

# Custom ball screws

## Features

- **Various screw shaft diameters and leads are available for your selection**
  - An optimal size can be selected from a variety of standardized screw shaft diameters and leads, eliminating unnecessary compromise in size selection.
- **Nut types suited for the mounting configuration are available for your selection**
  - Nut types such as the flange type and square type are available for your selection.
- **The preloading methods according to the equipment specifications are available for your selection**
  - The preloading methods can be selected from nut types including single nuts, integral nuts, and double nuts.

### □ Summary of the specifications

Screw shaft diameter	ø5 to ø125 mm
Lead	1 to 50 mm
Accuracy grade	C0-C10 grade
Axial clearance	0 to 0.2 mm
Screw shaft type	Free design Consult KURODA regarding your desired specifications.
Surface treatment	Consult KURODA regarding anticorrosive black coating and various coating types.
Material	Consult KURODA regarding standard materials and stainless steel materials.
Product line	Custom product

### □ Model numbers of each series

Example model numbers	Series	Shaft diameter	Lead	Number of circuits	Combination	Flange type	Ball recirculation system	Wiper material	Thread direction	Overall screw shaft length	Shaft end type	Thread length	Accuracy grade	Axial clearance		
	FR	15	10	P	S	-	H	P	N	R	-	0900	X	0840	-	C5
FR	10 to 40	5 to 16	See specifications.	See specifications.	-	See specifications.	See specifications.	See specifications.	See specifications.	-	To be shown with a 4-digit number in metric units (mm)	X	To be shown with a 4-digit number in metric units (mm)	-	See specifications.	See specifications.
GR	5 to 125	1 to 50														
DR	6 to 50	1 to 10									X					

• For more details, refer to the specifications and data for each size.

### □ Screw shaft diameter and lead combinations

Size line-up of custom ball screws

Screw shaft diameter (mm)	Lead (mm)																			
	1	1.5	2	2.5	3	4	5	6	8	10	12	15	16	20	24	25	30	32	40	50
5	G																			
6	D																			
8	D	G	DG	G	G	G		G	G											
10	G	G	DG	G	G	G	G			FG										
12			DG	G	DG	G	G	G		FG				FG						
14						D														
15			G	G	G	G	FG	G	G	FG		G	G	FG		G	F			
16						G	DG	G					G							
20				G		G	DG	G	G	DFG				FG		G		G		
25						G	FG	G	FG	FG				G		FG			G	
28							G			G				G						
32						G	FG	G	FG	FG	FG		F	G				G		
36							G	G	G	G	FG		F	G	G					
40							G	G	FG	FG	FG		FG	G				G	G	
45							G	G	G	G	G			G						
50							G	G	G	G	G		G	G					G	G
55									G	G	G		G	G						
63								G	G	G	G		G	G						
70											G	G		G	G					
80											G	G		G	G					
100												G		G	G					
125													G	G						

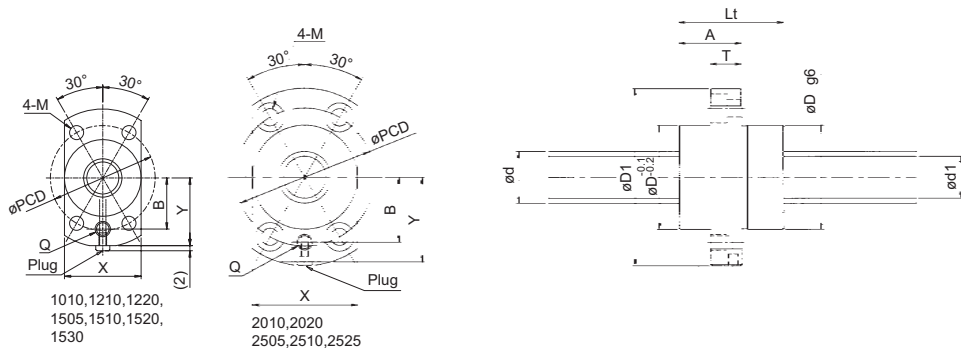
D: D series (Compact, deflector recirculation method)

G: G series (General, tube recirculation method)

F: F series (High rotational speed, end deflector recirculation method)

\* Combinations of shaft diameters and leads not described here are also available for the G series. Consult KURODA for more information.

Custom Ball Screw: END DEFLECTOR METHOD SINGLE NUT (Accuracy grade C3-C7)



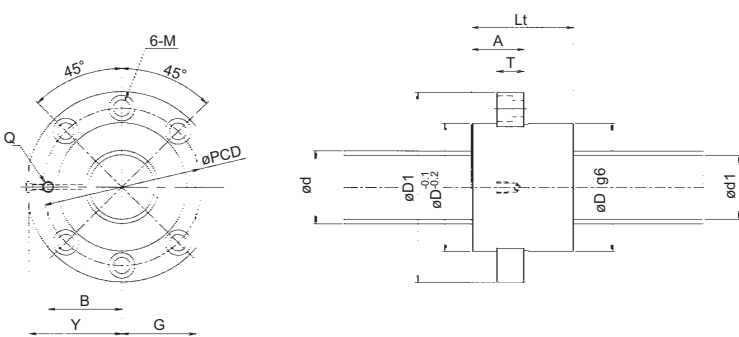
Flange type H

(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D <sub>b</sub>	Root diameter d <sub>r</sub>	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C <sub>0</sub> (N)	*Rigidity K <sub>res</sub> (N/μm)	Nut dimensions													Mass				
									Outer diameter D	Overall length L <sub>t</sub>	Length A	Wiper material	Flange thickness T	Flange outer diameter D <sub>1</sub>	Flange type	Flange dimensions					Mounting hole			Nut (kg)	Screw shaft (kg/100mm)	
																X	Y	B	G	Q	PCD	M				Depth
FR1010PS-HPNR	10	10	2.3812	8.1	1.7×1	2600	3800	60	23	27	17.5	N	10	44	H	24	21.5	16	—	M3	32	4.5	—	—	0.11	0.06
FR1210PS-HPNR	12	10	3.1750	9.5	2.7×1	6700	10700	110	27	38	19.5	N	10	47	H	27	23	18	—	M3	36	4.5	—	—	0.17	0.08
FR1220PS-HPNR	12	20	3.1750	9.5	1.7×1	4300	6700	70	27	48	20	N	10	47	H	27	23	18	—	M3	36	4.5	—	—	0.20	0.08
FR1505PS-HPNR	15	5	3.1750	12.5	2.7×1	7400	12900	120	30	25	17.3	N	9.5	54	H	30	26.5	20	—	M6	41	5.5	—	—	0.15	0.11
FR1510PS-HPNR	15	10	3.1750	12.5	2.7×1	7400	12900	120	30	38	20	N	10	54	H	30	26.5	20	—	M6	41	5.5	—	—	0.20	0.13
FR1520PS-HPNR	15	20	3.1750	12.5	1.7×1	4800	8200	80	30	48	20.5	N	10	54	H	30	26.5	20	—	M6	41	5.5	—	—	0.24	0.13
FR1530PS-HPNR	15	30	3.1750	12.5	1.7×1	4800	8200	80	32	65	20.5	N	10	56	H	32	27.5	21	—	M6	43	5.5	—	—	0.36	0.14
FR2010PS-HPNR	20	10	4.7625	16	2.7×1	18000	33900	160	40	38	23	N	12	68	H	40	32.5	25	—	M6	53	6.6	11	6.5	0.36	0.21
FR2020PS-HPNR	20	20	4.7625	15.9	1.7×1	11600	20600	100	40	48	23	N	12	68	H	40	32.5	25	—	M6	53	6.6	11	6.5	0.43	0.23
FR2505PS-HPNR	25	5	3.1750	22.5	3.7×1	13100	31800	240	40	30	20	N	12	68	H	40	32.5	25	—	M6	53	6.6	11	6.5	0.27	0.34
FR2508PS-HPNR	25	8	3.9688	21.6	3.7×1	17500	38800	250	45	41	25	N	15	74	H	45	35.5	28	—	M6	59	6.6	11	6.5	0.49	0.34
FR2510PS-HPNR	25	10	4.7625	21	2.7×1	20400	42600	200	45	37	25	N	15	74	H	45	35.5	28	—	M6	59	6.6	11	6.5	0.44	0.34
FR2525PS-HPNR	25	25	4.7625	21	1.7×1	13100	25900	130	45	58	27	N	15	74	H	45	35.5	28	—	M6	59	6.6	11	6.5	0.61	0.37

Note: • The rigidity indicated with the \*mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.  
• Wiper material N: Without wiper

Custom Ball Screw: END DEFLECTOR METHOD SINGLE NUT (Accuracy grade C3-C7)



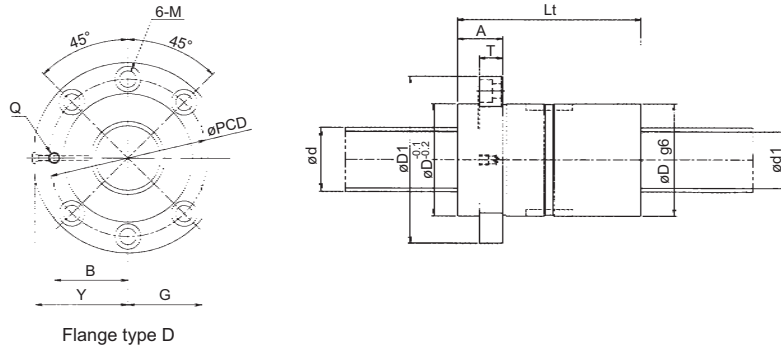
Flange type D

(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D <sub>b</sub>	Root diameter d <sub>r</sub>	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C <sub>0</sub> (N)	*Rigidity K <sub>res</sub> (N/μm)	Nut dimensions													Mass				
									Outer diameter D	Overall length L <sub>t</sub>	Length A	Wiper material	Flange thickness T	Flange outer diameter D <sub>1</sub>	Flange type	Flange dimensions					Mounting hole			Nut (kg)	Screw shaft (kg/100mm)	
																X	Y	B	G	Q	PCD	M				Depth
FR3205PS-DPNR	32	5	3.1750	29.5	3.7×1	14700	41600	300	52	30	20	N	12	82	D	—	39.5	32	31	M6	67	6.6	11	6.5	0.52	0.58
FR3208PS-DPNR	32	8	4.7625	28	3.7×1	30100	74600	330	56	42	25.5	N	15	84	D	—	40.5	34	32	M6	69	6.6	11	6.5	0.79	0.55
FR3210PS-DPNR	32	10	6.3500	27.2	3.7×1	43100	97000	370	62	55	28.5	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	1.17	0.52
FR3212PS-DPNR	32	12	6.3500	27.2	3.7×1	43100	97000	370	62	65	31	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	1.33	0.54
FR3216PS-DPNR	32	16	6.3500	27.2	3.7×1	43100	97000	370	62	78	30	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	1.54	0.56
FR3612PS-DPNR	36	12	7.1440	30.6	3.7×1	59500	140500	400	70	62	32.5	N	18	104	D	—	50.5	41	40	M6	86	9	14	8.6	1.77	0.66
FR3616PS-DPNR	36	16	7.1440	30.6	3.7×1	59500	140500	400	70	80	35	N	18	104	D	—	50.5	41	40	M6	86	9	14	8.6	2.14	0.70
FR4008PS-DPNR	40	8	4.7625	36	3.7×1	34400	98300	410	64	44	26	N	15	98	D	—	47.5	38	38	M6	80	9	14	8.6	1.01	0.89
FR4010PS-DPNR	40	10	6.3500	35.2	3.7×1	49400	125800	410	70	55	28.5	N	15	104	D	—	50.5	41	40	M6	86	9	14	8.6	1.43	0.85
FR4012PS-DPNR	40	12	7.1440	34.6	3.7×1	64000	160700	460	74	63	33	N	18	108	D	—	52.5	43	41	M6	90	9	14	8.6	1.90	0.84
FR4016PS-DPNR	40	16	7.1440	34.6	3.7×1	64000	160700	460	74	78	34	N	18	108	D	—	52.5	43	41	M6	90	9	14	8.6	2.23	0.88

Note: • The rigidity indicated with the \*mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.  
• Wiper material N: Without wiper

Custom Ball Screw: END DEFLECTOR METHOD DOUBLE NUT (Accuracy grade C3-C5)



Flange type D

(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D <sub>s</sub>	Root diameter d <sub>r</sub>	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C <sub>0</sub> (N)	*Rigidity K <sub>sw</sub> (N/μm)	Outer diameter D	Overall length L	Length A	Wiper material	Flange thickness T	Flange outer diameter D <sub>f</sub>	Flange type	Nut dimensions							Mass			
																Flange dimensions					Mounting hole			Nut (kg)	Screw shaft (kg/100mm)	
																X	Y	B	G	Q	PCD	M				
		Drill	Spot facing	Depth																						
FR3208PE-DPNR	32	8	4.7625	28	3.7×1	30100	74600	570	56	90	25.5	N	15	84	D	—	40.5	34	32	M6	69	6.6	11	6.5	1.43	0.55
FR3210PE-DPNR	32	10	6.3500	27.2	3.7×1	43100	97000	580	62	115	28.5	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	2.18	0.52
FR3212PE-DPNR	32	12	6.3500	27.2	3.7×1	43100	97000	580	62	137	31	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	2.54	0.54
FR3216PE-DPNR	32	16	6.3500	27.2	3.7×1	43100	97000	580	62	174	30	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	3.13	0.56
FR3612PE-DPNR	36	12	7.1440	30.6	3.7×1	59500	140500	670	70	134	32.5	N	18	104	D	—	50.5	41	40	M6	86	9	14	8.6	3.34	0.66
FR3616PE-DPNR	36	16	7.1440	30.6	3.7×1	59500	140500	670	70	176	35	N	18	104	D	—	50.5	41	40	M6	86	9	14	8.6	4.21	0.70
FR4008PE-DPNR	40	8	4.7625	36	3.7×1	34400	98300	700	64	100	26	N	15	98	D	—	47.5	38	38	M6	80	9	14	8.6	1.91	0.89
FR4010PE-DPNR	40	10	6.3500	35.2	3.7×1	49400	125800	700	70	115	28.5	N	15	104	D	—	50.5	41	40	M6	86	9	14	8.6	2.64	0.85
FR4012PE-DPNR	40	12	7.1440	34.6	3.7×1	64000	160700	740	74	135	33	N	18	108	D	—	52.5	43	41	M6	90	9	14	8.6	3.59	0.84
FR4016PE-DPNR	40	16	7.1440	34.6	3.7×1	64000	160700	740	74	174	34	N	18	108	D	—	52.5	43	41	M6	90	9	14	8.6	4.45	0.88

Note: • The rigidity K<sub>sw</sub> indicated with the \*mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/20 of basic dynamic load rating (C).  
 • Wiper material N: Without wiper