Synchronous Belt
Installation Instructions

IMPORTANT: DO NOT USE LUBRICANTS IN THIS INSTALLATION

P-5067-TBW
FORM 736D

Align Sprockets

Sprocket alignment and parallelism of the shafts is very important. Proper alignment helps to equalize the load across the entire belt width, thereby reducing wear and extending belt life. The sketches below show how to align a Synchronous drive properly. **PLACE A STRAIGHTEDGE** against the outside edge of the sprockets as shown in Figure 6; Figure 7 shows the four points where the straightedge should touch the sprockets.

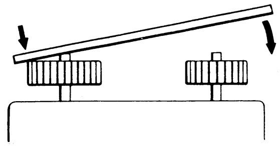

Figure 6

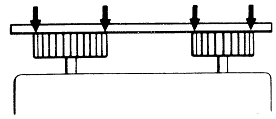

Figure 7

The straightedge should cross the sprockets at the widest possible part. (See Figure 8). **OR USE A STRING**. Tie a string around either shaft (Figure 9) and pull it around and across the outer edge of both sprockets. Figure 10 shows how the string should touch four points when the drive is properly aligned. After aligning the sprockets, check the rigidity of the supporting framework. Shafts should be well supported to prevent distortion and a resulting change in the center distance under load. **Do not** use spring-loaded or weighted idlers. Idler sprockets or pulleys must be locked into position after adjusting belt tension. **Please note: At least one sprocket must have a flange.**

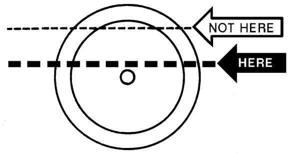

Figure 8

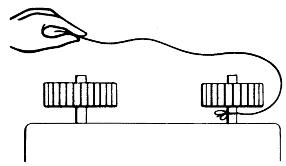

Figure 9

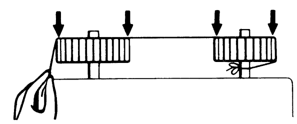

Figure 10

Install Belt

Do not pry or otherwise force the belt onto the sprockets, as this can result in permanent damage to the belt. Either remove the sprocket's outside flange or reduce the center distance between the sprockets so that the belt can be easily installed.

Belt Tensioning-General Method

This method of tensioning Synchronous belts should satisfy most drive requirements.

Step 1. Reduce the center distance so that the belt can be placed onto the sprockets without forcing or prying it over the flanges.

Step 2. Increase the belt tension until the belt feels snug or taut. Avoid over tensioning the belt.

Step 3. Start the drive and apply the most severe load condition. This may be either the motor starting torque or during the work cycle. A belt that is too loose will "jump teeth" under the most severe load condition. When this occurs, gradually increase the belt tension until satisfactory operation is achieved.

Belt Tensioning-Force Deflection Method

An alternate numerical method can also be used to properly tension the belt on a Synchronous drive. This procedure, commonly referred to as the Force Deflection Method, consists of measuring the pounds of force required to deflect the belt a given amount.

Step 1. Install the belt as per Steps 1 and 2 of the General Method. Measure the span length (in inches) as illustrated in Figure 11.

Step 2. From Figure 11 determine the deflection height required for the drive. The deflection height is always 1/64" per inch of span length. For example, a 32" span length requires a deflection fo 32/64" or 1/2". To measure the deflection height place a straightedge from sprocket to sprocket on top of the belt or wrap a string or steel tape around the sprockets on top of the belt. This will serve as a reference line to measure deflection inches.

Step 3. Using the formula at right, calculate the minimum and maximum force values (lbs.).

Step 4. Using a spring scale, apply a perpendicular force to the belt at the mid-point of the span as illustrated in Figure 1. NOTE: For belts wider than 2 inches, it is suggested that a rigid piece of keystock or something similar be placed across the belt between the point of force and the belt to prevent belt distortion. Compare this deflection force value to that found in Step 3. Adjust belt tension accordingly.

Actual belt installation tension required depends on peak loads, system rigidty, teeth in mesh, etc. In some instances it may be necessary to gradually increase the belt tension to achieve proper operation of the drive.

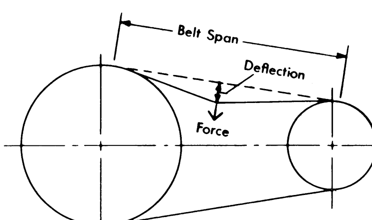

Figure 11

$$\text{Maximum Force} = \frac{4000 \times \text{DHP}}{\text{RPM} \times \text{Pitch Diameter}}$$

$$\text{Minimum Force} = \frac{5000 \times \text{BHP}}{\text{RPM} \times \text{Pitch Diameter}}$$

DHP = Belt Horsepower or Motor Horsepower x Recommended Service Factor

BHP = Brake Horsepower or Motor Horsepower

RPM = Speed of Fastest Shaft

Pitch Diameter = Diameter of Smallest Sprocket

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