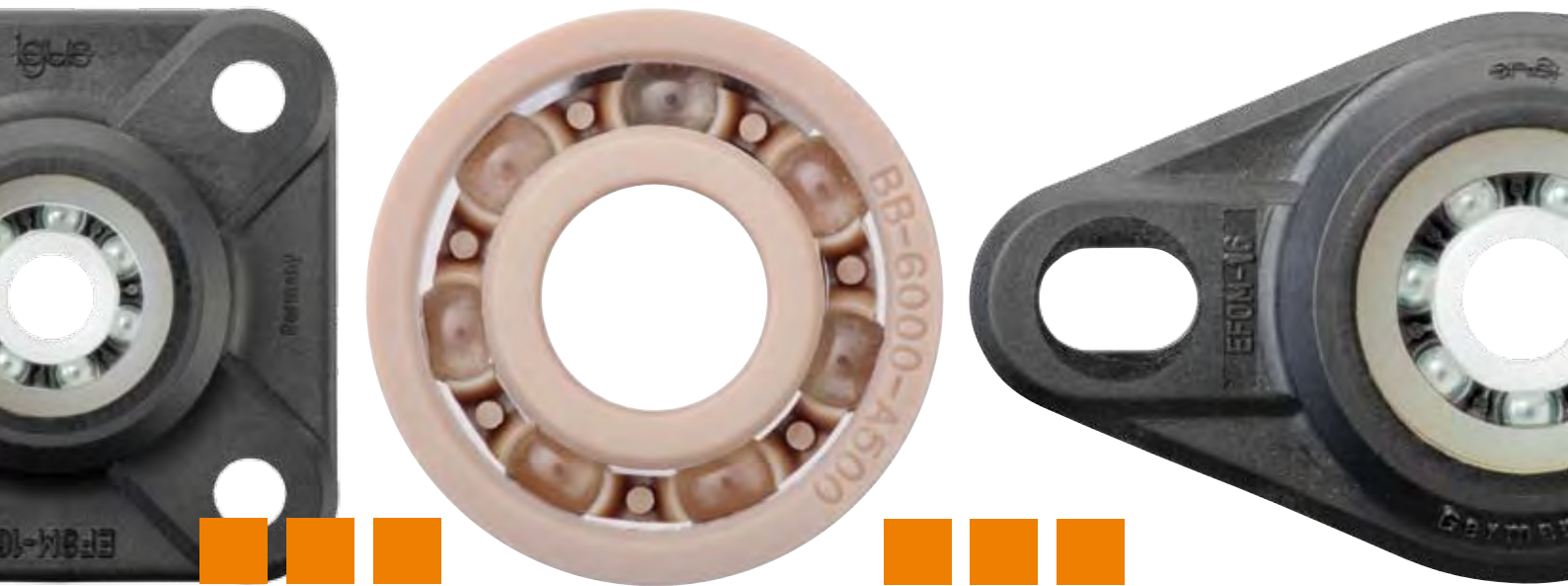


# xiros®/

polymer ball bearings.lubrication-free.polymer ball bearings.lu



# igus.eu/

plastics.for.longer.life®/...www.igus.eu/xiros®/...tribo-polyme

# /...xiros®/...tested.tested.tested/



René Achtnitz. Product manager iglidur® und xiros®

## Why is igus®, a manufacturer of polymer plain bearings, now also making polymer ball bearings?

Our customers are always increasing the demand for maintenance free bearing solutions, and we react to this by investing into more and more material and product development. Also, we do keep abreast of the ball bearing market, and our research shows that this area is relatively undeveloped. We believe that we can advance the technology of polymer ball bearings by drawing on our experience of tribologically optimised plastics.

## How are polymer ball bearings manufactured? Which parts are actually made of plastic?

Polymer ball bearings are made up of plastic cages, and balls made of stainless steel, Glass etc. as well as inner and outer races made of xirodur plastic. These are corrosion and chemical-resistant and have a high specific material strength.

## What is special about the xiros® polymer ball bearings from igus®?

Due to the use of tribo-optimised xirodur high-performance polymers, lubricants are no longer required, which makes the ball bearings completely maintenance-free and suitable for dry running.

## Where does the name xiros® come from?

It is derived from the Ancient Greek word for "dry", and at igus® it symbolises the bearings being able to run dry, without lubrication.

## What advantages does the combination of xiros® polymer ball bearings and igubal® housings have to offer?

The use of xiros® ball bearings in igubal® pedestal bearings and flange bearings results in greater flexibility for the rigid version when fitting the ball bearings. The spherical design provides the alignment compensation typical for igubal® for ball bearings, too.

## xiros® - Lubrication-free Polymer Ball Bearings



The development and design of dry running xiros® polymer ball bearings is based on tests carried out in the igus® polymer bearing laboratory.



The material combinations for bearing races, balls and cages are tested in the igus® polymer bearing laboratory under a wide range of different load and speed conditions. This extensive testing allows application-specific selection of the suitable bearing and an estimation of the service life.

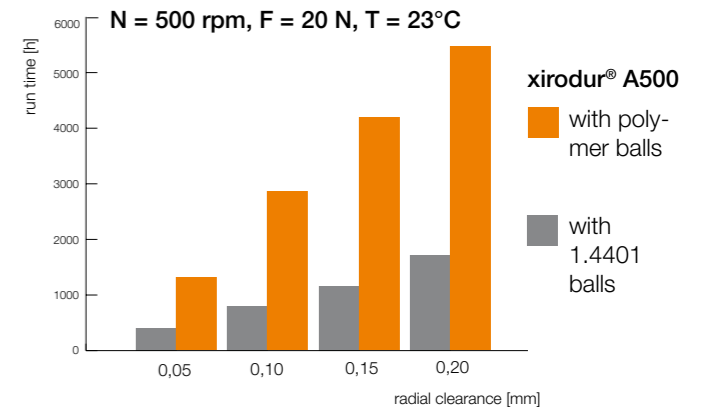
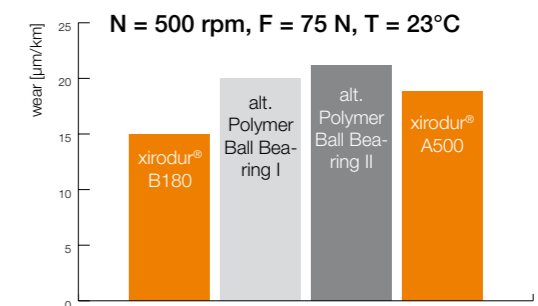
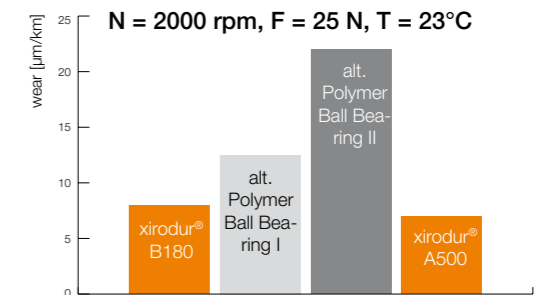
The xiros® polymer ball bearings are single row deep groove ball bearings manufactured to DIN 625 dimensions. The lubricant and maintenance-free ball bearings consist of four components:

- the outer race
- the inner race
- the cage
- the balls.

Inner and outer rings are made of igus® tribopolymers in order to maximise service life and minimise friction values. In contrast to metallic ball bearings, xiros® polymer ball bearings can be used without any lubrication. For this reason, they are suitable for many special applications where in comparison to permanently lubricated metallic ball bearings, lubricant-free use is more important than top speeds or loads.

These include food and medical technology, for example, to packaging and textile industries, chemical industry and clean room applications as well as electronics and office technology.

## comparison-tests in igus®-lab:



## Recommendation of tolerance for bore and shaft:

By default we recommend a H7-tolerance of the housing bore and a h6-tolerance of the shaft for xiros® polymer bearings.

For further questions about the dimensioning of the bore and the shaft please contact us.

**Delivery time 24 h or today\***  
The goods leave igus® within 24 hrs. On request we can deliver via express or special delivery. Please let us know what you require.

**No minimum order**  
igus® has no minimum order. Just order the amount you need. Our prices vary depending on order quantity. You can find them online at [www.igus.eu/igidur-shop](http://www.igus.eu/igidur-shop) or in our current pricelist, which you can order for free.

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Monday to Friday 8:00 am - 8:00 pm  
Saturday 8:00 am - 12:00 pm

dimensions in mm

**Order key:**  
**BB-623-A500-10-GL**

- Ball material**
  - ES Steel
  - GL Glass
  - PAI PAI
- Cage material**
  - 10 PA
  - 20 PP
  - 70 PEEK
- Race material**
  - A500 xirodur® A500
  - B180 xirodur® B180
  - C160 xirodur® C160
- Dimensions acc. to DIN 625-1**
- Ball Bearing**

# /...xiros® A500/...rock'n'roll/...



## xiros® A500 - for chemicals and high temperature

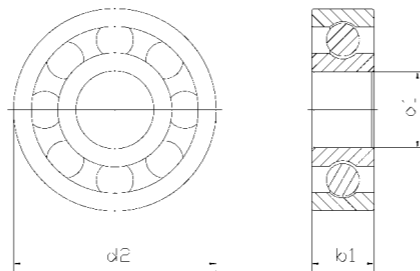
xiros® polymer ball bearings open new fields of application for plastic bearings. After the launch in 2007 the lifetime of the high temperature version with inner and outer race in xirodur® A500 was increased significantly – by up to a factor of 5.

- Maintenance- and lubricant-free
- For temperatures up to 150°C
- Corrosion-resistant
- Nonmagnetic and washable
- Chemical resistant
- PEEK-cages, inner- and outer rings made of FDA-compliant polymers
- Predictable lifetime
- Low weight
- For 3 - 10 mm shaft diameters

**Industries:** medicine, chemistry, plant engineering, food etc.



PEEK-cages, inner- and outer rings made of FDA-compliant polymers

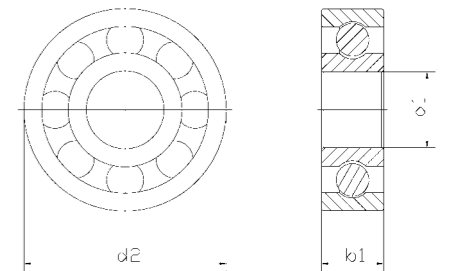


## xiros® A500 - improved wear resistance with polymer balls

xiros® A500 ball bearings are now available with polymer balls. The wear resistance can be 3 times higher at low load.

- Lubrication- and maintenance-free
- Corrosion-resistant
- chemical-resistant
- For temperatures up to 150 °C
- Non magnetic and resistant to cleaning / washdowns
- Predictable lifetime
- Light weight

**Industries:** Medical technology, chemical industry, plant design, vacuum technology, clean room etc.



Part-No.*	Races	Cage	Balls	Inner-Ø d1 [mm]	Outer-Ø d2 [mm]	Width b1 [mm]	Max. stat. load axial [N]	Stat. load rating [N]	Dyn. load rating [N]	Max. speed [rpm]
BB-623-A500-70-GL	A500	PEEK	Glass	3	10	4	40	30	40	5000
BB-626-A500-70-GL	A500	PEEK	Glass	6	19	6	125	60	81	3200
BB-608-A500-70-GL	A500	PEEK	Glass	8	22	7	220	72	97	2700
BB-6000-A500-70-GL	A500	PEEK	Glass	10	26	8	380	102	137	2100
BB-623-A500-10-ES	A500	PA	1.4401	3	10	4	40	30	40	5000
BB-626-A500-10-ES	A500	PA	1.4401	6	19	6	125	60	81	3200
BB-608-A500-10-ES	A500	PA	1.4401	8	22	7	220	72	97	2700
BB-6000-A500-10-ES	A500	PA	1.4401	10	26	8	380	102	137	2100
BB-623-A500-70-ES	A500	PEEK	1.4401	3	10	4	40	30	40	5000
BB-626-A500-70-ES	A500	PEEK	1.4401	6	19	6	125	60	81	3200
BB-608-A500-70-ES	A500	PEEK	1.4401	8	22	7	220	72	97	2700
BB-6000-A500-70-ES	A500	PEEK	1.4401	10	26	8	380	102	137	2100

\*More material combinations on request

Material data on page 12

Part-No.	Races	Cage	Balls	Inner-Ø d1 [mm]	Outer-Ø d2 [mm]	Width b1 [mm]	Max. stat. load axial [N]	Stat. load rating [N]	Dyn. load rating [N]	Max. speed [rpm]
BB-626-A500-70-PAI	A500	PEEK	PAI	6	19	6	30	15	20	3.200
BB-608-A500-70-PAI	A500	PEEK	PAI	8	22	7	55	18	25	2.700
BB-6000-A500-70-PAI	A500	PEEK	PAI	10	26	8	95	25	34	2.100

Material data on page 12

# /...xiros® B180/...rock'n'roll/...

## xiros® B180 - for normal temperatures

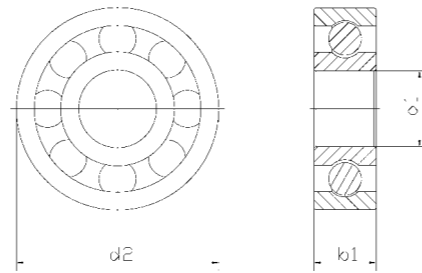
As well as the high-temperature range, igus® supplies a normal temperature line for use at temperatures up to 80°C. The specially developed material xirodur B180 for the inner and outer rings provides significantly longer life times, at a lower cost for applications in the normal temperature range.

- For temperatures up to 80° C
- Maintenance- and lubricant-free
- Non-magnetic and washable
- Corrosion-resistant
- Predictable lifetime
- Low weight
- Low friction
- For 3 - 20 mm shaft diameters

**Industries:** measurement, electronics, office equipment, vacuum technology, clean room etc.



xiros® B180 in an application for checking metal balls



Part-No.*	Races	Cage	Balls	Inner-Ø d1 [mm]	Outer-Ø d2 [mm]	Width b1 [mm]	Max. stat. load axial [N]	Stat. load rating [N]	Dyn. load rating [N]	Max. speed [rpm]
BB-623-B180-10-GL	B180	PA	Glass	3	10	4	30	25	35	4500
BB-626-B180-10-GL	B180	PA	Glass	6	19	6	95	50	70	2600
BB-608-B180-10-GL	B180	PA	Glass	8	22	7	165	60	84	2200
BB-6000-B180-10-GL	B180	PA	Glass	10	26	8	285	85	119	1900
BB-6001-B180-10-GL	B180	PA	Glass	12	28	8	315	105	147	1750
BB-6003-B180-10-GL	B180	PA	Glass	17	35	10	360	180	250	1400
BB-6004-B180-10-GL	B180	PA	Glass	20	42	12	400	210	294	1150
BB-623-B180-10-ES	B180	PA	1.4401	3	10	4	30	25	35	4500
BB-626-B180-10-ES	B180	PA	1.4401	6	19	6	95	50	70	2600
BB-608-B180-10-ES	B180	PA	1.4401	8	22	7	165	60	84	2200
BB-6000-B180-10-ES	B180	PA	1.4401	10	26	8	285	85	119	1900
BB-6001-B180-10-ES	B180	PA	1.4401	12	28	8	315	105	147	1750
BB-6003-B180-10-ES	B180	PA	1.4401	17	35	10	360	180	250	1400
BB-6004-B180-10-ES	B180	PA	1.4401	20	42	12	400	210	294	1150

\*More material combinations on request

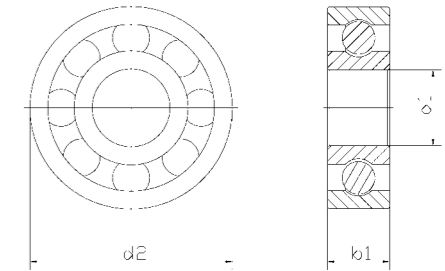
Material data on page 12

## xiros® C160 - good with chemicals

xirodur® C160 is the new ball bearing material for highest contamination resistance, but at a low price. xirodur® C160 can be used in temperatures up to 80 °C.

- Lubrication- and maintenance-free
- Corrosion-resistant
- Chemical-resistant
- Non magnetic and washable
- Lifetime predictable
- Low weight
- Low friction

**Industries:** Electroplating, chemical industry, plant design



Part-No.	Races	Cage	Balls	Inner-Ø d1 [mm]	Outer-Ø d2 [mm]	Width b1 [mm]	Max. stat. load axial [N]	Stat. load rating [N]	Dyn. load rating [N]	Max. speed [rpm]
BB-623-C160-20-GL	C160	PP	Glass	3	10	4	9	20	28	4500
BB-626-C160-20-GL	C160	PP	Glass	6	19	6	30	40	56	2600
BB-608-C160-20-GL	C160	PP	Glass	8	22	7	50	48	67	2200
BB-6000-C160-20-GL	C160	PP	Glass	10	26	8	85	68	95	1900
BB-623-C160-20-ES	C160	PP	1.4401	3	10	4	9	20	28	4500
BB-626-C160-20-ES	C160	PP	1.4401	6	19	6	30	40	56	2600
BB-608-C160-20-ES	C160	PP	1.4401	8	22	7	50	48	67	2200
BB-6000-C160-20-ES	C160	PP	1.4401	10	26	8	85	68	95	1900

Material data on page 12

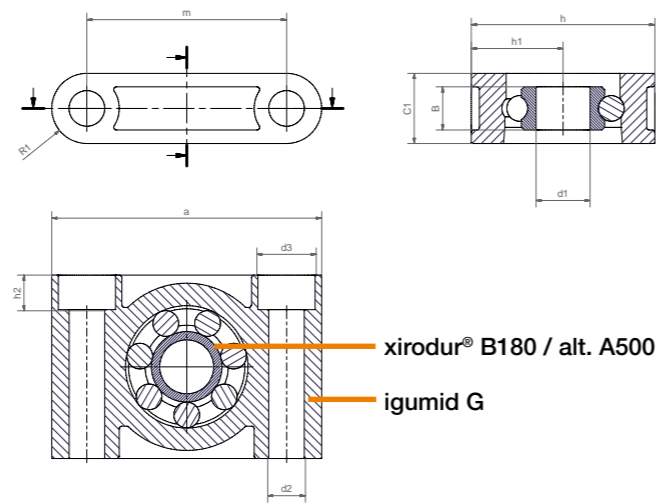
# xiros® pillow block bearings



## Lubricant-free pillow block bearing with plastic ball bearing:

xiros® pillow block bearings with Glass or stainless steel balls are a combination of xiros® polymer ball bearings and igubal® housings. Alongside the rigid type, the pivoting option enables the compensation of misalignments. Applicable for both options:

- Low weight
- Absolute corrosion resistance
- Maintenance- and lubricant-free
- Washable
- Nonmagnetic
- Service life prediction on request
- Compact design
- Temperatures up to 80°C (xirodur® B180): ESTM-....-102
- Temperatures up to 120°C (xirodur® A500): ESTM-....-202



**Industries:** Plant construction, fixture construction, medical technology

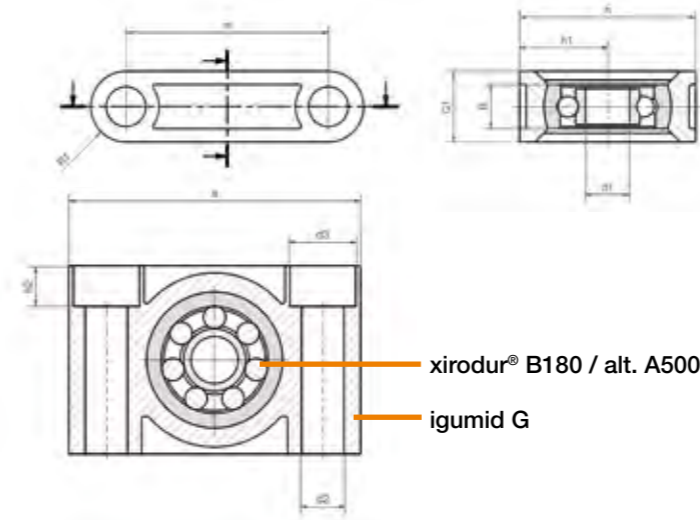
Part-No.* Glass Balls fixed	Inner-Ø d1 [mm]	Bore-Ø d2 [mm]	d3 [mm]	h [mm]	h1 [mm]	h2 [mm]	a [mm]	m [mm]	C1 [mm]	B [mm]	R1 [mm]
ESTM-BB1-F06-102**	6	5,5	-	22	11	-	36	26	10	6	5,0
ESTM-BB1-F10-102**	10	6,6	10,6	34	17	6,4	50	37	13	8	6,5
ESTM-BB1-F20-102**	20	9,0	14,0	48	24	8,6	72	54	18	12	9,0

Part-No.* Glass Balls fixed	Max. stat. load axial [N]	static load rating [N]	dynamic load rating [N]	Max. speed [rpm]
ESTM-BB1-F06-102**	95	50	70	2600
ESTM-BB1-F10-102**	285	85	119	1900
ESTM-BB1-F20-102**	400	210	294	1150

\*Balls also available in stainless steel (e.g. ESTM-BB1-F06-101) \*\*Temperatures up to 120 °C: ESTM-... -202

Material data on page 12

## ESTM - fixed and pivoting...up to 80 °C or 120 °C...



Ball Bearing test in igus® polymer lab

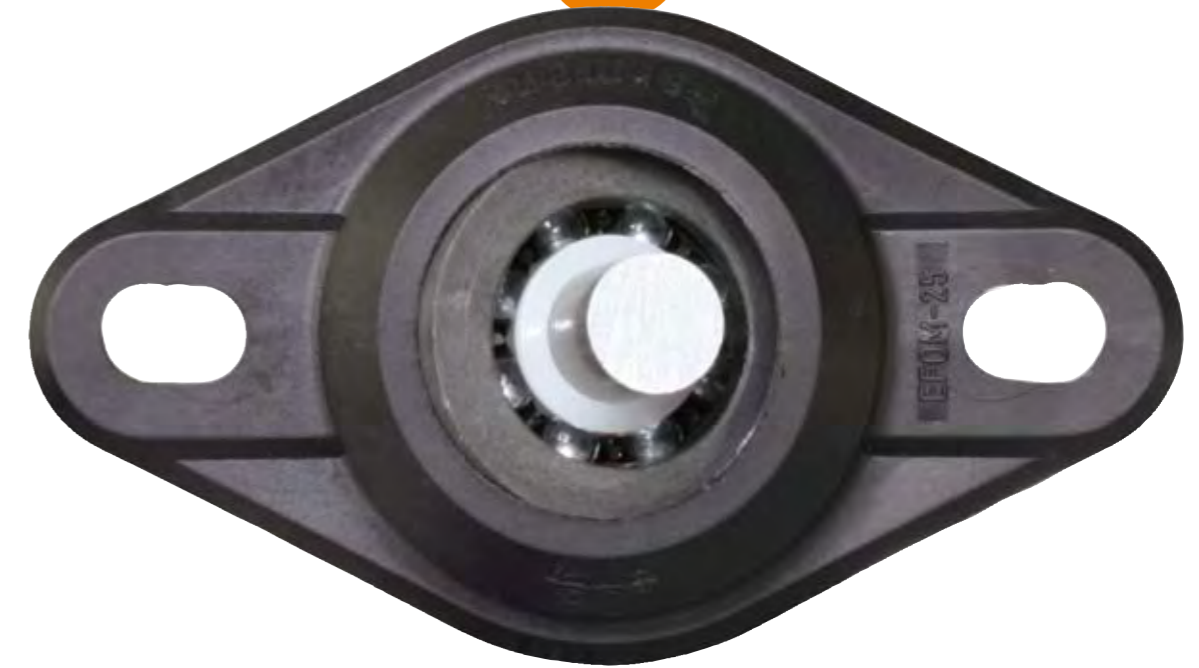
Part-No.* Glass Balls pivoting	Inner-Ø d1 [mm]	Bore-Ø d2 [mm]	d3 [mm]	h [mm]	h1 [mm]	h2 [mm]	a [mm]	m [mm]	C1 [mm]	B [mm]	R1 [mm]	Max. pivoting angle [°]
ESTM-BB1-P08-102**	8	6,6	10,6	34	17	6,4	50	37	13	7	6,5	5
ESTM-BB1-P10-102**	10	9,0	14,0	40	20	8,6	62	46	16	8	8	5
ESTM-BB1-P12-102**	12	9,0	14,0	48	24	8,6	72	54	18	10	9	5

Part-No.* Glass Balls pivoting	Max. stat. load axial [N]	static load rating [N]	dynamic load rating [N]	Max. speed [rpm]
ESTM-BB1-P08-102**	165	60	84	2200
ESTM-BB1-P10-102**	285	85	119	1900
ESTM-BB1-P12-102**	315	105	147	1750

\*Balls also available in stainless steel (e.g. ESTM-BB1-P08-101) \*\*Temperatures up to 120 °C: ESTM-... -202

Material data on page 12

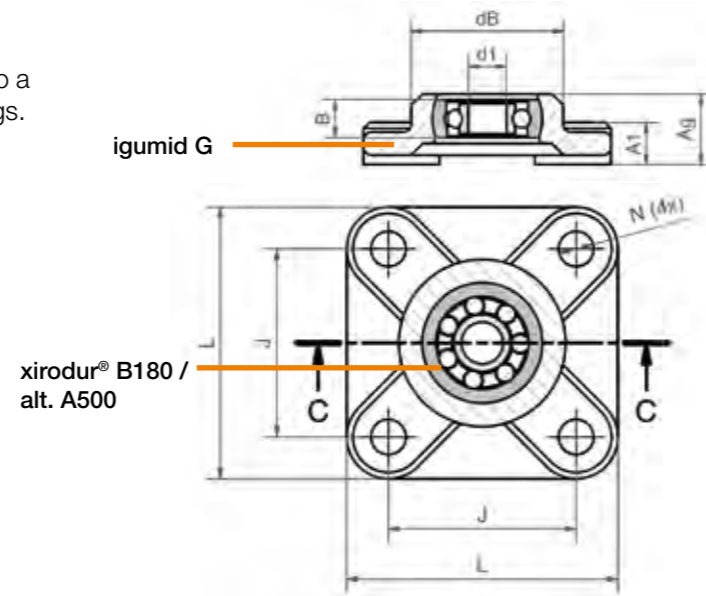
# /...xiros® flange bearings/...



## Lubricant-free flange ball bearings...4-hole-design: EFSM...

xiros® flange bearings with Glass or stainless steel balls are also a combination of xiros® polymer ball bearings and igubal® housings.

- Compensation of alignment faults
- Very low weight
- Corrosion-resistant
- Maintenance- and lubricant-free
- Washable
- Nonmagnetic
- Predictable lifetime on request
- Compact design
- Temperatures up to 80°C (xirodur B180): EFSM-....-102
- Temperatures up to 120°C (xirodur A500): EFSM-....-202



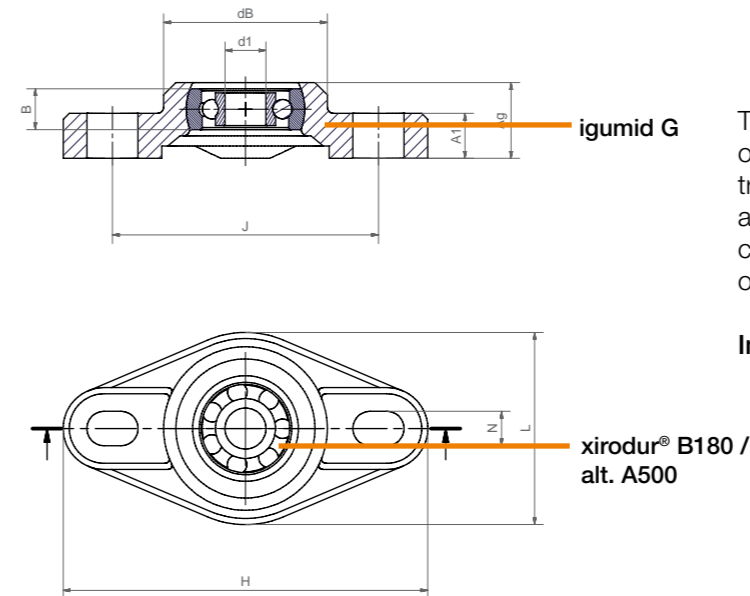
Part-No. 4-hole Glass Balls* pivoting	Inner-Ø d1 [mm]	dB [mm]	L [mm]	J [mm]	A1 [mm]	Ag [mm]	N [mm]	Max. pivoting angle [°]
EFSM-BB1-P08-102**	8	32,0	52	36	9	15,5	6,4	5
EFSM-BB1-P10-102**	10	40,0	65	45	11	18,5	8,4	5
EFSM-BB1-P12-102**	12	48,0	74	52	14	23,5	8,4	5

Part-No. 4-hole Glass Balls* pivoting	Max. stat. load axial [N]	static load rating [N]	dynamic load rating [N]	Max. speed [rpm]
EFSM-BB1-P08-102**	165	60	84	2200
EFSM-BB1-P10-102**	285	85	119	1900
EFSM-BB1-P12-102**	315	105	147	1750

\*Balls also available in stainless steel (e.g. EFSM-BB1-P08-101) \*\*Temperatures up to 120 °C: EFSM-... -202

Material data on page 12

## 2-hole-design: EFOM...up to 80°C or 120°C...



Part-No. 2-hole Glass Balls* pivoting	Inner-Ø d1 [mm]	dB [mm]	H [mm]	L [mm]	A1 [mm]	Ag [mm]	N [mm]	Max. pivoting angle [°]
EFOM-BB1-P08-102**	8	32	72,6	38	10	15,25	6,4 x 10,0	5
EFOM-BB1-P10-102**	10	40	89,0	47	11	18,5	8,4 x 12,5	5
EFOM-BB1-P12-102**	12	48,5	101,0	58,5	14	23,5	8,4 x 12,5	5

Part-No. 2-hole Glass Balls* pivoting	Max. stat. load axial [N]	static load rating [N]	dynamic load rating [N]	Max. speed [rpm]
EFOM-BB1-P08-102**	165	60	84	2200
EFOM-BB1-P10-102**	285	85	119	1900
EFOM-BB1-P12-102**	315	105	147	1750

\*Balls also available in stainless steel (e.g. EFOM-BB1-P08-101) \*\*Temperatures up to 120 °C: EF=M-... -202

Material data on page 12

The new xiros® polymer ball bearings with angle compensation were developed for maintenance-free use in conveyer belts, track rollers and deflection rollers. The light, corrosion-free and anti-magnetic bearings do not need any oil and grease, and compensate alignment errors caused by shaft deflection and/or tolerances.

**Industries:** Automotive parts suppliers, newspaper-printers, food and drinks industries, textile and Glass manufacture, stone processing etc.

# /...request/...

Yes, I am interested in igus®-Polymer solutions and would like to get more information the following way:

- Please send me more information!
- Please send me a sample!
- Please call me back!
- Please visit me: Please call me back to make an appointment

company: \_\_\_\_\_

name: \_\_\_\_\_

address: \_\_\_\_\_

Post code / town: \_\_\_\_\_

Phone number: \_\_\_\_\_

E-Mail: \_\_\_\_\_

Target date: \_\_\_\_\_

# more information



## Catalog

- More than 9.600 products in standard catalog for igus® Polymer Bearings
- Handy in Din A5 format
  - Quicklinks to the internet
  - Issue 01/2008



## News brochure 2009

- More than 40 new products and extensions for igus® Polymer Bearings
- Handy in Din A5 format
  - Quicklinks to the internet
  - Issue 10/2009

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