

## SECTION 15 HANDLING AND STORAGE

The following has been condensed from RMA Bulletin No. IP-3-4: "Storage of Power Transmission Belts":

Recommendations for proper belt storage is of interest to designers as well as to users.

Under favorable storage conditions, high-quality belts maintain their performance capabilities and manufactured dimensions. Good storage conditions and practices will result in the best value from belt products.

Power transmission belts should ideally be stored in a cool and dry environment. Excess weight against belts resulting in distortion should be avoided. Avoid storing belts in environments that may allow exposure to sunlight, moisture, excessive heat, ozone, or where evaporating solvents or other chemicals are present. Belts have been found to be capable of withstanding storage, without changing significantly, for as long as 8 years at temperatures less than 85° F (30° C) and relative humidity below 70 percent without direct contact with sunlight.

Proper handling of synchronous belts is also important in preventing damage that could reduce their performance capabilities. Synchronous belts should never be crimped or tightly bent. Belts should not be bent tighter than the minimum recommended pulley size specified for each belt section, or pitch. Belt backside bending should be limited to the values specified in **Table 21** for a minimum diameter backside idler.

## SECTION 16 STANDARDS APPLICABLE TO BELTS

Different belt tooth configurations are shown in **Figure 19** and their characteristics are described in **Table 3**, both on page T-15. Since synchronous belts are manufactured by several manufacturers, each has established individual standards. Subsequently, the following general standards have been published:

1. Specifications by the Rubber Manufacturers Association for Drives using Synchronous Belts.
2. Synchronous Belt Drives – specification by the International Organization for Standardization.

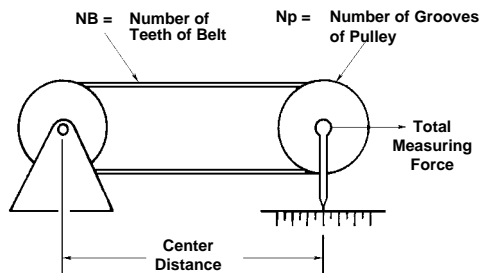
Based on these, as well as standards developed by belt manufacturers, the following information is presented in this handbook:

Recommended Tension for Length Measurement .....	<b>Table 22</b>
Belt Width Tolerances .....	<b>Table 23</b>
Pitch Length Tolerances .....	<b>Table 24</b>
Center Distance Tolerances .....	<b>Table 25</b>
Overall Belt Thickness dimensions .....	<b>Table 26</b>
Overall Belt Thickness Tolerances .....	<b>Table 27</b>

### Length Measurement

The pitch length of a synchronous belt is determined by placing the belt on a measuring fixture comprising two pulleys of equal diameter, applying tension and measuring the center distance between the two pulleys. One of the pulleys is fixed in position, while the other is movable along a graduated scale.

The fixture is shown schematically in **Figure 33**. Any pair of equal-diameter pulleys of the proper pitch and manufactured to specifications may be used for measuring. The measuring tension is given in **Table 22**.



**Fig. 33** Length Measuring Fixture

In measuring the length of a synchronous belt, the belt should be rotated at least two revolutions to seat it properly and to divide the tension equally between the two spans.

The pitch length is calculated by adding the pitch circumference of one pulley to twice the center distance:

$$\text{Belt Pitch Length} = 2 C + 2 \left( \frac{1}{2} N_{\text{Pulley}} \times \text{Pitch} \right)$$

$$C = \frac{\text{Pitch} (N_{\text{Belt}} - N_{\text{Pulley}})}{2}$$

where C is the Center Distance expressed in same units as the Pitch.

**Table 22 Recommended Tension for Length Measurement**

Total Measuring Tension			
Belt Width		Measuring Force	
in	mm	lbf	N
0.25	6.4	8	36
0.31	7.9	10	44
0.37	9.5	12	53
0.50	12.7	24	105
0.75	19.1	40	180
1.00	25.4	55	245

**Table 23 Belt Width Tolerances**

Belt Width		Belt Length					
		0 to 33" (0 to 838 mm)		33.01" to 66" (839 to 1676 mm)		Over 66" (Over 1676 mm)	
in	mm	in	mm	in	mm	in	mm
From 0.125	From 3	+0.016	+0.4	+0.016	+0.4	—	—
To 0.438	To 11	-0.031	-0.8	-0.031	-0.8	—	—
Over 0.438	Over 11	+0.031	+0.8	+0.031	+0.8	+0.031	+0.8
To 1.500	To 38.1	-0.031	-0.8	-0.047	-1.2	-0.047	-1.2
Over 1.500	Over 38.1	+0.031	+0.8	+0.047	+1.2	+0.047	+1.2
To 2.000	To 50.8	-0.047	-1.2	-0.047	-1.2	-0.063	-1.6

**Table 24 Pitch Length Tolerances**

Belt Pitch Length		Permissible Deviation from Standard		Belt Pitch Length		Permissible Deviation from Standard	
in	mm	in	mm	in	mm	in	mm
Up to 10	Up to 254	±0.016	±0.40	From 70 To 80	From 1778 To 2032	±0.036	±0.91
From 10 To 15	From 254 To 381	±0.018	±0.46	From 80 To 90	From 2032 To 2286	±0.038	±0.96
From 15 To 20	From 381 To 508	±0.020	±0.51	From 90 To 100	From 2286 To 2540	±0.040	±1.02
From 20 To 30	From 508 To 762	±0.024	±0.61	From 100 To 120	From 2540 To 3084	±0.044	±1.12
From 30 To 40	From 762 To 1016	±0.026	±0.66	From 120 To 140	From 3084 To 3556	±0.048	±1.22
From 40 To 50	From 1016 To 1270	±0.030	±0.76	From 140 To 160	From 3556 To 4064	±0.052	±1.32
From 50 To 60	From 1270 To 1524	±0.032	±0.81	From 160 To 170	From 4064 To 4318	±0.054	±1.37
From 60 To 70	From 1524 To 1778	±0.034	±0.86	From 170 To 180	From 4318 To 4572	±0.058	±1.47