

5. xiros®

Polymer ball bearings



...plastics

xiros® ball bearings | Product overview

With glass or stainless steel balls

xiros® radial deep-groove ball bearings – Standard material xirodur® B180

				
Standard PA cage	FDA compliant PE cage	Cost-effective B180 cage	With shield PA cage	Thin ring bearing B180 cage
► Page 728	► Page 728	► Page 728	► Page 728	► Page 728

xiros® radial deep-groove ball bearings – Further materials ...

... for special application areas

									
High temp. and chemical resistant – xirodur® A500, PEEK cage ► Page 730	For low loads xirodur® A500 PEEK cage PAI balls ► Page 730	High temperatures xirodur® A500, PA cage ► Page 730	High chemical resistance xirodur® C160 PP cage ► Page 732	Conductive xirodur® F180 PA cage ► Page 734	ESD protection & FDA compliant xirodur® F180 PE cage ► Page 734	Detectable xirodur® M180 xirodur® M180 cage ► Page 736	For tobacco industry xirodur® T220, PP cage ► Page 737	Quiet and for high speeds xirodur® D180 PA cage ► Page 738	Higher temperatures xirodur® G220 PP cage ► Page 739

Flange ball bearings

Other designs

									
With single flange xirodur® B180 PA cage ► Page 742	With double flange xirodur® B180 PA cage ► Page 742	Conductive xirodur® F180 PA cage ► Page 742	System-solution Aluminium tube with flange ball bearing ► Page 742	End cap xirodur® B180 PA cage ► Page 745	Spherical outer diameter xirodur® B180 ► Page 744	Spherical outer diameter xirodur® M180 ► Page 744	Double row xirodur® B180 ► Page 740	Multi axis xirodur® B180 PP balls ► Page 741	Skate wheel xirodur® B180 PA cage ► Page 746

Axial ball bearings made from xirodur® B180

						
Standard	Double row	Thrust washer	Polymer ball transfer unit POM balls ► Page 750	Axial polymer ball transfer unit with spherical ball ► Page 750	Slewing ring bearing glass/stainless steel balls ► Page 751	Slewing ring bearing, with gear teeth Stainless steel balls ► Page 751

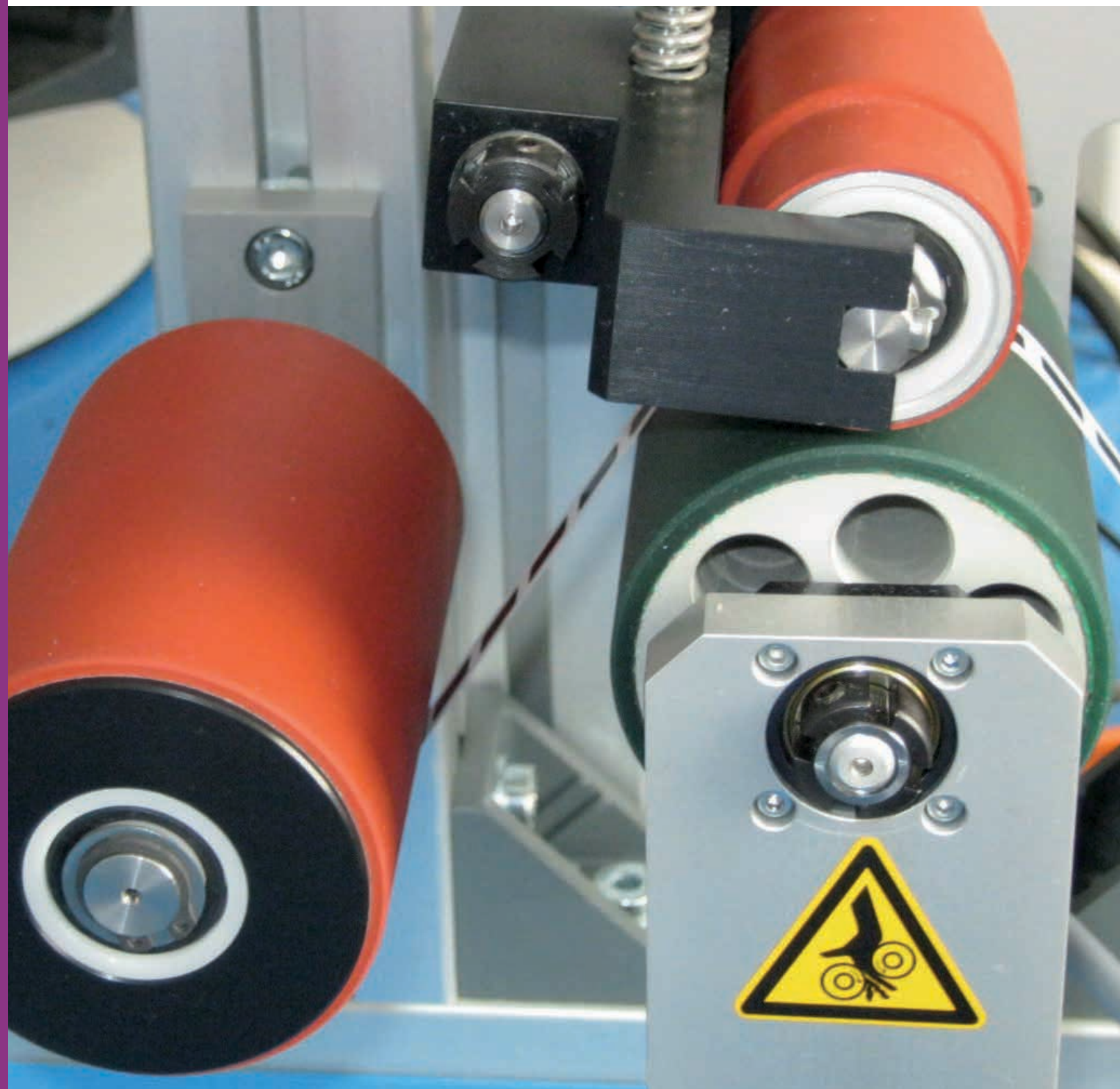
xiros® combination with igubal®

			
Pillow block, fixed	Pillow block, pivoting	4 holes flange bearing, pivoting	2 holes flange bearing, pivoting
► Page 752	► Page 753	► Page 754	► Page 755

Material data,
chemical resistance
table and tolerance
recommendation
► From page 726

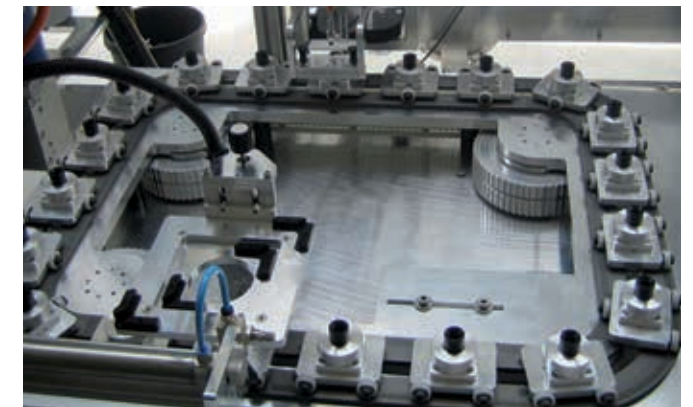
GUIDE ROLLERS

The xiros® polymer ball bearings are 50 % lower in price than the bearings previously used here



THERMOFORMING MACHINE

In this Thermoforming machine for coffee-cream portion packs, xiros® A500 plastic ball bearings are used for their high chemical resistance. (frischli Milchwerke GmbH)



INDEXING TABLE

This indexing table is used to test metal balls for cracks and dimensional accuracy. xiros® polymer ball bearings are used here as wheels for the trolleys.



WET FILM THICKNESS GAUGE

This precision tester for accurate and rapid measurement of all liquid paint, coatings, oil coatings and adhesives is equipped with a durable and solvent resistant xiros® B180 ball bearing.



FILM GUIDE ROLLERS

There is no contamination of the films through lubricants, due to the use of maintenance free xiros® flange bearings.



EXTRUDER ROLLER

After clarifying the corrosion characteristics of stainless steels, we were able to successfully conduct tests and installed our xiros® polymer ball bearings as drop-in replacements for the stainless steel bearings, which resulted in a significant increase of the service life.



THREE-SIDED TRIMER

The xirodur® B180 radial grooved ball bearing is used in a three sided trimmer made by Perfecta Schneidemaschinenwerk GmbH. xiros® polymer ball bearings are used to transport books, brochures, magazines, or newspapers to subsequently cut these into the proper format.

Maintenance free, temperature resistant up to +150°C



Cost-effective

made from xirodur® B180 with B180 cage and glass or stainless steel balls

► Page 728



Chemical resistant

made from xirodur® A500 with PEEK-cage and glass or stainless steel balls

► Page 730



ESD protection & FDA compliant

made from xirodur® F180 with PE-cage and stainless steel balls

► Page 734



Detectable

made from xirodur® M180 with xirodur® M180 cage and stainless steel balls

► Page 744



Flange ball bearings

Standard (xirodur® B180),
conductive (xirodur® F180)

► Page 742



Axial ball bearings

made from xirodur® B180, different types and designs

► Page 748



Polymer ball transfer units

for lubrication free transport of sensitive products

► Page 750



xiros® in combination with igubal®

for maintenance free use in conveyor belts and cam rollers

► Page 752

Lubrication free polymer ball bearings

xiros® polymer ball bearings revolutionise the market. The maintenance free dry-running and the use of xirodur® high performance polymers successfully solve many applications where conventional metal ball bearings are not effective. xiros® ball bearings are the only plastic ball bearings in the world which use specially developed xirodur® tribo-polymers.

- Lubrication and maintenance free
- High corrosion resistance
- Free from metal (due to the use of glass and plastic balls), therefore non-magnetic
- For temperatures up to +150 °C
- High chemical resistance, suitable for wash-down
- Light weight
- Electrically insulating (or conductive)
- FDA compliant (depending on material)
- Predictable service life

Typical application areas:

- Packaging ● Textile industry
- Test engineering and quality assurance
- Optical industry ● Model making
- Medical technology



Online product finder

► www.igus.eu/xiros-finder



max. 150 °C
min. -40 °C



7 Materials
17 product types



Detailed technical data

► From page 726



Available from stock.

Detailed information about delivery time online.



xiros® radial deep groove ball bearings

- Lubrication and maintenance free
- Corrosion resistant
- Chemical resistance
- Predictable service life
- Light weight

► From page 728



xiros® radial deep-groove ball bearings – further designs

- Lubrication and maintenance free
- Corrosion resistant
- Chemical resistance
- Light weight

► From page 740



xiros® axial ball bearings

- For absorbing axial loads
- xirodur® B180 combined with glass or stainless steel balls

● Temperature resistant up to +80°C

► From page 748



xiros® in combination with igubal®

- A combination of xiros® polymer ball bearings and igubal® housings
- Fixed or pivoting versions
- 4 versions
- For maintenance free use in conveyor belts and cam rollers

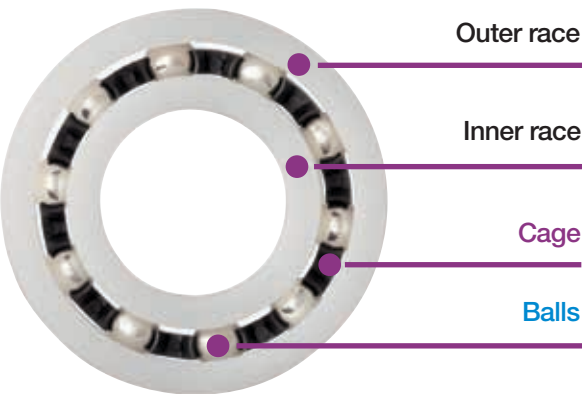
► From page 752

Design

The xiros® polymer ball bearings are single-row grooved ball bearings based on DIN 625. The lubrication and maintenance free ball bearings consist of four components:

The outer- and inner races

The suitability of a xiros® polymer ball bearings is largely determined by the materials of the two races. These are made from igus® tribopolymers to maximise service life and minimise friction. You can currently choose from six different materials. They allow different values of application temperature, chemical resistance and price. The table with material data (page 726) gives exact information.



The cage

The material of the ball bearing cage must fit well to the application. The various material options have quite different chemical and temperature resistance values. The cage materials are compatible with all the different race options within xiros®.

The balls

The ball materials differ most significantly. In addition to steel glass or plastics are used. This produces a large difference in mass, which in turn affects smoothness, weight and chemical resistance. Steel balls (stainless steel) are costeffective, chemical resistant, but with the highest weight. Glass balls are used to give a metal free solution. They are also very resistant to chemicals and have an average weight. Polymer balls have significant advantages in weight, size and quiet running characteristics. Depending on the polymer used, plastic balls they can have excellent chemical resistance.

Other designs

xiros® radial deep groove ball bearings

The other designs include convex rollers, which can run directly on a profile, castors, a multi-bearing for linear and radial movements, flange bearings designed e.g. for installation in tube ends and double-row bearings for absorbing higher forces.

Pillow block and flange bearings

This range is made up by combining xiros® polymer ball bearing with the igubal® pillow block and flanged housings, resulting in a higher flexibility in terms of installation of the bearings. The pre-finished bearing housing make it easy for the user to use these maintenance free components. Both flanged and pillow block are available as fixed or as pivoting design. The difference between the two options is that the pivoting type can compensate for shaft and/or bearing misalignment. A spherical outer race is pressed into the bearing housing, ensuring self aligning action. If necessary, the inner bearing can be pivoted in all directions. Possible misalignment of two bearing points lying together can thus be compensated.

Development and tests

Through numerous tests the race materials were optimised. The polymers we have developed for use with ball bearings allow higher speeds, greater loads, and longer service life. But the development continues, we believe that polymer ball bearing technology will continue to advance, especially with our experience and development with tribological polymer materials. Challenge us, talk to us about your applications, tell us what you need from a plastic ball bearing. In the igus® test laboratory the life and wear of xiros® polymer ball bearings are tested. In addition to the actual material comparison, tests indicate these experiments also answer questions about the impact of external influences such as temperature, humidity or dust.



Two of our test benches for xiros® polymer ball bearings at igus® bearings laboratory

Predictability

As part of the development of xiros® polymer ball bearing tests are carried out continuously. The high number of test results make it very difficult to present this information in tabular form. It is for this reason that igus® has developed the online life calculator, which uses real test results to give an accurate calculation.

The predictability of xiros® polymer ball bearing is one of the most important advantages. Based on the results of many wear tests, the user can calculate the service life of the xiros® polymer ball bearing reliably and interpret the application.

 www.igus.eu/xiros-expert



Material properties and chemical resistance

General properties	Unit	xirodur®								igumid
		B180	A500	C160	F180	M180	T220	D180	G220	G
Density	g/cm³	1.41	1.28	1.11	1.41	1.63	1.28	1.24	1.14	1.37
Colour		white	brown	opaque	black	blue	beige	blue	silver	black
Max. moisture absorption at +23°C/50% r.h.	% weight	0.2	0.3	0.1	0.2	0.2	0.3	0.5	2.1	1.4
Max. water absorption	% weight	0.7	0.5	0.2	0.7	0.6	0.5	1.4	8.9	5.6
Mechanical properties										
Modulus of elasticity	MPa	2,500	3,600	1,900	2,500	2,500	1,800	130	3,000	7,800
Tensile strength at +20°C	MPa	68	140	35	68	68	65	n. v.	n. v.	240
Shore-D Hardness		77	83	67	77	77	76	51	n. v.	79
Electrical properties										
Specific volume resistance ¹⁾	Ωcm	> 10 ¹⁴	> 10 ¹⁴	> 10 ¹⁴	>10 ⁷ –10 ⁹ ²⁾	>10 ⁹	>10 ¹⁰	> 10 ¹⁴	> 10 ¹³	> 10 ¹¹
Surface resistance ¹⁾	Ω	> 10 ¹⁴	> 10 ¹³	> 10 ¹⁴	>10 ⁷ –10 ⁹ ²⁾	>10 ⁹	>10 ¹⁰	> 10 ¹⁴	> 10 ¹²	> 10 ¹¹
Thermal properties of xiros® polymer ball bearings										
Max. long term application temperature	°C	+80	+150	+70	+80	+80	+100	+80	+100	+120
Min. application temperatures (in combination with cage material)	°C	−40	−100 (PEEK) −40 (PA)	0	−40	−40	−40	−50	−40	−40

¹⁾ Only valid for xirodur® F180: the good conductivity of this material favours, under certain conditions, the corrosion generation on metallic parts.

²⁾ Depending on the geometry

Table 01: Material data

Medium	xirodur®							igumid
	B180	A500	C160	F180	M180	T220	D180	G
Alcohols	+	+	+	+	+	+	+ to 0	+
Diluted alkalines	+	+	+	+	+	+	+ to 0	0 to −
Diluted acids	0 to −	+	+	0 to −	0 to −	0 to −	+ to 0	+
Fuels	+	+	+ to 0	+	+	+	+	+
Greases, oils without additives	+	+	+	+	+	+	+	+
Hydrocarbons	+	+	+ to 0	+	+	+	+	+
Strong alkalines	+ to 0	+	+	+ to 0	+ to 0	+ to 0	+ to 0	−
Strong acids	−	+	+ to 0	−	−	−	0	+ to 0

+ resistant 0 conditionally resistant − not resistant

Table 02: Chemical resistance of xiros® materials

Recommendation of tolerance for hole and shaft

Fitting	Housing bore	Shaft
Standard: transition fit	H7	h6

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

Standard material						High temperature					Chemical resistant		Conductive with ESD protection		Detectable	For the tobacco industry
xirodur® material B180						A500					C160		F180		M180	T220
Cage material	PA		B180		PE	PA		PEEK			PP		PA	PE	M180	PP
Ball material	ES	GL	ES	GL	ES	ES	GL	ES	GL	PAI	ES	GL	ES	ES	ES	ES
Dirt resistant	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Chemical resistant			●	●				●	●	●	●	●				
For high temperatures						●	●	●	●	●						
Smooth running	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Low moisture absorption	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Contact with food			●		●			●						●	●	
Seawater resistant								●	●		●	●				
Cost-effective	●		●													
Conductive + ESD protection													●	●		
Metal free		●		●			●		●	●		●				



Races made from xirodur® B180



PA cage,
stainless steel balls



PA cage,
glass balls



PA cage, with shield,
stainless steel balls
or glass balls



PE cage,
stainless steel balls



xirodur® B180 cage,
stainless steel balls



xirodur® B180 cage,
glass balls



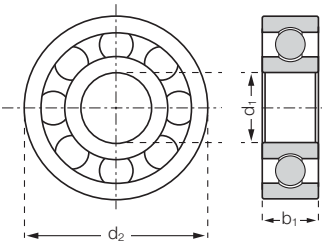
Thin ring bearing,
xirodur® B180 cage,
stainless steel balls



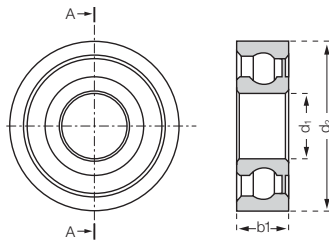
Special designs made
from xirodur® B180
► From page 740

Technical data

Size	Max. stat.	Bearing load		Max. speed	Weight		With shield	
	bearing load axial	stat.	dyn.		ES	GL	ES	GL
	[N]	[N]	[N]		[g]	[g]	[g]	[g]
623	30	25	34	4,500	0.4	0.3	0.4	0.4
624	42	33	45	4,000	1.0	0.9	–	–
625	75	40	55	3,700	1.6	1.0	–	–
626	95	42	58	3,200	2.2	1.7	2.5	1.8
629	40	110	128	2,200	6.1	–	–	–
608	165	60	84	2,200	3.9	2.6	4.0	2.7
688	132	48	67	1,760	3.1	2.1	–	–
6800	56	40	47	3,600	1.6	–	–	–
6000	285	130	140	2,200	6.1	4.0	6.3	4.1
6200	285	85	119	1,900	7.8	5.2	–	–
6801	56	60	75	3,250	1.9	–	–	–
6001	315	140	170	2,000	6.9	4.5	7.1	–
6201	315	105	147	1,750	8.8	5.9	–	–
6802	56	80	92	2,900	2.5	–	–	–
6002	338	150	195	1,800	8.9	6.2	–	–
6202	338	146	196	1,600	11.6	8.2	12.8	8.9
6003	360	240	330	1,600	11.1	7.9	11.5	8.4
6203	360	180	250	1,400	14.4	10.2	–	–
6004	400	250	320	1,400	20.2	13.6	20.8	14.2
6204	400	210	294	1,150	26.2	17.7	–	–
6005	520	280	380	1,200	23.9	16.7	24.7	17.5
6205	520	240	360	1,050	35.2	24.6	–	–
6006	640	380	500	1,000	35.0	24.2	–	–
6007	720	460	600	850	47.0	31.3	–	–
6008	800	520	680	750	56.3	39.1	–	–
6009	900	600	800	650	71.5	48.6	–	–
6010	950	680	900	600	83.1	56.4	–	–
6011	1,000	720	950	550	125.2	84.4	–	–
6012	1,100	800	1,000	500	129.6	85.6	–	–



Without shield



With shield



Order key

Type	xirodur®	Options
------	----------	---------

BB-623-B180-10-ES-C

Ball bearing	Dimensions acc. to DIN 625-1	Race material	Cage material	Ball material	With shield
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Options

Cage material

10 = PA

30 = xirodur® B180

50 = PE

Ball material

ES = stainless steel

GL = glass

Shield

C = with shield

The table shows the available cover option
– suffix "-C"

Dimensions [mm]

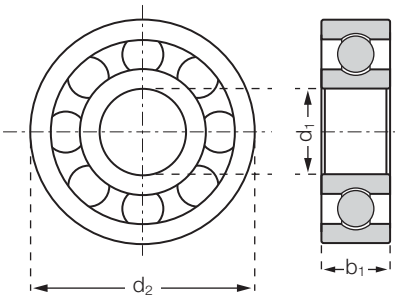
Inner Ø	Outer Ø	Width	Cage/ball material combination						With shield	Part No.
d1	d2	b1	PA/GL	PA/ES	PE/ES	B180/GL	B180/ES	PA/ES/GL		
3	10	4	●	●	●			●		BB-623-B180- -
4	13	5	●	●	●					BB-624-B180- -
5	16	5	●	●	●	●	●			BB-625-B180- -
6	19	6	●	●	●	●	●	●		BB-626-B180- -
9	26	8		●						BB-629-B180-10-ES
8	22	7	●	●	●	●	●	●		BB-608-B180- -
8	16	5	●	●						BB-688-B180- -
10	19	5					●			BB-6800-B180-30-ES
10	26	8	●	●	●	●	●	●		BB-6000-B180- -
10	30	9	●	●						BB-6200-B180- -
12	21	5					●			BB-6801-B180-30-ES
12	28	8	●	●	●	●	●	●		BB-6001-B180- -
12	32	10	●	●						BB-6201-B180- -
15	24	5					●			BB-6802-B180-30-ES
15	32	9	●	●	●					BB-6002-B180- -
15	35	11	●	●				●		BB-6202-B180- -
17	35	10	●	●	●	●	●	●		BB-6003-B180- -
17	40	12	●	●						BB-6203-B180- -
20	42	12	●	●	●	●	●	●		BB-6004-B180- -
20	47	14	●	●						BB-6204-B180- -
25	47	12	●	●	●	●	●	●		BB-6005-B180- -
25	52	15	●	●						BB-6205-B180- -
30	55	13	●	●						BB-6006-B180- -
35	62	14	●	●						BB-6007-B180- -
40	68	15	●	●						BB-6008-B180- -
45	75	16	●	●						BB-6009-B180- -
50	80	16	●	●						BB-6010-B180- -
55	90	18	●	●						BB-6011-B180- -
60	95	18	●	●						BB-6012-B180- -

Radial deep groove ball bearings | Product range

Races made from xirodur® A500, temperatures up to +150 °C



Chemical resistant, for high temperatures



Order key

Type

xirodur®

Options

BB-623-A500-10-ES

Ball bearing

Dimensions acc. to DIN 625-1

Race material

Cage material

Ball material

Options

Cage material

10 = PA

70 = PEEK

Ball material

ES = stainless steel

GL = glass

PAI = polyamide-imide

Technical data

Size	Max. stat. bearing load axial		Bearing load				Max. speed	Weight				
	PEEK/PAI		stat.	dyn.	stat. dyn.			PEEK/ ES	PEEK/ GL	PEEK/ PAI	PA/ ES	PA/ GL
	PEEK/PAI				PEEK/PAI							
	[N]	[N]			[N]	[N]						
623	30	–	30	40	–	–	5,000	0.4	0.3	–	0.4	0.3
624	56	–	40	52	–	–	4,550	1.0	0.9	–	1.9	0.9
626	125	30	60	80	15	20	3,400	2.3	1.6	1.4	2.3	1.6
608	220	55	72	100	18	25	2,700	3.7	2.4	2.2	3.7	2.4
6000	380	95	102	140	25	34	2,100	6.0	3.8	3.4	6.0	6.0
6002	440	120	161	168	32	41	1,900	9.1	5.2	5.6	9.1	9.1
6004	650	160	250	320	62	88	1,700	19.7	13.2	11.7	19.7	19.4

Dimensions [mm]

Inner Ø	Outer Ø	Width	Cage/ball material combination					Part No.
d1	d2	b1	PEEK/ES	PEEK/GL	PEEK/PAI	PA/ES	PA/GL	
3	10	4	●	●		●	●	BB-623-A500- -
4	13	5	●	●		●	●	BB-624-A500- -
6	19	6	●	●	●	●	●	BB-626-A500- -
8	22	7	●	●	●	●	●	BB-608-A500- -
10	26	8	●	●	●	●	●	BB-6000-A500- -
15	32	9	●	●	●	●	●	BB-6002-A500- -
20	42	12	●	●	●	●	●	BB-6004-A500- -

Order example:

BB-623-A500-10-ES = ball bearing with PA cage and stainless steel balls

Radial deep groove ball bearings | Product range

Races made from xirodur® C160



PP cage,
stainless steel balls

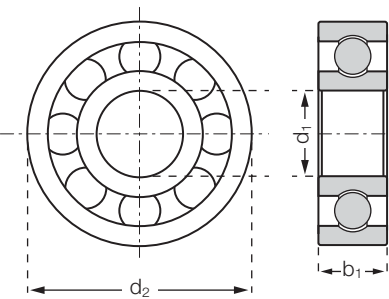


PP cage,
glass balls

Technical data

Size	Max. stat.	Bearing load		Max. speed	Weight	
	bearing load axial	stat.	dyn.		PP/ES	PP/GL
	[N]	[N]	[N]		[g]	[g]
623	25	20	28	4,000	0.4	0.3
626	80	30	42	2,600	2.1	1.4
608	145	45	60	2,200	3.4	2.2
6000	250	68	95	1,900	5.6	3.5
6002	290	95	120	1,600	8.1	4.2
6003	320	110	160	1,400	9.3	5.1

High media resistance



Order key

Type	xirodur®	Options
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BB-623-C160-20-ES

Ball bearing	Dimensions acc. to DIN 625-1	Race material	Cage material	Ball material
--------------	------------------------------	---------------	---------------	---------------

Options

Cage material

20 = PP

Ball material

ES = stainless steel

GL = glass

Dimensions [mm]

Inner Ø	Outer Ø	Width	Cage/ball material combination		Part No.
d1	d2		PP/ES	PP/GL	
3	10	4	●	●	BB-623-C160-20-
6	19	6	●	●	BB-626-C160-20-
8	22	7	●	●	BB-608-C160-20-
10	26	8	●	●	BB-6000-C160-20-
15	32	9	●	●	BB-6002-C160-20-
17	35	10	●	●	BB-6003-C160-20-



Order example:

BB-623-C160-20-ES = ball bearing with PP cage and stainless steel balls

Radial deep groove ball bearings | Product range

Races made from xirodur® F180



PA cage,
stainless steel balls



PE cage,
stainless steel balls



ESD protection

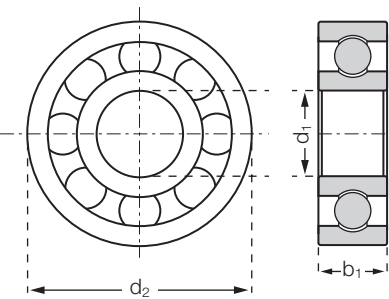


Special designs
made from xirodur® F180
► Page 742

Technical data

Size	Max. stat.	Bearing load		Max. speed	Weight	
	bearing load axial	stat.	dyn.		PA/ES	PE/ES
	[N]	[N]	[N]	[rpm]	[g]	[g]
623	30	25	34	4,400	0.4	0.4
624	42	33	45	3,900	1.0	1.0
625	75	38	55	3,600	1.6	1.6
626	95	41	58	3,200	2.1	2.1
608	165	105	152	2,500	3.8	3.8
6000	285	126	140	2,100	5.9	5.9
6001	315	136	170	2,000	6.9	6.9
6002	338	147	195	1,800	8.9	8.9
6003	360	234	330	1,600	10.7	10.7
6004	400	246	320	1,400	13.4	13.4

Conductive (with ESD protection)



Order key

Type	xirodur®	Options
BB-623-F180-10-ES		
Ball bearing	Dimensions acc. to DIN 625-1	Race material
		Cage material
		Ball material

Options
Cage material
10 = PA
50 = PE
Ball material
ES = stainless steel

Dimensions [mm]

Inner Ø	Outer Ø	Width	Cage/ball material combination		Part No.
d1	d2	b1	PA/ES	PE/ES	
3	10	4	●	●	BB-623-F180- -ES
4	13	5	●	●	BB-624-F180- -ES
5	16	5	●	●	BB-625-F180- -ES
6	19	6	●	●	BB-626-F180- -ES
8	22	7	●	●	BB-608-F180- -ES
10	26	8	●	●	BB-6000-F180- -ES
12	28	8	●	●	BB-6001-F180- -ES
15	32	9	●	●	BB-6002-F180- -ES
17	35	10	●	●	BB-6003-F180- -ES
20	42	12	●	●	BB-6004-F180- -ES



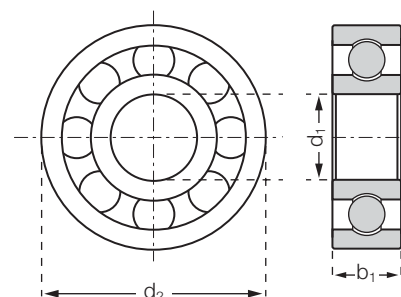
Order example:
BB-623-F180-10-ES = ball bearing with PA cage and stainless steel balls

Radial deep groove ball bearings | Product range

Races made from xirodur® M180, detectable



xirodur® M180 cage,
stainless steel balls



Special designs made
from xirodur® M180
► Page 744



Order key

Type xirodur® Options

BB-6000-M180-40-ES

Ball bearing	Dimensions acc. to DIN 625-1	Race material	Cage material	Ball material
--------------	---------------------------------	---------------	---------------	---------------

Options:

Cage material

40 = xirodur® M180

Ball material

ES = stainless steel

Technical data

Size	Max. stat. bearing load axial	Bearing load		Max. speed	Weight PP/ES
	[N]	stat. [N]	dyn. [N]		
6000	285	85	119	1,900	6.1
6003	360	180	250	1,400	11.1

Dimensions [mm]

Inner Ø	Outer Ø	Width	Cage/ball material combination	Part No.
d1	d2	b1	M180/ES	
10	26	8	●	BB-6000-M180-40-ES
17	35	10	●	BB-6003-M180-40-ES



Order example:

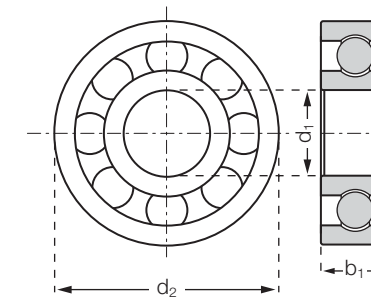
BB-6000-M180-40-ES = ball bearing with M180 cage and stainless steel balls

Radial deep groove ball bearings | Product range

Races made from xirodur® T220, no carcinogenic additives



PP cage,
stainless steel balls



Order key

Type xirodur® Options

BB-6002-T220-20-ES

Ball bearing	Dimensions acc. to DIN 625-1	Race material	Cage material	Ball material
--------------	---------------------------------	---------------	---------------	---------------

Options:

Cage material

20 = PP

Ball material

ES = stainless steel

Technical data

Size	Max. stat. bearing load axial	Bearing load		Max. speed	Weight PP/ES
	[N]	stat. [N]	dyn. [N]		
6002	338	149	196	1,600	8.9

Dimensions [mm]

Inner Ø	Outer Ø	Width	Cage/ball material combination	Part No.
d1	d2	b1	T220/ES	
15	32	9	●	BB-6002-T220-20-ES



Order example:

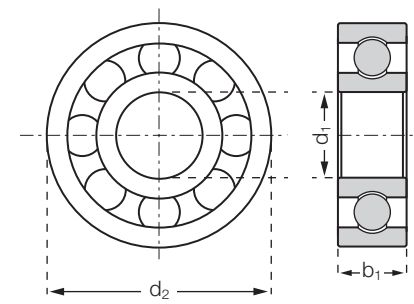
BB-6002-T220-20-ES = ball bearing with PP cage and stainless steel balls

Polymer ball bearings | Product range

Race made from xirodur® D180, for speeds up to 5,000 rpm



PA cage,
stainless steel balls



Order key

Type	xirodur®	Options
------	----------	---------

BB-623-D180-10-ES

Ball bearing	Dimensions acc. to DIN 625-1	Race material	Cage material	Ball material
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Options:
Cage material
10 = PA
Ball material
ES = stainless steel

Technical data

Size	Max. stat. bearing load axial	Bearing load		Max. speed	Weight
	[N]	stat. [N]	dyn. [N]	[rpm]	PA/ES [g]
623	1	2	12	5,000	0.4
626	5	13	30	4,500	2.0
608	7	20	42	4,300	3.7
6000	10	28	36	4,200	5.7
6001	12	32	49	4,000	6.6
6002	14	44	50	3,870	8.5

Dimensions [mm]

Inner Ø	Outer Ø	Width	Cage/ball material combination	Part No.
d1	d2	b1	PA/ES	
3	10	4	●	BB-623-D180-10-ES
6	19	6	●	BB-626-D180-10-ES
8	22	7	●	BB-608-D180-10-ES
10	26	8	●	BB-6000-D180-10-ES
12	28	8	●	BB-6001-D180-10-ES
15	34	9	●	BB-6002-D180-10-ES

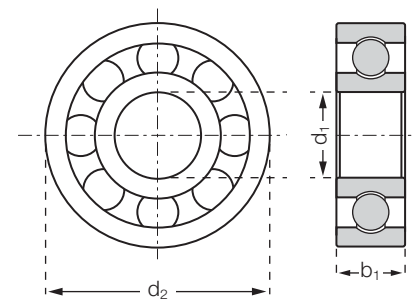
Order example:
BB-623-D180-10-ES = ball bearing with PA cage and stainless steel balls

Polymer ball bearings | Product range

Races made from xirodur® G220, temperatures up to 100°C



PA cage,
stainless steel balls



Order key

Type	xirodur®	Options
------	----------	---------

BB-6000-G220-10-ES

Ball bearing	Dimensions acc. to DIN 625-1	Race material	Cage material	Ball material
--------------	------------------------------	---------------	---------------	---------------

Options:
Cage material
10 = PA
Ball material
ES = stainless steel

Technical data

Size	Max. stat. bearing load axial	Bearing load		Max. speed	Weight
	[N]	stat. [N]	dyn. [N]	[rpm]	PP/ES [g]
6000	260	110	140	2,000	6.1

Dimensions [mm]

Inner Ø	Outer Ø	Width	Cage/ball material combination	Part No.
d1	d2	b1	G220/ES	
15	32	9	●	BB-6000-G220-10-ES

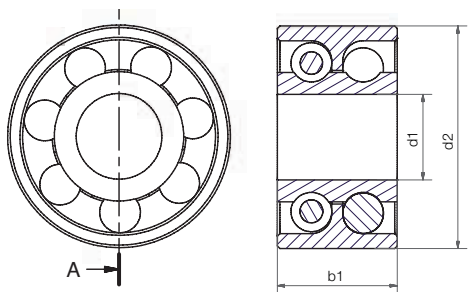
Order example:
BB-6000-G220-10-ES = ball bearing with PA cage and stainless steel balls

Double row ball bearing | Product range

Races made from xirodur® B180



PA cage,
stainless steel balls
or glass balls



Order key

Type	xirodur®	Options
------	----------	---------

BB-6000-B180-10-ES-D

Ball bearing	Dimensions acc. to DIN 625-1	Race material	Cage material	Ball material	Double row
--------------	------------------------------	---------------	---------------	---------------	------------

Options:

Cage material

10 = PA

Ball material

ES = stainless steel

GL = glass



- Higher loads
- Less expensive than two comparable bearings

Technical data

Size	Max. stat. bearing load axial [N]	Bearing load		Max. speed [rpm]	Weight	
		stat. [N]	dyn. [N]		ES [g]	GL [g]
6000	800	160	225	850	11.0	7.0
6004	1,100	350	530	510	36.0	29.0

Dimensions [mm]

Inner Ø d1	Outer Ø d2	Width b1	Cage/ball material combination		Part No.
			PA/ES	PA/GL	
10	26	14	●	●	BB-6000-B180-10-ES-D
20	42	20	●	●	BB-6004-B180-10-ES-D



Order example:

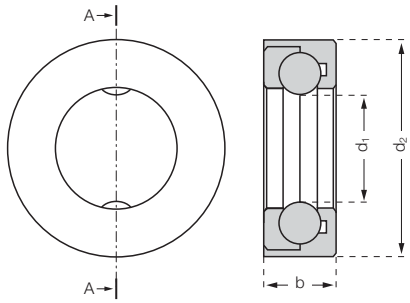
BB-6000-B180-10-ES-D = double row ball bearing with PA cage and stainless steel balls

Multi-axis plastic bearing | Product range

Races made from xirodur® B180



PP ball



Order key

Type	Dimensions	xirodur®	Ball
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BB-MB-1633-11-B180-PP

Ball bearing	Multi-axis bearings	Inner-Ø (d1)	Outer-Ø (d2)	Width (b)	Housing material	Ball material
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Options:

Housing material

B180 = xirodur® B180

Ball material = PP



- For rotary and linear motions

Technical data

Type	Bearing load, radial		Max. speed [rpm]	Weight PP [g]
	stat. [N]	dyn. [N]		
BB-MB	55	70	500	6,9

Dimensions [mm]

Inner Ø d1	Outer Ø d2	Width b1	Cage/ball material combination	Part No.
			B180/PP	
16.3	33	11	●	BB-MB-1633-11-B180-PP



Order example:

BB-MB-1633-11-B180-10-PP = multi-axis ball bearing with B180 cage and PP balls

Flange bearings | Product range

Races made from xirodur® B180 or xirodur® F180



xirodur® B180 races
PA cage, stainless
steel balls or glass
balls, double shield



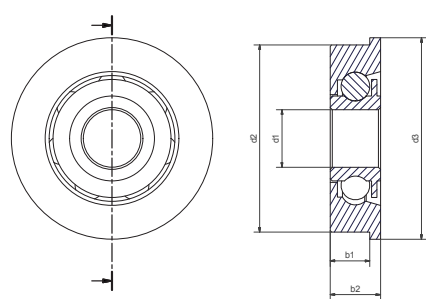
xirodur® B180 races
PA cage, stainless steel
balls or glass balls,
double flange and
shield



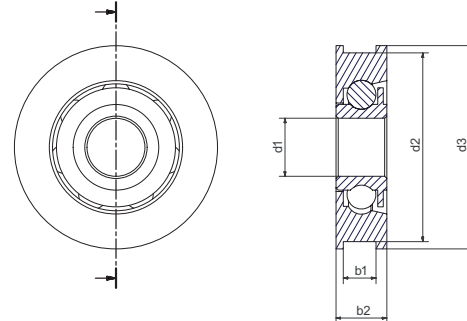
xirodur® F180 races
PA cage, stainless
steel balls,
double shield



xirodur® F180 races
PA cage, stainless
steel balls or glass
balls, double flange
and shield



Single flange



Flange on both sides

Technical data

Size	Flange on both sides	Max. stat. bearing load axial [N]	Bearing load		Max. speed [rpm]	Weight			
			stat. [N]	dyn. [N]		PA/ES [g]	B180 PA/GL [g]	B180/ES [g]	F180 PA/ES [g]
608		165	78	84	2,500	32.5	25.9	–	5.9
608	●	165	78	84	2,500	6.1	4.8	–	6.1
6000		285	85	119	1,900	9.6	–	9.6	–
6001		315	105	147	1,750	10.8	–	–	–
6002		338	146	196	1,600	12.1	–	–	–
6003		360	240	330	1,600	13.4	–	13.4	–

Dimensions [mm]

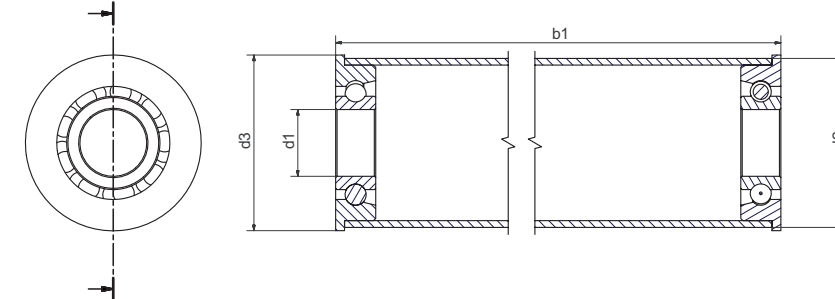
Inner Ø		Outer Ø		Width		Cage/ball material combination		Part No.
d1	d2	d3	b1	b2		B180 PA/ES	PA/GL	
8	26	28	5.5	7	●	●	●	BB-608F- -10- -CC
8	26	28	4	7	●	●	●	BB-608FF- - - -CC
8	28	30	5.5	7	●			BB-608F2830-B180-10-ES
10	28	30	7	9	●			BB-6000F2830-B180-10-ES
12	28	30	7	9	●			BB-6001F2830-B180-10-ES
10	35	38	7	9	●			BB-6000F3538-B180-10-ES
12	35	38	7	9	●			BB-6001F3538-B180-10-ES
15	35	38	7	9	●			BB-6002F3538-B180-10-ES
17	35	38	8	10	●			BB-6003F3538-B180-10-ES

Flange bearings | Product range

xiros® system-solution - aluminium tube with flange bearing



Aluminium tube with xirodur® B180 flange ball
bearing, available lengths: 25 - 1,500 mm



Dimensions [mm]

Inner Ø d1	Outer Ø d2	Flange Ø d3	Length b1	Part No.
8	30	29.9	25 – 1,500	BBT-AC30-608-B180-10-ES
10	30	29.9	25 – 1,500	BBT-AC30-6000-B180-10-ES
12	30	29.9	25 – 1,500	BBT-AC30-6001-B180-10-ES
10	38	37.9	25 – 1,500	BBT-AC38-6000-B180-10-ES
12	38	37.9	25 – 1,500	BBT-AC38-6001-B180-10-ES
15	38	37.9	25 – 1,500	BBT-AC38-6002-B180-10-ES
17	38	37.9	25 – 1,500	BBT-AC38-6003-B180-10-ES



Order example:

BBT-AC38-6000-B180-10-ES, L=500 mm = aluminium tube with 2 flange ball bearings, PA cage and stainless steel balls, total length 500 mm

Spherical outer diameter | Product range

Races made from xirodur® B180 or M180



xirodur® B180 races
PA cage,
stainless steel balls



xirodur® B180 races
PA cage,
glass balls



xirodur® M180 races
xirodur® M180 cage,
stainless steel balls



Order key

Type xirodur® Options

BB-608SO-B180-10-ES

Ball bearing	Dimensions acc. to DIN 625-1	Spherical outer Ø	Race material	Cage material	Ball material
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Options:

Race material

B180 = xirodur® B180

M180 = xirodur® M180

Cage material

10 = PA

40 = xirodur® M180

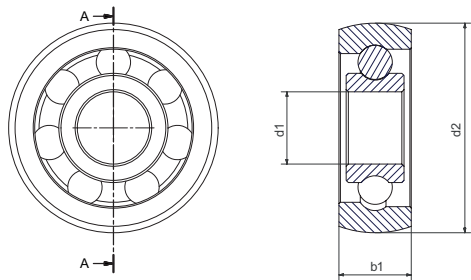
Ball material

ES = stainless steel

GL = glass



- Use in skewed/curved/twisted profiles
- Prevents edge stress



Technical data

Size	Max. stat.	Bearing load		Max. speed	Weight		
	bearing load axial	stat.	dyn.		PA/ES	PA/GL	M180/ES
	[N]	[N]	[N]		[g]	[g]	[g]
608	165	60	84	2,200	4.8	3.5	–
6000	285	85	119	1,900	7.9	5.8	6.1
6001	315	105	147	1,750	13.5	11.1	–

Dimensions [mm]

Inner Ø	Outer Ø	Width	Cage/ball material combination			Part No.
			PA/ES	PA/GL	M180/ES	
8	24	8	●	●		BB-608SO- - -
10	28.96	10	●	●	●	BB-6000SO- - -
12	35.56	12	●	●		BB-6001SO- - -



Order example:

BB-608SO-B180-10-ES = ball bearing made from xirodur® B180, spherical outer diameter, PA cage and stainless steel balls

End caps | Product range

Races made from xirodur® B180



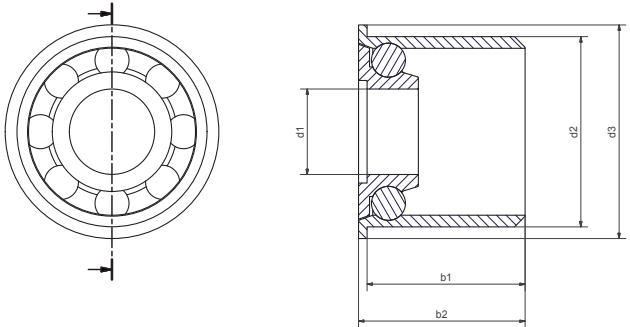
PA cage,
stainless steel balls
or glass balls



PA cage,
stainless steel balls
hex socket contour



- Fast and easy retrofits in many standard tubes
- Good axial stability



Technical data

Size	Max. stat.	Bearing load		Max. speed	Weight	
	bearing load axial	stat.	dyn.		PA/ES	PA/GL
	[N]	[N]	[N]		[g]	[g]
6204	520	245	294	1,800	32.5	25.9
6204	520	245	294	1,800	33.0	–

Dimensions [mm]

Inner Ø	Outer Ø		Width		Cage/ball material combination		Part No.
	d1	d2	d3	b1	b2	PA/GL	
20	44.5	50	37	39	●	●	BB-6204EC44.5-B180-10-
M8	44.5	50	38.5	39		●	BB-6204ECM8-B180-10-ES



Order example:

BB-6204EC44.5-B180-10-ES = end cap made from xirodur® B180, with PA cage and stainless steel balls



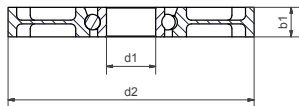
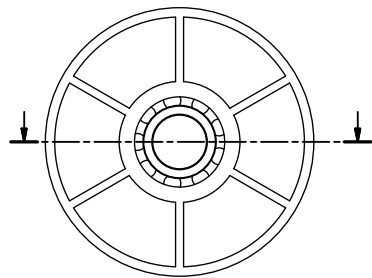
PA cage,
stainless steel balls



PA cage,
glass balls



- Larger outer diameter for smaller shafts
- Also used as roller in profiles



Order key

Type	Type	xirodur®	Options
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BB-6004SW100-B180-10-ES

Ball bearing	Dimensions acc. to DIN 625-1	Skate wheel	Outer Ø	Race material	Cage material	Ball material
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Options:

Cage material

10 = PA

Ball material

ES = stainless steel

GL = glass

Technical data

Size	Bearing load		Max. speed	Weight	
	stat. [N]	dyn. [N]		ES [g]	GL [g]
6004	245	294	1,400	60.5	55.7

Dimensions [mm]

Inner Ø	Outer Ø	Width	Part No.
20	100	12	BB-6004SW100-B180-10-ES



Order example:

BB-6004SW100-B180-10-ES = xiros® skate wheel with 100 mm outer diameter, races made from xirodur® B180, PA cage and stainless steel balls

Axial ball bearings | Product range

Races made from xirodur® B180



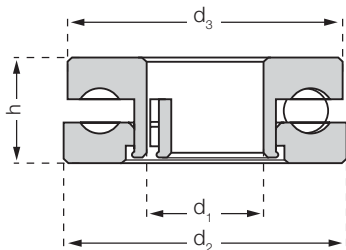
Stainless steel balls
or glass balls



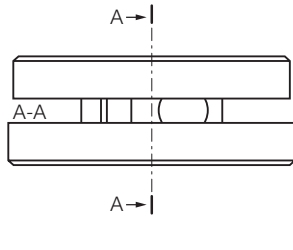
Double row,
stainless steel balls
or glass balls



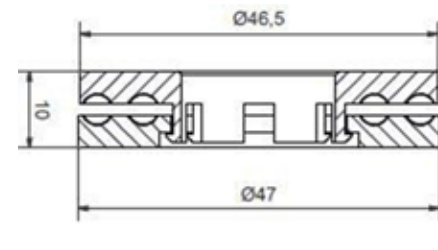
● Suitable for absorbing axial forces



Single row bearing



Double row bearing



Technical data

Size	Double row	Bearing load		Max. speed	Weight	
		stat. [N]	dyn. [N]		ES [g]	GL [g]
51100		200	250	600	6.9	4.4
51104		650	810	460	14.0	8.0
51104	●	975	1,215	460	28.0	17.0

Dimensions [mm]

Inner Ø	Outer Ø	Width	Height	Cage/ball material combination		Part No.
d1	d2	d3	h	B180/ES	B180/GL	
10	24	23.5	9	●	●	BB-51100-B180-
20	35	34.5	10	●	●	BB-51104-B180-
20	47	46.5	10	●	●	BB-51104-B180- -D



Order example:

BB-51100-B180-ES = axial ball bearing with B180 cage and stainless steel balls



Order key

Type	xirodur®	Options
------	----------	---------

BB-51100-B180-ES-D

Ball bearing	Dimensions acc. to DIN 711	Race/cage material	Ball material	Double row
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Options:

Ball material

ES = stainless steel

GL = glass

Thrust washer | Product range

Races made from xirodur® B180



Stainless steel balls

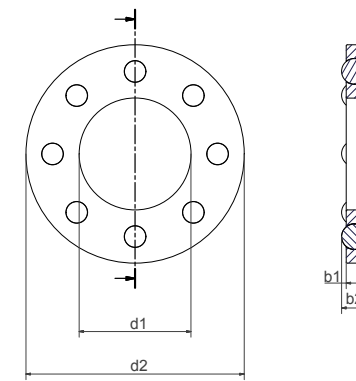


Glass balls



● Small mounting height

● Cost effective



Technical data and dimensions – related to metallic shafts [mm]

Size	Slim line	Recommended load capacity		Max. speed [rpm]	Weight	
		stat. [N]	dyn. [N]		ES [g]	GL [g]
626		341	425	2,000	1.2	0.9
608		482	600	1,700	1.3	1.0
6000		610	782	1,500	2.4	1.5
6000	●	405	500	1,500	2.2	1.3
6004		975	1,215	700	7.7	4.9
6006		925	1,540	600	7.5	4.7
6006	●	520	680	600	7.2	4.4

Inner Ø	Outer Ø	Width		Race/ball material combination		Part No.
		Standard b1	Slim line b1	B180/ES	B180/GL	
6.2	18.8	3.18	–	●	●	BB-626TW-B180-
8.2	21.8	3.97	–	●	●	BB-608TW-B180-
10.2	25.8	4.76	3.97	●	●	BB-6000TW-B180-
10.2	25.8	3.97	–	●	●	BB-6000TW-B180- -SL
21	41	4.76	–	●	●	BB-6004TW-B180-
29.9	45.5	4.76	3.97	●	●	BB-6006TW-B180-
29.9	45.5	4.76	–	●	●	BB-6006TW-B180- -SL



Order example:

BB-6000TW-B180-ES-SL = thrust washer with stainless steel balls, slim line version

Polymer ball transfer unit | Product range

Made from xirodur® B180, for axial loads



Polymer ball transfer unit



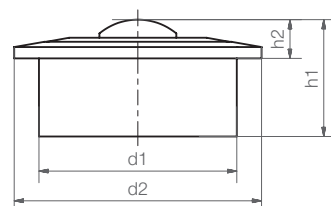
Polymer ball transfer unit



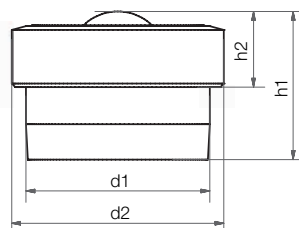
Axial polymer ball transfer unit for high loads (HH)



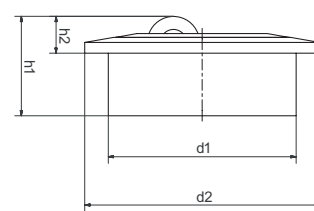
Axial polymer ball transfer unit with soft roller made from xirodur® D180 (HS)



BB-522-B180-POM
BB-515-B180-POM



BB-505-B180-POM



BB-515A-B180-HH/-HS
BB-522A-B180-HH/-HS



Order key

Type xirodur® Options

BB-522A-B180-HS



Options:

Polymer ball transfer unit:

POM ball

POM = POM

Axial polymer ball transfer unit:

B180 = HH (hard roller) or

D180 = HS (soft roller)

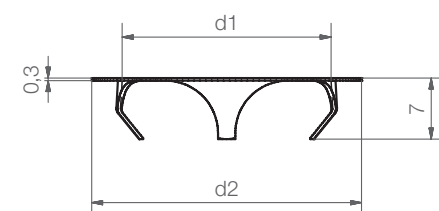
Technical data and dimensions [mm]

Size	Max. stat. bearing load axial [N]	Inner Ø		Height		Weight [g]	Part No.
		d1	d2	h1	h2		
505	35	10.4	12.0	8.4	4.3	0.9	BB-505-B180-POM
515	80	24.0	31.0	21.0	9.8	8.7	BB-515-B180-POM
515A	150	24.0	31.0	14.3	5.3	15.6	BB-515A-B180-□
522	110	36.0	45.0	30.0	9.8	28.8	BB-522-B180-POM
522A	300	36.0	45.0	21.25	7.05	21.7	BB-522A-B180-□

Clamp rings for xiros®-polymer ball transfer units



xiros® clamp rings made from stainless steel offer the possibility to install xiros® ball transfer units in another orientation than the standard horizontal position. Easy assembly and disassembly.



Dimensions [mm]

Part No.	For ball transfer unit	d1	d2	Housing bore
BB-515-CR	BB-515-B180-POM/BB-515A-B180-□	24	31	25.0 -0.2
BB-522-CR	BB-522-B180-POM/BB-522A-B180-□	36	41	37.3 -0.3

Slewing ring bearings | Product range

Made from xirodur® B180, low coefficients of friction



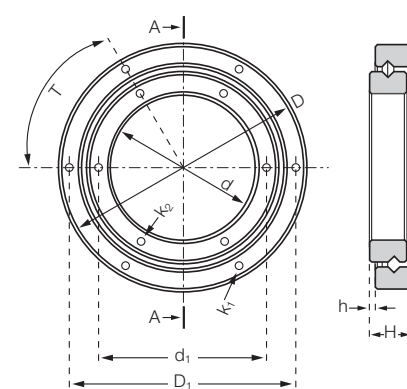
Stainless steel balls



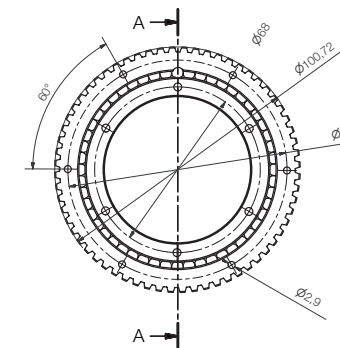
Glass balls



Stainless steel balls, with gear teeth



Standard version



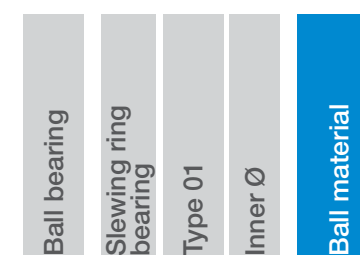
Version with gear teeth



Order key

Type Options

BB-RT-01-60-ES



Options:

Ball material

ES = stainless steel

GL = glass

Technical data

Type	Bearing load		Max. speed [rpm]	Weight	
	stat. [N]	dyn. [N]		ES [g]	GL [g]
RT-01-60	800	1,000	250	111.9	98.3
RT-01-60-HDT5	800	1,000	860	110.0	—
RT-01-100	1,250	1,500	250	250.8	231.1

Dimensions [mm]

D	D1	d	d1	H	h	T	K1	K2	Part No.
100	90.0	60	68	17.5	2.5	60	3.3	3.3	BB-RT-01-60-□
100	90.0	60	68	17.5	2.5	60	3.3	3.3	BB-RT-01-60-HDT5-B180-ES
160	150.0	100	110	20	5	60	5.2	5.2	BB-RT-01-100-□

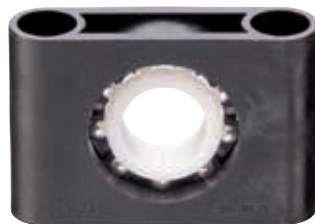
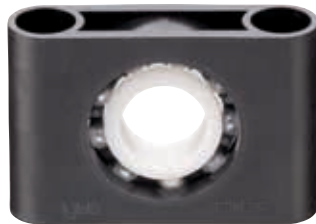


Order example:

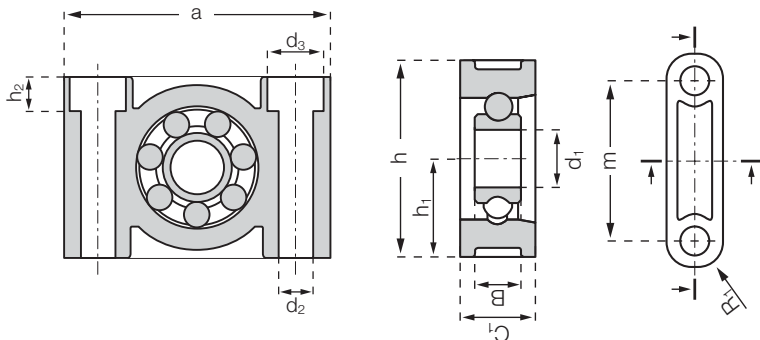
BB-RT-01-60-ES = slewing ring bearing with stainless steel balls

Pillow block bearing | Product range

Races made from xirodur® B180, fixed version

igumid G housing,
PA cage, stainless
steel ballsigumid G housing,
PA cage,
glass balls

● Suitable for washdown and non-magnetic



Technical data

Type	Max. stat. bea- ring load axial [N]	Bearing load		Max. speed [rpm]	Weight	
		stat. [N]	dyn. [N]		ES [g]	GL [g]
ESTM-F06	95	50	70	2,600	7.7	6.7
ESTM-F10	285	85	119	1,900	20.2	18.2
ESTM-F20	400	210	294	1,150	54.1	47.7

Dimensions [mm]

Inner Ø	Holes Ø	d3	h	h1	h2	a	m	C1	B	R1	Part No.
d1	d2										
6	5.5	–	22	11	–	36	26	10	6	5.0	ESTM-BB1-F06-B180-
10	6.6	10.6	34	17	6.6	50	37	13	8	6.5	ESTM-BB1-F10-B180-
20	9.0	14.0	48	24	8.6	72	54	18	12	9.0	ESTM-BB1-F20-B180-



Order example:

ESTM-BB1-F06-B180-ES = pillow block bearing, fixed version, made from xirodur® B180 with stainless steel balls



Order key

Type	Options				
ESTM-BB1-F06-B180-ES	Pillow block bearing	Ball bearing, single row	Fixed version	Inner Ø	Material
					Ball material

Options:

Race material

B180 = xirodur® B180

Ball material

ES = stainless steel

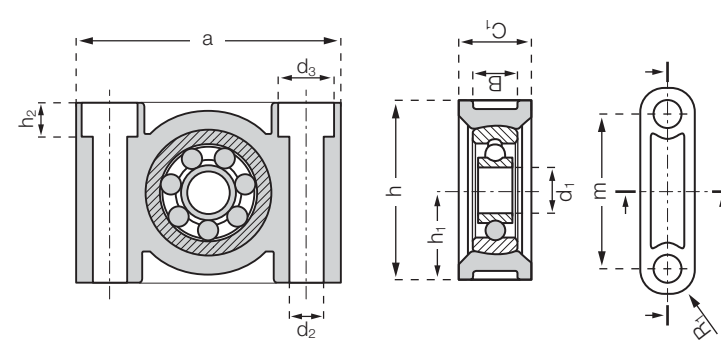
GL = glass

Pillow block bearing | Product range

Races made from xirodur® B180, pivoting version

igumid G housing,
PA cage, stainless
steel ballsigumid G housing,
PA cage
Glass balls

● Compensation of misalignment errors



Technical data

Type	Max. stat. bea- ring load axial [N]	Bearing load		Max. speed [rpm]	Weight	
		stat. [N]	dyn. [N]		ES [g]	GL [g]
ESTM-P08	165	60	84	2,200	19.6	18.2
ESTM-P10	285	85	119	1,900	32.9	30.3
ESTM-P12	315	105	147	1,750	54.8	52.8

Dimensions [mm]

Inner Ø	Holes Ø	d3	h	h1	h2	a	m	C1	B	R1	Max. pivot angle	Part No.
d1	d2											
8	6.6	10.6	34	17	6.4	50	37	13	8	6.5	±5°	ESTM-BB1-P08-B180-
10	9.0	14.0	40	20	8.6	62	46	16	10	8	±5°	ESTM-BB1-P10-B180-
12	9.0	14.0	48	24	8.6	72	54	18	12	9	±5°	ESTM-BB1-P12-B180-



Order example:

ESTM-BB1-P08-B180-ES = pillow block bearing, pivoting version, made from xirodur® B180 with stainless steel balls

4-hole flange bearing | Product range

Races made from xirodur® B180, pivoting version



igumid G housing,
PA cage,
stainless steel balls or
glass balls



● Compensation of misalignment errors



Order key

Type	Options
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EFSM-BB1-P08-B180-ES

4-hole flange bearing	Ball bearing, single row	Pivoting version	Inner Ø	Material	Ball material
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Options:

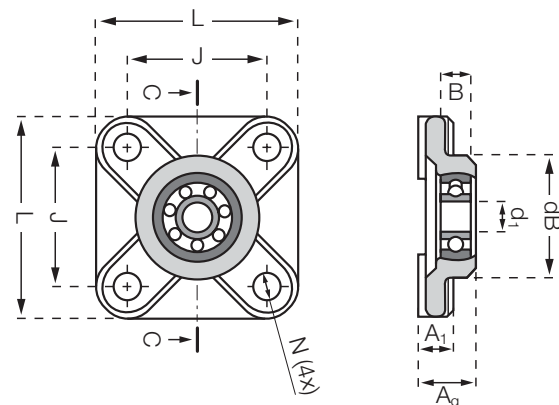
Race material

B180 = xirodur® B180

Ball material

ES = stainless steel

GL = glass



Technical data

Type	Max. stat. bearing load axial [N]	Bearing load		Max. speed [rpm]	Weight	
		stat. [N]	dyn. [N]		ES [g]	GL [g]
EFSM-P08	165	60	84	2,200	25.2	24.0
EFSM-P10	285	85	119	1,900	48.8	46.2
EFSM-P12	315	105	147	1,750	80.0	77.7

Dimensions [mm]

Inner Ø d1	dB d2	L	J	A1	Ag	B	N	Max. pivot angle	Part No.
8	32.5	52	36	9	15.5	8	6.4	±5°	EFSM-BB1-P08-B180-ES
10	40.0	65	45	11	18.8	10	8.4	±5°	EFSM-BB1-P10-B180-ES
12	48.0	74	52	14	23.5	12	8.4	±5°	EFSM-BB1-P12-B180-ES



Order example:

EFSM-BB1-P08-B180-ES = 4-hole flange bearing made from xirodur® B180 with stainless steel balls

2-hole flange bearing | Product range

Races made from xirodur® B180, pivoting version



igumid G housing,
PA cage,
stainless steel balls or
glass balls



- Trouble free readjustment thanks to extended holes
- Precise alignment of the bearings not necessary



Order key

Type	Options
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EFOM-BB1-P08-B180-ES

2-hole flange bearing	Ball bearing, single row	Pivoting version	Inner Ø	Material	Ball material
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Options:

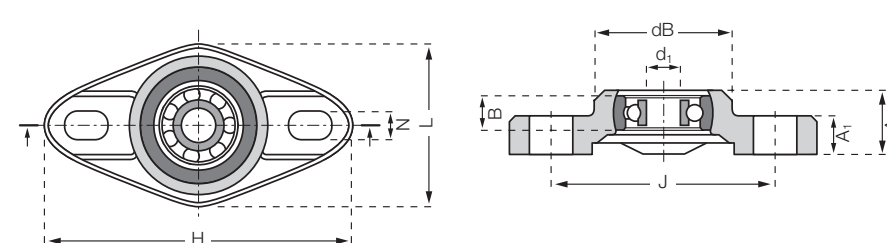
Race material

B180 = xirodur® B180

Ball material

ES = stainless steel

GL = glass



Technical data

Type	Max. stat. bearing load axial [N]	Bearing load		Max. speed [rpm]	Weight	
		stat. [N]	dyn. [N]		ES [g]	GL [g]
	165	60	84	2,200	19.5	18.1
	285	85	119	1,900	36.3	33.6
	315	105	147	1,750	61.7	59.4

Dimensions [mm]

Inner Ø d1	dB d2	H	L	J	A1	Ag	B	N	Max. pivot angle	Part No.
8	32.5	72.6	38	53	10	15.5	8	6.4x10.1	±5°	EFOM-BB1-P08-B180-ES
10	40.0	89.0	47	65	11	18.8	10	8.4x12.5	±5°	EFOM-BB1-P10-B180-ES
12	48.5	101.0	58.5	75	14	23.5	12	8.4x12.5	±5°	EFOM-BB1-P12-B180-ES



Order example:

EFOM-BB1-P08-B180-ES = 2-hole flange bearing made from xirodur® B180 with stainless steel balls

