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Enterprise brief introduction

TIANJIN SIMFLEX COMPANY LTD. was founded in 2003. It was aim to achive the demand and provide the high-quality products for customers. We provide the standard component that includes Disc spring, Die spring, SIMARS helix spring, anti-loose washer, anti-loose nut and so on. We can also provide customized products by the need. Setting up Integrated central Warehouse in Tianjin to ensure timely delivery of goods.

Industrial Parts Sales and technical support business. The major products :

Transmission Parts (bearing, LINEAR GUIDE), seals (o-ring series, rotating shaft seal, hydraulic pneumatic seal, etc.), elastic parts (disc spring, die spring, coil spring) and fasteners (clamp spring, lock Washer, lock nut).

We have six service outlets in China : Tianjin, Shenyang, Shanghai, Chongqing, Dongguan and Qingdao. We are committed to providing quick response localized services for customers in different regions. Our automation equipment quality and pre-sale and after-sales service has been the use of many customers praise.

It based on the market to improve themselves constantly, rich product and service categories. We look forward to collaborating with you in the future.

Washers

Simf



How does it work?

The Washers secure joints using tension rather than friction, as with traditional locking fasteners. The Washers consist of a pair of the Washers with cams on one side and radial teeth on the other. The cam sides are joined together with a mild adhesive, and installed between the bolt head and/or nut and the joint material. During installation, the radial teeth cause one half of the Washer to be seated to the bolt or nut, while the other half is seated to the joint material.

When exposed to load or vibration, the bolt or nut will attempt to loosen. Since the radial teeth are seated to the mating surfaces, any movement in the loosening direction is forces between the cam.

Because the cam angle(α)of the Washers is greater than the thread pitch angle(β)of the bolt, a wedge effect is created by the cams, preventing the bolt or nut from rotating loose. Clamp load is maintained and the joint remains secure.

Characteristics and strengths

- *Maintains clamp load in high vibration and load applications, thereby protecting the security of the joint
- *Heavy duty, self-locking design
- *For use with bolts up to Class 12.9, Grade 8
- *Available in SCM435/SAE4130 Alloy Steel, 316L Stainless Steel, and 254 SMC Stainless Steel
- *Provided in preassembled glued pairs
- *Easy to install and remove with standard tools
- *No retightening needed after installation
- *Reusable-will not distort threads on bolt
- *Vibration proof according to MIL-STD-1312-7/DIN 25201
- *Can be used reliably for joints with short clamp length
- *Secures joints with high and low preloads

How does it install?

To install the Washer, place the preassembled air between the nut and/bolt and the joint material.

As the nut or bolt is tightened, one half of the Washer pair will be seated to the joint material and the other half will be seated to the nut or bolt.

Tighten joints with the Washers using standard tools. Retightening is not needed.

The use of lubricants is highly recommended when installing the Washers. A high quality lubricant designed to prevent seizing will reduce friction during installation and improve the consistency of clamp load in joints.

When installing the Washers in a common application, expect an increase in required torque over recommended installation torque to achieve proper clamp load and maximum joint safety.

Removal and reuse

Removing the Washers requires no special tools or procedure. Simply loosen the joint in the normal method and check the Washer to ensure cam faces disengage.

While the Washers are typically reusable, it should always be inspected for deformation or excessive wear before reuse. If the Washers appear deformed or heavily worn, discard and use a new pair.

Quality

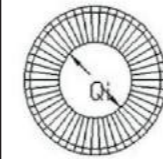
Each the Washers manufacturing facility is led by a team of seasoned engineering professionals charged with ensuring all products meet stringent quality requirements. Our facilities are certified to ISO 9001-2015, IATF16949, and utilize worldclass testing equipment, including tensile testing, accelerated corrosion salt spray testing machines, torque testing, standard measurement and gauging equipment.

The Washers are manufactured in a facility which strictly adheres to multiple ISO certification standards, and are thoroughly tested through the production cycle to ensure a high level of quality.

DIN25201 Dual-stacked self-locking washer

Material: SK5 carbon steel
Surface treatment: Dacrol, Kumet, Delta and other coating treatment

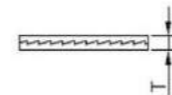
Inch	Metric	American system	Φi	Φo	T	Kg/100pcs
M3	M3	#5	3.4	7	1.8	0.03
M3.5	M3.5	#6	3.9	7.6	1.8	0.04
M3.5sp	M3.5	#6	3.9	9	1.8	0.06
M4	M4	#8	4.4	7.6	1.8	0.04
M4sp	M4	#8	4.4	9	1.8	0.06
M5	M5	#10	5.4	9	1.8	0.05
M5sp	M5	#10	5.4	10.8	1.8	0.11
M6	M6		6.5	10.8	1.8	0.07
M6sp	M6		6.5	13.5	2.5	0.2
M1/4"		1/4"	7.2	11.5	2.5	0.08
M1/4"sp		1/4"	7.2	13.5	2.5	0.18
M8	M8	5/16"	8.7	13.5	2.5	0.15
M8sp	M8	5/16"	8.7	16.6	2.5	0.28
M3/8"		3/8"	10.3	16.6	2.5	0.23
M3/8"sp		3/8"	10.3	21	2.5	0.48
M10	M10		10.7	16.6	2.5	0.22
M10sp	M10		10.7	21	2.5	0.47
M11	M11	7/16"	11.4	18.5	2.5	0.29
M12	M12		13	19.5	2.5	0.29
M12sp	M12		13	25.4	3.4	0.93
M1/2"		1/2"	13.5	19.5	2.5	0.27
M1/2"sp		1/2"	13.5	25.4	3.4	0.9
M14	M14	9/16"	15.2	23	3.4	0.56
M14sp	M14	9/16"	15.2	30.7	3.4	1.41
M16	M16	5/8"	17	25.4	3.4	0.67
M16sp	M16	5/8"	17	30.7	3.4	1.28
M18	M18		19.5	29	3.4	0.89
M18sp	M18		19.5	34.5	3.4	1.58
M3/4"		3/4"	20	30.7	3.4	1.05
M3/4"sp		3/4"	20	39	3.4	2.21
M20	M20		21.4	30.7	3.4	0.93
M20sp	M20		21.4	39	3.4	2.09
M22	M22	7/8"	23.4	34.5	3.4	1.25
M22sp	M22	7/8"	23.4	42	4.6	3.19
M24	M24		25.3	39	3.4	1.74
M24sp	M24		25.3	48.5	4.6	4.51
M1"		1"	27.9	39	3.4	1.53
M1"sp		1"	27.9	48.5	4.6	4.2
M27	M27		28.4	42	5.8	3.14
M27sp	M27		28.4	48.5	5.8	5.27
M30	M30	11/8"	31.4	47	5.8	4.1
M30sp	M30	11/8"	31.4	58.5	6.6	8.58
M33	M33	11/4"	34.4	48.5	5.8	3.89
M33sp	M33	11/4"	34.4	58.5	6.6	8
M36	M36	13/8"	37.4	55	5.8	5.49
M36sp	M36	13/8"	37.4	63	6.6	9.15
M39	M39	11/2"	40.4	58.5	5.8	5.89
M42	M42		43.2	63	6.8	7.97
M45	M45	13/4"	46.2	70	7	10.2
M48	M48		49.6	75	7	12
M52	M52	2"	53.6	80	7	13
M56	M56	21/4"	59.1	85	7	13.5
M60	M60		63.1	90	7	15.2
M64	M64	21/2"	67.1	95	7	16.7
M68	M68		71.1	100	9.5	28.2
M72	M72		75.1	105	9.5	30.7
M76	M76	3"	79.1	110	9.5	33.3
M80	M80		83.1	115	9.5	36
M85	M85		88.1	120	9.5	37.8
M90	M90		92.4	130	9.5	47.7
M95	M95		97.4	135	9.5	49.8
M100	M100		103.4	145	9.5	58.9
M105	M105		108.4	150	9.5	61.3
M110	M110		113.4	155	9.5	63.5
M115	M115		118.4	165	9.5	75.3
M120	M120		123.4	170	9.5	77.9
M125	M125		128.4	173	9.5	76.6
M130	M130		133.4	178	9.5	79.2



M3- M8
Qi±0.1mm
M10- M42
Qi±0.2mm
45- 130
Qi+0.5/-0mm



M3- M24
Qo±0.2mm
M27- 42
Qb±0.3mm
M45- M130
Qb+0/-2.0mm

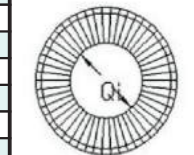


M3- M27
T±0.25mm
M27- M42
T+0/-0.5mm
M45- M130
T±0.75mm

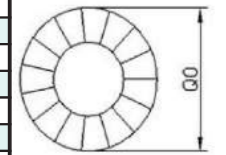
DIN25201 Dual-stacked self-locking washer

Material: SUS304.316
Surface treatment: stainless steel surface hardening polishing process

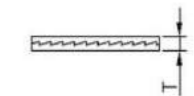
Inch	Metric	American system	Φi	Φo	T	Kg/100pcs
M3ss	M3	#5	3.4	7	2.2	0.04
M3.5ss	M3.5	#6	3.9	7.6	2.2	0.04
M3.5spss	M3.5	#6	3.9	9	2.2	0.07
M4ss	M4	#8	4.4	7.6	2.2	0.04
M4spss	M4	#8	4.4	9	2.2	0.07
M5ss	M5	#10	5.4	9	2.2	0.06
M5spss	M5	#10	5.4	10.8	2.2	0.11
M6ss	M6		6.5	10.8	2.2	0.09
M6spss	M6		6.5	13.5	2	0.16
M1/4"ss		1/4"	7.2	11.5	2.2	0.09
M1/4"spss		1/4"	7.2	13.5	2.2	0.15
M8ss	M8	5/16"	8.7	13.5	2	0.12
M8spss	M8	5/16"	8.7	16.6	2	0.23
M3/8"ss		3/8"	10.3	16.6	2	0.19
M3/8"spss		3/8"	10.3	21	2	0.38
M10ss	M10		10.7	16.6	2	0.18
M10spss	M10		10.7	21	2	0.37
M11ss	M11	7/16"	11.4	18.5	2.2	0.26
M12ss	M12		13	19.5	2	0.23
M12spss	M12		13	25.4	3	0.82
M1/2"ss		1/2"	13.5	19.5	2	0.22
M1/2"spss		1/2"	13.5	25.4	3.2	0.8
M14ss	M14	9/16"	15.2	23	3	0.49
M14spss	M14	9/16"	15.2	30.7	3.2	1.31
M16ss	M16	5/8"	17	25.4	3	0.59
M16spss	M16	5/8"	17	30.7	3.2	1.13
M18ss	M18		19.5	29	3.2	0.8
M18spss	M18		19.5	34.5	3.2	1.56
M3/4"ss		3/4"	20	30.7	3.2	0.96
M3/4"spss		3/4"	20	39	3.2	2.1
M20ss	M20		21.4	30.7	3	0.82
M20spss	M20		21.4	39	3.2	2.06
M22ss	M22	7/8"	23.4	34.5	3.2	1.23
M22spss	M22	7/8"	23.4	42	3.2	2.22
M24ss	M24		25.3	39	3.2	1.59
M24spss	M24		25.3	48.5	3.2	3.5
M1"ss		1"	27.9	39	3.2	1.42
M1"spss		1"	27.9	48.5	3.2	2.79
M39ss	M27		28.4	42	6.8	3.45
M39spss	M27		28.4	48.5	6.8	5.34
M30ss	M30	11/8"	31.4	47	6.8	4.49
M30spss	M30	11/8"	31.4	58.5	6.8	9.18
M33ss	M33	11/4"	34.4	48.5	6.8	4.28
M36ss	M36	13/8"	37.4	55	6.8	5.96
M39spss	M39	11/2"	40.4	58.5	6.8	6.74
M42ss	M42		43.2	63	6.8	7.5
M45ss	M45	13/4"	46.2	70	6.8	10.2
M48ss	M48		49.6	75	6.8	12
M52ss	M52	2"	53.6	80	9	18.04
M56ss	M56	21/4"	59.1	85	9	21.3
M60ss	M60		63.1	90	9	23.5
M64ss	M64	21/2"	67.1	95	9	25.8
M68ss	M68		71.1	100	9	28.2
M72ss	M72		75.1	105	9	30.7
M76ss	M76	3"	79.1	110	9	33.3
M80ss	M80		83.1	115	9	36



M3- M8
Qi±0.1mm
M10- M42
Qi±0.2mm
45- 130
Qi+0.5/-0mm



M3- M24
Qo±0.2mm
M27- 42
Qb±0.3mm
M45- M130
Qb+0/-2.0mm



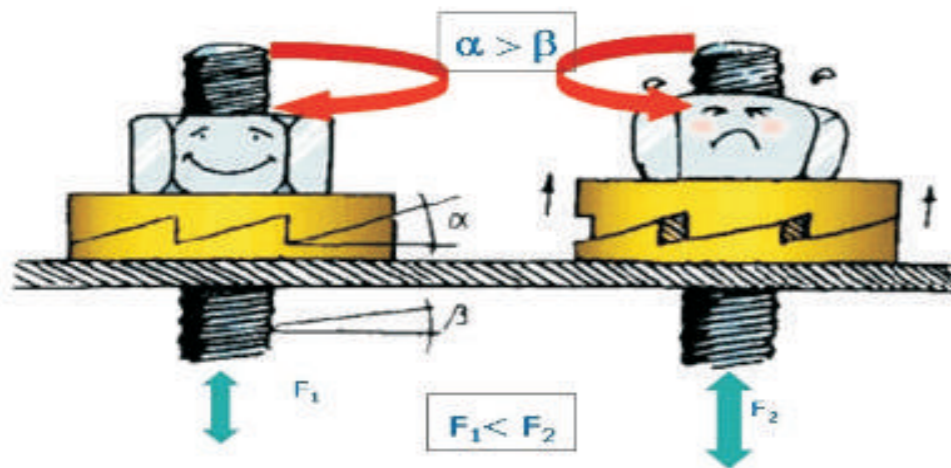
M3- M27
T±0.25mm
M27- M42
T+0/-0.5mm
M45- M130
T±0.75mm

DIN25201 Dual-stacked self-locking washer

DIN25201 double stack self-locking gaskets use a unique chipping structure to change the traditional way of anti-loosening which relies on friction. It is composed of two identical washers, and the upper and lower parts of each piece have different serrations. One side is a cam-like big tooth, and the slope Angle α is greater than the bolt thread Angle β , and the other side is a

denser small tooth. When installing the gasket, the big tooth surface should be opposite and installed in pairs. The small tooth surface is in contact with the nut and the fastener respectively. After tightening bolts to connect fasteners, when vibration occurs, the big tooth surface will be staggered and lifted, and the principle of α Angle is greater than β Angle to lock the bolt, so that it can not be loosened, with the function of wedge locking.

It provides a bolt locking system that is not affected by any vibration or dynamic load. This check washer has high safety performance, prevent loose caused by vibration and dynamic load, easy disassembly, installation lock effect is not affected by lubrication, both low and high pretightening has a good lock effect, can control the pre-tightening force of high and low, have the same temperature characteristic and standard bolt/nut, and reusable.



Comply with DIN25201 standard

Material	Range	Rigidity
SK5.SK7carbon steel	M3-M130 (The large outer diameter is denoted by "SP")	>47-50HRC
SUS304.316(A2.A4)	M3ss-M80ss (The large outer diameter is denoted by "SP")	> 520HV0.05
Remark: Special material can be produced and processed according to customer requirements		

Dual-stacked self-locking carbon steel Class 4.8 with plated bolt torque washer reference table

Washer size	Bolt size	Pitch [mm]	Oil, $G_F=75\%$ $\mu_{th}=0.15, \mu_h=0.17$		Cu/C cream*, $G_F=75\%$ $\mu_{th}=0.13, \mu_h=0.17$		Dry, $G_F=62\%$ $\mu_{th}=0.18, \mu_h=0.18$	
			Troque [Nm]	Clamping force load [KN]	Troque [Nm]	Clamping force load [KN]	Troque [Nm]	Clamping force load [KN]
M3	M3	0.5	0.8	1.2	0.7	1.2	0.7	1.0
M4	M4	0.7	1.8	2.1	1.7	2.1	1.6	1.7
M5	M5	0.8	3.5	3.4	3.4	3.4	3.2	2.8
M6	M6	1.0	6.2	4.8	5.9	4.8	5.6	4.0
M8	M8	1.25	15	9.0	14	8.8	14	7.0
M10	M10	1.5	29	14	28	14	27	12
M12	M12	1.75	50	20	48	20	46	17
M14	M14	2.0	80	28	76	28	73	23
M16	M16	2.0	123	38	116	38	112	31
M18	M18	2.5	172	46	163	46	157	38
M20	M20	2.5	240	59	228	59	220	49
M22	M22	2.5	328	73	311	73	301	60
M24	M24	3.0	414	85	392	85	379	70
M27	M27	3.0	605	110	573	110	555	91
M30	M30	3.5	825	135	782	135	757	111
M33	M33	3.5	1113	166	1053	166	1022	138
M36	M36	4.0	1435	196	1358	196	1316	162
M39	M39	4.0	1853	234	1753	234	1701	194
M42	M42	4.5	2291	269	2169	269	2103	222

Dual-stacked self-locking carbon steel Class 8.8 with plated bolt torque washer reference table

Washer size	Bolt size	Pitch [mm]	Oil, $G_F=75\%$ $\mu_{th}=0.15, \mu_h=0.17$		Cu/C cream*, $G_F=75\%$ $\mu_{th}=0.13, \mu_h=0.17$		Dry, $G_F=62\%$ $\mu_{th}=0.18, \mu_h=0.18$	
			Troque [Nm]	Clamping force load [KN]	Troque [Nm]	Clamping force load [KN]	Troque [Nm]	Clamping force load [KN]
M3	M3	0.5	1.7	2.4	1.5	2.4	1.5	2.0
M4	M4	0.7	3.8	4.2	3.6	4.2	3.5	3.5
M5	M5	0.8	7.5	6.8	6.9	6.8	6.8	5.6
M6	M6	1.0	13.1	9.7	12.1	9.7	11.9	8.0
M8	M8	1.25	32	18	29	18	29	15
M10	M10	1.5	62	28	57	28	56	23
M12	M12	1.75	107	40	98	40	97	33
M14	M14	2.0	170	55	157	55	155	46
M16	M16	2.0	260	75	240	75	237	62
M18	M18	2.5	364	92	336	92	331	76
M20	M20	2.5	510	118	470	118	464	97
M22	M22	2.5	696	146	642	146	635	120
M24	M24	3.0	878	169	809	169	800	140
M27	M27	3.0	1284	221	1183	221	1171	182
M30	M30	3.5	1750	269	1613	269	1596	222
M33	M33	3.5	2360	333	2173	333	2155	275
M36	M36	4.0	3043	392	2803	392	2776	324
M39	M39	4.0	3931	468	3619	468	3589	387
M42	M42	4.5	4860	538	4476	538	4436	445

Dual-stacked self-locking carbon steel Class 10.9 without plated bolt torque washer reference table

Washer size	Bolt size	Pitch [mm]	Oil , GF=75% $\mu_{th}=0.15, \mu_h=0.17$		Cu/C cream* , GF=75% $\mu_{th}=0.13, \mu_h=0.17$	
			Troque [Nm]	Clamping force load [KN]	Troque[Nm]	Clamping force load [KN]
M3	M3	0.5	2.0	3.2	2.0	3.4
M4	M4	0.7	4.5	5.6	4.5	5.9
M5	M5	0.8	8.9	9.1	8.9	9.6
M6	M6	1.0	15.5	12.9	15.5	13.6
M8	M8	1.25	37	23	37	25
M10	M10	1.5	73	37	73	39
M12	M12	1.75	126	54	126	57
M14	M14	2.0	201	74	201	78
M16	M16	2.0	307	100	306	106
M18	M18	2.5	430	123	429	130
M20	M20	2.5	602	156	600	165
M22	M22	2.5	821	194	818	205
M24	M24	3.0	1036	225	1034	238
M27	M27	3.0	1514	294	1509	310
M30	M30	3.5	2064	358	2058	378
M33	M33	3.5	2783	443	2772	468
M36	M36	4.0	3589	522	3576	551
M39	M39	4.0	4632	624	4614	659
M42	M42	4.5	5731	716	5709	757

Dual-stacked self-locking carbon steel Class 12.9 without plated bolt torque washer reference table

Washer size	Bolt size	Pitch [mm]	Oil , GF=75% $\mu_{th}=0.15, \mu_h=0.17$		Cu/C cream* , GF=75% $\mu_{th}=0.13, \mu_h=0.17$	
			Troque [Nm]	Clamping force load [KN]	Troque[Nm]	Clamping force load [KN]
M3	M3	0.5	2.2	3.9	2.3	4.1
M4	M4	0.7	5.1	6.7	5.3	7.1
M5	M5	0.8	10.0	10.9	10.3	11.5
M6	M6	1.0	17.4	15.4	18	16.3
M8	M8	1.25	42	28	43	30
M10	M10	1.5	82	44	85	47
M12	M12	1.75	142	65	146	68
M14	M14	2.0	226	89	233	94
M16	M16	2.0	345	120	355	127
M18	M18	2.5	483	148	498	156
M20	M20	2.5	676	188	696	198
M22	M22	2.5	921	233	948	246
M24	M24	3.0	1165	270	1199	286
M27	M27	3.0	1700	352	1749	372
M30	M30	3.5	2318	430	2385	454
M33	M33	3.5	3124	532	3213	562
M36	M36	4.0	4029	626	4145	662
M39	M39	4.0	5199	748	5346	790
M42	M42	4.5	6434	860	6617	908

Cu/C cream (Molykote 1000)[®]
Oil=WD40

GF=The yield rate.According to the reference torque and without deviation to achieve pretightening force in terms of % rate of yield point. μ_{th} = Thread friction coefficient
 μ_h =washer friction coefficient

Dual-stacked self-locking stainless steel washers and bolts torque reference table

Washer size	Bolt size	Pitch [mm]	A2-50,A4-50 Cu/ C cream* , GF=65% $\mu_{th}=0.13, \mu_h=0.13$		A2-70,A4-70 Cu/ C cream* , GF=65% $\mu_{th}=0.13, \mu_h=0.13$		A2-80,A4-80 Cu/C cream* , GF=65% $\mu_{th}=0.13, \mu_h=0.13$	
			Troque [Nm]	Clamping force load [KN]	Troque [Nm]	Clamping force load [KN]	Troque [Nm]	Clamping force load [KN]
M3ss	M3	0.5	0.4	0.7	0.8	1.5	1.1	2.0
M4ss	M4	0.7	0.9	1.2	1.8	2.6	2.4	3.4
M5ss	M5	0.8	1.7	1.9	3.6	4.1	4.8	5.5
M6ss	M6	1.0	2.9	2.7	6.3	5.9	8.4	7.8
M8ss	M8	1.25	7.0	5.0	15	11	20	14
M10ss	M10	1.5	14	8	30	17	39	23
M12ss	M12	1.75	24	12	51	25	68	33
M14ss	M14	2.0	38	16	81	34	108	45
M16ss	M16	2.0	58	21	124	46	165	61
M18ss	M18	2.5	81	26	173	56	231	75
M20ss	M20	2.5	113	33	242	72	323	95
M22ss	M22	2.5	149	39	330	89	440	118
M24ss	M24	3.0	195	48	418	103	557	137
M27ss	M27	3.0	284	63	609	134	812	179
M30ss	M30	3.5	388	77	831	164	1108	219
M36ss	M36	4.0	674	111	1444	239	1925	319

Cu/C cream* (Molykote 1000)[®]

GF=The yield rate.According to the reference torque and without deviation to achieve pretightening force in terms of % rate of yield point.

μ_{th} =Thread friction coefficient

μ_h =washer friction coefficient

1 N=0.225 lb

1 Nm=0.738 ft-lb

Note: The above table is only for reference . The actual installation torque shall be calculated according to the actual demand load.