

# SM TYPE

— Standard Type —



## part number structure

example **SMS25G UU-P**

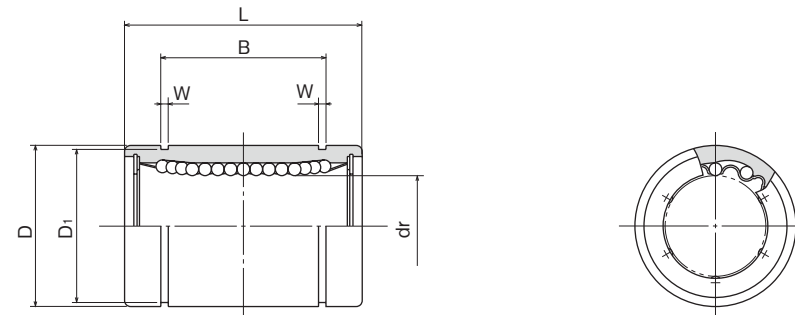
specification  
**SM**: standard  
**SMS**: anti-corrosion

inner contact diameter (dr)

retainer material  
**blank**: standard/steel  
**G**: anti-corrosion/stainless steel  
**G**: resin

accuracy grade  
**blank**: high  
**P**: precision

seal  
**blank**: without seal  
**U**: seal on one side  
**UU**: seals on both sides



part number				number of ball circuits	major dimensions			
standard steel retainer	anti-corrosion resin retainer	stainless steel retainer	resin retainer		mm	dr tolerance $\mu\text{m}$	mm	D tolerance $\mu\text{m}$
SM 3	SM 3G	SMS 3	SMS 3G	4	3			7
SM 4	SM 4G	SMS 4	SMS 4G	4	4	0	0	8
SM 5	SM 5G	SMS 5	SMS 5G	4	5	-5	-8	10
SM 6	SM 6G	SMS 6	SMS 6G	4	6			12
SM 8s	SM 8sG	SMS 8s	SMS 8sG	4	8			15
SM 8	SM 8G	SMS 8	SMS 8G	4	8			15
SM 10	SM10G	SMS10	SMS10G	4	10	0	0	19
SM 12	SM12G	SMS12	SMS12G	4	12	-6	-9	21
SM 13	SM13G	SMS13	SMS13G	4	13			23
SM 16	SM16G	SMS16	SMS16G	4	16			28
SM 20	SM20G	SMS20	SMS20G	5	20			32
SM 25	SM25G	SMS25	SMS25G	6	25	0	0	40
SM 30	SM30G	SMS30	SMS30G	6	30	-7	-10	45
SM 35	SM35G	SMS35	SMS35G	6	35			52
SM 40	SM40G	SMS40	SMS40G	6	40	0	0	60
SM 50	SM50G	SMS50	SMS50G	6	50	-8	-12	80
SM 60	SM60G	SMS60	SMS60G	6	60	0	0	90
SM 80	SM80G	SMS80	SMS80G	6	80	-9	-15	120
SM100	-	-	-	6	100	0	0	150
SM120	-	-	-	8	120	-10	-20	180
SM150	-	-	-	8	150	0/-13	0/-25	210

mm	L tolerance mm	mm	B tolerance mm	mm	W mm	mm	D <sub>1</sub> mm	eccentricity		radial clearance (maximum) $\mu\text{m}$	basic load rating		mass g	shaft diameter mm
								precision $\mu\text{m}$	high $\mu\text{m}$		C N	static Co N		
10		-	-	-	-	-	-				69	105	1.4	3
12	0	-	-	-	-	-	-	4	8		88	127	2.0	4
15	-0.12	10.2			1.1	9.6				-3	167	206	4.0	5
19		13.5			1.1	11.5					206	265	8.5	6
17		11.5			1.1	14.3					176	216	11	8
24		17.5			1.1	14.3					274	392	17	8
29	0	22	0		1.3	18		8	12		372	549	36	10
30	-0.2	23	-0.2		1.3	20				-4	510	784	42	12
32		23			1.3	22					510	784	49	13
37		26.5			1.6	27					774	1,180	76	16
42		30.5			1.6	30.5				-6	882	1,370	100	20
59		41			1.85	38		10	15		980	1,570	240	25
64		44.5			1.85	43				-8	1,570	2,740	270	30
70	0	49.5	0		2.1	49					1,670	3,140	425	35
80	-0.3	60.5	-0.3		2.1	57		12	20	-10	2,160	4,020	654	40
100		74			2.6	76.5					3,820	7,940	1,700	50
110		85			3.15	86.5		17	25	-13	4,700	10,000	2,000	60
140		105.5			4.15	116				-20	7,350	16,000	4,520	80
175	0	125.5	0		4.15	145		20	30		14,100	34,800	8,600	100
200	-0.4	158.6	-0.4		4.15	175				-25	16,400	40,000	15,000	120
240		170.6			5.15	204		25	40		21,100	54,300	20,250	150

1N=0.102kgf

# KB TYPE (Euro Standard)

– Standard Type –



## part number structure

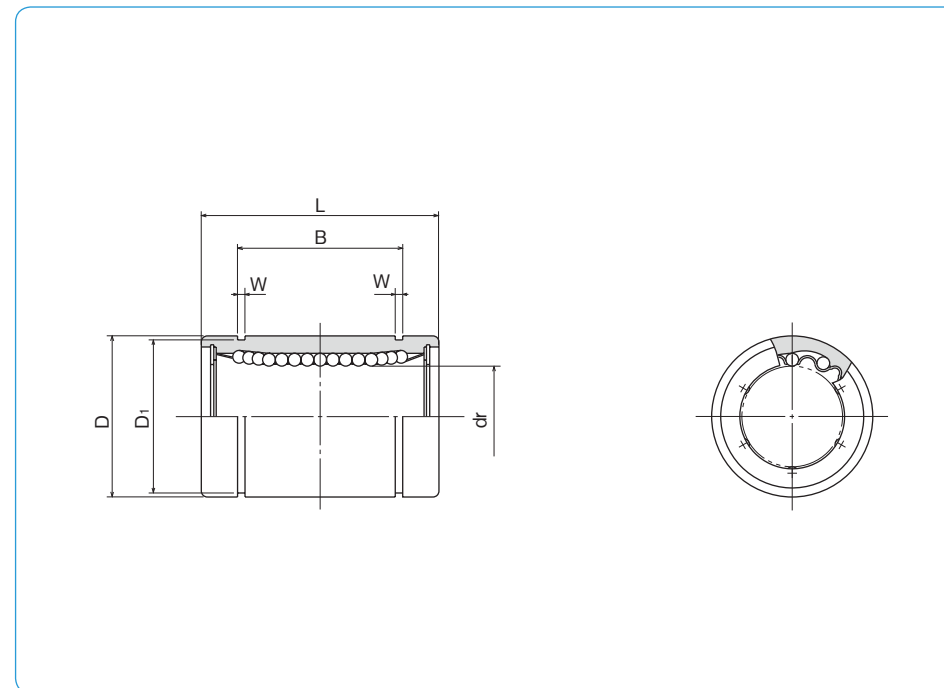
example **KBS 25 G UU**

specification  
**KB**: standard  
**KBS**: anti-corrosion

inner contact diameter (dr)

retainer material  
**blank**: standard/steel  
**G**: anti-corrosion/stainless steel  
**G**: resin

seal  
**blank**: without seal  
**U**: seal on one side  
**UU**: seals on both sides



part number				number of ball circuits	dr		major dimensions	
standard steel retainer	resin retainer	anti-corrosion stainless retainer	resin retainer		mm	tolerance $\mu\text{m}$	D mm	tolerance $\mu\text{m}$
<b>KB 3</b>	<b>KB 3G</b>	<b>KBS 3</b>	<b>KBS 3G</b>	4	3	+ 8 0	7	0 - 8
<b>KB 4</b>	<b>KB 4G</b>	<b>KBS 4</b>	<b>KBS 4G</b>	4	4		8	
<b>KB 5</b>	<b>KB 5G</b>	<b>KBS 5</b>	<b>KBS 5G</b>	4	5		12	
<b>KB 8</b>	<b>KB 8G</b>	<b>KBS 8</b>	<b>KBS 8G</b>	4	8		16	
<b>KB10</b>	<b>KB10G</b>	<b>KBS10</b>	<b>KBS10G</b>	4	10	+ 9 - 1	19	0 - 9
<b>KB12</b>	<b>KB12G</b>	<b>KBS12</b>	<b>KBS12G</b>	4	12		22	
<b>KB16</b>	<b>KB16G</b>	<b>KBS16</b>	<b>KBS16G</b>	4	16		26	
<b>KB20</b>	<b>KB20G</b>	<b>KBS20</b>	<b>KBS20G</b>	5	20		32	
<b>KB25</b>	<b>KB25G</b>	<b>KBS25</b>	<b>KBS25G</b>	6	25	+11	40	-11
<b>KB30</b>	<b>KB30G</b>	<b>KBS30</b>	<b>KBS30G</b>	6	30	- 1	47	
<b>KB40</b>	<b>KB40G</b>	<b>KBS40</b>	<b>KBS40G</b>	6	40	+13 - 2	62	0 -13
<b>KB50</b>	<b>KB50G</b>	<b>KBS50</b>	<b>KBS50G</b>	6	50		75	
<b>KB60</b>	<b>KB60G</b>	<b>KBS60</b>	<b>KBS60G</b>	6	60	+16/-4	90	0 -15
<b>KB80</b>	-	-	-	6	80		120	

mm	L	B		W	D <sub>1</sub>	eccentricity $\mu\text{m}$	radial clearance (maximum) $\mu\text{m}$	basic load rating		mass g	shaft diameter mm
	tolerance mm	mm	tolerance mm	mm	mm			C N	Co N		
10	0	-	-	-	-	10	- 3	69	105	1.4	3
12	-0.12	-	-	-	-			88	127	2	4
22	0	14.5	-0.2	1.1	11.5			206	265	11	5
25		16.5		1.1	15.2	265	402	22	8		
29		22		1.3	18	372	549	36	10		
32		-0.2		22.9	1.3	21	510	784	45	12	
36	0	24.9	-0.3	1.3	24.9	15	- 4	578	892	60	16
45		31.5		1.6	30.3			862	1,370	102	20
58		44.1		1.85	37.5			980	1,570	235	25
68	0	52.1	0	1.85	44.5	17	- 8	1,570	2,740	360	30
80	-0.3	60.6	-0.3	2.15	59			2,160	4,020	770	40
100	0	77.6	0	2.65	72	20	-13	3,820	7,940	1,250	50
125		101.7		3.15	86.5			4,700	9,800	2,220	60
165		-0.4		133.7	-0.4			4.15	116	7,350	16,000

1N=0.102kgf

# SW TYPE (Inch Standard)

— Standard Type —



## part number structure

example **SWS16GRUU-P**

specification  
**SW:** standard  
**SWS:** anti-corrosion

size

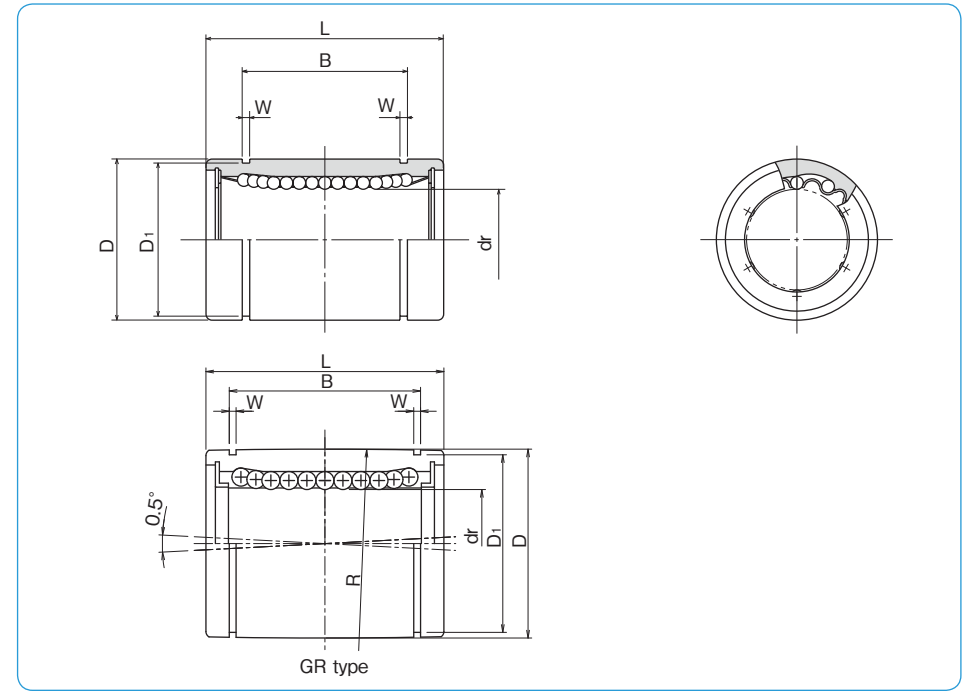
retainer material  
**blank:** standard/steel  
**G:** resin

accuracy grade  
**blank:** high  
**P:** precision

seal  
**blank:** without seal  
**U:** seal on one side  
**UU:** seals on both sides

self aligning  
**blank:** non self aligning  
**R:** self aligning

\*Seals are not available on SWS2 and SWS3.



steel retainer	partnumber		anti-corrosion		number of ball circuits	dr		majordimensions		
	standard	resinretainer	stainless retainer	resin retainer		inch (mm)	tolerance precision	inch/(μm) high	inch (mm)	tolerance inch/(μm)
									D	
-	-	-	<b>SWS2</b>	<b>SWS2G</b>	4	.1250 (3.175)	-	0 -.00035 (-8)	.3125 (7.938)	0 -.00040 (-9)
-	-	-	<b>SWS3</b>	<b>SWS3G</b>	4	.1875 (4.763)	-	0 -.00035 (-8)	.3750 (9.525)	0 -.00040 (-9)
<b>SW4</b>	<b>SW4G</b>	<b>SW4GR</b>	<b>SWS4</b>	<b>SWS4G</b>	4	.2500 (6.350)	-	0 -.00025 (-6)	.5000 (12.700)	0 -.00045 (-11)
<b>SW6</b>	<b>SW6G</b>	<b>SW6GR</b>	<b>SWS6</b>	<b>SWS6G</b>	4	.3750 (9.525)	0 -.00025 (-6)	0 -.00040 (-9)	.6250 (15.875)	0 -.00050 (-13)
<b>SW8</b>	<b>SW8G</b>	<b>SW8GR</b>	<b>SWS8</b>	<b>SWS8G</b>	4	.5000 (12.700)	0 -.00025 (-6)	0 -.00040 (-9)	.8750 (22.225)	0 -.00050 (-13)
<b>SW10</b>	<b>SW10G</b>	<b>SW10GR</b>	<b>SWS10</b>	<b>SWS10G</b>	4	.625 (15.875)	0 -.00025 (-6)	0 -.00040 (-9)	1.1250 (28.575)	0 -.00050 (-13)
<b>SW12</b>	<b>SW12G</b>	<b>SW12GR</b>	<b>SWS12</b>	<b>SWS12G</b>	5	.7500 (19.050)	0 -.00030 (-7)	0 -.00040 (-10)	1.2500 (31.750)	0 -.00065 (-16)
<b>SW16</b>	<b>SW16G</b>	<b>SW16GR</b>	<b>SWS16</b>	<b>SWS16G</b>	6	1.0000 (25.400)	0 -.00030 (-7)	0 -.00040 (-10)	1.5625 (39.688)	0 -.00075 (-19)
<b>SW20</b>	<b>SW20G</b>	<b>SW20GR</b>	<b>SWS20</b>	<b>SWS20G</b>	6	1.2500 (31.750)	0 -.00035 (-8)	0 -.00050 (-12)	2.0000 (50.800)	0 -.00075 (-19)
<b>SW24</b>	<b>SW24G</b>	<b>SW24GR</b>	<b>SWS24</b>	<b>SWS24G</b>	6	1.5000 (38.100)	0 -.00035 (-8)	0 -.00050 (-12)	2.3750 (60.325)	0 -.00075 (-19)
<b>SW32</b>	<b>SW32G</b>	<b>SW32GR</b>	<b>SWS32</b>	<b>SWS32G</b>	6	2.0000 (50.800)	0 -.00040 (-10)	0 -.00060 (-15)	3.0000 (76.200)	0 -.00090 (-22)
<b>SW40</b>	-	-	-	-	6	2.5000 (63.500)	0 -.00040 (-10)	0 -.00060 (-15)	3.7500 (95.250)	0 -.00090 (-22)
<b>SW48</b>	-	-	-	-	6	3.0000 (76.200)	0 -.00040 (-10)	0 -.00060 (-15)	4.50000 (114.300)	0 -.00100 (-25)
<b>SW64</b>	-	-	-	-	6	4.0000 (101.600)	0 -.00040 (-10)	0 -.00080 (-20)	6.0000 (152.400)	0 -.00100 (-25)

L	B	W	D <sub>1</sub>	eccentricity		radial clearance (maximum)	basicloadrating		mass	shaft diameter
				precision	high		C	Co		
				inch/(μm)	inch/(μm)		N	N		
.5000 (12.700)	.3681 (9.35)	.0280 (0.710)	.2902 (7.370)	-	.0003 (8)	-.0001 (-2)	59	76	2.8	1/8 (3.175)
.5625 (14.275)	.4311 (10.95)	.0280 (0.710)	.3520 (8.940)	-	.0003 (8)	-.0001 (-3)	91	110	3.6	3/16 (4.763)
.7500 (19.050)	.5110 (12.98)	.0390 (0.992)	.4687 (11.906)	0	.0003 (8)	-.0001 (-3)	206	265	9.5	1/4 (6.350)
.8750 (22.225)	.6358 (16.15)	.0390 (0.992)	.5880 (14.935)	0	.0003 (8)	-.0001 (-4)	225	314	15	3/8 (9.525)
1.2500 (31.750)	.9625 (24.26)	.0459 (1.168)	.8209 (20.853)	0	.0003 (8)	-.0001 (-4)	510	784	42	1/2 (12.700)
1.5000 (38.100)	1.1039 (28.575)	.0559 (1.422)	1.0590 (26.899)	0	.0003 (8)	-.0001 (-4)	774	1,180	85	5/8 (15.875)
1.6250 (41.275)	1.1657 (29.61)	.0559 (1.422)	1.1760 (29.870)	0	.0004 (10)	-.0002 (-6)	862	1,370	104	3/4 (19.050)
2.2500 (57.150)	1.7547 (44.57)	.0679 (1.727)	1.4687 (37.306)	0	.0004 (10)	-.0002 (-6)	980	1,570	220	1 (25.400)
2.6250 (66.675)	2.0047 (50.92)	.0679 (1.727)	1.8859 (47.904)	0	.0005 (12)	-.0003 (-8)	1,570	2,740	465	1-1/4 (31.750)
3.0000 (76.200)	2.4118 (61.26)	.0859 (2.184)	2.2389 (56.870)	0	.0005 (12)	-.0003 (-8)	2,180	4,020	720	1-1/2 (38.100)
4.0000 (101.600)	3.1917 (81.07)	.1029 (2.616)	2.8379 (72.085)	0	.0007 (17)	-.0005 (-13)	3,820	7,940	1,310	2 (50.800)
5.0000 (127.000)	3.9760 (100.99)	.1200 (3.048)	3.5519 (90.220)	0	.0007 (17)	-.0005 (-13)	4,700	10,000	2,600	2-1/2 (63.500)
6.0000 (152.400)	4.726 (120.04)	.1200 (3.048)	4.3100 (109.474)	0	.0008 (20)	-.0008 (-20)	7,350	16,000	4,380	3 (76.200)
8.0000 (203.200)	6.258 (158.95)	.1389 (3.530)	5.745 (145.923)	0	.0008 (20)	-.0008 (-20)	14,100	34,800	10,200	4 (101.600)

# GM TYPE

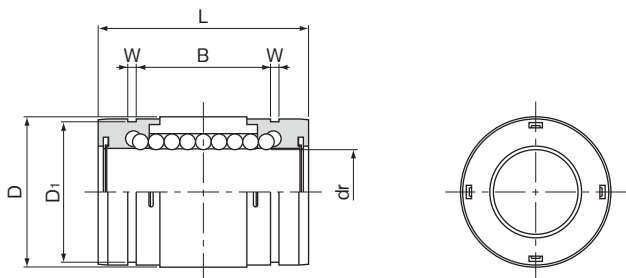
– Single Type –



## part number structure

example **GM 25 UU**

GM type  
inner contact diameter (dr)  
seal  
blank: without seal  
UU: seals on both sides



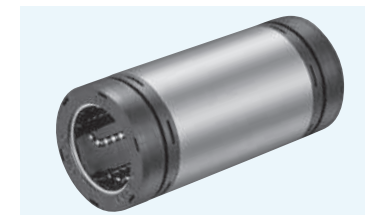
part number	number of ball circuits	dr mm	major dimensions							basic load rating dynamic C N	static Co N	mass g	
			tolerance $\mu\text{m}$	D mm	tolerance $\mu\text{m}$	L mm	B mm	W mm	D <sub>1</sub> mm				
GM 6	4	6	0	12	0	19	11.3	1.1	11.5	206	265	5	
GM 8	4	8		15	-11	24	15.3	1.1	14.3	274	392	10	
GM10	4	10		19	-13	29	19.4	1.3	18	372	549	18	
GM12	4	12	21	0		30	20.4	1.3	20	510	784	23	
GM13	4	13	23	32		20.4	1.3	22	510	784	27		
GM16	4	16	-9	28	0	37	23.3	1.6	27	774	1,180	45	
GM20	6	20		32		0	42	27.3	1.6	30.5	882	1,370	70
GM25	6	25		40		-16	59	37.3	1.85	38	980	1,570	150
GM30	6	30	-10	45	64	40.8	1.85	43	1,570	2,740	180		

GM-AJ type (clearance adjustable type) is also manufactured. Please contact NB for details.

1N≐0.102kgf

# GM-W TYPE

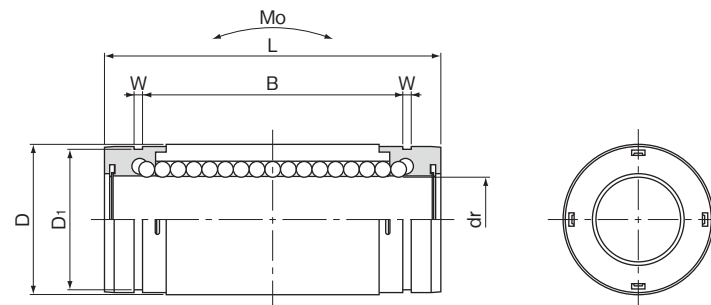
– Double-Wide Type –



## part number structure

example **GM 25 W UU**

GM type  
inner contact diameter (dr)  
seals on both sides  
double-wide type



part number	number of ball circuits	dr mm	tolerance $\mu\text{m}$	major dimensions							basic load rating dynamic C N	static Co N	allowable static moment Mo N·m	mass g
				D mm	tolerance $\mu\text{m}$	L mm	B mm	W mm	D <sub>1</sub> mm					
GM 6W UU	4	6	0	12	0	28	20.3	1.1	11.5	323	530	1.5	9	
GM 8W UU	4	8		15	-13	36	27.3	1.1	14.3	431	784	3.3	18	
GM10W UU	4	10		19	-16	41	31.4	1.3	18	588	1,100	5.0	31	
GM12W UU	4	12	21	0		46	36.4	1.3	20	813	1,570	7.6	42	
GM13W UU	4	13	23	21		48	36.4	1.3	22	813	1,570	8.1	50	
GM16W UU	4	16	-12	28	0	53	39.3	1.6	27	1,230	2,350	13.8	76	
GM20W UU	6	20		32		0	65	50.3	1.6	30.5	1,400	2,740	20.0	130
GM25W UU	6	25		40		-19	91	69.3	1.85	38	1,560	3,140	34.8	280
GM30W UU	6	30	45	99	75.8	1.85	43	2,490	5,490	57.5	334			

\*UU type is standard.

1N≐0.102kgf 1N·m≐0.102kgf·m

# GW TYPE (Inch Standard)

– Single Type –



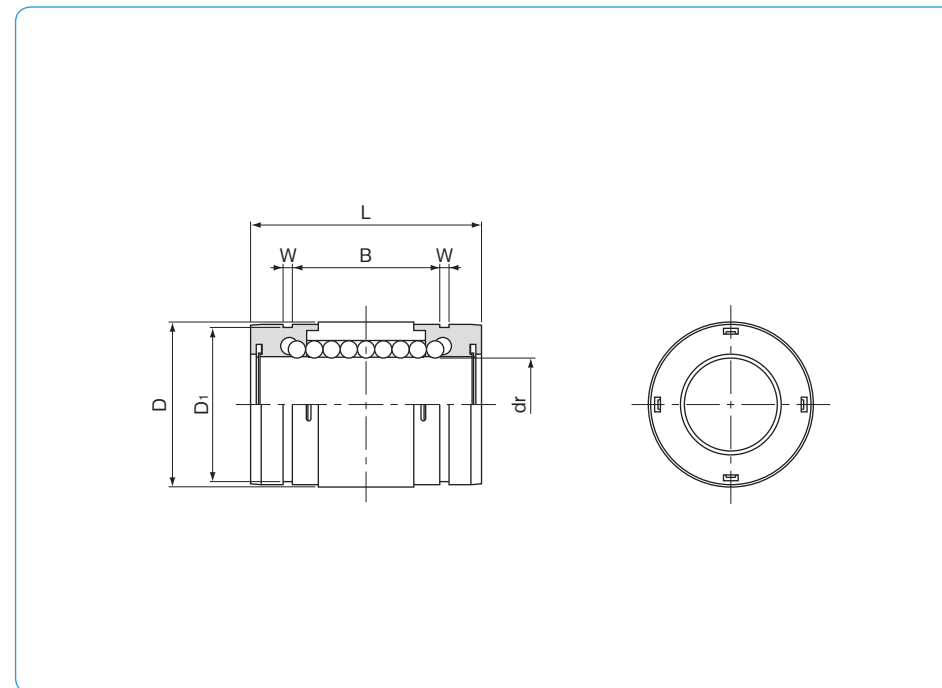
## part number structure

example **GW 16 UU**

GW type

size

seal  
blank: without seal  
UU: seals on both sides



part number	number of ball circuits	major dimensions				
		dr		D		L
		inch/(mm)	tolerance inch/( $\mu$ m)	inch/(mm)	tolerance inch/( $\mu$ m)	inch/(mm)
<b>GW 4</b>	4	.2500 (6.350)	0 −.00040 (−10)	.5000 (12.700)	0 −.00045 (−11)	.7500 (19.050)
<b>GW 6</b>	4	.3750 (9.525)		.6250 (15.875)	0	.8750 (22.225)
<b>GW 8</b>	4	.5000 (12.700)		.8750 (22.225)	−.00050 (−13)	1.2500 (31.750)
<b>GW10</b>	4	.6250 (15.875)		1.1250 (28.575)	0	1.5000 (38.100)
<b>GW12</b>	6	.7500 (19.050)		1.2500 (31.750)	−.00065 (−16)	1.6250 (41.275)
<b>GW16</b>	6	1.0000 (25.400)		1.5625 (39.688)	0	2.2500 (57.150)
<b>GW20</b>	6	1.2500 (31.750)		2.0000 (50.800)	−.00075 (−19)	2.6250 (66.675)

			basic load rating		mass g
B	W	D1	dynamic C N	static Co N	
inch/(mm)	inch/(mm)	inch/(mm)			
.4329 (10.996)	.0390 (0.992)	.4687 (11.906)	206	265	5.4
.5577 (14.166)	.0390 (0.992)	.5880 (14.935)	225	314	7.8
.8710 (22.123)	.0459 (1.168)	.8209 (20.853)	510	784	26
.9920 (25.197)	.0559 (1.422)	1.0590 (26.899)	774	1,180	51
1.0538 (26.767)	.0559 (1.422)	1.1760 (29.870)	862	1,370	72
1.6187 (41.115)	.0679 (1.727)	1.4687 (37.306)	980	1,570	138
1.8687 (47.465)	.0679 (1.727)	1.8859 (47.904)	1,570	2,740	269

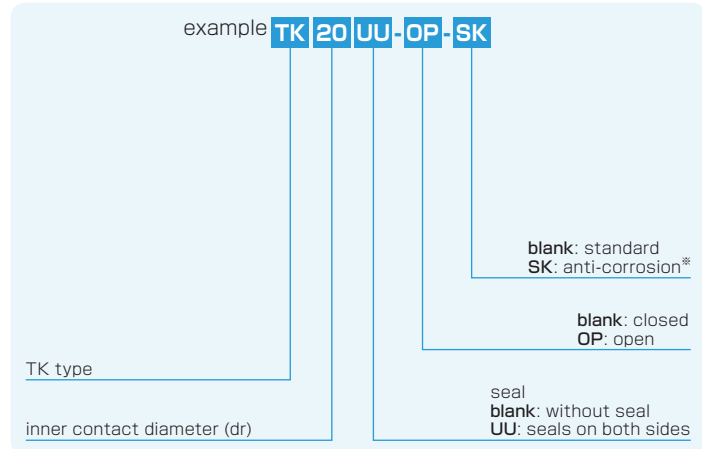
1N≐0.225lbf 1kg≐2.205lbs

# TK TYPE

– TOPBALL Metric Type –



## part number structure

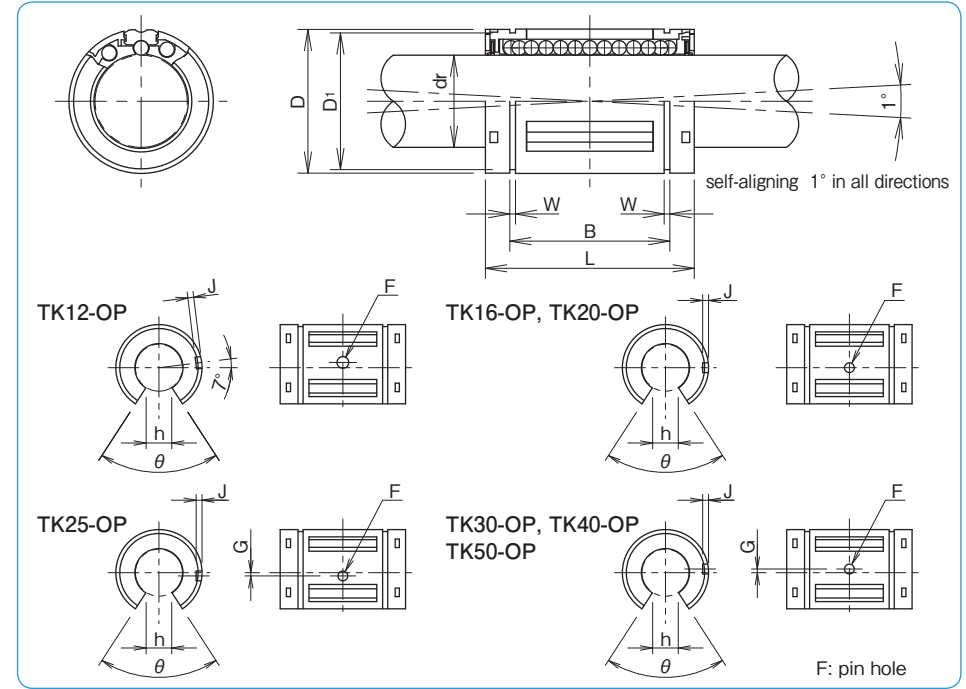


※For anti-corrosion the load plates are electroless nickel plated with stainless steel balls.

closed type		part number		open type		major dimensions				
	number of ball circuits	mass g		number of ball circuits	mass g	dr* mm	tolerance μm	D mm	L mm	tolerance mm
TK 8	4	7.3	—	—	—	8	+ 8	16	25	±0.2
TK 10	5	14	—	—	—	10	0	19	29	
TK 12	5	21	TK 12-OP	4	17	12	+ 9	22	32	
TK 16	5	43	TK 16-OP	4	35	16	- 1	26	36	
TK 20	6	58	TK 20-OP	5	48	20	+11	32	45	
TK 25	6	123	TK 25-OP	5	103	25	- 1	40	58	
TK 30	6	216	TK 30-OP	5	177	30	+13	47	68	
TK 40	6	333	TK 40-OP	5	275	40	- 2	62	80	
TK 50	6	618	TK 50-OP	5	520	50		75	100	

\* Based on nominal housing bore

\*\* One-sided seal is also available. Please contact NB for details.

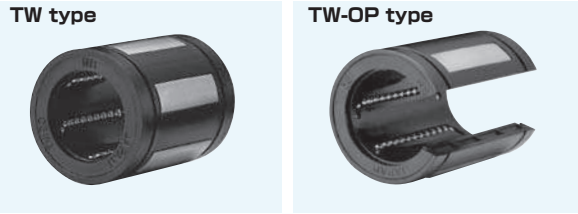


mm	B tolerance mm	W mm	D <sub>1</sub> mm	h mm	θ	open type			basic load rating		shaft diameter mm	
						F <sup>H11</sup> mm	G mm	J mm	dynamic C N	static Co N		
16.5	0	1.1	15.2	—	—	—	—	—	423	534	8	
22.0		1.3	18	—	—	—	—	—	750	935	10	
22.9		-0.2	1.3	21	6.5	66°	3	—	0.7	1,020	1,290	12
24.9			1.3	24.9	9	68°		—	1.0	1,250	1,550	16
31.5	0	1.6	30.3	9	55°	—		1.0	2,090	2,630	20	
44.1		1.85	37.5	11.5	57°	1.5		1.5	3,780	4,720	25	
52.1		-0.3	1.85	44.5	14	57°		2	1.7	5,470	6,810	30
60.6			2.15	59	19.5	56°		1.5	2.4	6,590	8,230	40
77.6		2.65	72	22.5	54°	5		2.5	2.7	10,800	13,500	50

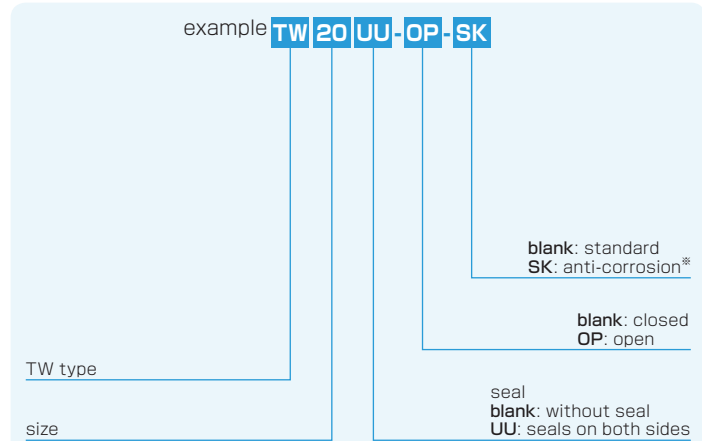
1N≒0.102kgf

# TW TYPE

– TOPBALL Inch Type –



## part number structure



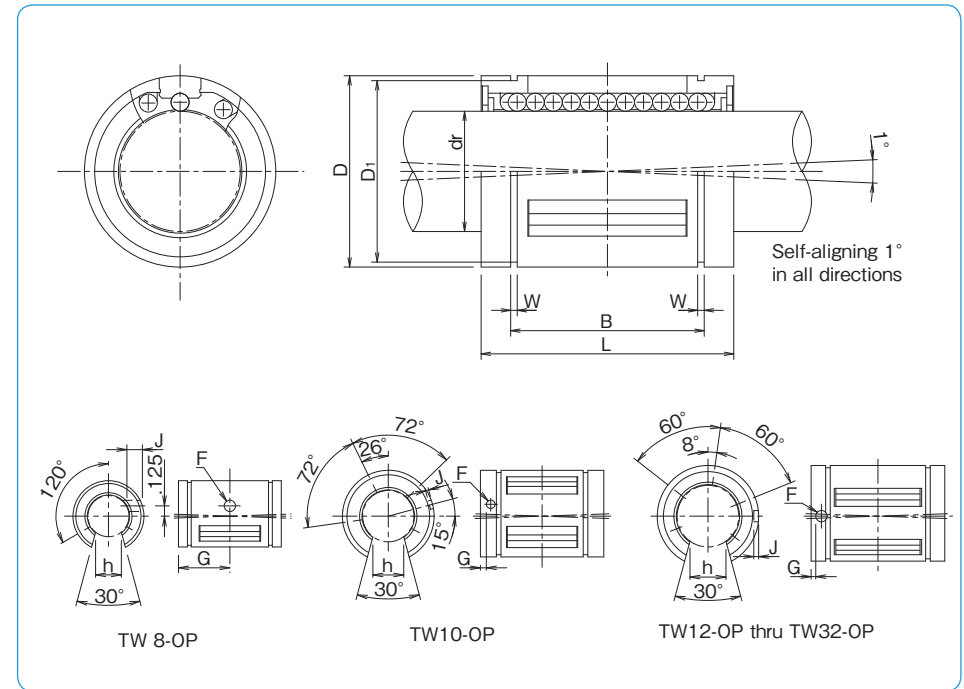
※For anti-corrosion the load plates are electroless nickel plated with stainless steel balls.

closed type		part number			open type		major dimensions				
	number of ball circuits	mass lbs		number of ball circuits	mass lbs	inch	dr* tolerance inch	D inch	L inch	tolerance inch	
TW 3	4	.004	—	—	—	.1875	0	.3750	.562	±.008	
TW 4	4	.009	—	—	—	.2500		.5000	.750	0	
TW 6	4	.014	—	—	—	.3750		.6250	.875	-.015	
TW 8	4	.043	TW 8-OP	3	.033	.5000		.8750	1.250		
TW 10	5	.103	TW 10-OP	4	.083	.6250		1.1250	1.500	0	
TW 12	6	.123	TW 12-OP	5	.102	.7500		1.2500	1.625	-.020	
TW 16	6	.265	TW 16-OP	5	.220	1.0000	1.5625	2.250			
TW 20	6	.485	TW 20-OP	5	.419	1.2500	0	2.0000	2.625	0/- .025	
TW 24	6	.750	TW 24-OP	5	.639	1.5000	-.0006	2.3750	3.000	0/- .030	
TW 32	6	1.411	TW 32-OP	5	1.168	2.0000	0/- .0008	3.0000	4.000	0/- .040	

\* Based on nominal housing bore

\*\* Seals are not available on TW3.

\*\*\* One-sided seal is also available. Please contact NB for details.



B	W	D <sub>1</sub>	h	F	G	J	basic load rating dynamic C	static Co	nominal shaft diameter	
inch	inch	inch	inch	inch	inch	inch	lbf	lbf	inch	
—	—	—	—	—	—	—	35	47	3/16	
.515	0	.0390	.4687	—	—	—	60	80	1/4	
.703	-.015	.0390	.5880	—	—	—	95	120	3/8	
1.032	0	.0459	.8209	.313	.136	.6250	through	230	290	1/2
1.112	0	.0559	1.0590	.375	.105	.1250	.0390	400	500	5/8
1.272	-.020	.0559	1.1760	.438	.136	.1250	.0590	470	590	3/4
1.886	0	.0679	1.4687	.563	.136	.1250	.0470	850	1,060	1
2.011	0/- .025	.0679	1.8859	.625	.201	.1875	.0900	1,230	1,530	1-1/4
2.422	0/- .030	.0859	2.2389	.750	.201	.1875	.0900	1,480	1,850	1-1/2
3.206	0/- .040	.1029	2.8379	1.000	.265	.3125	through	2,430	3,040	2

1inch=25.4mm

1lbs≐0.454kg

1lbf≐4.448N