

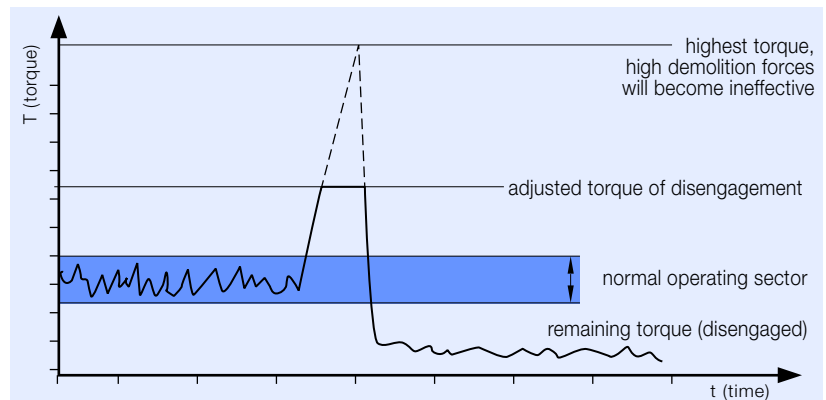
Safety Couplings Dimensioning

A good concept offers many possibilities

Even large destructive forces have no chance!

When determining the disengaging torque of the safety coupling, brief peaks of torque in the drive assembly as well as the machine need to be taken into account. **GERWAH®** safety couplings have been developed for rapid interruption. We recommend paying special attention to the motor characteristic regarding the maximal acceleration torque.

When using dynamic drives (servo motors), e.g. machine tools, we suggest to consider the influence of the moments of inertia. Since the acceleration torque in both positive and negative direction is usually much higher than



the nominal moment, the sizing of the safety coupling and the disengaging torque level needs to be based on the maximum acceleration torque.

The following values have been determined for a correct dimensioning of couplings on highly dynamic drives.

Generally, the following equation applies:

$$T_A = K \times T_{\max} \times \frac{J_{\text{mach}}}{J_{\text{mot}} + J_{\text{mach}}} = [\text{Nm}]$$

- J_{mot} = moment of inertia of motor
- J_{mach} = moment of inertia of machine
- T_{\max} = max. acceleration torque
- T_A = cut-off (disengaging torque) of coupling
- K = load or impact factor
- $K = 1,5$ (regular movements)
- $K = 2$ (irregular movements)
- $K = 2,5 - 4$ (shock loads)

A load/impact factor of $K=1.5 - 2$ should be applied to servo drives in machine tools. A higher load factor should be used for extreme applications.