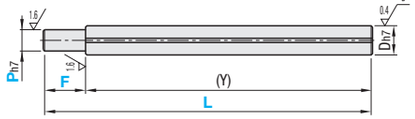
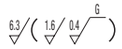
Ball Splines
One End Stepped

■One End Stepped

RoHS10

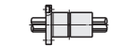
One End Stepped	Spline Shafts M EN 1.3505 Equiv. Nut M EN 1.7242 Equiv. H Hardness: 58HRC ~		Spline Shaft, Nut M Material: EN 1.4125 Equiv. H Hardness: 55HRC ~
	Nut 1 pc.	Nut 2 pcs.	Nut 1 pc.
With Round Flange Nut	BSDM	BSD2M	BSDMS
With Compact Flange Nut	BSDN	BSD2N	-
With Straight Nut	BSDS	BSD2S	-



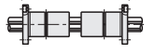


Flanged Nut Orientation

- 1 Nut Type



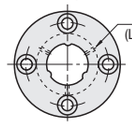
- 2 Nut Type (When Alteration NTW is specified)



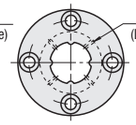
When selecting Overall Length (L Dimension), check the Annealing Range. P.339
Accuracy P.339 For the included nut, please select a shape from below.

■Round Flange Nuts

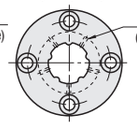
No.6, 8

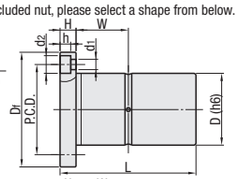


No.10, 13



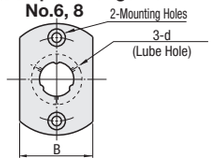
No.16, 20, 25, 30



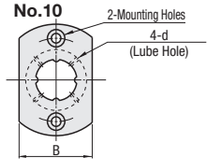


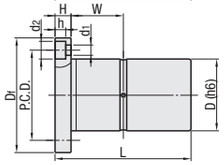
■Compact Flange Nuts

No.6, 8



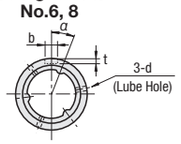
No.10



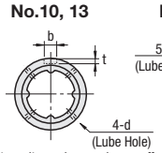


■Straight Nuts

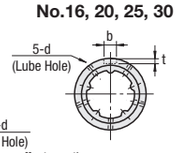
No.6, 8

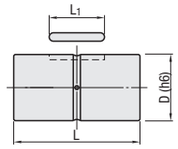


No.10, 13



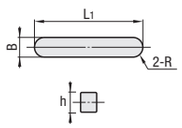
No.16, 20, 25, 30





* The key is press-fit into the nut.

A Dimension of Included Key



* Please refrain from machining the nuts as it may have adverse effects on the accuracy.

■Spline Shafts

Part Number Type	No.	1mm Increment L 1-Nut Type	L 2-Nut Type	F	P Selection	D	(Y) 1-Nut Type min~max	(Y) 2-Nut Type min~max	Mass (kg/m)
BSDM BSDN BSDS BSD2M BSD2N BSD2S BSDMS	*6	60~400(190)	60~400	When P=3 2≤F≤9 When P=4 2≤F≤16 When P≥5 2≤F≤Px5	3 4 5	6	58~398(188)	58~398	0.23
	*8	60~400(190)	60~400		4 5 6	8	58~398(188)	58~398	0.39
	*10	60~600(390)	90~600		4 5 6 8	10.4	58~598(388)	88~598	0.65
	*13	60~600(390)	100~600		5 6 8 10	13.4	58~598(388)	98~598	1.11
	*16	70~600(390)	110~600		5 6 8 10 12 13	16.6	68~598(388)	108~598	1.65
	20	80~ 700	130~700		8 10 12 13 15 16	20.6	78~898	128~698	2.57
	25	90~ 900	150~900		8 10 12 13 15 16 20	25.8	88~898	148~898	4.04
	30	100~1150	170~1150		10 12 13 15 16 20 25	30.8	98~1148	168~1148	5.85

For BSDMS, only * marked sizes are available, and the Max. L and Y dimensions are in ( ).
For BSDN and BSD2N, only No. 6, 8 and 10 are available.

■Round Flange Nuts, Compact Flange Nuts

No.	D (h6)	L	Df	H	P.C.D.	d1	d2	h	W	d	B	Basic Rated Torque Dynamic Ct (N·m)	Basic Rated Torque Static Cot (N·m)	Basic Load Rating Dynamic C (kN)	Basic Load Rating Static Co (kN)	Allowable Static Moment M01 (N·m)	Allowable Static Moment M02 (N·m)	Mass (kg)
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		24						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)		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)				15(10)		-	28(20)	52(37)	4.6(3.3)	8.3(5.9)	36(22)	251(148)	0.11
16	31	50	51	7	40			4.4	18			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	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

Dimensions in ( ) are for EN 1.4125 Equiv. 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 Dynamic Ct (N·m)	Basic Rated Torque Static Cot (N·m)	Basic Load Rating Dynamic C (kN)	Basic Load Rating Static Co (kN)	Allowable Static Moment M01 (N·m)	Allowable Static Moment M02 (N·m)	Mass (kg)	Dimensions of Key (Included) B	Tolerance	h	Tolerance	L1	R
6	14	25	2.5	+0.014 0	1.2	1.5	15°	3.8	7	1.2	2.1	5	36	0.012	2.5	+0.016 +0.006	2.5	0 -0.025	10.5	1.25
8	16						25°	4.8	8.7	1.2	2.1	5	36	0.013					10.5	
10	21	40(33)	3		1.5		-	19(11)	34(21)	3.8(2.4)	6.9(4.3)	26(15)	181(102)	0.06	3		3		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	3.5	+0.024 +0.012	3.5	0 -0.030	18	1.75
20	35	63	4		2.5			85	154	8.5	15.3	83	611	0.2	4		4		29	2
25	42	71						193	348	15.4	27.7	173	1248	0.29					33	
30	47	80				2.5		272	490	18.5	33.3	212	1581	0.37					42	

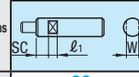
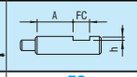
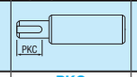
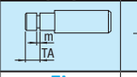
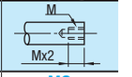
Dimensions in ( ) are for EN 1.4125 Equiv. Allowable static moment M01 is a value measured when a single nut is used, and M02 is a value measured when two nuts are used.

Part Number Type	No.	Unit Price Min. L ~150	L151 ~200	L201 ~300	L301 ~400	L401 ~500	L501 ~600	L601 ~700	L701 ~800	L801 ~900	L901 ~1000	L1001 ~1150
BSDM BSD2M Price of BSD2M = BSDM + Additional price shown below	6					-	-	-	-	-	-	-
	8					-	-	-	-	-	-	-
	10							-	-	-	-	-
	13							-	-	-	-	-
	16							-	-	-	-	-
	20								-	-	-	-
	25										-	-
	30											
BSDN BSD2N Price of BSD2N = BSDN + Additional price shown below	6					-	-	-	-	-	-	-
	8					-	-	-	-	-	-	-
	10							-	-	-	-	-
BSDS BSD2S Price of BSD2S = BSDS + Additional price shown below	6					-	-	-	-	-	-	-
	8					-	-	-	-	-	-	-
	10							-	-	-	-	-
	13							-	-	-	-	-
	16							-	-	-	-	-
	20								-	-	-	-
	25										-	-
	30											

Part Number Type	No.	Unit Price Min. L ~150	L151 ~200	L201 ~250	L251 ~300	L301 ~350	L351 ~390
BSDMS	6			-	-	-	-
	8			-	-	-	-
	10						
	13						
	16						

No.	Additional Price for 2-Nut Type Round Flange Nuts	Compact Flange Nuts	Straight Nuts
6			
8			
10			
13		-	
16		-	
20		-	
25		-	
30		-	

Alterations Part Number - L - F - P - (SC, FC···etc)
BSDN10 - 300 - F20 - P8 - SC15

Alterations	Wrench Flats	Set Screw Flat	Keyway on Shaft End	Retaining Ring Groove	Tapping
					
Code	SC	FC	PKC	TA	MC
Spec.	Adds a wrench flat. SC=1mm Increment SC+ℓ1≤Y	Adds a set screw flat. Ordering Code FC10-A8 FC, A=1mm Increment FC≤3xD 1.5xD<FC >> FC≤Y/2 A=0 or A≥2	Adds a keyway on the shaft end P. Ordering Code PKC10 P≥8 PKC=1mm Increment PKC≤Px3 PKC≤F-1 Keyway Details P.340	Adds retaining ring grooves. Ordering Code TA10 TA=1mm Increment P≥6 4≤TA<F/2 For Retaining Ring Groove Details P.340	Machines tapped hole on the right end face.

SC: No. 6: W 5, ℓ1 8; No. 8: W 7, ℓ1 8; No. 10: W 8, ℓ1 8; No. 13: W 11, ℓ1 10; No. 16: W 14, ℓ1 10; No. 20: W 17, ℓ1 15; No. 25: W 22, ℓ1 15; No. 30: W 27, ℓ1 15

FC: No. 6: h 1; No. 8: h 1; No. 10: h 1; No. 13: h 1; No. 16: h 1; No. 20: h 2; No. 25: h 2; No. 30: h 2

MC:

No.	M
6	3
8	3, 4
10	3, 4, 5
13	5, 6
16	6, 8
20	6, 8, 10
25	6, 8, 10, 12
30	8, 10, 12

When selecting multiple alteration additions, more than 2mm is needed between each feature to be added.

Ordering Example

Part Number - L - F - P
BSDN10 - 300 - F20 - P6
BSDN10G - 300 - F20 - P6
BSDN10L - 300 - F20 - P6

Alternative grease types available.
For Days to Ship, Price and Performance, see P.340

Cautions for Ball Spline Assembly

■Check Assembly Position

Match Mark No.'s are entered on nuts and spline shafts (see diagram on right).
When re-assembling, match the character orientations of Match Mark No.'s, and positional relationship.

■Tolerance for Mating Bores

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