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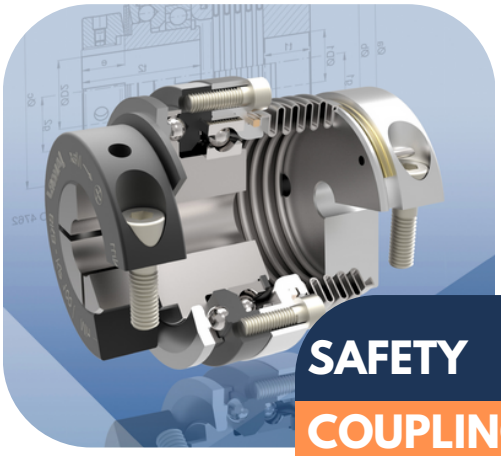
Torque limiters, or safety couplings, are mechanical devices designed to protect machinery by limiting the amount of torsional force (or torque) transmitted through the system. They function by disengaging the components when the torque exceeds a predetermined value, preventing damage and ensuring the continuous and safe operation of the equipment.

TORQUE LIMITERS PROTECTION AND EFFICIENCY IN MECHANICAL SYSTEMS

There are various types of torque limiters, each with different mechanisms to control the applied torsional force on a rotating object, for example:



Friction Torque Limiters:

They use friction discs or plates that slip when the torque exceeds the set limit. They can be adjusted by changing the pressure on the friction discs. These are generally used in conveyor belts, packaging machinery, and other industrial applications where simple and adjustable torque control is required.

Retention Ball Torque Limiters:

Contain balls that are seated in cavities. When the torque exceeds the limit, the balls are ejected from the cavities, disengaging the system. These limiters do not allow for adjustments and must be manually reset after activation. They are ideal for precision machinery, laboratory equipment, and robotics, where avoiding overloads is crucial.

Magnetic Torque Limiters:

Uses magnetic fields to transmit torque. When the torque limit is exceeded, the magnetic field breaks, disengaging the system. They are easily adjustable by changing the strength of the magnetic field and are suitable for high-speed applications and environments that require contactless torque transmission.

Shear Pin Torque Limiters:

They use a pin that breaks when the torque exceeds the limit, disconnecting the system. They require the pin to be replaced after activation and are commonly used in heavy machinery and agricultural equipment due to their robustness and simplicity.

Torque limiters are used in various industries to protect equipment and improve operational safety:

Automotive Sector:

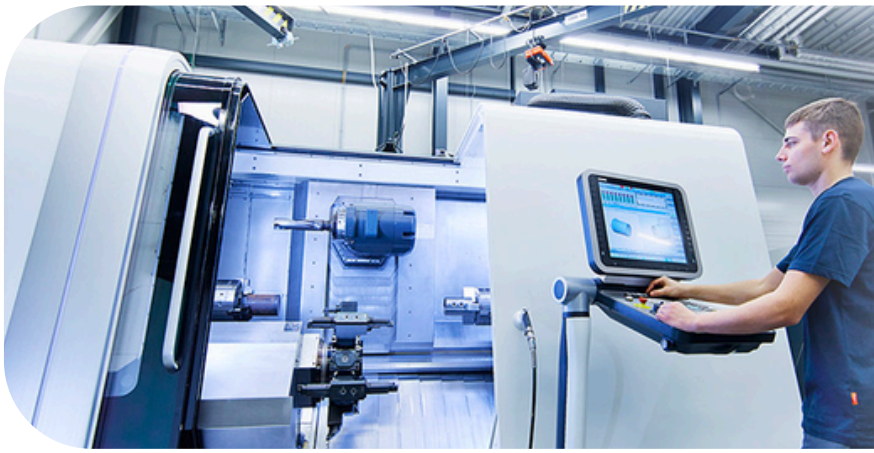
They protect engines and transmissions from sudden loads that could cause damage.

Industrial Machinery:

They prevent damage on conveyor belts, pumps, mixers, and other industrial equipment that could become overloaded.

Robotics:

They protect delicate components and ensure precise movements, avoiding costly damage.



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“The benefits of using torque limiters are plenty: they protect equipment from overloads, improve operational safety, reduce wear and maintenance costs, and optimize system performance. In common applications, from automotive to heavy industry and robotics, these devices ensure that systems operate within safe and efficient parameters.”