

## 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 nut shapes 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.

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

Unit: mm

Nominal diameter	Lead			Max. shaft length <sup>1)</sup>	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

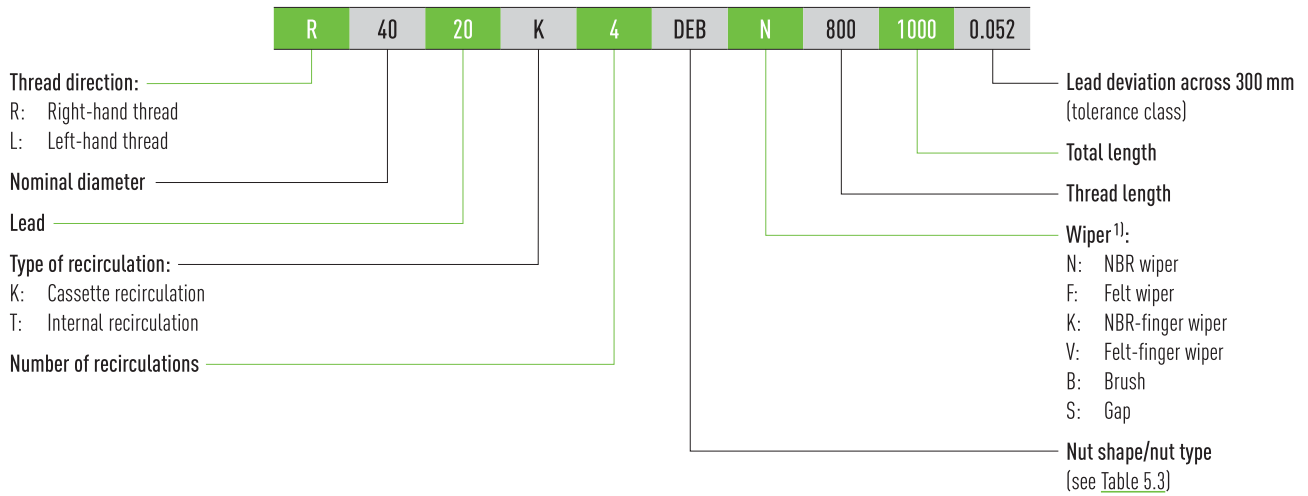
<sup>1)</sup> The critical speed and max. buckling force should be taken into account for long shafts.

# Ballscrews

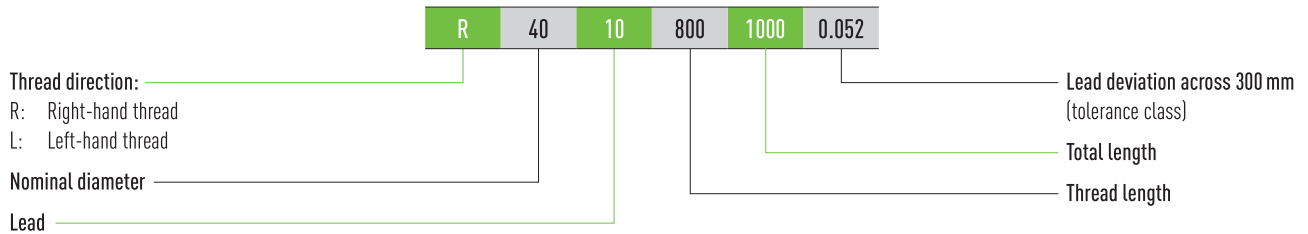
## Peeled ballscrews

### 5.3 HIWIN order code for peeled ballscrews

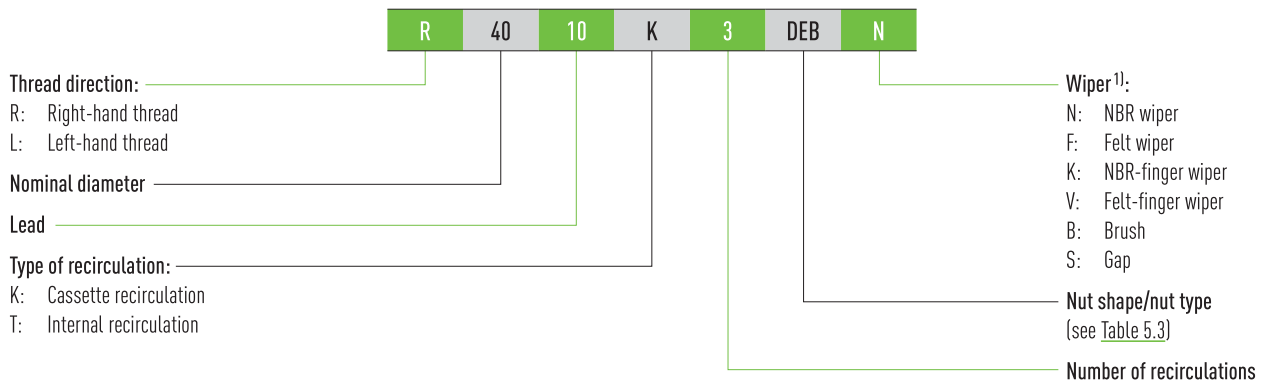
In order to clearly identify the ballscrew, information about the ballscrew shaft and nut is needed.



### Order code for ballscrew shaft without the nut



### Order code for ballscrew nut without the shaft



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

Nut designation	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 <sup>2)</sup>

<sup>2)</sup> 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

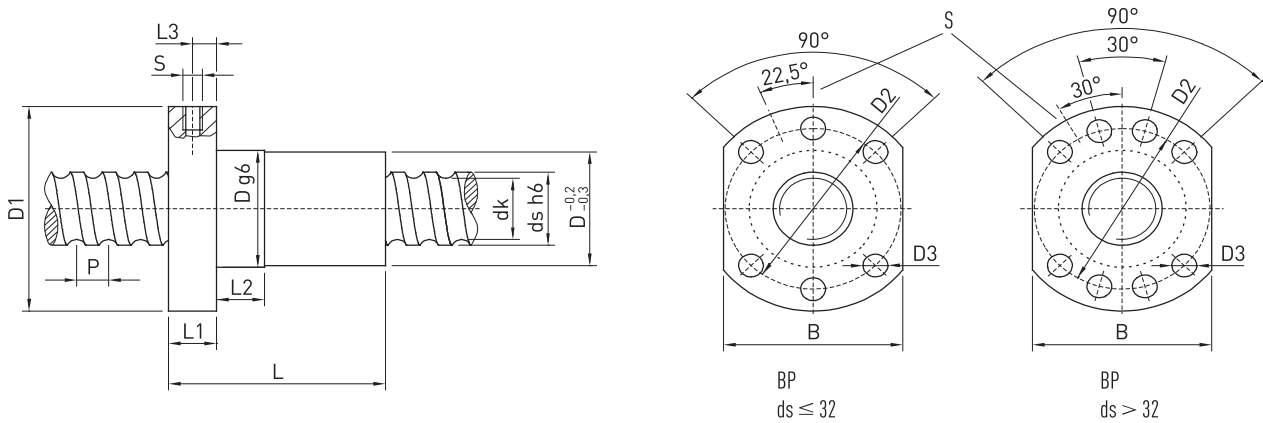


Fig. 5.1 Flange single nut DEB-x with Wiper N and F

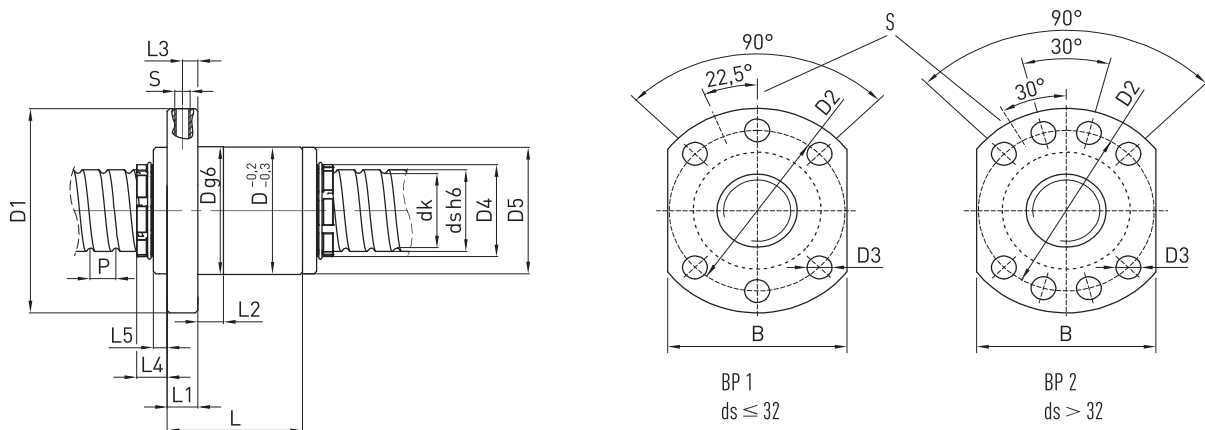


Fig. 5.2 Flange single nut DEB-x with Wiper K and V

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 <sup>1)</sup>	L5 <sup>1)</sup>	Lubri- cation hole S	B	dk	Dynamic load rating C <sub>dyn</sub> [N]	Static load rating C <sub>0</sub> [N]	Max. axial play [mm]	Mass [kg/piece]	N/ K	F/ V
R16-05K4-DEB-x <sup>2)</sup>	15	5	28	48	38	5.5	47	10	10	5.0	14	8	M6	40	12.5	10,400	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	8,200	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	5,600	8,300	0.02	0.18	x	
R20-05K4-DEB-x <sup>2)</sup>	20	5	36	58	47	6.6	48	10	10	5.0	10.5	5	M6	44	17.3	13,900	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	9,900	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	7,000	11,800	0.02	0.32	x	
R25-05K4-DEB-x <sup>2)</sup>	25	5	40	62	51	6.6	53	10	10	5.0	11.5	6	M6	48	22.3	15,600	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	14,300	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	7,700	14,900	0.02	0.41	x	
R32-05K5-DEB-x <sup>2)</sup>	32	5	50	80	65	9.0	53	12	10	6.0	12.5	6	M6	62	29.3	20,700	48,700	0.02	0.60	x	x

<sup>1)</sup> Only for wiper variants K and V

<sup>2)</sup> 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 <sup>1)</sup>	L5 <sup>1)</sup>	Lubri- cation hole S	B	dk	Dynamic load rating C <sub>dyn</sub> [N]	Static load rating C <sub>0</sub> [N]	Max. axial play [mm]	Mass [kg/piece]	N/ K	F/ V
R32-10K5-DEB-x <sup>2)</sup>	32	10	50	80	65	9.0	83	14	20	7.0	11	6	M6	62	28.7	30,900	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	55,500	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	24,800	43,000	0.02	0.75	x	
R40-05K5-DEB-x <sup>2)</sup>	40	5	63	93	78	9.0	56	14	10	7.0	11	5	M8 × 1	70	37.3	22,500	61,700	0.02	0.90	x	x
R40-10K4-DEB-x <sup>2)</sup>	38	10	63	93	78	9.0	81	14	20	7.0	11	5	M8 × 1	70	32.9	50,500	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	27,500	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	27,200	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	24,900	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	70,500	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	45,100	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	90,800	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	129,000	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	101,800	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	151,700	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	

<sup>1)</sup> Only for wiper variants K and V

<sup>2)</sup> 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

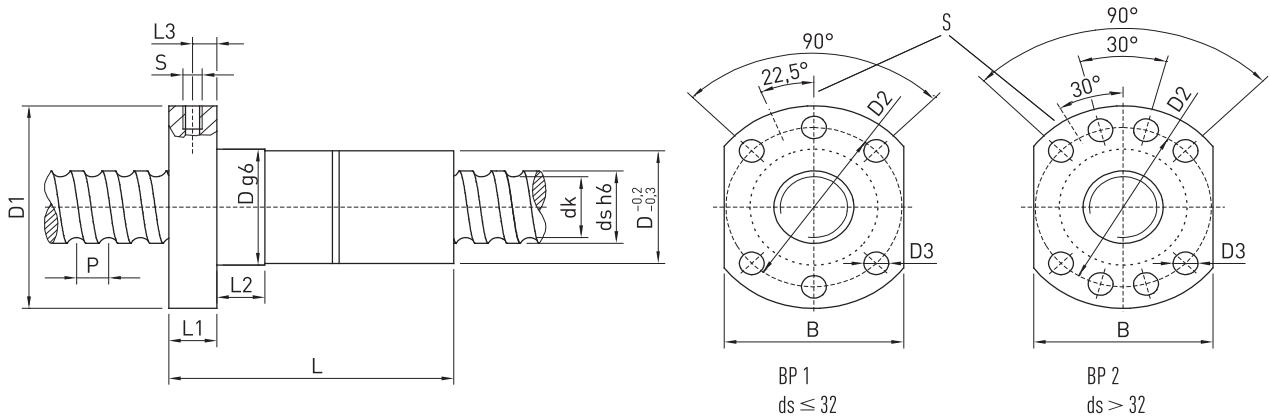


Fig. 5.3 Flange double nut DDB-x with Wiper N and F

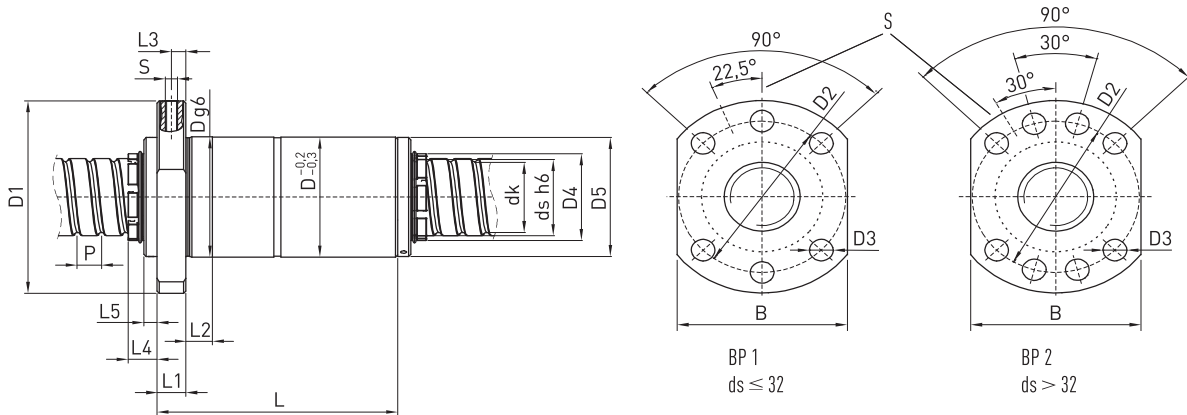


Fig. 5.4 Flange double nut DDB-x with Wiper K and V

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 <sup>1)</sup>	L5 <sup>1)</sup>	Lubri- cation hole S	B	dk	Dynamic load rating C <sub>dyn</sub> [N]	Static load rating C <sub>0</sub> [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	10,400	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	13,900	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	15,600	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	14,300	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	20,700	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	30,900	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	45,800	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	24,800	43,000	1.4	x	
R40-05K5-DDB-x	40	5	63	93	78	9.0	101	14	10	7	11	5	M8 x 1	70	37,3	22,500	61,700	1.7	x	x
R40-10K4-DDB-x	38	10	63	93	78	9.0	150	14	20	7	11	5	M8 x 1	70	32,9	50,500	105,800	1.9	x	x
R40-20K2-DDB-x	38	20	63	93	78	9.0	146	14	20	7	12	5	M8 x 1	70	32,9	27,500	52,400	2.0	x	
R50-05K5-DDB-x	50	5	75	110	93	11.0	103	16	10	8	12	6	M8 x 1	85	47,3	24,900	77,900	2.1	x	x
R50-10K4-DDB-x	50	10	75	110	93	11.0	153	16	20	8	12	6	M8 x 1	85	44,9	58,200	143,300	3.2	x	x
R50-20K3-DDB-x	50	20	75	110	93	11.0	189	16	20	8	12	6	M8 x 1	85	44,9	45,100	106,900	4.8	x	

<sup>1)</sup> Only for wiper variants K and V

All dimensions stated without a unit are in mm

# Ballscrews

## Peeled ballscrews

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 <sup>1)</sup>	L5 <sup>1)</sup>	Lubri- cation hole S	B	dk	Dynamic load rating C <sub>dyn</sub> [N]	Static load rating C <sub>0</sub> [N]	Mass [kg/piece]	N/ K	F/ V
<b>R63-10K6-DDB-x</b>	63	10	90	125	108	11.0	193	18	16	9	13	7	M8 x 1	95	57.9	90,800	271,500	6.8	x	x
<b>R63-20T4-DDB-x</b>	63	20	95	135	115	13.5	289	20	25	10	15	9	M8 x 1	100	55.5	105,000	250,000	8.0	x	
<b>R80-10K6-DDB-x</b>	80	10	105	145	125	13.5	195	20	25	10	14	6	M8 x 1	110	74.9	101,800	355,800	6.0	x	x
<b>R80-20K4-DDB-x</b>	80	20	125	165	145	13.5	259	25	25	12.5	17	9	M8 x 1	130	72.5	135,000	349,900	14.0	x	

<sup>1)</sup> Only for wiper variants K and V

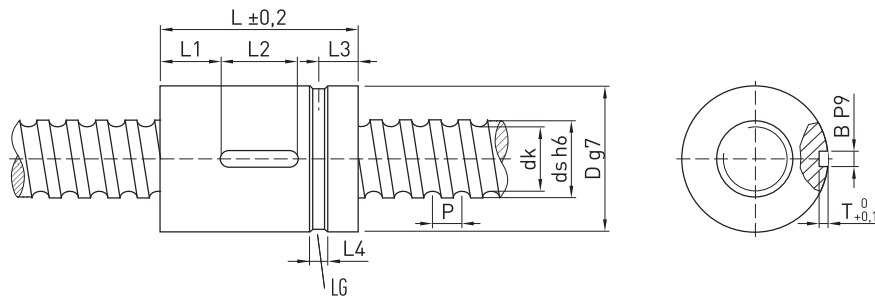
All dimensions stated without a unit are in mm

- 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 <sup>1)</sup>	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 <sup>1)</sup>	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 <sup>1)</sup>	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 <sup>2)</sup>	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 <sup>2)</sup>	32	20	56	80	27.0	25	15	5	2.4	4	27.8	20,300	26,800	0.02	0.70
R40-05T5-ZE-F <sup>1)</sup>	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 <sup>1)</sup>	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	23,800	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 <sup>2)</sup>	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	105,000	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	135,000	322,000	0.05	7.80
R80-20T6-ZEH-S	78	20	130	182	68.5	45	19	8	4.0	8	68.2	200,000	510,000	0.05	11.05

<sup>1)</sup> Left-hand nut available short-term

<sup>2)</sup> Left-hand nut available upon request

All dimensions stated without a unit are in mm

- Reduced axial play on request
- Nuts with dirt wipers

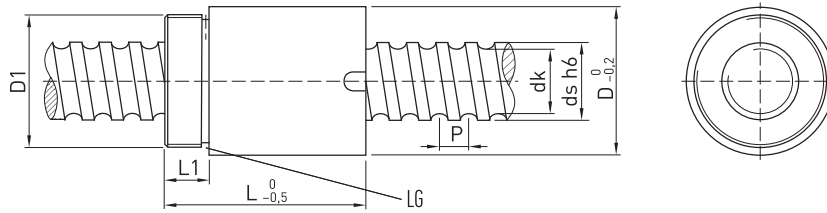
Order example:

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 <sup>1)</sup>	16	5	36	M30 × 1.5	42	12	13.5	9,600	12,700	0.02	0.45
R20-05T4-SE-F <sup>1)</sup>	20	5	40	M35 × 1.5	52	12	17.5	13,900	21,800	0.02	0.53
R25-05T4-SE-F <sup>2)</sup>	25	5	45	M40 × 1.5	60	15	22.5	15,600	27,900	0.02	0.82
R25-10T3-SE-F <sup>2)</sup>	25	10	48	M45 × 1.5	70	15	21.0	24,100	36,200	0.02	1.00
R32-05T5-SE-F <sup>2)</sup>	32	5	52	M48 × 1.5	60	15	29.5	20,700	43,900	0.02	1.13
R32-10T3-SE-F <sup>2)</sup>	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	20,300	26,800	0.02	1.44
R40-05T5-SE-F <sup>1)</sup>	40	5	65	M60 × 1.5	68	18	37.5	22,500	54,600	0.02	1.63
R40-10T4-SE-F <sup>1)</sup>	40	10	65	M60 × 1.5	88	18	35.8	46,800	82,600	0.02	1.75
R40-20T2-SE-B <sup>2)</sup>	40	20	65	M60 × 1.5	88	18	35.8	23,800	36,400	0.03	1.75
R50-10T4-SE-F <sup>1)</sup>	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 <sup>2)</sup>	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

<sup>1)</sup> Left-hand nut available short-term

<sup>2)</sup> 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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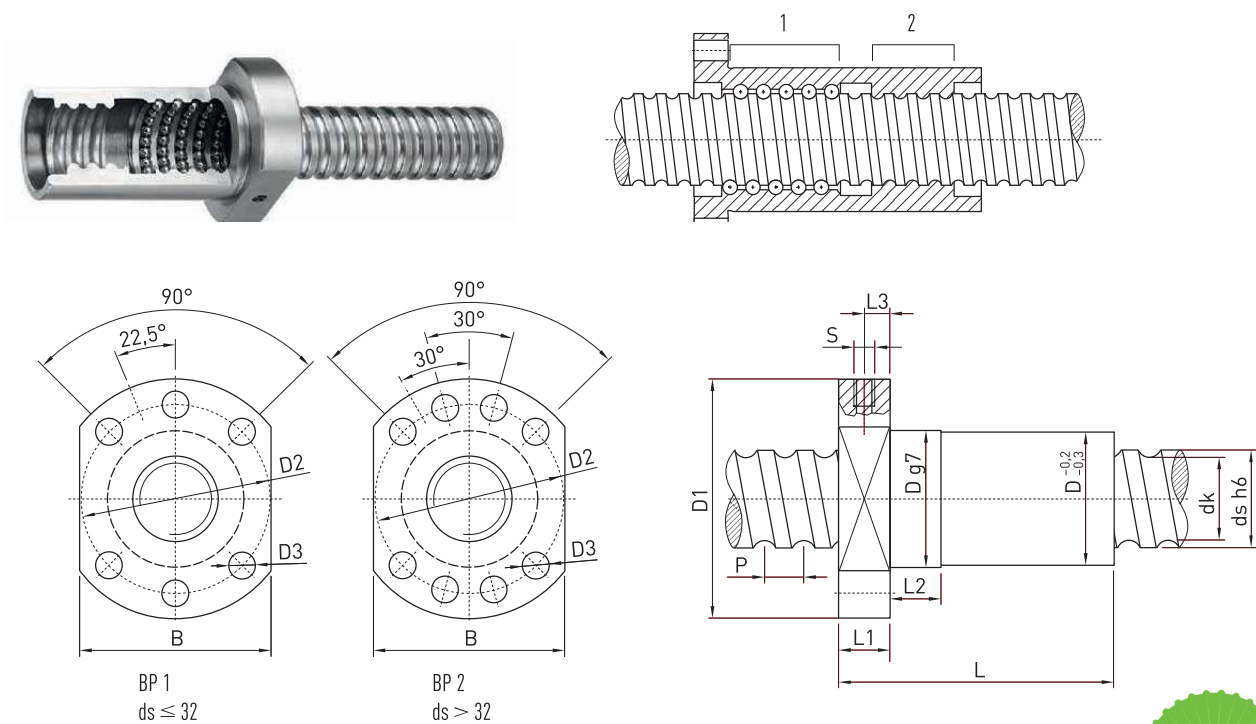
### 5.4.5 Safety nut SEM

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	23,800	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	105,000	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	161,500	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.