

LINEAR BEARINGS TYPE RSDE



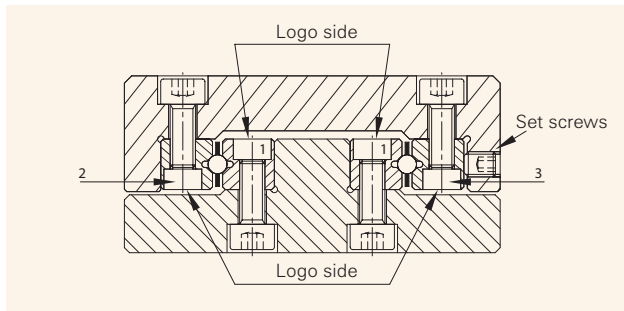
ASSEMBLY PROCEDURE

PRIOR TO ASSEMBLY

PM linear bearings are precision components; they have to be handled with meticulous care. To achieve a perfect linear bearing, it is necessary to respect the following guidelines:

- When handling the components. Damage on the rail surface will impact the running performance and operational lifetime
- Prevent contact with any foreign materials when mounting the rails
- During assembly, ensure that all linear bearing components have the same temperature
- For uniform tightening of the bolts the use of a torque screw driver is recommended. Various models are available.

ASSEMBLY LINEAR BEARINGS



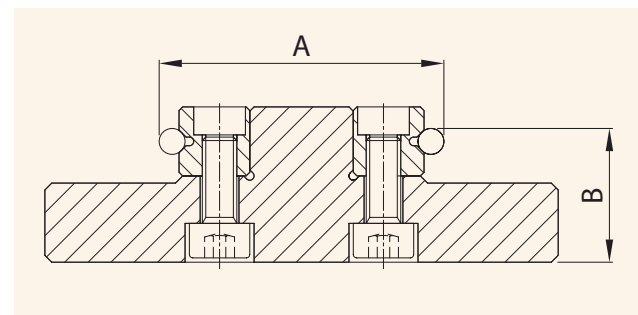
For satisfactory installation of all types of linear bearings in this catalogue, it is necessary to consider the following points:

- 1) To determine the location of fixing holes in the support structure (slide base) the holes in the rails should be taken as a reference and "copied" onto the support structure. This is highly desirable as the original pitch of individual holes may have altered during hardening by as much as 0.4 mm. To compensate this, special type GD or GDN attachment screws can be supplied. The dimensions of these screws are listed in the tables at the end of each chapter.
- 2) Carefully de-burr and clean all elements, to ensure a flat surface and a perfect fit of the rails.
- 3) Now, as a required first step, to fasten the inner rail pair (marked as 1 in figure above) the base and reference face 1 of the linear bearing rails should be lightly oiled before they are clamped against the mounting and reference shoulder. Subsequently,

they can be fastened by starting from one end and working towards the opposite end.

- 4) Parallelism of the V-groove of the rails (A and B) should be checked to ensure they don't exceed the tolerance of the linear bearings (page 14). After these steps have been followed, the slide element is ready for assembly.

Parallelism of rails V-groove: ΔA and ΔB



- 4.1) The fixed bearing rail (2) should be mounted as described under step 3 above, but care should be taken not to tighten the adjustable rail (marked as 3 in figure on the left side) too much, so as to leave a gap between the V-grooves for the insertion of ball cages, roller cages or needle cages.
- 5) If any end stop screws are present, remove them now.
- 6) Carefully insert the cages. When placed in their exact position, lightly secure the adjustable rail until the screws are finger-tight.
- 7) Fit the end screws or end pieces.
- 8) The linear bearing set is now ready to be backlash free-adjusted using the lateral preload set screws (page 18, Preload Settings). The amount of preload is given in the tables at page 21.
- 9) Secure the attachment screws on the adjusting rail.
- 10) When assembly is complete, the linear bearings must be checked for absence of play and inspected for running quality.



TABLES

RECOMMENDED PRELOAD SETTINGS

Table 1 Linear bearings type RSD with roller cages

Roller size (mm)	Pitch cage (mm)	Set screw	Pitch* (mm)	Preload (Ncm)
1.5	3	M2.5	10	0.75
2	4	M3	15	1.50
3	5	M5	25	4.50
4	7	M5	40	11.50
6	9	M6	100	18.50
9	14	M8	100	105.50
12	18	M10	100	176.50
15	20	M12	100	370.00

Table 2 Linear bearings type RSD with ball cages

Roller size (mm)	Pitch cage (mm)	Set screw	Pitch* (mm)	Preload (Ncm)
1.5	3	M2.5	10	0.20
2	4	M3	15	0.40
3	5	M5	25	1.10
4	7	M5	40	2.70
6	9	M6	50	4.00
9	14	M8	100	11.70
12	18	M10	100	25.00
15	20	M12	100	34.50

Table 3 Linear bearings type RSDE with roller cages

Roller size (mm)	Pitch cage (mm)	Set screw	Pitch* (mm)	Preload (Ncm)
3	3.3	M5	25	16
4	4.4	M5	40	41
6	6.6	M6	50	86
9	On request			

Table 4 Linear bearings type RNG with roller cages

Roller size (mm)	Pitch cage (mm)	Set screw	Pitch* (mm)	Preload (Ncm)
4	4.4	M3	25	14
6	6.6	M4	25	25

Table 5 Linear bearings type N/O and M/V with needle cages

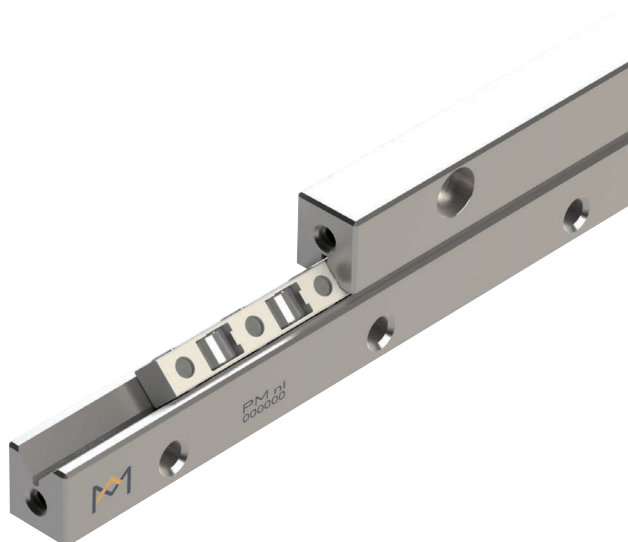
Roller size (mm)	Pitch cage (mm)	Set screw	Pitch* (mm)	Preload (Ncm)
2	4.5	M6	50	1.05
2	4.5	M8	100	1.30
2.5	5	M8	100	2.70
2.5	5.5	M8	100	2.90
3	6	M12	100	5.70
3.5	7	M14	100	7.70

RECOMMENDED TIGHTENING TORQUE FOR ATTACHMENT SCREWS

Table 6 Tightening torque strength grade 12.9

Max. tightening torques (Nm)		
Size	Tightening Torque DIN 912	Attachment screws type GD and GDN
M2	0.60	0.48
M3	2.00	1.60
M4	4.90	3.92
M5	9.60	7.68
M6	17.00	13.60
M8	41.00	19.20
M10	79.00	38.40
M12	140.00	66.40
M14	220.00	105.60

*pitch between the preload setscrews



Our linear bearings type RSDE are a next generation development of the RSD type. The deeper V-groove in combination with uniquely designed cylindrical rollers and cages offer higher load ratings and stiffness without changing the boundary dimensions of the rails. RSDE rails are used mostly in highly dynamic applications requiring high speed, high running accuracy and outstanding quality.

STRUCTURE AND FEATURES

The set consists of two pairs of linear bearings; one pair consists of two similar 90° V-groove, through hardened and precision ground rails, equipped with a crossed roller cage in between (KRE cage: rollers retained). The rails come with countersunk attachment holes, according to standard configuration.

Key features are:

- Load capacity approx. 3 times that of an RSD rails
- Stiffness increases by a factor 2, owing to the running surface's larger contact area (approx. 80% for a type RSDE, compared to 35% for conventional types)
- The design, with space between rails reduced to a minimum, prevents dust and dirt from entering the interior of the rails
- Designed for higher speeds and accelerations, with optional Anti Cage Creep solution

Roller cages are available in POM and PEEK material.

Rail ends have threaded holes compatible with type GB end pieces.

For assembly of the rails, special type GD screws are available to order separately.

Anti cage creep available on request, see page 88 - 91.

ORDER NOTES

One set of linear bearings RSDE consists of:
4 pcs. rails (=2 pairs) RSDE, 2 pcs. cages KRE and 8 pcs. end pieces with type GB screws.

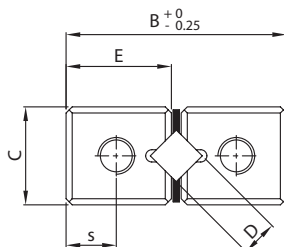
Please specify the following in your order note:

- Quantity and type of rails needed
- Quantity, type and length of cages or max. stroke
- Direction of movement (eg: horizontal, vertical or in between)
- Quantity and type of end pieces needed

Example:

To order one linear bearing set of 125 mm length, size 3 mm for a 75 mm stroke in standard quality please specify as follows:

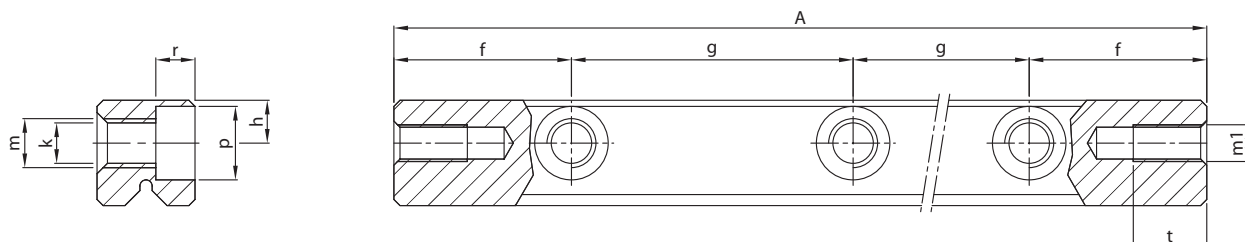
- 4 pcs. Rails type RSDE-3125
- 2 pcs. Roller cages type R3x26KRE
- 8 pcs. End pieces type GB-3



Rail type		Main dimensions					Mounting holes					
Standard	Stainless steel	A	B	C	E	D	f	g	h	k	m	p
RSDE-3050	RSDE-3050-SS	50	18	8	8.6	3	12.5	1x25	3.5 ± 0.2	3.2	M4	6
RSDE-3075	RSDE-3075-SS	75						2x25				
RSDE-3100	RSDE-3100-SS	100						3x25				
RSDE-3125	RSDE-3125-SS	125						4x25				
RSDE-3150	RSDE-3150-SS	150						5x25				
RSDE-3175	RSDE-3175-SS	175						6x25				
RSDE-3200	RSDE-3200-SS	200						7x25				
RSDE-3225	RSDE-3225-SS	225						8x25				
RSDE-3250	RSDE-3250-SS	250						9x25				
RSDE-3275	RSDE-3275-SS	275						10x25				
RSDE-3300	RSDE-3300-SS	300	22	11	10.6	4	20	11x25	4.5 ± 0.2	4.3	M5	7.5
RSDE-3350	RSDE-3350-SS	350						13x25				
RSDE-4080	RSDE-4080-SS	80						1x40				
RSDE-4120	RSDE-4120-SS	120						2x40				
RSDE-4160	RSDE-4160-SS	160						3x40				
RSDE-4200	RSDE-4200-SS	200						4x40				
RSDE-4240	RSDE-4240-SS	240						5x40				
RSDE-4280	RSDE-4280-SS	280						6x40				
RSDE-4320	RSDE-4320-SS	320						7x40				
RSDE-4360	RSDE-4360-SS	360						8x40				
RSDE-4400	RSDE-4400-SS	400						9x40				
RSDE-4440	RSDE-4440-SS	440						10x40				
RSDE-4480	RSDE-4480-SS	480						11x40				

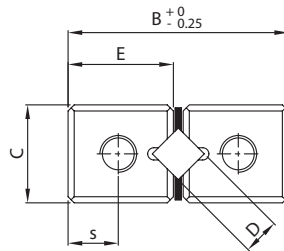
Bold = Short lead time item

Regular = Long lead time item - please ask us about prices and lead times



r	End holes			Weight (g)	Type	Accessories
	m1	s	t			
3.2	M3	4.1	5.5	22	RSDE-3050	Cages: KRE End pieces: GB Attachment screws: GD-3
				34	RSDE-3075	
				46	RSDE-3100	
				58	RSDE-3125	
				70	RSDE-3150	
				82	RSDE-3175	
				94	RSDE-3200	
				106	RSDE-3225	
				118	RSDE-3250	
				130	RSDE-3275	
				142	RSDE-3300	
				166	RSDE-3350	
4.1	M3	5	7	65	RSDE-4080	Cages: KRE, KREV End pieces: GB Attachment screws: GD-4
				98	RSDE-4120	
				131	RSDE-4160	
				164	RSDE-4200	
				197	RSDE-4240	
				230	RSDE-4280	
				263	RSDE-4320	
				296	RSDE-4360	
				329	RSDE-4400	
				362	RSDE-4440	
				395	RSDE-4480	

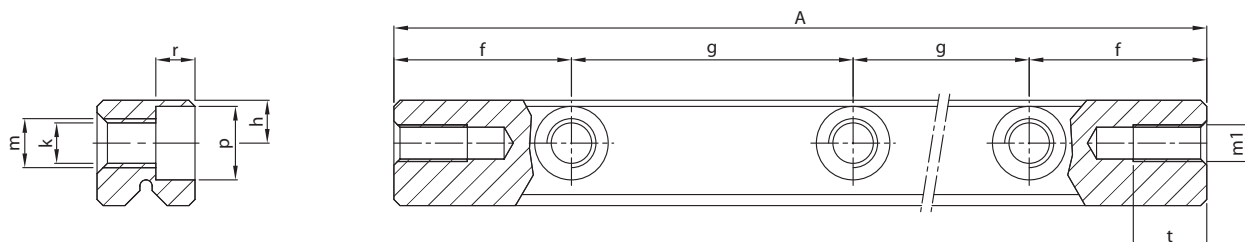
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Rail type		Main dimensions					Mounting holes					
Standard	Stainless steel	A	B	C	E	D	f	g	h	k	m	p
RSDE-6100	RSDE-6100-SS	100						1x50				
RSDE-6150	RSDE-6150-SS	150						2x50				
RSDE-6200	RSDE-6200-SS	200						3x50				
RSDE-6250	RSDE-6250-SS	250						4x50				
RSDE-6300	RSDE-6300-SS	300						5x50				
RSDE-6350	RSDE-6350-SS	350						6x50				
RSDE-6400	RSDE-6400-SS	400						7x50				
RSDE-6450	RSDE-6450-SS	450	31	15	14.9	6	25	8x50	6 \pm 0.2	5.2	M6	9.5
RSDE-6500	RSDE-6500-SS	500						9x50				
RSDE-6600	RSDE-6600-SS	600						11x50				
RSDE-6700	RSDE-6700-SS	700						13x50				
RSDE-6800	RSDE-6800-SS	800						15x50				
RSDE-6900	RSDE-6900-SS	900						17x50				
RSDE-61000	RSDE-61000-SS	1000						19x50				
RSDE-61100	RSDE-61100-SS	1100						21x50				
RSDE-61200	RSDE-61200-SS	1200						23x50				
RSDE-9100	RSDE-9100-SS	100					25	1x50				
RSDE-9200	RSDE-9200-SS	200						1x100				
RSDE-9300	RSDE-9300-SS	300						2x100				
RSDE-9400	RSDE-9400-SS	400						3x100				
RSDE-9500	RSDE-9500-SS	500						4x100				
RSDE-9600	RSDE-9600-SS	600	44	22	21.3	9	50	5x100	9 \pm 0.2	6.8	M8	11
RSDE-9700	RSDE-9700-SS	700						6x100				
RSDE-9800	RSDE-9800-SS	800						7x100				
RSDE-9900	RSDE-9900-SS	900						8x100				
RSDE-91000	RSDE-91000-SS	1000						9x100				
RSDE-91100	RSDE-91100-SS	1100						10x100				
RSDE-91200	RSDE-91200-SS	1200						11x100				

Bold = Short lead time item

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r	End holes			Weight (g)	Type	Accessories
	m1	s	t			
5.2	M5	7	8.5	147	RSDE-6100	Cages: KRE, KREV End pieces: GB Attachment screws: GD-6
				219	RSDE-6150	
				293	RSDE-6200	
				365	RSDE-6250	
				439	RSDE-6300	
				512	RSDE-6350	
				585	RSDE-6400	
				661	RSDE-6450	
				731	RSDE-6500	
				876	RSDE-6600	
				1021	RSDE-6700	
				1165	RSDE-6800	
				1312	RSDE-6900	
				1457	RSDE-61000	
				1604	RSDE-61100	
				1752	RSDE-61200	
6.2	M6	9.9	10	315	RSDE-9100	Cages: On request End pieces: GA Attachment screws: GD-9
				630	RSDE-9200	
				945	RSDE-9300	
				1260	RSDE-9400	
				1575	RSDE-9500	
				1890	RSDE-9600	
				2205	RSDE-9700	
				2520	RSDE-9800	
				2835	RSDE-9900	
				3150	RSDE-91000	
				3466	RSDE-91100	
				3780	RSDE-91200	

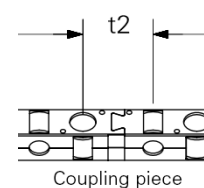
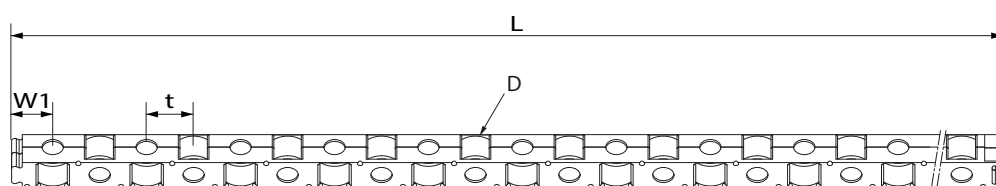
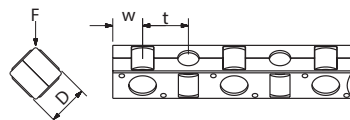
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ACCESSORIES

FOR RAILS TYPE RSDE

Roller cage type KRE and KREV size 3, 4 and 6 mm

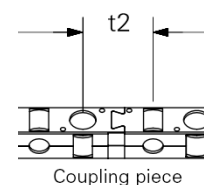
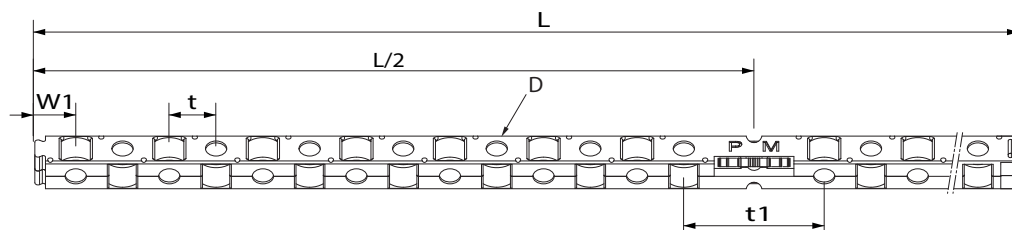
- Snap-on cage, rollers retained
- Suitable for horizontal and vertical application
- KRE material POM
- KREV material PEEK (suitable for UHV application in size 4 and 6)



Roller cage type KRE and KREV size 3, 4 and 6 mm

- Snap-on cage, rollers retained
- Suitable for horizontal and vertical application
- KRE material POM
- KREV material PEEK (suitable for UHV application in size 4 and 6)

Roller cage with anti cage creep technology KRE-ACC

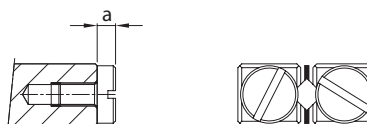


Cage type		Main dimensions							Accessories	
Standard	Stainless steel	D	t	t1	t2	w	w1	L	Suitable for rail	End pieces
R3xKRE	R3xKRE-SS	3	3.3	-	5.1	2.2	2.95	101.6	RSDE- 3	GB
R3xKRE-ACC	R3xKRE-ACC-SS	3	3.3	10.9	5.1	2.2	2.95	101.6		GB
R4xKRE	R4xKRE-SS	4	4.4	13.2	6.7	2.8	3.85	135.3	RSDE- 4	GB
R4xKRE-ACC	R4xKRE-ACC-SS	4	4.4	13.2	6.7	2.8	3.85	135.3		GB
R4xKREV	R4xKREV-SS	4	4.5	13.2	6.7	2.8	on request			GB
R4xKREV-ACC	R4xKREV-ACC-SS	4	4.5	13.2	6.7	2.8				GB
R6xKRE	R6xKRE-SS	6	6.6	19.8	10.6	4.3	6.3	204	RSDE- 6	GB
R6xKRE-ACC	R6xKRE-ACC-SS	6	6.6	19.8	10.6	4.3	6.3	204		GB
R6xKREV	R6xKREV-SS	6	6.7	19.8	10.6	4.3	6.3	204		GB
R6xKREV-ACC	R6xKREV-ACC-SS	6	6.7	19.8	10.6	4.3	6.3	204		GB
R9x...	R9x...-SS	on request							RSDE-9	GB
R9x...-ACC	R9x...-ACC-SS									GB

F = For load direction please refer to picture provided

End screws type GA, size 3 - 9 mm

- For horizontal and vertical application
- For cages type KRE, KREV
- For rails type RSDE



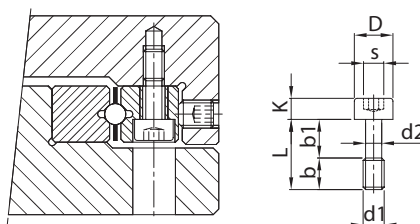
Dimensions	Size			
	3	4	6	9
a	2.4	2.7	3.7	4.2

Order template (adjust as needed): 8 pcs. End screws type GA-6

Stainless steel: 8 pcs. End screws type GA-6-SS

Attachment screws type GD, size 3 - 9 mm

- For compensation of pitch distances between mounting holes
- Recommended for attaching the preload rail
- For rails type RSDE



Type	Size								Max. tightening torque (Nm) ¹
	L	b	b1	D	d1	d2	K	s	
GD-3	12	5	7	5	M3	2.3	3	2.5	1.60
GD-4	16	7	9	6.5	M4	3	4	3	3.92
GD-6	20	8	12	8	M5	3.9	5	4	7.68
GD-9	30	12	18	8.5	M6	4.6	6	5	13.60

¹ Strength class 12.9

PM RESEARCH AND PRODUCTION FACILITIES



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