HIWIN®

BALLSCREW

Miniature Ballscrew

Q Series Internal Circulation

HIWIN Support

About HIWIN

Achieving ultra-micro precision across diverse applications

Miniature Ballscrew

Designed for compact devices, this product fits high-precision fields such as medical instruments, semiconductor, and robotics. Available in six diameter options—4, 5, 6, 8, 10, and 12 mm—and two precision grades, C6 and C7, striking a balance between high accuracy and cost-effectiveness.

Standard design, quick introduction

In accordance with ISO 3408-2 standards, HIWIN offers three popular nut types and a standard spindle end design. These features simplify selection and speed up early-stage design, enabling quick integration into new models or system upgrades. Additionally, HIWIN provides custom sizes to meet diverse precision needs.

New technology, internal circulation design

To meet growing demand for miniature ballscrews, HIWIN introduces an innovative internal circulation that reduces nut size and supports product miniaturization. This design streamlines assembly and achieves economies of scale—delivering a smart solution that balances performance and value.

Features of
Q Series internal circulation

1. High speed 3000 rpm
2. Outer diameter of nut is small.

Flanged spindle end design

In general designs, screw shaft ends require bearings for stable transmission. However, miniature ballscrews typically use smaller bearings, which can improve stability and alignment. A flange-type shaft end increases the contact area—enhancing assembly precision and mechanical reliability.

Stainless steel support for demanding environments

For cleanroom applications like medical and semiconductor equipment, HIWIN offers martensitic stainless steel ballscrews with excellent corrosion resistance. This helps prevent abnormal wear and precision degradation caused by oxidation, rust, or contamination, ensuring reliable performance in sensitive applications.

Nut types

HIWIN offers three popular nut configurations: flanged type, threaded cylindrical type, and keyway cylindrical type. These options allow users to quickly select the most suitable nut structure based on actual installation requirements, meeting diverse mechanical design needs.

Flange type

Threaded round type

Keyway round type

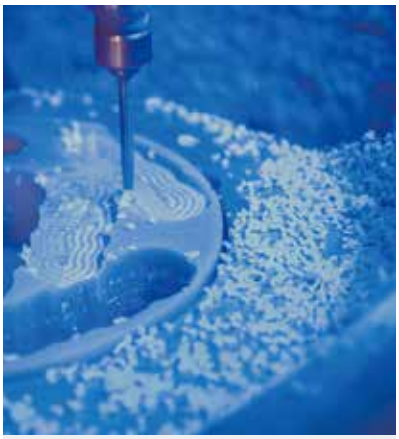
Lubrication recommendations

Miniature ballscrews are compatible with HIWIN G05 general-purpose grease. Avoid mixing different types of lubricants. For special environments, please use specialized lubricants and contact HIWIN for assistance.

Applications

Semiconductor lithography technology

Laser cutting machine



Dental carving machine

Miniature clamping system

Industrial inspection equipment

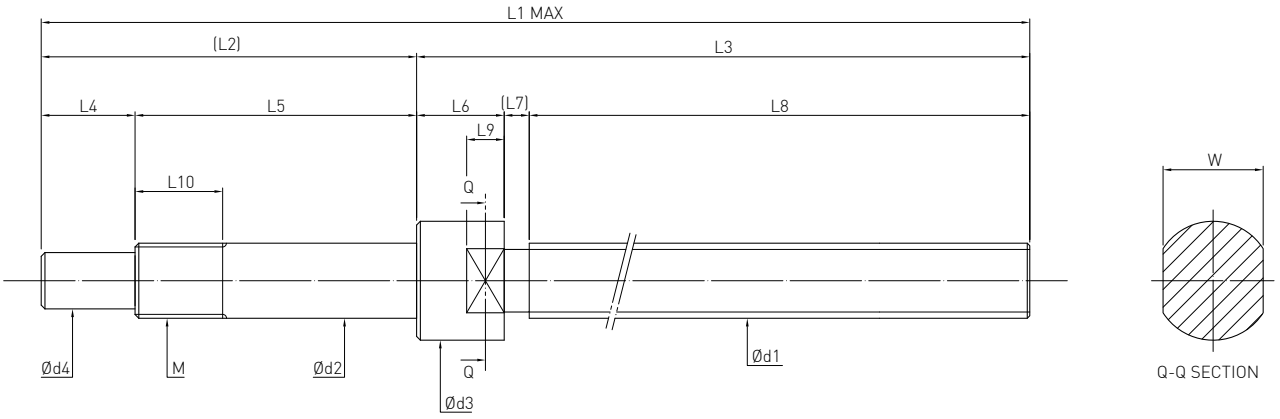
Precision manipulator

Product type

R 10 - 2 T3 - F S Q - 100 - 150 - 0.05 - M

- Right-hand screw
- Nominal diameter
- Lead
- Circuits
- Nut shape
  S: Square
  R: Round
  F: Nut with flange
- Nut type
  S: Single nut
  D: Double nut
- Circulation Type
  Q: Q Series internal circulation
- Thread length
- Total length
- Lead deviation in random 300 mm travel path thread length
- Note
  M: Stainless

Standard spindle end sizes



Unit:mm

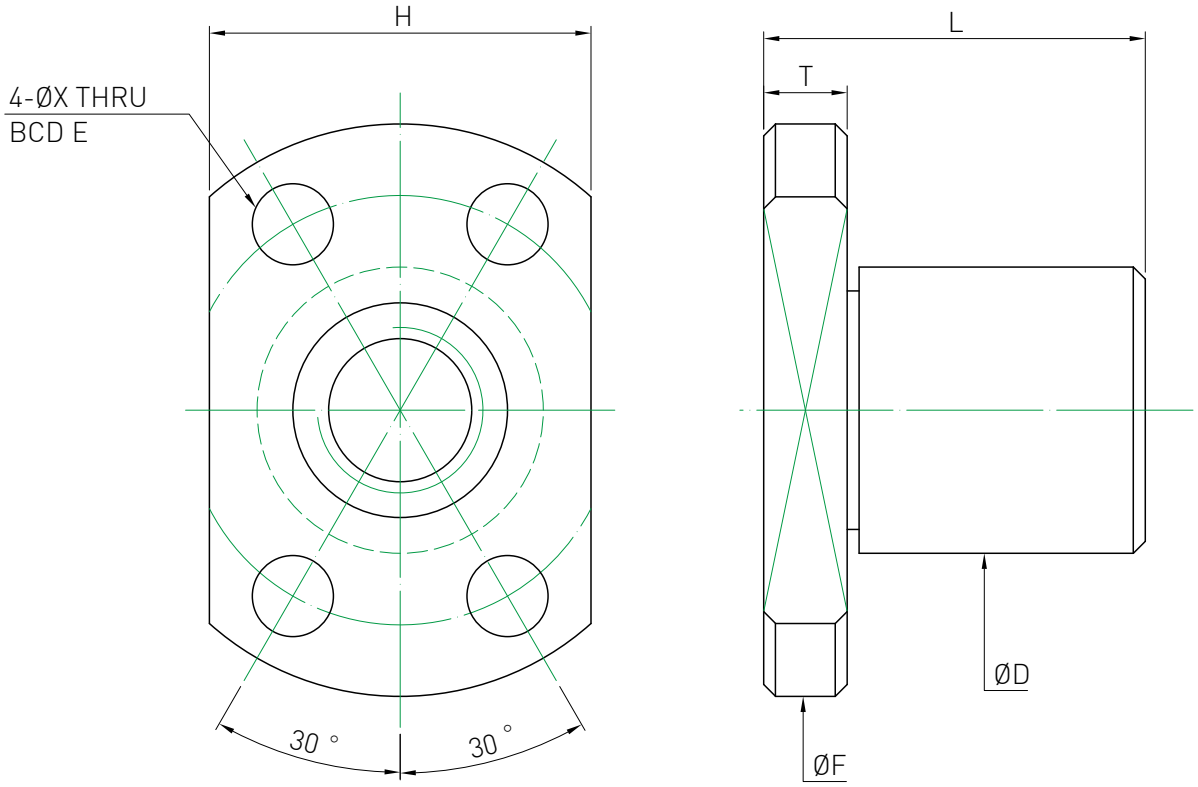
R/L	OD	Lead	BD	d1	d2	d3	d4	L1Max.	L2	L3	L4	L5	L6	L7	L8	L9	L10	W	M
R	4	1	0.8	4	4	6.5	3	104.5	21	83.5	5.5	15.5	1.5	2	80	-	8	-	M4x0.5P
R	5	1	0.8	5	4	6.5	3	175.5	21	155	5.5	15.5	1.5	3	150	-	8	-	M4x0.5P
R	5	2	0.8	5	4	6.5	3	175.5	21	155	5.5	15.5	1.5	3	150	-	8	-	M4x0.5P
R	6	1	0.8	6	6	6.5	4.5	189	30	159	7.5	22.5	7	2	150	3	7	8	M6x0.75P
R	6	2	0.8	6	6	9.5	4.5	190	30	160	7.5	22.5	7	3	150	3	7	8	M6x0.75P
R	6	3	1.5	6	6	9.5	4.5	192	30	162	7.5	22.5	7	5	150	3	7	8	M6x0.75P
R	8	1	0.8	8	8	11.5	6	197	37	160	10	27	8	2	150	4	9	10	M8x1P
R	8	2	1.5	8	8	11.5	6	198	37	161	10	27	8	3	150	4	9	10	M8x1P
R	10	2	1.5	10	8	11.5	6	198	37	161	10	27	8	3	150	4	9	10	M8x1P
R	10	4	2.38	10	8	11.5	6	201	37	164	10	27	8	6	150	4	9	10	M8x1P
R	12	2	1.5	12	10	14	8	208	45	163	15	30	10	3	150	5	10	12	M10x1P
R	12	4	2.38	12	10	14	8	190	45	145	15	30	10	6	129	5	10	12	M10x1P
R	12	5	2.38	12	10	14	8	213	45	168	15	30	10	8	150	5	10	12	M10x1P

Note: 1. L1 Max can be customized upon request. For more detailed information, please contact HIWIN.

2. The screw shaft end can be customized with features such as threaded holes, hexagonal holes, or external hexagonal holes. For more detailed information, please contact HIWIN.

Standard nut sizes for FSQ

Flange type

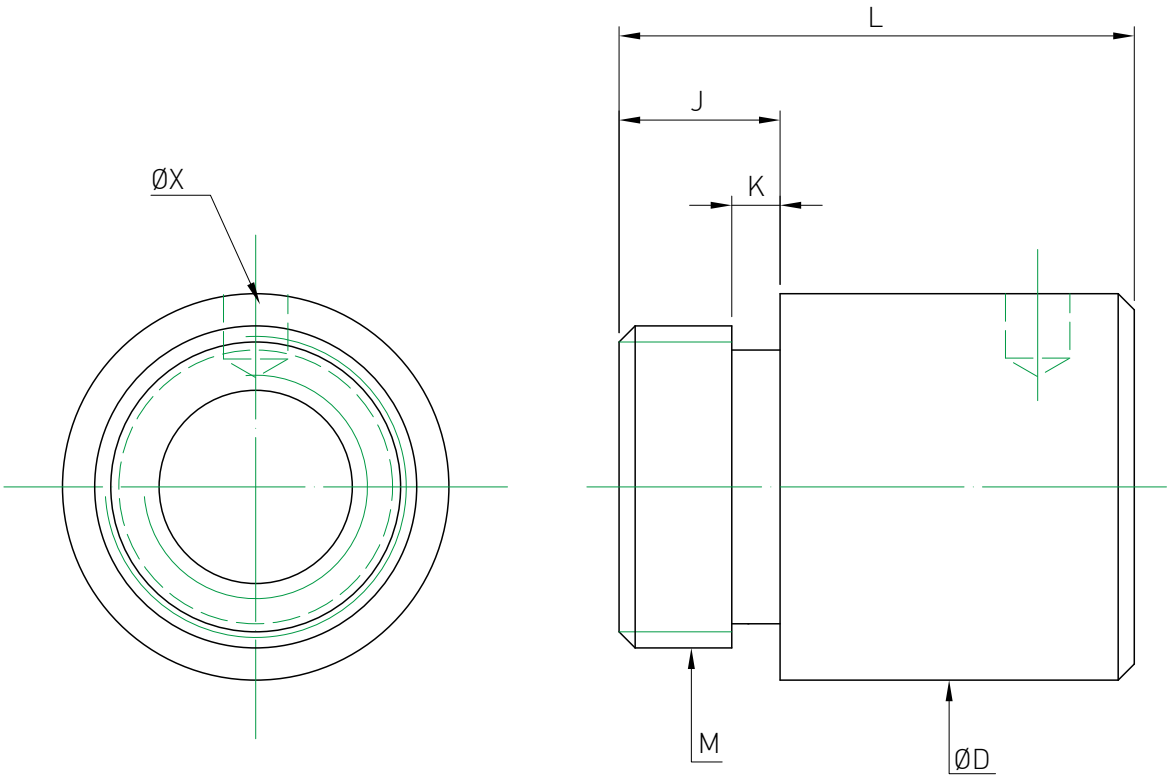


Model	Ball dia. (mm)	Dynamic load Ca(kgf)	Static load Co(kgf)	Nut		Flange				Flange hole
				D (mm)	L Note2 (mm)	E (mm)	F (mm)	H (mm)	T (mm)	X (mm)
R4-1T3	0.8	59	63	11	15	17	23	15	4	3.4
R5-1T2	0.8	49	56	12	14	18	24	15	4	3.4
R5-2T2	0.8	49	56	12	15	18	24	15	4	3.4
R6-1T3	0.8	110	79	12	18	18	24	16	6	3.4
R6-2T2	0.8	53	66	12	17	18	24	16	6	3.4
R6-3T2	1.5	99	100	14	21	18	24	16	6	3.4
R8-1T3	0.8	131	86	16	19	22	28	19	6	3.4
R8-2T3	1.5	223	181	16	25	22	28	19	6	3.4
R10-2T3	1.5	295	211	19	25	28	36	23	6	4.5
R10-4T3	2.381	282	248	21	27	28	36	23	6	4.5
R12-2T3	1.5	386	246	24	27	32	40	26	8	4.5
R12-4T3	2.381	337	559	24	29	32	40	26	8	4.5
R12-5T3	2.381	394	516	24	32	32	40	26	8	4.5

Note: 1.Type A is Flange type, manufactured in accordance with DIN/ISO 3408 standards.
2.L (Nut length): The length does not include the wiper.

Standard nut sizes for RSQ

Threaded round type

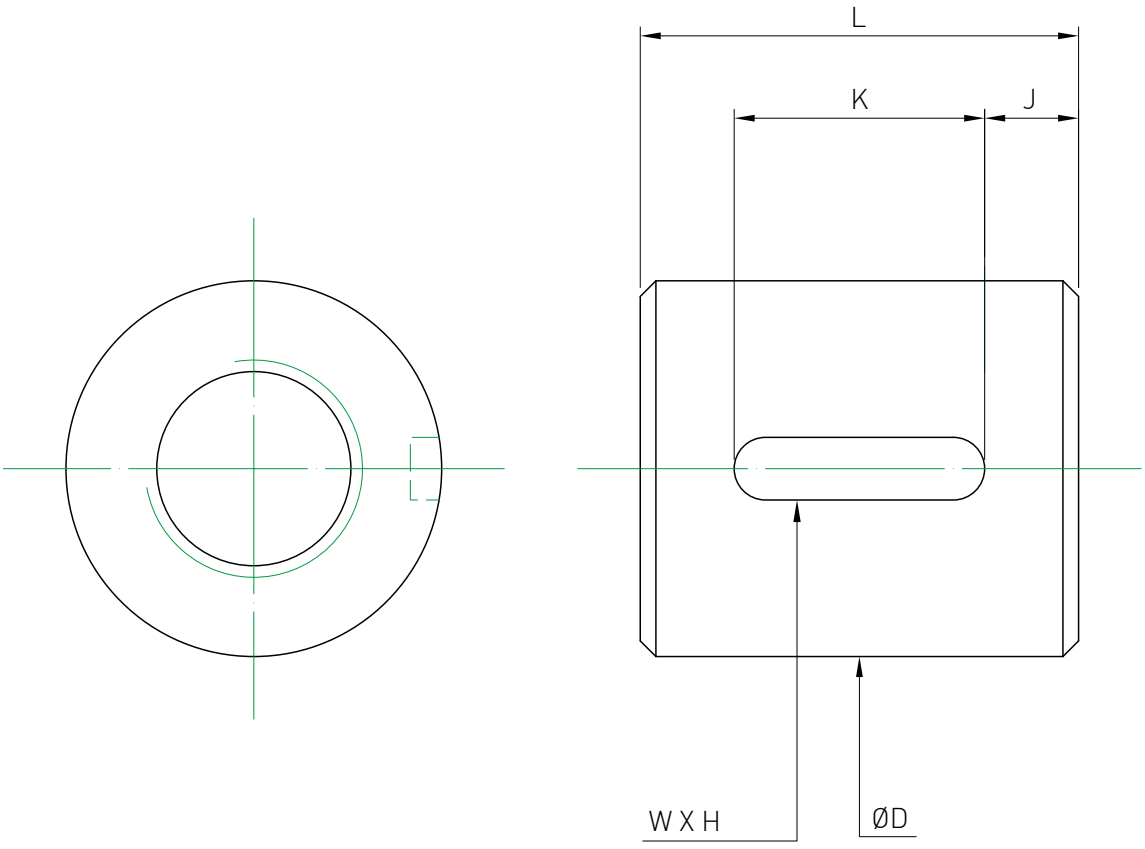


Model	Ball dia. (mm)	Dynamic load Ca(kgf)	Static load Co(kgf)	Nut		Flange			Positioning hole
				D (mm)	L Note (mm)	J (mm)	K (mm)	M	X (mm)
R4-1T3	0.8	59	63	11	17	6	1	M8x0.75P	2
R5-1T2	0.8	49	56	12	16	6	1.5	M8x0.75P	2
R5-2T2	0.8	49	56	12	17	6	1.5	M8x0.75P	2
R6-1T3	0.8	110	79	12	18	6	1.5	M10x1P	2
R6-2T2	0.8	53	66	12	17	6	1.5	M10x1P	2
R6-3T2	1.5	99	100	14	22	8	2	M10x1P	2
R8-1T3	0.8	131	86	16	21	8	2	M14x1P	3.2
R8-2T3	1.5	223	181	16	27	8	2	M14x1P	3.2
R10-2T3	1.5	295	211	18	27	8	2	M16x1P	3.2
R10-4T3	2.381	282	248	21	29	8	2	M18x1P	3.2
R12-2T3	1.5	386	246	24	27	8	2	M18x1P	3.2
R12-4T3	2.381	337	559	24	31	10	2	M20x1P	3.2
R12-5T3	2.381	394	516	24	34	10	2	M20x1P	3.2

Note: L (Nut length): The length does not include the wiper.

Standard nut sizes for RSQ

Keyway round type



Model	Ball dia. (mm)	Dynamic load Ca(kgf)	Static load Co(kgf)	Nut		Keyway		
				D (mm)	L Note (mm)	K (mm)	W x H (mm)	J (mm)
R4-1T3	0.8	59	63	11	11	8	W2xH1	1.5
R5-1T2	0.8	49	56	12	10	8	W2xH1	1
R5-2T2	0.8	49	56	12	11	8	W2xH1	1.5
R6-1T3	0.8	110	79	12	12	8	W2xH1	2
R6-2T2	0.8	53	66	12	11	8	W2xH1	1.5
R6-3T2	1.5	99	100	14	15	8	W2xH1.2	3.5
R8-1T3	0.8	131	86	16	13	8	W2xH1.2	2.5
R8-2T3	1.5	223	181	16	19	8	W2xH1.2	5.5
R10-2T3	1.5	295	211	18	19	10	W3xH1.5	4.5
R10-4T3	2.381	282	248	21	21	10	W3xH1.5	3.5
R12-2T3	1.5	386	246	24	19	14	W3xH1.8	2.5
R12-4T3	2.381	337	559	24	21	14	W3xH1.8	3.5
R12-5T3	2.381	394	516	24	24	14	W3xH1.8	5

Note: L (Nut length): The length does not include the wiper.

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