

# Antifriction Bearings in Practice

After in-depth consultation and precise design and production, Franke Antifriction Bearings provide movement in diverse applications. For example, in computer tomography, processing centres, textile machinery, machinery for chip production, indexing tables or robots. Our Antifriction Bearings pass the practical test day after day – you can rely on that.

## In Medical Technology: Computer Tomography

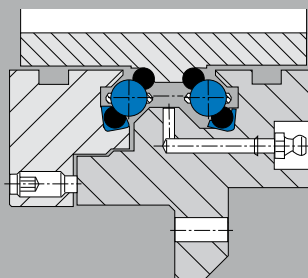


Photo credit: Siemens AG

The patented Franke **Fluesterlager**® as the main bearing in computer tomography contributes to exact x-rays thanks to its design tailor-made to the needs of medical technology.

### The Features:

- Smooth and low-vibration running is even ensured at high rotary speeds thanks to CNC-ground raceways.
- The elastomer profiles between the race rings and the race ring bed form the basis for muted noise development and electrical insulation of the inner and outer ring.
- The silent bearing impresses with rotary speeds of up to 300 revolutions per minute.



Ball diameter: 12 mm  
Bearing diameter: 1500 mm

## In Machinery: Machining Centres

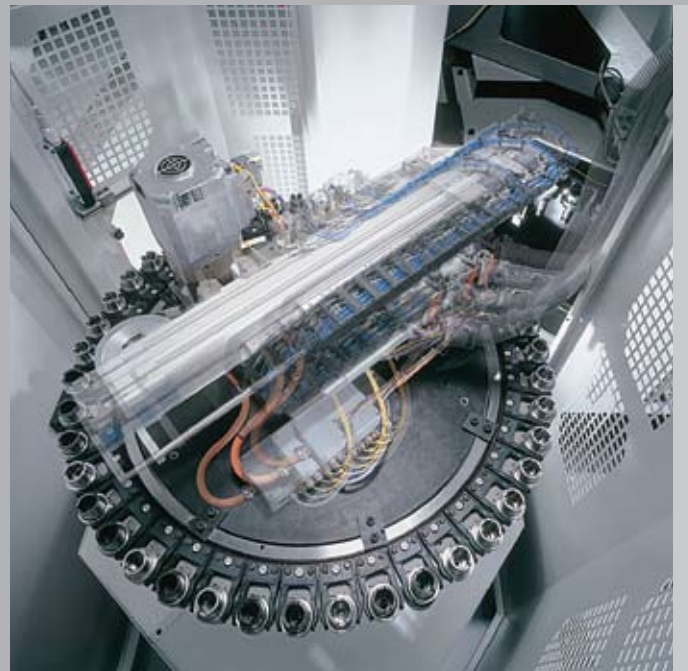
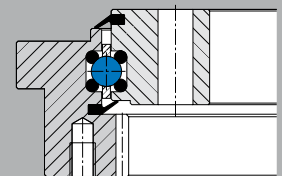


Photo credit: Hermle AG

In tool changers at machining centres, our bearing assemblies help to ensure that different tools are fed quickly and precisely into the machining head.

### The Features:

- Due to the high centre freedom of the bearing assemblies, the drive system can be installed to the inside.
- Labyrinth seals protect the raceways of the bearing assemblies from chipping and coolants.
- The preload of the bearing guarantees high accuracy and even adjustment – thus, nothing stands in the way of quiet running and maximum precision.



Ball diameter: 9.525 mm  
Bearing diameter: 970 mm

## In the Textile Industry: Circular Knitting Machines

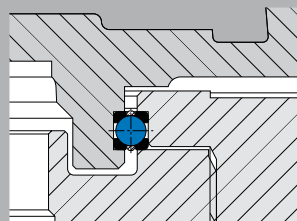


Photo credit: Mayer & Cie. GmbH & Co.KG

Our bearing elements for circular knitting machines have a decisive influence on the quality of the textiles due to their precision.

### The Features:

- Even under severe thermal and mechanical loads, the bearing elements enable exact radial and axial guiding of the needles.
- The rotary speeds are up to 60 revolutions per minute.
- The quality of the machines is determined amongst other things by the quiet running of the bearing and the high surface quality of the raceways.



Ball diameter: 9.525 mm  
Bearing diameter: 960 mm

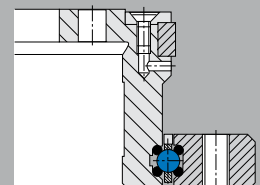
## In Clean Room Technology: Machinery for Chip Production



Wafer steppers are used for microchip production in the clean room. The illumination optics form the heart of this machine. They produce the filigree chip structures. A component of the optics: a Franke Antifriction Bearing.

### The Features:

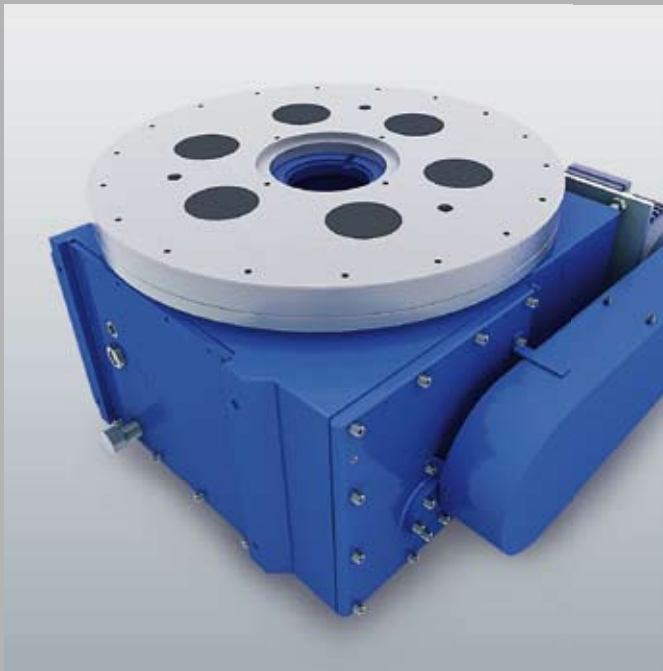
- So that the illumination optics can work with extremely low tolerances, the bearing has good radial and axial accuracy and high stiffness.
- Low-abrasion materials, special balls, a special ball cage and freedom from lubricants meet the necessary requirements for the clean room.
- The final cleaning and packing of the bearing is effected for clean room level 10000.
- Weight is saved by using aluminium.



Ball diameter: 6 mm  
Bearing diameter: 138 mm

# Antifriction Bearings in Practice

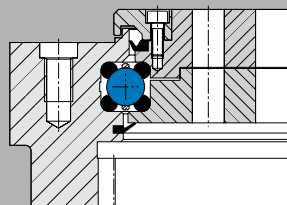
## In Machinery: Indexing Tables



By using indexing tables, also called Rotary Tables, tools are moved precisely. The constant and precise movement of these indexing tables is based on our bearing elements amongst other things.

### The Features:

- The bearing elements are precisely adjusted to the different loads. Enormous loads can easily be borne from all directions.
- The Antifriction Bearings guarantee that the Rotary Table can move without jerks or shocks, high repeat accuracy is included.



Ball diameter: 20 mm  
Bearing diameter: 800 mm

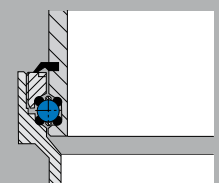
## In Automation: Robots



Our bearing elements are ideally suited for use in the mobile axles of small robots.

### The Features:

- The ingenious 4-point system from Franke facilitates high capacity from all directions of movement.
- As the bearing element is integrated into the existing robot design, only minimal installation space is needed.
- The high centre freedom of the bearing enables cables and supply pipes to be fed through.



Ball diameter: 6 mm  
Bearing diameter: 240 mm

## In Research: Lamp Positioning

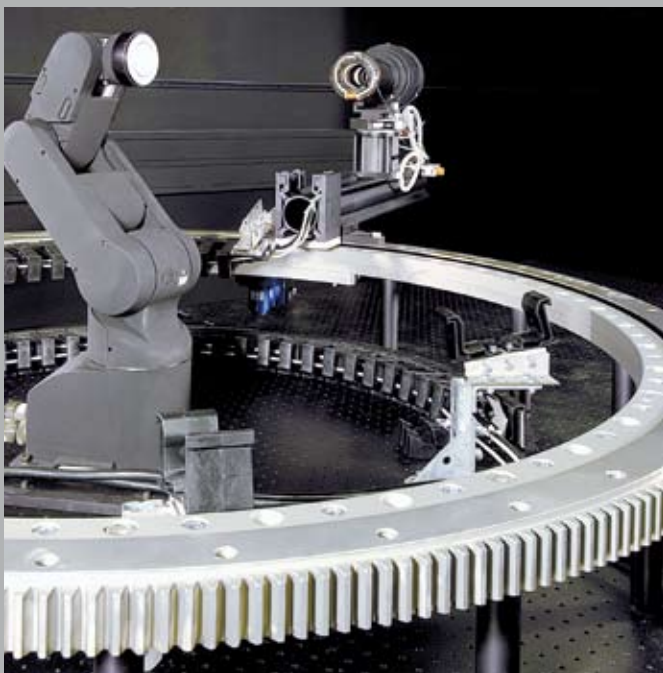
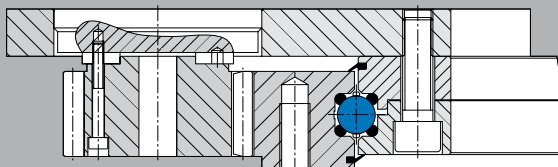


Photo credit: PTB

Facilities for lamp positioning in research are equipped with our large Antifriction Bearings. The most important components of these bearings: the outer gear and the pinion drive.

### The Features:

- Aluminium components are the basis for the low weight of the bearing, the high radial and axial accuracy guarantees exact positioning.
- The bearing is supplied complete: with driving pinion and planet angular gear.
- The bearing's large centre freedom provides space for the robots used and for feeding in supply lines.
- The bore shape is oriented to customer requirements.



Ball diameter: 20 mm  
Bearing diameter: 1500 mm

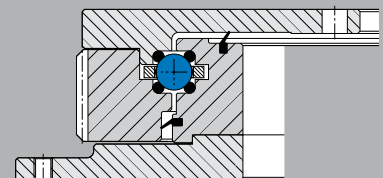
## In the Aviation Industry: Turbine Testing



Franke Special Bearings of 700 to 1500 mm are used in testing stations for turbines. They are used to position the conducting segments and rotating blades. The bearings are integrated in precise housing contours to record the complex measuring and testing sensors.

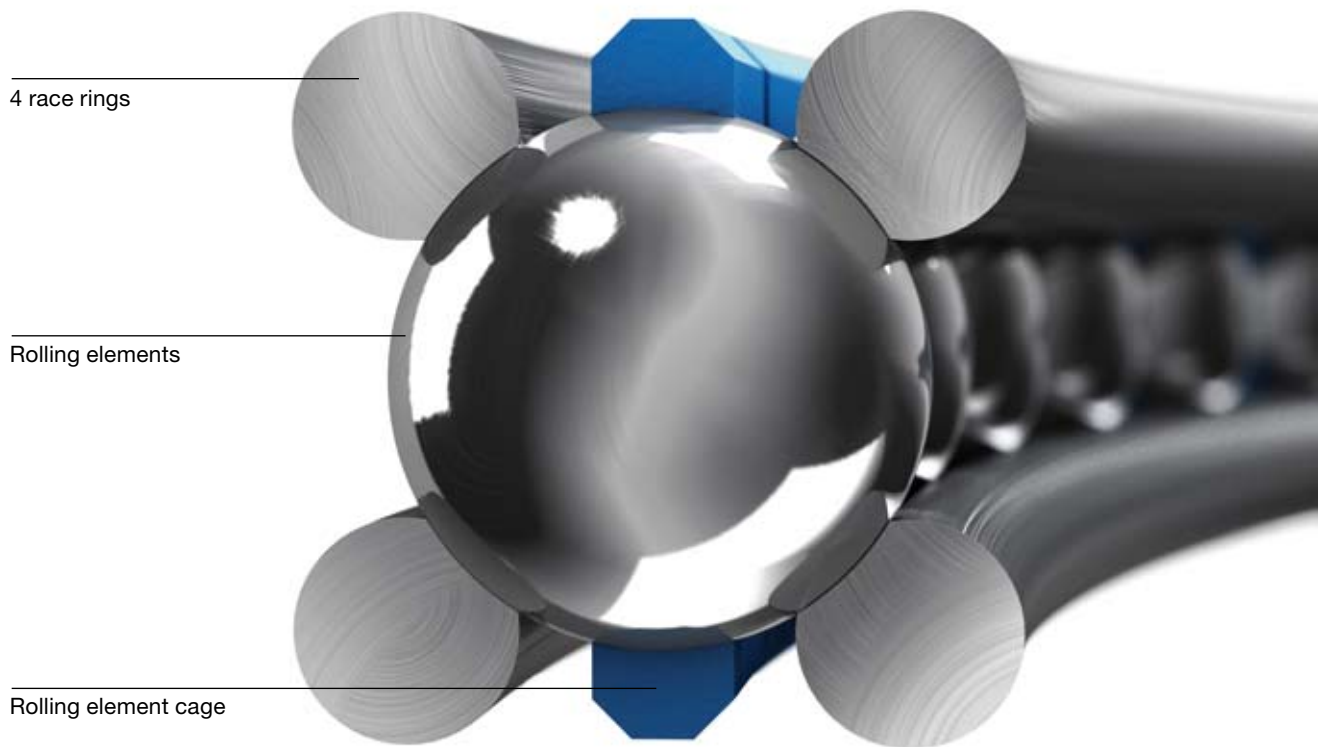
### The Features:

- The bearings withstand temperatures up to 200 °C.
- High accuracy requirements for radial and axial running are fulfilled.
- The bearings can optionally be adjusted to all interface dimensions.



Ball diameter: 16 mm  
Bearing diameter: 850 mm

# Bearing Elements – Advantages and Characteristics



## The Characteristics:

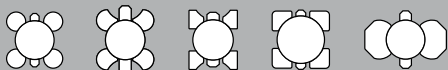
### Race Rings

The four race rings have a diameter of 1.5 to 7 mm as standard. The special diameters are 0.75 to 22 mm. Different race ring diameters can be combined with different ball diameters.

The raceway of the ring is optimally adjusted to the diameter of the rolling element in its osculation. Osculation and angle support of the race ring are individually specified and are determined by the installation situation.

The raceway surface is either ground or drawn. Ground surfaces provide the highest precision and smoothest running. However, Franke also offers unground ball race rings.

There are several race ring profiles to choose from (see p. 28–39).



### Rolling Elements

The standard steel rolling elements correspond to DIN 5401, G28. They are matched in tolerance and grade. Grades up to G3 are available for high accuracy applications.

You can choose between rolling elements of non-corrosive, non-magnetic steel or ceramics for special cases.

For particularly high requirements with regard to load rating and stiffness, Franke prefinished bearing assemblies with rollers as cross roller bearings are suitable.