

5. Peeled ballscrews

5.1 Properties

In terms of quality, peeled ballscrews from HIWIN fall between rolled and ground ballscrews and can therefore be used for numerous transport or positioning applications. On request, we are happy to produce a lead measurement report for them. A number of series are available for peeled ballscrews, as both single and double nuts. Customised complete ballscrews can be produced with short lead times. Complete bearing units combined with standardised shaft ends minimise the amount of design work involved.

5.2 Tolerance classes

Table 5.1 shows the tolerance classes of peeled ballscrews. The lead accuracy is defined using the deviation from nominal path over any 300 mm section of the entire length.

Table 5.1 **Tolerance classes of peeled ballscrews**

Path deviation	Tolerance class	
	T5	T7
v_{300p}	0.023	0.052

Unit: mm

Table 5.2 **Overview of available peeled ballscrews**

Nominal diameter	Lead			Max. shaft length ¹⁾	Max. thread length
	5	10	20		
16	○×			6,000	4,700
20	○×			6,000	5,100
25	○×	○×		6,000	5,100
32	○×	○×	○×	6,000	5,100
40	○×	○×	○×	6,000	5,100
50	○×	○×	○×	6,000	5,100
63		○×	○×	6,000	5,100
80		○×	○×	6,000	5,100

Unit: mm

Larger lengths are available on request

○ Right-hand and left-hand thread

× Preferred type for right-hand thread with fast delivery

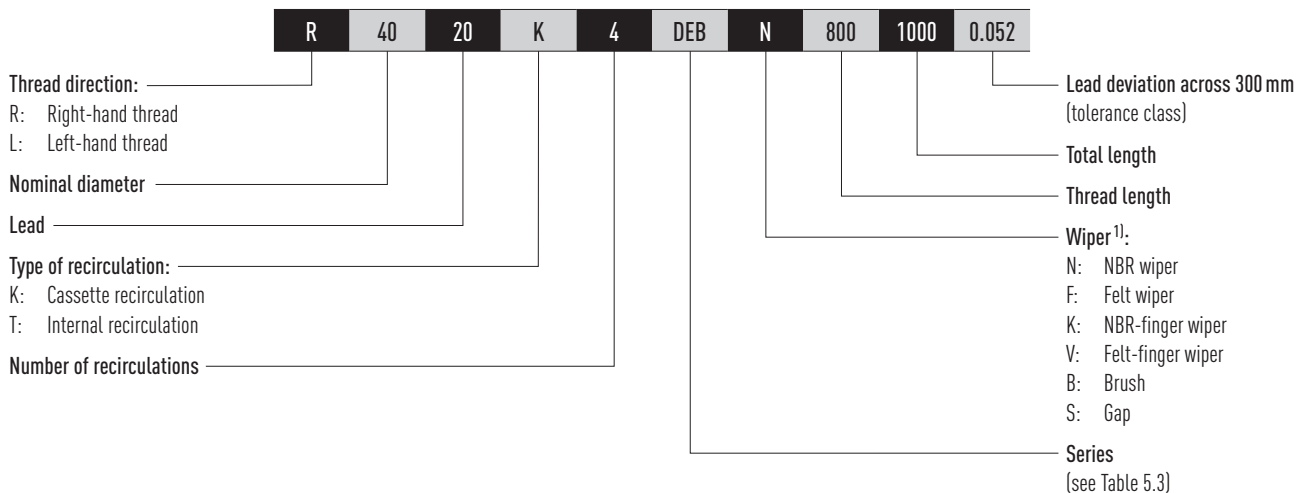
¹⁾ The critical speed and max. buckling force should be taken into account for long shafts.

Ballscrews

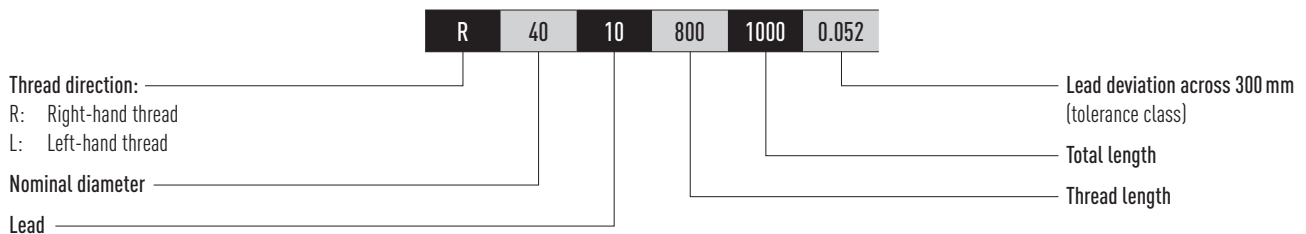
Peeled ballscrews

5.3 HIWIN order code for peeled ballscrews

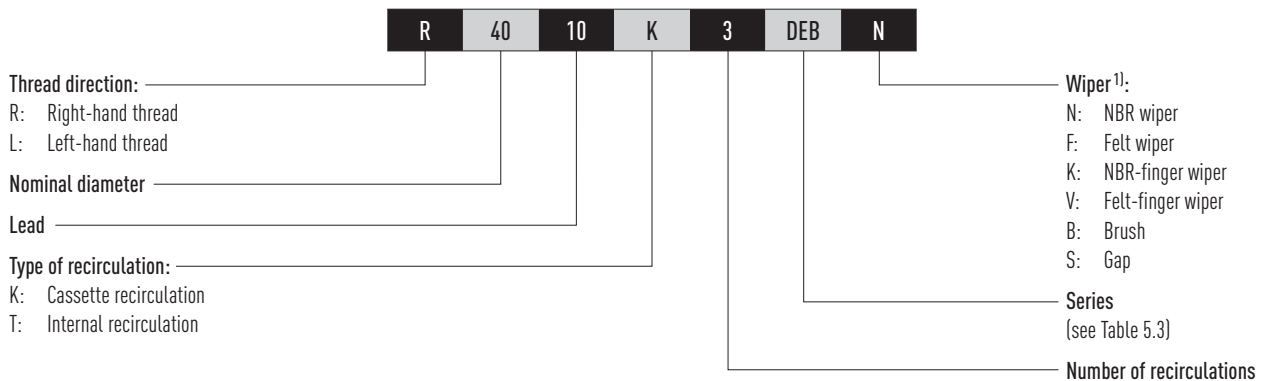
In order to clearly identify the ballscrew, information about the ballscrew shaft and nut is needed..



Order code for ballscrew shaft without the nut



Order code for ballscrew nut without the shaft



¹⁾ The wiper used is shown in the following tables for the individual series. For the DEB-x and DDB-x series, you can choose between N, K, F or V wipers, depending on the thread pitch.

Table 5.3 Overview of series	
Series	Description
DEB-x	Flange single nut with variable wiper type
DDB-x	Flange double nut with variable wiper type
ZE	Cylindrical single nut
SE	Cylindrical single nut with screw-in thread
SEM	Flange single nut with integrated locking nut ²⁾

²⁾ Simply using a safety nut does not provide sufficient protection against a load being lowered unintentionally. The safety guidelines valid for the application must be observed. The safety nut it is not a safety component according to the Machinery Directive.

5.4 Nuts for peeled ballscrews

5.4.1 Flange single nut DEB-x

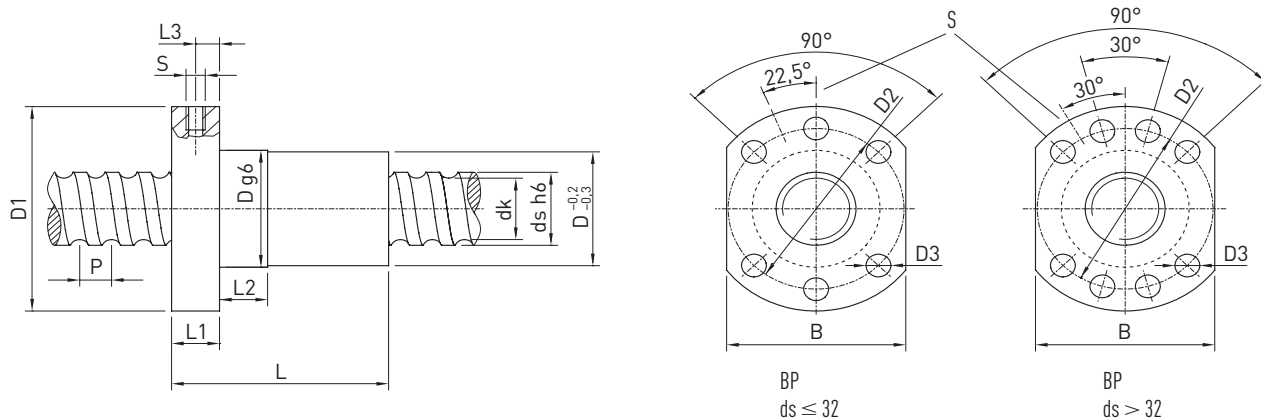


Fig. 5.1 Flange single nut DEB-x with Wiper N and F

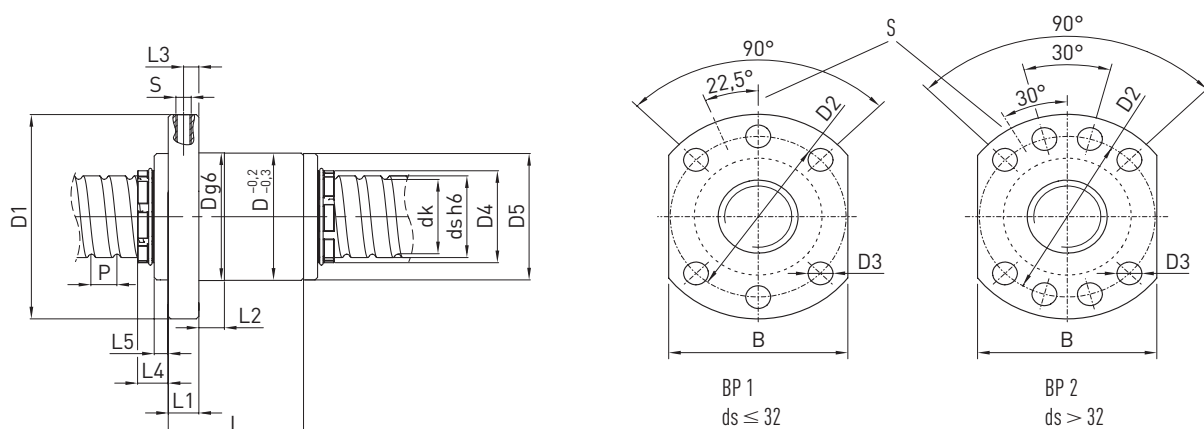


Fig. 5.2 Flange single nut DEB-x with Wiper K and V

BP Hole pattern

Table 5.4 Nut dimensions (wiper variants N and F or K and V)

Type	ds	P	D	D1	D2	D3	L	L1	L2	L3	L4 ¹⁾	L5 ¹⁾	Lubrication hole S	B	dk	Dynamic load rating C _{dyn} [N]	Static load rating C ₀ [N]	Max. axial play [mm]	Mass [kg/piece]	N/K	F/V
R16-05K4-DEB-x ²⁾	15	5	28	48	38	5.5	47	10	10	5.0	14	8	M6	40	12.5	13,800	16,400	0.02	0.15	x	x
R16-10K3-DEB-x	15	10	28	48	38	5.5	53	10	10	5.0	14	8	M6	40	12.9	10,800	12,800	0.02	0.17	x	x
R16-16K2-DEB-x	15	16	28	48	38	5.5	55	10	10	5.0	14	8	M6	40	12.9	7,100	8,300	0.02	0.18	x	
R20-05K4-DEB-x ²⁾	20	5	36	58	47	6.6	48	10	10	5.0	10.5	5	M6	44	17.3	17,300	23,300	0.02	0.29	x	x
R20-10K3-DEB-x	20	10	36	58	47	6.6	55	10	10	5.0	10.5	5	M6	44	17.3	13,100	17,400	0.02	0.30	x	x
R20-20K2-DEB-x	20	20	36	58	47	6.6	65	10	10	5.0	12	6	M6	44	17.3	8,800	16,100	0.02	0.32	x	
R25-05K4-DEB-x ²⁾	25	5	40	62	51	6.6	53	10	10	5.0	11.5	6	M6	48	22.3	19,200	29,800	0.02	0.32	x	x
R25-10K4-DEB-x	25	10	40	62	51	6.6	70	10	10	5.0	12	6	M6	48	22.3	19,000	29,700	0.02	0.38	x	x
R25-25K2-DEB-x	25	25	40	62	51	6.6	79	10	10	5.0	12	6	M6	48	22.3	9,700	14,900	0.02	0.41	x	
R32-05K5-DEB-x ²⁾	32	5	50	80	65	9.0	53	12	10	6.0	12.5	6	M6	62	29.3	26,200	48,700	0.02	0.60	x	x

¹⁾ Only for wiper variants K and V

²⁾ Left-hand nut available ex warehouse (only for wiper variant N and F)

All dimensions stated without a unit are in mm

Ballscrews

Peeled ballscrews

Table 5.4 Nut dimensions (wiper variants N and F or K and V)

Type	ds	P	D	D1	D2	D3	L	L1	L2	L3	L4 ¹⁾	L5 ¹⁾	Lubri- cation hole S	B	dk	Dynamic load rating C _{dyn} [N]	Static load rating C ₀ [N]	Max. axial play [mm]	Mass [kg/piece]	N/ K	F/ V
R32-10K5-DEB-x ²⁾	32	10	50	80	65	9.0	83	14	20	7.0	11	6	M6	62	28.7	35,800	72,800	0.02	0.68	x	x
R32-10K5-DEBH-x	32	10	56	86	71	9.0	87	14	20	7.0	12	6	M6	65	26.9	65,600	108,800	0.02	0.75	x	x
R32-20K2-DEB-x	32	20	56	86	71	9.0	72	14	20	7.0	11	6	M6	65	26.9	27,800	43,000	0.02	0.75	x	
R40-05K5-DEB-x ²⁾	40	5	63	93	78	9.0	56	14	10	7.0	11	5	M8 × 1	70	37.3	28,700	61,700	0.02	0.90	x	x
R40-10K4-DEB-x ²⁾	38	10	63	93	78	9.0	81	14	20	7.0	11	5	M8 × 1	70	32.9	58,700	105,800	0.02	1.13	x	x
R40-20K2-DEB-x	38	20	63	93	78	9.0	79	14	20	7.0	12	5	M8 × 1	70	32.9	30,500	52,400	0.03	1.10	x	
R40-40K2-DEB-x	38	40	63	93	78	9.0	113	14	20	7.0	11	5	M8 × 1	70	32.9	30,100	53,300	0.04	1.60	x	
R50-05K5-DEB-x	50	5	75	110	93	11.0	58	16	10	8.0	12	6	M8 × 1	85	47.3	31,400	77,900	0.02	1.20	x	x
R50-10K5-DEB-x	50	10	75	110	93	11.0	93	16	20	8.0	12	6	M8 × 1	85	44.9	82,000	179,100	0.02	1.80	x	x
R50-20K3-DEB-x	50	20	75	110	93	11.0	101	16	20	8.0	12	6	M8 × 1	85	44.9	51,200	106,900	0.03	1.95	x	
R63-10K6-DEB-x	63	10	90	125	108	11.0	103	18	10	9.0	13	7	M8 × 1	95	57.9	105,700	271,500	0.04	2.90	x	x
R63-20T5-DEB-x	63	20	95	135	115	13.5	169	20	25	10.0	15	9	M8 × 1	100	55.5	150,200	315,400	0.04	4.10	x	
R63-20K6-DEBH-x	63	20	125	165	145	13.5	185	25	25	12.5	18	10	M8 × 1	130	53.2	295,900	723,500	0.04	9.50	x	
R80-10K6-DEB-x	80	10	105	145	125	13.5	105	20	12	10.0	14	6	M8 × 1	110	74.9	118,000	355,800	0.04	3.00	x	x
R80-20K5-DEB-x	80	20	125	165	145	13.5	157	25	25	12.5	17	9	M8 × 1	130	72.5	176,400	437,400	0.05	7.80	x	
R80-20K6-DEBH-x	78	20	135	175	155	13.5	175	25	25	12.5	19	11	M8 × 1	140	68.2	336,500	931,200	0.05	13.50	x	
R80-20K7-DEBH-x	78	20	135	175	155	13.5	195	25	25	12.5	19	11	M8 × 1	140	68.2	384,100	1,086,400	0.05	15.00	x	

¹⁾ Only for wiper variants K and V

²⁾ Left-hand nut available ex warehouse (only for wiper variant N and F)

All dimensions stated without a unit are in mm

- Reduced axial play on request
- Nuts with interchangeable dirt wipers
- For nut housing, see Section 8.4

Order example:

R	63	10	T6	DEB	N	3850	3972	0.052
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5.4.2 Flange double nut DDB-x

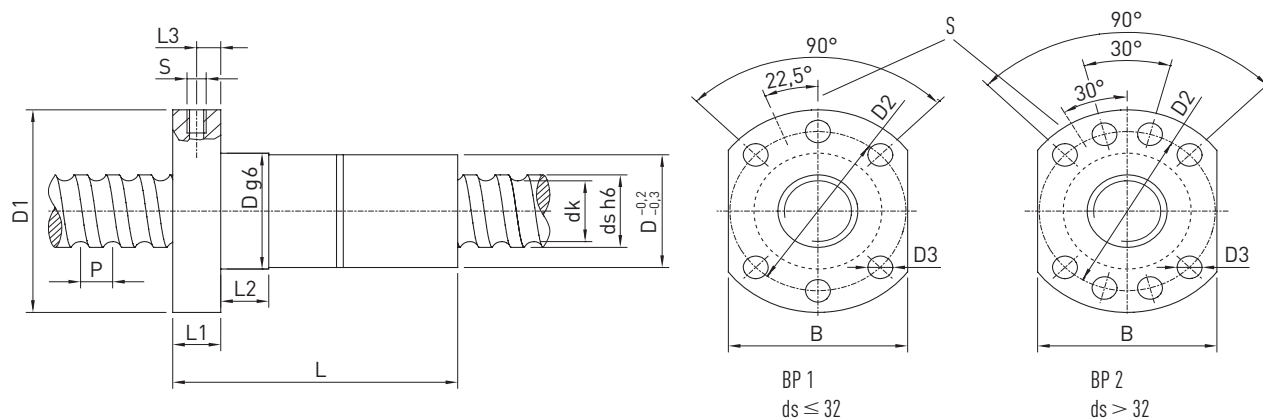


Fig. 5.3 Flange double nut DDB-x with Wiper N and F

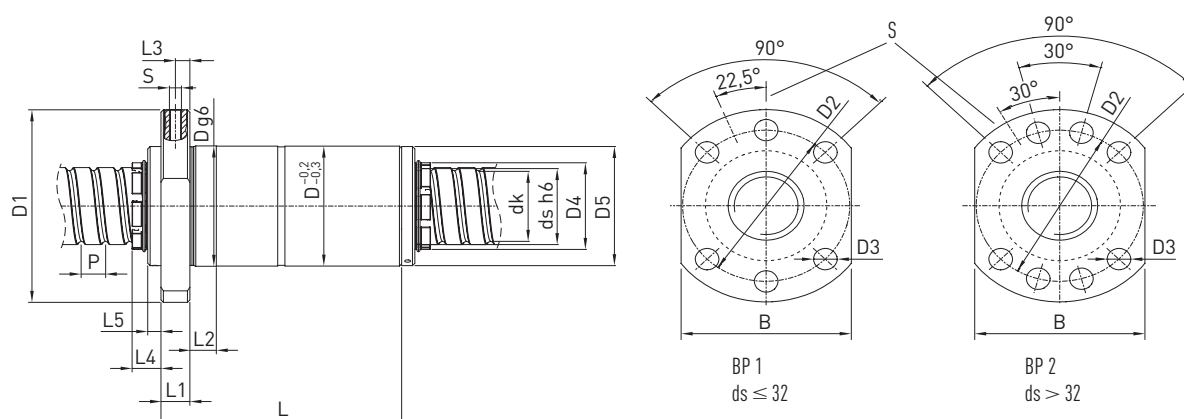


Fig. 5.4 Flange double nut DDB-x with Wiper K and V

BP Hole pattern

Table 5.5 Nut dimensions (wiper variants N and F or K and V)

Type	ds	P	D	D1	D2	D3	L	L1	L2	L3	L4 ¹⁾	L5 ¹⁾	Lubri- cation hole S	B	dk	Dynamic load rating C _{dyn} [N]	Static load rating C ₀ [N]	Mass [kg/piece]	N/ K	F/ V
R16-05K4-DDB-x	15	5	28	48	38	5.5	75	10	10	5	14	8	M6	40	12.5	13,800	16,400	0.3	x	x
R20-05K4-DDB-x	20	5	36	58	47	6.6	87	10	10	5	10.5	5	M6	44	17.3	17,300	23,300	0.5	x	x
R25-05K4-DDB-x	25	5	40	62	51	6.6	96	10	10	5	11.5	6	M6	48	22.3	19,200	29,800	0.68	x	x
R25-10K4-DDB-x	25	10	40	62	51	6.6	130	10	10	5	12	6	M6	48	22.3	19,000	29,700	0.7	x	x
R32-05K5-DDB-x	32	5	50	80	65	9.0	96	12	10	6	12.5	6	M6	62	29.3	26,200	48,700	1.2	x	x
R32-10K5-DDB-x	32	10	50	80	65	9.0	156	14	20	7	11	6	M6	62	28.7	35,800	72,800	1.3	x	x
R32-10K4-DDBH-x	32	10	56	86	71	9.0	144	14	20	7	12	6	M6	62	26.9	53,600	87,000	1.4	x	x
R32-20K2-DDB-x	32	20	56	86	71	9.0	134	14	20	7	11	6	M6	65	26.9	27,600	43,000	1.4	x	
R40-05K5-DDB-x	40	5	63	93	78	9.0	101	14	10	7	11	5	M8 × 1	70	37.3	28,700	61,700	1.7	x	x
R40-10K4-DDB-x	38	10	63	93	78	9.0	150	14	20	7	11	5	M8 × 1	70	32.9	58,700	105,800	1.9	x	x
R40-20K2-DDB-x	38	20	63	93	78	9.0	146	14	20	7	12	5	M8 × 1	70	32.9	30,500	52,400	2.0	x	
R50-05K5-DDB-x	50	5	75	110	93	11.0	103	16	10	8	12	6	M8 × 1	85	47.3	31,400	77,900	2.1	x	x
R50-10K4-DDB-x	50	10	75	110	93	11.0	153	16	20	8	12	6	M8 × 1	85	44.9	67,000	143,300	3.2	x	x
R50-20K3-DDB-x	50	20	75	110	93	11.0	189	16	20	8	12	6	M8 × 1	85	44.9	51,200	106,900	4.8	x	

¹⁾ Only for wiper variants K and V

All dimensions stated without a unit are in mm

Ballscrews

Peeled ballscrews

Type	ds	P	D	D1	D2	D3	L	L1	L2	L3	L4 ¹⁾	L5 ¹⁾	Lubri- cation hole S	B	dk	Dynamic load rating C _{dyn} [N]	Static load rating C ₀ [N]	Mass [kg/piece]	N/ K	F/ V
R63-10K6-DDB-x	63	10	90	125	108	11.0	193	18	16	9	13	7	M8 × 1	95	57.9	105,700	271,500	6.8	x	x
R63-20T4-DDB-x	63	20	95	135	115	13.5	289	20	25	10	15	9	M8 × 1	100	55.5	105,000	250,000	8.0	x	
R80-10K6-DDB-x	80	10	105	145	125	13.5	195	20	25	10	14	6	M8 × 1	110	74.9	118,000	355,800	6.0	x	x
R80-20K4-DDB-x	80	20	125	165	145	13.5	259	25	25	12.5	17	9	M8 × 1	130	72.5	144,300	349,900	14.0	x	

¹⁾ Only for wiper variants K and V

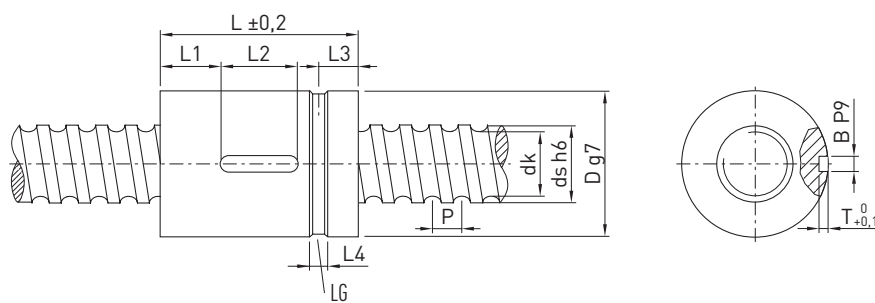
All dimensions stated without a unit are in mm

- Preloaded
- Nuts with dirt wipers
- Left-handed nuts on request
- For nut housing, see Section 8.4

Order example:

R	63	10	T6	DDB	N	3850	3972	0.052
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5.4.3 Cylindrical single nut ZE



L6 Groove for lubricant supply

Table 5.6 Nut dimensions

Type	ds	P	D	L	L1	L2	L3	L4	T	B	dk	Dynamic load rating C_{dyn} [N]	Static load rating C_0 [N]	Max. axial play [mm]	Mass [kg/piece]
R16-05T3-ZE-F ¹⁾	16	5	28	40	12.0	16	9	4	2.4	4	13.5	9,600	12,700	0.02	0.10
R20-05T4-ZE-F ¹⁾	20	5	36	51	15.0	20	10	4	2.4	4	17.5	13,900	21,800	0.02	0.23
R25-05T4-ZE-F ¹⁾	25	5	40	60	20.0	20	12	5	2.4	4	22.5	15,600	27,900	0.02	0.29
R25-10T3-ZE-F	25	10	48	65	22.0	20	15	5	2.4	4	21.0	24,100	36,200	0.02	0.50
R32-05T5-ZE-F ²⁾	32	5	48	60	20.0	20	12	5	2.4	4	29.5	20,700	43,900	0.02	0.38
R32-10T4-ZE-F	32	10	56	80	27.0	25	15	5	2.4	4	27.8	40,900	63,200	0.02	0.74
R32-20T2-ZE-B ²⁾	32	20	56	80	27.0	25	15	5	2.4	4	27.8	20,800	26,800	0.02	0.70
R40-05T5-ZE-F ¹⁾	40	5	56	68	24.0	20	15	6	2.4	4	37.5	22,500	54,600	0.02	0.44
R40-10T4-ZE-F ¹⁾	40	10	62	88	31.0	25	15	6	2.4	4	35.8	46,800	82,600	0.02	0.85
R40-20T2-ZE-B	40	20	62	88	31.0	25	15	6	2.4	4	35.8	24,300	36,400	0.03	0.88
R50-05T5-ZE-F	50	5	68	69	24.0	20	15	6	2.4	4	47.5	24,900	69,800	0.02	0.72
R50-10T4-ZE-F ²⁾	50	10	72	100	37.0	25	17	6	2.4	4	45.8	52,800	106,800	0.02	1.04
R50-20T3-ZE-B	50	20	72	114	44.0	25	17	6	2.4	4	45.8	40,000	76,200	0.03	1.10
R63-10T6-ZE-F	63	10	85	120	44.0	32	17	6	3.5	6	58.8	84,700	210,800	0.04	1.73
R63-20T4-ZE-S	63	20	95	135	52.0	32	17	6	3.5	6	55.4	124,000	250,000	0.04	3.80
R80-10T6-ZE-F	80	10	105	120	44.0	32	17	8	3.5	6	75.8	93,400	269,200	0.04	2.80
R80-20T4-ZE-S	80	20	125	150	52.0	45	17	8	3.5	6	72.4	144,000	322,000	0.05	7.80
R80-20T6-ZEH-S	78	20	130	182	68.5	45	19	8	4.0	8	68.2	286,200	510,000	0.05	11.05

¹⁾ Left-hand nut available short-term

²⁾ Left-hand nut available upon request

All dimensions stated without a unit are in mm

- Reduced axial play on request
- Nuts with dirt wipers

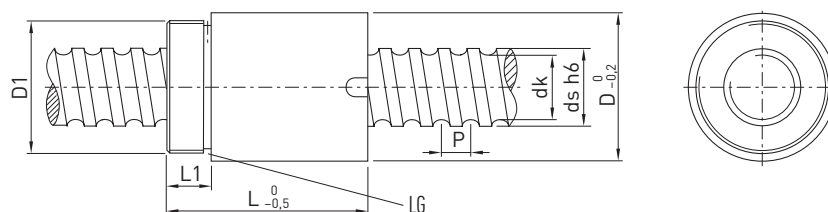
Order example:

R	16	05	T3	ZE	F	420	495	0.052
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Ballscrews

Peeled ballscrews

5.4.4 Cylindrical single nut with screw-in thread SE



LG Groove for lubricant supply

Table 5.7 Nut dimensions

Type	ds	P	D	D1	L	L1	dk	Dynamic load rating C_{dyn} [N]	Static load rating C_0 [N]	Max. axial play [mm]	Mass [kg/piece]
R16-05T3-SE-F ¹⁾	16	5	36	M30 × 1.5	42	12	13.5	9,600	12,700	0.02	0.45
R20-05T4-SE-F ¹⁾	20	5	40	M35 × 1.5	52	12	17.5	13,900	21,800	0.02	0.53
R25-05T4-SE-F ²⁾	25	5	45	M40 × 1.5	60	15	22.5	15,600	27,900	0.02	0.82
R25-10T3-SE-F ²⁾	25	10	48	M45 × 1.5	70	15	21.0	24,100	36,200	0.02	1.00
R32-05T5-SE-F ²⁾	32	5	52	M48 × 1.5	60	15	29.5	20,700	43,900	0.02	1.13
R32-10T3-SE-F ²⁾	32	10	56	M52 × 1.5	80	15	27.8	34,100	56,100	0.02	1.62
R32-20T2-SE-B	32	20	56	M52 × 1.5	80	15	27.8	20,800	26,800	0.02	1.44
R40-05T5-SE-F ¹⁾	40	5	65	M60 × 1.5	68	18	37.5	22,500	54,600	0.02	1.63
R40-10T4-SE-F ¹⁾	40	10	65	M60 × 1.5	88	18	35.8	46,800	82,600	0.02	1.75
R40-20T2-SE-B ²⁾	40	20	65	M60 × 1.5	88	18	35.8	24,300	36,400	0.03	1.75
R50-10T4-SE-F ¹⁾	50	10	80	M75 × 1.5	100	20	45.8	52,800	106,800	0.02	2.96
R50-20T3-SE-B	50	20	80	M75 × 1.5	114	20	45.8	40,000	76,200	0.03	3.15
R63-10T6-SE-F ²⁾	63	10	95	M85 × 2.0	120	20	58.8	84,700	210,800	0.04	4.37
R63-20T3-SE-S	63	20	95	M85 × 2.0	138	20	55.4	96,000	189,000	0.04	4.40

¹⁾ Left-hand nut available short-term

²⁾ Left-hand nut available upon request

All dimensions stated without a unit are in mm

- Reduced axial play on request
- Nuts with dirt wipers

Order example:

R	20	05	T4	SE	F	600	680	0.052
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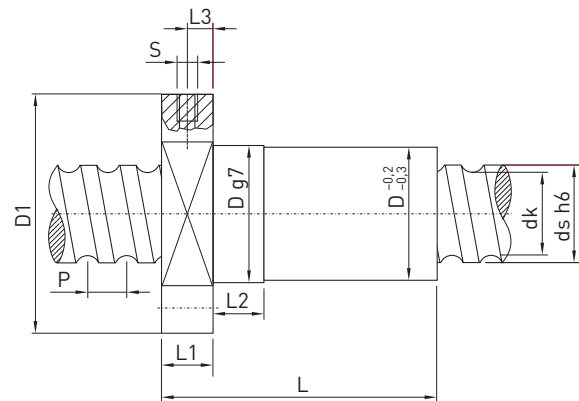
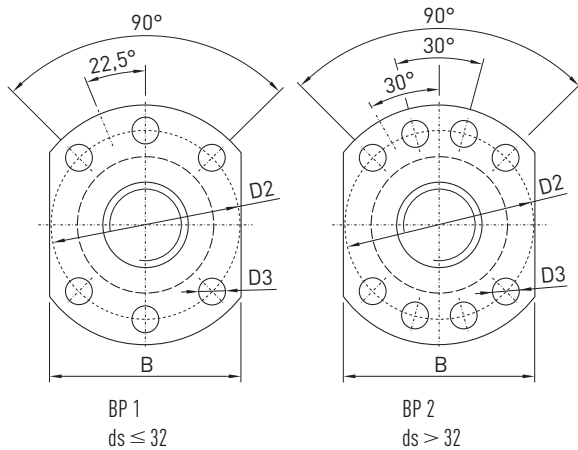
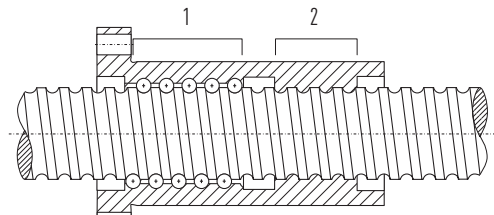
5.4.5 Safety nut SEM

The safety nut comprises a ball thread unit and safety unit. The safety nut basically works like a normal ballscrew nut. If the axial play is increased due to wear, ball failure or ball loss, the thread of the safety unit comes into contact with the ball thread. The nut cannot therefore break out. The normal function of the unit is guaranteed up to an axial play of 0.4 mm.

Areas of application:

- Lifting equipment
- Clamping fixtures
- Lifting platforms
- Elevators

- 1 Ballscrew unit
- 2 Safety unit



BP Hole pattern

Table 5.8 Safety nut dimensions

Type	ds	P	D	D1	D2	D3	L	L1	L2	L3	S	B	dk	Dynamic load rating C_{dyn} [N]	Static load rating C_0 [N]	Max. axial play [mm]	Mass [kg/piece]
R32-10T4-SEM-F	32	10	56	86	70	9.0	130	15	16	7.5	M6	66	27.8	40,900	63,200	0.02	1.55
R40-10T4-SEM-F	40	10	63	93	78	9.0	130	15	16	7.5	M8 × 1	70	35.8	46,800	82,500	0.02	1.69
R40-20T2-SEM-B	40	20	63	93	78	9.0	140	15	16	7.5	M8 × 1	70	35.8	24,300	36,400	0.03	1.82
R50-10T5-SEM-F	50	10	75	110	93	11.0	145	16	16	8.0	M8 × 1	85	45.8	63,900	133,300	0.02	2.40
R63-20T4-SEM-S	63	20	95	135	115	13.5	205	20	25	10.0	M8 × 1	100	55.4	124,000	250,000	0.04	5.90
R80-20T5-SEM-S	80	20	125	165	145	13.5	230	25	25	12.5	M8 × 1	130	72.4	174,500	398,000	0.05	12.10

All dimensions stated without a unit are in mm

Note:

Simply using a safety nut does not provide sufficient protection against a load being lowered unintentionally. The safety guidelines valid for the application must be observed. The safety nut it is not a safety component according to the Machinery Directive.