



GGB

*EP Solid Polymer
Bearing Solutions*

*The Global Leader
in High Performance
Bearing Solutions*



an EnPro Industries company

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Introduction

GGB® is best known for our DU® and DX® metal-polymer plain bearings. Today we also offer a full line of solid polymer bearings that are being used successfully in hundreds of applications.

Consisting of nine different materials -- including our environmentally friendly EP®22, EP®43 and EP®63 polymers -- our EP® series of precision injection molded bearings are made of a variety of high performance engineering resins modified with solid lubricants and reinforcing fibers. These lightweight, corrosion resistant bearings provide low friction and excellent wear resistance under a wide range of

operating conditions. They also exhibit high dimensional stability, compressive strength and creep resistance, plus low thermal expansion and good thermal conductivity.

With our extensive experience and expertise in solid polymer bearing technology, we work closely with customers to develop tribologically optimized, application-specific solutions. Also offered are in-house testing capabilities, technical assistance with material selection and system design as well as rapid prototyping.

Subject to technical alterations and improvements in the interest of technical progress. Dimensions are specified with tolerances in accordance with ISO and GGB company standards.

The specified weights are approximate values.
Errors and omissions are expected.

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Standard Forms

Standard forms are available as cylindrical bearings, flanged bearings, KA thrust washers.



Cylindrical Bearings

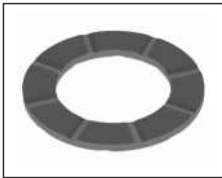


Flanged Bearings



KA Thrust Washers

Special Forms



Our EP® materials cover a wide range of applications within the scope of their material properties. Bearings made of these materials can be found in many different types of equipment, including agricultural, chemical processing, material handling, electronics assembly, food processing, gaming, medical, office, packaging, scientific, sports and recreation, textile and transportation.

They also are used in apparatus engineering, household appliances, awnings and blinds, cash boxes, furniture, industrial fittings, slot machines and valves. In addition, our EP®73 bearings are being used in automotive applications such as automatic gears, pumps, sealing for turbo compressors, piston rings and valve seats, as well as industrial ovens. Additionally, EP®73 is used in the aerospace industry as it offers weight savings in compressor blades for turbojet engines.



EP®



Structure

Injection moulded thermoplastic dry bearing material: PA6.6T + PTFE + glass fibres + graphite

Possible Applications

Generally applicable within the limits of the material properties.

Industrial: Medical equipment, awnings and blinds, scientific equipment, gaming equipment, office equipment etc.

Features

- Injection moulded reinforced polyamide 6.6T based and modified bearing material
- Good bearing performance under moderate operating conditions
- The EP™ standard programme is interchangeable with roll-formed bushes according to ISO3547
- Recommended tolerances for fitted bushes: Housing H7, Shaft h7 - h9
- Colour: black

EP®22



Structure

Injection moulded thermoplastic dry bearing material: PBT + PTFE

Possible Applications

Generally applicable within the limits of the material properties.

Automotive: Pedal bearings, steering columns, axles
Industrial: Domestic appliances, chemical equipment, office equipment, sports equipment and many more

Features

- Injection moulded polybutylterephthalate based and modified bearing material
- High shock and edge load resistance
- Dry running or marginally lubricated conditions
- Good price/performance ratio
- Colour: white

EP®43



Structure

Injection moulded thermoplastic dry bearing material: PPS + PTFE + Aramid

Possible Applications

Generally applicable within the limits of the material properties.

Industrial: Domestic appliances, materials handling equipment, apparatus engineering, slot machines and cash boxes, and many more

Features

- Injection moulded reinforced polyphenylsulfide based and modified bearing material
- Good chemical and hydrolysis resistance
- Very low friction and wear, optimised for dry running conditions
- High dimensional stability
- Colour: brown

EP®63



Structure

Injection moulded thermoplastic dry bearing material: PEEK + PTFE + Aramid

Possible Applications

Generally applicable within the limits of the material properties.

Industrial: Domestic appliances, valve technology, electronics assembly, agricultural machinery and many more

Features

- Injection moulded reinforced polyetheretherketone based and modified bearing material
- High temperature material with low thermal expansion for demanding components
- Optimized for dry running conditions
- High viscosity and mechanical strength
- Shock and edge load resistance
- High wear resistance in oscillating movements
- Good chemical and hydrolysis resistance
- Colour: black

KA™



Structure

Polyacetal-copolymer bearing material (POM)

Possible Applications

Industrial:

Thrust washers are used as axial bearings in conjunction with all cylindrical bushes according to ISO 3547 to prevent metal to metal contact and fretting damage

Features

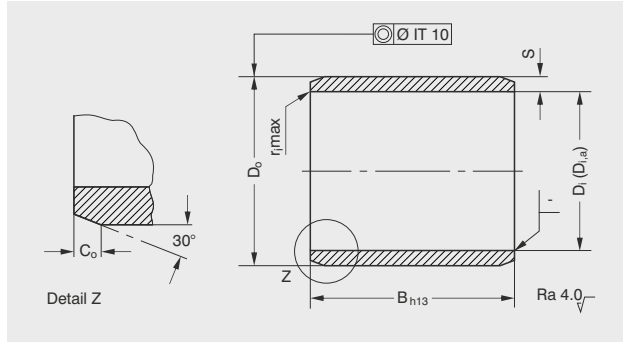
- Suitable for light duty applications
- Dry running or lubricated conditions
- Prevents metal to metal contact between assembly parts

Thrust washers

Bearing properties	Unit	EP	EP22	EP43	EP63	KA	
Maximum load \bar{p}	- static - dynamic	MPa	80 -	50 -	83 -	20 10	
Maximum sliding speed v	- dry	m/s	1,0	1,0	1,0	1,5*	
Maximum $\bar{p}v$ factor		MPa x m/s	1,0	0,20	3,59	0,35*	
Maximum temperature T_{max}		°C	+140	+170	+240	+80	
Minimum temperature T_{min}		°C	-40	-50	-40	-40	
Coefficient of friction f	- dry	-	0,15 - 0,30	0,22 - 0,37	0,11 - 0,20	0,12 - 0,21	0,08 - 0,12*
Shaft surface finish Ra		µm	0,5 ± 0,3	0,3 ± 0,2	0,5 ± 0,3	0,3 ± 0,2	≤0,4
Shaft hardness		HV	>200	>200	>200	>200	>200

* Values for KA with lubrication

EP® - Cylindrical Bearings



Outside chamfers and inside radiuses

S	C ₀	r _{max}
1,0	0,5	0,1
1,5	0,8	0,2
2	0,8	0,2

Recommended tolerance class for shaft h7

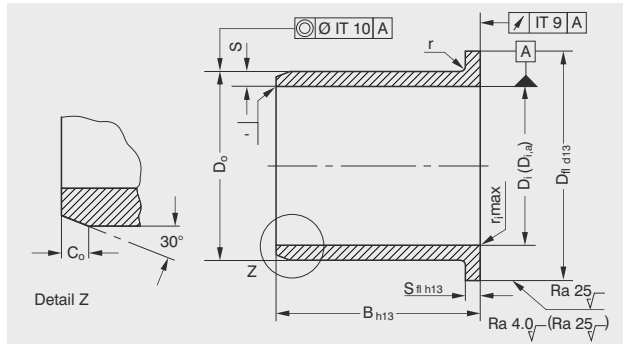
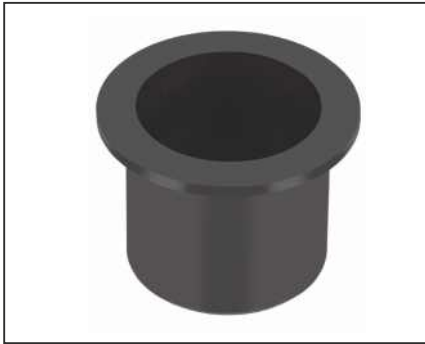
Dimensions [mm], tests and materials according to GGB specifications.

Part No.	Technical data						
	Dimensions				Installation tolerance		
GGB	Inner Ø D _i	Outer Ø D _o	Width B	Weight g	Housing H7	D _{i,a}	
0505EP	5	7	5	0,1	+0,015 0	+0,105 +0,030	
0508EP	5	7	8	0,2			
0510EP	5	7	10	0,3			
0606EP	6	8	6	0,2			
0608EP	6	8	8	0,3			
0610EP	6	8	10	0,3			
0806EP	8	10	6	0,2			
0808EP	8	10	8	0,3			
0810EP	8	10	10	0,4			
0812EP	8	10	12	0,5			
0815EP	8	10	15	0,6	+0,130 +0,040		
1004EP	10	12	4	0,2			
1006EP	10	12	6	0,3			
1008EP	10	12	8	0,4			
1010EP	10	12	10	0,5			
1015EP	10	12	15	0,7			
1020EP	10	12	20	1,0			
1210EP	12	14	10	0,6		+0,018 0	+0,160 +0,050
1212EP	12	14	12	0,7			
1215EP	12	14	15	0,9			
1220EP	12	14	20	1,2			
1415EP	14	16	15	1,0	+0,021 0		
1420EP	14	16	20	1,4			
1425EP	14	16	25	1,7			
1515EP	15	17	15	1,1	+0,025 0	+0,195 +0,065	
1520EP	15	17	20	1,4			
1525EP	15	17	25	1,7			
2015EP	20	23	15	2,2	+0,021 0		
2020EP	20	23	20	2,9			
2030EP	20	23	30	4,4			
2515EP	25	28	15	2,7	+0,025 0		
2520EP	25	28	20	3,6			
2530EP	25	28	30	5,4			
3020EP	30	34	20	5,8	+0,025 0		+0,240 +0,080
3030EP	30	34	30	8,6			
3040EP	30	34	40	11,6			

D_{i,a} = Dimensions of the bush inner diameter after installation in an H7 housing.

Additional dimensions on request.

EP® - Flanged Bearings



Dimensions [mm], tests and materials according to GGB specifications.

Outside chamfers and inside radiuses

S	C _o	r _{max}
1,0	0,5	0,1
1,5	0,8	0,2

S	r (mm)
≤ 1	0,3
> 1	0,5

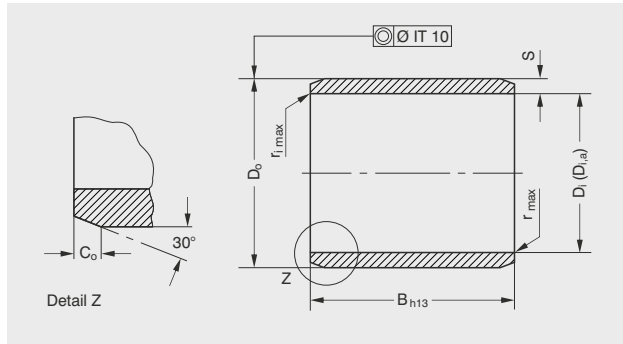
Recommended tolerance class for shaft h7

Part No.	Technical data							Installation tolerance	
	Inner Ø D _i	Outer Ø D _o	Flange Ø D _{fl}	Flange S _{fl}	Width B	Weight g	Housing H7	D _{i,a}	
BB0505EP	5	7	11	1,0	5,0	0,2	+0,015 0	+0,105 +0,030	
BB0604EP	6	8	12	1,0	4,0	0,2			
BB0606EP	6	8	12	1,0	6,0	0,3			
BB0608EP	6	8	12	1,0	8,0	0,4			
BB0610EP	6	8	12	1,0	10,0	0,4	+0,018 0	+0,130 +0,040	
BB0806EP	8	10	15	1,0	5,5	0,4			
BB0808EP	8	10	15	1,0	7,5	0,5			
BB0810EP	8	10	15	1,0	10,0	0,5			
BB1007EP	10	12	18	1,0	7,0	0,6			
BB1009EP	10	12	18	1,0	9,0	0,7			
BB1012EP	10	12	18	1,0	12,0	0,8			
BB1015EP	10	12	18	1,0	15,0	1,0			
BB1017EP	10	12	18	1,0	17,0	1,1			
BB1207EP	12	14	20	1,0	7,0	0,6			+0,160 +0,050
BB1209EP	12	14	20	1,0	9,0	0,8			
BB1212EP	12	14	20	1,0	12,0	1,2			
BB1215EP	12	14	20	1,0	15,0	1,3			
BB1217EP	12	14	20	1,0	17,0	1,4			
BB1220EP	12	14	20	1,0	20,0	1,5			
BB1412EP	14	16	22	1,0	12,0	0,9			
BB1417EP	14	16	22	1,0	17,0	1,5			
BB1509EP	15	17	23	1,0	9,0	1,0	+0,021 0	+0,195 +0,065	
BB1512EP	15	17	23	1,0	12,0	1,2			
BB1517EP	15	17	23	1,0	17,0	1,5			
BB1520EP	15	17	23	1,0	20,0	1,8			
BB1617EP	16	18	24	1,0	17,0	1,7			
BB2012EP	20	23	30	1,5	11,5	2,4			
BB2017EP	20	23	30	1,5	16,5	3,2			
BB2022EP	20	23	30	1,5	21,5	3,9			
BB2512EP	25	28	35	1,5	11,5	2,9			
BB2517EP	25	28	35	1,5	16,5	3,9			
BB2522EP	25	28	35	1,5	21,5	4,9			

D_{i,a} = Dimensions of the bush inner diameter after installation in an H7 housing.

Additional dimensions on request.

EP[®]22 - Cylindrical Bearings



Outside chamfers and inside radiuses

S	C _o	r _{max}
1,0	0,5	0,2
1,5	0,8	0,3
2	0,8	0,3

Recommended tolerance class for shaft h9

Dimensions [mm], tests and materials according to GGB specifications.

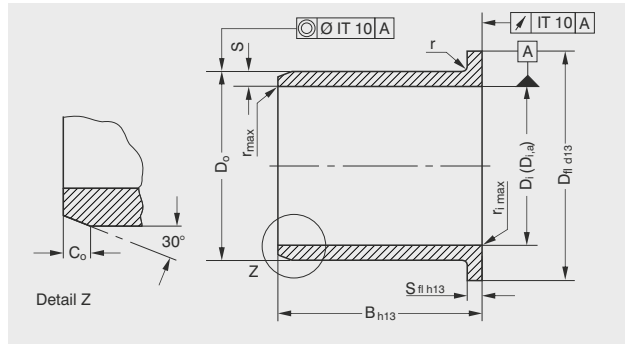
Part No.	Technical data					
	Dimensions				Installation tolerance	
GGB	Inner Ø D _i	Outer Ø D _o	Width B	Weight g	Housing H7	D _{i,a}
0806EP22	8	10	6	0,2	+0,015 0	+0,083 +0,025
0808EP22	8	10	8	0,3		
0810EP22	8	10	10	0,4		
0812EP22	8	10	12	0,5		
0815EP22	8	10	15	0,6		
1004EP22	10	12	4	0,2	+0,018 0	+0,102 +0,032
1006EP22	10	12	6	0,3		
1008EP22	10	12	8	0,4		
1010EP22	10	12	10	0,5		
1015EP22	10	12	15	0,7		
1020EP22	10	12	20	1,0		
1210EP22	12	14	10	0,6		
1212EP22	12	14	12	0,7		
1215EP22	12	14	15	0,9		
1220EP22	12	14	20	1,2		
1410EP22	14	16	10	0,7	+0,021 0	+0,124 +0,040
1412EP22	14	16	12	0,9		
1415EP22	14	16	15	1,0		
1420EP22	14	16	20	1,4		
1425EP22	14	16	25	1,7		
1510EP22	15	17	10	0,8	+0,025 0	+0,150 +0,050
1515EP22	15	17	15	1,1		
1520EP22	15	17	20	1,4		
1525EP22	15	17	25	1,7		
1610EP22	16	18	10	0,8		
1612EP22	16	18	12	1,0		
1615EP22	16	18	15	1,2		
1620EP22	16	18	20	1,6		
1625EP22	16	18	25	1,8		
1810EP22	18	20	10	0,9		
1815EP22	18	20	15	1,4		
1820EP22	18	20	20	1,8		
1825EP22	18	20	25	2,0		
2010EP22	20	23	10	1,5		
2015EP22	20	23	15	2,2		
2020EP22	20	23	20	2,9		
2025EP22	20	23	25	3,9		
2030EP22	20	23	30	4,4		
2515EP22	25	28	15	2,7		
2520EP22	25	28	20	3,6		
3010EP22	30	34	10	3,1		
3015EP22	30	34	15	4,6		
3020EP22	30	34	20	6,2		
3030EP22	30	34	30	9,3		
3040EP22	30	34	40	12,4		
4020EP22	40	44	20	8,1		
4025EP22	40	44	25	10,2		
4030EP22	40	44	30	12,2		
4040EP22	40	44	40	16,3		
4050EP22	40	44	50	20,3		

Part No.	Technical data					
	Dimensions				Installation tolerance	
GGB	Inner Ø D _i	Outer Ø D _o	Width B	Weight g	Housing H7	D _{i,a}
5020EP22	50	55	20	12,7	+0,030 0	+0,150 +0,050
5030EP22	50	55	30	19,0		
5040EP22	50	55	40	25,4		
5050EP22	50	55	50	31,7		
5060EP22	50	55	60	38,1		
6020EP22	60	65	20	15,1		
6030EP22	60	65	30	22,7		
6040EP22	60	65	40	30,2		
6060EP22	60	65	60	45,4		
6070EP22	60	65	70	52,9		

D_{i,a} = Abmaße des Buchseninnendurchmessers nach dem Einbau in Gehäuse Mitte H7.

Weitere Abmessungen auf Anfrage.

EP[®]22 - Flanged Bearings



Outside chamfers and inside radiuses

S	C ₀	r _{max}
1,0	0,5	0,2
1,5	0,8	0,3

S	r (mm)
≤ 1	0,3
> 1	0,5

Recommended tolerance class for shaft h9

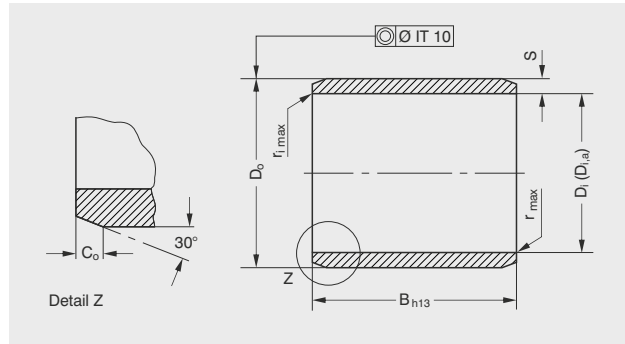
Dimensions [mm], tests and materials according to GGB specifications.

Part No.	Technical Data						Installation tolerance	
	Inside Ø D _i	Outside Ø D _o	Flange Ø D _n	Flange S _n	Width B	Weight g	Housing Journal	D _{i,a}
GGB								
BB0806EP22	8	10	15	1,0	5,5	0,4	+0,015 0	
BB0808EP22	8	10	15	1,0	7,5	0,5		
BB0810EP22	8	10	15	1,0	10	0,5		
BB1007EP22	10	12	18	1,0	7	0,6	+0,018 0	+0,083 +0,025
BB1009EP22	10	12	18	1,0	9	0,7		
BB1012EP22	10	12	18	1,0	12	0,8		
BB1015EP22	10	12	18	1,0	15	1,0		
BB1017EP22	10	12	18	1,0	17	1,1		
BB1207EP22	12	14	20	1,0	7	0,6		
BB1209EP22	12	14	20	1,0	9	0,8	+0,102 +0,032	
BB1212EP22	12	14	20	1,0	12	1,2		
BB1215EP22	12	14	20	1,0	15	1,3		
BB1217EP22	12	14	20	1,0	17	1,4		
BB1220EP22	12	14	20	1,0	20	1,5		
BB1412EP22	14	16	22	1,0	12	0,9		
BB1417EP22	14	16	22	1,0	17	1,5	+0,021 0	+0,124 +0,040
BB1509EP22	15	17	23	1,0	9	1,0		
BB1512EP22	15	17	23	1,0	12	1,2		
BB1517EP22	15	17	23	1,0	17	1,5		
BB1520EP22	15	17	23	1,0	20	1,8		
BB1612EP22	16	18	24	1,0	12	1,3	+0,025 0	+0,150 +0,050
BB1617EP22	16	18	24	1,0	17	1,7		
BB1812EP22	18	20	26	1,0	12	1,4	+0,030 0	
BB1817EP22	18	20	26	1,0	17	2,1		
BB2012EP22	20	23	30	1,5	11,5	2,4		
BB2017EP22	20	23	30	1,5	16,5	3,2	+0,025 0	
BB2022EP22	20	23	30	1,5	21,5	3,9		
BB2512EP22	25	28	35	1,5	11,5	2,9		
BB2517EP22	25	28	35	1,5	16,5	3,9	+0,030 0	
BB2522EP22	25	28	35	1,5	21,5	4,9		
BB3016EP22	30	34	42	2,0	16	6,4	+0,030 0	
BB3026EP22	30	34	42	2,0	26	9,5		
BB3040EP22	30	34	42	2,0	40	13,9		
BB4016EP22	40	44	52	2,0	16	8,4	+0,030 0	
BB4026EP22	40	44	52	2,0	26	12,4		
BB4050EP22	40	44	52	2,0	50	22,2		
BB5026EP22	50	55	63	2,0	26	18,8	+0,030 0	
BB5060EP22	50	55	63	2,0	60	40,4		
BB6050EP22	60	65	73	2,0	50	40,5		
BB6070EP22	60	65	73	2,0	70	55,6		

D_{i,a} = Dimensions of the bush inner diameter after installation in an H7 housing.

Additional dimensions on request.

EP[®]43 - Cylindrical Bearings



Outside chamfers and inside radiuses

S	C _o	r _{max}
1,0	0,5	0,2
1,5	0,8	0,3
2	0,8	0,3

Recommended tolerance class for shaft h9

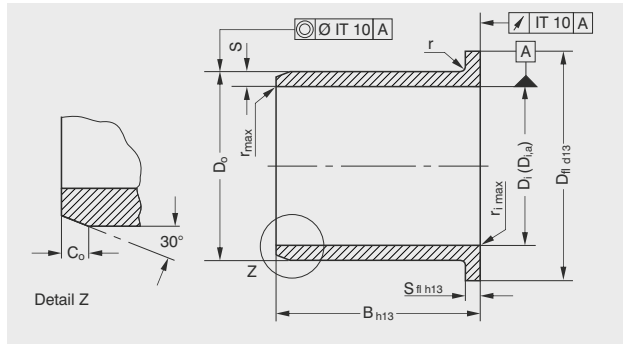
Dimensions [mm], tests and materials according to GGB specifications.

Part No.	Technical data					
	Dimensions				Installation tolerance	
GGB	Inner Ø D _i	Outer Ø D _o	Width B	Weight g	Housing H7	D _{i,a}
0806EP43	8	10	6	0,2	+0,015 0	+0,071 +0,013
0808EP43	8	10	8	0,3		
0810EP43	8	10	10	0,4		
0812EP43	8	10	12	0,5		
0815EP43	8	10	15	0,6		
1004EP43	10	12	4	0,2	+0,018 0	+0,086 +0,016
1006EP43	10	12	6	0,3		
1008EP43	10	12	8	0,4		
1010EP43	10	12	10	0,5		
1015EP43	10	12	15	0,7		
1020EP43	10	12	20	1,0		
1210EP43	12	14	10	0,6		
1212EP43	12	14	12	0,7		
1215EP43	12	14	15	0,9		
1220EP43	12	14	20	1,2		
1415EP43	14	16	15	1,0	+0,021 0	+0,104 +0,020
1420EP43	14	16	20	1,4		
1425EP43	14	16	25	1,7		
1515EP43	15	17	15	1,1	+0,021 0	+0,104 +0,020
1520EP43	15	17	20	1,4		
1525EP43	15	17	25	1,7		
2015EP43	20	23	15	2,2	+0,021 0	+0,104 +0,020
2020EP43	20	23	20	2,9		
2030EP43	20	23	30	4,4		
2515EP43	25	28	15	2,7	+0,021 0	+0,104 +0,020
2520EP43	25	28	20	3,6		

D_{i,a} = Dimensions of the bush inner diameter after installation in an H7 housing.

Additional dimensions on request.

EP[®]43 - Flanged Bearings



Outside chamfers and inside radiuses

S	C _o	r _{max}
1,0	0,5	0,2
1,5	0,8	0,3

S	r (mm)
≤ 1	0,3
> 1	0,5

Recommended tolerance class for shaft h9

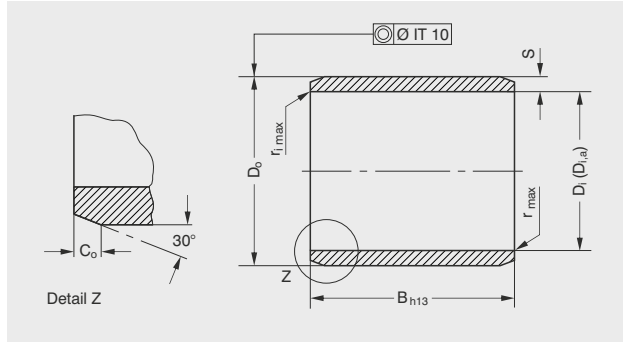
Dimensions [mm], tests and materials according to GGB specifications.

Part No.	Technical data						Installation tolerance	
	Dimensions						Housing H7	D _{i,a}
GGB	Inner Ø D _i	Outer Ø D _o	Flange Ø D _{fl}	Flange S _{fl}	Width B	Weight g		
BB0806EP43	8	10	15	1,0	5,5	0,4	+0,015 0	+0,071 +0,013
BB0808EP43	8	10	15	1,0	7,5	0,5		
BB0810EP43	8	10	15	1,0	10	0,5		
BB1007EP43	10	12	18	1,0	7	0,6	+0,018 0	+0,086 +0,016
BB1009EP43	10	12	18	1,0	9	0,7		
BB1012EP43	10	12	18	1,0	12	0,8		
BB1015EP43	10	12	18	1,0	15	1,0		
BB1017EP43	10	12	18	1,0	17	1,1		
BB1207EP43	12	14	20	1,0	7	0,6		
BB1209EP43	12	14	20	1,0	9	0,8	+0,021 0	+0,104 +0,020
BB1212EP43	12	14	20	1,0	12	1,2		
BB1215EP43	12	14	20	1,0	15	1,3		
BB1217EP43	12	14	20	1,0	17	1,4		
BB1220EP43	12	14	20	1,0	20	1,5		
BB1412EP43	14	16	22	1,0	12	0,9		
BB1417EP43	14	16	22	1,0	17	1,5	+0,021 0	+0,104 +0,020
BB1509EP43	15	17	23	1,0	9	1,0		
BB1512EP43	15	17	23	1,0	12	1,2		
BB1517EP43	15	17	23	1,0	17	1,5		
BB1520EP43	15	17	23	1,0	20	1,8		
BB1617EP43	16	18	24	1,0	17	1,7	+0,021 0	+0,104 +0,020
BB2012EP43	20	23	30	1,5	11,5	2,4		
BB2017EP43	20	23	30	1,5	16,5	3,2		
BB2022EP43	20	23	30	1,5	21,5	3,9	+0,021 0	+0,104 +0,020
BB2512EP43	25	28	35	1,5	11,5	2,9		
BB2517EP43	25	28	35	1,5	16,5	3,9		
BB2522EP43	25	28	35	1,5	21,5	4,9	+0,021 0	+0,104 +0,020

D_{i,a} = Dimensions of the bush inner diameter after installation in an H7 housing.

Additional dimensions on request.

EP[®]63 - Cylindrical Bearings



Outside chamfers and inside radiuses

S	C _o	r _{max}
1,0	0,5	0,2
1,5	0,8	0,3
2	0,8	0,3

Recommended tolerance class for shaft h9

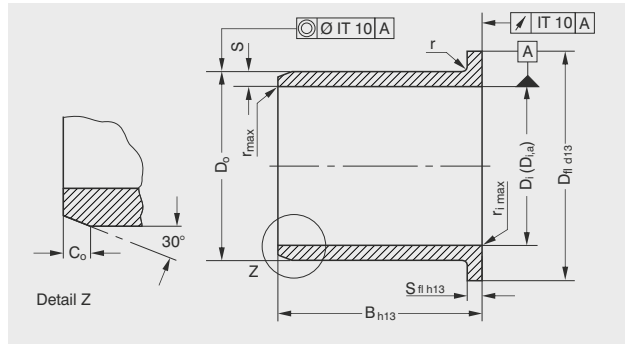
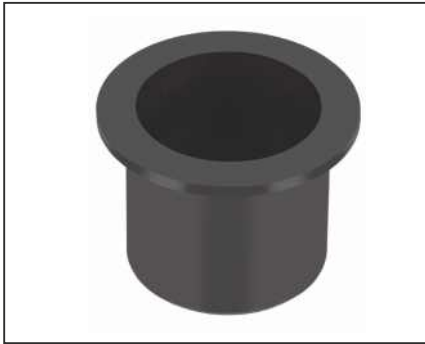
Dimensions [mm], tests and materials according to GGB specifications.

Part No.	Technical data					
	Dimensions				Installation tolerance	
GGB	Inner Ø D _i	Outer Ø D _o	Width B	Weight g	Housing H7	D _{i,a}
0806EP63	8	10	6	0,2	+0,015 0	+0,071 +0,013
0808EP63	8	10	8	0,3		
0810EP63	8	10	10	0,4		
0812EP63	8	10	12	0,5		
0815EP63	8	10	15	0,6		
1004EP63	10	12	4	0,2	+0,018 0	+0,086 +0,016
1006EP63	10	12	6	0,3		
1008EP63	10	12	8	0,4		
1010EP63	10	12	10	0,5		
1015EP63	10	12	15	0,7		
1020EP63	10	12	20	1,0		
1210EP63	12	14	10	0,6		
1212EP63	12	14	12	0,7		
1215EP63	12	14	15	0,9		
1220EP63	12	14	20	1,2		
1415EP63	14	16	15	1,0	+0,021 0	+0,104 +0,020
1420EP63	14	16	20	1,4		
1425EP63	14	16	25	1,7		
1515EP63	15	17	15	1,1	+0,021 0	+0,104 +0,020
1520EP63	15	17	20	1,4		
1525EP63	15	17	25	1,7		
2015EP63	20	23	15	2,2	+0,021 0	+0,104 +0,020
2020EP63	20	23	20	2,9		
2030EP63	20	23	30	4,4		
2515EP63	25	28	15	2,7	+0,021 0	+0,104 +0,020
2520EP63	25	28	20	3,6		

D_{i,a} = Dimensions of the bush inner diameter after installation in an H7 housing.

Additional dimensions on request.

EP[®]63 - Flanged Bearings



Dimensions [mm], tests and materials according to GGB specifications.

Outside chamfers and inside radiuses

S	C _o	r _{max}
1,0	0,5	0,2
1,5	0,8	0,3

S	r (mm)
≤ 1	0,3
> 1	0,5

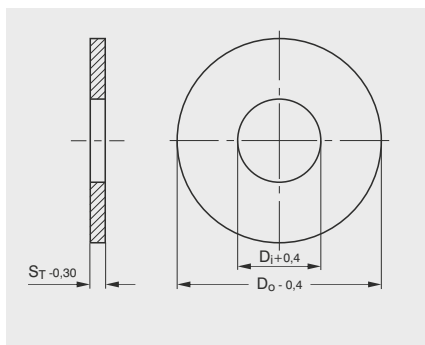
Recommended tolerance class for shaft h9

Part No.	Technical data						Installation tolerance	
	Inner Ø D _i	Outer Ø D _o	Flange Ø D _{fl}	Flange S _{fl}	Width B	Weight g	Hous- ing H7	D _{i,a}
GGB								
BB0806EP63	8	10	15	1,0	5,5	0,4	+0,015 0	+0,071 +0,013
BB0808EP63	8	10	15	1,0	7,5	0,5		
BB0810EP63	8	10	15	1,0	10	0,5		
BB1007EP63	10	12	18	1,0	7	0,6	+0,018 0	+0,086 +0,016
BB1009EP63	10	12	18	1,0	9	0,7		
BB1012EP63	10	12	18	1,0	12	0,8		
BB1015EP63	10	12	18	1,0	15	1,0		
BB1017EP63	10	12	18	1,0	17	1,1		
BB1207EP63	12	14	20	1,0	7	0,6		
BB1209EP63	12	14	20	1,0	9	0,8	+0,021 0	+0,104 +0,020
BB1212EP63	12	14	20	1,0	12	1,2		
BB1215EP63	12	14	20	1,0	15	1,3		
BB1217EP63	12	14	20	1,0	17	1,4		
BB1220EP63	12	14	20	1,0	20	1,5		
BB1412EP63	14	16	22	1,0	12	0,9		
BB1417EP63	14	16	22	1,0	17	1,5	+0,021 0	+0,104 +0,020
BB1509EP63	15	17	23	1,0	9	1,0		
BB1512EP63	15	17	23	1,0	12	1,2		
BB1517EP63	15	17	23	1,0	17	1,5		
BB1520EP63	15	17	23	1,0	20	1,8		
BB1617EP63	16	18	24	1,0	17	1,7	+0,021 0	+0,104 +0,020
BB2012EP63	20	23	30	1,5	11,5	2,4		
BB2017EP63	20	23	30	1,5	16,5	3,2		
BB2022EP63	20	23	30	1,5	21,5	3,9	+0,021 0	+0,104 +0,020
BB2512EP63	25	28	35	1,5	11,5	2,9		
BB2517EP63	25	28	35	1,5	16,5	3,9		
BB2522EP63	25	28	35	1,5	21,5	4,9	+0,021 0	+0,104 +0,020

D_{i,a} = Dimensions of the bush inner diameter after installation in an H7 housing.

Additional dimensions on request.

Glacetal KA™ - Thrust Washers



Part No.	Technical data			
GGB	Dimensions			Weight g
	Inner Ø D _i	Outer Ø D _o	Thickness S _T	
WC10KA	10,5	24,20	1,65	0,8
WC12KA	12,5	26,20	1,65	0,9
WC14KA	14,5	30,20	1,65	1,1
WC16KA	16,5	32,20	1,65	1,3
WC18KA	18,5	36,20	1,65	1,6
WC20KA	20,5	38,20	1,65	1,7
WC22KA	22,5	42,20	1,65	2,0
WC24KA	24,5	44,20	1,65	2,2
WC25KA	25,5	48,20	1,65	2,8
WC28KA	28,5	48,20	1,65	2,5
WC30KA	30,5	54,20	1,65	3,3
WC35KA	36,0	62,20	1,65	4,3
WC40KA	41,0	66,20	1,65	4,7
WC45KA	46,0	74,20	2,15	5,6
WC50KA	51,0	78,20	2,15	5,8

Additional dimensions on request.

EP® - Prototype / Serial Production

GGB Bearing Technology in Germany is a Center of Excellence for solid polymer bearing technology. Offering extensive experience and technical expertise, the company works closely with customers to develop tribologically optimized, application-specific bearing solutions. State-of-the-art, in-house testing capabilities allow for experimentation, making it possible to evaluate the bearing materials and fine-tune application parameters.

In addition to assisting in the selection of the most suitable material for an application and developing the design of the overall system, GGB can provide prototypes made

of semi-finished material and injection-molded parts for serial production.

Besides cylindrical bearings, flanged bearings and thrust washers, the materials can be processed into special forms, such as double-flanged bearings, bearings with conical surfaces, spherical bearings and bearings with extremely thin wall thicknesses and close tolerances. The materials also can be formed into guide shoes and slide inlays. There are virtually no limits in terms of shape, size and special features, including notches, grooves, snap-fit, halfshell and overmolded.



Data Sheet

Data for Bearing Design Calculation



Application: _____

Project / No.: _____

Quantity: _____ New Design Existing Design

Dimensions [mm]	
Inside diameter	D_i
Outside diameter	D_o
Length	B
Flange diameter	S_{fl}
Flange thickness	B_{fl}
Wall thickness	S_T
Length of slideplate	L
Width of slideplate	W
Thickness of slideplate	S_s

Load	
<input type="checkbox"/> Radial load F	
- static [N]	
- dynamic [N]	
<input type="checkbox"/> Axial load F	
- static [N]	
- dynamic [N]	
<input type="checkbox"/> Specific load \bar{p}	
- radial [MPa]	
- axial [MPa]	

Movement	
Rotational speed N [1/min]	
Speed U [m/s]	
Length of stroke L_s [mm]	
Frequency of stroke [1/min]	
Oscillating cycle φ [°]	
Oscillating freq. N_{OSZ} [1/min]	

Mating Surface	
Material	
Hardness HB/HRC	
Surface finish Ra [μm]	

Fits and Tolerances	
Shaft	D_J
Bearing housing	D_H

Operating Environment	
Ambient temperature T_{amb} [°]	
<input type="checkbox"/> Housing with good heating transfer properties	
<input type="checkbox"/> Light pressing or insulated housing with poor heat transfer properties	
<input type="checkbox"/> Non metal housing with poor heat transfer properties	
<input type="checkbox"/> Alternate operation in water and dry	

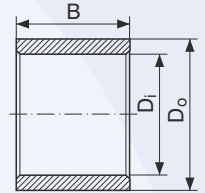
Lubrication	
<input type="checkbox"/> Dry	
<input type="checkbox"/> Continuous lubrication	
<input type="checkbox"/> Process fluid lubrication	
<input type="checkbox"/> Initial lubrication only	
<input type="checkbox"/> Hydrodynamic conditions	
Process fluid	
Lubricant	
Dynamic viscosity η	

Service Hours per Day	
Continuous operation	
Intermittent operation	
Operating time	
Days per year	

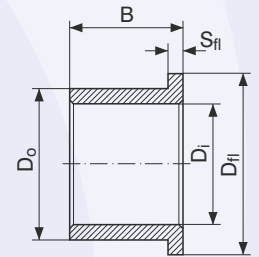
Service Life	
Required service life L_H [h]	

Bearing Type:

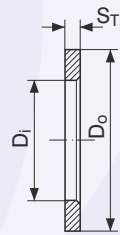
Cylindrical bush



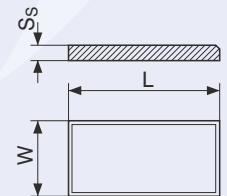
Flanged bush



Thrust washer



Slideplate



Special parts (sketch)

- Rotational movement
- Steady load
- Rotating load
- Oscillating movement
- Linear movement

Customer Information	
Company _____	
Street _____	
City / Post Code _____	
Name _____	
Tel. _____	Fax _____
email _____	Date / Signature _____

Product Information

GGB gives an assurance that the products described in this document have no manufacturing errors or material deficiencies. The details set out in this document are registered to assist in assessing the material's suitability for the intended use. They have been developed from our own investigations as well as from generally accessible publications. They do not represent any assurance for the properties themselves.

Unless expressly declared in writing, GGB gives no warranty that the products described are suited to any particular purpose or specific operating circumstances. GGB accepts no liability for any losses, damages or costs however they may arise through direct or indirect use of these products.

GGB's sales and delivery terms and conditions, included as an integral part of quotations, stock and price lists, apply absolutely to all business conducted by GGB. Copies can be made available on request.

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

Edition 2013 (This edition replaces earlier editions which hereby lose their validity).

Declaration on Lead Contents of GGB Products / Compliance with EU Law

Since July 1, 2006 it has been prohibited under Directive 2002/95/EC (restriction of the use of certain hazardous substances in electrical and electronic equipment; ROHS Directive) to put products on the market that contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE). Certain applications listed in the annex to the ROHS Directive are exempted. A maximum concentration value of 0.01% by weight and per homogeneous material, for cadmium and of 0.1% by weight and per homogeneous material, for lead, mercury, hexavalent chromium, PBB and PBDE shall be tolerated.

According to Directive 2000/53/EC on end-of life vehicles, since July 1, 2003 it has been prohibited to put on the market materials and components that contain lead, mercury, cadmium or hexavalent chromium. Due to an exceptional provision, lead-

containing bearing shells and bushes could still be put on the market up until July 1, 2008. This general exception expired on July 1, 2008. A maximum concentration value of up to 0.1% by weight and per homogeneous material, for lead, hexavalent chromium and mercury shall be tolerated.

All products of GGB in this brochure, with the exception of DU[®], DU-B[™], DB[™], PICAL2[™], SY[™], SP[™], GGB-CSM[™]115, GGB-CSM[™]118, GGB-CSM[™]124, GGB-CSM[™]125, GGB-CBM[™]311, GGB-CBM[™]312, GGB-CBM[™]321, GGB-CBM[™]322, GGB-CBM[™]341 and GGB-CBM[™]342 satisfy these requirements of Directives 2002/95/EC (ROHS Directive) and 2000/53/EC (End-of-life Vehicle Directive).

All products manufactured by GGB are also compliant with REACH Regulation (EC) No. 1 907/2006 of December 18, 2006.



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