

# Ball Splines

## One End Threaded & Stepped / One End Tapped Type

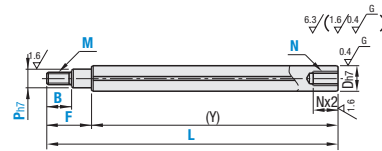
Ball Splines – One End Threaded & Stepped / One End Tapped Type



RoHS10

One End Stepped and Threaded / One End Tapped	Splines Shaft Material 52100 Bearing Steel Nut Material 4115 Alloy Steel Equivalent Hardness: 58 HRC min.		Splines Shaft, Nut Material 440C Stainless Steel Equivalent Hardness: 55 HRC min.
	Nut 1 pc.	Nut 2 pcs.	Nut 1 pc.
With Round Flange Nut	<b>BSBM</b>	<b>BSB2M</b>	<b>BSBMS</b>
With Compact Flange Nut	<b>BSBN</b>	<b>BSB2N</b>	—
With Straight Nut	<b>BSBS</b>	<b>BSB2S</b>	<b>BSBSS</b>

- ① When selecting Overall Length (L Dimension), check the Annealing Range. P.409
- ② Accuracy P.407

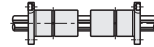


Flanged Nut Orientation

1 Nut Type

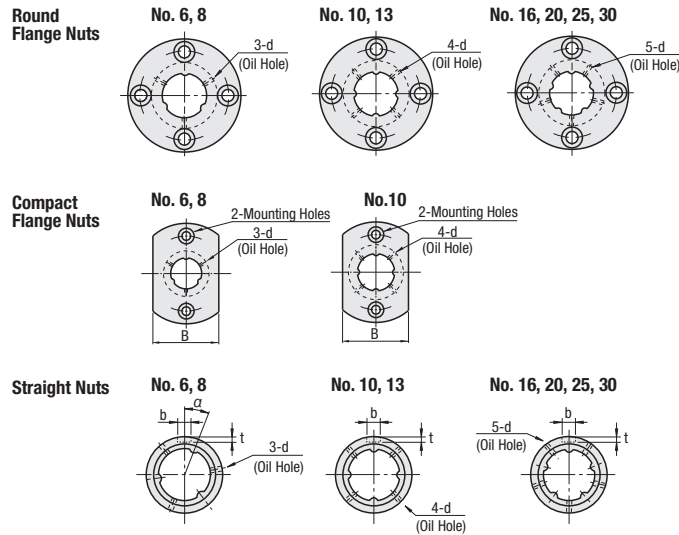
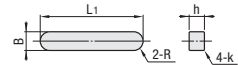


2 Nut Type



\* The key is press-fit into the nut.

Dimension of Attached Key



# Ball Splines

## One End Stepped & Threaded Type / One End Threaded & Stepped / One End Tapped Type, continued

Part Number Alterations

Part Number	L	F	B	P	M	N	(SC, FC, NTW)
<b>BSKS8</b>	- 250	- F20	- B15	- P6	- M6	- N3	- SC15
<b>BSB2N10</b>	- 300	- F20	- B10	- P5	- M5	- N3	

Alterations	Wrench Flats	Set Screw Flat																																												
	Code	<b>SC</b>	<b>FC</b>																																											
Spec.	Adds a wrench flat. SC = 1 mm Increment ① SC+L <sub>1</sub> ≤Y	Adds a set screw flat. Ordering Code: FC10-A8 FC, A=1 mm increments. ① FC≤3xD ② When 1.5xD<FC, FC≤Y/2 ③ A=0 or A≥2																																												
	<table border="1"> <thead> <tr> <th>No.</th> <th>W</th> <th>L<sub>1</sub></th> </tr> </thead> <tbody> <tr><td>6</td><td>5</td><td></td></tr> <tr><td>8</td><td>7</td><td>8</td></tr> <tr><td>10</td><td>8</td><td></td></tr> <tr><td>13</td><td>11</td><td></td></tr> <tr><td>16</td><td>14</td><td>10</td></tr> <tr><td>20</td><td>17</td><td></td></tr> <tr><td>25</td><td>22</td><td>15</td></tr> <tr><td>30</td><td>27</td><td></td></tr> </tbody> </table>	No.	W	L <sub>1</sub>	6	5		8	7	8	10	8		13	11		16	14	10	20	17		25	22	15	30	27		<table border="1"> <thead> <tr> <th>No.</th> <th>h</th> </tr> </thead> <tbody> <tr><td>6</td><td></td></tr> <tr><td>8</td><td></td></tr> <tr><td>10</td><td>1</td></tr> <tr><td>13</td><td></td></tr> <tr><td>16</td><td></td></tr> <tr><td>20</td><td></td></tr> <tr><td>25</td><td>2</td></tr> <tr><td>30</td><td></td></tr> </tbody> </table>	No.	h	6		8		10	1	13		16		20		25	2	30
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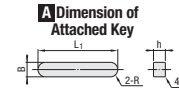
### Incomplete Thread Dimensions

M	l
6 or Less	2
8, 10	3
12 or More	5

- ① When selecting multiple alteration additions, more than 2mm 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

Part Number	L	F	B	P	M	N
<b>BSB2N10</b>	- 300	- F20	- B10	- P6	- M5	- N3
<b>BSB2N10G</b>	- 300	- F20	- B10	- P5	- M5	- N3
<b>BSB2N10L</b>	- 300	- F20	- B10	- P5	- M5	- N3



- ① Alternative grease types available.

## Spline Shafts

Part Number	1 mm Increment		F	B	P	M (Coarse) (M≤P)	N (Coarse)	D	(Y)		Mass (kg/m)
	Type	No.							1-Nut Type	2-Nut Type	
<b>BSBM</b>	6	60-400 (190)	60-400	When P=3 2≤B≤9 4≤F≤9	3 4 5	3 4 5	3	6	56-396 (186)	56-396	0.23
<b>BSBN</b>	8	60-400 (190)	60-600		4 5 6	4 5	3 4	8	56-396 (186)	56-596	0.39
<b>BSBS</b>	10	60-600 (390)	90-600	When P=4 2≤B≤16 4≤F≤16	4 5 6 8	4 5 6 8	3 4 5	10.4	56-596 (386)	86-596	0.65
<b>BSB2M</b>	13	60-600 (390)	100-600		5 6 8 10	5 6 8 10	4 5 6	13.4	56-596 (386)	96-596	1.11
<b>BSB2N</b>	16	70-600 (390)	110-600	When M≥5 2≤B≤Mx5	5 6 8 10 12 13	6 8 10 12	4 5 6 8	16.6	66-596 (386)	106-596	1.65
<b>BSB2S</b>	20	80-700	130-700		8 10 12 13 15 16	6 8 10 12 16	4 5 6 8 10	20.6	76-696	126-696	2.57
<b>BSBMS</b>	25	90-900	150-900	When P≥5 4≤F≤Px5, ① F, B+2 ② B≥Pitchx3+1 ③ For Stainless Steel materials, M≤B≤Mx3	8 10 12 13 15 16 20	6 8 10 12 16 20	5 6 8 10 12	25.8	86-896	146-896	4.04
<b>BSBSS</b>	30	100-1150	170-1150		10 12 13 15 16 20 25	8 10 12 16 20 24	6 8 10 12 16	30.8	96-1146	166-1146	5.85

- ① For BSBS and BSBMS, only \*marked sizes are available, and the Max. L and Y dimensions are in ( ). ② For BSN and BSB2N, only No. 6, 8 and 10 are available.

## Round Flange Nuts / Compact Flange Nuts

No.	D (h6)	L	Df	H	P.C.D.	d <sub>1</sub>	d <sub>2</sub>	h	W	d	B	Basic Rated Torque				Basic Load Rating		Allowable Static Moment		Mass (kg)
												Dynamic C <sub>r</sub> (N-m)	Static C <sub>0r</sub> (N-m)	Dynamic C (kN)	Static C <sub>0</sub> (kN)	M <sub>01</sub> (N-m)	M <sub>02</sub> (N-m)			
6	14	25	30	6	22	3.5	6	3.1	6.5	1.5	18	3.8	7	1.2	2.1	5	36	0.03		
8	16	32	32	6	24	3.5	6	3.1	6.5	1.5	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	14 (8.5)	1.5	25	19 (11)	34 (12)	3.8 (2.4)	6.9 (4.3)	26 (15)	181 (102)	0.09		
13	24	44 (36)	44 (45)	7 (8)	33 (34)	4.5	8	4.4	15 (10)	1.5	28 (20)	28 (20)	52 (37)	4.6 (3.3)	8.3 (5.9)	36 (22)	251 (148)	0.11		
16	31	50	51	7	40	5.5	9.5	5.4	18	2	—	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	9	52	5.5	9.5	5.4	26.5	2	—	193	348	15.4	27.7	173	1248	0.4		
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 M<sub>01</sub> is a value measured when a single nut is used, and M<sub>02</sub> is a value measured when two nuts are used.

## Straight Nuts

No.	D (h6)	L	b	Tolerance	t +0.05 0 ( )	d	a	Basic Rated Torque				Basic Load Rating		Allowable Static Moment		Mass (kg)	Dimension of Key (Included)				
								Dynamic C <sub>r</sub> (N-m)	Static C <sub>0r</sub> (N-m)	Dynamic C (kN)	Static C <sub>0</sub> (kN)	M <sub>01</sub> (N-m)	M <sub>02</sub> (N-m)	B	Tolerance		h	Tolerance	L <sub>1</sub>	R	
6	14	25	2.5	+0.014	1.2	1.5	15°	3.8	7	1.2	2.1	5	36	0.012	2.5	±0.016	2.5	0	10.5	1.25	
8	16	32	3	0	1.5	1.5	25°	4.8	8.7	1.2	2.1	5	36	0.013	±0.006	3	-0.025	10.5			
10	21	40 (33)	3	0	1.5	1.5	—	19 (11)	34 (21)	3.8 (2.4)	6.9 (4.3)	26 (15)	181 (102)	0.06	3	±0.012	3.5	0	17 (14)	1.5	
13	24	44 (36)	3	0	1.5	1.5	—	28 (20)	52 (37)	4.6 (3.3)	8.3 (5.9)	36 (22)	251 (148)	0.07	3	±0.012	3.5	0	17 (14)	1.5	
16	31	50	3.5	+0.018	2	2	—	51	93	6.2	11.1	56	386	0.15	4	±0.024	4	0	18	1.75	
20	35	63	4	0	2.5	2	—	85	154	8.5	15.3	83	611	0.2	4	±0.012	4	0	29		
25	42	71	4	0	2.5	2.5	—	193	348	15.4	27.7	173	1248	0.29	4	±0.012	4	0	33	2	
30	47	80	4	0	2.5	2.5	—	272	490	18.5	33.3	212	1581	0.37	4	±0.012	4	0	42		