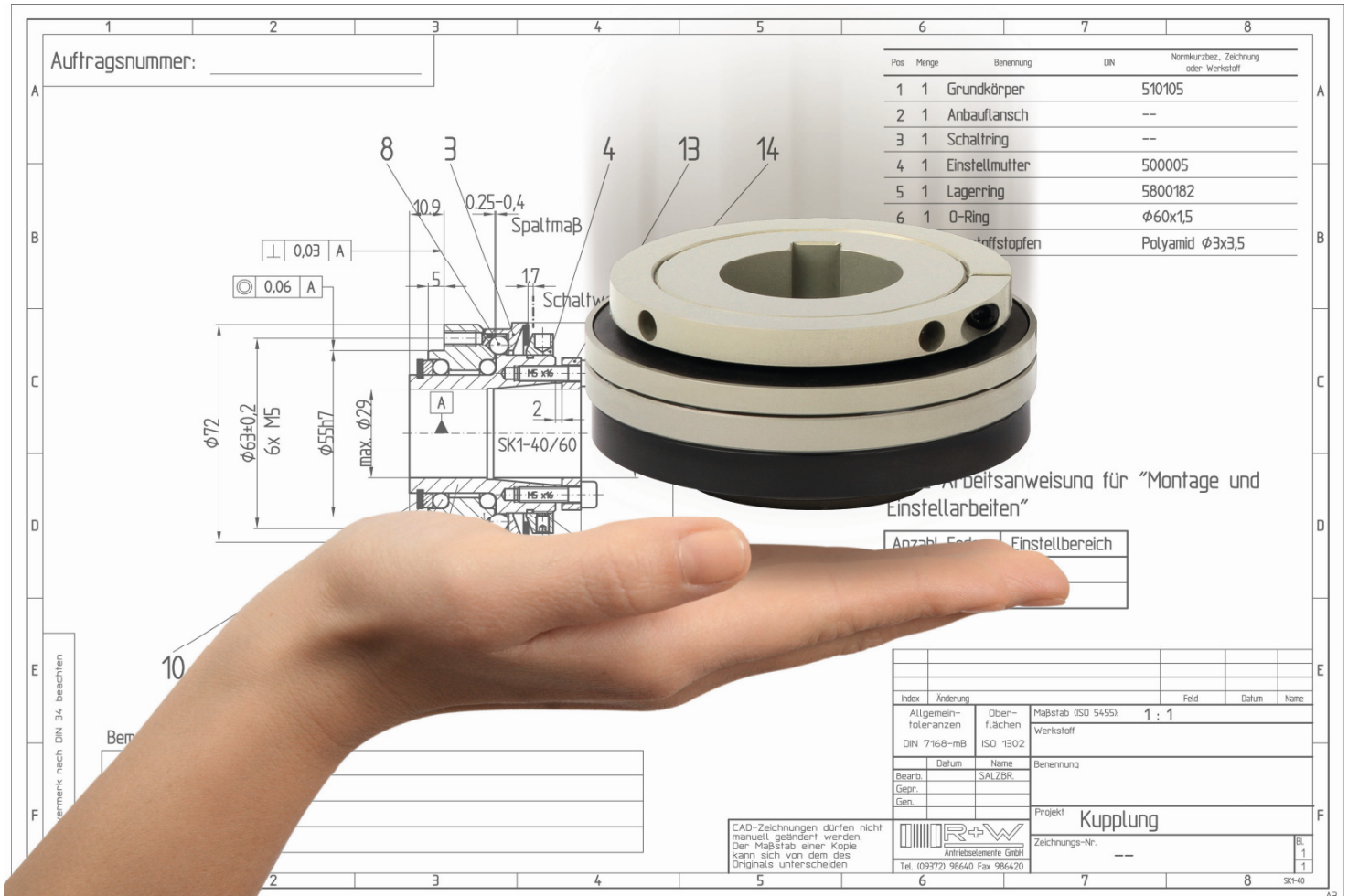


New ULTRALIGHT torque limiters with unparalleled power density

The concept of weight reduction through the use of high tech materials is not a new one. But for those involved in the design of motion control and automation systems, the elimination of excess mass and inertia continues to make the difference between success and failure. Energy savings, higher throughput rates, and reduced downtime, all without compromise to quality or accuracy, are on the minds of almost every machine design engineer today. To address this requirement R+W has introduced a revolutionary new torque limiter, SL Series, with half the inertia and less than half the mass, allowing for a rapid and automatic recovery from torque overload even in the most advanced drive technology.



The use of mechanical torque limiters is often considered to be outdated by those who prefer to control torque overload through electronic current limitation. While this is effective in many cases, as machinery becomes more dynamic, the inertia of moving parts becomes more critical. It is indeed possible to abruptly decelerate a rotating mass through unintentional blockage or application of a dynamic braking system at a faster rate than the drive would normally accelerate. This creates torque overload through reflected inertia which is completely independent of the electronic system, and can easily exceed the peak torque rating of the motor. While older and bulkier designs may be out of the question, these modern high



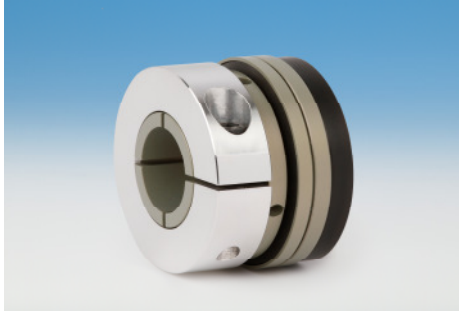
Light weight with clamping hubs
level of sensitivity and accuracy, with increasingly smaller impact on the size, mass, balance, and power consumption of the drive system. The SL Series utilizes the proven spring loaded ball detent system, along with a previously patented preload for zero backlash operation. But to achieve its target of 50% weight reduction, R+W embarked on a two year collaborative effort with local universities, designing the product

from the ground up rather than simply redesigning or optimizing existing products. The result is a torque limiter constructed from state of the art materials with unique surface treatments and innovative assembly technology - surpassing weight reduction targets and simultaneously reducing its footprint. One example of this newly achieved size reduction is a



The new family of SL Limiters up to 700 Nm

torque limiter rated to disengage at 160Nm, which in the past would

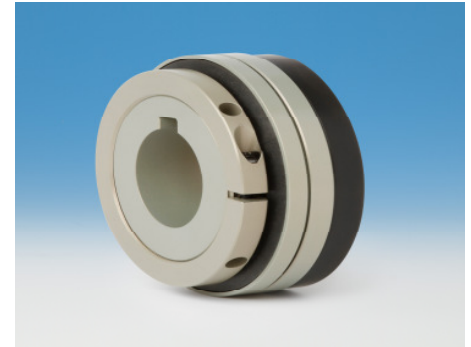


SLN for pulley drives

have had at best a mass of 1.3kg and a moment of inertia of $1.6 \cdot 10^{-3} \text{ kgm}^2$, now weighs 370 grams with a moment of inertia of $0.8 \cdot 10^{-3} \text{ kgm}^2$. What that amounts to is an automatic torque limiter with unparalleled power density on planet earth. In addition to custom material specifications, specially designed spring systems, and some improvements to the ball detent configuration, resulting in a 40% increase in torque capacity for a given size, the weight reduction was also achieved through the compression of individual

components. This, of course, is without negative impact on the precision or service life of the torque limiter. The SL Series, just like the previously existing R+W torque limiter designs, can handle in excess of 10,000 disengagement events, depending on rotational speed. The four sizes (Series 30 / 60 / 150 / 300) cover disengagement torque values from 5Nm to 700Nm, and involve various mounting options, including both direct and indirect drive versions. Models SLN (clamping) and SLP (keyway) attach by flange to sprockets, sheaves, pulleys, and gears, and include an integral dual bearing system to support belt and chain tension when properly located over the shaft. Models SL2 (bellows coupling) and SLE (servo insert coupling) mount inline between two independently supported shafts, such as motor to ball screw connections, and compensate for the small but inevitable misalignment which exists in this type of machine

layout. All four types are field adjustable, and come with both English and metric bores according to customer specifications. Proving once again that there is a place for mechanical torque limiters in



SLP with Keyway connection

cutting edge machinery design, the SL Series gives everyone who has overlooked this type of device due to size or weight considerations a chance for a second look. Contact R+W today with your requirements and realize the benefits of working with the ultimate coupling, worldwide.

Authors: Tobias Wolf – Product Engineer, R+W GmbH;

Andrew Lechner – Product Manager, R+W America.