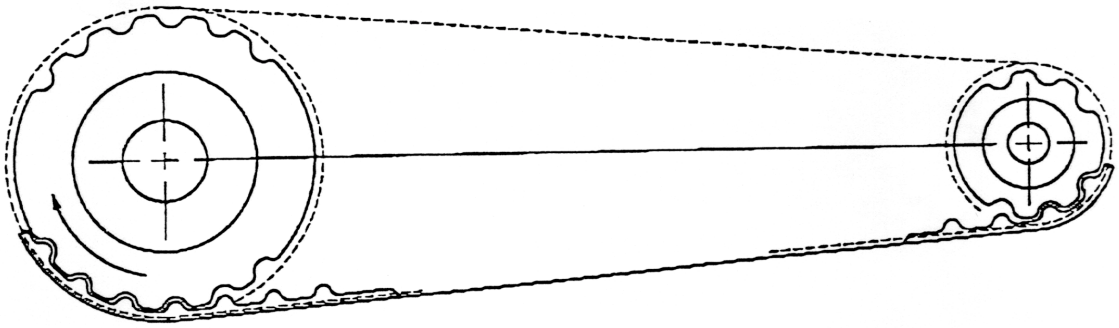
HUDSON
Products Corporation

High Torque Drive (H.T.D.)

It is important that belt teeth and sheave teeth mesh properly on slack side of belt at fan sheave (see * on sketches below). The few pounds of force either over/under manufacturers recommendations when using a belt tension meter is not as important as the teeth meshing in the center for a smooth operating fan. From a vibration standpoint this factor alone can determine the difference between a smooth or rough operating fan. The illustrations below show a correct belt/sheave mesh, one with belt too tight, and one with belt too loose. Rotate fans by hand while viewing belt mesh at fan sheave, then adjust to correct position using motor adjustment bolts.

CORRECT

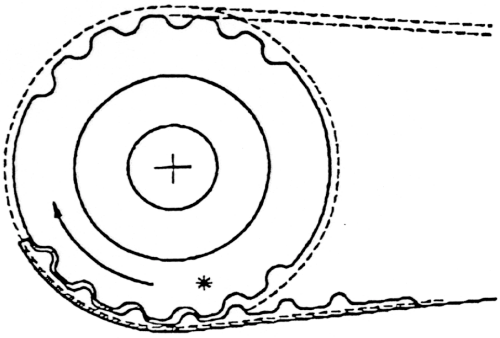
FAN **MOTOR**



INCORRECT

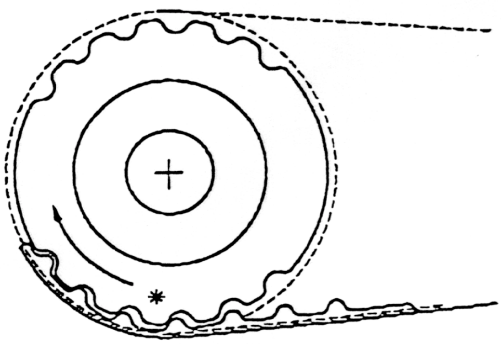
BELT TENSION / TOO TIGHT

FAN



BELT TENSION / TOO LOOSE

FAN



ISSUE DATE 4-21-93

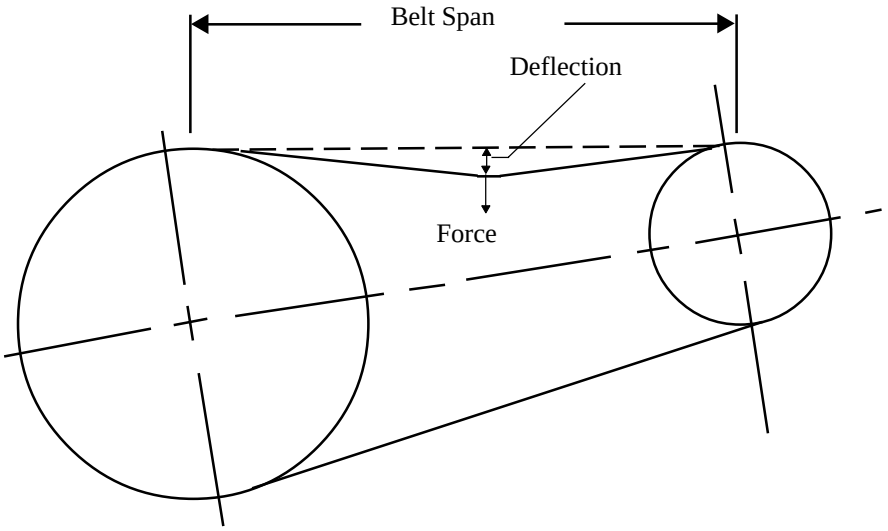
HUDSON
Products Corporation

Belt Installation and Tensioning Instructions for Hudson Synchronous Drives (HSD)

After alignment of the sprockets, install the belts. Belts should not be installed more than 30 days prior to start up. Move motor mount toward large sprocket so that the belts can be easily installed. Do not pry or otherwise force the belts onto the sprockets, as this can result in permanent damage to the belts.

The deflection force can be measured to verify the proper tension. By using a tension tester or a spring scale, apply a perpendicular force to the exact center of the belt width near the center of the belt span. Measure the force required to deflect the belt 1/64" for every inch of span length (16 mm per m). For example, the deflection for a 32" span would be 1/64" multiplied by 32, or 1/2" (or 0.813 m x 16 mm/m = 13 mm deflection). For belts wider than 2" (50 mm), it is suggested that a 3/4" or 1" (20-25 mm) rigid strip of metal be placed across the belt between the point of force and the belt to prevent belt distortion.

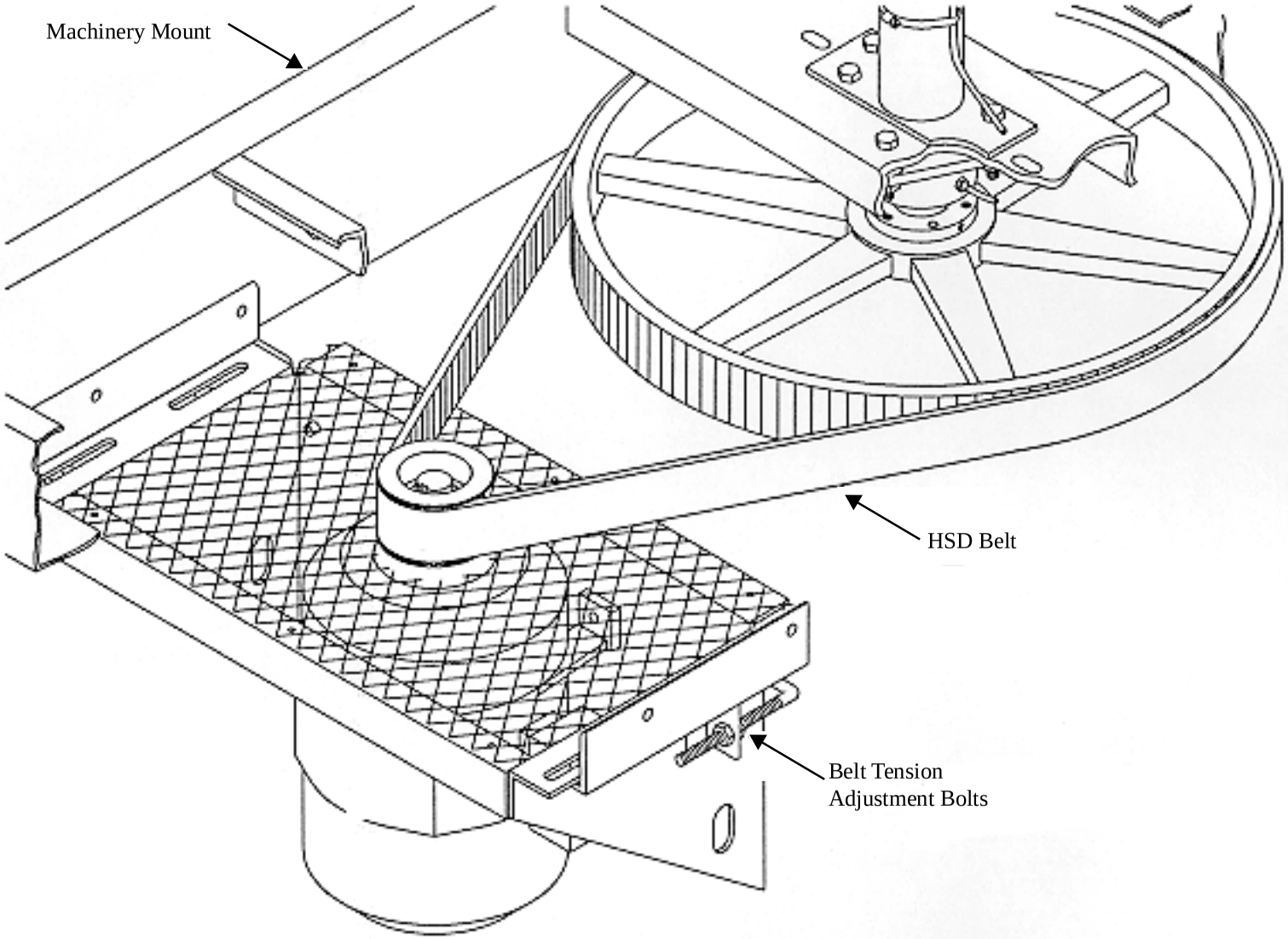
Check tension several times during the first 24 hours of operation and re-tension as required.



$$\text{Max. Force (LBS.)} = \frac{4000 \times DP\ (HP) \times SF}{RPM \times \text{Pitch Diameter (in.)}} \qquad \left(N = \frac{610{,}000 \times DP\ (kW) \times SF}{RPM \times \text{Pitch Diameter (mm)}} \right)$$

$$\text{Min. Force (LBS.)} = \frac{5000 \times BP\ (HP)}{RPM \times \text{Pitch Diameter (in.)}} \qquad \left(N = \frac{760{,}000 \times BP\ (kW)}{RPM \times \text{Pitch Diameter (mm)}} \right)$$

Where:
DP = Motor Power, HP (kW)
RPM = Motor RPM
Pitch Diameter = Diameter of small sprocket, in. (mm)
BP = Fan Brake Power, HP (kW)
SF = Service Factor (Usually 2.0)



HUDSON
Products Corporation

FIG. E3 - BELT