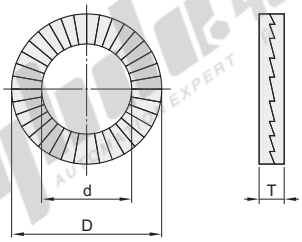
Lock Washers — Stainless Steel

Code	Type	Material	Hardness	Heat-resistant Temperature
TBQ01	Lock Washers	SUS304	HV300	-160~500℃



This product is to be used in pairs.

Applicable Standards:DIN25201

The first perspective

Part Number Code	Part Number No.	Applicable Screw	d	D	T Thickness
TBQ01	3	M3	3.4	7	2.2
	4	M4	4.4	7.6	
	5	M5	5.4	9	
	6	M6	6.5	10.8	
	8	M8	8.7	13.5	2.0
	10	M10	10.7	16.6	
	11	M11	11.4	18.5	2.2
	12	M12	13.0	19.5	2.0
	14	M14	15.2	23	3.0
	16	M16	17.0	25.4	
	18	M18	19.5	29	3.2
	20	M20	21.4	30.7	3.0
	22	M22	23.4	34.5	3.2
	24	M24	25.3	39	
	27	M27	28.4	42	6.8
	30	M30	31.4	47	

Principle of Lock Washers

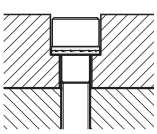
A pair of washers with wedge cams on one side and radial ribs on the other side each to compose a self-locking arrangement.
Cam angle(a)is set to be larger than the thread lead angle(b).
When the screw begins to rotate loose,a force is generated by a cam member to push up and separate from the opposite cam member.The rotation is blocked by the wedge effect and the cams will not be separated by more than one thread pitch.

Proper installation and Cautions on Repeated Use.

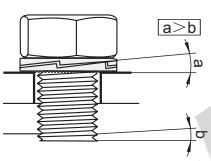
Upon reusing, please confirm the cams are not worn or cracked, and follow the installation instructions below.Do not use together with other washers.When using it again, it is recommended to use lubricating oil.

Correct Wrong Wrong

EX Example



Counterbore dia. does not need to be increased.



Recommended Tightening Torque and Tightening Force

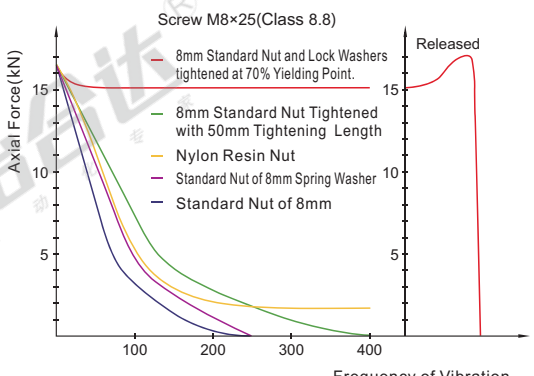
please refer to the values listed below as guidelines when securing a screw with a lock washer.
There is no self-locking effect when the values are far below recommended values.
If the tightened torque exceeds the recommended values,loosening the screws may become impossible or Lock Washers may be broken.

Recommended Tightening Torque and Tightening Force. GTP600=Lubricant

No.	Applicable Screw (M×Pitch)	Screw Strength Class A2-50 , A4-50 G_F=0.65 μ_{th}=0.14,μ_b=0.15		Screw Strength Class A2-70 , A4-70 G_F=0.65 μ_{th}=0.14,μ_b=0.15		Screw Strength Class A2-80, A4-80 G_F=0.65 μ_{th}=0.14,μ_b=0.15	
		Torque (Nm)	Tightening Force (kN)	Torque (Nm)	Tightening Force (kN)	Torque (Nm)	Tightening Force (kN)
3	3×0.5	0.4	0.7	0. 9	1.5	1.2	2
4	4×0.7	0.9	1.2	2	2.6	2.7	3.4
5	5×0.8	1.8	1.9	3.9	4.1	5.3	5.5
6	6×1.0	3.2	2.7	6.9	5.9	9.2	7.8
8	8×1.25	7.7	5	17	11	22	14
10	10×1.5	15	8	33	17	43	23
12	12×1.75	26	12	56	25	75	33
14	14×2.0	42	16	89	34	119	45
16	16×2.0	64	21	136	46	181	61
18	18×2.5	89	26	191	56	254	75
20	20×2.5	125	33	267	72	356	95
22	22×2.5	170	41	364	89	485	118
24	24×3.0	214	48	460	103	613	137
27	27×3.0	313	63	671	134	895	179
30	30×3.5	427	77	915	164	1220	219

G_F=Coefficient at theYield Point μ_{th}=Coefficient of Friction at Screw Thread
μ_b=Coefficient of Friction in Washer
1N=0.2251B 1Nm=0.738ft-1b

Junker Test Result



Please order as shown

Part Number Code	Part Number No.
TBQ01	3
	4
	5

TBQ01— 4

Discount price

Per	1~99	100~
Price	100%	Additional quotation

Delivery 8