

# Ultra-quiet ball screws

## F series

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Ordering instructions, shaft diameter and lead combinations	B_ 3

### Stocked FE series (C7 grade) / FG series (C5 grade)

• 10 mm shaft diameter, Unfinished shaft-ends	B_ 4
• 12 mm shaft diameter, Unfinished shaft-ends	B_ 5 ~ 6
• 15 mm shaft diameter, Unfinished shaft-ends	B_ 7 ~ 9
• 20 mm shaft diameter, Unfinished shaft-ends	B_10 ~ 11
• 25 mm shaft diameter, Unfinished shaft-ends	B_12 ~ 14

\* Refer to page E-1 and after for the shaft-end process drawings for the above sizes.

### Custom product FR series, Single nut (C3 ~ C7 grade)

• 10 to 40 mm shaft diameter, Single nut	B_15 ~ 16
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### Custom product FR series, Double nut (C3 ~ C5 grade)

• 32 to 40 mm shaft diameter, Double nut	B_17
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# Ultra-quiet ball screws **F series**

F series

## Features

### ● High rotational speed achieved by inovative recirculation system

- Delivers higher rotational speed up to 5,000 min<sup>-1</sup> based on new design and manufacturing technologies developed by KURODA.
- Provides maximum table speed of 2.5 m/sec. (It is for a ball screw with a 15 mm screw shaft diameter and 30 mm lead).

### ● Reduced sound pressure level and solved noise issue

- Delivers improved sound pressure level (down by up to 6 dB) and sound quality in a high frequency range, using KURODA's high-precision processing technologies developed during its history of gauge production and based on longstanding efforts toward quieter ball screws. (The above values are in the case of a ball screw with a 25 mm screw shaft diameter and 25 mm lead)

### ● Nut dimensions for more compactness

- With ball recirculation components provided at both end of a nut and a recirculation path developed by KURODA, substantial compactness in a overall length and outside diameter of the nut body has been realized.

### ● Longer lifetime achieved by bigger load rating

- With a load rating designed without changing a ball diameter in a KURODA's previous model, the F series ball screw provides improved basic dynamic load rating and basic static load rating, compared with previous models.

## Summary of the specifications

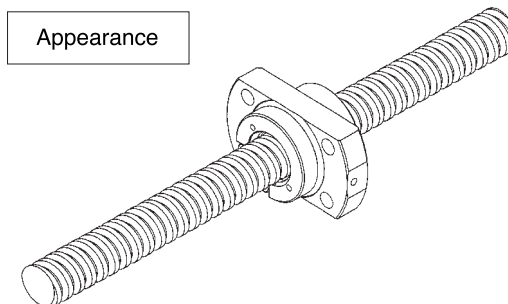
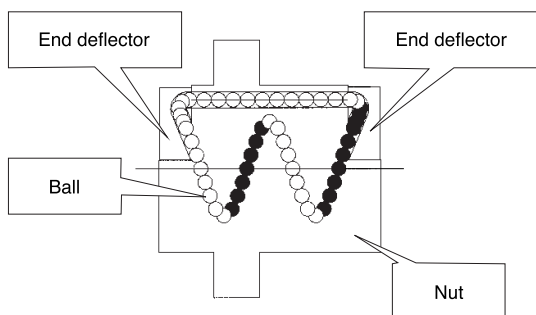
Shaft diameter:  $\varnothing 10$  to  $\varnothing 40$  mm, lead: 5 to 30 mm

(Refer to the list of shaft diameters and lead combinations for more details.)

Accuracy grade: C3 to C7 grades (C3 to C5 grades for ball screws with double nut)

Nut type: single nut, double nut (spacer type)

Recirculation system: end deflector method



Series product line-up

Series name		Nut type	Accuracy grade	Shaft diameter line-up	Shaft type	Product line
F series	FG series	Single nut	C5	$\varnothing 10 \sim \varnothing 25$	Both ends unfinished	Standard (in-stock) product line
	FE series		C7			
	FR series	Single nut	C3 ~ C7	$\varnothing 10 \sim \varnothing 40$	Free design	Custom product line
		Double nut	C3 ~ C5	$\varnothing 32 \sim \varnothing 40$		

• In the standard product line, both ends of the screw shaft are not finished. Additional end machining to fulfill your needs and operating conditions is required.

• Refer to page E-1 and after in this catalog for the shaft-end process drawings for standard (in-stock) products.

• For the custom ball screws, custom shaft design to fulfill your needs and operating conditions is required.

## □ Model numbers of F series

Example of the model number	Model series	Screw shaft diameter	Lead	Number of circuits	Combination	Flange type	Ball recirculation system	Wiper material	Thread direction	Overall length of screw shaft	Shaft end type	Thread length	Accuracy grade	Axial clearance
	FR	12	20	P	S	H	P	N	R	0900	X	0840	C5	F
FE	10 ~ 25	5 ~ 25	P	S	H	P	N	R	To be shown with a 4-digit number in metric unit (mm)	A, X	To be shown with a 4-digit number in metric unit (mm)	C7	M	
FG												C5	F	
FR	10 ~ 40	5 ~ 30	P	E	See specifications. H	P	N	R	To be shown with a 4-digit number in metric unit (mm)	X	To be shown with a 4-digit number in metric unit (mm)	C3 ~ C7	S, F, H, M	
FR	32 ~ 40	8 ~ 16										C3 ~ C5	S	

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

## □ Shaft diameter and lead combinations

Screw shaft diameter (mm)	Lead (mm)							
	5	8	10	12	16	20	25	30
10			S					
12			S			S		
15	S		S			S		S
20			S			S		
25	S		S				S	
32	S	S	S	S	S			
		E	E	E	E			
36				S	S			
				E	E			
40		S	S	S	S			
		E	E	E	E			

• The symbols in the above table represent:

S: single nut, E: double nut (spacer type)

• The shaded areas indicate that the screws are standard (in-stock) products (S: single nut).

## □ Options available for standard (in-stock) ball screws

Series	Additional end machining	Axial clearance adjustment	Surface treatment	Grease	Direction of nut	Wiper detachment
FE series	o	x	o	o	o	---
FG series	o	o	o	o	o	---

• In FE/FG series, both ends of the screw shaft are not finished. Additional end machining to fulfill your needs and operating conditions is required.

• Contact KURODA for more information on axial clearance adjustment for FG series products.

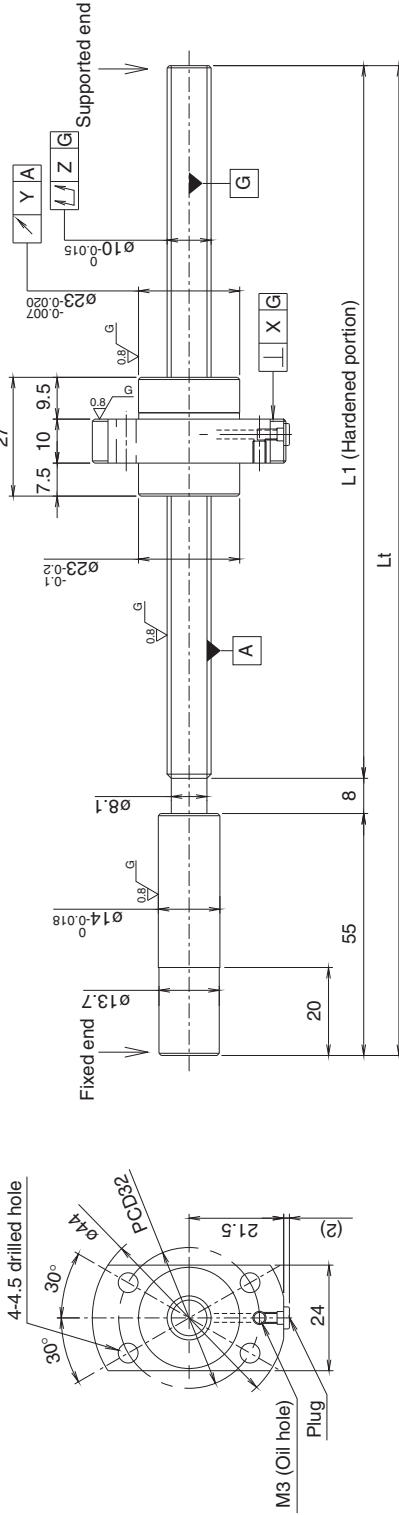
• The surface treatment mentioned above is anti corrosive black coating (1 to 2 μm).

• Alvania Grease S2 is contained in a nut shipped from KURODA, unless otherwise specified. Contact KURODA if you want other greases to be contained.

**UNFINISHED SHAFT ENDS**

**Screw shaft diameter ø10, Lead 10**

(Unit: mm)



**Notation of standard ground ball screw**

- Standard length shaft without end machining  
FE1010PS-HPNR-□□□□A  
FG1010PS-HPNR-□□□□A
- With end machining specified on your drawing  
FE1010PS-□PNR-□□□□X□□□□-C7M  
FG1010PS-□PNR-□□□□X□□□□-C5□

Overall length      Thread length

- Support unit: BUK/M-10F, BUK/M-8S or BUK/M-10 is recommended.
- Product with axial clearance ~0.005(F) shown in the table may be partially preloaded.
- Preload torque shown in the table is a value before greasing.
- The grease is contained inside of nut only at the time of delivery. When using it, apply lubricant where appropriate.

Model No.	Axial clearance	L <sub>1</sub>	L <sub>t</sub>	X	Y	Z	Preload torque (N·cm)	Lead accuracy		Wiper	Mass (kg)
								±Ec	ec		
FE1010PS-HPNR-0255A	~0.030(M)	192	255			0.080	-	0.05/300	-	-	0.29
FE1010PS-HPNR-0455A		392	455	0.014	0.020	0.120					0.40
FE1010PS-HPNR-0655A		592	655			0.150					0.52
FG1010PS-HPNR-0255A	~0.005(F)	192	255			0.055	~1.0	0.023	0.018	-	0.29
FG1010PS-HPNR-0455A		392	455	0.010	0.012	0.080					0.40
FG1010PS-HPNR-0655A		592	655			0.090					0.52

**Table of optional specifications for each model**

Series	Additional machining of shaft end	Axial clearance adjustment (Note 2)	Surface treatment (Note 1)	Direction of nut	Wiper removal
FE	0	X	0	0	-
FG	0	0	0	0	-

Note 1: The above-mentioned surface treatment is Anticorrosive black coating (coating thickness: 1 to 2 μm).

Note 2: For axial clearance adjustment for FG series, consult KURODA.

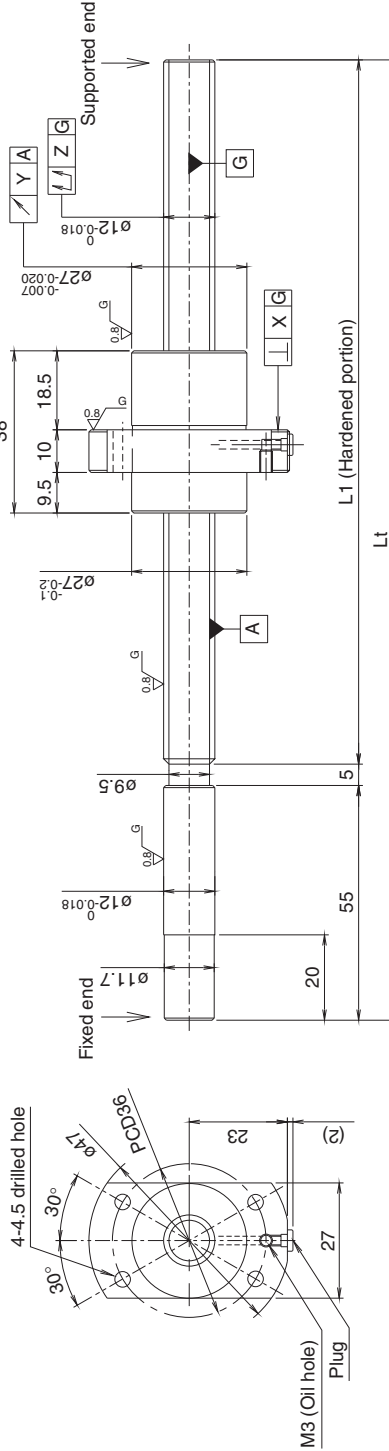
**Ball screw specifications**

Screw shaft diameter		10	Axial clearance	~0.030(M) ~0.005(F)
Lead	10		Basic dynamic load rating	2600N
Thread direction	Right-hand		Basic static load rating	3800N
Number of circuits	1.7 turn 1 circuit		Spacer ball	None
Ball diameter	2.381		Lubricant	Alvania Grease S2

**UNFINISHED SHAFT ENDS**

**Screw shaft diameter ø12, Lead 10**

(Unit: mm)



**Notation of standard ground ball screw**

- Standard length shaft without end machining  
FE1210PS-HPNR-□□□□A  
FG1210PS-HPNR-□□□□A
- With end machining specified on your drawing  
FE1210PS-□PNR-□□□□X□□□□-C7M  
FG1210PS-□PNR-□□□□X□□□□-C5□

Overall length Thread length

Model No.	Axial clearance	L <sub>1</sub>	L <sub>t</sub>	X	Y	Z	Preload torque (N·cm)		Lead accuracy		Wiper	Mass (kg)
							±Ec	ec	±Ec	ec		
FE1210PS-HPNR-0455A	~0.030(M)	395	455	0.014	0.020	0.120	-	0.05/300	-	-	-	0.53
FE1210PS-HPNR-0605A		545	605									0.150
FG1210PS-HPNR-0455A	~0.005(F)	395	455	0.010	0.012	0.080	~2.0	0.025	0.020	0.018	-	0.53
FG1210PS-HPNR-0605A		545	605									0.030

• Support unit: BUK/M-10F, BUK/M-8S or BUK/M-10 is recommended.

• Product with axial clearance ~0.005(F) shown in the table may be partially preloaded.

• Preload torque shown in the table is a value before greasing.

• The grease is contained inside of nut only at the time of delivery. When using it, apply lubricant where appropriate.

**Table of optional specifications for each model**

Series	Additional machining of shaft end	Axial clearance adjustment (Note 2)	Surface treatment (Note 1)	Difference of grease	Direction of nut	Wiper removal
FE	o	x	o	o	o	-
FG	o	o	o	o	o	-

Note 1: The above-mentioned surface treatment is Anticorrosive black coating (coating thickness: 1 to 2 μm).

Note 2: For axial clearance adjustment for FG series, consult KURODA.

**Ball screw specifications**

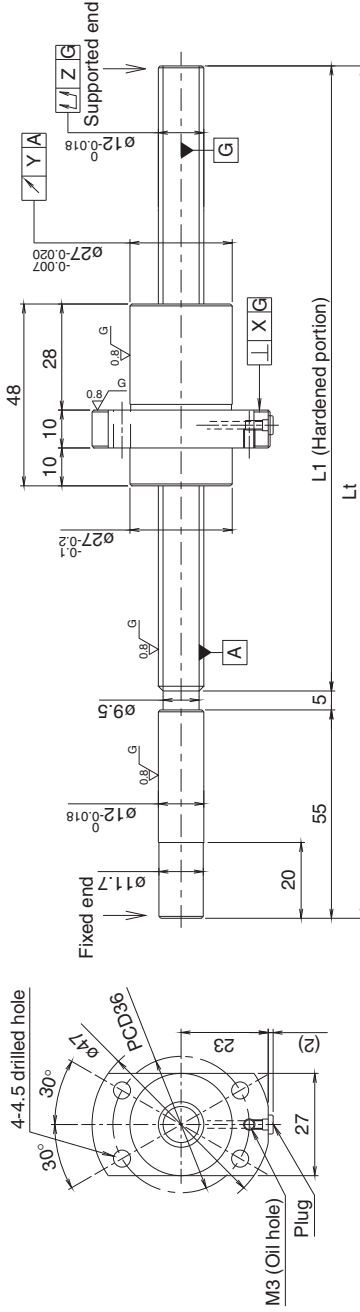
Screw shaft diameter	Lead	Thread direction	Number of circuits	Ball diameter	Axial clearance	Basic dynamic load rating	Basic static load rating	Spacer ball	Lubricant
ø12	10	Right-hand	2.7 turn 1 circuit	3.175	~0.030(M)	6700N	10700N	None	Alvania Grease S2

**KURODA** Standard Ground Ball Screw: FE Series (Accuracy grade C7)/FG Series (Accuracy grade C5)

**UNFINISHED SHAFT ENDS**

**Screw shaft diameter ø12, Lead 20**

(Unit: mm)



**Notation of standard ground ball screw**

- Standard length shaft without end machining  
FE1220PS-HPNR-□□□□A  
FG1220PS-HPNR-□□□□A
- With end machining specified on your drawing  
FE1220PS-□□PNR-□□□□X□□□□-C7M  
FG1220PS-□□PNR-□□□□X□□□□-C5□

Overall length Thread length

Model No.	Axial clearance	L <sub>1</sub>	L <sub>t</sub>	X	Y	Z	Preload torque (N·cm)	Lead accuracy		Wiper	Mass (kg)
								±Ec	ec		
FE1220PS-HPNR-0405A	~0.030(M)	345	405	0.018	0.030	0.120	-	0.05/300	-	-	0.54
FE1220PS-HPNR-0605A		545	605								0.71
FE1220PS-HPNR-0900A		840	900								0.95
FG1220PS-HPNR-0405A	~0.005(F)	345	405	0.010	0.012	0.080	~2.5	0.025 0.020	-	-	0.54
FG1220PS-HPNR-0605A		545	605								0.71
FG1220PS-HPNR-0900A		840	900								0.95

• Support unit: BUK/M-10F, BUK/M-8S or BUK/M-10 is recommended.

• Product with axial clearance ~0.005(F) shown in the table may be partially preloaded.

• Preload torque shown in the table is a value before greasing.

• The grease is contained inside of nut only at the time of delivery. When using it, apply lubricant where appropriate.

**Table of optional specifications for each model**

Series	Additional machining of shaft end	Axial clearance adjustment (Note 2)	Surface treatment (Note 1)	Difference of grease	Direction of nut	Wiper removal
FE	0	x	0	0	0	-
FG	0	0	0	0	0	-

Note 1: The above-mentioned surface treatment is Anticorrosive black coating (coating thickness: 1 to 2 μm).

Note 2: For axial clearance adjustment for FG series, consult KURODA.

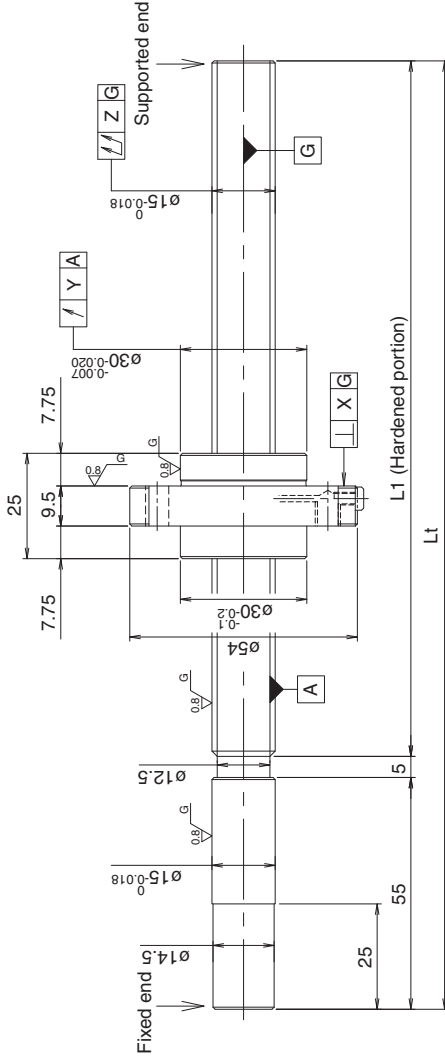
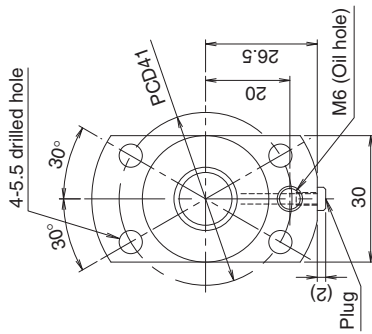
**Ball screw specifications**

Screw shaft diameter		12	Axial clearance	~0.030(M)	~0.005(F)
Lead		20	Basic dynamic load rating	4300N	
Thread direction		Right-hand	Basic static load rating	6700N	
Number of circuits		1.7 turn 1 circuit	Spacer ball	None	
Ball diameter		3.175	Lubricant	Alvania Grease S2	

**UNFINISHED SHAFT ENDS**

**Screw shaft diameter ø15, Lead 5**

(Unit: mm)



**Notation of standard ground ball screw**

- Standard length shaft without end machining  
FE1505PS-HPNR-□□□□A  
FG1505PS-HPNR-□□□□A
  - With end machining specified on your drawing  
FE1505PS-□P□R-□□□□X□□□□-C7M  
FG1505PS-□P□R-□□□□X□□□□-C5□
- Overall length    Thread length

Model No.	Axial clearance		L <sub>1</sub>	L <sub>t</sub>	X	Y	Z	Preload torque (N·cm)	Lead accuracy		Wiper	Mass (kg)
	~0.030(M)	~0.005(F)							±Ec	ec		
FE1505PS-HPNR-0600A	~0.030(M)		540	600	0.014	0.020	0.110	-	0.05/300	-	-	0.83
FE1505PS-HPNR-1100A	~0.030(M)		1040	1100	0.014	0.020	0.210		-	-	-	1.39
FG1505PS-HPNR-0600A	~0.005(F)		540	600	0.010	0.012	0.075	~2.0	0.030	0.023	0.018	0.83
FG1505PS-HPNR-1100A	~0.005(F)		1040	1100	0.010	0.012	0.150		0.046	0.030	0.018	1.39

- Support unit: BUK/M-12F, BUK/M-10S or BUK/M-12 is recommended.
- Product with axial clearance ~0.005(F) shown in the table may be partially preloaded.
- Preload torque shown in the table is a value before greasing.
- The grease is contained inside of nut only at the time of delivery. When using it, apply lubricant where appropriate.

**Table of optional specifications for each model**

Series	Additional machining of shaft end	Axial clearance adjustment (Note 2)	Surface treatment (Note 1)	Difference of grease	Direction of nut	Wiper removal
FE	0	X	0	0	0	-
FG	0	0	0	0	0	-

Note 1: The above-mentioned surface treatment is Anticorrosive black coating (coating thickness: 1 to 2 μm).

Note 2: For axial clearance adjustment for FG series, consult KURODA.

**Ball screw specifications**

Screw shaft diameter	15	Axial clearance	~0.030(M)	~0.005(F)
Lead	5	Basic dynamic load rating	7400N	
Thread direction	Right-hand	Basic static load rating	12900N	
Number of circuits	2.7 turn 1 circuit	Spacer ball	None	
Ball diameter	3.175	Lubricant	Alvania Grease S2	

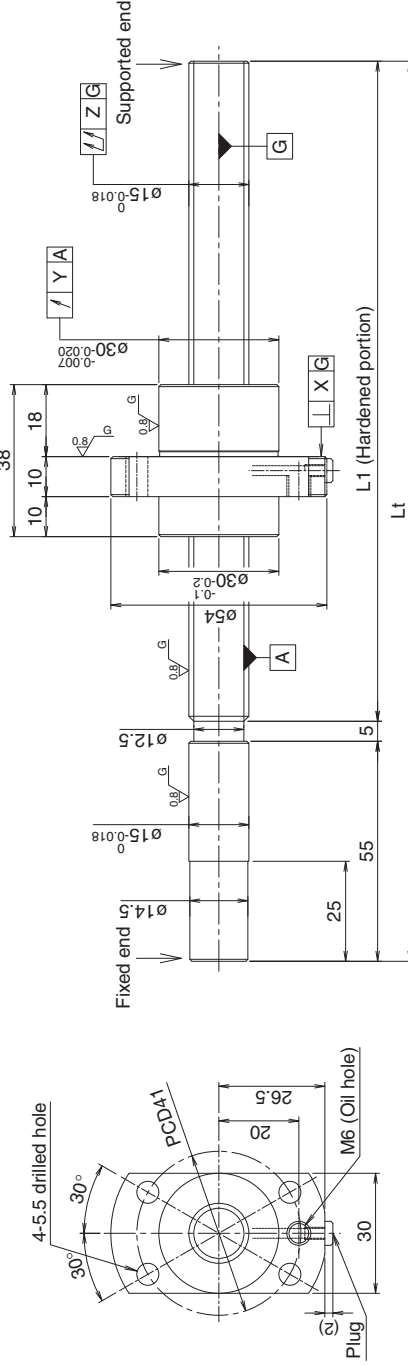


**KURODA** Standard Ground Ball Screw: FE Series (Accuracy grade C7)/FG Series (Accuracy grade C5)

**UNFINISHED SHAFT ENDS**

**Screw shaft diameter ø15, Lead 10**

(Unit: mm)



**Notation of standard ground ball screw**

- Standard length shaft without end machining

FE1510PS-HPNR-□□□□A

FG1510PS-HPNR-□□□□A

- With end machining specified on your drawing

FE1510PS-□PNR-□□□□X□□□□-C7M

FG1510PS-□PNR-□□□□X□□□□-C5□

Overall length Thread length

**Table of optional specifications for each model**

Series	Additional machining of shaft end	Axial clearance adjustment (Note 2)	Surface treatment (Note 1)	Difference of grease	Direction of nut	Wiper removal
FE	0	x	0	0	0	-
FG	0	0	0	0	0	-

Note 1: The above-mentioned surface treatment is Anticorrosive black coating (coating thickness: 1 to 2 μm).

Note 2: For axial clearance adjustment for FG series, consult KURODA.

Model No.	Axial clearance	L <sub>1</sub>	L <sub>t</sub>	X	Y	Z	Preload torque (N·cm)	Lead accuracy		Wiper	Mass (kg)
								±Ec	ec		
FE1510PS-HPNR-0600A	~0.030(M)	540	600			0.110	-	0.05/300	-	-	0.96
FE1510PS-HPNR-0900A		840	900			0.170					1.34
FE1510PS-HPNR-1100A		1040	1100	0.014	0.020	0.210					1.59
FE1510PS-HPNR-1300A		1240	1300			0.270					1.84
FE1510PS-HPNR-1500A		1440	1500			0.270					2.10
FG1510PS-HPNR-0600A	~0.005(F)	540	600			0.075	~3.0	0.030	0.023	-	0.96
FG1510PS-HPNR-0900A		840	900			0.120		0.040	0.027	1.34	
FG1510PS-HPNR-1100A		1040	1100	0.010	0.012	0.150		0.046	0.030	1.59	
FG1510PS-HPNR-1300A		1240	1300			0.190		0.054	0.035	1.84	
FG1510PS-HPNR-1500A		1440	1500			0.190		0.054	0.035	2.10	

• Support unit: BUK/M-12F, BUK/M-10S or BUK/M-12 is recommended.

• Product with axial clearance ~0.005(F) shown in the table may be partially preloaded.

• Preload torque shown in the table is a value before greasing.

• The grease is contained inside of nut only at the time of delivery. When using it, apply lubricant where appropriate.

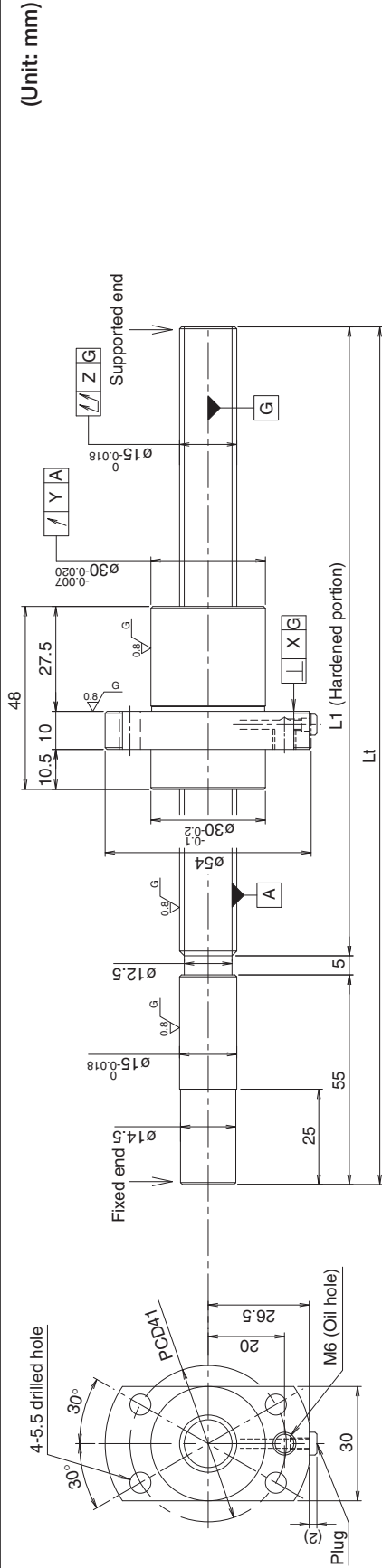
**Ball screw specifications**

Screw shaft diameter	15	Axial clearance	~0.030(M) ~0.005(F)
Lead	10	Basic dynamic load rating	7400N
Thread direction	Right-hand	Basic static load rating	12900N
Number of circuits	2.7 turn 1 circuit	Spacer ball	None
Ball diameter	3.175	Lubricant	Alvania Grease S2



**UNFINISHED SHAFT ENDS**

**Screw shaft diameter ø15, Lead 20**



(Unit: mm)

**Notation of standard ground ball screw**

- Standard length shaft without end machining  
FE1520PS-HPNR-□□□□A  
FG1520PS-HPNR-□□□□A
- With end machining specified on your drawing  
FE1520PS-□PNR-□□□□X□□□□-C7M  
FG1520PS-□PNR-□□□□X□□□□-C5□

Overall length Thread length

**Table of optional specifications for each model**

Series	Additional machining of shaft end	Axial clearance adjustment (Note 2)	Surface treatment (Note 1)	Difference of grease	Direction of nut	Wiper removal
FE	0	x	0	0	0	-
FG	0	0	0	0	0	-

Note 1: The above-mentioned surface treatment is Anticorrosive black coating (coating thickness: 1 to 2 μm).

Note 2: For axial clearance adjustment for FG series, consult KURODA.

Model No.	Axial clearance	L <sub>1</sub>	L <sub>t</sub>	X	Y	Z	Preload torque (N·cm)		Lead accuracy		Wiper	Mass (kg)
							±Ec	ec	±Ec	e300		
FE1520PS-HPNR-0600A	~0.030(M)	540	600			0.110	~3.0	0.030	0.023	-	-	1.04
FE1520PS-HPNR-0900A		840	900			0.170						1.44
FE1520PS-HPNR-1100A		1040	1100	0.014	0.020	0.210						1.71
FE1520AS-HPNR-1300A		1240	1300			0.270						1.97
FE1520PS-HPNR-1500A		1440	1500			0.270						2.24
FG1520PS-HPNR-0600A	~0.005(F)	540	600			0.075	0.030	0.027	0.018	-	-	1.04
FG1520PS-HPNR-0900A		840	900			0.120						1.44
FG1520PS-HPNR-1100A		1040	1100	0.010	0.012	0.150						1.71
FG1520AS-HPNR-1300A		1240	1300			0.190						1.97
FG1520PS-HPNR-1500A		1440	1500			0.190						2.24

- Support unit: BUK/M-12F, BUK/M-10S or BUK/M-12 is recommended.
- Product with axial clearance ~0.005(F) shown in the table may be partially preloaded.
- Preload torque shown in the table is a value before greasing.
- The grease is contained inside of nut only at the time of delivery. When using it, apply lubricant where appropriate.

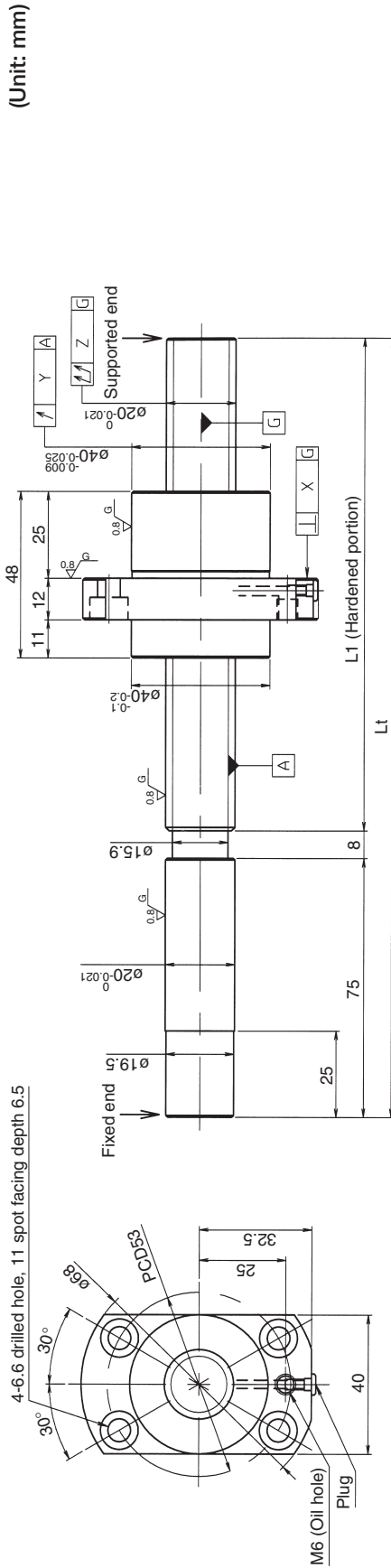
**Ball screw specifications**

Screw shaft diameter	Lead	Thread direction	Number of circuits	Ball diameter	Axial clearance	Basic dynamic load rating	Basic static load rating	Spacer ball	Lubricant
15	20	Right-hand	1.7 turn 1 circuit	3.175	~0.030(M)	4800N	8200N	None	Alvania Grease S2



**UNFINISHED SHAFT ENDS**

**Screw shaft diameter ø20, Lead 20**



(Unit: mm)

**Notation of standard ground ball screw**

- Standard length shaft without end machining  
FE2020PS-HPNR-□□□□A  
FG2020PS-HPNR-□□□□A
- With end machining specified on your drawing  
FE2020PS-□PNR-□□□□X□□□□-C7M  
FG2020PS-□PNR-□□□□X□□□□-C5□

Overall length Thread length

Model No.	Axial clearance	L <sub>1</sub>	L <sub>t</sub>	X	Y	Z	Preload torque (N·cm)	Lead accuracy		Wiper	Mass (kg)	
								±Ec	e300			
FE2020PS-HPNR-1005A	~0.030(M)	922	1005	0.018	0.030	0.210	-	0.05/300	-	-	2.73	
FE2020PS-HPNR-1505A		1422	1505								0.270	3.87
FE2020PS-HPNR-1805A		1722	1805								0.150	4.55
FG2020PS-HPNR-1005A	~0.005(F)	922	1005	0.011	0.015	0.150	~4.0	0.040	0.027	-	2.73	
FG2020PS-HPNR-1505A		1422	1505								0.190	3.87
FG2020PS-HPNR-1805A		1722	1805								0.040	0.035

- Support unit: BUK/M-15F, BUK/M-15S or BUK/M-15 is recommended.
- Product with axial clearance ~0.005(F) shown in the table may be partially preloaded.
- Preload torque shown in the table is a value before greasing.
- The grease is contained inside of nut only at the time of delivery. When using it, apply lubricant where appropriate.

**Table of optional specifications for each model**

Series	Additional machining of shaft end	Axial clearance adjustment (Note 2)	Surface treatment (Note 1)	Difference of grease	Direction of nut	Wiper removal
FE	0	X	0	0	0	-
FG	0	0	0	0	0	-

Note 1: The above-mentioned surface treatment is Anticorrosive black coating (coating thickness: 1 to 2 μm).

Note 2: For axial clearance adjustment for FG series, consult KURODA.

**Ball screw specifications**

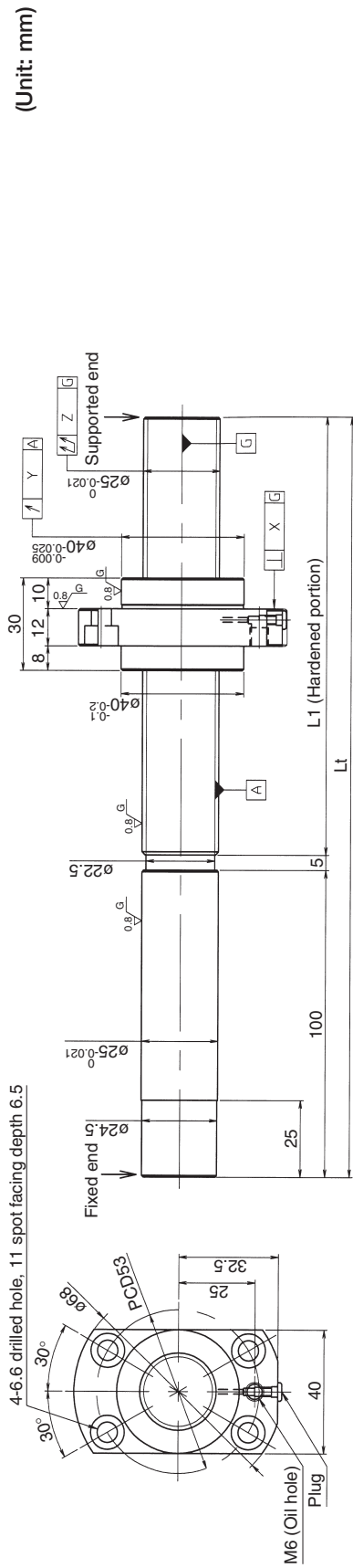
Screw shaft diameter		20	Axial clearance	~0.030(M)	~0.005(F)
Lead	20	Basic dynamic load rating	11600N		
Thread direction	Right-hand	Basic static load rating	20600N		
Number of circuits	1.7 turn 1 circuit	Spacer ball	None		
Ball diameter	4.7625	Lubricant	Alvania Grease S2		



**KURODA** Standard Ground Ball Screw: FE Series (Accuracy grade C7)/FG Series (Accuracy grade C5)

**UNFINISHED SHAFT ENDS**

**Screw shaft diameter ø25, Lead 5**



(Unit: mm)

**Notation of standard ground ball screw**

- Standard length shaft without end machining  
FE2505PS-HPNR-□□□□A  
FG2505PS-HPNR-□□□□A
- With end machining specified on your drawing  
FE2505PS-□PNR-□□□□X□□□□-C7M  
FG2505PS-□PNR-□□□□X□□□□-C5□

Overall length Thread length

Model No.	Axial clearance	L <sub>1</sub>	L <sub>t</sub>	X	Y	Z	Preload torque (N·cm)	Lead accuracy		Wiper	Mass (kg)
								±Ec	ec		
FE2505PS-HPNR-0600A	~0.030(M)	495	600	0.018	0.030	0.090	-	0.05/300	-	-	2.37
FE2505PS-HPNR-1000A		895	1000			0.130					3.74
FE2505PS-HPNR-1505A		1400	1505			0.190					5.47
FE2505PS-HPNR-1805A		1700	1805			0.250					6.50
FG2505PS-HPNR-0600A	~0.005(F)	495	600	0.011	0.015	0.060	~4.0	0.027 0.020	0.018	-	2.37
FG2505PS-HPNR-1000A		895	1000			0.085					3.74
FG2505PS-HPNR-1505A		1400	1505			0.130					5.47
FG2505PS-HPNR-1805A		1700	1805			0.170					6.50

- Support unit: BUK/M-20F, BUK/M-20S or BUK/M-20 is recommended.
- Product with axial clearance ~0.005(F) shown in the table may be partially preloaded.
- Preload torque shown in the table is a value before greasing.
- The grease is contained inside of nut only at the time of delivery. When using it, apply lubricant where appropriate.

**Table of optional specifications for each model**

Series	Additional machining of shaft end	Axial clearance adjustment (Note 2)	Surface treatment (Note 1)	Direction of nut	Difference of grease	Wiper removal
FE	0	x	0	0	0	-
FG	0	0	0	0	0	-

Note 1: The above-mentioned surface treatment is Anticorrosive black coating (coating thickness: 1 to 2 μm).

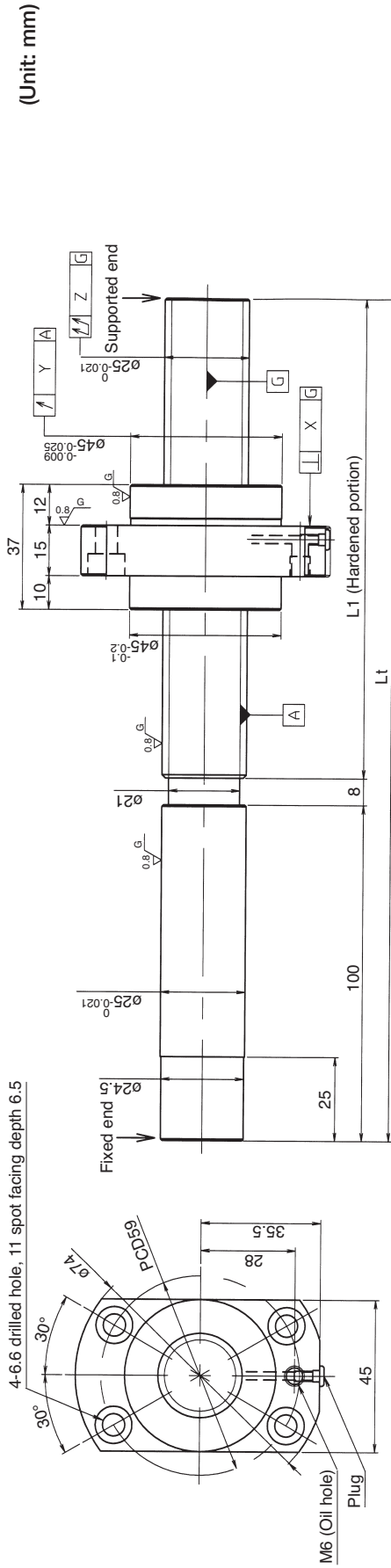
Note 2: For axial clearance adjustment for FG series, consult KURODA.

**Ball screw specifications**

Screw shaft diameter		25	Axial clearance	~0.030(M) ~0.005(F)
Lead		5	Basic dynamic load rating	13100N
Thread direction		Right-hand	Basic static load rating	31800N
Number of circuits		3.7 turn 1 circuit	Spacer ball	None
Ball diameter		3.175	Lubricant	Alvania Grease S2

**UNFINISHED SHAFT ENDS**

**Screw shaft diameter  $\phi 25$ , Lead 10**



(Unit: mm)

**Notation of standard ground ball screw**

- Standard length shaft without end machining  
FE2510PS-HPNR-□□□□A  
FG2510PS-HPNR-□□□□A
- With end machining specified on your drawing  
FE2510PS-□P NR-□□□□X□□□□-C7M  
FG2510PS-□P NR-□□□□X□□□□-C5□

Overall length Thread length

Model No.	Axial clearance	L <sub>1</sub>	L <sub>t</sub>	X	Y	Z	Preload torque (N·cm)	Lead accuracy		Wiper	Mass (kg)
								±Ec	eC		
FE2510PS-HPNR-1020A	~0.030(M)	912	1020	0.018	0.030	0.150	-	0.05/300	-	-	3.92
FE2510PS-HPNR-1520A		1412	1520								5.60
FE2510PS-HPNR-2220A		2112	2220								7.95
FG2510PS-HPNR-1020A	~0.005(F)	912	1020	0.011	0.015	0.100	~4.0	0.040	0.027	-	3.92
FG2510PS-HPNR-1520A		1412	1520								5.60
FG2510PS-HPNR-2220A		2112	2220								7.95

• Support unit: BUK/M-20F, BUK/M-20S or BUK/M-20 is recommended.

• Product with axial clearance ~0.005(F) shown in the table may be partially preloaded.

• Preload torque shown in the table is a value before greasing.

• The grease is contained inside of nut only at the time of delivery. When using it, apply lubricant where appropriate.

**Table of optional specifications for each model**

Series	Additional machining of shaft end	Axial clearance adjustment (Note 2)	Surface treatment (Note 1)	Difference of grease	Direction of nut	Wiper removal
FE	○	X	○	○	○	-
FG	○	○	○	○	○	-

Note 1: The above-mentioned surface treatment is Anticorrosive black coating (coating thickness: 1 to 2 μm).

Note 2: For axial clearance adjustment for FG series, consult KURODA.

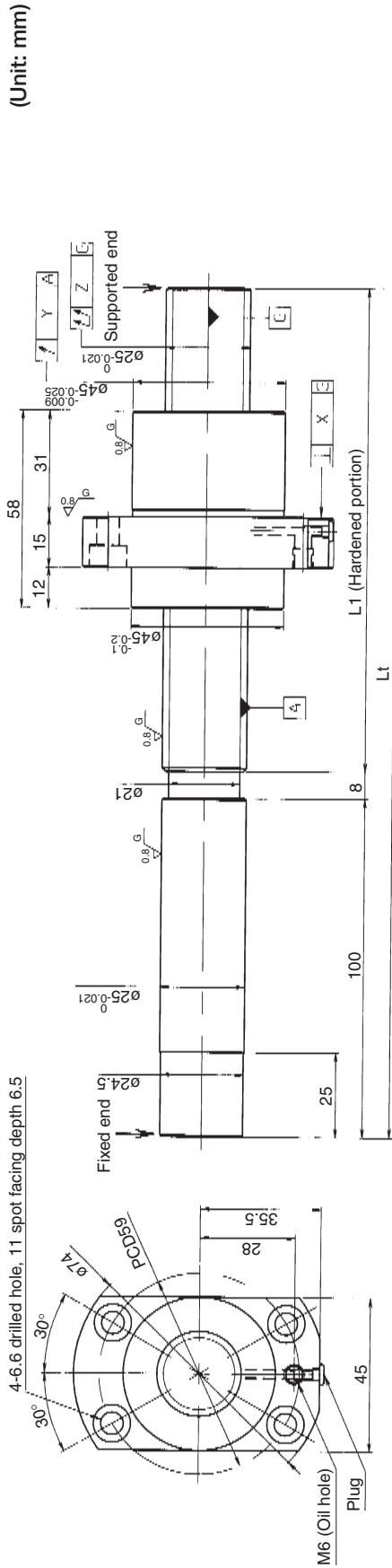
**Ball screw specifications**

Screw shaft diameter		25	Axial clearance	~0.030(M)	~0.005(F)
Lead		10	Basic dynamic load rating	20400N	
Thread direction		Right-hand	Basic static load rating	42600N	
Number of circuits		2.7 turn 1 circuit	Spacer ball	None	
Ball diameter		4.7625	Lubricant	Alvania Grease S2	

**KURODA** Standard Ground Ball Screw: FE Series (Accuracy grade C7)/FG Series (Accuracy grade C5)

**UNFINISHED SHAFT ENDS**

**Screw shaft diameter ø25, Lead 25**



(Unit: mm)

**Notation of standard ground ball screw**

- Standard length shaft without end machining  
FE2525PS-HPNR-□□□□A  
FG2525PS-HPNR-□□□□A
- With end machining specified on your drawing  
FE2525PS-□PNR-□□□□X□□□□-C7M  
FG2525PS-□PNR-□□□□X□□□□-C5□



- Support unit: BUK/M-20F, BUK/M-20S or BUK/M-20 is recommended.
- Product with axial clearance ~0.005(F) shown in the table may be partially preloaded.
- Preload torque shown in the table is a value before greasing.
- The grease is contained inside of nut only at the time of delivery. When using it, apply lubricant where appropriate.

Model No.	Axial clearance	L <sub>1</sub>	L <sub>t</sub>	X	Y	Z	Preload torque (N·cm)	Lead accuracy		Wiper	Mass (kg)
								±Ec	ec		
FE2525PS-HPNR-1020A	~0.030(M)	912	1020	0.018	0.030	0.150	-	0.05/300	-	-	4.39
FE2525PS-HPNR-1520A		1412	1520								6.23
FE2525PS-HPNR-2020A		1912	2020								8.08
FG2525PS-HPNR-1020A	~0.005(F)	912	1020	0.011	0.015	0.100	~4.0	0.040	0.027	-	4.39
FG2525PS-HPNR-1520A		1412	1520								6.23
FG2525PS-HPNR-2020A		1912	2020								8.08

**Table of optional specifications for each model**

Series	Additional machining of shaft end	Axial clearance adjustment (Note 2)	Surface treatment (Note 1)	Direction of nut	Difference of grease	Wiper removal
FE	0	x	0	0	0	-
FG	0	0	0	0	0	-

Note 1: The above-mentioned surface treatment is Anticorrosive black coating (coating thickness: 1 to 2 μm).

Note 2: For axial clearance adjustment for FG series, consult KURODA.

**Ball screw specifications**

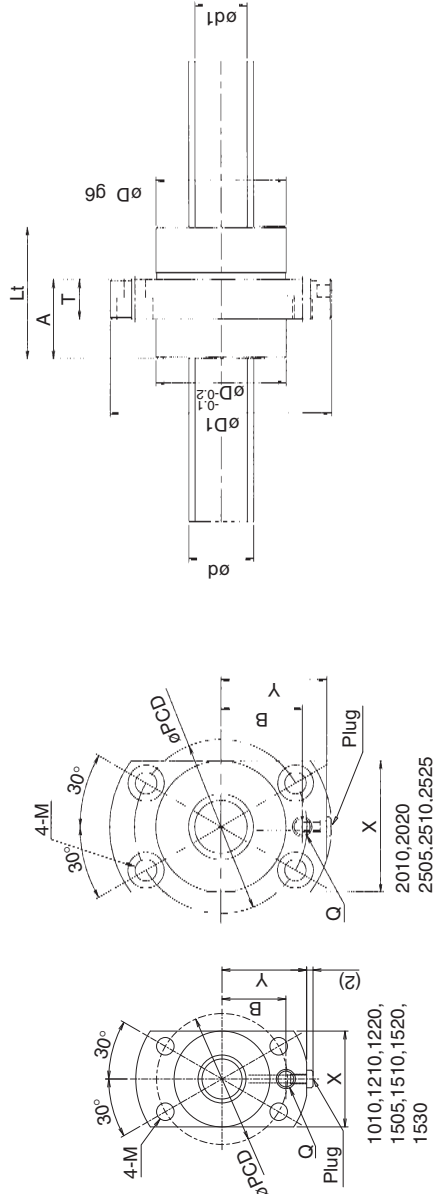
Screw shaft diameter		25	Axial clearance	~0.030(M)	~0.005(F)
Lead	25	Basic dynamic load rating	13100N		
Thread direction	Right-hand	Basic static load rating	25900N		
Number of circuits	1.7 turn 1 circuit	Spacer ball	None		
Ball diameter	4.7625	Lubricant	Alvania Grease S2		



**END DEFLECTOR METHOD SINGLE NUT**

**Screw shaft diameter  $\phi 10$ - $\phi 25$**

(Unit: mm)



Flange type H

Model No.	Screw shaft diameter d	Lead L	Ball diameter $D_b$	Root diameter $d_1$	Number of circuits Turn x	Basic dynamic load rating C (N)	Basic static load rating $C_0$ (N)	* Rigidity $K_{NS}$ (N/ $\mu$ m)	Outer diameter D	Overall length $L_t$	Length A	Wiper material	Flange thickness T	Flange outer diameter $D_1$	Flange type	Nut dimensions						Mounting hole			Mass	
																X	Y	B	G	Q	PCD	Drill	M		Nut (kg)	Screw shaft (kg/100mm)
																							Spot facing	Depth		
FR1010PS-HPNR	10	10	2.381	8.1	1.7X1	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	3.175	9.5	2.7X1	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	3.175	9.5	1.7X1	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	3.175	12.5	2.7X1	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	3.175	12.5	2.7X1	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	3.175	12.5	1.7X1	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	3.175	12.5	1.7X1	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	4.763	16	2.7X1	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	4.763	15.9	1.7X1	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	3.175	22.5	3.7X1	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	3.7X1	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	4.763	21	2.7X1	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	4.763	21	1.7X1	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

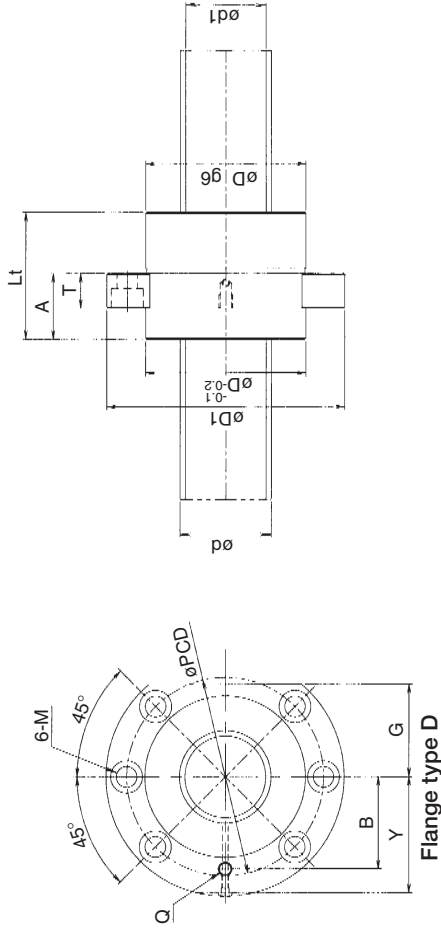
Note: \* The rigidity indicated with the \*mark in the above list represents the practical value based on the result of rigidity test. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.

. Wiper material N: Without wiper



## END DEFLECTOR METHOD SINGLE NUT

(Unit: mm)



Model No.	Screw shaft diameter d	Lead L	Ball diameter D <sub>b</sub>	Root diameter d <sub>1</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>NS</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			Drill	M Spot facing	Depth
FR3205PS-DPNR	32	5	3.175	29.5	3.7X1	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	4.763	28	3.7X1	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	6.350	27.2	3.7X1	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	6.350	27.2	3.7X1	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	6.350	27.2	3.7X1	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	7.144	30.6	3.7X1	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	7.144	30.6	3.7X1	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	4.763	36	3.7X1	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	6.350	35.2	3.7X1	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	7.144	34.6	3.7X1	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	7.144	34.6	3.7X1	64000	160700	460	74	78	34	N	18	108	D	-	52.5	43	41	M6	90	9	14	8.6	2.23	0.88

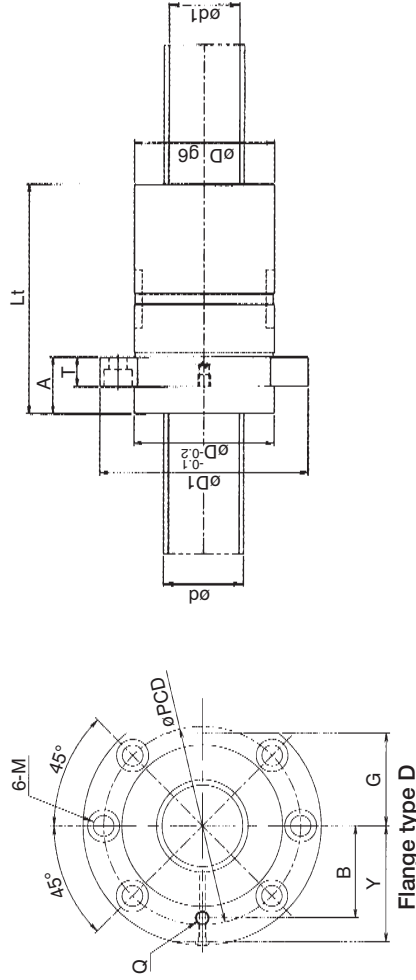
Note: The rigidity indicated with the \*mark in the above list represents the practical value based on the result of rigidity test. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.

. Wiper material N: Without wiper

**END DEFLECTOR METHOD DOUBLE NUT**

**Screw shaft diameter  $\phi 32\text{-}\phi 40$**

(Unit: mm)



Model No.	Screw shaft diameter d	Lead L	Ball diameter $D_b$	Root diameter $d_1$	Number of Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating $C_0$ (N)	* Rigidity $K_{NW}$ (N/ $\mu$ m)	Nut dimensions										Mass							
									Outer diameter D	Overall length $L_t$	Length A	Wiper material	Flange thickness T	Flange outer diameter $D_1$	Flange type	Flange dimensions			Mounting hole			Nut (kg)	Screw shaft (kg/100mm)			
																X	Y	B	G	Q	PCD			Drill	Spot facing	Depth
FR3208PE-DPNR	32	8	4.763	28	3.7X1	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	6.350	27.2	3.7X1	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	6.350	27.2	3.7X1	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	6.350	27.2	3.7X1	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	7.144	30.6	3.7X1	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	7.144	30.6	3.7X1	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	4.763	36	3.7X1	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	6.350	35.2	3.7X1	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	7.144	34.6	3.7X1	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	7.144	34.6	3.7X1	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  $K_{NW}$  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