


Ball Splines

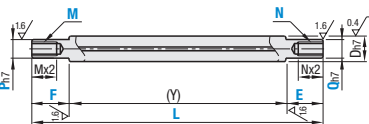
Both Ends Stepped and Tapped

Both Ends Stepped and Tapped



RoHS10

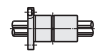
Both Ends Stepped and Tapped	Spline Shaft / 52100 Bearing Steel Nut / 4115 Alloy Steel Equivalent / Hardness: 58 HRC min.	Spline Shaft, Nut / 440C Stainless Steel Equivalent / Hardness: 55 HRC min.
		Nut 1 pc.
With Round Flange Nut	BSLM	BSLMS
With Compact Flange Nut	BSLN	—
With Straight Nut	BLSL	BSLSS



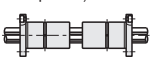
① When selecting Overall Length (L Dimension), check the Annealing Range. P.409
 ② Accuracy P.407
 ③ Choose Accessories Nuts from the following Shapes.

Flanged Nut Orientation

1 Nut Type

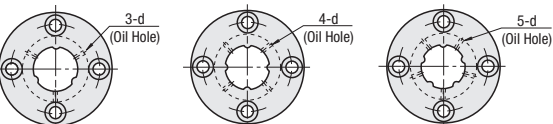


2 Nut Type (When Alteration NTW is specified)



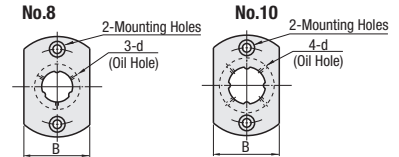
Round Flange Nuts

No.8, No. 10, 13, No. 16, 20, 25, 30



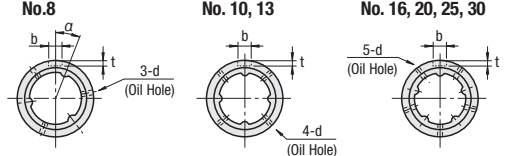
Compact Flange Nuts

No.8, No.10

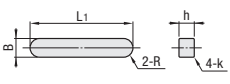


Straight Nuts

No.8, No. 10, 13, No. 16, 20, 25, 30



Dimension of Attached Key



* The key is press-fit into the nut.

Spline Shafts

Part Number	No.	1mm Increment		P, Q	M (Coarse), N (Coarse) (M+3<P, N+3<Q)	D	(Y)		Mass (kg/m)
		L	F, E				1-Nut Type min-max		
BSLM BSLN BLSL BSLMS BSLSS	*8	60-400 (190)	2<F<P<5 2<E<Q<5	6	3	8	56-396 (186)		0.39
	*10	60-600 (390)		6 8	3 4	10.4	56-596 (386)		0.65
	*13	60-600 (390)		6 8 10	3 4 5 6	13.4	56-596 (386)		1.11
	*16	70-600 (390)		6 8 10 12 13	3 4 5 6 8 10	16.6	66-596 (386)		1.65
	20	80-700		8 10 12 13 15 16	4 5 6 8 10 12	20.6	76-696		2.57
	25	90-900		8 10 12 13 15 16 20	4 5 6 8 10 12 16	25.8	86-896		4.04
	30	100-1150		10 12 13 15 16 20 25	4 5 6 8 10 12 16 20	30.8	96-1146		5.85

① For BSLSS and BSLMS, only *marked sizes are available, and the Max. L and Y dimensions are in ().
 ② For BSLN, only No. 8 and 10 are available.

Round Flange Nuts / Compact Flange Nuts

No.	D (h6)	L	Df	H	P.C.D.	d ₁	d ₂	h	W	d	B	Basic Rated Torque		Basic Load Rating		Allowable Static Moment		Mass (kg)
												Dynamic C _t (N-m)	Static C _{0t} (N-m)	Dynamic C (kN)	Static C ₀ (kN)	M ₀₁ (N-m)	M ₀₂ (N-m)	
8	16	25	32	6	24	3.5	6	3.1	6.5	—	21	4.8	8.7	1.2	2.1	5	36	0.04
10	21	40 (33)	42 (41)	6 (8)	32 (30)	4.5	8	4.4 (5.3)	14 (8.5)	1.5	25	19 (11)	34 (21)	3.8 (2.4)	6.9 (4.3)	26 (15)	181 (102)	0.09
13	24	44 (36)	44 (45)	7 (8)	33 (34)							28 (20)	52 (37)	4.6 (3.3)	8.3 (5.9)	36 (22)	251 (148)	0.11
16	31	50	51	7	40							51	93	6.2	11.1	56	386	0.2
20	35	63	58	9	45	5.5	9.5	5.4	22.5	2	—	85	154	8.5	15.3	83	611	0.3
25	42	71	65		52							26.5	193	348	15.4	27.7	173	1248
30	47	80	75	10	60	6.6	11	6.5	30	2.5	—	272	490	18.5	33.3	212	1581	0.57

① Dimensions in () are for 440C Stainless Steel. ② Allowable static moment M01 is a value measured when a single nut is used, and M02 is a value measured when two nuts are used.

Straight Nuts


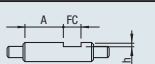
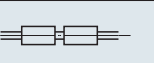
No.	D (h6)	L	b	Tolerance	t	+0.05 0	d	α	Basic Rated Torque		Basic Load Rating		Allowable Static Moment		Mass (kg)	Dimension of Key (Included)							
									Dynamic C _t (N-m)	Static C _{0t} (N-m)	Dynamic C (kN)	Static C ₀ (kN)	M ₀₁ (N-m)	M ₀₂ (N-m)		B	Tolerance	h	Tolerance	L ₁	R		
8	16	25	2.5	+0.014 0	1.2	1.5	25°	—	4.8	8.7	1.2	2.1	5	36	0.013	2.5	+0.016 +0.006	3	0 -0.025	10.5	1.25		
10	21	40 (33)	3						19 (11)	34 (21)	3.8 (2.4)	6.9 (4.3)	26 (15)	181 (102)	0.06	3.5				4	0 -0.030	17 (14)	1.5
13	24	44 (36)							28 (20)	52 (37)	4.6 (3.3)	8.3 (5.9)	36 (22)	251 (148)	0.07							17 (14)	
16	31	50	3.5	+0.018 0	2	2	—	—	51	93	6.2	11.1	56	386	0.15	4	+0.024 +0.012	4	0 -0.030	18	1.75		
20	35	63	4						85	154	8.5	15.3	83	611	0.2					4	0 -0.030	29	2
25	42	71							193	348	15.4	27.7	173	1248	0.29							33	
30	47	80	4	2.5	272	490	18.5	33.3	212	1581	0.37	4	0 -0.030	42									

① Dimensions in () are for 440C Stainless Steel. ② Allowable static moment M01 is a value measured when a single nut is used, and M02 is a value measured when two nuts are used.

Ball Splines

Both Ends Stepped and Tapped, continued

Part Number Alterations **BSLM13** - 250 - F25 - E10 - P10 - Q8 - M5 - N5 - SC15

Alterations	Wrench Flats	Set Screw Flat	Additional Spline Nuts
	Code	SC	FC
Spec.	Adds a wrench flat. SC=1mm Increment ① SC+ℓ ₁ ≤Y 	Adds a set screw flat. Ordering Code: FC10-A8 FC, A=1mm Increment ① FC<3xD ② When 1.5xD<FC, FC<Y/2 ③ A=0 or A≥2 	Adds a nut. (from one to two) ① Only available for BSLs, BSLM and BSLN. 

① When selecting multiple alteration additions, more than 2 mm is needed between each feature to be added. Orientation between wrench flats or set screw flats to the spline nut keyway or flange counterbores are random and cannot be specified.

Part Number Example **BSLM13** - 250 - F25 - E10 - P10 - Q8 - M5 - N5

● BSLM13G - 250 - F25 - E10 - P10 - Q8 - M5 - N5
 ● BSLM13L - 250 - F25 - E10 - P10 - Q8 - M5 - N5

① Alternative grease types available.

Cautions for Ball Spline

Lubrication

Ball splines are shipped greased. Reapply lubrication with Lithium soap based grease (Alvania Grease S2 by Showa Shell Sekiyu K.K.), etc. as needed.

Tolerance for Mating Bores

An H7 tolerance is recommended for mating bores for the spline nuts.

Nut Removal

Balls do not fall out when the spline shaft is pulled out. Once the nuts are removed from the spline shaft, reassemble the ball spline while confirming match No.'s, character orientations, and positional relationship of these parts.

Nuts and shafts are offered as the set product. Thus, when using multiple pcs. of them, do not change the default combination.

Adding Nuts

The ball spline ensures clearance and accuracy by integrating the nuts and shaft into one set. Thus, the nuts or shafts are not sold as separate items. When two nuts are required, select the 2-nut type part number.

