

BALL SCREWS AND SINGLE AXIS MODULE

GUIDE BOOK



KURODA

BALL SCREWS

Compact and High Speed!!

H series

HG : C5 Accuracy
End Cap Method
High Speed Application
Shaft : $\phi 6 - \phi 32$



Page 5

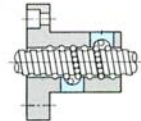


D series

DP : C3 Accuracy
Deflector Method
Compact Nut Diameter
Shaft : $\phi 6 - \phi 12$



Page 4



Space, Designing & Ass'y time saving

SE series

High Rigidity
with Rolled Ball Screw



Page 9

SG series

High Accuracy and Rigidity
with Ground Ball Screw



Avandant Variety of Ball Screws

Standard Ground Ball Screw

G series
GE : C7, GG : C5, GP : C3
Shaft : $\phi 8 - \phi 32$



Page 3

Standard Rolled Ball Screw

G series
GY : C10, GW : C7
Shaft : $\phi 8 - \phi 40$



Page 7, 8

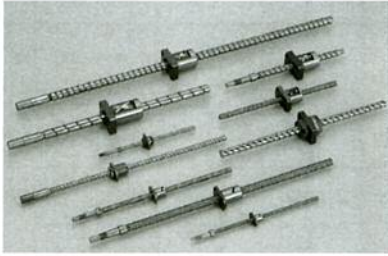
Customized Ground Ball Screw

G series
GR, GM, GZ : C0-C10
Shaft : $\phi 8 - \phi 125$



Page 6

BALL SCREW RANGE



Without end machining

GE 1504DS—BALR—0600A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

With end machining

GE 1504DS—BALR—1100 X 0600—C7M

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

① Series

Ground ball screw Rolled ball screw
 GE : JIS C7 grade GY : JIS C10 grade
 GG : JIS C5 grade GW : JIS C7 grade
 GP : JIS C3 grade GT : Customized for Rolled Ball Screw
 DP : JIS C3 grade
 HG : JIS C5 grade high lead
 GR : Order for nut with exact same dimensions as our catalog
 GM : Order for nut with different flange dimensions from our catalog
 GZ : Customized ball screw

② Shaft diameter (mm)

③ Lead (mm)

④ Number of circuits

A : 1.5 turns 1 circuit E : 2.5 turns 2 circuits
 B : 1.5 turns 2 circuits F : 2.5 turns 3 circuits
 C : 1.5 turns 3 circuits G : 3.5 turns 1 circuits
 D : 2.5 turns 1 circuit J : 1 turn 3 circuits
 Z : Customized (including shaft only)

⑤ Nut type

S : Single nut
 T : Integral nut
 D : Double nut (Pin type)
 Z : Customized (including shaft only)

⑨ Thread direction

R : Right hand thread
 L : Left hand thread

⑩ Overall length of screw shaft (mm)

⑥ Flange type

A~E, H
 N : Without flange
 Z : Customized (including shaft only)

⑪ Shaft and configuration

A : Without end machining
 X : End machining as per your drawing
 Y : End machining as per your drawing for rolled screw shaft

⑦ Ball return system

A : Tube method (Round type)
 D : Deflector method
 G : Guide plate method
 Z : Customized (including shaft only)

⑫ Thread length (mm)

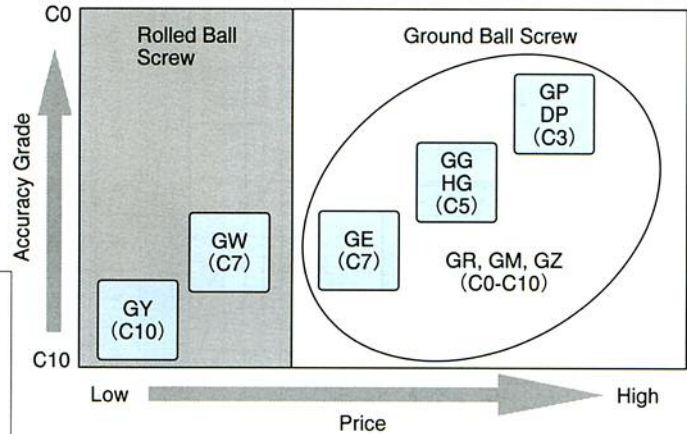
⑬ Accuracy grade
 C0, C1, C2, C3, C4, C5, C7, CA (=C10)

⑧ Wiper material

P : Plastic
 L : Lip seal
 F : Felt
 B : Brush
 S : LUBSEAL
 N : No wiper
 Z : Customized (including shaft only)

⑭ Axial play

S : 0 (Preloaded)
 F : 0.005mm max
 M : 0.030mm max
 L : 0.200mm max
 Y : Axial play for rolled ball screw



- Shaft Dia. & Lead -

Shaft dia (mm)	Lead (mm)																				
	1	1.5	2	2.5	3	4	5	6	10	12	15	16	20	25	30	32	40	50	60	64	
6	◇							□													
8	◇	○	●	○	○	○	○		□												
10		○	●	○	○	○	○	○		○	○										
12		○	●	○	○	○	○	○					○	○		□					
14					◇																
15		○	●	○	○	○	○	○		○	○		○	○	□		□				
16												○	○			□					
20						○	○	○	○	○			○	○	□		□				
25							○	○	○	○			○	○	□		□				
32								○	○	○			○	○	□		□			□	

G Series ○ : GE ● : GG ○ : GP
 D Series ◇ : DP
 H Series □ : HG

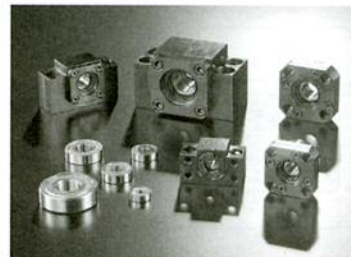
- Support Units -

BUK series : Small sized Factory Automation

φ 8—φ 32

BUM series : Machine Tools

φ 25—φ 50



- MATERIAL & HARDENING -

	Material	Heat treatment	HRC
NUT	SCM420 (SCM22)	Carborising	58-62
SHAFT	SCM415 (SCM21)	Carborising	58-62
	SCM420 (SCM22)		
	AISI 4150HV	Induction hardening	58-62

- CAD (2D & 3D) Data -

Available from KURODA URL

<http://www.kuroda-precision.co.jp/e-top>

※Contact KURODA for the special conditions such as material, surface treatment, grease and so on.

Customized Ground Ball Screws

**GM/GR/GZ:CO-C10
BUK, BUM, BUT**

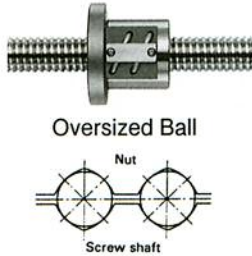
High Accuracy and Reliability
Precise positioning
Excellent Speed Consistency

COMBINATION OF ACCURACY AND AXIAL PLAY

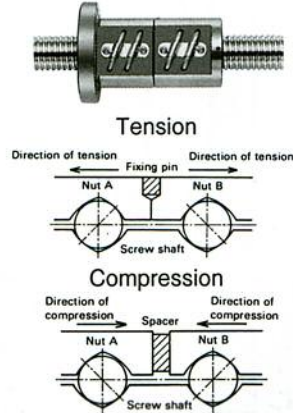
Single nut, Preloaded:C0S-C5S
Single nut, Axial play 0.005mm or less:C1F-C5F
Single nut, Axial play 0.030mm or less:C4M,C5M, C7M
Single nut, Axial play 0.20mm or less:C7L,C10L
Double nut, Preloaded:C0S-C5S



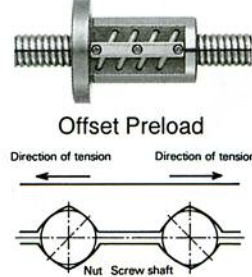
●Single Nut Preloaded



●Double Nut Preloaded



●Integral Nut Preloaded



●Others

Contact KURODA for any customized Ball screw as below.
Stainless steel ball screw.
Right and left handed ball screw.
Surface treatment.
Special grease,
and so on

●Accuracy Grade And Manufacturable Range of Screw Shaft Length

(Unit:mm (inch))

		Nominal diameter of screw shaft																
		4	6	8	10	12	15·16	20	25	28	32	36	40	45	50	55	63	80·100·125
		(0.16)	(0.24)	(0.31)	(0.39)	(0.47)	(0.59·0.63)	(0.79)	(0.98)	(1.10)	(1.26)	(1.42)	(1.57)	(1.77)	(1.97)	(2.17)	(2.48)	(3.15·3.94·4.92)
Accuracy Grade (JIS)	C0	90 (3.5)	160 (6.3)	240 (9.4)	340 (13.3)	420 (16.5)	500 (19.6)	800 (31.5)	1100 (43.3)	1200 (47.2)	1600 (62.9)	1800 (70.8)	2000 (78.7)	2000 (78.7)	2000 (78.7)	2000 (78.7)	2000 (78.7)	—
	C1	120 (4.7)	180 (7.1)	280 (11.0)	400 (15.7)	500 (19.6)	600 (23.6)	900 (35.4)	1300 (51.2)	1500 (59.0)	1800 (70.8)	2000 (78.7)	2200 (86.6)	2300 (90.5)	2800 (110)	3000 (118)	3000 (118)	3000 (118)
	C2	120 (4.7)	180 (7.1)	280 (11.0)	400 (15.7)	500 (19.6)	600 (23.6)	1100 (43.3)	1600 (62.9)	1800 (70.8)	2200 (86.6)	2500 (98.4)	2800 (110)	3000 (118)	3600 (141)	4000 (157)	4500 (177)	4500 (177)
	C3	140 (5.5)	210 (8.2)	340 (13.3)	480 (18.9)	600 (23.6)	700 (27.5)	1400 (55.1)	1800 (70.8)	2000 (78.7)	2500 (98.4)	2800 (110)	3200 (125)	3600 (141)	4000 (157)	5000 (196)	5200 (204)	5500 (216)
	C4	140 (5.5)	210 (8.2)	340 (13.3)	480 (18.9)	600 (23.6)	800 (31.5)	1400 (55.1)	1800 (70.8)	2000 (78.7)	2500 (98.4)	2800 (110)	3200 (125)	3600 (141)	4000 (157)	5000 (196)	5200 (204)	5500 (216)
	C5	140 (5.5)	210 (8.2)	340 (13.3)	500 (19.6)	700 (27.5)	1300 (51.2)	1600 (62.9)	2000 (78.7)	2200 (86.6)	2800 (110)	3100 (122)	3600 (141)	4100 (161)	4500 (177)	5700 (224)	5700 (224)	5700 (224)
	C7	—	—	340 (13.3)	500 (19.6)	700 (27.5)	1300 (51.2)	1800 (70.8)	2300 (90.5)	2600 (102)	3200 (125)	3600 (141)	4600 (181)	5000 (196)	5700 (224)	5700 (224)	5700 (224)	5700 (224)
	C10	—	—	—	—	—	1300 (51.2)	1800 (70.8)	2300 (90.5)	2600 (102)	3600 (141)	4000 (157)	4600 (181)	5200 (204)	5700 (224)	5700 (224)	5700 (224)	5700 (224)

SUPPORT UNIT/BUK, BUM, BUT

Wide Variation

The unit can be used for ball screws of shaft dia. ϕ 6 to ϕ 32.

Low Profile

Preloaded Angular Bearing

"DF" type bearing as standard, Contact KURODA if you need "DF" for high rigidity.

Surface Treatment, Special Grease Available

Stocked And Reasonable Price



BUK Series			BUM Series			BUT Series
Set	Fixed side	Support side	Set	Bearing on Support side	Support side	Fixed side
BUK-6	BUK-6	—	BUM-6	606ZZ	—	—
BUK-8A	BUK-8F	BUK-6S	BUM-8	606ZZ	BUM-6S	—
BUK-10A	BUK-10F	BUK-8S	BUM-10	608ZZ	BUM-8S	—
BUK-12A	BUK-12F	BUK-10S	BUM-12	6000ZZ	BUM-10S	—
BUK-15A	BUK-15F	BUK-15S	BUM-15	6002ZZ	BUM-15S	—
BUK-20A	BUK-20F	BUK-20S	BUM-20	6204ZZ	BUM-20S	BUT-20
BUK-25A	BUK-25F	BUK-25S	BUM-25	6205ZZ	—	BUT-25
—	—	—	—	—	—	BUT-30
—	—	—	—	—	—	BUT-35
—	—	—	—	—	—	BUT-40

Ordering Instruction

BUK-10A

① ② ③

①Series

BUK:Direct Mount (Rectangle) Support Units
BUM:Circle Flange Support Units
BUT:Machine Tools Applications

②Bearing Journal Diameter (mm)

③Combination Code

A : Set of fixed and supported end units
F : Fixed end unit only
S : Supported end unit only

No Mark : Fixed end unit & Supported bearing

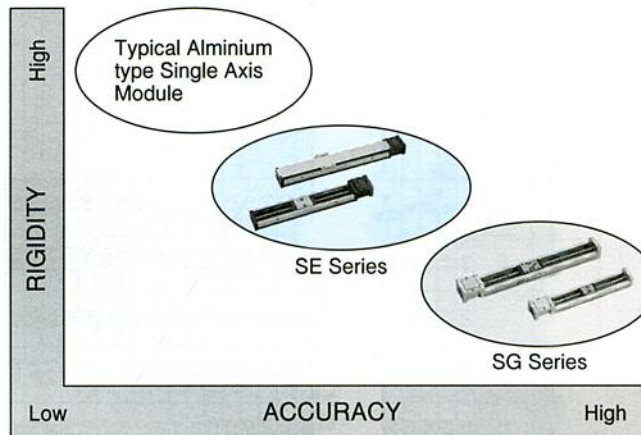
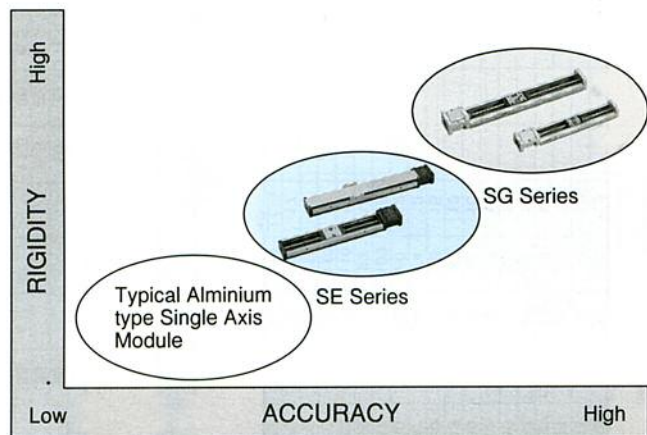
HIGH ACCURACY & RIGIDITY SINGLE AXIS MODULE

SG/SE

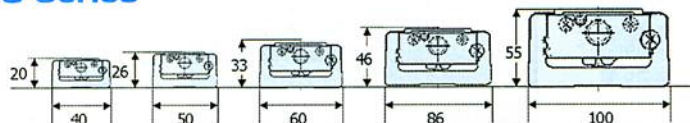
High accuracy, rigidity and compactness

Most suitable positioning unit can be configured according to applications.

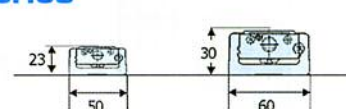
- Type of ball screw : High and Precision in Accuracy grade
- Width of guide rail :
 - SG Series-40, 50, 60, 86 and 100mm
 - SE Series-50 and 60mm
- Table Height :
 - SG Series-20, 26, 33, 48 and 55mm
 - SE Series-23 and 30mm
- Types of Slide Block : Short Block & Long Block
- Quantity of Slide Block : 1 and 2
- Intermediate Flanges For Different Motor Brackets Available
- Dustproof Cover And Sensor Available (Option)
- Several Points Accurate Positioning Possible
- Excellent Repeatability



SG Series



SE Series



SG33 05 A-150 P-A1 C C-L C

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

① Product Series

SG20, SG26, SG33, SG46, SG55
SE23, SE30

② Lead of Ball Screw

		SG20	SG26	SG33	SG46	SG55	SE23	SE30
01	1mm	○						
02	2mm		○				○	
04	4mm							○
05	5mm			○			○	○
10	10mm			○				○
20	20mm				○	○		

③ Guide Rail Length (mm)

A	With 1 long block
B	With 2 long blocks
C	With 1 short block
D	With 2 short blocks

④ Guide Rail Length (mm)

Series	Guide Rail Length (mm)
SG20	100, 150, 200
SG26	150, 200, 250, 300
SG33	150, 200, 300, 400, 500, 600
SG46	340, 440, 540, 640, 740, 840, 940
SG55	980, 1080, 1180, 1280, 1380
SE20	150, 200, 250, 300
SE33	150, 200, 300, 400, 500, 600, 700, 750

⑤ Ball Screw Accuracy Grade

SG Series
H : High Grade
P : Precision Grade
SE Series
W : Rolled Ball Screw C7 Accuracy Axial play 0.020 or less
C : Rolled Ball Screw C7 Accuracy Preloaded

⑥ Motor Bracket Type

(reference to SG/SE complete catalog for it)

⑦ Dustproof Cover

N : Without dustproof cover
C : With dustproof cover

⑧ Sensor

N : Without sensor
S : With photo-micro sensor
K : With proximity sensor
C : With photo-micro sensor

⑨ Surface Treatment

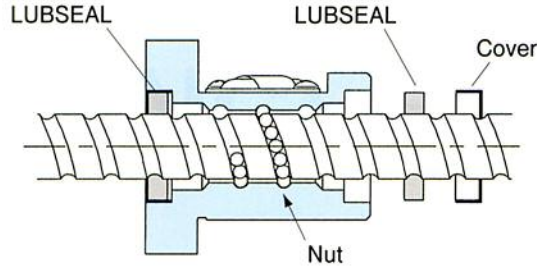
N : Without any surface treatment
L : Raydenf surface treatment

⑩ Grease

N : Standard
C : C Grease

“LUBSEAL” KURODA Maintenance Free Lubrication Unit

It can be assembled completely inside of nut so that it is no dimension change of nut.



C GREASE

Clean Grease for ball screw

The superb quality of C GREASE meets the need for cleanliness in the environment of actuators used in semiconductor manufacturing machines and related parts. KURODA “C GREASE” features cleanliness, stable torque characteristics, high lubricating performance and excellent rust-preventive performance not available from usual fluorine grease.



Number of dust particles from ball screw (Particle diameter of more than 0.13 μ m)

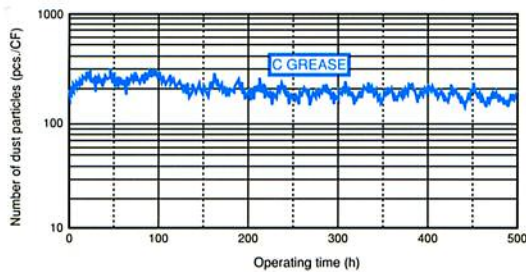


Fig. 1 Test Conditions
 Ball screw Shaft diameter : 20mm
 Lead : 20mm
 Preload : 800N
 Number of revolutions : 1200min⁻¹
 Stroke : 250mm
 Amount of grease : 1cc
 Measurement interval : 1h

Number of dust particles from ball screw (Particle diameter of more than 0.13 μ m)

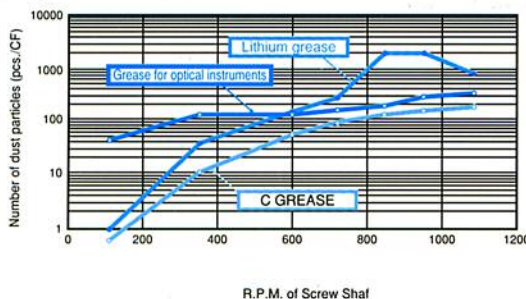


Fig. 2 Test Conditions
 Ball screw Shaft diameter : 20mm
 Lead : 20mm
 Preload : 800N
 Number of revolutions : 1200min⁻¹
 Stroke : 250mm
 Amount of grease : 1cc

These values are mean values taken after 100 times of measurements for each R.P.M. Average operating time of ball screw for that period of time was about 240 hours.