tension being applied to the belt would be half of the value listed if you are measuring true tension of the belt material.

If you have additional questions, please contact the technical support group at Tol-O-Matic.



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