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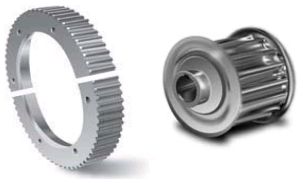

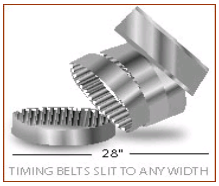

TORQUE

Definition: The twisting or turning effort around a shaft tending to cause rotation. Torque is determined by multiplying the applied force by the distance from the point where force is applied to the shaft center. It is measured in terms of pounds, or ounces; acting on a lever arm, measured in terms of feet or inches (Metric = Newton Meters (Nm). This lever arm is connected to a shaft that can rotate.

Torque (ft-lb) = Force x Distance

NOTE: Torque can be present at zero (0) rpm, in which case the horsepower would be zero (0).

FULL-LOAD TORQUE

Definition: Full-load torque is the torque to produce the rated power at full speed of the motor.

$$\text{Torque (in-lb)} = \frac{63{,}025 \times HP}{RPM}$$

$$\text{Torque (ft-lb)} = \frac{5{,}252 \times HP}{RPM}$$

$$\text{Torque (Nm)} = \frac{9{,}550 \times KW}{RPM}$$

NOTE: Ratios, whether by gears, belts, chain and sprockets or anything else, are usually thought of as speed reducers, or less often, as speed increasers. They should be thought of more in terms of what they do to torque. A speed reducer is a torque increaser and vice versa. The laws of physics dicate that a change of speed via a ratio, proportionally changes the torque, as a factor of the ratio. Disregarding the friction in the system, the torque is multiplied or divided as a factor of the ratio. Thus a 5:1 speed reduction ratio, multiplies the input torque five (5) times (a MECHANICAL ADVANTAGE) and 1:5 speed increasing ratio would reduce the torque 5 times (a MECHANICAL DISADVANTAGE)

CONVERSIONS

HP =	KW x 1.341
KW =	HP x 0.7457
ft-lb =	Nm x 0.737562
in-lb =	Nm x 8.85
Nm =	ft-lb x 1.356
Nm =	in-lb x 0.113
ft-lb/sec =	HP x 550