

SBC 

**Maintenance-Free,  
Sealed Bearing Cartridges**



# SBC Sealed Bearing Cartridges

This brochure describes SBC Sealed Bearing Cartridges designed to provide a cost effective, environmentally friendly and maintenance-free alternative to conventional greased bronze, hardened steel or rolling element bearings in demanding applications typically found in off-highway, construction and earth-moving equipment.

GGB is the world's leading manufacturer of polymer bearings with longstanding experience in providing self-lubricated bearing solutions. GGB is also the inventor of DU® and DX®, the global industry standards for metal-backed, polymer plain bearings. In addition, GGB has more than thirty years' experience in the manufacture and formulation of class leading, no compromise, self-lubricating, maintenance-free fiber reinforced composite bearing products, with an established history of successful applications across a wide spectrum of industries

At the heart of SBC Sealed Bearing Cartridges are either GAR-MAX® or HSG or any other of GGB's fiber reinforced composite bearings.

SBC Sealed Bearing Cartridges provide a sealed, grease free plain bearing unit to meet the demanding performance and economic requirements of your equipment.

## Advantages

GGB Sealed Bearing Cartridges offer the following advantages:

- Maintenance free operation – self lubrication
- Environmental friendly - no grease required
- High load capability - up to 90,000 lbf/in<sup>2</sup> (620 Mpa)
- Excellent tolerance to shock and edge loading
- Superior wear-rate and bearing life
- Dimensional stability, low water absorption - no swelling
- Excellent corrosion resistance
- Sealed to exclude contaminants from the bearing
- No galling of shaft/pin
- Secure and simple installation

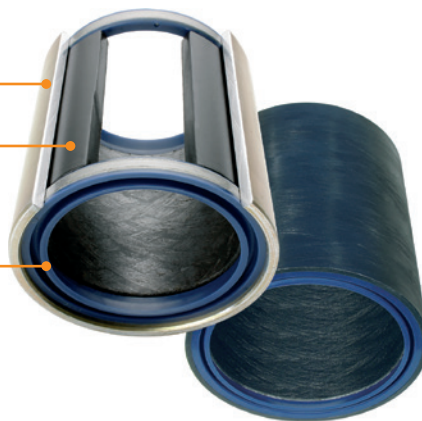


## Material Composition

Zinc plated steel outer shell

HSG (High Strength GAR-MAX®) self-lubricated bearing (grease free operation)

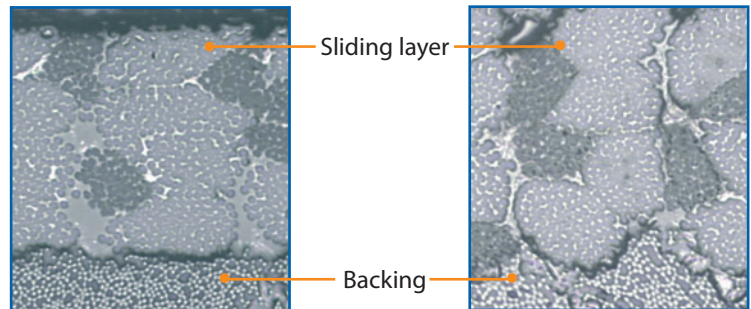
Industry proven integral lip seal



# SBC with GAR-MAX® / HSG – Data

BEARING PROPERTIES		UNITS	VALUE SBC with GAR-MAX®	VALUE SBC with HSG
<b>GENERAL</b>				
Maximum load P	Static	psi / N/mm <sup>2</sup>	30.000 / 210	60.000 / 415
	Dynamic	psi / N/mm <sup>2</sup>	20.500 / 140	20.500 / 140
Operating temperature	Continuous	°F / °C	200 / 93	200 / 93
	Intermittent	°F / °C	219 / 104	219 / 104
<b>DRY</b>				
Maximum sliding speed V		fpm / m/s	25 / 0.13	25 / 0.13
Maximum PV factor		psi x fpm / N/mm <sup>2</sup> x m/s	30.000 / 1.05	30.000 / 1.05
<b>RECOMMENDATIONS</b>				
Shaft surface roughness, Ra		µin / µm	6 - 16 / 0.15 - 0.40	6 - 16 / 0.15 - 0.40
Shaft surface hardness	Normal	HB	> 350	> 350
	For longer service life	HB	> 480	> 480

OPERATING PERFORMANCE	
Dry	Very good
Oil lubricated	Fair
Grease lubricated	Fair
Water lubricated	Fair
Process fluid lubricated	Fair



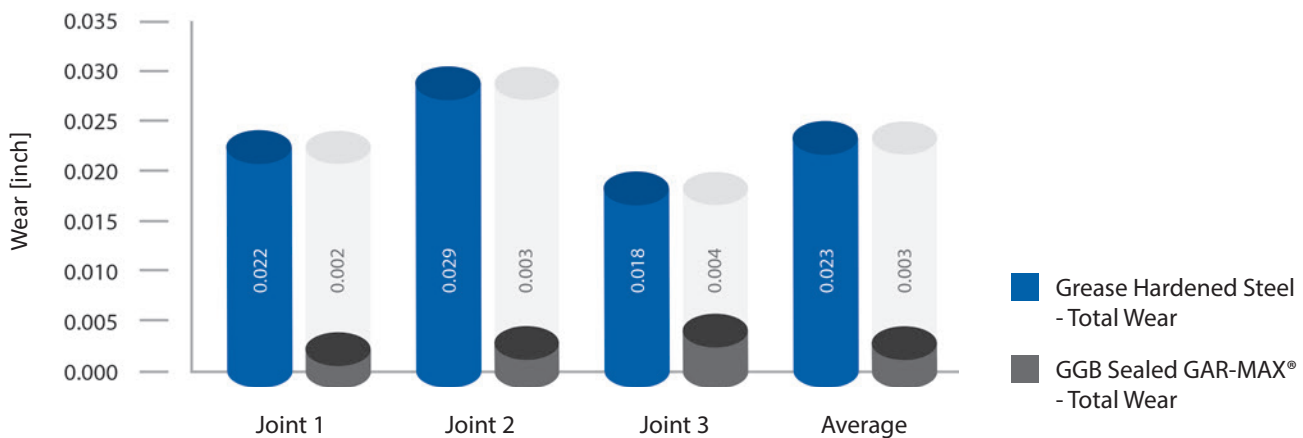
GAR-MAX Microsection

HSG Microsection

## Specific Wear

### Contaminated Testing of GGB Sealed Bearing Cartridge with GAR-MAX® vs Hardened Steel

Test conditions: 7500 lbf/in<sup>2</sup> (51.7 MPa), ± 30°deg Oscillation



# Applications

- Steering linkages
- Hydraulic cylinder pivots
- King pin bearings
- Boom lifts
- Scissor lifts
- Cranes
- Hoists
- Lift gates
- Backhoes
- Trenchers
- Skid steer loaders
- Front end loaders, etc.

Articulating joints

Steering cylinders



Critical clearance joints

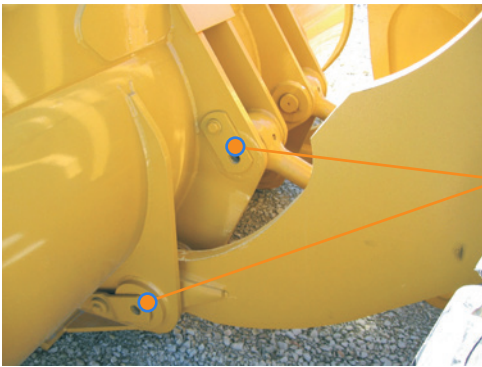
Suspension or track trunnions



Linkage pins

King pins

Axle trunnions



Lift cylinders

Dump body pivot



# Standard Dimensions

GGB Sealed Bearing Cartridges are available in a range of standard dimensions to accommodate shafts from 1" to 4" (25 mm to 100 mm) diameter and housing bores from 1.75" to 4.875" (41 mm to 122 mm) diameter as follows.

GGB Sealed Bearing Cartridges can also be produced to non standard diameters to meet customers' requirements.

NOMINAL D <sub>i</sub> [in]	NOMINAL D <sub>o</sub> [in]	SHAFT Ø D <sub>J</sub> [in]	HOUSING Ø D <sub>H</sub> [in]
1	1.75	1.0000 0.9995	1.7500 1.7505
1.25	2	1.2500 1.2495	2.0000 2.0005
1.5	2.25	1.5000 1.4995	2.2500 2.2510
1.75	2.5	1.7500 1.7495	2.5000 2.5010
2	2.75	2.0000 1.9995	2.7500 2.7510
2.25	3	2.2500 2.2495	3.0000 3.0015
2.5	3.25	2.5000 2.4990	3.2500 3.2515
2.75	3.5	2.7500 2.7490	3.5000 3.5020
3	3.75	3.0000 2.9990	3.7500 3.7520
3.5	4.375	3.5000 3.4990	4.3750 4.3770
4	4.875	4.0000 3.9990	4.8750 4.8770

NOMINAL D <sub>i</sub> [mm]	NOMINAL D <sub>o</sub> [mm]	SHAFT Ø D <sub>J</sub> [mm]	HOUSING Ø D <sub>H</sub> [mm]
25	41	25.000 24.967	41.000 41.025
30	46	30.000 29.967	46.000 46.025
35	51	35.000 34.961	51.000 51.030
40	56	40.000 39.961	56.000 56.030
50	66	50.000 49.961	66.000 66.030
55	71	55.000 54.954	71.000 71.030
60	76	60.000 59.954	76.000 76.030
70	86	70.000 69.954	86.000 86.035
80	96	80.000 79.954	96.000 96.035
90	112	90.000 89.946	112.000 112.035
100	122	100.000 99.946	122.000 122.040

GGB recommends the following for maximum performance:

- Corrosion protection for the shaft/pin
- Shaft/pin surface finish after plating 8 - 16 µin (0.15 - 0.4 µm)
- Shaft/pin surface hardness > 50 Rc

## AVAILABILITY

### Bearing forms available in standard dimensions:

Plain cylindrical bushes

**Bearing forms made to order:** cylindrical bushes with non-standard lengths and wall thickness, flanged bearings, hexagonal and square bores, liner on outer diameter, customized bearing designs



# The GGB Difference

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## Application Engineering Expertise

GGB's engineers bring their cross-industrial expertise to a wide range of industries, including automotive, aerospace and industrial manufacturing.

## Research and Development Expertise

With inhouse R&D and testing facilities worldwide, GGB partners with customers worldwide on customized solutions.

## Manufacturing Excellence

It is always our goal to provide superior, high-quality solutions for our customers' needs, no matter where those demands take our products. By combining best practices and the best in quality management, our manufacturing plants are certified in quality and excellence.

## Tribological Expertise

Tribological test results and surface analytical methods help us estimate the tribo-performance including friction and wear of existing materials and new prototypes.



# The GGB Advantage

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### MAINTENANCE-FREE

GGB® bearings are self-lubricating, making them ideal for applications demanding extended bearing life without continuous lubrication.



### LOW FRICTION, HIGH WEAR RESISTANCE

Low coefficients of friction eliminate the need for lubrication, while providing smooth operation, reducing wear and extending service life.



### NVH (Noise, Vibration, Harshness)

Plain bearings provide a smooth sliding motion between surfaces and their material properties and simple design reduce noise, vibration and harshness.



### LOWER SYSTEM COST

A one-piece design offers space and weight reductions and thanks to the material compositions and self-lubricating properties, less maintenance is needed.



### REDUCED CO<sub>2</sub> FOOTPRINT

GGB's flexible and local production platforms facilitate timely deliveries and reduced CO<sub>2</sub> footprint.



### PARTNER SUPPORT

GGB offers tribological, application and design support, and partners with our customers to provide the most efficient solutions.

# Product Information

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This document is provided to give you the analysis tools or information to assist you in product selection. Product performance is affected by many factors beyond the control of GGB. Therefore, you must validate the suitability and feasibility of all product selections for your applications.

GGB products are sold subject to GGB's Terms of Sale and Delivery, which include our limited warranty and remedy. You can find these here: <https://www.ggbearings.com/en/terms-and-conditions>, or ask your GGB representative for a copy.

Products are subject to continual development. GGB retains the right to make specification amendments or improvements to the technical data without prior announcement.

## Document Information

Edition 2024. This edition replaces earlier editions which hereby lose their validity.

Every reasonable effort has been made to ensure the accuracy of the information in this writing, but GGB assumes no liability for errors or omissions or for any other reason.

## Health and Safety

GGB is committed to adhering to all U.S., European and international standards and regulations with regard to lead content. We have established internal processes that monitor any changes to existing standards and regulations, and we work collaboratively with customers and distributors to ensure that all requirements are followed. This includes RoHS and REACH guidelines.

GGB is committed to operating in an environmentally conscious and safe manner. We follow numerous industry best practices and are committed to meeting or exceeding a variety of internationally recognized standards for emissions control and workplace safety.

Each of our global locations has management systems in place that adhere to IATF 16949, ISO 9001, ISO 14001 and ISO 45001 quality regulations. Our certificates can be found here: <https://www.ggbearings.com/en/certificates>.

A detailed explanation of our commitment to REACH and RoHS directives can be found at <https://www.ggbearings.com/en/who-we-are/quality-and-environment>.

## Polymer Fumes

At temperatures up to 250°C the polytetrafluoroethylene (PTFE) present in the lining material is completely inert so that even on the rare occasions in which DP4 bushes are drilled or sized after assembly there is no danger in boring or burnishing. At higher temperatures however, small quantities of toxic fumes can be produced and the direct inhalation of these can cause an influenza type of illness which may not appear for some hours but which subsides without after-effects in 24-48 hours. Such fumes can arise from PTFE particles picked up on the end of a cigarette. Therefore smoking should be prohibited where DP4 is being machined.

## Trademarks

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# Stronger.Together.



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