



# High-Precision Roller Bearings for Wire Rod Blocks

Small details, big results



# High-precision roller bearings

Precise, stable, and low-vibration

Roller bearings in wire rod blocks are used to provide a secure and accurate mounting for axles, shafts, and bevel gears. They ensure low-friction, low-vibration rotation of these components. Customers all over the world rely on high-precision roller bearings from SMS group. So they can not only avoid downtimes but also guarantee the high quality and dimensional accuracy of their rolled products.

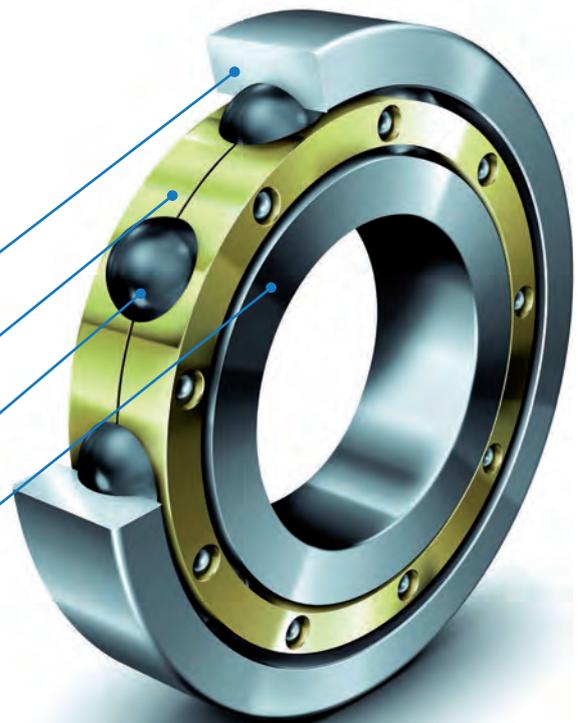
The greatest challenges for the roller bearings are the high speeds and dynamic loads in the wire rod blocks. With a rolling speed of up to 120 m/s and sudden peak loads during the initial pass, the roller bearings are subjected to extremely high forces. Depending on the form and temperature of the rolling stock, these initial peak loads may be more than twice the rolling force

or mill torque. These considerable stresses reduce the service life of roller bearings significantly. Only stable, high-precision special bearings can accommodate the loads generated and enable long-term operation of the plant – just like SMS group’s high-precision roller bearings, which have a DIN 620-compliant accuracy standard of P5 - P2 in respect of their parallelism and running accuracy.

Standard roller bearings, on the other hand, are only capable of bearing the forces generated for a short period of time, if at all, and will fail as a result of wear or material fatigue. This inevitably results in a cost and time-intensive plant shutdown.

## SMS group high-precision roller bearings are characterized by their:

- Precision manufacturing to 0.001 mm
- High degree of running accuracy, minimal wear
- Solid cages made of brass/steel/bronze
- High load-bearing capacity and speed suitability
- Excellent rotational performance with a steel or ceramic rolling element
- Universal design (angular contact ball bearing)
- Choice of X, O, or tandem arrangement



# „Made in Germany“

## Top quality with a strong partner

When it comes to manufacturing our high-precision roller bearings, we always put quality first. Schaeffler, which is based in Herzogenaurach in Germany and ranks as one of the market and technology leaders worldwide, manufactures precision bearings for the mechanical engineering and automotive sectors, as well as for the aerospace industry. The FAG brand represents over 120 years of outstandingly high-quality roller bearings.

Engineers from both companies work closely on the development of SMS group's high-precision roller bearings. The roller bearings are continually improved and adapted to market requirements, and the model series is subject to ongoing expansion. The special bearings are manufactured in Europe by Schaeffler exclusively for SMS group, thus ensuring consistently high quality standards. All quality-related processes, such as the grinding of the inner and outer races for example, are carried out at Schaeffler. This is one of the main reasons that the bearings are setting standards in terms of speed, accuracy, and service life.



It is this kind of quality that impresses – like SMS group products, FAG products from Schaeffler are the number one choice of customers all over the world. Whether it's bearings for aerospace applications, car wheel bearings, large-diameter bearings with an outside diameter of over four meters, or high-precision roller bearings for wire rod blocks too.



# SCHAEFFLER



# FAG

# Proven quality

## Original manufacturer know-how and experience

SMS group high-precision roller bearings are accurately manufactured to one thousandth of a millimeter – far more precise than any other manufacturer. Thanks to this high degree of precision, the bearings do not need to be marked with regard to their eccentricity, so there is no need for the standard marking on the inner or outer race. The advantage of this for our customers is: When installing the bearings, and especially in the case of paired bearings, no errors can be made by not taking the eccentricity sufficiently into account. Moreover, axles and shafts can be mounted with far greater precision, which in turn has a positive effect on the quality and dimensional accuracy of the rolled products.

### **Cylindrical roller bearings for radial loads**

Due to the special shape of the rolling elements, cylindrical roller bearings are suitable for maximum radial loads. In addition to the high load-bearing capacity, high speeds can also be accommodated, which is why these bearings are used primarily in wire rod mills. The cages offer a particularly high degree of strength and stability to withstand the strong acceleration and deceleration forces.



### **Deep-groove ball bearings for radial and axial loads**

These single-row bearings are suitable for high speeds and capable of absorbing mainly radial loads and, to a lesser degree, axial loads. Deep-groove ball bearings can be utilized for a variety of applications, however they cannot be dismantled for installation purposes. So in spite of their suitability for high speeds and axial and radial loads, they are not the only bearing used; other bearing types are also employed.

SMS group has many years of experience in the field of high-precision roller bearings – they are already in use in over 100 wire rod mills around the world. Our roller bearings are subject to ongoing development and are adapted to the changing needs of our customers.

# Super precise, extremely resilient

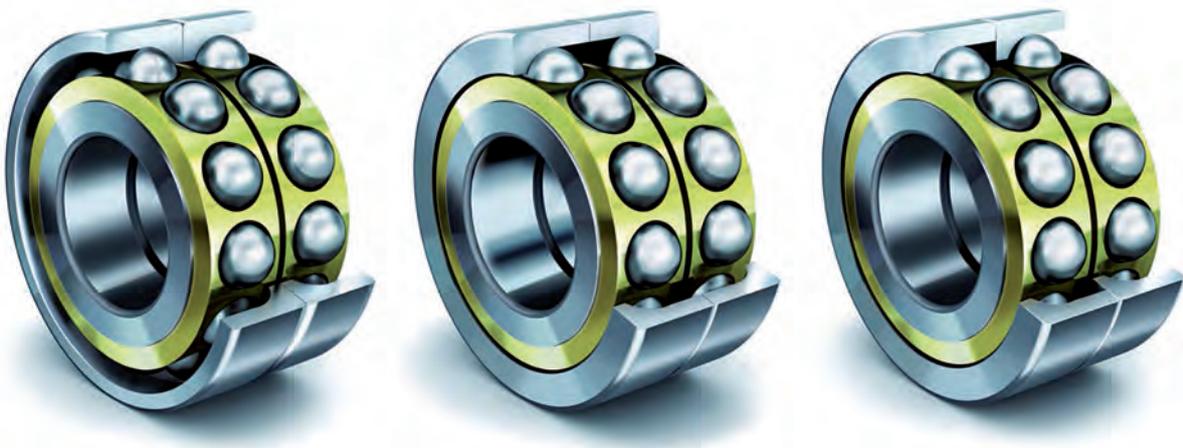
Precise, with no deviations

## Angular contact ball bearings for radial and axial loads

Angular contact ball bearings are not only able to absorb both radial and axial loads, they are also suitable for high speeds. Single-row angular contact ball bearings, however, can absorb axial loads in just one direction only, therefore they are normally paired with a second bearing.

The arrangement of the bearings in relation to each other influences the load absorption characteristics.

SMS group high-precision roller bearings are manufactured to a universal design. The advantage: Your choice of bearings can be installed in the relevant configuration; pairing or grouping of the bearings (as a result of eccentricity) is not absolutely essential.

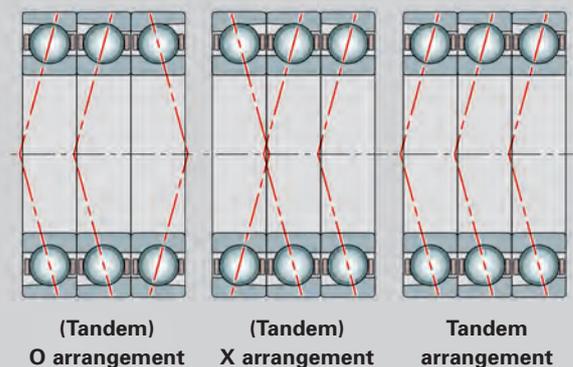


## Guaranteed flexibility with a universal configuration

If the load capacity of a single angular contact ball bearing is not sufficient, several bearings are installed next to each other. To ensure that the load distribution and the play in the bearing set are as uniform as possible, the bearings must be suitably aligned with one another. A distinction is made between the X, O, and tandem arrangement. Depending on the arrangement used, the axial loads are accommodated in different ways.

SMS group high-precision roller bearings are manufactured to such high standards of accuracy that any bearing can be combined with the same SMS type and installed in the relevant arrangement. Bearings

installed in pairs are supplied individually, thus ensuring that the bearings cannot be inadvertently mixed up during assembly. What's more, bearings can be ordered individually, thereby simplifying the procurement of spare parts and inventory control.





# Small details, big results

Although perceived to be a small part of the big picture, SMS group high-precision roller bearings ensure the long-term, trouble-free operation of plant and equipment. And they achieve this with minimal downtimes. Thanks to their high quality and precision, our roller bearings require little maintenance and last longer than standard components – a fact that is reflected not least in lower costs for wear parts.



# Product innovation

## Hybrid bearings for improved dimensional accuracy

Hybrid bearings have been successfully used for years for both machine tool and aerospace applications. Instead of conventional steel rolling elements, hybrid bearings have special ceramic rolling elements. SMS group utilizes the benefits of this special ceramic to optimize the bearing assembly of the roll shafts in a wire rod block.

### Enhanced final product quality

High-precision hybrid bearings can be used with little axial clearance. This ensures significantly higher axial rigidity of the bearing seat, meaning the roll shaft is mounted more precisely and the rolled product therefore has a better dimensional accuracy.

### Higher speeds

The use of ceramic allows speeds to be increased by up to 10% compared to bearings with steel rolling elements. The lighter weight of the ceramic rolling elements results in lower mass inertia, thereby allowing greater acceleration speeds and faster load changes to be achieved. In addition, the lower centrifugal forces cause less friction in the bearing, and the strength and stability of the cage is improved.

### Thermally robust

Hybrid bearings are subject to less friction than standard bearings, and the operating temperature is likely to be lower too, particularly at higher speeds. At the same time, thermal expansion is lower, which enables the bearing clearance and preload to be controlled more precisely.

Hybrid bearings are employed in all new plant and equipment from SMS group on the CL160 (6") and CL200 (8") roll shafts. What's more, all existing plants can be retrofitted with hybrid bearings without the need for modifications. This also applies to wire rod blocks from other manufacturers which are identical in design.

Property	Steel	Ceramic
Density g/cm	7.8 to 7.85	3.2 to 3.25
Therm. expansion coefficient	11.5	3.2
Hardness NV 10	700	1,600
Electrically insulating	no	yes



# Safety technology

## For original products

To protect customers from the risks of fake products, SMS group bearings are provided with a DataMatrix-Code. The code is uniquely generated for each individual bearing, so that the authenticity of each bearing can be clearly established. If there are any concerns about the quality or origin of a bearing, SMS group can determine with absolute certainty whether it is an original product.

**Background:** Copies and imitations of roller bearings are not uncommon. Many forgers try to profit from the market success of established manufacturers by distributing products that are generally of poorer quality. It is often difficult to identify copies from their appearance alone, yet in terms of function, quality, and service life, they cannot compete with the original products. Plant shutdowns or total write-offs caused by roller bearing failures are no exception, unfortunately, and result in time and cost-intensive repairs.

The DataMatrix-Code on SMS group high-precision roller bearings allows you to identify their authenticity.

Download the „OriginCheck“ app from Schaeffler on your smartphone or tablet and scan the bearing code.



**OriginCheck**

[www.schaeffler.de/apps](http://www.schaeffler.de/apps)



DataMatrix-Code

### How you can protect yourself against fake products.

- Check that the imprint on the roller bearing matches the packaging label.
- Buy your roller bearings only from certified retailers or directly from SMS group.
- Quality counts. Make your purchasing department aware – a low price is often not the most cost-effective.
- If you are in any doubt, use the DataMatrix-Code\* on SMS group bearings to verify their authenticity.

\* For production-related reasons not all bearing types are provided with a DataMatrix-Code. Contact us for an overview of bearings with an identification marking.

# High-precision roller bearings

Directly available from stock

Type of roller bearing	SMS group type designation	SMS group material no.	Dimensions (mm)	Weight (kg)
Cylindrical roller bearing	360005	11415404	400 × 500 × 46	21.50
	360009	11415111	130 × 200 × 33	3.94
	360011	11415043	60 × 130 × 31	2.08
	360016	11415112	130 × 200 × 33	3.94
	360019	11415046	130 × 200 × 46	5.34
	360022	11414952	120 × 180 × 28	2.59
	360023	11415064	140 × 220 × 36	5.16
	360024	11415116	130 × 200 × 33	3.94
	360031	11415061	140 × 250 × 42	9.25
	360032	11415052	200 × 320 × 48	15.40
	360033	11415405	170 × 265 × 42	8.82
	360084	11415075	200 × 310 × 51	14.10
	360085	11415053	170 × 310 × 52	17.80
	360088	11415055	170 × 260 × 42	8.20
	360246	11415000	400 × 500 × 46	19.50
	360361	11415057	60 × 130 × 46	3.09
	360372	11415037	75 × 145 × 46	3.57
	360415	11415049	130 × 230 × 40	7.30
	360417	11415054	60 × 130 × 46	3.07
	360551	11415060	140 × 250 × 42	9.00
	360552	11415071	130 × 200 × 46	5.10
	360553	11415073	55 × 100 × 21	0.70
	360554	11415062	60 × 110 × 32	1.23
	360555	11415117	95 × 200 × 45	6.90
	360556	11415113	75 × 160 × 55	5.30
	360570	11415115	60 × 130 × 46	3.02
	360577	11415051	60 × 130 × 46	2.78
	366600	14070367	570 × 670 × 50	29.70
Four-point bearing	360086	11414594	170 × 310 × 52	18.74
	360571	11414596	140 × 250 × 42	9.46
Angular contact ball bearing <sup>1)</sup>	360010	11414881	130 × 200 × 33	3.86
	360012	11414885	45 × 100 × 25	1.01
	360014	11414883	55 × 120 × 29	1.64
	360015	11414888	35 × 80 × 21	0.53
	360018	13978841	50 × 110 × 27	1.31
	360020	11414834	130 × 230 × 40	7.10
	360021	11414910	120 × 215 × 40	6.45
	360027	11414901	40 × 100 × 25	1.03
	360028	11414861	50 × 120 × 25	1.50
	360029	11414921	50 × 110 × 22	1.07
	360035	11414870	40 × 80 × 18	0.42
	360368	11414863	55 × 120 × 29	1.65
	360557	11415402	55 × 120 × 29	1.62
	360561	11573417	130 × 230 × 40	6.90
	360572	11414908	50 × 110 × 27	1.26
	360578	11414890	200 × 310 × 51	13.32
	Angular contact ball bearing	360247	11414864	200 × 310 × 51
360416		11414862	100 × 180 × 34	3.45
360418		11414833	65 × 130 × 31	1.86
360559		11414865	120 × 180 × 28	2.40
Hybrid angular contact ball bearing <sup>1)</sup>	360558	11415401	35 × 80 × 21	0.53
	366018	13978844	50 × 110 × 27	1.30
Deep-groove ball bearing	360026	11414791	170 × 260 × 42	8.41
	360030	11421036	140 × 210 × 33	4.21
	360036	11414766	140 × 250 × 42	9.04
	360125	10714146	40 × 80 × 18	0.37
	360367	11414800	45 × 100 × 25	1.01
	360560	11414796	130 × 200 × 33	3.83
	360565	11414767	25 × 52 × 15	0.13
	360566	11421032	35 × 72 × 17	0.30
360567	11421034	50 × 90 × 20	0.48	
Tapered roller bearing	360185	12680408	57 × 108 × 65	2.40

<sup>1)</sup> One pair of bearings comprises two SMS group single bearings

# Total compatibility

## Flexible retrofits with SMS group

During the development of SMS group's high-precision roller bearings, our engineers made sure that the outside dimensions and the lubricant connections precisely match the bearing types in older assemblies. As a result, they are fully compatible with the bearings in wire rod blocks from other manufacturers which are similar in design to wire rod blocks from SMS group.

These blocks can be easily retrofitted – without any limitations – with high-precision roller bearings from SMS group. All the benefits as well as the high performance of SMS group bearings can be utilized immediately, without the need for design or mechanical modifications to existing plant components.

### Compatible, yet individual

The fact that SMS group high-precision roller bearings are compatible with other types of bearings does not mean that they are absolutely identical in design. SMS group continuously works on the enhancement of its bearings to ensure consistently optimized product characteristics.

Lubrication holes, for example, can be located in other positions or in varying numbers to achieve better lubrication of the raceway. Such product improvements apply similarly to the cage or ring materials used, as well as to the number and absolute diameter of rolling elements and the axial and radial clearance.

Replaceable third-party bearings	
162250-B (MCS140-106, MCS140-106-CD, N-140-VAA)	162250-L (5308-9, 7208PD, 7208PD4/5F)
162250-C (7226-D2/3/-Spec./6/7/8/9B)	162250-LA (7309PD-5/7F)
162250-CA	162250-LB (7307PD-3/4/8F)
162250-D (MCS-128-107, N-228-VAA)	162250-M (MRC5310-8/C2, BA2B-475881)
162250-DA (MCS-128-108)	162250-MA (MRC5310; MRC5311-5/C2, BA2B-475882)
162250-E (7224, 7224D-3/5/6/9B)	162250-MB (7310PD-4/8S)
162250-F (U-1024-EMR-304/305, N-1024-VAA, 804235/A)	162250-MC
162250-G (MR126KC-1/3/7/10, N-1026-VAA, U1026EMR103, X-4567-ABEC5)	162250-N (6208-2RS1/W64CVK121)
162250-GA (MR126KC4/8/11)	162250-NA
162250-GC (R126KC-2/4/6)	162250-P
162250-GD (MR126KC-6/9, R126KC-3/5/7)	162250-Q
162250-GE	162250-S (MCS134-104, MCS134-104-CD, N-134-VAA)
162250-H (MR312C-1/2/4), 162250-HA (MR312C-3/5)	162250-U (134-KS, 134-KS-1)
162250-HB (R312C-7/11)	162250-V (MR228 C1, U-1228-EMR-302, N-228 AA)
162250-HC	162250-VA
162250-HG	162250-W (MRC228S, BB1B-447022)
162250-HH	162250-WA
162250-HJ	162250-X (9128, 9128 KS1/-2)
162250-HK	162250-XA
162250-J (7310PD-2/3/4/5/7/8B, 7310D-4B)	162250-Y (7126KRD-2/4S)
162250-JA (7311PD-2/3/6/9B)	162250-Z
162250-JC	M438 106A
162250-K (309RD-3/4/5/6/9B)	M438 106B (N226 E.M1.C3)
162250-KA (309S-26, 309S-34)	M438 106C
162250-KC (CONE-462-CUP-452 DX2S-462EP.008)	M438 106D
	QJ 234 N2 MPA.C3



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