# Standard precision ball screws

## **Features**

- GP, GG, GE series: Various screw shaft diameters, leads, and accuracy grades available for your selection
- An optimal size can be selected from a variety of screw shaft diameters, leads, and accuracy grades eliminating unnecessary compromise in product selection.

## • FG, FE series: High rotational speed

- Delivers higher rotational speed up to 5,000 min<sup>-1</sup> through our unique recirculation system.
- In consideration of the load rating, the products have higher specifications than previous KURODA products.

## • DP series: The industry's smallest compact nut class

- Utilizes a deflector recirculation system which realizes minimal nut dimensions.
- With leads from 1 mm, the DP series is suitable for machines and equipment that requires fine pitch forwarding and precise positioning.
- HG series: Optimal for high-speed conveyance achieved by larger leads
- · Larger leads enable a higher feed rate at a low rotational speed.
- With the adoption of multi-start thread, we have achieved a more compact nut with an improved load rating.

## □ Summary of the specifications

Screw shaft diameter	ø6 to ø32 mm
Lead	1 to 60 mm
	C3 grade: GP, DP
Accuracy grade	C5 grade: FG, GG, HG
	C7 grade: FE, GE
Axial clearance	Refer to each product specification table.
	One shaft end finished (C3 grade: GP, DP)
Shaft end type	Unfinished shaft ends
Product line	Standard product

## □ Options available

Series	Additional shaft- end machining	Surface treatment	Change of grease type	Change of nut direction	LUBSEAL
GP, DP FG, GG, HG FE, GE	0	0	0	0	See the notes below.

• The GP and DP series have one shaft end finished.

• The surface treatment is anticorrosive black coating (coating thickness: 1 to 2  $\mu$ m).

· Contact KURODA regarding the inclusion of grease types other than the standard grease.

• Please refer to the LUBSEAL series and size reference chart or the option specifications on each product's page to determine whether or not LUBSEAL is supported.

## □ Model numbers of each series

Series	Shaft diameter	Lead				Flange type	Ball recir- culation system	Wiper material	Thread direction		Overall screw shaft length	Shaft end type	Thread length			Axial clearance	
FG	15	10	Р	S	-	Н	Р	Ν	R	-	0900	Х	0840	-	C5	F	
DP	6 to 14	1 to 4	J			Н	D	Ν			To he	B, X	To he		C3	F, S	
FG	10 to 25	5 to 25	Б	s -		ы	Б	N	N		shown		A, X A, X A, X B, X S, X S, X S, X S, X S, Shown with a 4-digit number in metric units		C5	F	
FE	10 10 25	5 10 25	Г				F	IN			4-digit	A, A			C7	Μ	
GG	0 +0 22	2 to 25	See		-	_	See	R	R	-				-	C5	F	
GE	0 10 32	2 10 25	specifi-				cations.					Π, Λ			C7	М	
GP	0 to 20	2 to 5	cations.			cations.	A	cations.				B, X			C3	F, S	
HG	0 10 20	12 to 60	Q				Q					A, X	(mm)		C5	F, H	
	FG DP FG FE GG GE GP	Series diameter   FG 15   DP 6 to 14   FG 10 to 25   GG 8 to 32   GP 8 to 20	Series diameter Lead   FG 15 10   DP 6 to 14 1 to 4   FG 10 to 25 5 to 25   GG 8 to 32 2 to 25   GP 8 to 32 2 to 25	Series diameter Lead of circuits   FG 15 10 P   DP 6 to 14 1 to 4 J   FG 10 to 25 5 to 25 P   GG 8 to 32 2 to 25 See specifi- cations.   GP 8 to 20 2 to 5 2 to 6	Genesities claude cf circuits tion   FG 15 10 P S   DP 6 to 14 1 to 4 J   FG 10 to 25 5 to 25 P   FG 10 to 25 5 to 25 P   GG 8 to 32 2 to 25 See specifications.   GP 8 to 20 2 to 5 12 to 60	Series diameter Lead of circuits tion   FG 15 10 P S   DP 6 to 14 1 to 4 J   FG 10 to 25 5 to 25 P   GG 8 to 32 2 to 25 See specifi- cations. S   HG 8 to 20 2 to 5 cations. S	Series Statt diameter Lead Number Combina- of circuits Parage tion   FG 15 10 P S - H   DP 6 to 14 1 to 4 J - H   FG 10 to 25 5 to 25 P - H   GG 8 to 32 2 to 25 See specifi- 12 to 60 S - See specifications. -	Series Stratt diameter Lead Number Contoina- of circuits Plange tion culation type culation system   FG 15 10 P – H P   DP 6 to 14 1 to 4 J – H D   FG 10 to 25 5 to 25 P – H D   GG 8 to 32 2 to 25 See specifi- GE S – See specifi- cations. See specifi- A –   HG 8 to 20 2 to 5 cations. A Q –	Setting diameter Lead of circuits tion type Culation system material   FG 15 10 P S - H P N   DP 6 to 14 1 to 4 J - H P N   FG 10 to 25 5 to 25 P - H P N   GG 8 to 32 2 to 25 See specifi- GP S See specifi- cations. See specifi- cations. See specifi- Q See specifi- Q See specifi- actions. See specifi- actions. See specifi- actions. See specifi- actions. See specifi- actions. See specifi- actions. See specifi- actions. See specifi- actions. See specifi- actions. 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· For more details, refer to the specifications and data for each size.

## Screw shaft diameter and lead combinations

			Lead (mm)													
		1	2	3	4	5	10	12	15	16	20	25	30	32	40	60
	6	0														
	8	0	• 0		•											
	10		• 0		٠		• •									
Screw	12		• 0	0	•	•	• •				• •					
shaft	14				0											
diam- eter	15		•		•	• •	• •		•		• • •					
(mm)	16									•						
()	20				•	•	• •				• • •					
	25					• •	• •				•	• •				
	32					•	•									

•: GP, GG, GE series

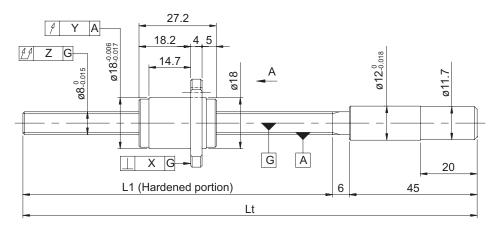
 $\circ: \text{DP}$  series (small lead)

□: HG series (large lead)

♦: FG, FE series (high rotational speed)

- Ball colon opeenioatione			
Shaft diameter (mm) - Lead (mm)	8 - 12		
Number of circuits /	1.67 turns 2 circuits		
Thread direction	(2 threads) / Right-hand		
Ball diameter (mm)	1.5875		
Root diameter (mm)	6.6		
Series	HG		
Basic dynamic load rating C (N)	2490		
Basic static load rating C0 (N)	3460		
Accuracy grade /	C5 / H		
Axial clearance symbol	C57 H		
Axial clearance (mm)	0.010 or less		
Preload torque (N·cm)			
Spacer ball	None		
Recirculation system	End cap method		
Wiper	None		
Lubricant	Multemp PS2		





Model No.	Screw sh	aft length	Maximum stroke	Le	ead accura	су
(Unfinished shaft ends)	L1	Lt	(L1 - nut length)	±Ε₀	ec	<b>e</b> <sub>300</sub>
HG0812QS-HEZR-0340A	289	340	261	0.023	0.018	0.018

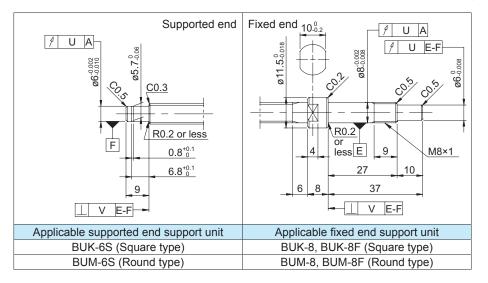
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

## • Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below. **Model example:** Unfinished shaft ends (See left figure)  $\rightarrow$  Finished shaft ends

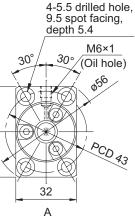
HG0812QS-HEZR-0340A → HG0812QS-HEZR-<u>0340</u>X0280-C5H →Thread length →Overall screw shaft length

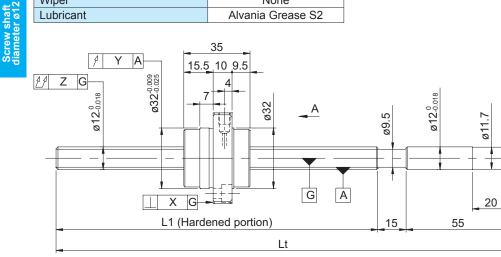


#### Optional specifications

	Accur	Preload torque	Mass			
Х	Y	Z	U	V	(N·cm)	(kg)
0.010	0.012	0.075	0.010	0.005		0.20

• Buil Solew Specifications			
Shaft diameter (mm) - Lead (mm)	12 - 30	]	
Number of circuits /	0.67 turns 3 circuits	1	
Thread direction	(3 threads) / Right-hand		
Ball diameter (mm)	3.175	1	
Root diameter (mm)	9.5	]	
Series	HG	,	\ لم
Basic dynamic load rating C (N)	4800	1	
Basic static load rating C0 (N)	6650	1	A
Accuracy grade /	C5 / H	48	
Axial clearance symbol			
Axial clearance (mm)	0.010 or less		
Preload torque (N·cm)			$  \setminus 0$
Spacer ball	None	]	1
Recirculation system	End cap method	]	
Wiper	None	]	
Lubricant	Alvania Grease S2	1	





Model No.	Screw shaft length Maximum stro		Maximum stroke	Le	ead accura	су
(Unfinished shaft ends)	L1	Lt	(L1 - nut length)	±Ε <sub>c</sub>	ec	e <sub>300</sub>
HG1230QS-BEZR-0500A	430	500	395	0.027	0.020	0.018
HG1230QS-BEZR-0800A	730	800	695	0.035	0.025	0.016

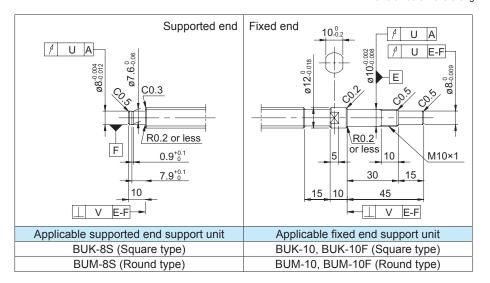
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

## • Shaft end finish type

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HG1230QS-BEZR-0800A → HG1230QS-BEZR-<u>0800X0720</u>-C5H



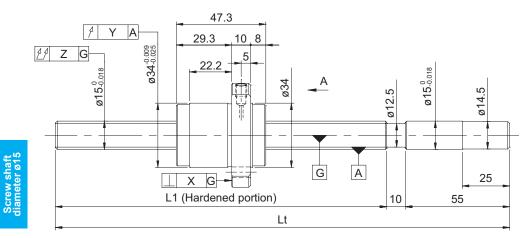
#### Optional specifications

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

	Accur	Preload torque	Mass			
Х	Y	Z	U	V	(N·cm)	(kg)
0.010	0.012	0.080	0.011	0.005		0.62
0.010	0.012	0.090	0.011	0.005		0.85

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• Dan Screw Specifications		
Shaft diameter (mm) - Lead (mm)	15 - 20	30° 30° 4-5.5
Number of circuits /	1.67 turns 2 circuits	14° drilled hole
Thread direction	(2 threads) / Right-hand	M6×1
Ball diameter (mm)	3.175	(Oil hole)
Root diameter (mm)	12.5	
Series	HG	
Basic dynamic load rating C (N)	8740	
Basic static load rating C0 (N)	17550	PCD
Accuracy grade /	C5 / F	PCD 45
Axial clearance symbol	C57 F	
Axial clearance (mm)	0.005 or less	
Preload torque (N·cm)	Up to 6.0	34
Spacer ball	None	A
Recirculation system	End cap method	
Wiper	None	
Lubricant	Alvania Grease S2	



Model No.	Screw sh	aft length	Maximum stroke	Lead accuracy		
(Unfinished shaft ends)	L1	Lt	(L1 - nut length)	±E <sub>c</sub>	ec	e <sub>300</sub>
HG1520QS-HEZR-0600A	535	600	487	0.030	0.023	0.018
HG1520QS-HEZR-1100A	1035	1100	987	0.046	0.030	0.010

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.

Preload torque is a value before applying grease.

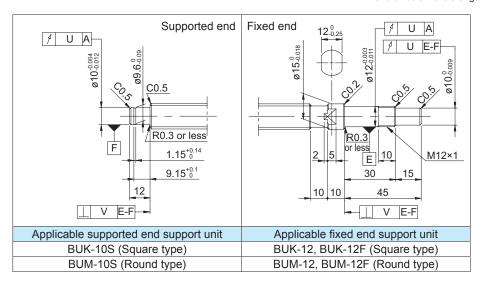
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

#### • Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

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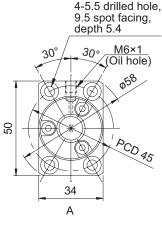
HG1520QS-HEZR-1100A → HG1520QS-HEZR-<u>1100X1023</u>-C5F → Thread length → Overall screw shaft length

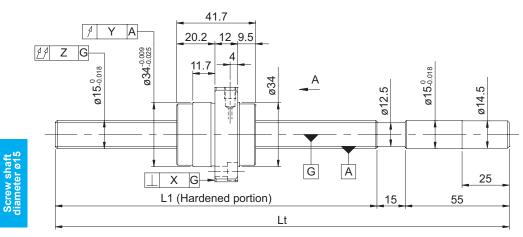


#### Optional specifications

	Accur	Preload torque	Mass			
Х	Y	Z	U	V	(N·cm)	(kg)
0.011	0.015 0.075		0.012 0.0	0.005	Lin to 6.0	1.07
0.011 0.015	0.015	0.150	0.012	0.005	Up to 6.0	1.70

· Bail Solew Speelheadons						
Shaft diameter (mm) - Lead (mm)	15 - 40					
Number of circuits /	0.67 turns 3 circuits	1				
Thread direction	(3 threads) / Right-hand					
Ball diameter (mm)	3.175	]				
Root diameter (mm)	12.5	]				
Series	HG					
Basic dynamic load rating C (N)	5600	1				
Basic static load rating C0 (N)	8600	]				
Accuracy grade /	C5 / H					
Axial clearance symbol	C57H					
Axial clearance (mm)	0.010 or less					
Preload torque (N·cm)						
Spacer ball	None					
Recirculation system	End cap method					
Wiper	None	]				
Lubricant	Alvania Grease S2					





Model No.	Screw shaft length		Model No. Screw shaft length Maximum stroke		Lead accuracy		
(Unfinished shaft ends)	L1	Lt	(L1 - nut length)	±Ε <sub>c</sub>	ec	e <sub>300</sub>	
HG1540QS-BEZR-0600A	530	600	488	0.030	0.023	0.018	
HG1540QS-BEZR-1100A	1030	1100	988	0.046	0.030	0.018	

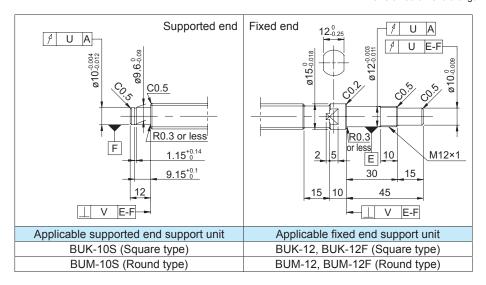
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## • Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below. **Model example:** Unfinished shaft ends (See left figure)  $\rightarrow$  Finished shaft ends

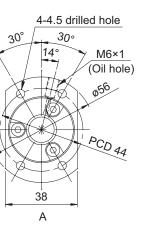
HG1540QS-BEZR-1100A → HG1540QS-BEZR-<u>1100</u>X<u>1018</u>-C5H

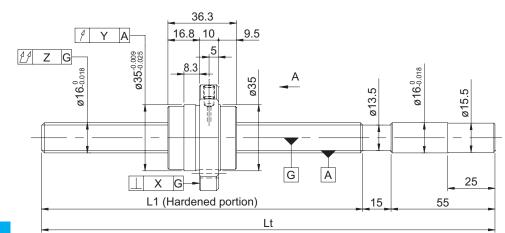


#### Optional specifications

	Accur	Preload torque	Mass			
Х	Y	Z	U	V	(N·cm)	(kg)
0.011	0.015	0.075	0.012	0.005		1.06
0.011 0.015	0.015	0.150 0.012		0.005		1.70

Shaft diameter (mm) - Lead (mm)	16 - 32	]
Number of circuits /	0.67 turns 3 circuits	]
Thread direction	(3 threads) / Right-hand	×
Ball diameter (mm)	3.175	
Root diameter (mm)	13.5	]
Series	HG	
Basic dynamic load rating C (N)	6100	]
Basic static load rating C0 (N)	9100	] _
Accuracy grade /	C5 / F	]
Axial clearance symbol	C37F	۲ ا
Axial clearance (mm)	0.005 or less	
Preload torque (N·cm)	Up to 6.0	]
Spacer ball	None	]
Recirculation system	End cap method	]
Wiper	None	]
Lubricant	Alvania Grease S2	1





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Model No.	Screw shaft length		Maximum stroke	Lead accuracy		
(Unfinished shaft ends)	L1	Lt	(L1 - nut length)	±Ε <sub>c</sub>	ec	<b>e</b> <sub>300</sub>
HG1632QS-HEZR-0600A	530	600	493	0.030	0.023	0.018
HG1632QS-HEZR-1100A	1030	1100	993	0.046	0.030	0.016

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.

Preload torque is a value before applying grease.

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied.

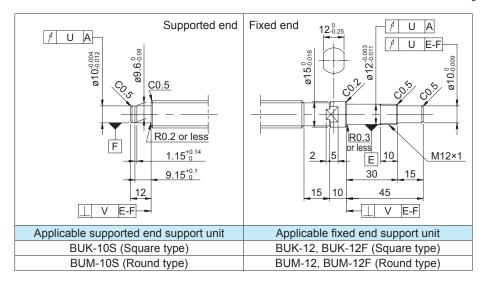
Before and during use, apply lubricant where appropriate.

#### Shaft end finish type

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Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below. **Model example:** Unfinished shaft ends (See left figure)  $\rightarrow$  Finished shaft ends

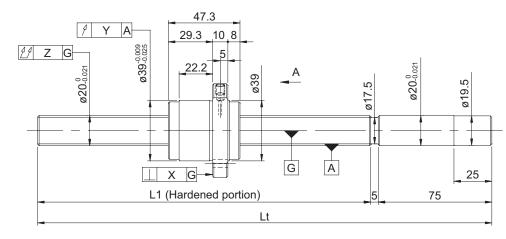
HG1632QS-HEZR-1100A → HG1632QS-HEZR-<u>1100X1023</u>-C5F →Thread length →Overall screw shaft length



#### Optional specifications

	Accur	Preload torque	Mass			
Х	Y	Z	U	V	(N·cm)	(kg)
0.011	0.015	0.075	0.012	0.005	Lin to 6.0	1.14
0.011 0.01	0.015	0.150	0.012	0.005	Up to 6.0	1.86

Shaft diameter (mm) - Lead (mm)	20 - 20	30° 30°
Number of circuits /	1.67 turns 2 circuits	14° 4-5.5
Thread direction	(2 threads) / Right-hand	M6×1 drilled hole
Ball diameter (mm)	3.175	(Oil hole)
Root diameter (mm)	17.5	
Series	HG	
Basic dynamic load rating C (N)	10690	
Basic static load rating C0 (N)	23330	PCD 50
Accuracy grade /	C5 / F	
Axial clearance symbol	C37F	
Axial clearance (mm)	0.005 or less	39
Preload torque (N·cm)	Up to 7.0	A
Spacer ball	None	
Recirculation system	End cap method	
Wiper	None	
Lubricant	Alvania Grease S2	]



Model No.	Screw shaft length		Maximum stroke	Lead accuracy		
(Unfinished shaft ends)	L1	Lt	(L1 - nut length)	±E <sub>c</sub>	ec	e <sub>300</sub>
HG2020QS-HEZR-1000A	920	1000	872	0.040	0.027	0.018
HG2020QS-HEZR-1500A	1420	1500	1372	0.054	0.035	0.010

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.

Preload torque is a value before applying grease.

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied.

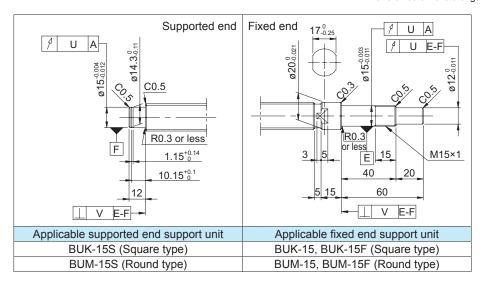
Before and during use, apply lubricant where appropriate.

#### • Shaft end finish type

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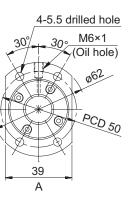
HG2020QS-HEZR-1500A → HG2020QS-HEZR-<u>1500</u>X1408-C5F

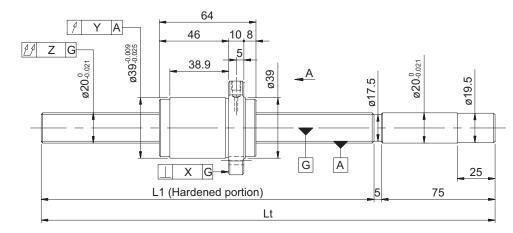


#### Optional specifications

	Accur	Preload torque	Mass			
Х	Y	Z	U	V	(N·cm)	(kg)
0.011	0.015	0.120	0.012	0.005	Lin to 7.0	2.71
0.011 0.015	0.190	0.012	0.005	Up to 7.0	3.86	

Shaft diameter (mm) - Lead (mm)	20 - 30
Number of circuits /	1.67 turns 2 circuits
Thread direction	(2 threads) / Right-hand
Ball diameter (mm)	3.175
Root diameter (mm)	17.5
Series	HG
Basic dynamic load rating C (N)	10690
Basic static load rating C0 (N)	23330
Accuracy grade /	C5 / F
Axial clearance symbol	6371
Axial clearance (mm)	0.005 or less
Preload torque (N·cm)	Up to 9.0
Spacer ball	None
Recirculation system	End cap method
Wiper	None
Lubricant	Alvania Grease S2





Model No.	Screw shaft length		Maximum stroke	Lead accuracy		
(Unfinished shaft ends)	L1	Lt	(L1 - nut length)	±E <sub>c</sub>	ec	e <sub>300</sub>
HG2030QS-HEZR-1000A	920	1000	856	0.040	0.027	0.018
HG2030QS-HEZR-1500A	1420	1500	1356	0.054	0.035	0.010

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.

Preload torque is a value before applying grease.

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied.

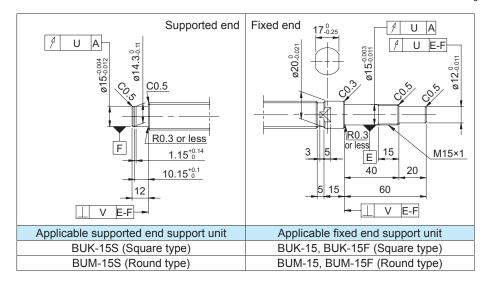
Before and during use, apply lubricant where appropriate.

#### • Shaft end finish type

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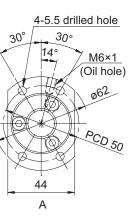
HG2030QS-HEZR-1500A → HG2030QS-HEZR-<u>1500</u>X<u>1408</u>-C5F →Thread length →Overall screw shaft length

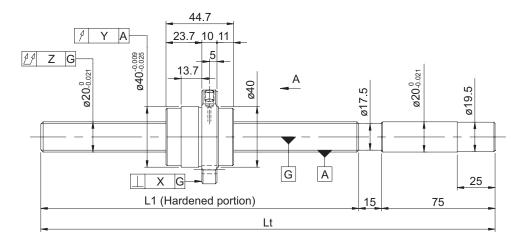


#### Optional specifications

Accuracy of each part					Preload torque	Mass
Х	Y	Z	U	V	(N·cm)	(kg)
0.011 (	0.015 0.120	0.012	0.005	Lin to 0.0	2.87	
0.011	0.015	0.190	0.012	0.005	Up to 9.0	4.06

Shaft diameter (mm) - Lead (mm)	20 - 40
Number of circuits /	0.67 turns 3 circuits
Thread direction	(3 threads) / Right-hand
Ball diameter (mm)	3.175
Root diameter (mm)	17.5
Series	HG
Basic dynamic load rating C (N)	6800
Basic static load rating C0 (N)	12100
Accuracy grade /	C5 / F
Axial clearance symbol	6371
Axial clearance (mm)	0.005 or less
Preload torque (N·cm)	Up to 7.0
Spacer ball	None
Recirculation system	End cap method
Wiper	None
Lubricant	Alvania Grease S2





Model No. Screw shaft le		aft length	Maximum stroke	Lead accuracy		
(Unfinished shaft ends)	L1	Lt	(L1 - nut length)	±Ε <sub>c</sub>	ec	<b>e</b> <sub>300</sub>
HG2040QS-HEZR-1000A	910	1000	865	0.040	0.027	0.018
HG2040QS-HEZR-1500A	1410	1500	1365	0.054	0.035	0.010

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.

Preload torque is a value before applying grease.

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied.

Before and during use, apply lubricant where appropriate.

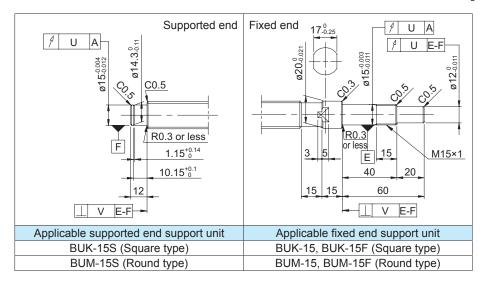
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#### • Shaft end finish type

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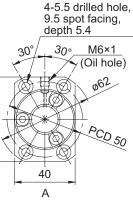
HG2040QS-HEZR-1500A → HG2040QS-HEZR-<u>1500</u>X<u>1398</u>-C5F →Thread length →Overall screw shaft length

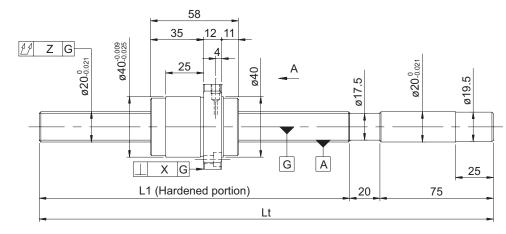


#### • Optional specifications

Accuracy of each part					Preload torque	Mass
Х	Y	Z	U	V	(N·cm)	(kg)
0.011	0.015	0.120	0.012	0.005	Lip to 7.0	2.73
0.011	0.015	0.190	0.012	0.005	Up to 7.0	3.90

· Buil colon opcontoutiono		
Shaft diameter (mm) - Lead (mm)	20 - 60	
Number of circuits /	0.67 turns 3 circuits	]
Thread direction	(3 threads) / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	17.5	
Series	HG	
Basic dynamic load rating C (N)	6800	
Basic static load rating C0 (N)	12100	20
Accuracy grade /	C5 / H	2
Axial clearance symbol	C57 H	)   '
Axial clearance (mm)	0.010 or less	
Preload torque (N·cm)		]
Spacer ball	None	]
Recirculation system	End cap method	]
Wiper	None	]
Lubricant	Alvania Grease S2	





Model No.	Screw shaft length		Maximum stroke	Lead accuracy		
(Unfinished shaft ends)	L1	Lt	(L1 - nut length)	±E <sub>c</sub>	ec	e <sub>300</sub>
HG2060QS-BEZR-1000A	905	1000	847	0.040	0.027	0.018
HG2060QS-BEZR-1500A	1405	1500	1347	0.054	0.035	0.010

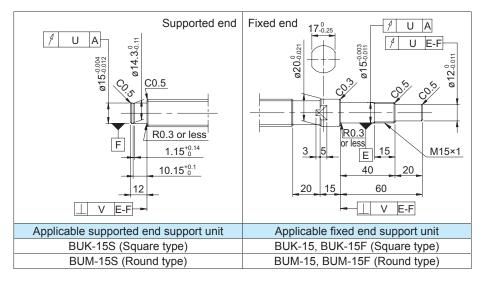
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

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HG2060QS-BEZR-1500A → HG2060QS-BEZR-<u>1500</u>X<u>1393</u>-C5H →Thread length →Overall screw shaft length



#### Optional specifications

Accuracy of each part					Preload torque	Mass
Х	Y	Z	U	V	(N·cm)	(kg)
0.011	0.015	0.120	0.012	0.005		2.87
0.011	0.015	0.190	0.012	0.005		4.06