

6. Ground ballscrews

6.1 Properties

Of the various production methods used for ballscrews, ground ballscrews offer the greatest accuracy. Ballscrews with a lead accuracy of up to 3.5 µm/300 mm thread length can be produced by grinding after hardening. They are used mainly in machine tools, grinding machines and measuring machines.

Ground ballscrews are always customized, enabling the customer's requirements relating to nut shape, load ratings, preload method, wiper type and end machining to be met. Contact our team for more details.

Below you will find typical standardized nut shapes, nominal diameters and leads. This is just part of our range. We can provide other nut dimensions on request.

6.2 Tolerance classes

Table 6.1 Tolerance classes of ground ballscrews

Path deviation	Tolerance class					
	T0	T1	T2	T3	T4	T5
e _{2p}	3.0	4	6	8	8	8
e ₃₀₀	3.5	6	8	12	18	23

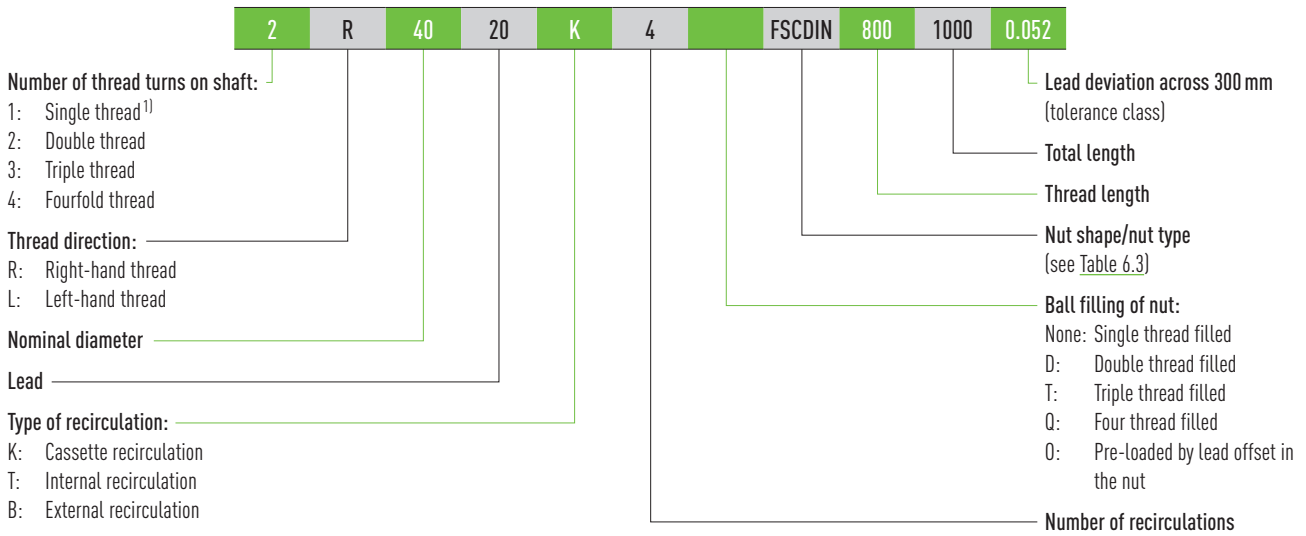
Unit: mm

Table 6.2 Overview of available ground ballscrews available

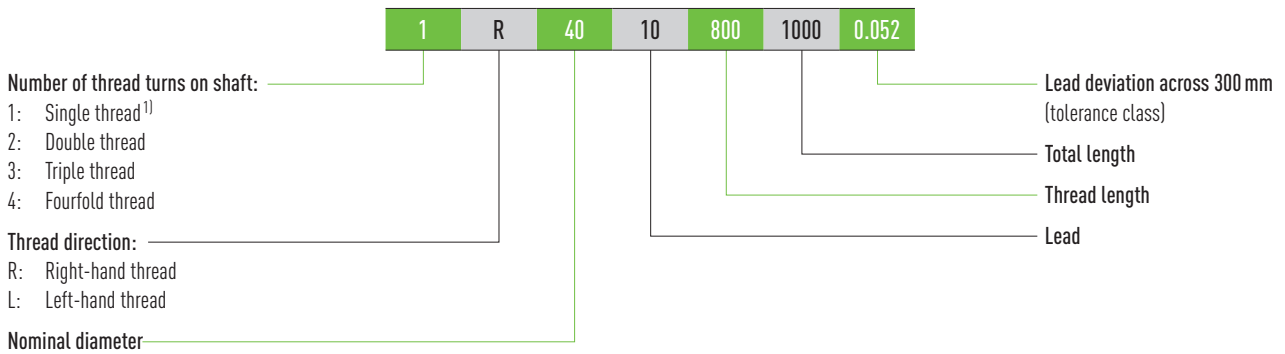
Outer diameter	6	8	10	12	16	20	25	32	40	50	63	80	100
Accuracy	Maximum lengths of ballscrew shafts												
T0	110	170	300	400	600	700	1,000	1,200	1,500	1,800	2,000	2,000	2,000
T1	110	170	400	500	720	950	1,300	1,800	2,300	3,100	4,000	4,000	4,000
T2	140	200	500	630	900	1,300	1,700	2,200	2,900	4,000	5,200	6,300	6,300
T3	170	250	500	630	1,000	1,400	1,800	2,500	3,500	4,500	6,000	10,000	10,000
T4	170	250	500	630	1,000	1,400	1,800	2,500	3,500	4,500	6,000	10,000	10,000
T5	170	250	500	630	1,410	1,700	2,400	3,000	3,800	5,000	6,900	10,000	10,000

6.3 HIWIN order code for ground ballscrews

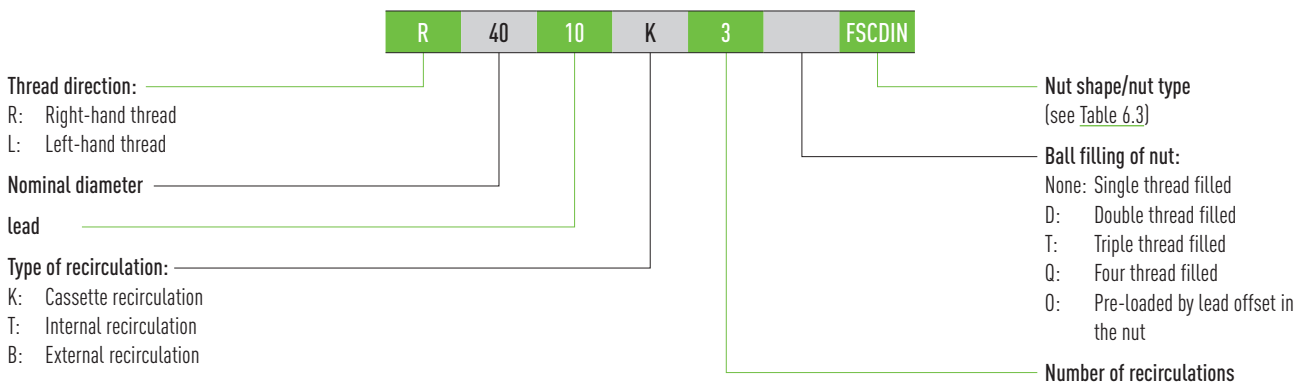
In order to clearly identify the ballscrew, information about the ballscrew shaft and nut is needed.



Order code for ballscrew shaft without the nut



Order code for ballscrew nut without the shaft



¹⁾ Standard; can be omitted with single-thread shafts

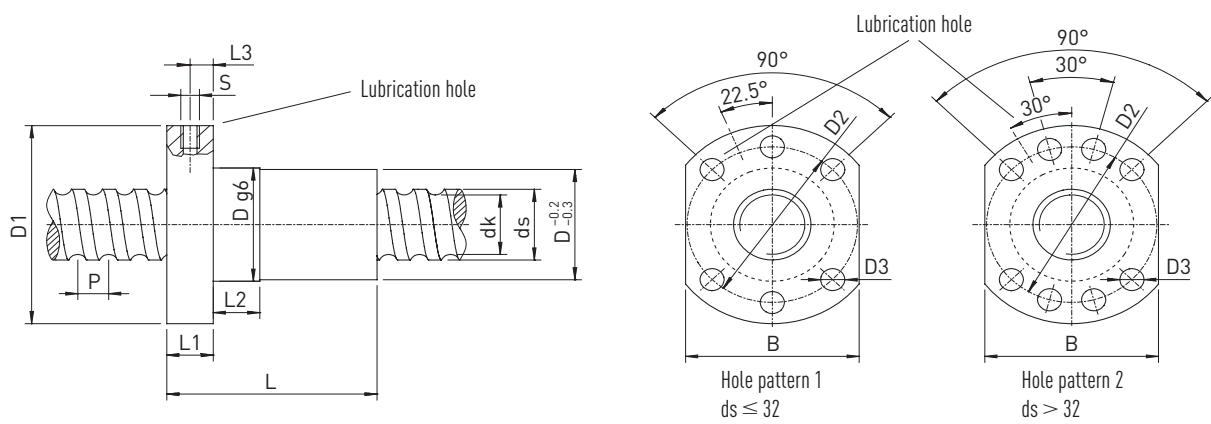
Ballscrews

Ground ballscrews

Nut designation	Description
FSC	Flange single nut with cassette recirculation
FDC	Flange double nut with cassette recirculation
FSI	Flange single nut with internal single recirculation
FDI	Flange double nut with internal single recirculation
RSI	Cylindrical single nut with internal single recirculation
RDI	Cylindrical double nut with internal single recirculation

6.4 Nuts for ground ballscrews

6.4.1 DIN single nut FSC (DIN 69051 Part 5) with total recirculation



Article number	ds	P	Ball diameter	D min.	D1	D2	D3	Hole pattern	L	L1	L2	L3	S	B	dk	Rigidity [N/μm]	Dynamic load rating C_{dyn} [N]	Static load rating C_0 [N]
R14-10K3-FSC	14	10	3.175	28	48	38	5.5	1	46	10	10	5	M5	40	10.72	240	9,200	17,900
R15-10K3-FSC	15	10	3.175	34 ¹⁾	57	45	5.5	1	44	10	10	5	M5	43	12.32	250	9,600	19,300
R15-20K2-FSC	15	20	3.175	34 ¹⁾	57	45	5.5	1	50	10	10	5	M5	43	12.32	150	6,300	12,560
R16-16K2-FSC	16	16	3.175	34 ¹⁾	57	45	5.5	1	47	10	10	5	M5	43	13.12	170	6,800	13,850
R20-05K4-FSC	20	5	3.175	36	58	47	6.6	1	40	10	10	5	M6	44	17.32	420	14,900	36,400
R20-10K3-FSC	20	10	3.175	36	58	47	6.6	1	47	10	10	5	M6	44	17.32	320	11,300	26,600
R20-20K2-FSC	20	20	3.175	36	58	47	6.6	1	57	10	10	5	M6	44	17.32	210	7,600	17,300
R25-05K4-FSC	25	5	3.175	40	62	51	6.6	1	43	10	10	5	M6	48	22.32	490	16,500	46,120
R25-10K3-FSC	25	10	3.175	40	62	51	6.6	1	50	10	10	5	M6	48	22.32	380	12,600	33,700
R25-10K4-FSC	25	10	3.969	45 ¹⁾	65	54	6.6	1	60	10	10	5	M6	51	21.74	560	22,100	56,600
R25-20K3-FSC	25	20	3.175	40	62	51	6.6	1	80	10	10	5	M6	48	22.32	390	12,600	34,360
R25-25K2-FSC	25	25	3.175	40	62	51	6.6	1	69	10	10	5	M6	48	22.32	250	8,400	21,700
R25-20K3-FSC	25	20	3.969	45 ¹⁾	65	54	6.6	1	80	10	10	5	M6	51	21.74	430	17,100	42,900
R32-05K4-FSC	32	5	3.175	48	70	59	6.6	1	38	12	10	6	M6	54	29.32	570	18,400	59,600
R32-10K5-FSC	32	10	3.969	50	80	65	9.0	1	73	12	10	6	M6	62	28.74	850	30,800	94,500
R32-10K5-FSC	32	10	4.763	56 ¹⁾	86	71	9.0	1	79	14	10	7	M6	65	28.13	860	38,500	108,900
R32-10K5-FSC	32	10	6.350	62 ¹⁾	92	77	9.0	1	77	14	10	7	M6	74	26.91	900	56,400	144,800
R32-20K3-FSC	32	20	3.969	50	80	65	9.0	1	87	12	20	6	M6	62	28.74	520	19,000	54,300
R32-20K4-FSC	32	20	4.763	54 ¹⁾	86	71	9.0	1	106	14	20	7	M6	65	28.13	720	31,900	89,140
R32-20K4-FSC	32	20	6.350	62 ¹⁾	92	77	9.0	1	107	14	20	7	M6	74	26.91	700	42,400	108,540

Table 6.4 Nut dimensions – continuation

Article number	ds	P	Ball diameter	D min.	D1	D2	D3	Hole pattern	L	L1	L2	L3	S	B	dk	Rigidity [N/μm]	Dynamic load rating C _{dyn} [N]	Static load rating C ₀ [N]
R32-32K2-FSC	32	32	3.969	50	80	65	9.0	1	87	12	20	6	M6	62	28.74	340	12,800	35,300
R32-40K2-FSC	32	40	3.969	50	80	65	9.0	1	94	12	20	6	M6	62	28.74	320	12,400	34,400
R38-10K4-FSC	38	10	6.350	63	93	78	9.0	2	70	14	20	7	M8 × 1	70	32.91	810	50,500	137,900
R38-20K4-FSC	38	20	6.350	63	93	78	9.0	2	108	14	25	7	M8 × 1	70	32.91	830	49,900	136,600
R38-25K4-FSC	38	25	6.350	63	93	78	9.0	2	127	14	25	7	M8 × 1	70	32.91	830	49,400	135,600
R38-40K2-FSC	38	40	6.350	63	93	78	9.0	2	103	14	25	7	M8 × 1	70	32.91	400	25,900	65,600
R40-05K5-FSC	40	5	3.175	63	93	78	9.0	2	45	14	20	7	M8 × 1	70	37.32	850	24,700	94,900
R40-10K5-FSC	40	10	6.350	70 ¹⁾	100	85	9.0	2	83	14	20	7	M8 × 1	75	34.91	1,060	63,400	184,000
R40-20K4-FSC	40	20	6.350	70 ¹⁾	100	85	9.0	2	110	14	20	7	M8 × 1	75	34.91	870	51,300	144,400
R40-40K2-FSC	40	40	6.350	70 ¹⁾	100	85	9.0	2	101	14	25	7	M8 × 1	75	34.91	420	26,600	69,400
R50-05K5-FSC	50	5	3.175	70	100	85	11.0	2	45	16	20	8	M8 × 1	75	47.32	950	27,000	119,400
R50-10K5-FSC	50	10	6.350	82 ¹⁾	118	100	11.0	2	80	16	25	8	M8 × 1	92	44.91	1,250	70,500	233,000
R50-20K4-FSC	50	20	6.350	82 ¹⁾	118	100	11.0	2	106	16	25	8	M8 × 1	92	44.91	1,040	57,200	183,400
R50-20K4-FSC	50	20	9.525	86 ¹⁾	121	103	11.0	2	120	16	25	8	M8 × 1	95	42.47	1,130	98,700	274,200
R50-40K3-FSC	50	40	6.350	82 ¹⁾	118	100	11.0	2	145	16	25	8	M8 × 1	92	44.91	790	43,900	137,500
R63-10K5-FSC	63	10	6.350	95	135	115	13.5	2	84	20	25	10	M8 × 1	100	57.91	1,440	77,200	291,900
R63-20K5-FSC	63	20	6.350	95	135	115	13.5	2	132	20	25	10	M8 × 1	100	57.91	1,570	78,500	300,200
R63-20K5-FSC	63	20	9.525	107	147	127	13.5	2	140	20	25	10	M8 × 1	112	55.47	1,680	134,300	435,300
R63-40K2-FSC	63	40	6.350	95	135	115	13.5	2	110	20	25	10	M8 × 1	100	57.91	620	33,100	111,000
R80-10K5-FSC	80	10	6.350	110 ¹⁾	150	130	13.5	2	80	25	25	12.5	M8 × 1	115	74.91	1,660	86,200	379,800
R80-20K4-FSC	80	20	9.525	120 ¹⁾	165	145	13.5	2	122	25	25	12.5	M8 × 1	130	72.47	1,600	124,000	449,100

All dimensions stated without a unit are in mm

¹⁾ Non-standard series of DIN 69051 Part 5 for high leads or of nut diameters deviating from the DIN standard

- The rigidity values stated are determined by calculation without preload for loading of 30 % of the dynamic load rating
- Deviating nut dimensions on request
- Other diameters and leads on request
- Left-handed nuts on request

Order example:

R	40	40	K2	FSC	1200	1295	0.012
---	----	----	----	-----	------	------	-------