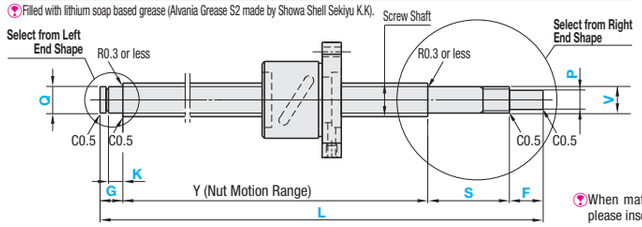
Rolled Ball Screws - Shaft Ends Configurable

Accuracy Grade C10

Nut Type	Type	Screw Shaft			Nut		
		M Material	H Hardness	S Surface Treatment	M Material	H Hardness	S Surface Treatment
Standard Nut	FBSSR	S55C	Induction Hardened 56 ~ 62HRC	Phosphate Conversion Coating	SCM420	Carburized 58~62HRC	Low Temperature Black Chrome (Screw Shafts 8 and 10 are applied with Phosphate Conversion Coating)
	FBSSZ			-			

Filled with lithium soap based grease (Alvania Grease S2 made by Showa Shell Sekiyu K.K).

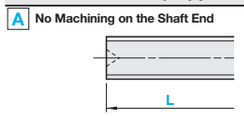
V	Tolerance
6	-0.002 -0.007
8	-0.002 -0.008
10	-0.002 -0.015
12, 15	-0.003 -0.018
20, 25	-0.004 -0.021



When mating with support units, please insert a collar.

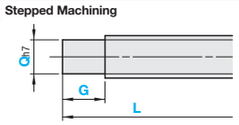
Left (Support Side) Shaft End Shape

A No Machining on the Shaft End

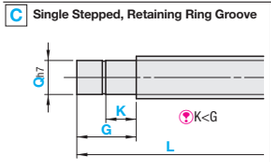


With a Centering Hole

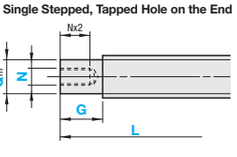
B Stepped Machining



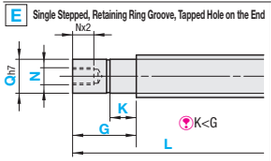
C Single Stepped, Retaining Ring Groove



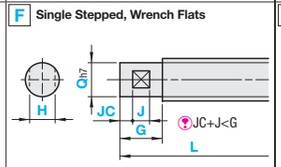
D Single Stepped, Tapped Hole on the End



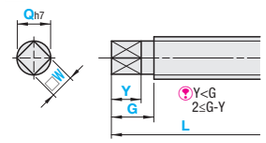
E Single Stepped, Retaining Ring Groove, Tapped Hole on the End



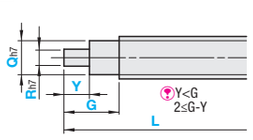
F Single Stepped, Wrench Flats



G Single Stepped, Square End

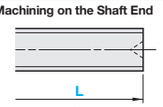


H Double Stepped End Machining



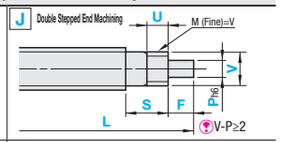
Right (Fixed Side) Shaft End Shape

A No Machining on the Shaft End

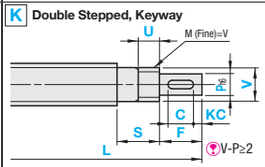


With a Centering Hole

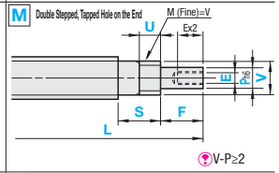
J Double Stepped End Machining



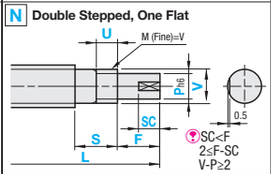
K Double Stepped, Keyway



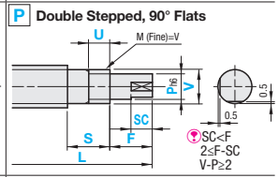
M Double Stepped, Tapped Hole on the End



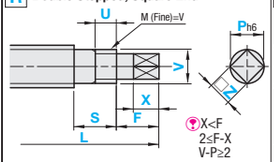
N Double Stepped, One Flat



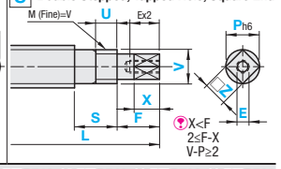
P Double Stepped, 90° Flats



R Double Stepped, Square End



S Double Stepped, Tapped Hole, Square End



For ball nut dimensions and specifications, refer to each product's page. Shaft Dia. 8 P.689, 10 P.695, 12 P.701, 14 P.701, 15 P.707, 20 P.713, 25 P.719, 28 P.723, 32 P.723

When combining the left end shape F, G with the right end shape K, N, P, R, S, there is no angular phase relationship.

Part Number - L - F - P - S - V - U - C - KC - E - SC - X - Z - G - Q - K - N - J - JC - H - Y - W - R -(RLC, SZC)

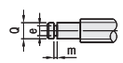
FBSSZDJ2010 - 1200 - F36 - P12 - S60 - V15 - U15 - G20 - Q15 - N10 -RLC

Alterations	Code	Spec.
Ball Nut Orientation Reversed (Left Shaft) (Right Shaft) Std. Revised	RLC	Changes the nut direction. Ordering Code RLC
Wrench Flats on Fixed Side	SZC	Adds wrench flats on the shaft right end. Ordering Code SZC. Ball bearings will fall out if the ball nut crosses the wrench flats.

Shaft Dia.	Z	ZC	S	ℓ
8	4	4	5	18
10	5	5	8	20
12	5	5	8	20
14	5	7	10	22
15	5	7	10	22
20	6	9	16	25
25	7	10	18	27
28	8	11	21	29
32	9	13	27	32

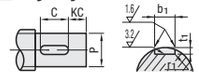
ℓ indicates incomplete hardened area.

Retaining Ring Groove Details



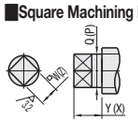
Q	e	e Tolerance	m +0.14 0
6	5.7	0 -0.06	0.8
8	7.6		0.9
10	9.6	0 -0.09	1.15
12	11.5	0 -0.11	
15	14.3		
20	19	0 -0.21	1.35
25	23.9		

Keyway Details



Applicable Shaft and Hole Dia. P	Key Groove Dimension b1 Reference Dim.	b1 Tolerance (N9)	t1 Reference Dim.	t1 Tolerance	r1
6, 7	2	-0.004 -0.029	1.2	+0.1 0	0.08 ~0.16
8~10	3		1.8		
11, 12	4	0 -0.030	2.5		
13~17	5		3.0		
18~22	6		3.5		0.16 ~0.25
23	8	0 -0.036	4.0	+0.2 0	

Square Machining Details



Q(P)	W(Z) 1mm Increment
6~10	5~ 8
11~14	8~10
15~19	10~14
20~25	14~20

(Q(P)/2)√2≥W (Z) Chamfering may not be available depending on the relationship between Q(P) and W(Z).

V (Fine) Details

M	Pitch
6	0.75
8	1.0
10	1.0
12	1.0
15	1.0
20	1.0
25	1.5

Accuracy Grade	Part Number Type	Left End Support Side	Right End Fixed Side	Screw Shaft O.D.	Lead	1mm Increment L	1mm Increment F P S U C KC SC X Z	Selection V	Selection E (Coarse)	1mm Increment G K J JC H Y R W	Selection Q	Selection N (Coarse)
C10	FBSSR FBSSZ	A B C D E F G H	A J K M N P R S	08	02	100~400	5≤F≤P×3 9≤S≤V×4 V≤U≤V×2 U≤S-Pitch×3 b1<C≤60 F-C-KC≥2 KC=0 or KC≥2 5≤SC≤P×3 SC≤F-2 5≤X≤20 P≥4 P≥V/2 When V=6, P=4 When V≥8, P≤V-2	6	4 5 6 8 10	5≤G≤Q×3 5≤K≤Q×3 3≤J≤20 H≥Q-2 5≤Y≤20 R≤Q-2	6	-
				08	04	100~380					6	
				10	02	150~585		8			6	-
				10	04	150~600					6	
				10	10	150~585					6	
				12	04	150~800		8 10			6 8	4
				12	10	150~800		8 10				
				14	05	150~800		8 10			6 8 10	4 5 6
				15	05	150~1200		10 12			8 10 12	5 6 8
				15	10	200~1200						
				15	20							
				20	05	200~2000						
				20	10	250~2000		10 12 15			8 10 12 15	5 6 8 10
				20	20							
				25	05	200~2000		15 20			10 12 15 20	6 8 10
				25	10	300~2000						
				25	25							
				28	06	200~2000		15 20			10 12 15 20	6 8 10
				32	10	300~2000		20 25			10 12 15 20 25	6 8 10
				32	32							

For FBSSZ type, sizes 0804, 1002 and 1010 are not available. E≤P-4 N≤Q-4

Part Number - L - F - P - S - V - U - C - KC - E - SC - X - Z - G - Q - K - N - J - JC - H - Y - W - R

FBSSRAA1004 - 450

FBSSZDJ2010 - 1200 - F36 - P12 - S60 - V15 - U15 - G20 - Q15 - N10

Shaft Dia.	Lead	Material Unit Price 1 ~ 4 pc(s). Left End Shape: A Right End Shape: A — FBSSR Min. L~200	201~400	401~600	601~800	801~1000	1001~1200	1201~1500	1501~2000	FBSSZ Min. L~200	201~400	401~600	601~800	801~1000	1001~1200	1201~1500	1501~2000
08	02			-	-	-	-	-	-			-	-	-	-	-	-
08	04			-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	02				-	-	-	-	-	-	-	-	-	-	-	-	-
10	04				-	-	-	-	-				-	-	-	-	-
10	10				-	-	-	-	-	-	-	-	-	-	-	-	-
12	04					-	-	-	-					-	-	-	-
12	10					-	-	-	-					-	-	-	-
14	05					-	-	-	-					-	-	-	-
15	05							-	-							-	-
15	10							-	-							-	-
15	20							-	-							-	-
20	05																
20	10	-								-							
20	20	-								-							
25	05																
25	10	-								-							
25	25	-								-							
28	06																
32	10	-								-							
32	32	-								-							

Shaft Dia.	Lead	Left Side Shaft Machining Unit Price 1 ~ 4 pc(s). B	C	D	E	F	G	H	Right Side Shaft Machining Unit Price 1 ~ 4 pc(s). J	K	M	N	P	R	S
08	02			-	-					-	-			-	-
08	04			-	-					-	-			-	-
10	02			-	-						-				-
10	04			-	-						-				-
10	10			-	-						-				-
12	04														
12	10														
14	05														
15	05														
15	10														
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20	05														
20	10														
20	20														
25	05														
25	10														
25	25														
28	06														
32	10														
32	32														

Caution: Do not let the nuts overrun or remove the nuts from the screw shafts.
It may cause the balls to fall out or damage the ball recirculation parts.

For accuracy of Rolled Ball Screws, see P.2223 and P.2224.
For Support Units, see P.753~P.778.
For Nut Brackets, see P.780.