



*Safety by*

**FUJILOK**

**U-NUT**



# Products



# Guide



The Locknut with the stainless steel insert

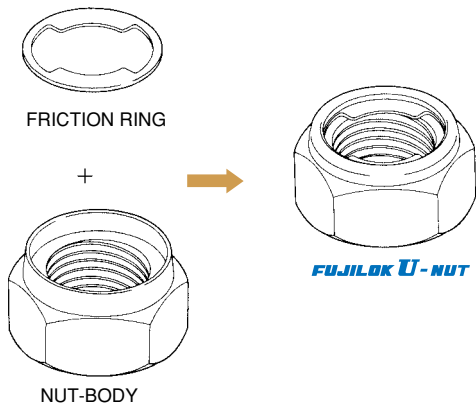
# FUJILOK U-NUT

The **FUJILOK U-NUT** has an international reputation built on over 30 years. The **FUJILOK U-NUT** is used worldwide in many engineering applications.

It is recognized as the most reliable of all-metal locking nuts. The **FUJILOK U-NUT** can be customized to fit your unique requirements with regard to material, dimension, and finish.

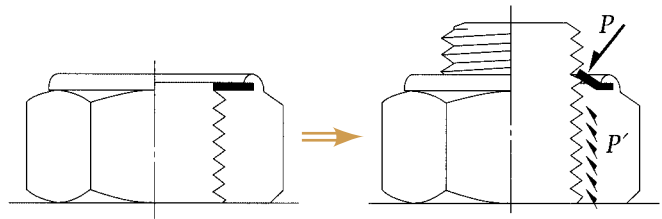
**FUJILOK U-NUT** is used by Government civil and defense projects, public utility corporation (water, energy), railways, and many leading manufacturers.

## CONSTRUCTION AND FUNCTION



The **FUJILOK U-NUT** comprises a nut and friction ring (special spring stainless steel). The friction ring is attached to the top face of the nut by crimping.

The **FUJILOK U-NUT** is comprised of a nut and stainless steel friction ring spring.



A stress ( $P$ ) is produced by the spring effect of the stainless steel friction ring coming into contact with the screw thread as shown in the above illustration.

The ( $p$ ) and its reaction force ( $P'$ ) press strongly against the screw threads to produce a frictional torque (prevailing torque). This prevailing torque prevents the turning of the screw, generation an excellent locking effect.



## FASTENING FUNCTION

**FUJILOK U-NUT** GUARANTEES LONG LASTING RESISTANCE TO VIBRATION.



## PREVENTION OF LOOSENING

EARLY STAGE LOOSENING OF THE **FUJILOK U-NUT** IS PREVENTED EVEN IF THE AXIAL TENSIONS ARE LOWERED.



## HEAT RESISTANCE AND LOW TEMPERATURE RESISTANCE

**FUJILOK U-NUT**'S ALL-METAL CONSTRUCTION HAS EXCELLENT RESISTANCE TO HIGH AND LOW TEMPERATURE.



## SIMPLE TO USE

SIMPLE FASTENING SAVES TIME AND IMPROVES PRODUCTIVITY.



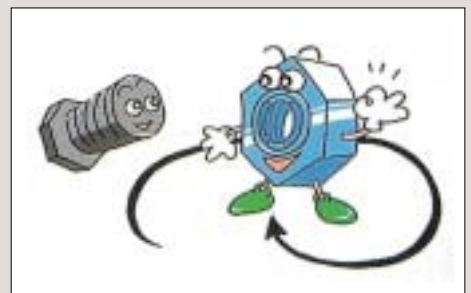
## SINGLE PART

ONE PART, ONE WAY TO INSTALL, SIMPLE, EASY AND EFFECTIVE.



## RE-USEABILITY

**FUJILOK U-NUT** IS A REUSABLE ALL-METAL SELF LOCKING NUT.



## THREAD

METRIC THREADS

\* UNIFIED THREADS and WHIT WORTH THREADS can be manufactured on request.

## TYPE

SINGLE CHAMFER  
DOUBLE CHAMFER  
THIN TYPE  
SMALL TYPE  
FLANGE TYPE  
DOMED TYPE  
WELD TYPE

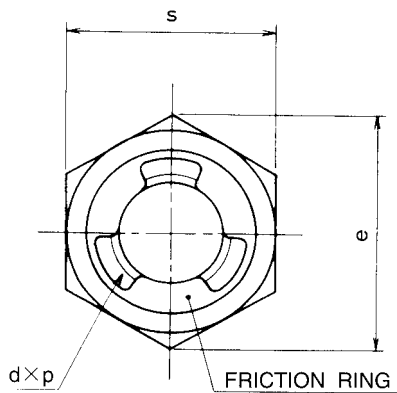
## MATERIAL

LOW CARBON STEEL (SS400 or equivalent)  
HIGH CARBON STEEL (S45C-H or equivalent)  
ALLOY STEEL (SCM435-H)  
STAINLESS STEEL 304  
STAINLESS STEEL 316L

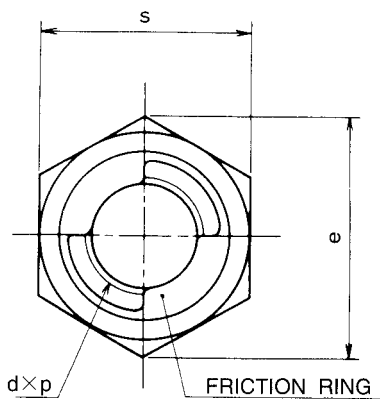
## SURFACE TREATMENT

YELLOW ZINC PLATED  
WHITE ZINC PLATED  
HOT DIP GALVANIZING

## DIMENSION TABLE FOR HEXAGON NUTS



M6 AND UNDER



ABOVE M6



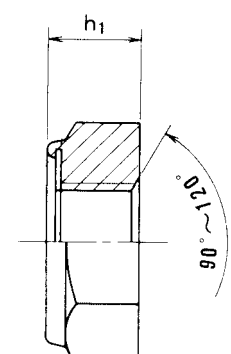
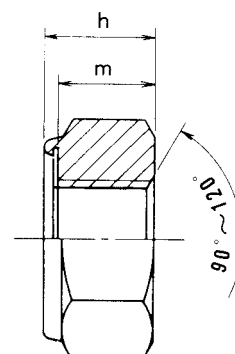
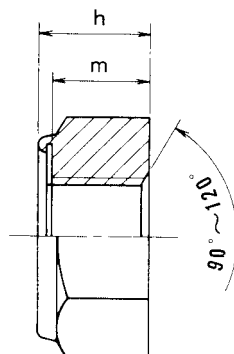
SINGLE CHAMFER



DOUBLE CHAMFER



THIN TYPE



... AVAILABLE

... AVAILABLE ON REQ

MATERIAL OF NUT BODY						SS400	S45C-H	S304	REQUEST ORDER	WIGHT [g]				
MATERIAL OF FRICTION RING						SUS301								
NOMINAL DIAMETER	PITCH	WIDTH ACROSS FLAT (s)		OVERALL HEIGHT (h)		THREAD HEIGHT (m) APPROX.	ACROSS CORNERS (s) APPROX.	SINGLE CHAMFER	DOUBLE CHAMFER	DOUBLE CHAMFER	SINGLE CHAMFER	THIN TYPE (h1)	APPROX.	
		SIZE	TOLERANCE	SIZE	TOLERANCE									
M 4	0.7	7	0 -0.2	3.8	±0.3	3	8.1					3.1	0.8	
M 5	0.8	8		4.6		3.9	9.2						4	1.2
M 6	1	10		5.1		4.2	11.5							2.1
M 8	1.25	13	0 -0.25	7.3	±0.4	6.1	15					5	5.1	
	1													
M10	1.5	17		8.3		7.1	19.6	9	21.9					6.5
	1.25													
M12	1.75	19	10.5	9	21.9	11	25.4					8.5	15.2	
	1.5													
	1.25													
M14	2	22	0 -0.35	12.5	±0.5	11	25.4					9.5	24	
	1.5													
M16	2	24		14.5		13	27.7	14	31.2					12
	1.5													
M18	2.5	27	16	14	31.2	15.4	34.6					14	45.2	
	1.5													
M20	2.5	30	17.5	15.4	34.6	17.2	37					14	61.4	
	1.5													
M22	2.5	32	0 -0.4	19.5	±0.6	17.2	37					16	74.3	
	1.5													
M24	3	36		21.5		18.8	41.6	21.2	47.3					16
	2													
M27	3	41	24	21.2	47.3								159	
M30	3.5	46	27	24	53.1	24	53.1					226	287	
	3													
M33	3.5	50	29.5	26.5	57.7	29.5	63.5					393	509	
	3													
M36	4	55	32.5	29.5	63.5	31.8	69.3					651	972	
	3													
M39	4	60	35	31.8	69.3	34.5	75					794	1190	
	3													
M42	4.5	65	38	34.5	75	36	80.8					1360	1410	
	3													
M45	4.5	70	40	36	80.8	36.5	86.5					1660	1910	
	3													
M48	5	75	42	38	86.5	42	92.4					1190	1360	
	3													
M52	5	80	46	42	92.4							1190	1360	
M55	3	85	49	44.5	98.1	45	104					1410	1660	
	5.5													
M56	5.5	90	52	47.5	104	48	110					1660	1910	
	4													
M60	5.5	90	52	47.5	104	48	110					1660	1910	
	4													
M65	6	95	54	50	110							1910	1910	
	4													

\* Dimensions may be subject to change without notice due to our policy of product improvement.

## DIMENSION TABLE FOR SMALL NUTS

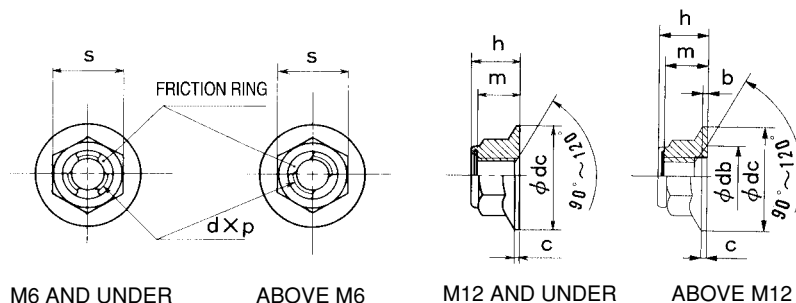
... AVAILABLE  
 ... AVAILABLE ON REQ

THREAD ACCURACY : ISO 6H(JIS CLASS 2)    UNIT:mm

MATERIAL OF NUT BODY						SS400	S45C-H	SUS304	WIGHT (g)			
MATERIAL OF FRICTION RING						SUS301						
NOMINAL DIAMETER (d)	PITCH (p)	WIDTH ACROSS FLAT (s)		OVERALL HEIGHT (h)		THREAD HEIGHT(m) APPROX.	DOUBLE CHAMFER	DOUBLE CHAMFER	DOUBLE CHAMFER	APPROX.		
		SIZE	TOLERANCE	SIZE	TOLERANCE							
M 8	1.25	12	0 -0.25	7.3	± 0.4	6.2				4		
M10	1.25	14		8.5		7.3				5.9		
	1.5			10.5		9.4				10.6		
M12	1.25	17	0 -0.35	12.5	± 0.5	11				15.4		
	1.75						14.5	13				
M14	1.5	22					16	14.5				
M16	2	24	0 -0.35	17.5	± 0.5	16				41.5		
M18	1.5						17.5	16	14.5			
M20	1.5	27					17.5	16				

\* Dimensions may be subject to change without notice due to our policy of product improvement.

## DIMENSION TABLE FOR HEXAGON NUTS WITH FLANGE



M6 AND UNDER

ABOVE M6

M12 AND UNDER

ABOVE M12

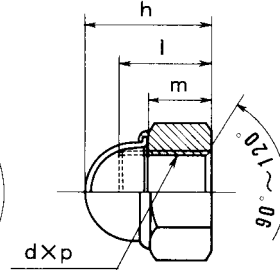
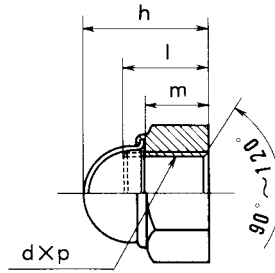
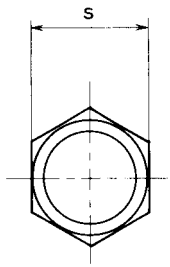
... AVAILABLE  
 ... AVAILABLE ON REQ

THREAD ACCURACY : ISO 6H(JIS CLASS 2)    UNIT:mm

MATERIAL OF NUT BODY										SS400	S45C-H	WIGHT (g)			
MATERIAL OF FRICTION RING										SUS301					
NOMINAL DIAMETER (d)	PITCH (p)	WIDTH ACROSS FLAT (s)		FLANGE DIAMETER (φ dc)		OVERALL HEIGHT (h)		THREAD HEIGHT(m) APPROX.	DEPTH OF COUNTER BORES(b) APPROX.	DIAMETER OF COUNTERBORES(φdb)		FLANGE THICKNESS (c) MIN	PROOF LOAD STRESS (N/mm <sup>2</sup> )		APPROX.
		SIZE	TOLERANCE	SIZE	TOLERANCE	SIZE	TOLERANCE			SIZE	TOLERANCE		600	800	
M 5	0.8	8	0	11	0 -0.4	6	± 0.3	5.3	-	-	-	1			2
M 6	1	10	-0.2	13		6.9		6				1.2			3.5
M 8	1.25	12	0 -0.25	17	± 0.4	8.5	± 0.4	7.5	-	-	-	1.5			6.8
		14		10		8.8		1.7						8.3	
M10	1.25	17		12.5		11.2		2				13	1.4		
M12	1.25	19	0 -0.5	24	± 0.5	15	± 0.5	13.5	3	17	± 0.3	1.6			20.5
M14	1.5	22		16.5		15		15				22.6			
		24		16		15		17				29.8			
M16	1.5	24	0 -0.35	30	± 0.5	16	± 0.5	15	3	20	± 0.3	3			35.7
		27		18		16.5		17				41.5			
M18	1.5	27	32	18	16.5	20	16.5	16.5	3	20	± 0.3	3			41.7
															55

\* Dimensions may be subject to change without notice due to our policy of product improvement.

## DIMENSION TABLE FOR DOMED NUTS



ABOVE M12

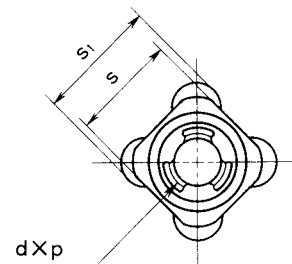
... AVAILABLE  
 ... AVAILABLE ON REQ

THREAD ACCURACY : ISO 6H(JIS CLASS 2)    UNIT: mm

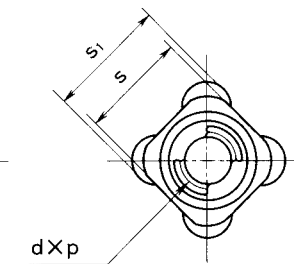
MATERIAL OF NUT BODY						SS400	S45C-H	SUS304	WIGHT (g) APPROX.				
MATERIAL OF CAP PART						SPC		SUS304					
MATERIAL OF FRICTION RING						SUS301							
NOMINAL DIAMETER (d)	PITCH (p)	WIDTH ACROSS FLAT(s)		OVERALL HEIGHT(h)		THREAD HEIGHT(m)		SINGLE CHAMFER		DOUBLE CHAMFER	DOUBLE CHAMFER	SINGLE CHAMFER	
		SIZE	TOLERANCE	SIZE	TOLERANCE	MAX	MIN						
M 5	0.8	8	0 -0.2	9	±0.6	3.9	7.4	5.5				1.4	
M 6	1	10		10.5		4.2	7.9	6.2					2.5
M 8	1.25	12	0 -0.25	13.6	±0.8	6.1	10.8	8.6				4.6	
		13		13								5.7	
		14		13.4								6.8	
M10	1.5	17	0 -0.25	15.5	±0.8	7.1	12.8	10.1				11.6	
	1.25												
M12	1.75	19	0 -0.35	19	±1	9	15.8	12.5				16.6	
	1.5												
	1.25												
M14	2	22	0 -0.35	24.5	±2	11	19.8	15				25.9	
	1.5												
M16	2	24	0 -0.35	26.5	±2	13	20.8	17				36.2	
	1.5												
M18	2.5	27	0 -0.35	28.5	±2	14	22.8	19				47.1	
	1.5												
M20	2.5	30	0 -0.35	31	±2	15.4	24.8	20.4				66	
	1.5												

\* Dimensions may be subject to change without notice due to our policy of product improvement.

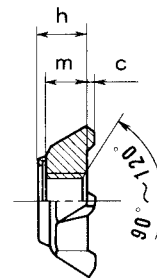
## DIMENSION TABLE FOR WELD NUTS



M6 AND UNDER



ABOVE M6



... AVAILABLE  
 ... AVAILABLE ON REQ

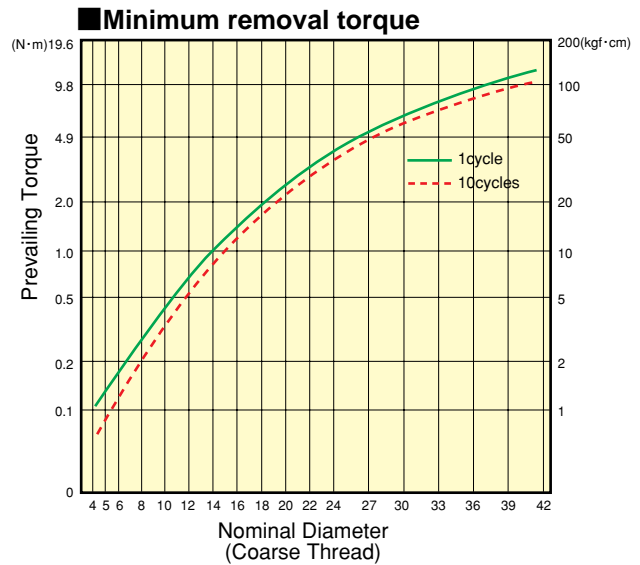
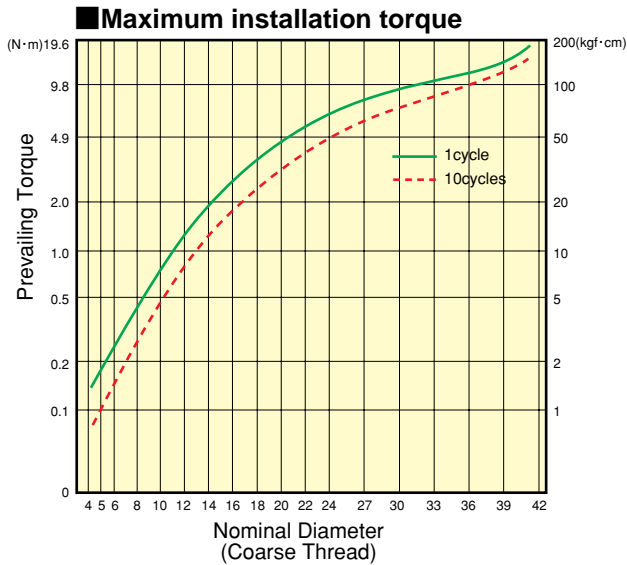
MATERIAL OF NUT BODY : SS400    MATERIAL OF FRICTION RING : SUS301    THREAD ACCURACY : ISO 6H(JIS CLASS 2)    UNIT: mm

NOMINAL DIAMETER (d)	PITCH (p)	WIDTH ACROSS FLAT(s)		OUTLINE (S1) APPROX.	OVERALL HEIGHT(h)		THREAD HEIGHT(m) APPROX.	(c)		SQUARE WELO	WIGHT (g) APPROX.
		SIZE	TOLERANCE		SIZE	TOLERANCE		SIZE	TOLERANCE		
M 5	0.8	9	0 -0.25	9.7	3	±0.3	2.3	1	0 -0.2		1.2
M 6	1	10		11	4		3.1				1.9
M 8	1.25	14		15.4	5.2		4				4.8
M10	1.25	17	0 -0.25	18.9	8	±0.4	6.8	1.2	0 -0.2		11.5
M12	1.25			19.2	10.5		9.2				13.6

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## PREVALING TORQUE

The prevailing torque is a frictional torque produced by the friction ring acting on the threads of a bolt.  
(The following graphs can be used for reference when using lubricated fasteners.)



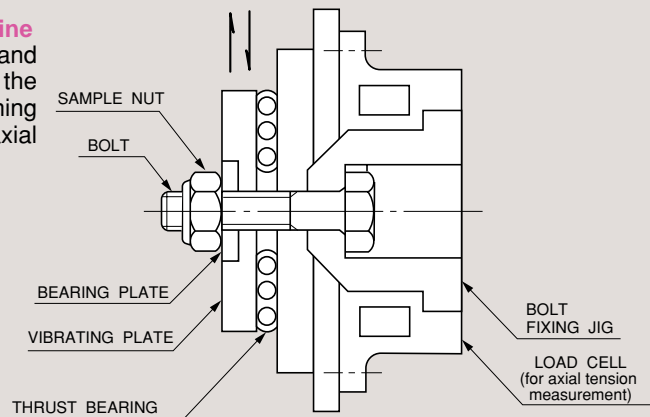
## VERTICAL AXIS VIBRATION TEST

### Test machine used – Junker type

The **Junker type thread loosening testing machine** is used to apply vibration and amplitude to a bolt and nut. The vibration and amplitude are applied in the direction vertical to the bolt axis thereby, determining the locking capacity according to the reduced axial tension of the fastener.

#### Specification of Junker type thread loosening testing machine.

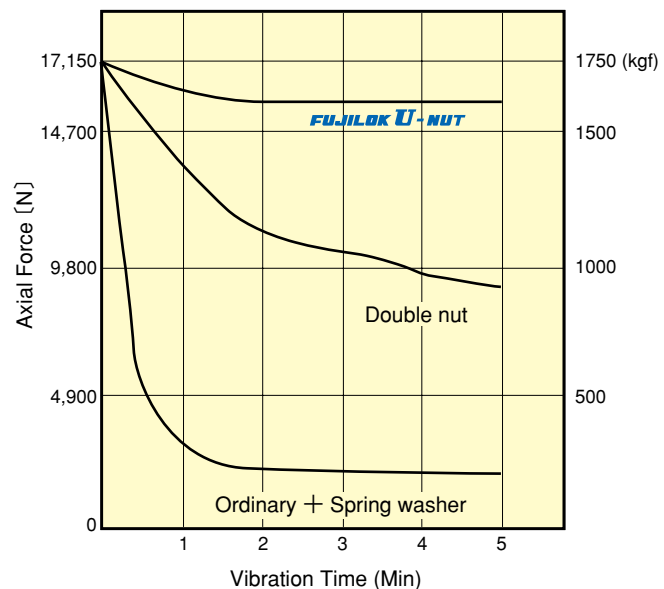
Frequency of vibration plate	200 c.p.m.
Displacement of vibration	± 0.5mm
Vibration time	5 min



### Test conditions

Sample size	M12×1.75
Material of nut and bolt	SS400 or equivalent
Axial tension for fastening	17150N {1750 kgf}
Yield point of bolt $\sigma_y$	314N/mm <sup>2</sup> {32kgf/mm <sup>2</sup> }

### Test results





# RECTANGULAR AXIS VIBRATION AND IMPACT TEST

## ■ Test machine used – NAS type

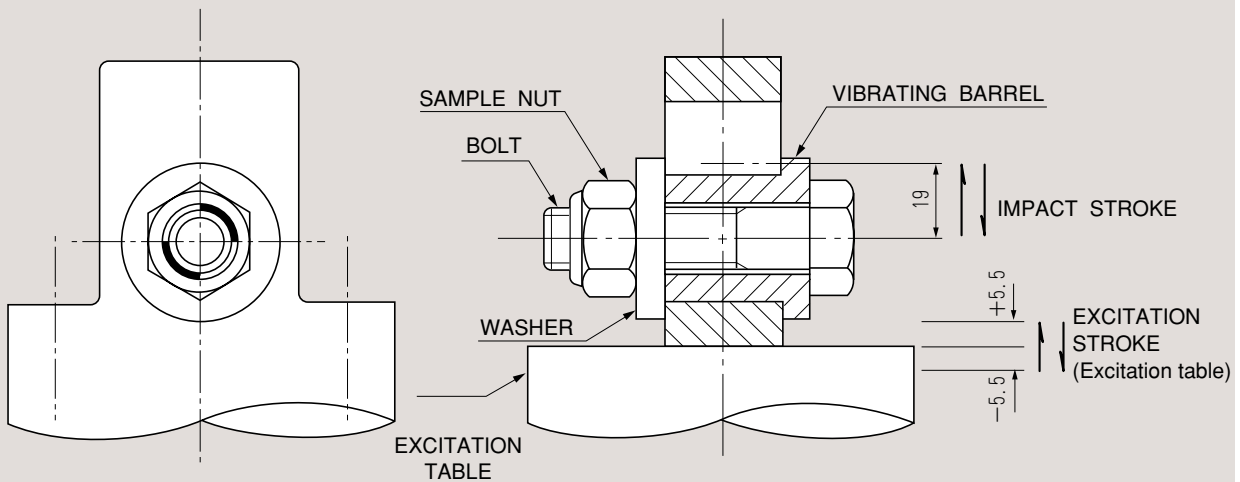
### NAS conforming high speed thread looseness testing machine.

(U.S. aircraft standard NAS 3350).

This test machine is used to apply repeated impact shocks to the bolt and nut fastening the vibrating barrel. The shocks are applied in the direction vertical to the bolt axis so as to check for the presence of looseness and determine the locking performance.

### Specification of NAS type high speed thread looseness testing machine

Frequency	1780 c.p.m.
Excitation stroke	11mm
Impact stroke	19mm
Vibrating acceleration of excitation table	19.5 G



## ► Test conditions

Sample size	M12×1.75
Material of nut and bolt	SS400 or equivalent
Axial tension for fastening	17150N {1750 kgf}
Yield point of bolt $\sigma_y$	314N/mm <sup>2</sup> {32kgf/mm <sup>2</sup> }

## ■ Test results

SAMPLE NUT	FREQUENCY	VIBRATION TIME
<b>FUJILOK U-NUT</b>	30000 cycles	16' 51"
	ACCEPTABLE	
DOUBLE NUT	4450 cycles	2' 30"
	CAME OFF	
ORDINARY NUT + SPRING WASHER	1335 cycles	45"
	CAME OFF	

## FUJILOK U-NUT TIGHTENING TORQUE TABLE FOR REFERENCE

### (SINGLE CHAMFER·DOUBLE CHAMFER)

· THE TIGHTENING TORQUE SHOWN IN THE TABLE BELOW ARE GIVEN AS THE VALUE FOR REFERENCE BASED ON THE BOLT STRENGTH.

(USE THE VALUE ACCORDING TO THE SURFACE TREATMENT AND STRENGTH OF THE BOLT)

· FOR THE NUT OF SMALL TYPE, USE 60% OF THE TIGHTENING TORQUE OF THE TABLE BELOW.

· COMBINATION OF **FUJILOK U-NUT** MATERIAL INCLUDES RESPECTIVE EQUIVALENT MATERIALS.

·        OF THE TABLE BELOW INDICATES THE COMBINATION TO WHICH THE REFERENCE TIGHTENING TORQUE CAN BE APPLIED.

· CONSULT US IF YOUR APPLICATION REQUIRES SIZES OR MATERIALS NOT LISTED.

UNIT: N·m {kgf·cm}

SURFACE TREATMENT		PLAIN			ZINC PLATED			HOT DIP GALV.	PLAIN
STRENGTH GRADE OF BOLT		4.8	8.8	10.9	48.8	8.8	10.9	4.8	STAINLESS STEEL PROOF STRESS 300N/mm <sup>2</sup> {30.6kg/mm <sup>2</sup> }
COMBINATION OF <b>FUJILOK</b> <b>U-NUT</b>	SS400		—	—		—	—		
	S45CH			—			—		
	SCM435-H								
	SUS304	—	—	—	—	—	—	—	
M 4 × 0.7		{ 1.8 18}	— —	— —	{ 2.2 22}	— —	— —	— —	{ 1.9 19}
M 5 × 0.8		{ 3.7 38}	{ 7.4 75}	{ 10 100}	{ 4.4 45}	{ 8.7 89}	{ 12 120}	— —	{ 3.8 39}
M 6 × 1.0		{ 6.3 64}	{ 13 130}	{ 18 180}	{ 7.4 75}	{ 15 150}	{ 21 210}	— —	{ 6.5 66}
M 8 × 1.2		{ 15 150}	{ 30 310}	{ 43 440}	{ 18 180}	{ 36 370}	{ 51 520}	{ 23 230}	{ 16 160}
M10 × 1.5		{ 30 310}	{ 60 610}	{ 85 870}	{ 36 370}	{ 71 720}	{ 100 1000}	{ 45 460}	{ 31 320}
M12 × 1.75		{ 53 540}	{ 105 1050}	{ 145 1500}	{ 62 630}	{ 125 1250}	{ 175 1800}	{ 79 810}	{ 55 560}
M14 × 2.0		{ 84 860}	{ 165 1700}	{ 235 2400}	{ 99 1000}	{ 200 2050}	{ 280 2850}	{ 125 1250}	{ 87 890}
M16 × 2.0		{ 130 1350}	{ 260 2650}	{ 365 3700}	{ 155 1600}	{ 310 3150}	{ 435 4450}	{ 195 2000}	{ 135 1400}
M18 × 2.5		{ 180 1850}	{ 360 3650}	{ 510 5200}	{ 210 2150}	{ 425 4350}	{ 600 6100}	{ 270 2750}	{ 185 1900}
M20 × 2.5		{ 255 2600}	{ 510 5200}	{ 720 7350}	{ 300 3050}	{ 600 6100}	{ 850 8650}	{ 385 3950}	{ 265 2700}
M22 × 2.5		{ 345 3500}	{ 690 7050}	{ 970 9900}	{ 410 4200}	{ 820 8350}	{ 1150 11700}	{ 520 5300}	{ 360 3650}
M24 × 3.0		{ 440 4500}	{ 880 8950}	{ 1240 12600}	{ 520 5300}	{ 1040 10600}	{ 1470 15000}	{ 660 6750}	{ 450 4600}
M27 × 3.0		{ 640 6550}	{ 1290 13200}	{ 1810 18500}	{ 760 7750}	{ 1530 15600}	{ 2150 21900}	{ 970 9900}	{ 670 6850}
M30 × 3.5		{ 880 8950}	{ 1750 17800}	{ 2460 25100}	{ 1040 10600}	{ 2070 21100}	{ 2920 29800}	{ 1320 13500}	{ 910 9300}
M33 × 3.5		{ 1190 12100}	{ 2380 24300}	{ 3350 34200}	{ 1410 14400}	{ 2820 28800}	{ 3970 40500}	{ 1800 18400}	{ 1240 12600}
M36 × 4.0		{ 1530 15600}	{ 3060 31200}	{ 4300 43800}	{ 1810 18500}	{ 3620 36900}	{ 5100 52000}	{ 2310 23600}	{ 1590 16200}
M39 × 4.0		{ 1980 20200}	{ 3960 40400}	{ 5570 56800}	{ 2340 23900}	{ 4690 47800}	{ 6590 67200}	{ 2980 30400}	{ 2060 21000}
M42 × 4.5		{ 2450 25000}	{ 4890 49900}	{ 6880 70200}	{ 2900 29600}	{ 5800 59100}	{ 8150 83100}	{ 3690 37600}	{ 2540 25900}
M45 × 4.5		{ 3070 31300}	{ 6130 62500}	{ 8620 87900}	{ 3630 37000}	{ 7260 74000}	{ 10200 104000}	{ 4620 47100}	{ 3180 32400}
M48 × 5.0		{ 3670 37400}	{ 7340 74800}	{ 10300 105000}	{ 4350 44400}	{ 8690 88600}	{ 12200 124000}	{ 5530 56400}	{ 3810 38900}
M52 × 5.0		{ 4760 48500}	{ 9520 97100}	{ 13400 137000}	{ 5640 57500}	{ 11300 115000}	{ 15850 162000}	{ 7180 73200}	{ 4940 50400}
M56 × 5.5		{ 5910 60300}	{ 11800 120000}	{ 16650 170000}	{ 7000 71400}	{ 14000 143000}	{ 19700 201000}	{ 8910 90900}	{ 6140 62600}
M60 × 5.5		{ 7360 75100}	{ 14750 150000}	{ 20700 211000}	{ 8720 88900}	{ 17450 178000}	{ 24550 250000}	{ 11100 113000}	{ 7650 78000}
M64 × 6.0		{ 8920 91000}	{ 17850 182000}	{ 25100 256000}	{ 10550 108000}	{ 21150 216000}	{ 29700 303000}	{ 13450 137000}	{ 9260 94400}

## NOTES ON USE

**FUJILOK U-NUT** ARE USED FOR FASTENING ESPECIALLY IN IMPORTANT AREAS. WHEN USING **FUJILOK U-NUT**, THE BEST RESULTS ARE ACHIEVED BY ADHERING TO THE FOLLOWING SIMPLE REQUIREMENTS.



- For fastening refer to the tightening torque table on the left pages.



- Use a bolt with the point chamfer to the screw accuracy of ISO 965. (TOLERANCE CLASS 6g)



- Use lubricant in cases where scorching, seizure, etc. may occur during installation of and removal of the nut.



- For full locking, ensure that two full bolt threads protrude beyond the friction ring in the top of the **FUJILOK U-NUT**.



- When welding the nut, pay attention to the effect of heat spatter on the friction ring and thread areas.



- Consult us before using the nut if the bolt thread is machined (with key way, pin holes, etc.)



- The nut cannot be installed from the friction ring side.



- Stop using the nut when excessive deformation or other fault is found in the friction ring and the clamp.



- For applications under severe conditions or low axial tension, consult us before use.



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