

product overview

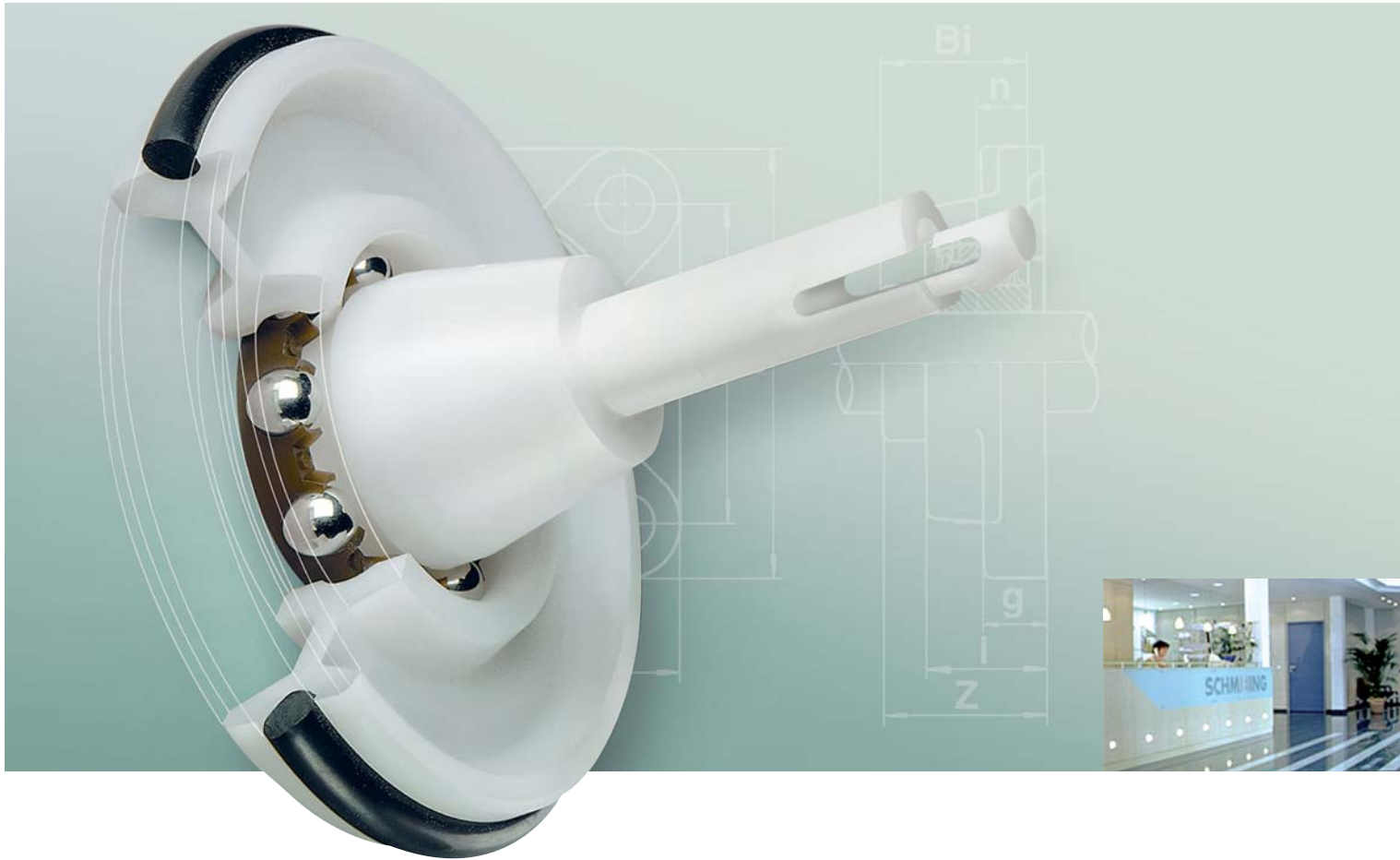
plastic ball bearings & components

PLASTICS TECHNOLOGY



SIMIG[®]

INNOVATIVE SOLUTIONS MADE OF PLASTICS



Characteristics and advantages of plastic ball bearings:

- Flexibility in design for the best possible production integration
- No lubrication, maintenance-free
- Outstanding running characteristic due to free material selection
- Very low weight (up to 80 % less than steel)
- Electrically isolating
- Resistant to acid and lye
- Temperature resistance of up to above 200° C

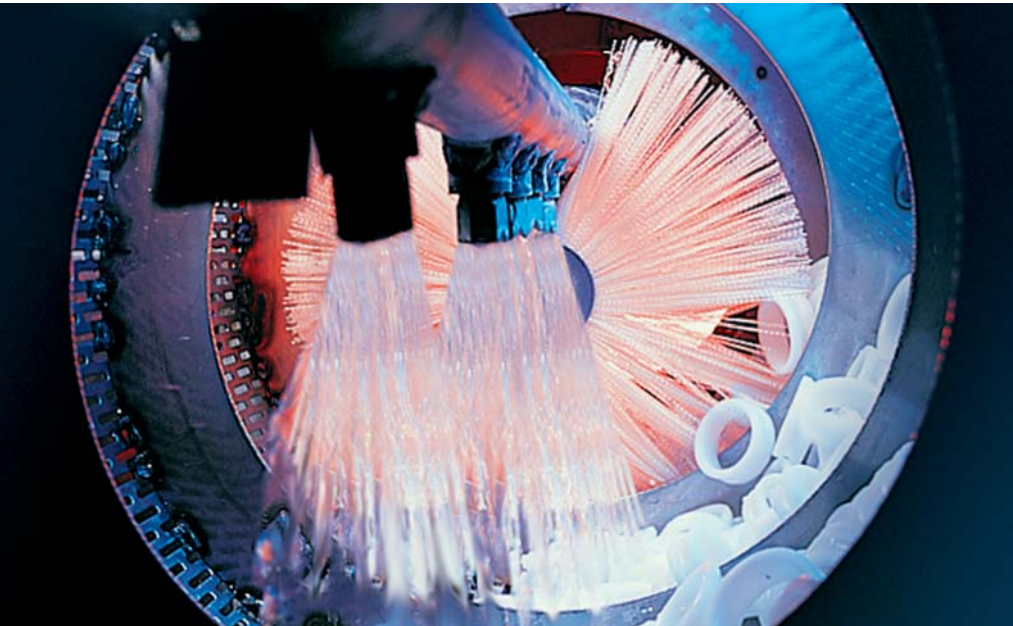
Under the brand of SMG, Schmeing offers a wide-ranging assortment of technically sophisticated and high-quality parts and components made of plastics. From the planning stage through the production of prototypes to serial production the customer is supported in an integrated manner. The combination of construction, cutting manufacturing, tool making and injection moulding results in products with optimally adapted details.

In this scope SMG stands for a variety of standard products, such as radial and thrust ball bearings as well as ball transfer units on the one hand. On the other hand

SMG also offers services in the field of plastic processing, which include the customer-designed production of turned, milled and injection moulded parts. This often opens out into customised developments which help overcoming challenges whilst producing cost reductions especially in the case of special applications.

For example plastic ball-bearings made of PEEK, PPS or PI with balls made of glass or stainless steel for the usage in the high-temperature range. These do not require any lubrication and are suitable even in a high-humidity atmosphere and under steam.

QUALITY IS OUR DEMAND



CLEANING PROCESS

DIN EN ISO 9001:2000 certified

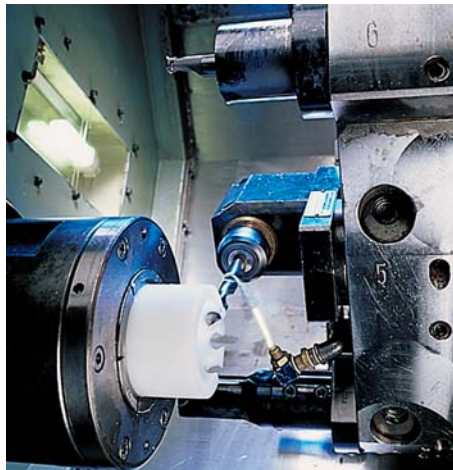
Our products are tested for quality and lifetime on our own test machines.

The complex cleaning process and the strict quality control ensure that SMG ball bearings are used worldwide in the food and pharmaceutical industry, amongst others.

No matter if available product or service ordered: Latest testing and measuring machines as well as an own laboratory for the material control lay the ideal foundations.

SMG and SCHMEING are members of the Groz-Beckert Group. Groz-Beckert is the leading manufacturer of needles and precision components for the manufacturing of textile fabrics employing approx. 6,300 people worldwide.

The German production site is a high quality feature for SMG.



CNC-TURNING MACHINE

The SMG-team offers a broad advisory service on material selection, conception, construction, tool manufacture and production.

Our in-house mould-construction translates the CAD-parameters into the tool using latest CNC turning and milling machines.



INJECTION MOULDING MACHINE

SOLVING PROBLEMS AND COST-CUTTING

Examples for applications: Conveying systems, apparatus engineering, air conditioning, electroplating, food processing, vacuum applications, fibre processing, conveyor ovens, textile finishing, medical radiation (sterilization), photo processing, computer assembly, ...



Deep groove plastic ball bearings

Application:

Specially designed to be used as pulleys for flat and round belts in the production of computer motherboards.

Advantages:

Simplified construction of the installation and outstanding chemical resistance when using special materials resulting in cost reduction.



Single row and double row plastic ball bearings and guide rollers

Application:

These ball bearings and guide rollers are designed to serve as pulleys improving side guidance in conveyor technique.

Advantages:

Suitable for use in food and permitted for use in the food-processing sector (FDA) even in the high-temperature range of up to 250° C using special materials. They do not require any lubrication even at high humidity or under steam.



Special ball bearings

Application:

Special rolling bearings for special applications integrated into the product as complete structural component or as ball bearing with toothed wheel. Designed for the use in the transport technology.

Advantages:

Possibility of customising results in cost saving.



SPECIAL THRUST BALL BEARING WITH STAINLESS STEEL ROLLERS AND PEEK-HOUSING.

RADIOLUCENT, RESISTANT TO RADIATION, HIGH CHEMICAL AND TEMPERATURE RESISTANCE.



Standard steel ball bearings with plastic-covered outer ring

Application:

Used as rope pulleys or deflection rollers inside digital printers and large-scale copiers.

Advantages:

Offer noise attenuation and are suitable for the transport of sensitive goods.



Deep groove ball bearings with Z-shields, insert bearings, etc.

Application:

Used for patient transportation trolleys with bearings made of PEEK, radiolucent and resistant to radiation.

Advantages:

Simplified construction of the installations, suitable for the use in the medical technology. FDA approval and biocompatibility available with special materials.



Linear guides made of plastics

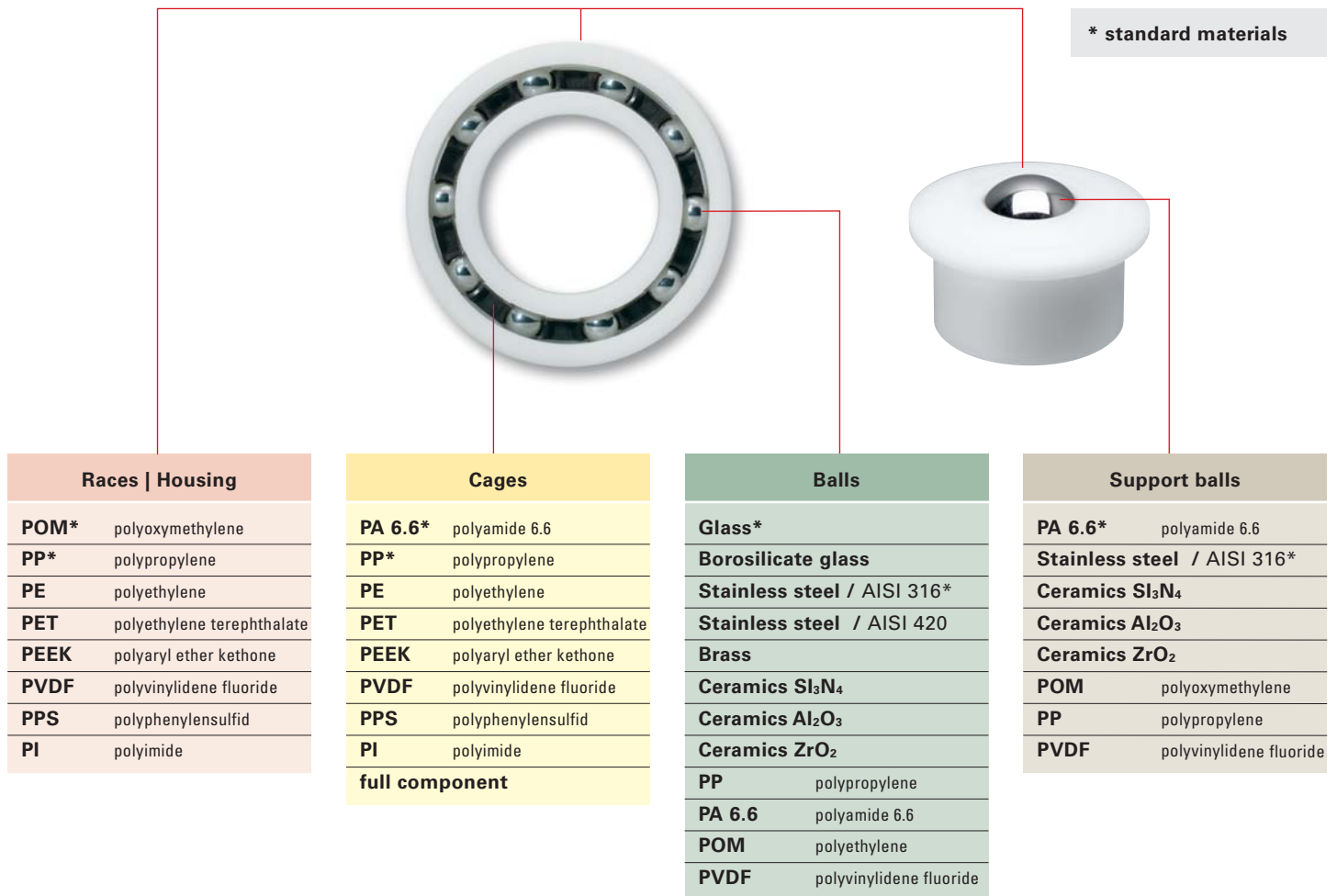
Application:

For use in many sterile application fields such as the food-processing industry. Customized product modification possibilities are available upon request.

Advantages:

The guides are operated without any grease or oil and can thereby be used in a variety of sterile fields in the food processing industry. Low kinetic energy due to the use of plastics. The linear guides are developed to specific orders and are also available in small batch series.

MATERIAL CHARACTERISTICS



APPLICATIONS

Ball Bearings	Races	Cages	Balls
Conveying systems, apparatus engineering, air conditioning	POM	PA	AISI 316
Electro plating	PP	PP	Glass
Food processing	POM	PA	AISI 316
Vacuum applications	PVDF	PVDF	Glass
Fiber processing	POM	PA	Glass
Conveyor ovens	PPS	PPS	Glass
Textile finishing	POM	PA	AISI 316
Medical radiation	PET	PET	AISI 316
Medical radiation (sterilization)	PPS	PPS	Glass
Photo processing	PP/PET	PP	AISI 316
Computer assembly	POM	PA	AISI 316
Automotive application (high temperature)	PPS	PPS	AISI 316
Automotive application	POM	PA	AISI 316
Model and lightweight construction	POM	PA	Glass

Ball transfer units	Housing	Support Balls
Materials-handling technology	POM	AISI 316 / PA
Swivel tables	POM	AISI 316 / PA
Food processing	POM	AISI 316
Electroplating	PP/PVDF	Ceramics
Semiconductor industry	PP/PVDF	Ceramics
Medical engineering (sterilization)	PEEK	AISI 316
Electrical engineering	POM	PA
Vacuum systems	PVDF	PVDF
Air conditioning	PE	AISI 316

Fig.1

MATERIAL CHARACTERISTICS



Dynamic load capacity depending on speed and operating temperature

The dynamic load capacity depends on the operating conditions. The chart below gives an estimation of the influences the operating temperature and the speed have on the dynamic load capacity.

Example:

An application uses a bearing type 6204 with POM races. From the product chart no. 1 shown on page 8 you take a dynamic load capacity of 420 N and a maximal operating speed of 1050 min⁻¹. The operating temperature is 80° C at an operating speed of 630 min⁻¹.

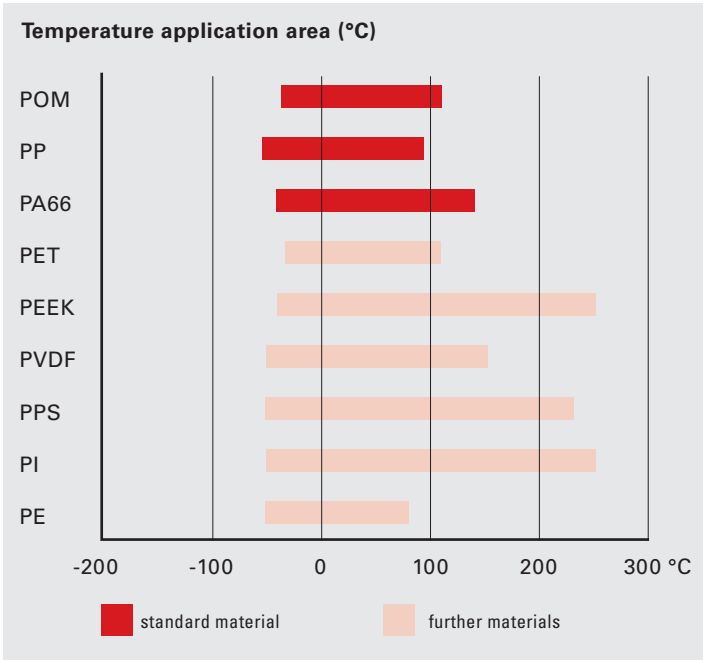


Fig.2

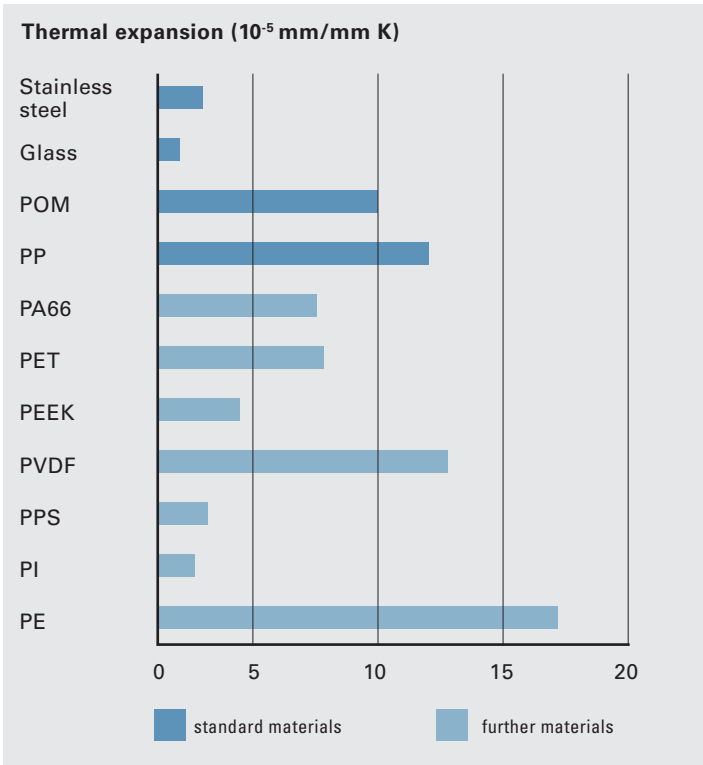


Fig.3

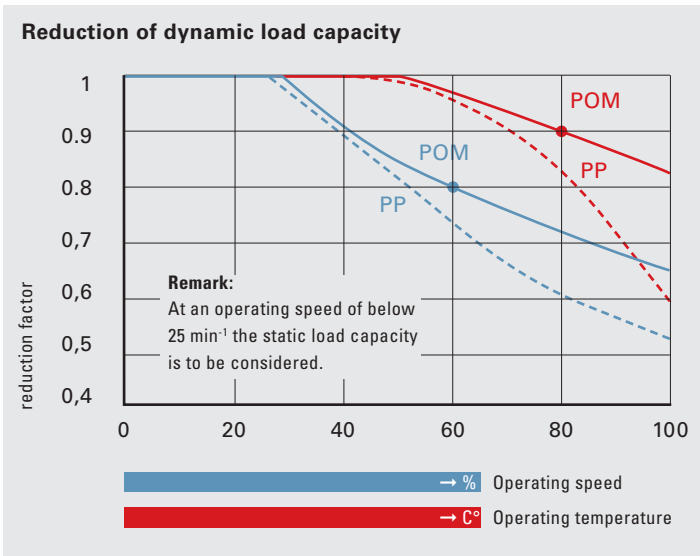


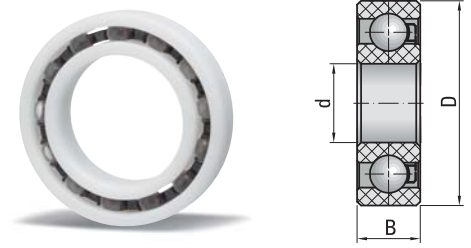
Fig.4

The chart states a reduction factor for the operating temperature of approx. 0.90. The reduction factor for the speed of 630 min⁻¹ (60% of the max. speed) shows a factor of approx. 0.80.

In our application example the load should not exceed **420 N x 0,90 x 0,80 ≈ 300 N**

SINGLE ROW RADIAL BALL BEARINGS

SINGLE AND DOUBLE ROW*



Material combinations

Standard

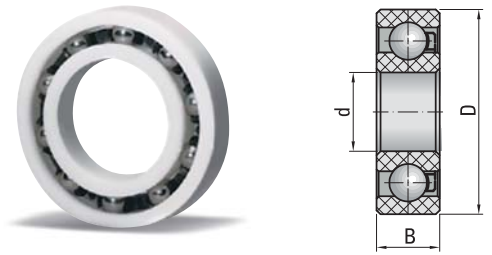
Chart 1

TYPE	ID mm	OD mm	W mm	capacity		n max. speed rpm	Races				Races			
				stat N	dyn N		POM		PP		PP		PP	
							SMG part no. AISI 316	weight g	SMG part no. glass	weight g	SMG part no. AISI 316	weight g	SMG part no. glass	weight g
623	3	10	4	30	45	4500	464.623	0,4	465.623	0,3	470.623	0,4	468.623	0,2
624	4	13	5	40	60	3600	464.624	0,9	465.624	0,7	470.624	0,5	468.624	0,5
625	5	16	5	45	65	3050	464.625	1,4	465.625	1,0	470.625	1,3	468.625	0,8
626	6	19	6	50	70	2600	464.626	2,8	465.626	1,8	470.626	2,4	468.626	1,4
607	7	19	6	50	70	2600	464.607	2,2	465.607	1,5	470.607	1,7	468.607	1,1
627	7	22	7	55	80	2200	464.627	3,9	465.627	2,6	470.627	3,2	468.627	1,9
608	8	22	7	55	80	2200	464.608	3,6	465.608	2,4	470.608	3,0	468.608	1,8
609	9	24	7	60	90	2050	464.609	7,8	465.609	6,6	470.609	5,7	468.609	4,5
629	9	26	8	70	100	1900	464.629	6,3	465.629	4,1	470.629	5,2	468.629	3,9
6000	10	26	8	90	130	1900	464.100	6,2	465.100	4,1	470.100	5,1	468.100	3,0
6200	10	30	9	110	160	1650	464.200	8,9	465.200	6,5	470.200	7,1	468.200	4,7
6300	10	35	11	190	280	1400	464.300	17,4	465.300	11,3	470.300	14,5	468.300	8,4
6001	12	28	8	110	160	1750	464.101	7,1	465.101	4,6	470.101	5,9	468.101	3,5
6201	12	32	10	150	220	1550	464.201	11,9	465.201	7,7	470.201	99,9	468.201	5,7
6301	12	37	12	210	310	1300	464.301	21,8	465.301	13,4	470.301	18,6	468.301	10,2
16002	15	32	8	130	190	1500	464.002	8,0	465.002	5,5	470.002	6,5	468.002	4,1
6002	15	32	9	140	200	1500	464.102	9,1	465.102	6,4	470.102	7,4	468.102	4,7
6202	15	35	11	170	250	1400	464.202	14,3	465.202	9,4	470.202	11,8	468.202	7,0
6302	15	42	13	260	370	1200	464.302	27,3	465.302	17,5	470.302	23,0	468.302	13,2
16003	17	35	8	160	240	1400	464.003	9,6	465.003	6,6	470.003	7,9	468.003	4,9
6003	17	35	10	170	260	1400	464.103	11,4	465.103	8,4	470.103	9,0	468.103	6,0
6203	17	40	12	220	320	1250	464.203	19,1	465.203	13,9	470.203	15,4	468.203	10,2
6303	17	47	14	260	370	1050	464.303	37,5	465.303	24,5	470.303	31,3	468.303	18,2
16004	20	42	8	190	290	1150	464.004	13,8	465.004	9,8	470.004	10,5	468.004	7,0
6004	20	42	12	200	300	1150	464.104	20,7	465.104	14,2	470.104	16,8	468.104	10,9
6204	20	47	14	270	420	1050	464.204	33,4	465.204	22,1	470.204	27,6	468.204	16,4
6304	20	52	15	350	500	950	464.304	48,6	465.304	31,7	470.304	40,5	468.304	23,6
16005	25	47	8	210	310	1050	464.005	19,1	465.005	10,9	470.005	16,2	468.005	9,0
6005	25	47	12	240	360	1050	464.105	23,8	465.105	1,6	470.105	19,3	468.105	12,1
6205	25	52	15	320	480	950	464.205	39,6	465.205	27,0	470.205	32,5	468.205	26,6
6305	25	62	17	400	600	725	464.305	76,4	465.305	49,5	470.305	63,9	468.305	36,9
16006	30	55	9	240	370	900	464.006	26,2	465.006	17,3	470.006	21,6	468.006	13,0
6006	30	55	13	280	420	900	464.106	35,4	465.106	24,2	470.106	28,9	468.106	17,7
6206	30	62	16	360	550	800	464.206	63,4	465.206	41,6	470.206	52,6	468.206	30,8
6306	30	72	19	460	700	675	464.306	113,8	465.306	72,0	470.306	95,7	468.306	53,9
16007	35	62	9	270	410	800	464.007	32,3	465.007	21,8	470.007	26,3	468.007	16,3
6007	35	62	14	320	480	800	464.107	47,4	465.107	32,0	470.107	38,9	468.107	23,5
6207	35	72	17	410	620	700	464.207	94,9	465.207	60,3	470.207	79,8	468.207	45,2
6307	35	80	21	490	750	600	464.307	153,7	465.307	98,7	470.307	129,6	468.307	74,4
16008	40	68	9	300	450	750	464.008	37,7	465.008	29,3	470.008	30,6	468.008	19,2
6008	40	68	15	350	520	750	464.108	52,3	465.108	39,4	470.108	45,5	468.108	28,7
6208	40	80	18	440	660	625	464.208	131,4	465.208	79,8	470.208	102,5	468.208	60,9
6308	40	90	23	520	800	575	464.308	207,5	465.308	130,7	470.308	174,8	468.308	97,9
16009	45	75	10	330	500	650	464.009	48,9	465.009	33,6	470.009	39,7	468.009	24,4
6009	45	75	16	380	560	650	464.109	74,8	465.109	50,6	470.109	61,4	468.109	37,2
6209	45	85	19	470	720	580	464.209	138,0	465.209	86,3	470.209	117,0	468.209	65,4
6309	45	100	25	540	900	500	464.309	296,4	465.309	177,1	470.309	256,8	468.309	135,5
6010	50	80	16	390	580	600	464.110	82,0	465.110	55,9	470.110	67,0	468.110	40,9
6210	50	90	20	540	770	550	464.210	153,8	465.210	96,5	470.210	130,1	468.210	72,8
6011	55	90	18	400	600	550	464.111	120,8	465.111	80,8	470.111	99,6	468.111	59,6
6012	60	95	18	420	640	500	464.112	127,0	465.112	80,6	470.112	104,3	468.112	61,3

* Double row ball bearings with ZZ-shields on request. The basic load rating and speed limits stated herein are basic figures. Due to different operating conditions the figures gained under real-life conditions can vary to a high extent. Please see the information given in fig. 4 on page 7 to partly consider the environmental influences.

BALL BEARINGS

INCH DIMENSIONS: SINGLE AND DOUBLE ROW*

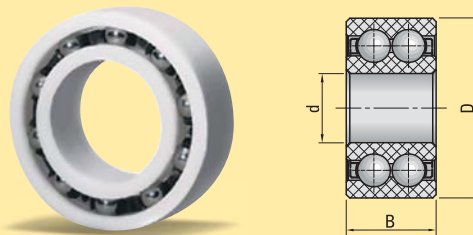


Material combinations

Races	POM			
Cage	PA 6.6			
Balls				
SMG part no.	weight	SMG part no.	weight	
AISI 316	g	glass	g	

TYPE	ID		OD		W		capacity		n max. speed rpm
	inch	mm	inch	mm	inch	mm	stat N	dyn N	
	R4	1/4"	6,35	5/8"	15,88	3/8"	9,53	40	
R6	3/8"	9,53	7/8"	22,22	7/16"	11,11	60	80	2200
R8	1/2"	12,7	1-1/8"	28,58	7/16"	11,11	110	160	1750
R10	5/8"	15,88	1-3/8"	34,93	9/32"	7,14	170	250	1400
R12	3/4"	19,05	1-5/8"	41,28	5/16"	7,94	200	300	1200
R16	1"	25,4	2"	50,80	1/2"	12,70	240	360	1050

* Double row editions of ball bearings listed in charts 1 and 2 on request.

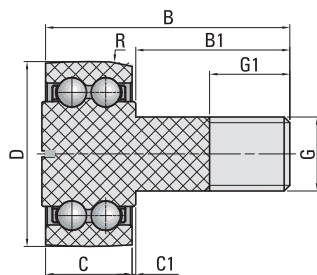


* Double row ball bearings with ZZ-shields on request.

The basic load rating and speed limits stated herein are basic figures. Due to different operating conditions the figures gained under real-life conditions can vary to a high extent. Please see the information in fig. 4 on page 7 to partly consider the environmental influences.

GUIDE ROLLERS

AVAILABLE ALSO IN INCH-DIMENSIONS*



Material combinations

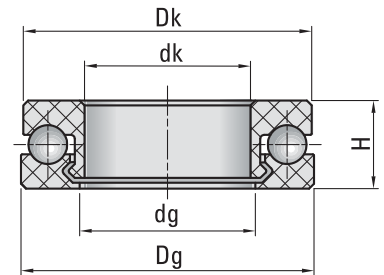
Races	POM	
Cage	PA 6.6	
Balls		
SMG part no.	weight	
AISI 316	g	

TYPE	D mm	B mm	B1 mm	G mm	G1 mm	C mm	C1 mm	capacity		n max. speed rpm
								stat N	dyn N	
								KR16	16	
KR19	19	31,5	20	M8	10	11	0,5	90	126	2340
KR22	22	36	23	M10	12	1	0,6	99	144	1980
KR26	26	36	23,4	M10x1	12	12	0,6	162	234	1710
KR30	30	39,6	25	M12x1,5	13	14	0,6	198	288	1580
KR32	32	39,6	25	M12x1,5	13	14	0,6	198	288	1580
KR35	35	51,3	32,5	M16x1,5	17	18	0,8	306	450	1200
KR40	40	57,25	36,5	M18x1,5	19	20	0,8	396	576	1122
KR47	47	65,3	40,5	M20x1,5	21	24	0,8	486	756	945

* Double row ball bearings with ZZ-shields on request. The basic load rating and speed limits stated herein are basic figures. Due to different operating conditions the figures gained under real-life conditions can vary to a high extent. Please see the information given in fig. 4 on page 7 to partly consider the environmental influences.

THRUST BALL BEARINGS

SMG manufactures thrust ball bearings in nearly all metric and inch dimensions. Also customized editions can be offered. The standard material combination for the races is POM in full complement execution with alternating balls out of AISI 316 and POM. Thrust ball bearings made of any other material listed on page 6 are available upon request.



Material combinations

Chart 4 TYPE	dk mm	DG mm	dg mm	Dk mm	H mm	capacity		n max. speed rpm	Races			
						stat N	dyn N		POM			
									Balls		SMG part no.	
									AISI 316	weight g	glass	weight g
51100	10	24	11	23	9	200	250	600	464.500	5,2	465.500	4,0
51200	10	26	11	25	11	210	260	600	464.520	7,9	465.520	6,1
51101	12	26	13	25	9	320	400	540	464.501	5,6	465.501	4,4
51201	12	28	13	27	11	330	410	540	464.521	9,5	465.521	7,2
51102	15	28	16	27	9	500	625	500	464.502	6,1	465.502	4,7
51202	15	32	16	31	12	520	650	500	464.522	11,5	465.522	9,3
51103	17	30	18	29	9	570	710	480	464.503	6,8	465.503	5,2
51203	17	35	18	34	12	600	750	480	464.523	14,9	465.523	10,7
51104	20	35	21	34	12	650	810	460	464.504	10,3	465.504	7,6
51204	20	40	21	39	14	690	860	460	464.524	20,5	465.524	15,7
51105	25	42	26	41	11	710	880	410	464.505	14,6	465.505	11,3
51205	25	47	26	46	15	750	930	400	464.525	26,5	465.525	22,2
51106	30	47	31	46	11	760	950	400	464.506	17,3	465.506	13,4
51206	30	52	21	51	16	820	1025	375	464.526	34,0	465.526	26,9
51107	35	52	36	51	12	810	1010	390	464.507	20,8	465.507	16,6
51207	35	62	36	61	18	870	1090	365	464.527	56,9	465.527	44,3
51108	40	60	41	59	13	890	1110	375	464.508	31,2	465.508	24,7
51208	40	68	41	67	19	940	1175	350	464.528	67,1	465.528	53,1
51109	45	65	46	64	14	950	1185	360	464.509	37,5	465.509	28,2
51209	45	73	46	72	20	1010	1260	330	464.529	86,7	465.529	62,1
51110	50	70	51	69	14	1020	1275	340	464.510	40,5	465.510	30,5
51210	50	78	51	77	22	1100	1375	310	464.530	107,0	465.530	80,4
51111	55	78	56	77	16	1050	1310	310	464.511	63,6	465.511	52,1
51112	60	85	61	84	17	1120	1400	280	464.512	87,5	465.512	67,9

* **Double row thrust bearings with ZZ-shields on request.** The basic load rating and speed limits stated herein are basic figures. Due to different operating conditions the figures gained under real-life conditions can vary to a high extent. Please see the information given in fig. 4 on page 7 to partly consider the environmental influences.



OPERATION GUIDELINE

Dimensions

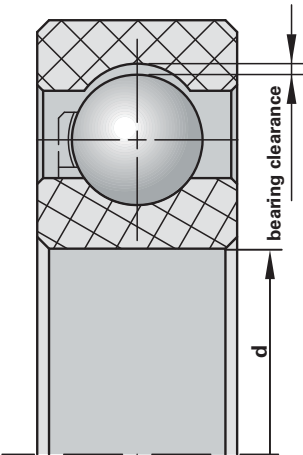
The main dimensions of the radial plastic ball bearings are in conformity with the specification of DIN 625-1:1989 and DIN 616:2000 or ISO 15:1989 respectively, except for the distance between the edges. The main dimensions of the plastic thrust bearings, with the exception of the distances between the edges, are in conformance with DIN 616:2000 or ISO 104:2002 respectively.

Assembly instructions (radial ball bearings)

To ensure a proper assembly we recommend a press fit on the ID and a loose fit on the OD (or vice versa).

A simultaneous press fit on the ID and OD will result in a preliminary wear of the bearing.

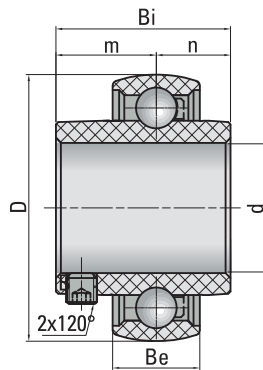
For any questions on this matter, please contact SMG.



Bore d [mm]		Radial bearing clearance [µm]	
more than	up to	min	max
-	9	60	140
9	17	70	150
17	20	80	160
20	25	80	170
30	35	90	180
35	45	100	200
45	60	110	210

The listed tolerances are valid for ball bearings with races made of POM. Other materials may require different tolerances. These data are standard values for our radial bearings. The bearing clearance can be changed according to customer's order.

INSERT BEARINGS SINGLE ROW*



Material combinations

Races	POM
Cage	PA 6.6
Balls	AISI 316
SMG part no.	weight
	g

Chart 5 TYPE	d mm	D mm	Bi mm	Be mm	m mm	n mm	capacity		n max. speed rpm	SMG part no.	weight g
							stat N	dyn N			
UC 200	10	47	31	17	18,3	12,7	270	420	1050	464.700	51,8
UC 201	12	47	31	17	18,3	12,7	270	420	1050	464.701	50,3
UC 202	15	47	31	17	18,3	12,7	270	420	1050	464.702	47,5
UC 203	17	47	31	17	18,3	12,7	270	420	1050	464.703	45,9
UC 204	20	47	31	17	18,3	12,7	270	420	1050	464.704	42,0
UC 205	25	52	34,1	17	19,6	14,5	320	480	950	464.705	51,6
UC 206	30	62	38,1	19	22,2	15,9	360	550	800	464.706	82,7
UC 207	35	72	42,9	20	25,4	17,5	410	620	700	464.707	124,1
UC 208	40	80	49,2	21	30,2	19	440	660	625	464.708	175,1
UC 209	45	85	49,2	22	30,2	19	470	720	580	464.709	197,8

* **Double insert bearings with ZZ-shields on request.** The basic load rating and speed levels stated herein are basic figures. Due to different operating conditions the figures gained under real-life conditions can vary to a high extent. Please see the information given in fig. 4 on page 7 to partly consider the environmental influences.

All insert bearings fit in the plastic housings listed on page 13 and in the established cast steel housings. The standard material combination for insert bearings are rings made of POM, bearings made of stainless steel AISI 316 and cages made of PA.

Certainly any other material combination as listed on page 6 is possible.

Special editions are available on request.



PILLOW BLOCKS AND BOLT FLANGE HOUSINGS MADE OF FIBRE REINFORCED PLASTIC



SMG housings are manufactured from extra strong glass fibre reinforced polyamide. Zinc-plated sleeves strengthen the bolt holes by default. Optionally also stainless steel sleeves are available.

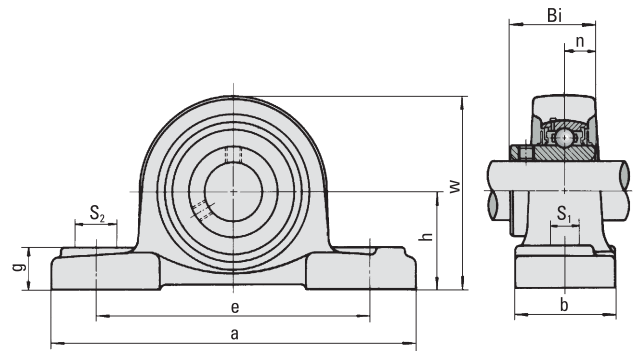
They have an exceptional chemical resistance and are noncorrosive and much lighter than steel housings.

The dimensions of the housings are in line with common cast steel housings.

In addition to the plastic inserts listed on page 12, our housings also accept many customary steel inserts.

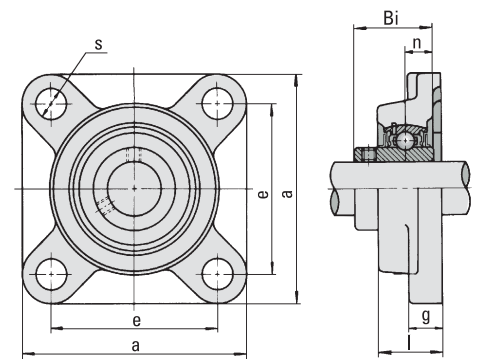
Thermoplastic Pillow Blocks

TYPE	SMG part no.	weight g	h mm	a mm	e mm	b mm	S ₁ mm	S ₂ mm	g mm	w mm
PL 200-P	874.920	102,8	33,3	126	96	32	12	17,5	16	64
PL 201-P	874.920	102,8	33,3	126	96	32	12	17,5	16	64
PL 202-P	874.920	102,8	33,3	126	96	32	12	17,5	16	64
PL 203-P	874.920	102,8	33,3	126	96	32	12	17,5	16	64
PL 204-P	874.920	102,8	33,3	126	96	32	12	17,5	16	64
PL 205-P	874.921	120,1	36,5	134	105	32	12	17,5	16	70,5
PL 206-P	874.922	190,0	42,9	159	121	40	14,5	21,5	19	82
PL 207-P	874.923	247,2	47,6	164	126	45	14,5	21,5	19	93
PL 208-P	874.924	287,3	49,2	176	136	4	14,5	21,5	19	93



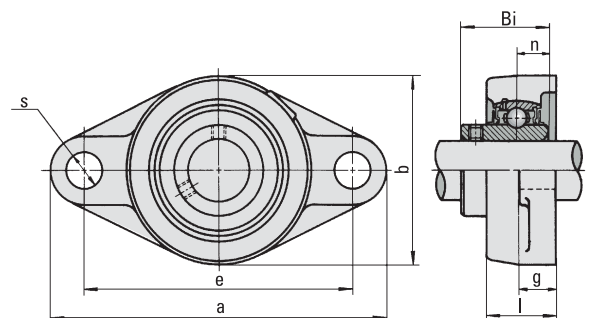
Thermoplastic 4 Bolt Flange Housings

TYPE	SMG part no.	weight g	a mm	e mm	g mm	l mm	s mm
F 200-P	874.910	115,2	86	63,5	15	30	12
F 201-P	874.910	115,2	86	63,5	15	30	12
F 202-P	874.910	115,2	86	63,5	15	30	12
F 203-P	874.910	115,2	86	63,5	15	30	12
F 204-P	874.910	115,2	86	63,5	15	30	12
F 205-P	874.911	138,6	95	70	15	31	12
F 206-P	874.912	182,5	108	82,5	15,3	33	12
F 207-P	874.913	235,3	118	92	17	35	14,5
F 208-P	874.914	294,5	130	101,5	17	39	14,5

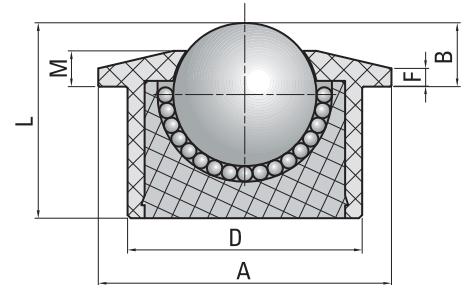


Thermoplastic 2 Bolt Flange Housings

TYPE	SMG part no.	weight g	a mm	e mm	g mm	l mm	s mm
FL 200-P	874.930	82,3	112	90	60,5	29,5	12
FL 201-P	874.930	82,3	112	90	60,5	29,5	12
FL 202-P	874.930	82,3	112	90	60,5	29,5	12
FL 203-P	874.930	82,3	112	90	60,5	29,5	12
FL 204-P	874.930	82,3	112	90	60,5	29,5	12
FL 205-P	874.931	99,4	124	99	70	30	12
FL 206-P	874.932	143,3	142,5	116,5	83	33	12
FL 207-P	874.933	175,1	156	130	96	35	14,5



BALL TRANSFER UNITS MADE OF PLASTICS



Material combinations

TYPE	Material combinations			Dimensions (mm)						Weight g	Basic load rating C (N)
	Housing (housing balls)		POM	A max. Ø	B height of ball	D base Ø	F flange thickness	M bottom flange to top of outer ring	L overall height		
	Balls		POM								
	Support balls										
	SMG part no.	Support balls	Ball Ø mm								
515	467.315	1.4401	15	31	9,5	24	2,8	6,3	21	24	70
	467.415	PA		± 0,1	± 0,2	± 0,065	12			12	
522	467.322	1.4401	22	45	9,8	36	2,8	5,5	30	74	100
	467.422	PA		± 0,1	± 0,2	± 0,080	36			36	
530	467.330	1.4401	30	55	13,8	45	4	8,3	37	162	150
	467.430	PA		± 0,2	± 0,3	± 0,080	66			66	
545	467.345	1.4401	45	75	19	62	4	10	53,5	502	200
	467.445	PA		± 0,2	± 0,4	± 0,095	176			176	

Advantages of ball transfer units made of plastics in comparison to steel units

- resistant to acid and lye
- no lubrication, maintenance-free
- low friction
- low weight (up to 70 % less)
- appropriate for vacuum or pressure
- non-conductive
- saltwater-proof
- free of metallic components*
- flexibility in design for best possible product integration
- heat resistant up to 250° C (applies to "high performance plastic")
- transport of fragile goods such as glass*
- appropriate for use in explosive atmosphere (acc. to ATEX-guidelines)
- appropriate for use in aseptic areas (e. g. medical technology)
- customized design possible

* depending on selection of materials

Please note:

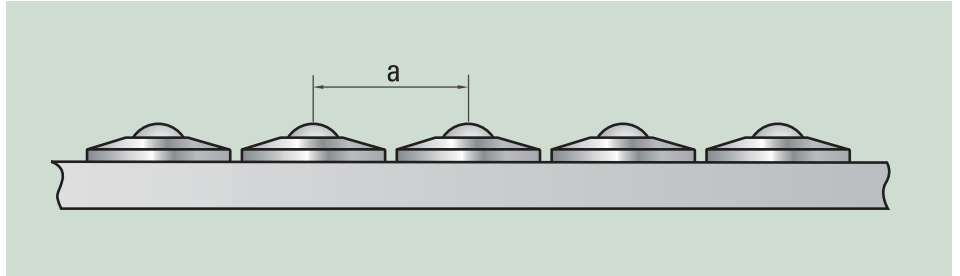
In comparison to steel units, ball transfer units out of plastics are non-conductive and offer a lower load capacity, lower thermal stability (for standard material POM approx. 90° C) and a higher thermal expansion coefficient.

Arrangement of the ball transfer units:

For articles with a uniform, smooth under-surface the distance between the ball transfer units "a" is calculated by dividing the smallest edge length by 3.

Undersurface of the conveyed article
= 300 x 800 mm

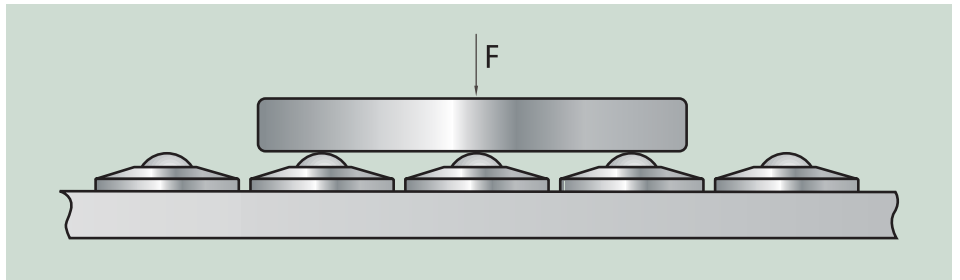
Distance between the ball transfer units
 $a = 300/3 = 100 \text{ mm}$



Determination of the load for ball transfer units:

To determine the load for a ball transfer unit the weight of the conveyed article is divided by the number of the loaded ball transfer units or at least by 9.

Weight = 500 N
Ball transfer unit load (F)
 $F = 500/9 \approx 56 \text{ N per ball transfer unit}$

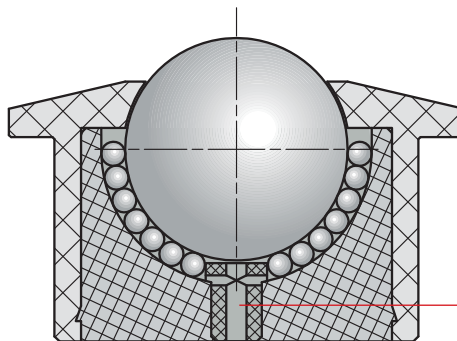


Conveying velocity: $V_{max.} = 1 \text{ m/sec.}$

Temperature °C	Temperature factor f_T
40	0,93
50	0,85
60	0,75
70	0,60
80	0,45

Temperature factor:
Operating temperature of up to 30° C.
At operating temperatures of above 30° C, please note the reduction in basic load rating.

The load capacity must be multiplied by the temperature factor.

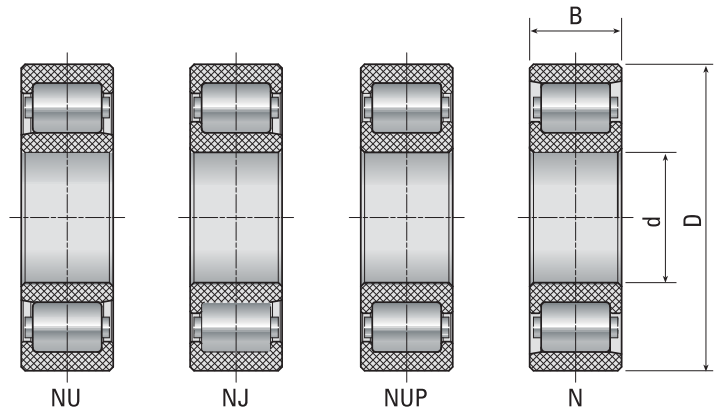


Available with drain outlet on request.

CYLINDRICAL ROLLER BEARINGS



CYLINDRICAL ROLLER BEARINGS ARE AVAILABLE ON REQUEST.



Characteristics

- Due to the usage of cylindrical rollers instead of balls the cylindrical roller bearings are able to accommodate a higher radial load
- Shaft expansion in length can be compensated by the shifting of the races (except for the edition NUP).
- Lubrication free dry operation
- These ball bearings are made to customer specification

Basic types

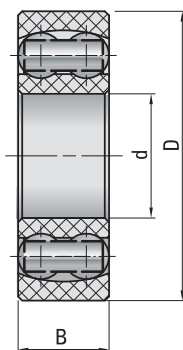
Edition NU: Two integral flanges on the outer ring and no flanges on the inner ring

Edition NJ: Two integral flanges on the outer ring and one integral flange on the inner ring

Edition NUP: Two integral flanges on the outer ring and two integral flanges on the inner ring.

Edition N: Outer ring without flanges and two integral flanges on the inner ring

SPHERICAL ROLLER BEARINGS



SPHERICAL ROLLER BEARINGS ARE AVAILABLE ON REQUEST.

Characteristics

- Spherical roller bearings contain two rows of rollers and a spherical raceway on the outer ring. Thereby, they are able to absorb misalignments.
- Lubrication free dry operation
- These roller bearings are made to customer specification



SMG – SPECIALIST IN PLASTICS



In addition to the field of ball bearings, cylindrical bearings and roller bearings, SMG also offers its customers the full premium production spectrum of precision parts made of plastics. SMG's customers benefit from the combination of construction, cutting and in-plant tool-manufacture and injection moulding.

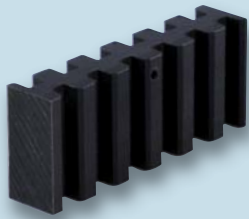


VARIABLE PRODUCTION FACILITIES MADE OF PLASTICS



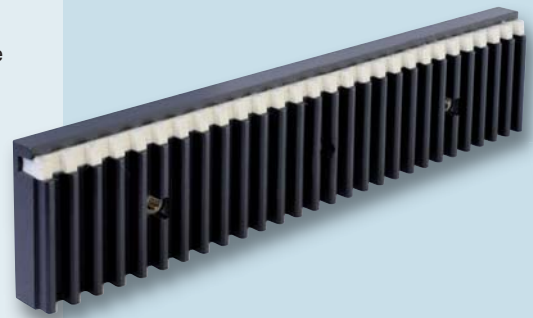
Turned parts

Production facilities on latest CNC turning centers equipped with automatic bar stock feed up to a diameter of 72 mm. The maximum collet capacity amounts to 280 mm – available from single-piece to large-scale production.



Milled parts

SMG has specialized in the manufacture of small parts made of high performance materials at the highest degree of accuracy and precision – available from single-piece to large-scale production.



Moulded parts

Our SMG machine outfit includes injection moulding machines with a clamping force of up to 250 tons. Almost all thermoplastics are processed: PP, PA, POM, PMMA, PUR, ... with or without additives like carbon fiber, glass fiber, graphite, MOS2. Also high-capacity plastics such as PPS, PEEK and TPI are used for our moulded parts.



MATERIALS

Thermoplastics

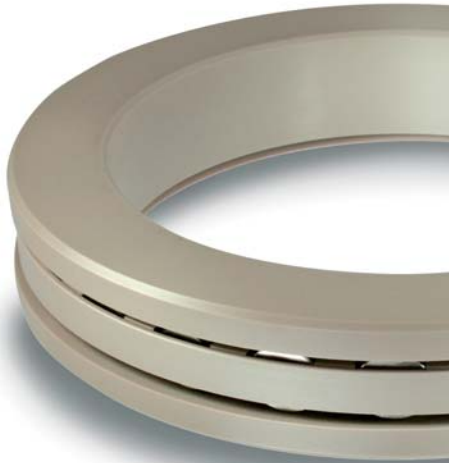
- POM
- PA
- PE
- PET
- PPS
- PEEK
- TPI
- and many others

Special materials

- Polyimide
- Carbon
- Laminated fabrics
- Duroplastics, high-performance plastics

Composite materials

- Duroplastics
- Thermoplastics
- Synthetic resin fabrics
- Laminated wood



BALL BEARINGS , GUIDE ROLLERS , BALL TRANSFER UNITS , CUSTOMIZED SOLUTIONS



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