



## ► SIZING INFORMATION

### Sizing and Selecting for Couplings and Safety Couplings

#### Sizing:

1) Determine torque ( $M_N$ )

$$M_N = M_a \cdot \frac{J_{load}}{J_{load} + J_{drive}} \cdot 2.5$$

2) Verify resonant frequency ( $f$ )

$$f_{coupling} = \sqrt{\frac{C_{coupling}}{J_{mot} + 1/2 J_{mach}}}$$

$$f_{drive} = \frac{1}{2\pi} \sqrt{\frac{C_{drive} \cdot (J_{drive} + J_{load})}{J_{drive} \cdot J_{load}}}$$

3) Apply operating temperature safety factor only for elastomer couplings

Operating Temperature	< 50°C	50°C - 70°C	70°C - 90°C	90°C - 110°C	> 110°C
Multiply $M_N$ by	1	1.3	1.6	1.8	2

$M_N$  Nominal Torque of Coupling

$M_a$  Acceleration Torque of Motor

$C$  Stiffness value [Nm/rad]

$f$  Resonant frequency [Hz]

$J_{mot}$  Motor inertia + 1/2 coupling inertia [kgm<sup>2</sup>]

$J_{mach}$  Load inertia + 1/2 coupling inertia [kgm<sup>2</sup>]

As a rule of thumb,  $f_{coupling} \geq 2 \cdot f_{drive}$

#### Selecting:

1) Determine series of coupling

2) Determine size of coupling based on  $M_N$

3) Verify shaft diameters are within range

#### Ordering Examples:

(When ordering, please include shaft sizes and tolerances)

##### Standard Coupling

- KM-20
- D1 = 14 mm k6
- D2 = 1.00" +0/-0.0005", x 1/8" keyway

##### Safety Coupling

- SKB-30
- D1 = 19 mm k6
- TA (disengagement torque) = 25 Nm

##### Drive Shaft Coupling

- WD-100
- D1 = .500" +/- .0005"
- D2 = 32 mm k6
- Distance Between Shafts = 915 mm