



# KOLBENSCHMIDT Sputter bearings – O.E. quality for the aftermarket

As an approved series supplier of all renowned automotive and engine manufacturer KOLBENSCHMIDT in Germany produces Sputter bearings as original equipment (O.E.) and for the global aftermarket. The following table shows an extract of our comprehensive range of Sputter bearings.

## Development and introduction of Sputter bearings

Sputter bearings were first used in modern engine construction in 1989. The launch of newly developed and extremely efficient diesel engines with high torques which subjected engine bearings with increasing specific stresses meant that the limits of galvanic surface coating technology had been reached. For this reason, new bearing materials and coating methods were investigated and developed. An increased bearing stress capacity of up to 50% was achieved with bearings of identical dimensions and materials that were coated with the Sputter method. In addition, immensely improved wear resistance was accomplished solely by changing the coating processes.

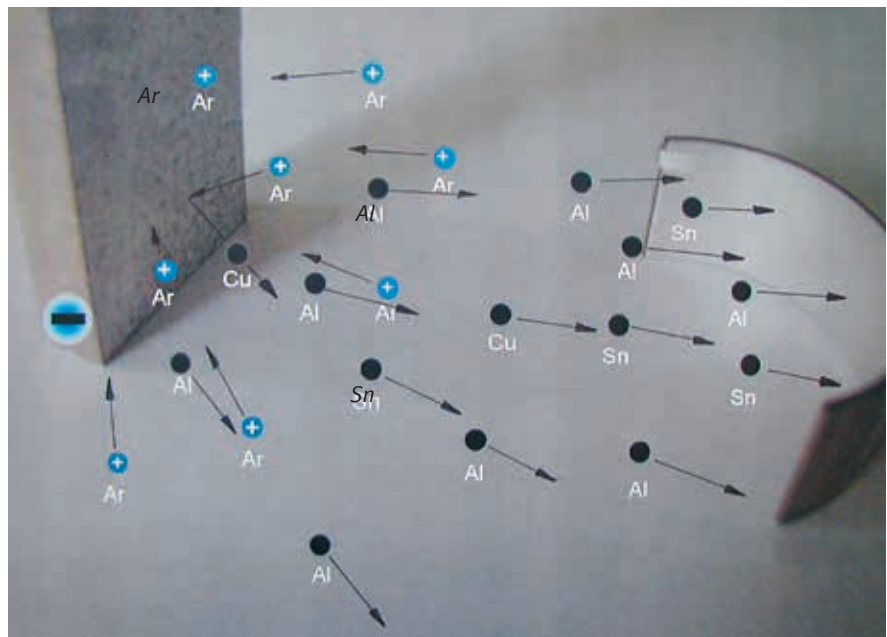


Fig. 2 Sputter process

## The Sputter process

The special surface of the Sputter bearing is generated by means of the PVD or Physical Vapour Deposition method. This process is carried out in a high vacuum under clean-room conditions. In this process, atoms are ejected from a target (coating material) by accelerated argon gas ions which are then deposited on the running layer of the bearing shell. The highly stress-resistant sliding surface of the bearing is formed as a result of the extremely fine distribution of the coating material. The ultimate layer is only a few thousandth of millimetre thick. There is no galvanic procedure that can achieve such fine and consequently extremely resistant sliding layers. Sputtering a bearing shell

takes between 7 and 10 hours, depending on the layer thickness of the sliding surface. As a result of the complex and extremely long coating time as well as the labour-intensive pre-cleaning steps, the production of a sputtered bearing shell is far more expensive than the manufacture of conventional three-component bearing shells.

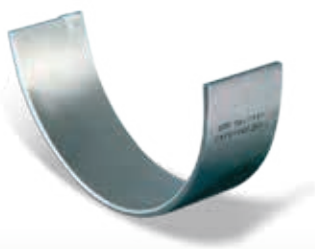


Fig. 1 KOLBENSCHMIDT Sputtered bearing shell

The right of changes and deviating pictures is reserved. For assignment and replacement parts, refer to the current catalogues, TecDoc CD or respective systems based on TecDoc.  
\* The reference numbers given are for comparison purposes only and must not be used on invoices to the consumer.



Fig. 3 Sputter plant

**Bearing production and production capacities**

KS Gleitlager GmbH have consistently expanded the production capacities for Sputter technology. Of the 110 million bearings manufactured annually in the KS bearings plant in Papenburg, more than ten million are Sputter bearings. These extremely stress-resistant bearings can withstand the extreme working pressures that are generated in modern diesel and petrol engines. As a result of the start-up of a planned third Sputter plant together with the new development of lead-free high-performance bearing materials, the KOLBENSCHMIDT brand is optimally prepared for oncoming market developments in the original equipment and aftermarket sector. Thanks to increased production capacities and higher output figures it has been possible to consistently reduce production costs in recent years.

**Extract from the KOLBENSCHMIDT Sputter bearing range**

Audi	2.5 TDI / 2.2 20V	PL			77244600
BMW	M51D25 Turbo	PL			77218600
BMW	M41D18	PL			77277600
Deutz	1015	PL		79319600	
Deutz	1015	HL		79321600	
Deutz	BF 6 M 1015 ..	PL			77774600
Deutz	BF 8 M 1015 ..	PL			77775600
Deutz	BF 8 M 1015 C	HL			77778600
MAN	D2876	PL		79237600	
MAN	D2066	PL		79298600	
MAN / Mercedes-Benz	D2842 / OM4..	PL		78897600	
MAN / Mercedes-Benz	D2866 / OM447	PL		78901600	
Mercedes-Benz	OM602	PL			77219600
Mercedes-Benz	OM603	PL			77220600
Mercedes-Benz	OM442LA	HL			77249600
Mercedes-Benz	OM444A/LA	HL			77250600
Mercedes-Benz	OM601	PL			77287600
Mercedes-Benz	OM611	HL			77518600
Mercedes-Benz	OM612	HL			77519600
Mercedes-Benz	OM613	HL			77520600
Mercedes-Benz	OM611	PL			77521600
Mercedes-Benz	OM612	PL			77522600
Mercedes-Benz	OM613	PL			77523600
Mercedes-Benz	OM904	PL			77540600
Mercedes-Benz	OM906	PL			77541600
Mercedes-Benz	OM541 V6	PL			77547600
Mercedes-Benz	OM541 V6	HL			77548600
Mercedes-Benz	OM542 V8	HL			77549600
Mercedes-Benz	OM542 V8	PL			77550600
Mercedes-Benz	OM457	PL			77723600
Mercedes-Benz	OM44..	PL		78902600	
Mercedes-Benz	OM44..	HL		78921600	
Mercedes-Benz	OM900	PL		79227600	
Mercedes-Benz	OM541 V6	PL		79229600	
Mercedes-Benz	OM541/542	HL		79231600	
Mercedes-Benz	OM542 V8	PL		79232600	
Mercedes-Benz	OM457	PL		79294600	
Opel	1.7 TD	PL			77274600
Opel	X20DTH	PL			77529600
Peugeot	DW10	PL			77714600
Smart	0.8 TD	PL			77712600
Smart	0.8 TD	HL			77713600
Volkswagen/Audi	1.9 TDI	PL			77288600
Volkswagen/Audi	2.5 TDI	PL			77292600
Volkswagen/Audi	1.8 Turbo 20V	PL			77338600
Volkswagen/Audi	1.9 TDI PDE	PL			77554600
Volkswagen/Audi	2.0 TDI	PL			77555600
Volkswagen/Audi	1.4 TDI	PL			77556600
Volkswagen/Audi	2.5 TDI V6	PL			77701600
Volkswagen/Audi	2.5 TDI V6	PL			77702600

\* Non-binding catalogue extract, the correct allocation/use of parts is set out in the current KOLBENSCHMIDT Engine Bearings catalogue