Disc Cone Clutch Application Worksheet

Use this form to request engineering assistance. The data you furnish will enable us to understand your application and recommend* the appropriate clutch. When available please attach prints or dimensional drawings.

CONTACT INFORMATION

Name: _____

Email: _____

Company: _____

Address: _____

City: _____

State: _____ Zip: _____

Phone: _____

APPLICATION REQUIREMENTS

Available Operating Pressure (PSI): ..... _____

Input Power Shaft Size (in.): .....

_____

Starting Time Required (sec): ..... _____

Weight Of Rotating Members (lbs): ..... _____

Radii Of Rotating Members (ft.): ..... _____

Speed (RPM): ..... _____

Cycle Rate Per Hour: ..... _____

Rotation Reductions in Multi-Shaft Systems:

_____

_____

CALCULATE REQUIRED TORQUE

Begin the calculation with this basic formula:

$$T = \frac{WK^2N}{308t}$$

Where: T = Torque (in foot-pounds)

N = Speed (in RPM)

W = Weight of the Rotating Member (in pounds)

K^2 = Radius of Gyration (in feet)

t = Starting Time (in seconds)

The radius of gyration is the distance from the center of rotation at which the entire rotating mass could be concentrated and still be equivalent to the actual distributed mass (see axis diagrams).

For multiple shaft systems, use the following formula:

$$WK_e^2 = WK_s^2 + WK_1^2\left|\frac{N_1}{N_s}\right| + \ . \ . \ .$$

Where: WK_e^2 = Equivalent of WK^2 of multiple shaft system

WK_s^2 = WK^2 of shaft on which clutch is mounted

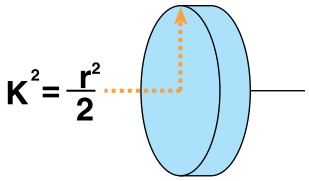
WK_1^2 = WK^2 of second shaft assembly

N_s = RPM of shaft on which clutch is mounted

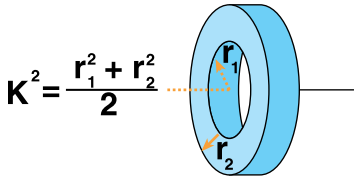
N_1 = RPM of second shaft

The formula is modified to read: $T = \frac{WK_e^2N_s}{308t}$

Solid Cylinder About its Own Axis



Hollow Cylinder About its Own Axis



CALCULATE HEAT DISSIPATION

Heat dissipation must also be considered in sizing a clutch. To find the amount of heat which an application will generate, which in turn must be dissipated, use the following formulae:

$$E = \frac{WK^2N^2}{5872} \text{ or } E = \frac{\pi TNt}{60}$$

Where: E = Kinetic Energy; ft-lbs

Then use: $BTU/Start = \frac{E}{778}$

$BTU/Hour = (BTU/Start) \times (Cycle\ Rate/Hour)$

To determine thermal horsepower, use:

$$Thermal\ Horsepower = \frac{BTU/Hour}{2545}$$

*Recommendation is based on information supplied by the customer. Final acceptance and approval is the responsibility of the customer. Tolomatic recommends field testing or simulation of field testing on the machine it is designed for.

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