

# GMN

## High Precision Ball Bearings



Standard Program  
Special Solutions  
Service

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# GMN

In Nürnberg, GMN Paul Müller Industrie GmbH & Co. KG produces with an experience of more than 95 years high precision ball bearings, machining spindles, free-wheel clutches, non-contact seals and air bearings for a wide scope.

Most of the products are made for special applications on customer requests.

A world wide net of service stations support all demands of our customers.

## High Precision Ball Bearings

GMN produces high precision ball bearings in precision class P4 (ABEC7) or better as spindle bearings (angular contact bearings), radial deep groove ball bearings, hybrid bearings and special bearings. Complete units with additional installation parts according to customer's wish supplement the product range. GMN coats bearings and other parts, e.g. for solid lubrication in vacuum technique in a company-owned PVD unit.

## Spindles

GMN machine spindles represent more than 70 years of experience in development, production and application. They are used for precision as well as for HSC high-speed processing. A close-knit network of dealers and repair service workshops guarantees comprehensive service and expert advice. GMN optospindles, air bearings and scanners are setting new standards in image projection. They have been developed for maximum running accuracy as well as stability in rotational speed and phase.

## Freewheel-Clutches

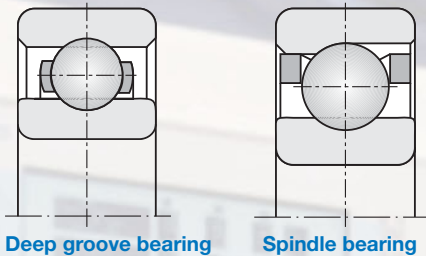
Freewheels are unidirectional couplings, transmitting or supporting torque in one direction by friction and allowing idling in the opposite direction. GMN manufactures sprag type clutches of two different sprag sizes to be used as indexing devices, backstops or overrunning clutches. Roller ramp supplements are available too.

## Non-Contact Seals

GMN offers two different systems of non-contact seals for wear free sealing of fast turning machine components. The GMN labyrinth seals are made of steel and aluminium by a special and very sophisticated production process which results in absolute identity of the inner and outer rings labyrinth profile. The GMN gap seals with return drain are made of high quality, highly resistant plastic material.

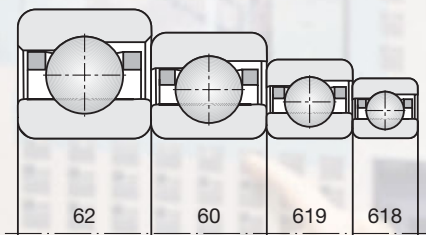


## Standard Program

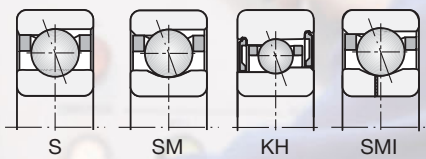


Deep groove bearing

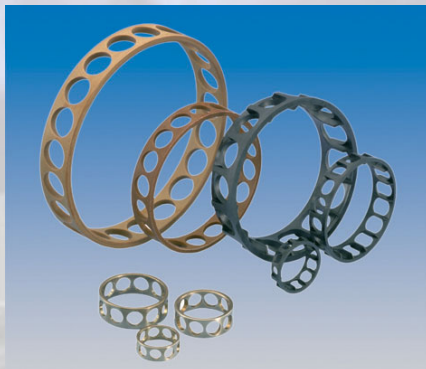
Spindle bearing



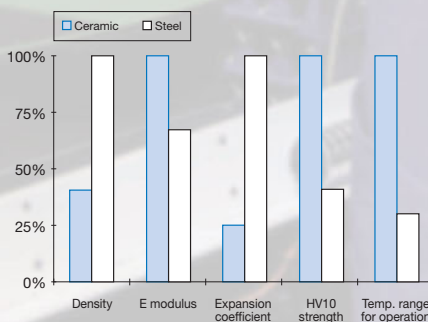
Bearing series



Bearing types



Cages



Ball materials

### Types of bearings

GMN produces spindle and deep groove ball bearings in the precision classes P4/ABEC 7 to P2/ABEC 9 for applications with the highest demands. Their reliability, precision and quality set the standard internationally.

The large product range of spindle bearings and the wide variety of bearing series and sizes, with bore sizes from 5 – 70 mm, always provide an optimum solution for customers with regard to loading, rigidity, speed and service life.

The new KH spindle bearing series with optimized raceway geometry has been developed for high speeds and increased service life. The open version for oil lubrication enables the highest speeds. The sealed version with for-life grease lubrication offers economic and technical advantages such as an increased service life, reduced sensitivity to contamination in the assembly area, and a simple and safe operation.



KH spindle bearing type

### Cages

GMN bearings are available with outer or inner-land-guided cages made from textile reinforced phenolic resin. Other types and materials (e.g. TORLON, AL-Bronze) can be offered for customer-specific requests.

The low-wear TXM cages made of PEEK (Polyetheretherketone) that have been especially developed for grease lubrication enable operating temperatures up to 250 °C. The optimized ball pockets operate as a lubricant reservoir and provide a high service life. The TXM cage has proven itself as a solution for cage vibration issues.

### Materials

GMN bearings with rings and balls made of ball bearing steel 100Cr6 (SAE 52100) are used in many applications. Hybrid bearings with rings made of 100Cr6 and balls made of silicon nitride  $Si_3N_4$  are often a technical and economic alternative. All bearings can be supplied in a hybrid form.

High temperature steels for higher temperatures and materials made of HNS (High Nitrogen Steel) are also available as alternatives.



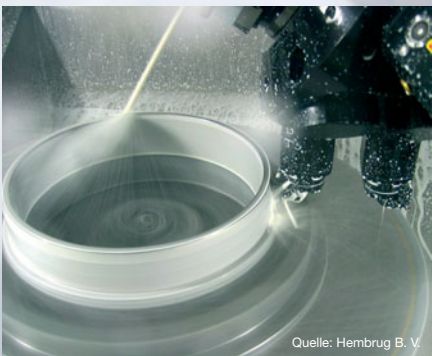
## Special Solutions



Special bearings for machining spindles

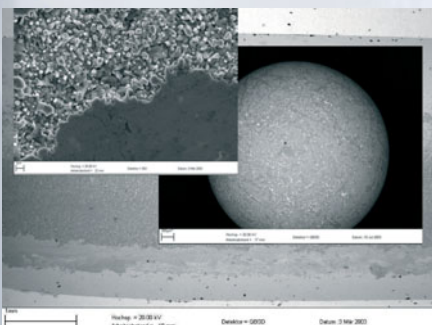


Bearing systems



Quelle: Hembrug B. V.

High-end manufacturing



After sales service

### Special bearings / units

#### *From idea to solution*

In addition to the main program, GMN also offers the possibility to find new solutions thanks to its engineering and flexible manufacturing areas. The products range from special bearings to ready-to-install bearing systems. After sales service and the continuous development of existing products set GMN apart from the competition.

Technical benchmarks that are founded on detailed basic developments are set for various applications:

- Vacuum applications (TMP, SEM)
- Medical technology (X-ray tube bearing units)
- Touchdown bearings for magnetic bearing systems
- Laser technology
- Measurement and navigation bearings and units
- Machine tool applications

### Technology

#### *GMN: proven success*

The continuous development of key competences, committed employees, a focus on quality and the careful selection of suppliers are guarantees of delivery dependability and quality.

The use of the most modern technology such as CBN grinding, hard turning and PVD sputtering form the basis for flexible solutions at the cutting edge of technology.

Innovative cost-optimised products demand the application of modern methods like 6-Sigma, SEM, TEM, as well as the close collaboration with customers, universities and competent business partners.



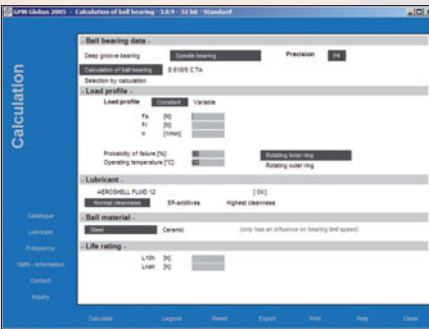
GMN PVD sputtering system

# Service



## Customer Service

An experienced team of technical experts are available for any questions about GMN bearings or bearing designs. Call us on +49 (0) 9 11-56 91-2 29 / 2 25 / 2 17 / 3 26 or contact us via [www.gmn.de](http://www.gmn.de).



## Globus calculation software

The correct bearing for a particular application can be selected quickly and easily using the Globus calculation software. It helps with frequency analyses and has its own extendable lubrication database.



## Internet

More information about the following can be found at [www.gmn.de](http://www.gmn.de):

- Product areas
- Bearing programs
- Current catalogues to download
- Calculation software
- GMN representatives at home and abroad



## "Quality management" is more than an obligation for GMN

Quality management isn't just a phrase for GMN, it's standard. The entire company is certified according to EN ISO 9001 : 2000 and its quality is continuously assessed both internally and externally.



**High Precision  
Ball Bearings**

Spindle Bearings

Deep Groove Ball Bearings

Hybrid Bearings

Special Bearings,  
Bearing Units

Vakuum Technology,  
Dry Lubrication



**GMN Paul Müller Industrie  
GmbH & Co. KG**

Äußere Bayreuther Straße 230  
D - 90411 Nürnberg

Phone: +49 (0) 9 11 - 56 91 - 2 29 / 2 25 / 2 17 / 3 26  
Fax: +49 (0) 9 11 - 56 91 - 5 87  
Email: [vertrieb.kula@gmn.de](mailto:vertrieb.kula@gmn.de)

Internet: [www.gmn.de](http://www.gmn.de)