

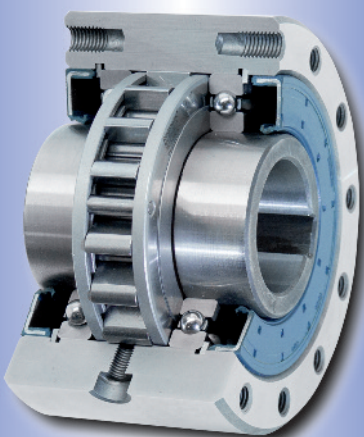
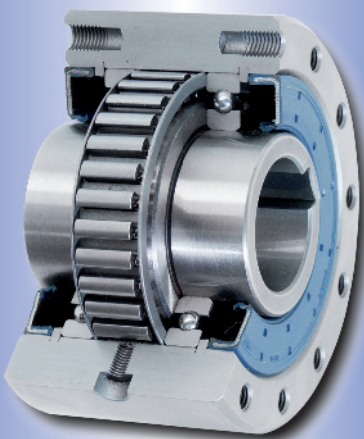
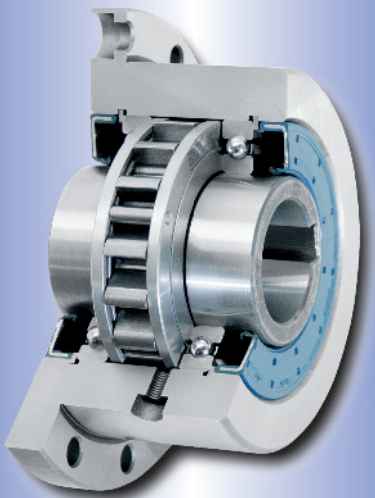
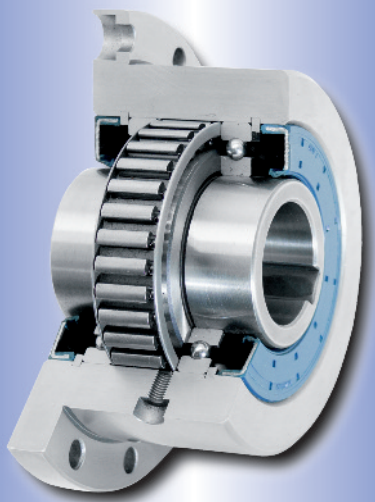
# The kinematic darling of designers

The ready-to-install complete freewheels from RINGSPANN's premium FB and FBF series are true universalists and cover a wide range of applications. They can be used in drive trains in machinery and plant construction as backstops and for overrunning and indexing functions. Since they are also available for a very large torque range and in four different sprag variants, they convince as extremely versatile drive elements. They can be ordered directly from RINGSPANN's online shop in versions with or without mounting flange.

If there were a versatility tournament in industrial drive technology, the freewheels of RINGSPANN's premium FB/BBF series would regularly land at the top of the winners' podium. That is because these complete freewheels provided by the manufacturer ready for installation are not only available in several sprag configurations for different performance demands, but also for an enormous torque range from 45 to 160,000 Nm. This opens up a wide field for designers and developers in mechanical engineering and plant construction to realise innovative and efficient solutions for backstops as well as overrunning and indexing kinematics in drive trains. They can also choose between basic versions with or without mounting flange. All FB/BBF freewheels can be selected and ordered directly from the RINGSPANN online shop. A number of variants with standard bores (max. 300 mm) are available at short notice.

## Chrome steel with wear protection

RINGSPANN's FB/BBF series complete freewheels are essentially sealed sprag freewheels with ball bearings, which are filled with oil at the factory and supplied ready for installation. Depending on the individual application, the designer can then choose between four performance categories with regards to the sprag configuration. The standard version and the RIDUVIT® design already cover a wide range of applications. Both are suitable for backstop and overrunning applications with maximum idling speeds of 4,800 min<sup>-1</sup> (inner ring) and 5,500 min<sup>-1</sup> (outer ring). As indexing freewheels, they can handle medium (standard) to high (RIDUVIT®) indexing cycles. The chromium



steel sprags of the RIDUVIT® variant are also characterised by a special surface with hard metal-like wear resistance. "This high-performance functional coating is based on important tribological findings and gives the RIDUVIT® freewheels a significantly increased service life," says Thomas Heubach, head of the freewheels division at RINGSPANN.

## Decision between X or Z

The other variants of the freewheels FB/FBF are more specifically designed, which differ in the design of the sprag lift-off and are predestined for the realisation of particularly demanding backstop and overrunning applications. Here, the design engineer can choose between complete freewheels with the so-called sprag lift-off X or sprag lift-off Z. Both versions were developed for high freewheeling speeds in long-term operation, where no wear on the sprags arises beyond the lift-off speed. The sprags' shapes and bearing arrangements, which have been thought out down to the finest detail, exhibit an innovative sophistication. "In these two disciplines of freewheel design, we possess internationally recognised expertise thanks to decades of in-house development work", emphasises Thomas Heubach.

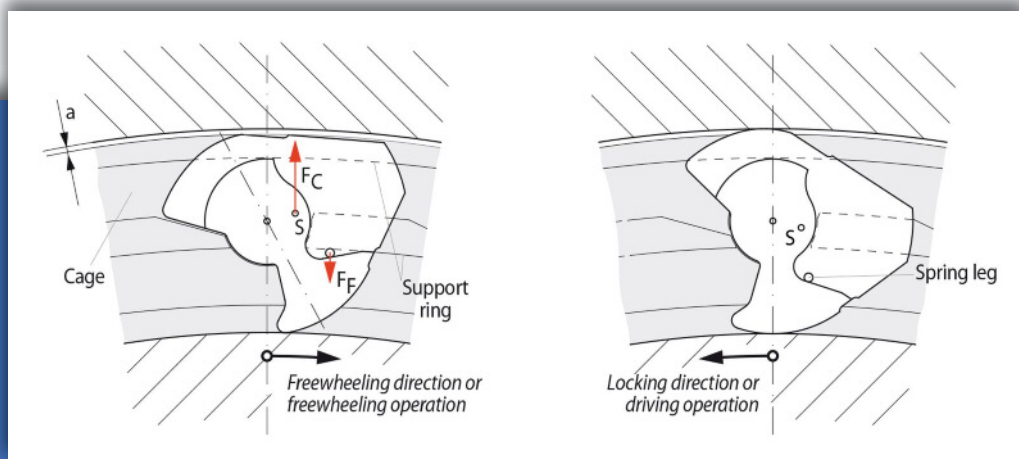
With the complete freewheels FB/FBF with sprag lift-off X, the sprags supported in a cage connected with the inner ring, rotate with the inner ring in freewheeling operation. Since this is

caused by centrifugal force without any contact to the outer ring, the freewheel with sprag lift-off X can rotate almost wear-free in applications with a fast rotating inner ring. Similarly, type-Z sprags rotate in freewheeling operation without contact with the outer ring - which is why the FB/FBF freewheels with this type of sprag lift-off prove to be the ideal solution for long-term applications with a fast rotating outer ring. "The first two questions that the design engineer must therefore answer when choosing between X and Z are therefore: What is the mounting position? In which direction of rotation should the FB/FBF turn freely and in which direction should it lock or drive?"; explains Thomas Heubach.

## Two relatives with shaft couplings

The complete freewheels of RINGSPANN's premium FB/FBF series are currently used in almost all sectors and niches of international mechanical engineering and plant construction. Whether in the drive systems of trimming shears for wide-belt rolling mills, meat processing machines, shredders, mail sorting systems or leisure rides such as rollercoasters - in countless applications they serve as extremely reliable and durable backstops, overrunning clutches or clutches.

Two close relatives of the FB family are tailor-made for applications with overrunning functions, where two shafts have to be connected with offset. These are the complete freewheels FBE



## Infobox

### The sprag lift-off X

The sprag lift-off X is always used in RINGSPANN backstops and overrunning clutches when in freewheeling operation the inner ring is rotating at high speed and when in overrunning function the driving operation is carried out at low speed. In freewheeling operation, the centrifugal force causes the sprags in an X-like form to lift off from the outer track. The freewheel then works wear-free and with unlimited service life. The sprags, which are supported in a cage connected with the inner ring, rotate with the inner ring. The centrifugal force turns the sprag counter-clockwise and rests against the support rim of the cage, creating a gap between the sprag and the outer track; the freewheel therefore operates without contact. If the inner ring speed now decreases to such an extent that the effect of the centrifugal force on the sprag is less than that of the spring force, the sprag again rests on the outer ring and "switches" the freewheel to locked condition. Please note: If used as an overrunning clutch, the driving speed must not exceed 40 percent of the lift-off speed.

and FBL, which RINGSPANN offers as ready-to-use assemblies with flexible and torsionally rigid shaft couplings from its portfolio. "The customer thus receives combined solutions from two functional components, whereby the shaft couplings can be flexibly docked onto the freewheel depending on the desired direction of rotation", explains Thomas Heubach. The flexible FBE solution is designed for smaller shaft displacements - for example between a main drive and an angular gear - and the torsionally rigid FBL design can accommodate large radial and angular misalignments without constraining forces acting on adjacent bearings. A typical installation situation for this is, for example, the positioning between the main motor and the creep drive of a conveyor belt system. Both system solutions consisting of an overrunning clutch and a shaft coupling are available in three variants: Standard, RIDUVIT® and with sprag lift-off Z.

### At home in all sectors and niches

In addition to a large selection of FB and FBF freewheels available at short notice, RINGSPANN can also produce special designs on request, for example for unusual bore dimensions or rare flanged connections. Depending on requirements and

quantities, the RINGSPANN Group can draw on the capacities of production plants on three continents. "Both the FB/FBF complete freewheels and the FBE/FBL combined solutions are real examples of our market leadership on the worldwide freewheel market and our positioning as an international one-stop supplier of high-quality components for industrial drive technology," underlines division manager Thomas Heubach.



**Thomas Heubach**  
Head of Division Freewheels  
at RINGSPANN GmbH

