Lock Nuts / Toothed Lock Washers for Bearings

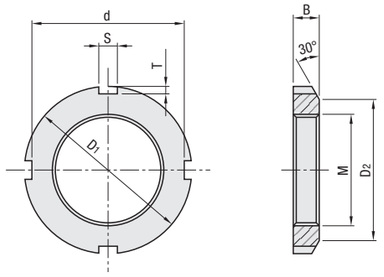
Features: A set of a nut and a special washer, the standard components to secure bearings.

Lock Nuts / Toothed Lock Washers for Bearings

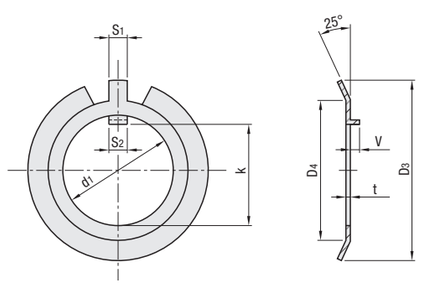
RoHS 10

Type			(1) Bearing Nut	(2) Tooth Lock Washer for Bearing
Type	(1)+(2) set	(1) Only	Material	Material
Steel	JLNK	JLN	1018 Carbon Steel or Equivalent	Low Carbon Steel
Stainless Steel	JLNSK	JLNS	No.10–20 303 Stainless Steel No.25–50 304 Stainless Steel	304 Stainless Steel

(1) Bearing Nut



(2) Tooth Lock Washer for Bearing



Screw Precision JIS B 0211 6H (Class 2)

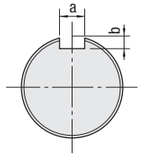
Part Number		(1) Bearing Nut							Reference Weight (g)			
Type	No.	M x Pitch (Fine)	D_1	D_2	B	d	S	T	Set (1)+(2) JLNK	Set (1)+(2) JLNSK	1 Pcs. (1) Only JLN	1 Pcs. (1) Only JLNS
(1)+(2) Set Steel JLNK / Stainless Steel JLNSK	10	10 x 0.75	18	13	4	14	3	2	5.0	5.3	3.7	4.1
	12	12 x 1.0	22	17		18			8.3	8.2	6.4	6.6
	15	15 x 1.0	25	21	5	21	4		12.5	12.7	10	10.3
	17	17 x 1.0	28	24		24			15.5	16.3	12.4	13
	20	20 x 1.0	32	26	6	28			21.5	22.8	19	19.5
(1) Only Steel JLN / Stainless Steel JLNS	25	25 x 1.5	38	32	7	34	5		31.4	36.6	25	31.2
	30	30 x 1.5	45	38		41			47.8	48.3	40	41.1
	35	35 x 1.5	52	44	8	48			63.4	73.7	53	64.3
	40	40 x 1.5	58	50	9	53	6	2.5	97.3	97.7	85	86.5
	45	45 x 1.5	65	56	10	60			134.2	135	119	121
	50	50 x 1.5	70	61	11	65			162.5	161.5	146.5	147

No.	(2) Tooth Lock Washer for Bearing									Dim. of Tooth Lock Washer Mounting Groove (Reference)	
	d_1	k	S_1	S_2	t	V	D_3	D_4	No. of Teeth	Slot Width a	Slot Depth b
10	10	8.5	3	3	1.0	2	21	13	9	4	2
12	12	10.5					25	17			
15	15	13.5	4	4		2.5	28	21	13	5	
17	17	15.5					32	24			
20	20	18.5					36	26			
25	25	23	5	5	1.2		42	32		7	2.5
30	30	27.5					49	38			3
35	35	32.5		6			57	44	15		
40	40	37.5	6				62	50			
45	45	42.5					69	56	17		
50	50	47.5					74	61			

Part Number Example

Part Number

(1)+(2) set
JLNK10
(1) Only
JLN25



Bearing Nuts and Toothed Lock Washers

– These 2 items are common parts for securing bearings.
– Nut loosening can be prevented by machining a vertical groove (Keyway) on the thread of a rotary shaft, and by tightening the nut and the shaft with the tooth lock washer.

Mounting Procedure

(1) Assemble a bearing onto a rotary shaft.
(2) Fit the tooth lock washer tab (S_2) in the groove of the rotary shaft (a).
(3) Tighten the bearing nut.
(4) Fold the tooth lock washer tab (S_1) to fit the groove of the rotary shaft (S).

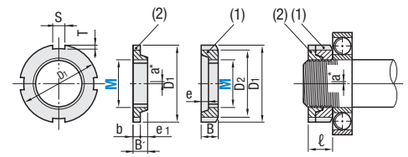
Hard Locking Bearing Nuts / Fine U Nuts®

Hard Locking Bearing Nuts

RoHS 10

Type		Material	Hardness	Surface Treatment
Standard Type	Thin Type			
HLB	—	1018 Carbon Steel or Equivalent	—	Parker
HLBM	—			Electroless Nickel Plating
HLBC	HLBU	1045 Carbon Steel or Equivalent	22–28HRC	Parker
HLBS	—	304 Stainless Steel	—	—

*Designed Offset (a) is provided between No. 2 Nut boss.
For Thin Type (HLBU), please mount the second nut (upper nut) first, followed by the first one.



Screw Accuracy: JIS B 02116H (Class 2)

Part Number		M x Pitch (Fine)	(1) No.1 Nut (Lower Nut)						(2) No.2 Nut (Upper Nut)							Common to No.1 & 2		Setting Height l				Perpendicularity of End Surface (max.)	Mass per Set (g)	
Type	M		D_1	D_2	B		e		D_1	B'		e_1		b		S	T	Standard		Thin			Standard	Thin
					Standard	Thin	Standard	Thin		Standard	Thin	Standard	Thin	Standard	Thin			Min	Max	Min	Max			
Standard Type HLB (M10 – 50) HLBM (M12 – 50) HLBC (M10 – 50) HLBS (M12 – 50)	10	10 x 0.75	18	13	6	—	2.7	—	18	6	—	2.5	—	3.5	—	3	2.0	9.5	10.5	—	—	0.05	15	—
	12	12 x 1.0	22	17					22														17	
	15	15 x 1.0	25	21	7				25	7				4.5		4		11.5	12.5				23	
	17	17 x 1.0	28	24					28														29	
	20	20 x 1.0	32	26	8				32	8				5.5				13.5	14.5				43	
	25	25 x 1.5	38	32	10	7	4.2	3.7	38	10	7	4.0	4	6	3	5		16.0	17.5	10	11.5		72	45
	30	30 x 1.5	45	38					45														103	63
Thin Type HLBU (M25 – 50)	35	35 x 1.5	52	44	11	8		4.2	52	11	8		4.0	7	4			18.0	19.5	12	13.5		150	100
	40	40 x 1.5	58	50	12	9			58	9	9			5	5			17.0	18.5	14	15.5		170	140
	45	45 x 1.5	65	56	13	10			65	10	10			6	6	6	2.5	19.0	20.5	16	17.5		240	201
	50	50 x 1.5	70	61	14	11			70	11	11			7	7			21.0	22.5	18	19.5		285	250

Part Number Example

Part Number

HLB35

Structure and Function of Hard Locking Baring Nut

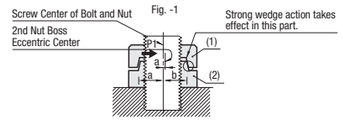
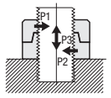


Fig. -2



Precautions for Use

Machine chamfering (C = 1 pitch equivalent) on the tip of male thread, whose precision grade is JIS 6g (Class 2).

Comparison with Conventional Products

Unlike standard bearing nut sets, no keyway machining is required for toothed washers and shafts.

Wedge action does not change even when nuts are installed upside down of the figure on left.

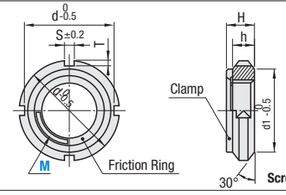
Fig.-1 When upper nut is tightened, stress is automatically applied in P_1 arrow direction. Horizontal stress continues to increase with tightening until upper nut closely contacts lower nut as shown in Fig.-2. The nuts are fully locked by the wedge effect.

Fig.-2 After nuts are tightened, internal stress remains distributed as composite stress of $P_1 + P_2 + P_3$ to resist external impact.

Fine U Nuts®

RoHS 10

Type	Material		
	Main Body	Friction Ring	
FUNT	1018 Carbon Steel Equivalent	301 Stainless Steel	
FUNTC	1045 Carbon Steel or Equivalent Thermal Refined (22–28 HRC)		
FUNTS	304 Stainless Steel		



Screw Accuracy: JIS 6H (Class 2)

Part Number		M x Pitch (Fine)	D	D_1	d	T	S	H		h	Perpendicularity of End Face (max.)
Type	M										
FUNT FUNTC FUNTS	8	8 x 0.75	16	12	13	1.5	3	5.3	±0.3	4.3	0.05
	10	10 x 0.75	18	13.5	14.4	1.8	3	5.2		4	
	12	12 x 1.0	22	17	18.4	1.8	3	5.4		4	
	15	15 x 1.0	25	21	21.4	1.8	4	6.5	±0.5	5	
	17	17 x 1.0	28	24	24.2	1.9	4	6.4		5	
	20	20 x 1.0	32	26	28.4	1.8	4	7.7		6	
	25	25 x 1.5	38	32	34	2	5	9.1		7	
	30	30 x 1.5	45	38	41	2	5	9.1	±0.8	7	
	35	35 x 1.5	52	44	48	2	5	10.2		8	
	40	40 x 1.5	58	50	53	2.5	6	11.2		9	
	45	45 x 1.5	65	56	60	2.5	6	12.5	±1.0	10	
	50	50 x 1.5	70	61	65	2.5	6	13.5		11	

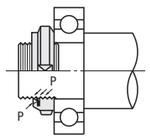
Part Number Example

Part Number

FUNT10

Hard Lock Structure

As shown in the figure, stress P is caused by the spring effect when Friction Ring contacts the thread. The reaction force P' together with P presses hard upon the threads, which creates friction torque (preventing torque) to prevent any free motion.



Fine U Nut® is a registered trademark of FUJISEIMITSU CO., LTD.

Precautions for Use

– Machine chamfering (C=1 pitch equivalent) on the tip of male thread, whose precision grade is JIS 6g (Class 2).
– Use lubricant when threading in and out. (Use extra high performance lubricant when shaft hardness is low.)
– For optimal performance, ensure that the complete thread portion is to extrude by 2 pitches or more from function ring side.
– The perpendicularity of the plane end in the above table is effective only when tightened with twice or more the preventing torque.
– Not usable with high speed impact wrenches.
– Not usable on machined thread portion of shafts (keyway, etc.)
– Screwing in from the friction ring side is impossible.
– Do not use when the deflection of friction rings or clamp part occurs.