

DRIVE

THE JOURNAL FOR COUPLING TECHNOLOGY

HOT TOPIC:
New range of couplings
for servo drives





Jörg Stang, Sales Manager

Enhancing performance

Dear readers,

precision and safety are of massive importance for drive tasks of all kinds. That applies to all engine and motor components – but in particular to couplings. Exact torque transmission not only helps you achieve maximum possible dynamics and productivity. It also has a compensatory and protective effect, should there ever be “trouble with the transmission”.

We should like to present to you two of our products designed to perform precisely these functions. The SCL servo disc pack coupling will shortly join R+W’s portfolio. It plays a key misalignment compensation role in industrial machine construction and plant engineering applications.

Our safety couplings also provide reliable protection against damage to transmission components. They are a key aspect of any solution designed to prevent long-term loss of production and stabilize overall performance, not just in precision terms.

We at R+W are also continuously upping our performance rate. In addition to upgrading and renewing our agencies abroad, construction of the new R+W headquarters in Würth am Main is due to begin this summer.

I wish you an interesting read.

A handwritten signature in black ink, appearing to read 'Jörg Stang'.

Jörg Stang

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New range of couplings for servo drives

R+W is expanding its servo disc pack couplings offering by adding the SCL range.

Servo drives are made for motion involving a high degree of precision and dynamics. These controlled, dynamic motors can be found in many industrial applications like automation equipment, packaging machinery and machine tools through industrial robots in the automotive industry. Shaft couplings for these demanding applications must be correspondingly inertia-reduced, provide misalignment compensation, and operate with a high degree of precision. R+W has decades of experience in this area with its precision bellows couplings, and will now be expanding its offering for this special application by adding its new SCL range; consisting of a zero-backlash disc pack coupling with light weight

aluminum clamping hubs - designed for lower torques. The servo disc pack coupling is suitable for dynamic drive tasks involving frequent stopping and starting as well as reversing operations, where the focus is on absolute positioning accuracy. Their hubs are made of aluminum, which delivers low weight and low moment of inertia. The disc packs themselves are made of high-strength stainless steel and feature a high degree of power density. High-strength screws that transmit torque via a frictional connection are used to fasten the disc packs – entirely zero backlash. No micro-movements are generated in the disc pack connection, which translates to higher torsional stiffness. The shaft-hub connection is only available

in a friction-locked format with a clamping hub, split clamping hub or conical clamping hub.

Preventing bearing damage

Modern-day servo motors enable a high degree of accuracy to be achieved. High-precision couplings play a major role in compensating for misalignment and in transmitting torque exactly. The double-flex design enables the disc packs of the disc pack coupling to compensate for not only angular and axial shaft misalignment, but for parallel misalignment as well. Very low restoring forces in all three types of misalignment prevent bearings from overheating. They therefore provide the major benefit of preventing bearing damage.

There are two key situations in which the SCL series would be suitable for use over bellows couplings in these types of applications. On the one hand the flexible disc packs enable it to compensate for shaft misalignment to a somewhat greater extent. On the other hand its modular design means it is suitable as a stock product and is therefore available on short notice. That is a key advantage especially in the event of a malfunction.

When designing drivelines, engineers have to factor in a large number of parameters which have reciprocal effects, including torque, torsional stiffness, reaction loads, moment of inertia, balance, and backlash. The R+W product development team always has these complex physical requirements in mind when designing couplings. A wealth of experience in both servo drives and disc pack couplings mean that R+W's latest product range will exhibit superior properties over the competition.

Enhanced moment of inertia

R+W's disc pack couplings are characterized by their small size. Recesses around the fastening screws deliver an optimum hub footprint. This reduces

material content, which in turn reduces the weight and results in a lower moment of inertia, which is of great importance for dynamic motion. Use of aluminum for hub material is paying dividends. The SCL is also a particularly compact disc pack coupling, the dimensions of which provide design engineers with maximum flexibility.

As with other R+W ranges, SCL models are fitted with disc packs made of high-strength spring steel. Its specific orientation lays the foundation for a high degree of torsional rigidity. During assembly the individual discs are positioned at a 90-degree offset to one another, which is accurately facilitated by a visual marking on each disc. This means that the rolling direction of the steel used has absolutely no negative impact on the coupling's torsional rigidity. The special spring steel was developed precisely to meet this requirement and therefore features a very high degree of tensile strength as well as excellent elastic properties at the same time. This means it is superbly equipped to cope with the forces acting on it during torque transmission.

R+W's disc pack couplings are delivered fully assembled. Users and design engineers do not have to worry about assembling the couplings, but can concentrate on installing them. Assembly is always performed by experienced R+W employees, which reduces errors and saves time.

The right coupling for every application

Disc pack couplings from the SCL range provide precision transmission for servo drives at lower torques. They are available with capacities ranging from 25 Nm to 300 Nm. Initially R+W will only be offering double-flex versions. These couplings are built for permanent operation throughout the equipment's entire service lifetime. >>

As with all couplings, R+W's development team is ready and willing to provide special solutions for applications where standard products can't do the job. In line with the proven "as efficient as possible and as custom as necessary" motto, our design engineers are delighted to assist with innovations and enhancements. Many new ideas for couplings are derived from dialog with customers and from their specifications. R+W therefore operates its own R&D department, including prototyping, which also partners with universities and scientific institutions. The company's first priority is always delivering solutions that meet customers' requirements: secure, effective investment in operational reliability and optimum production. Fit-for-purpose couplings are a fundamental requirement for smart, flexible processes.

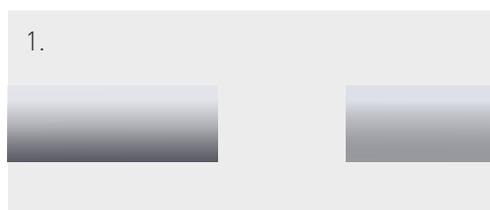
DISC PACK COUPLING WITH INTEGRATED COOLING LUBRICANT DUCT



R+W's LP series disc pack couplings are a range of torsionally rigid couplings (torque from 350 to 24000 Newton meters). These high-performance, robust models are also available with an integrated cooling lubricant duct. Manufacturers of machine tools with long spindle structures can conduct cooling lubricant through the integrated inner tube, over long distances, directly into the tool – an obvious benefit. The symmetrical conical clamping hubs and special balancing also deliver extremely smooth operation and a high degree of balance quality.

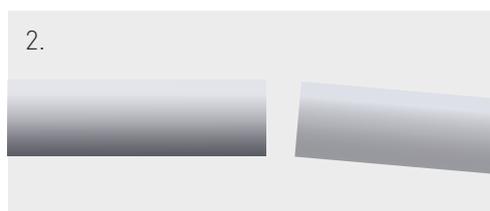
TYPES OF MISALIGNMENT

Shaft misalignment between driving and driven components is frequently caused by inaccurately measured components, assembly errors or external influences such as temperature fluctuations. Here a distinction is made between three types of shaft misalignment:



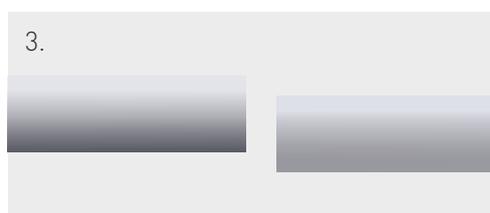
Axial misalignment

Temperature fluctuations can cause usually metallic materials to expand or contract. The resulting change in length leads to axial misalignment along the longitudinal axis.



Angular misalignment

Angular shaft misalignment is usually caused by inaccuracies during foot mounting, or lack of flatness in brackets for face mounting.



Parallel or radial misalignment

Parallel or lateral shaft misalignment is usually caused by inaccuracies during foot mounting, or lack of concentricity and / or large clearances in brackets for face mounting.

This is how a disc pack coupling works

Disc pack couplings are a type of shaft coupling for angular-synchronous applications, since they can compensate for misalignments between rotating shafts. They transmit torque between equipment angle-synchronously and are used, for example, to connect servo motors to machinery. Spring assemblies made of spring steel, which are attached to the hub using fitted bolts, serve as compensatory elements. They come in single-flex and double-flex versions. Coupling systems with twin disc pack assemblies can compensate for axial and angular as well as radial shaft misalignment. The advantage that disc pack couplings have is that they can compensate for major shaft misalignment and at the same time feature low restoring forces. This makes them eminently suitable for a wide range of mechanical and plant engineering applications.



Preventing downtime

R+W's precision safety couplings reliably protect manufacturing facilities against torque overload.

Process reliability is a key factor that determines the efficiency and profitability of a manufacturing operation. Mechanical failures can have far-reaching consequences, particularly where automation systems are involved – for the machinery itself and for the entire production process. Safety couplings protect manufacturing facilities against costly damage, time-consuming repairs and longer production downtime.

Safety risk – torque overload

The function of a safety coupling is to limit torque precisely to a preset level. During regular operation it monitors torque and then intervenes if there is a risk of overload. This is usually caused by blockages within the drivetrain. The mechanical safety coupling reacts precisely within three to maximum five milliseconds. The more immediate the reaction,



SK1 safety coupling: precise torque overload protection



SK2 safety coupling: low residual friction after disengagement

the less the damage. Here the mechanical safety coupling has a clear advantage, because it is three times faster than electronic means of protection, the electronics of which are also more prone to errors, because of the sensor technology used. Only one safety component per axis is needed to protect the system. It can be positioned where an overload is most likely to occur.

If a machine crashes because of a blockage, the safety coupling immediately disconnects the driving and driven shafts, using the spring-loaded ball-detent principle, for which R+W has developed special disc springs. In the case of auger fed centrifuges, for example, the auger and drum can occasionally become locked together during operation. With the aid of the safety coupling disengagement, the running speed of the auger can be allowed to match the speed of the drum in a matter of split seconds. The machine comes to a halt without being damaged.

Although a safety coupling is not able to prevent blockages and subsequent downtime entirely, it nevertheless prevents damage to machinery and gear unit components. Such damage can in turn lead to expensive and protracted repairs, because spare parts can have long ordering lead times. Plant and equipment downtime is therefore inevitable. Loss of production often has even more serious repercussions than just repair costs, because a lack of productivity entails a lack of profit contributions to offset high operating costs. Safety couplings are often paid for after the first disengagement.

High power density, compact design

Precision safety couplings from the SK, ES and SL ranges are available in a wide range of torsionally rigid or vibration-damping configurations and designed for disengagement torques ranging from 0.1 to 2800 Nm. In many versions the disengagement torque setting is continuously adjustable, and there are also choices for different shaft attachment methods. Another benefit of these zero-backlash and zero-maintenance safety couplings is their lightweight, compact design. Thus higher torque can be transmitted within a smaller footprint. Great power density and excellent continuous stress properties make a precision safety coupling an almost indispensable component of any driveline.

R+W's highly flexible modular system enables reliable safety couplings to be customized at great value for the cost. A safety coupling custom design engineering process always kicks off with in-depth expert advice. You can obtain information about the various models and how they function beforehand by visiting the R+W website or via the R+W app. You can also very easily custom configure your own safety coupling using the CAD-configurator – for optimum processes and consistent production performance.

all about 
automation
friedrichshafen

WILLKOMMEN!
GRÜASS DI!
GRÜEZI!



REGIONAL
FUNCTIONAL
OPTIMAL

Automation experts get together

In March R+W showcased what it does best for the first time at the “all about automation” show in Friedrichshafen. The two major positives of this automation trade fair with a regional character and a high-end professional audience are its focused structure and opportunities for in-depth dialog between practitioners.

“Regional, functional, optimal” – this was the motto of this year’s industrial automation engineering industry get-together at Lake Constance. The standardized booth construction and catering concept plus professional implementation enabled the exhibitors to concentrate fully on their core business. This economically powerful, tri-border area region attracted 180 exhibitors and 2227 visitors from Germany and abroad, mainly German-speaking countries, to the fourth edition of the fair. An increase of 18 percent in visitor numbers compared to the previous year and 23 additional exhibitors demonstrated the trade fair’s growing popularity in the industry.

“R+W regards this trade fair as being a very well organized platform. We are not only able to showcase our entire drive technology portfolio, but above all get to talk in depth with product developers and engineers”, says Alexander Schmidt from the South of Germany Sales Team in summary. “Its compact size and informal character mean that visitors have more time to spend at booths than at larger trade fair venues. We can delve much deeper into the subject of automation and discuss day-to-day practical problems with experts”, he adds. Not infrequently this generates actual inquiries from existing and new customers for future automation projects.



Informal atmosphere and in-depth technical discussions at “all about automation”

Digitization-related issues are of course always very topical in this environment. That’s why the trade audience, including many young engineers, was particularly interested in the R+W app and got the booth team to demonstrate its expanded range of functions and product features in detail. “We have a thoroughly positive take on debuting at ‘all about automation’ in Friedrichshafen. We made several new contacts during these two days and are now looking forward to the next two regional editions of this trade fair format in Essen and Leipzig”, Jörg Stang, Head of Sales at R+W, summarizes.

Visit us on September 12 and 13 at the “all about automation” show in Leipzig: Hall A, Booth 207

Optimum conditions for growth

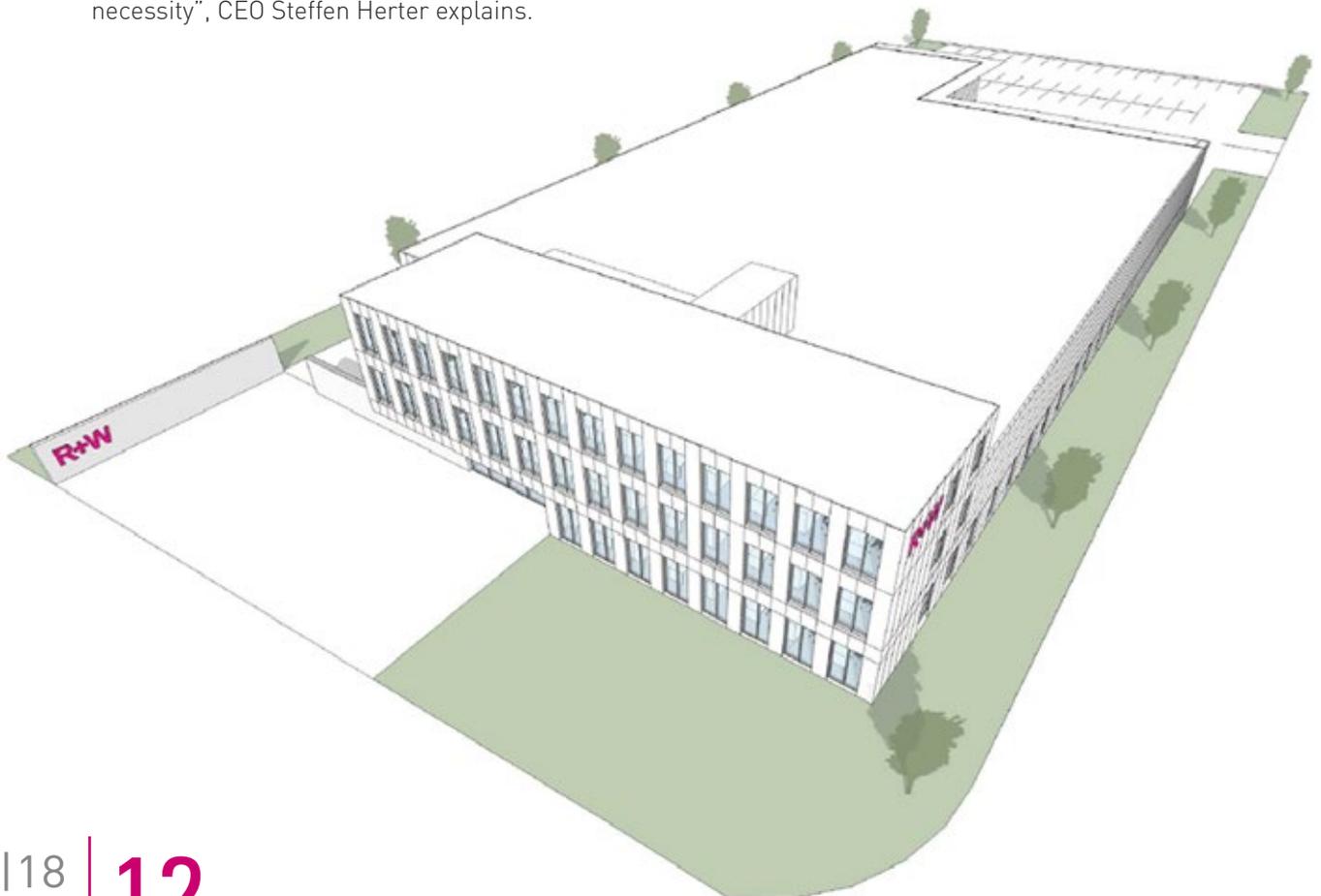
R+W is building its new headquarters in Würth am Main and creating more space for its production and business administration functions.

R+W has secured a plot of around 6500 square meters in the new "Weidenhecken" business park in Würth am Main, just a few hundred meters from its present location. This is where R+W's new headquarters are to be built, featuring approximately 2500 square meters of production space and roughly 1000 square meters of office space. In-depth planning is now in full swing and construction work is due to begin this summer. The move-in date is scheduled for summer 2019, just a year after the start of construction.

"The location selected is perfect for us, because it offers us more space and ideal conditions to grow our business and we only have to move a very short distance. This will enable us to increase our capacities massively in just a short space of time. Successfully expanding our business over the last few years has made this a necessity", CEO Steffen Herter explains.

R+W's headquarters are currently split between three sites: the main building in Klingenberg housing production facilities and the administrative function as well as two additional production and office spaces in Würth itself.

"The new building gives us the opportunity to align processes and structures to match our requirements perfectly. The targeted amalgamation and simultaneous expansion of existing production facilities will enable us to enhance material flows even more. As a result we will increase our efficiency and output substantially", Holger Vogt, Head of Operations, promises. This will enable R+W to remain one of the leading manufacturers of industrial and precision couplings in the future too.





R+W is growing

New offices for R+W branches in Italy, France, China and the USA

New buildings are not only being planned for R+W's headquarters. The company's uninterrupted expansion course has not spared R+W's branches abroad either. Many of our international colleagues have moved into their new offices over the past few months.

Leading the way were the employees of R+W Giunti, R+W's Italian subsidiary, who relocated in the spring to Cinisello Balsamo near Milan. The Italian branch's tenth anniversary was the perfect occasion to inaugurate the new facilities appropriately. Together with journalists, sales agents, distributors and international R+W managers, the in-the-mood-for-dancing Lombardians celebrated their "birthday" to the sounds of live music.

Colleagues in France, the USA and China were also delighted to have more space and modern office facilities.

Company van upgrade

Have you seen it already?

From now on, coupling components will be properly shuttled between our two production sites in the new R+W company van. During the production process a change of location to Wörth is sometimes required to complete special job steps before the coupling is returned to Klingenberg for final assembly. This smart vehicle is now used for these journeys. Safe trip at all times!



Have you met Kai Kupplung yet?

Series of explanatory videos kicks off on R+W's YouTube channel

May we introduce our new employee, Kai Kupplung? Kai is a design engineer and drive technology expert. In the future he will be regularly providing you with an understanding of a wide range of mechanical engineering topics, for example on R+W's YouTube channel, and will explain the world of industrial and precision couplings in a series of informative, entertaining videos.

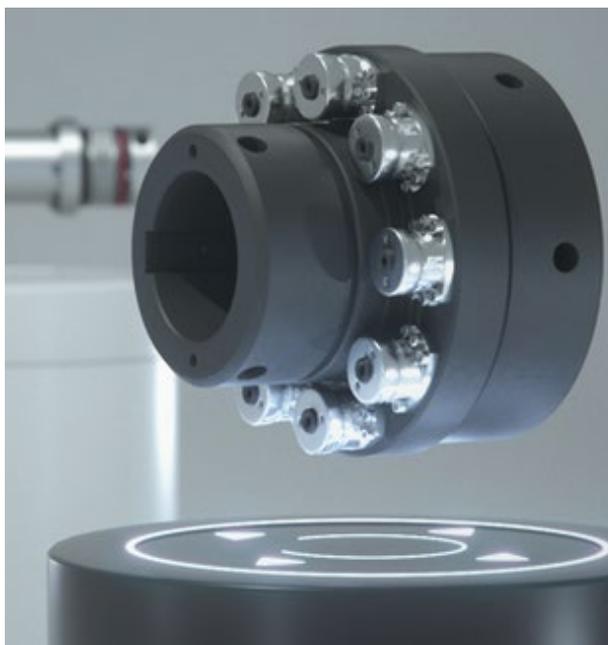
Find out more about the design of coupling elements and the general role they play within automation processes. Get familiar, real-life transmission problems explained to you using clear diagrams. Regularly stopping by pays dividends!

The R+W app is now available for Windows

Good news for all non-mobile users: the R+W app is now also available in a Windows version.

The R+W app is coming direct to your desktop. The new Windows version now enables you to make use of all the familiar, practical features of the R+W app, plus its augmented reality function and virtual showroom, without having to use a smartphone.

Full information about R+W's drive components is presented logically and practically in one app – download the free Windows application now: www.rw-couplings.com/app/



The R+W app blurs the boundaries between the real and virtual worlds.

New direct inquiry function in the CAD product configurator

Configure coupling faster and more conveniently – this popular CAD tool is now even more comprehensive.

The CAD product configurator makes customizing precision and safety couplings a walk in the park. The results can then be displayed in the form of 2D or 3D scale drawings or as datasheets, zoomed in on and rotated for closer viewing and downloaded for inclusion in your programs.

Have you already configured the coupling you require? From now on, the new direct inquiry function guides you in just a few clicks to your tailored quotation.

Check it out now at www.cad.rw-kupplungen.de



Product selection

Data entry

Processing

Download



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