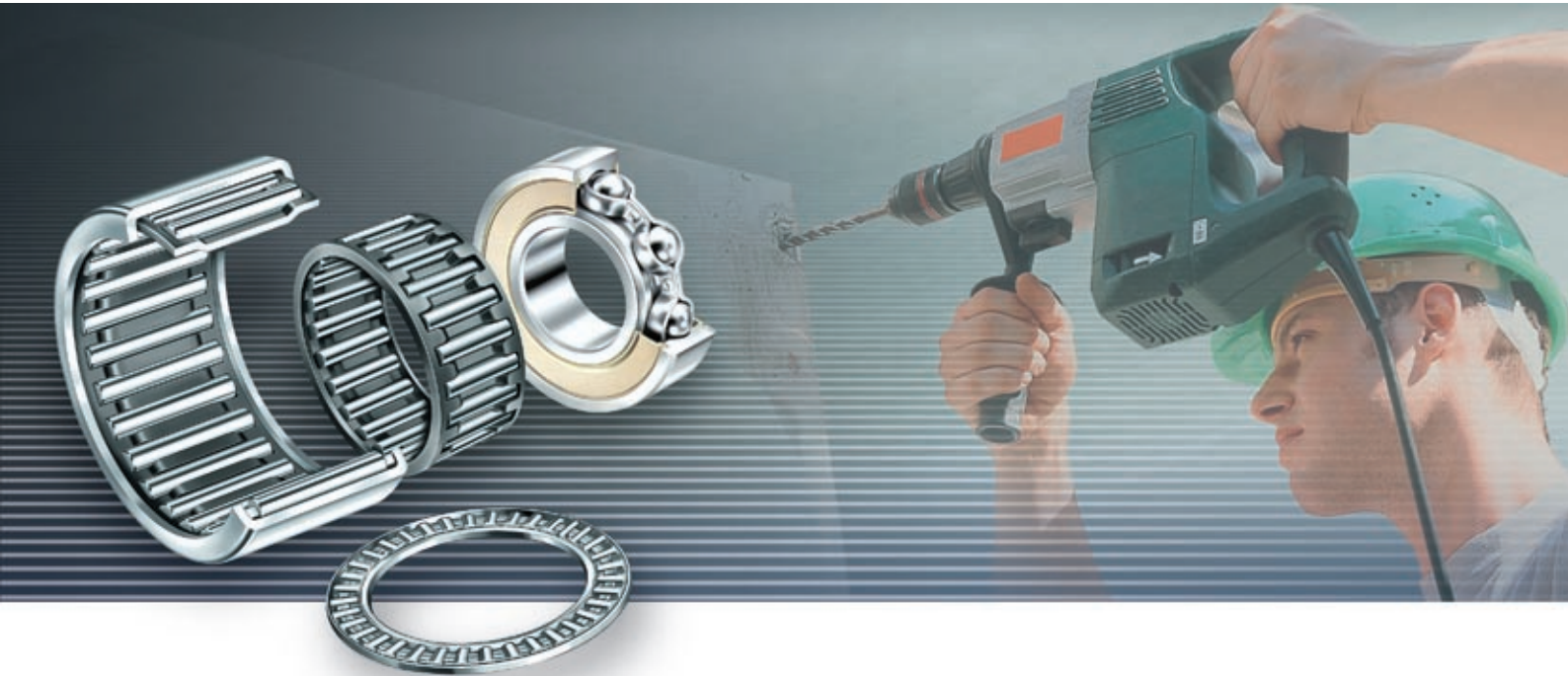




FAG



Bearing Supports and Components for Electric Power Tools

SCHAEFFLER GROUP
INDUSTRIAL

Your Partner: The Schaeffler Group



Schaeffler customer always receive good advice because our application engineers are specialists in their sector

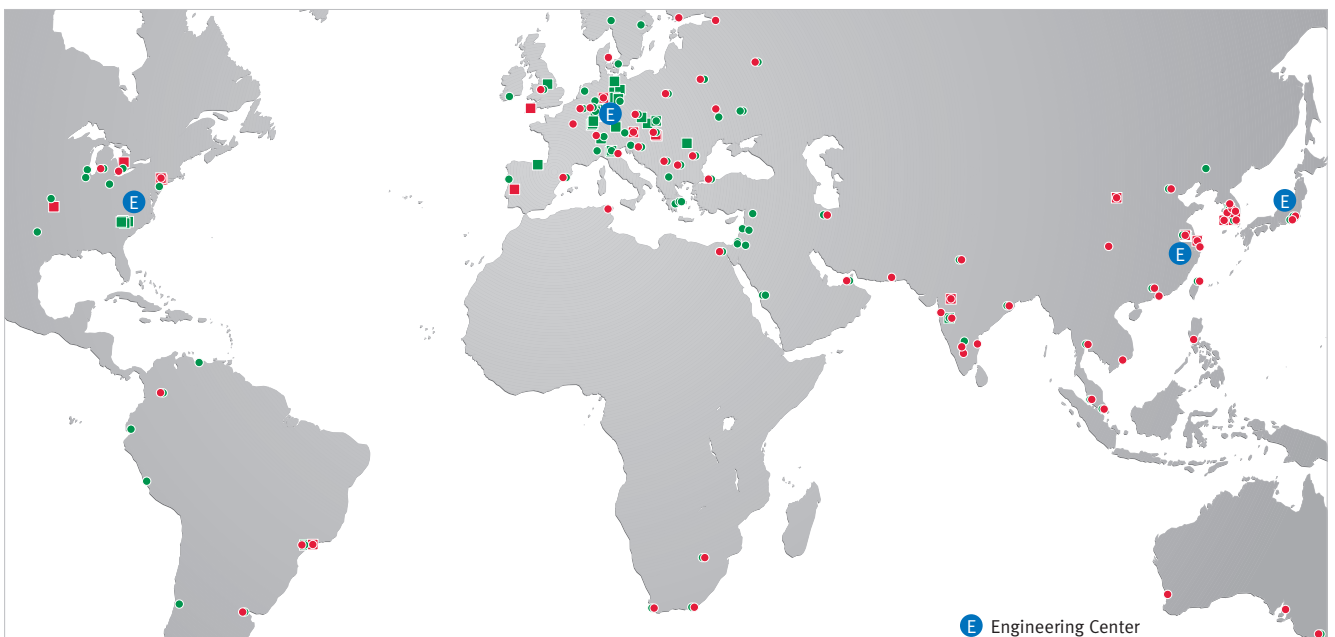
and produce electric power tools, place their trust in Schaeffler quality for professional tools and also in the do-it-yourself sector.

With the INA and FAG brands, we have a range of components and system solutions that is unrivaled in its quality and scope. It includes almost 40,000 catalog bearings as well as numerous customer-specific special solutions.

We manufacture “in the market, for the market” at over 180 locations in all major industrial countries of the world. Large production runs, the most up-to-date manufacturing technology and customer proximity make our products economical. This is also why local Chinese manufacturers increasingly rely on Schaeffler products.

The Schaeffler Group and its 66,000 employees ranks among the leading international rolling bearing manufacturers and is a recognized partner for all major automotive manufacturers.

The companies belonging to the Schaeffler Group are successful in more than 60 industrial sectors, and have also been active in your sector for some decades. All renowned companies, which develop



In our global network of Engineering Centers, we develop sophisticated, economical solutions from creative ideas and customer requirements

Your benefit: Cost-effective solutions in the required quality

Safe and efficient bearing supports for moving machine parts has been our profession for over 100 years. We are both a reliable supplier and a development partner for bearing supports in electric power tools.

What can you expect from us?

- A diversified catalog range – from low-end to high-end solutions – adapted to suit your needs
- Cost-effectiveness ensured by producing large quantities locally using state-of-the-art technology
- Quality ensured by worldwide standards
- Support geared towards the application in all stages of the product life cycle – extensive knowledge of the industry ensures optimum bearing design
- A wide range of bearing designs (for example seals)
- Costs, performance and quality optimized using a holistic approach.



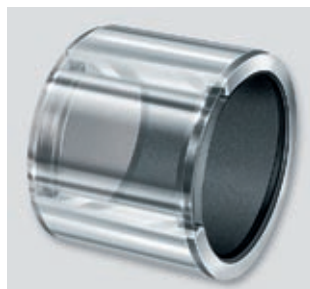
Multiple die press: Highly-developed, deep drawing technology enables economical production of bearing components manufactured by forming methods



Drawn cup needle roller bearing



Drawn cup needle roller bearing with steel flange



Maintenance-free plain bush



Axial bearing



Deep groove ball bearing



Machined needle roller bearing



Deep drawn guiding sleeve

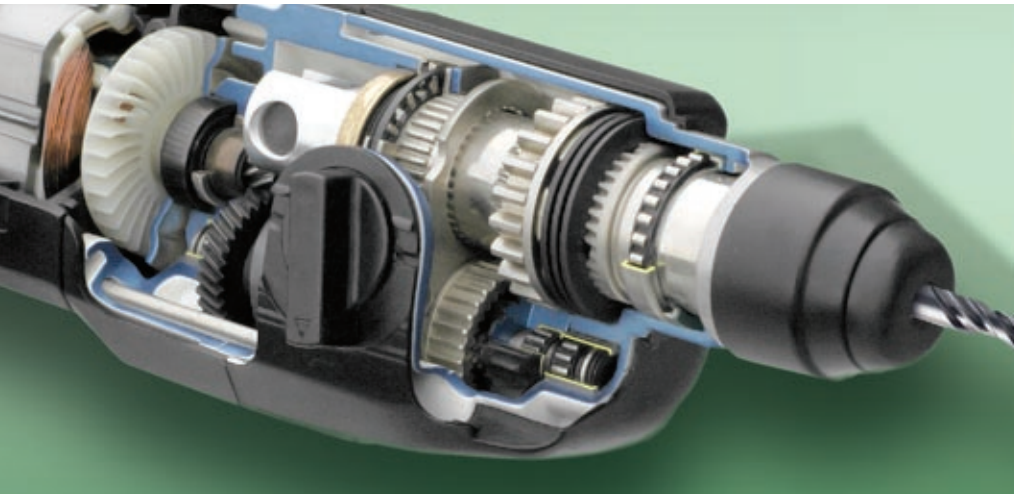


Fine blanked parts



Linear ball bearing

Cost-effective, volume produced products that still meet individual needs? Benefit from the varied INA/FAG bearing range!



The hammer drill – a typical application for needle roller bearings

range of sophisticated products. Drawn cup bearings are the right choice in electric power tools where the use of machined needle roller bearings is not essential due to lower performance requirements. INA drawn cup needle roller bearings with open ends have many advantages: They are compact, economical and provide a high load carrying capacity and a constant level of quality.

Are you really using the full performance?

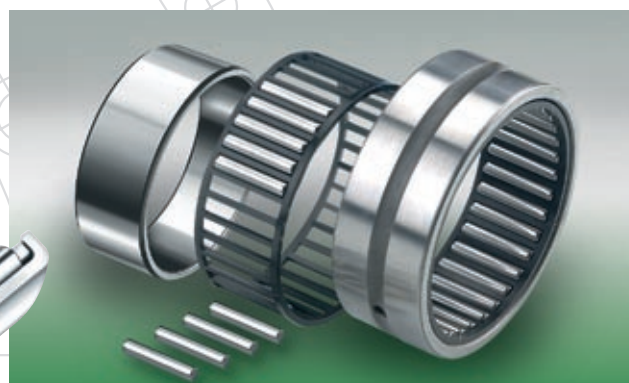
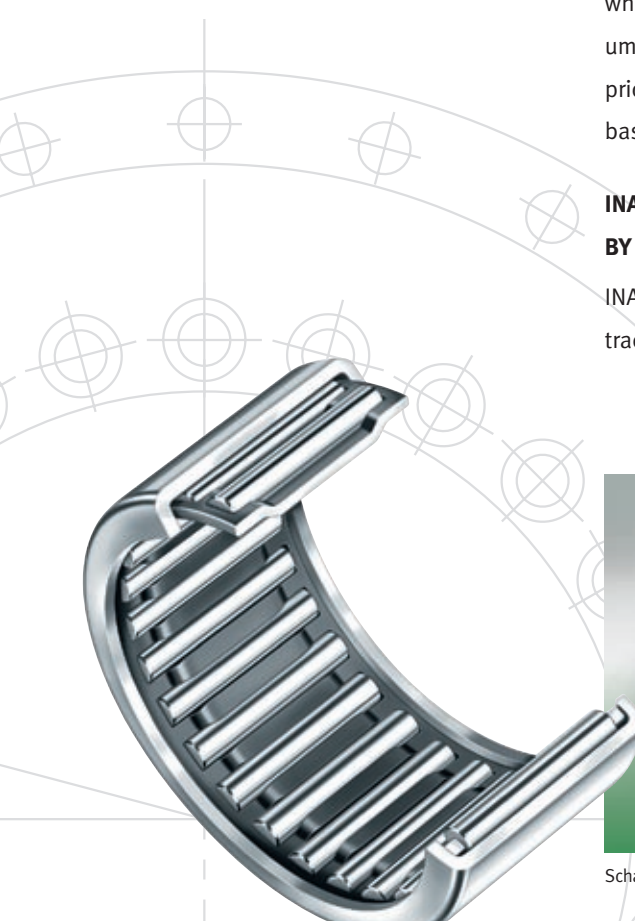
There are applications in which the performance potential of a catalog drawn cup needle roller bearing is not fully exploited. Drawn cup bearings with application-related performance offer an economical alternative here – our “HK with customized performance”. Rating life tests show that INA drawn cup needle roller bearings have a longer life than standard needle roller bearings from some other companies.

Customer-specific solutions are our specialty. Just ask us.

The Schaeffler Group has developed a large catalog range of rolling bearings which are continuously produced in volume. It ensures supply at an economical, price-performance ratio – on a worldwide basis.

INA needle roller bearings: BY professionals FOR professionals

INA needle roller bearings have a long tradition. This is matched by our wide



Schaeffler offers a wide range of needle roller bearing solutions under the INA brand

FAG deep groove ball bearings – standardized, but available in a wide variety

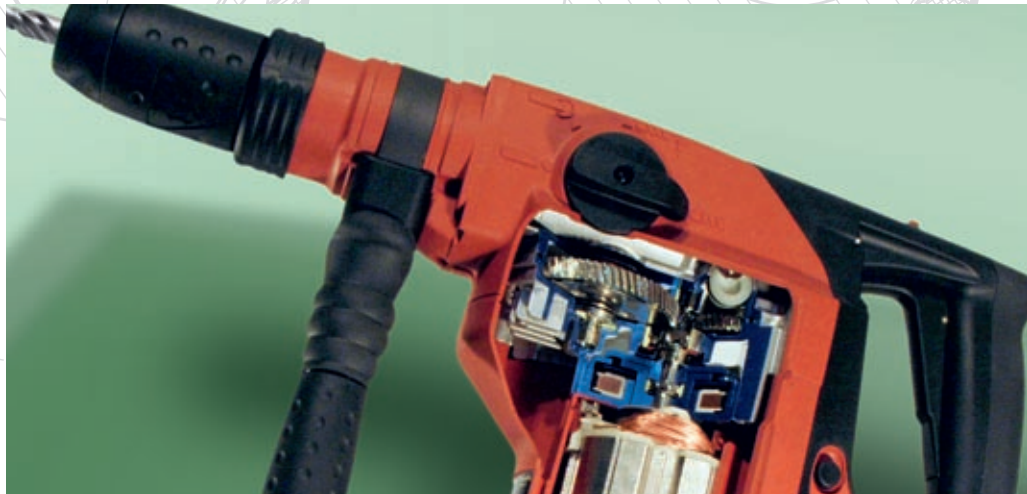
Deep groove ball bearings allow very high speeds and low friction. For this reason, they are indispensable in electric power tools.

Along with the basic design listed in the catalog, FAG offers numerous variants: bearings with one or two sealing shields, with special radial internal clearance, with increased accuracy and protection against corrosion or the passage of electrical current, etc. And if this selection does not suffice, we will jointly find a solution that is matched to your requirements.

Generation C – with improved seals

FAG Generation C deep groove ball bearings have been very successful in the electric motor market. With 50% less noise and around 35% less friction, these bearings increase the efficiency of motors and meet the increasingly strict requirements for minimizing noise.

A new seal concept significantly improves bearing operating life. Sealed Generation C deep groove ball bearings offer the perfect balance between friction and sealing action. They are greased for life with high-quality grease.



Deep groove ball bearings are particularly suitable for the spindle bearing supports of electric motors

The star of the show is the new HRS lip seal made of nitrile butadiene rubber. At high speeds in particular, this seal has lower friction and generates less heat than the previous RSR seal. The effectiveness of the sealing action has also been increased.

Sealing action	Z	BRS ^{*)}	HRS ^{**)}
Retaining grease in the bearing	+	++	++
Dust, dry contamination	+	++	++
Damp atmospheres	+	+	++
Liquid spray	-	-	++
Rotating bearing outer ring	+	++	++
Low pressure differences	-	-	++

Seal is: [++] particularly suitable [+] suitable [-] unsuitable
^{*)} available by agreement ^{**) from series 629 onwards}



FAG Generation C single row deep groove ball bearings for shaft diameters from 10 to 25 mm

Are there changes in your market? Let us develop new solutions together!



Meets the strict EU limits for the vibration loads of electric power tools: The Autobalancer makes angle grinders more ergonomic

Autobalancer – a contribution to improved ergonomics

With the Autobalancer, we have developed a product under the INA brand that reduces the vibrations emitted by angle grinders by more than a half. This makes work more comfortable, productive and is beneficial to health.

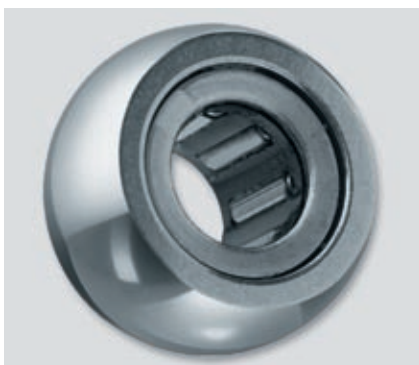
The Autobalancer is fitted as a compact, sealed unit to the drive shaft of the angle grinder. The shaft must meet the necessary accuracy requirements.

Advantages of the Schaeffler solution:

- Reduction in vibration of over 50 %
- Economical, since deep drawn, low-price parts are used
- Problem-free transmission of forces and ease of fitting due to geometrical locking
- High-quality coating of all outer surfaces

You do not need to make compromises if our standard range does not ideally meet your requirements. We can find a solution together – the Schaeffler Group is a strong development partner.

Considerably more than 1,000 new products go into volume production annually and just as many are registered for patents – for example, the INA Autobalancer, the innovative ball roller bearing or also system solutions with fine blanked parts.



Increased degree of freedom: Spherical needle roller bearing with a high load carrying capacity for grinding and cutting equipment



Expertise for system solutions: Rolling bearing + deep drawn part = new perspectives for your design



The innovative ball roller bearing: Increased basic load ratings in the same space by means of a new type of rolling element

You want a competitive edge? Optimum bearing design with BEARINX®

Rolling bearing design is the focus of our design support. Here we select the correct design to ensure that your product has a competitive edge.

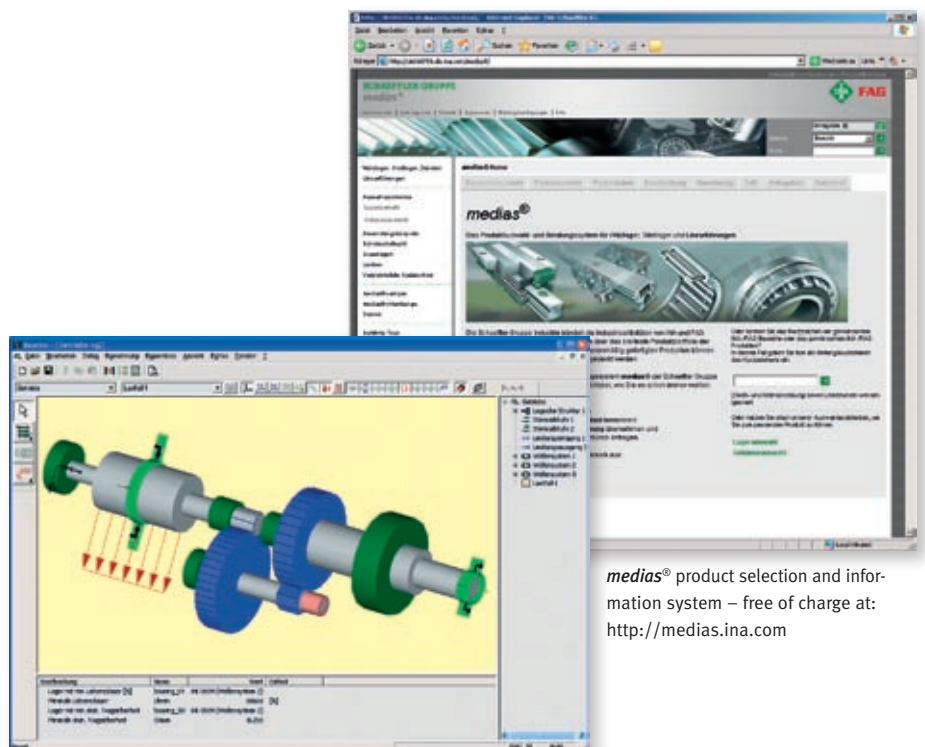
With BEARINX®, we have created the leading program for rolling bearing calculation. The software enables rolling bearing supports to be analyzed in detail – from single bearings to complex gearboxes, for example, in a hammer drill. All calculations are performed in a consistent calculation model. Even for complex gearboxes, the contact pressure on each rolling element is considered in the calculation. Amongst other factors, BEARINX® considers the elasticity of the shaft, raceway osculation and internal clearance, as well as the influence of lubrication conditions and contamination on the fatigue life.

From the complete machine design right down to the contact pressure on individual rolling elements – our calculation program ensures optimum bearing design and helps you to design the optimum system. We will point out the weaknesses and can support you during optimization.

When can we advise you?



The operational reliability of the bearing supports in the tool is ensured by considering the entire mechanical system in BEARINX®



medias® product selection and information system – free of charge at: <http://medias.ina.com>

Calculation for a drill using the BEARINX® gearbox module



Fax Reply to:

Fax +49 9132 82-45-6882

Yes, I would like to know more about INA/FAG products for electric power tools.
Please send me detailed information about:

- Rolling Bearings, Catalog HR 1
- FAG Generation C Deep Groove Ball Bearing, Brochure PRK
- Generation C Single Row Deep Groove Ball Bearings, Technical Product Information TPI 165
- Plain Bearings – For everything that moves, Brochure PLG
- INA Linear Technology: Performance, Quality and Variety without Limits, Brochure PLF

Company/department _____

Name _____

Position _____

Street _____

Zip code, city _____

Telephone/fax _____

E-mail _____

If you have any questions, please contact us at the address below or by sending an e-mail to:
specialproducts@schaeffler.com



Schaeffler KG

Industriestrasse 1 – 3
91074 Herzogenaurach
(Germany)
Internet www.ina.com

In Germany:
Phone 0180 5003872
From Other Countries:
Phone +49 9132 82-0



Schaeffler KG

Georg-Schaefer-Strasse 30
97421 Schweinfurt
(Germany)
Internet www.fag.com

In Germany:
Phone 0180 5003872
From Other Countries:
Phone +49 9721 91-0

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