Bearing Supports and System Solutions for Motorcycles
Schaeffler is the perfect partner for you

With its 76,000 employees, Schaeffler is one of the world’s leading manufacturers of rolling bearings. It ranks among the world’s major automotive suppliers and successfully serves more than 60 industry sectors.

With the INA and FAG brands we have a unique and high quality range of components and system solutions available. Almost 40,000 catalog products are part of this range as well as numerous customized special solutions. Where possible, we manufacture in close proximity to the customer – “in the market, for the market.” Large volumes and up-to-date manufacturing technologies ensure efficient production.

Sophisticated, economical and environmentally-friendly solutions are generated from customer requirements and creative ideas developed in our worldwide network of Engineering Centers. The motorcycle industry has benefited from this for many decades. Here, the synergy effects that result from our proximity to the automotive sector are transformed into advantages for the customer.

Schaeffler motorcycle sector: Engineering Centers all over the world

Wherever motorcycles are built, we are close at hand with the expertise and resources of our strong, international group of companies. After all, a successful cooperation is one that already begins in the development stage.
Our product range offers motorcycle manufacturers and their customers maximum benefits:

- Extended operating life of motorcycles via highly-developed components and assemblies with durable materials
- Reduced fuel consumption and increased cost-efficiency through innovative engine components and weight-optimized parts – Schaeffler is regarded as the number one specialist in deep drawing technology, which is used to produce many of these components
- Products that contribute to the reduction of CO₂ emissions, which helps protect the environment
- Customer orientation with a strong focus on optimum solutions for large and small motorcycles
- Customer-specific innovations by using state-of-the-art technologies in design, calculation, testing and manufacturing
- Perfection by optimizing costs, performance and quality in an integrated approach

To make the most out of the advantages of our product range – just ask us! We would like to talk to you about your application.
Low-friction, lightweight and maintenance-free

We have developed numerous engine solutions in cooperation with our customers’ engine design specialists. With the development of the INA cage-guided needle roller bearing, a complete economical machine element for high-speed shafts was available as early as 1949. Later, the first cam followers with cam rollers were put into volume production. Rolling bearings significantly reduce friction in the valve train.

We help our customers design hydraulic valve lash adjustment elements with the correct mating materials in order to create a solution that is as cost-effective as possible. The adjustment elements ensure that the valve lash always remains constant. The combustion process is ideal and the optimal operating state of the engine remains unchanged regardless of the varying operating conditions. The result: a reduction in fuel consumption and CO₂ emissions.

INA and FAG components also assist in balancing individual mobility with economy and ecology in numerous other motorcycle applications.

Crankshaft
Main bearing: low-friction FAG ball bearings (with optional integrated seal) and cylindrical roller bearings manufactured with the highest precision. They help keep noise levels and fuel consumption down.

INA needle roller and cage assemblies guided on the outside diameter (crank pin cages) are used for the connecting rod bearing supports. The dry-running characteristics are significantly improved by the use of coatings.
Piston pin bearings keep the radial internal clearance as small as possible. INA needle roller and cage assemblies guided on the inside diameter (piston pin cages) have proved to be an ideal solution in wear-resistant designs with extreme temperatures.

**Chain Drive Systems**

Mechanical and hydraulic chain tensioners with tensioner blades and chain guides dampen the vibrations from the timing chain. This reduces noise development and increases operating life. The camshaft runs at low friction in maintenance-free needle roller bearings or ball bearings.

**Valve Train Systems**

In the valve train, rocker arms, finger followers, and end pivot rocker arms or bucket type tappets with mechanical or hydraulic valve lash adjustment elements ensure optimal valve performance.

**Accessories**

Wherever components rotate in engines, cost-efficient bearings supplied by INA and FAG have proven highly effective: examples include, light, small drawn cup needle roller bearings with open ends in the starter motor or durable needle roller bearings and ball bearings in the oil pump.
Drivers of light and heavy motorcycles take durable components with high fuel economy for granted. Hidden from sight and absolutely reliable, rolling bearings play a decisive role.

Developing and manufacturing lightweight and space-saving components is one of our core areas of expertise. For example, for almost 50 years now, we have produced rolling bearings with economical cold-formed bearing rings. We develop high-precision components with the lowest movable mass, which can be economically produced in volume.

Transmission

For drive shafts and output shafts, our customers put their trust in FAG ball bearings with optimized load ratings and space-saving INA drawn cup cylindrical roller bearings.

Low-noise, hi-speed gear bearing supports with lightweight, split plastic cages increase the life of the transmission since they minimize the risk of false brinelling.
Clutch
Durable release bearings with formed rings provide high load carrying capacity in a small design space.

Gearshift
Low-friction FAG ball bearings and INA needle roller bearings make shifting easy. In contrast to steel-steel or steel-aluminum solutions, these rolling bearings offer consistent, low radial internal clearance for the shift drum and wear-free operation.
Chassis

Ball bearings with integrated seals that have been lubricated for life are the preferred choice due to their shock resistance and smooth operation. Their low friction and low wear also contribute to fuel savings. Sealed needle roller bearings are a cost-effective solution for special swing arm designs.

Sealed, adjustable tapered roller bearings, angular contact ball bearings or angular contact needle roller bearings serve to support axial and radial loads in the steering head. These rolling bearings, designed for high loads, provide safety in extreme situations.

Many motorcycle manufacturers put their trust in durable INA needle roller bearings with a full complement of rollers, or with cages for use as swing arm bearing supports. Our specialists offer advice regarding the required load carrying capacity and internal radial clearance in order to ensure the highest level of safety with regards to operating life.

Maintenance-free, robust ELGES plain bearings or spherical plain bearings are available for forks and suspension struts.

Reliability in all components

We do not want safety aspects to fall by the wayside. This is why we provide our customers with support in developing and designing the chassis. A perfectly adjusted chassis and precise steering system ensure that the motorcycle does exactly what the driver wants in critical situations.

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Wheel bearings
Spherical plain bearings
Drawn cup needle roller bearing (open end)
Special applications

Propshaft
INA deep-drawn bearings used as bearing supports in the universal joints transmit the power through the driveshaft. Staked retention is an efficient method developed by Schaeffler that allows the universal joints to be mounted axially and without clearance. This leads to excellent symmetries and therefore a reduction in vibrations and running noise.

Our strong customer orientation is also shown in the fact that for decades we have developed and produced assembly processes and machines specifically for rolling bearings.

IPH (the INA stake retention method), for example, enables a spider to be guided without axial clearance and without any additional safety components.

All with unrivaled cost-effectiveness! We can also supply a complete assembly machine at your request.

ABS
If a wheel locks, an INA sensor ring triggers the ABS control system. High pitch accuracy requires manufacturing precision, and the coatings protect the components from corrosion during the operating life.
Consistent quality control management in all stages of production ensures the highest level of product quality and safety for our customers. All steps are integrated in our company’s internationally recognized environmental management system.

An example of this is optimized transmission elements that reduce component weight while actually improving rigidity.

Specialists in engineering teams across the globe provide advice and support from the very beginning. Our customers benefit from the experience of our employees who demonstrate their knowledge and skills day after day.

As a company that is geared to the future, we invest in the development of your products. We use modern simulation processes, test stands and laboratories for physical and chemical tests.

Global Service

Customer-oriented expertise
From theory into practice

Design
Customer-specific bearing systems and components are standard for the INA and FAG brands. The use of state-of-the-art tools such as CAD goes without saying and is beneficial for both sides.

Calculation and selection
By using BEARINX® software developed by Schaeffler, we are able to model and calculate complex shaft systems as well as entire transmissions. The internal loads of all bearing types right down to individual rolling element contact are calculated and can be displayed as a table or a graph.

From the loads of each contact, BEARINX® accurately determines the calculated operating life of the bearing system.

Simulation
In the design and modeling phase, state-of-the-art methods such as dynamic simulation and FEA analysis are used. By means of “rapid prototyping,” the customer can even order a dimensionally accurate model that can be tested for fit and form in the application.

Testing
Only then – after optimization – does a product move to testing. By request, our customers’ prototypes can be tested in all situations and for all functions in our state-of-the-art R & D Centers. Tests are carried out on everything from wear behavior to noise range, isolated within the surrounding structure or in a complete vehicle. After a series of stringent, application-oriented tests, the volume production can confidently begin.