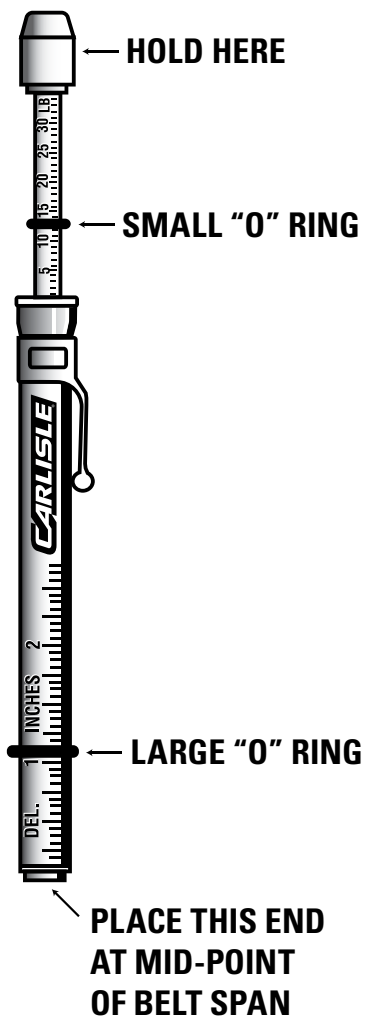


## Spring-Loaded Belt Tensiometer

Proper belt tensioning is one of the most important factors necessary for long, satisfactory operation. Too little tension will result in slippage, causing rapid belt and sheave wear as well as a loss of productivity. Too much tension can result in excessive stress on the belts, bearings and shafts. The tensiometer uses a tensioning method based on the fact that the force required to deflect a given span length by a given amount is related to the tension in the belt. The single stem tensiometer is capable of measuring force from 0-35 lbs. (0-15.9 kg.) and belt tension from 0-560 lbs. (0-255 kg.) on belts up to 1 inch in width.

Figure 1



### Procedure for Using the Tensiometer

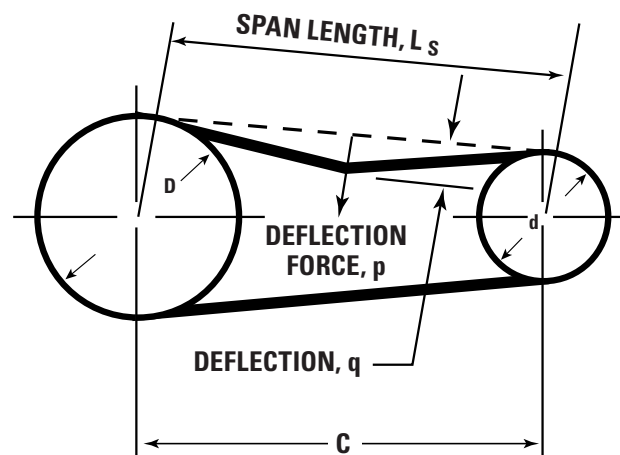
1. Measure the span length of the drive. (See Fig. 2). Set the large "O" ring at  $1/64$ " for each inch of belt span. For example, set the large "O" ring at  $1/4$ " for a span length of 16," at  $1/2$ " for a span length of 32," or at 1" for a span length of 64", etc.
2. Set the small "O" ring at zero (See Fig. 1) and press down the Tensiometer at the center of the belt span.
  - a. On a single belt drive, depress the tensiometer until the large "O" ring is even with the bottom of a straight edge or string placed on the outside rims of the two sheaves.
  - b. On a multiple belt drive, depress the Tensiometer until the large "O" ring

is even with the top of the next belt.

Measure each belt in the drive and take the average reading of all belt tensions. On banded belts, multiply the deflection force by the number of ribs in the band being measured.

3. Remove the Tensiometer and observe that the small "O" ring has moved from its original setting at zero to the number of pounds required to deflect the belt.
4. Check this reading against the value of the deflection force in the V-Belt Tensioning table (see reverse). The most accurate deflection force recommendations are available from "Drive Engineer" after performing a drive analysis. Access the "Drive Engineer" web application at: [www.driveengineer.com](http://www.driveengineer.com).

Figure 2



**Please Note:** The tensioning guidelines presented are suggestions to help install and maintain belts properly. Please always follow the recommendations of the original equipment manufacturer. Timken also offers Carlisle Tension-Finder® and Frequency-Finder tensioning tools.

## Average Tensioning Values (recommended minimum force per belt)

This table shows minimum deflection force values. New belts should be installed at 2.0 times these values.

Used belts should be between 1.0 and 1.5 times these values.

Carlisle Belts	V-Belt Section	Small Sheave		Deflection Force for the Drive Speed Ratio (lbs.)			
		Speed Range	Diameter	1.0	1.5	2.0	4.0 and over
<b>Super II® &amp; Super Blue Ribbon®</b>	A AP	1800-3600	3.0	2.0	2.3	2.4	3.3
		1800-3600	4.0	2.6	2.8	3.0	3.3
		1800-3600	5.0	3.0	3.3	3.4	3.7
		1800-3600	7.0	3.5	3.7	3.8	4.3
	B BP	1200-1800	4.6	3.7	4.3	4.5	5.0
		1200-1800	5.0	4.1	4.6	4.8	5.6
		1200-1800	6.0	4.8	5.3	5.5	6.3
	C CP	1200-1800	8.0	5.7	6.2	6.4	7.2
		900-1800	7.0	6.5	7.0	8.0	9.0
		900-1800	9.0	8.0	9.0	10.0	11.0
		900-1800	12.0	10.0	11.0	12.0	13.0
	DP	700-1500	16.0	12.0	13.0	13.0	14.0
		900-1500	12.0	13.0	15.0	16.0	17.0
		900-1500	15.0	16.0	18.0	19.0	21.0
		700-1200	18.0	19.0	21.0	22.0	24.0
	<b>Gold-Ribbon® Cog-Belt®</b>	AX	700-1200	22.0	22.0	23.0	24.0
1800-3600			3.0	2.5	2.8	3.0	3.3
1800-3600			4.0	3.3	3.6	3.8	4.2
1800-3600			5.0	3.7	4.1	4.3	4.6
BX		1800-3600	7.0	4.3	4.6	4.8	5.3
		1200-1800	4.6	5.2	5.8	6.0	6.9
		1200-1800	5.0	5.4	6.0	6.3	7.1
		1200-1800	6.0	6.0	6.4	6.7	7.7
CX		1200-1800	8.0	6.6	7.1	7.5	8.2
		900-1800	7.0	10.0	11.0	12.0	13.0
		900-1800	9.0	11.0	12.0	13.0	14.0
		900-1800	12.0	12.0	13.0	13.0	14.0
DX	700-1500	16.0	13.0	14.0	14.0	15.0	
	900-1500	12.0	16.0	18.0	19.0	20.0	
	900-1500	15.0	19.0	21.0	22.0	24.0	
	700-1200	18.0	22.0	24.0	25.0	27.0	
<b>Power-Wedge® Cog-Belt®</b>	3VX	700-1200	22.0	25.0	27.0	28.0	30.0
		1200-3600	2.2	2.2	2.5	2.7	3.0
		1200-3600	2.5	2.6	2.9	3.1	3.6
		1200-3600	3.0	3.1	3.5	3.7	4.2
		1200-3600	4.1	3.9	4.3	4.5	5.1
		1200-3600	5.3	4.6	4.9	5.1	5.7
	5VX	1200-3600	6.9	5.0	5.4	5.6	6.2
		1200-3600	4.4	6.5	7.5	8.0	9.0
		1200-3600	5.2	8.0	9.0	9.5	10.0
		1200-3600	6.3	9.5	10.0	11.0	12.0
		1200-3600	7.1	10.0	11.0	12.0	13.0
		900-1800	9.0	12.0	13.0	14.0	15.0
	8VX	900-1800	14.0	14.0	15.0	16.0	17.0
		900-1800	12.5	18.0	21.0	23.0	25.0
		900-1800	14.0	21.0	23.0	24.0	28.0
		700-1500	17.0	24.0	26.0	28.0	30.0
		700-1200	21.2	28.0	30.0	32.0	34.0
		400-1000	24.8	31.0	32.0	34.0	36.0
<b>Super Power-Wedge®</b>	5V	900-1800	7.1	8.5	9.5	10.0	11.0
		900-1800	9.0	10.0	11.0	12.0	13.0
		900-1800	14.0	12.0	13.0	14.0	15.0
		700-1200	21.2	14.0	15.0	16.0	17.0
	8V	900-1800	12.5	18.0	21.0	23.0	25.0
		900-1800	14.0	21.0	23.0	24.0	28.0
		700-1500	17.0	24.0	26.0	28.0	30.0
		700-1200	21.2	28.0	30.0	32.0	34.0
		400-1000	24.8	31.0	32.0	34.0	36.0

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The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets high-performance mechanical components, including bearings, belts, gears, chain, couplings and related mechanical power transmission products and services.

[www.carlislebelts.com](http://www.carlislebelts.com)