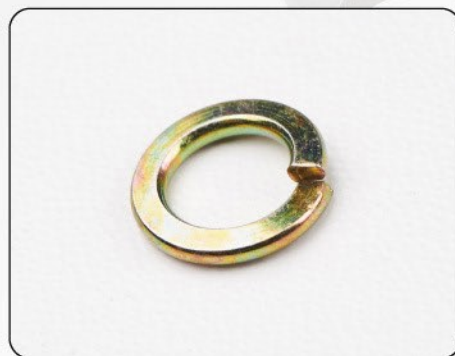
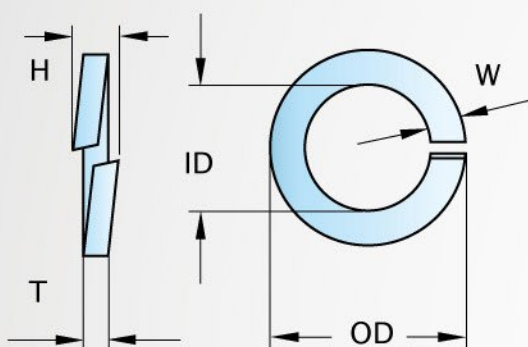


SPRING WASHER

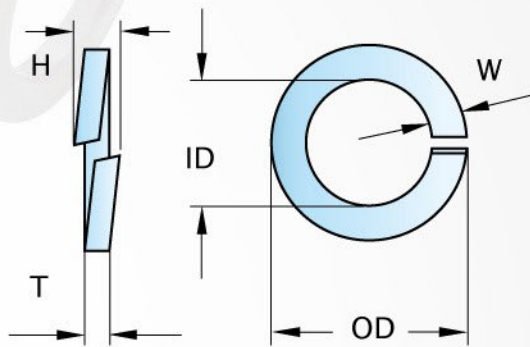
ASME B 18.21.1 -- Table.1 Regular



Size-No.	ID		OD Max.	T Min.	W Min.
	Min.	Max.			
No. 2	0.088	0.094	0.172	0.020	0.035
No. 3	0.101	0.107	0.195	0.025	0.040
No. 4	0.114	0.120	0.209	0.025	0.040
No. 5	0.127	0.133	0.236	0.031	0.047
No. 6	0.141	0.148	0.250	0.031	0.047
No. 8	0.167	0.174	0.293	0.040	0.055
No. 10	0.193	0.200	0.334	0.047	0.062
No. 12	0.220	0.227	0.377	0.056	0.070
1/4	0.252	0.260	0.487	0.062	0.109
5/16	0.314	0.322	0.583	0.078	0.125
3/8	0.377	0.385	0.680	0.094	0.141
7/16	0.440	0.450	0.776	0.109	0.156
1/2	0.502	0.512	0.869	0.125	0.171
9/16	0.564	0.574	0.965	0.141	0.188
5/8	0.628	0.641	1.073	0.156	0.203
3/4	0.753	0.766	1.265	0.188	0.234
7/8	0.878	0.894	1.459	0.219	0.266
1	1.003	1.024	1.656	0.250	0.297
1 1/8	1.129	1.153	1.847	0.281	0.328
1 1/4	1.254	1.280	2.036	0.312	0.359
1 3/8	1.379	1.408	2.219	0.344	0.391
1 1/2	1.504	1.534	2.419	0.375	0.422
1 5/8	1.633	1.663	2.553	0.389	0.424
1 3/4	1.758	1.789	2.679	0.389	0.424

SPRING WASHER

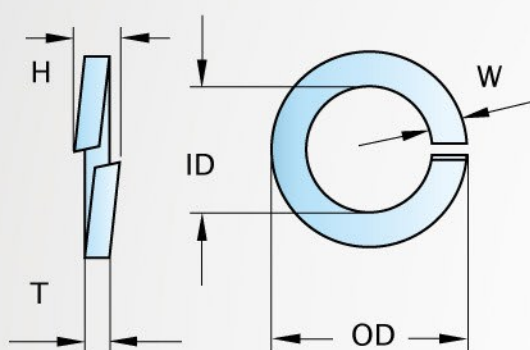
ASME B 18.21.1 -- Table.2 Heavy



Size-No.	ID		OD	T	W
	Min.	Max.	Max.	Min.	Min.
No. 2	0.088	0.094	0.182	0.025	0.040
No. 3	0.101	0.107	0.209	0.031	0.047
No. 4	0.114	0.120	0.223	0.031	0.047
No. 5	0.127	0.133	0.252	0.040	0.055
No. 6	0.141	0.148	0.266	0.040	0.055
No. 8	0.167	0.174	0.307	0.047	0.062
No. 10	0.193	0.200	0.350	0.056	0.070
No. 12	0.220	0.227	0.391	0.063	0.077
1/4	0.252	0.260	0.489	0.077	0.110
5/16	0.314	0.322	0.593	0.097	0.130
3/8	0.377	0.385	0.688	0.115	0.145
7/16	0.440	0.450	0.784	0.133	0.160
1/2	0.502	0.512	0.879	0.151	0.176
9/16	0.564	0.574	0.975	0.170	0.193
5/8	0.628	0.641	1.087	0.189	0.210
3/4	0.753	0.766	1.285	0.226	0.244
7/8	0.878	0.894	1.489	0.266	0.281
1	1.003	1.024	1.700	0.306	0.319
1 1/8	1.129	1.153	1.903	0.345	0.356
1 1/4	1.254	1.280	2.104	0.384	0.393
1 3/8	1.379	1.408	2.301	0.422	0.427
1 1/2	1.504	1.534	2.491	0.458	0.458
1 5/8	1.633	1.663	2.694	0.458	0.491
1 3/4	1.758	1.789	2.820	0.458	0.491

SPRING WASHER

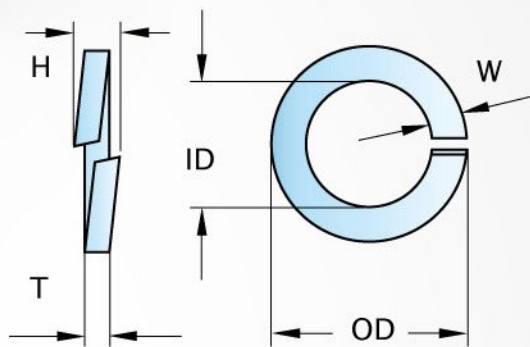
ASME B 18.21.1-- Table.3 Extra Duty



Size-No.	ID		OD	T	W
	Min.	Max.	Max.	Min.	Min.
No. 2	0.088	0.094	0.208	0.027	0.053
No. 3	0.101	0.107	0.239	0.034	0.062
No. 4	0.114	0.120	0.253	0.034	0.062
No. 5	0.127	0.133	0.300	0.045	0.079
No. 6	0.141	0.148	0.314	0.045	0.079
No. 8	0.167	0.174	0.375	0.057	0.096
No. 10	0.193	0.200	0.434	0.068	0.112
No. 12	0.220	0.227	0.497	0.080	0.130
1/4	0.252	0.260	0.533	0.084	0.132
5/16	0.314	0.322	0.619	0.108	0.143
3/8	0.377	0.385	0.738	0.123	0.170
7/16	0.440	0.450	0.836	0.143	0.186
1/2	0.502	0.512	0.935	0.162	0.204
9/16	0.564	0.574	1.035	0.182	0.223
5/8	0.628	0.641	1.151	0.202	0.242
3/4	0.753	0.766	1.355	0.241	0.279
7/8	0.878	0.894	1.571	0.285	0.322
1	1.003	1.024	1.794	0.330	0.366
1 1/8	1.129	1.153	2.013	0.375	0.411
1 1/4	1.254	1.280	2.222	0.417	0.452
1 3/8	1.379	1.408	2.429	0.458	0.491
1 1/2	1.504	1.534	2.627	0.496	0.526
1 5/8	1.633	1.663	2.784	0.496	0.526
1 3/4	1.758	1.789	2.902	0.526	0.532

SPRING WASHER

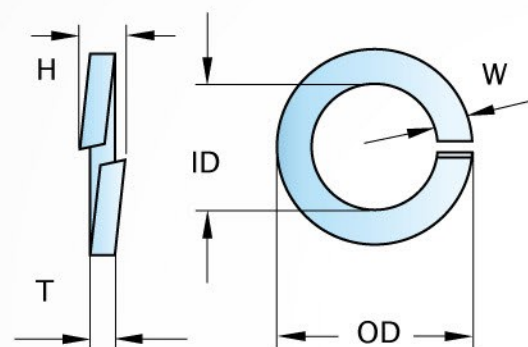
ASME B 18.21.1 -- Table.4 High Collar



Size-No.	ID		OD	T	W
	Min.	Max.	Max.	Min.	Min.
No. 4	0.114	0.120	0.173	0.022	0.022
No. 5	0.127	0.133	0.202	0.030	0.030
No. 6	0.141	0.148	0.216	0.030	0.030
No. 8	0.167	0.174	0.267	0.047	0.042
No. 10	0.193	0.200	0.294	0.047	0.042
1/4	0.252	0.260	0.363	0.078	0.047
5/16	0.314	0.322	0.457	0.093	0.062
3/8	0.377	0.385	0.550	0.125	0.076
7/16	0.440	0.450	0.644	0.140	0.090
1/2	0.502	0.512	0.733	0.172	0.103
5/8	0.628	0.641	0.917	0.203	0.125
3/4	0.753	0.766	1.105	0.218	0.154
7/8	0.878	0.894	1.291	0.234	0.182
1	1.003	1.024	1.478	0.250	0.208
1 1/8	1.129	1.153	1.663	0.313	0.236
1 1/4	1.254	1.280	1.790	0.313	0.236
1 3/8	1.379	1.408	2.031	0.375	0.292
1 1/2	1.504	1.534	2.159	0.375	0.292
1 3/4	1.758	1.789	2.596	0.469	0.383

SPRING WASHER

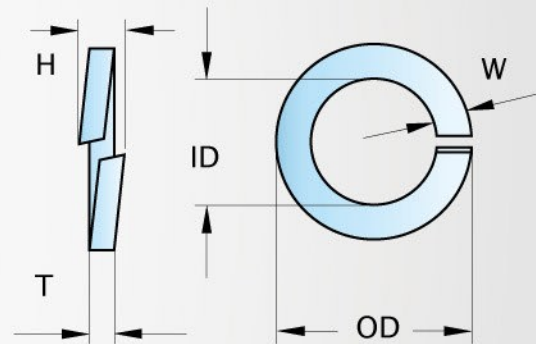
DIN 127 type B



Screw Size	ID		OD Max.	W		T		H	
	Basic	Tol.		Basic	Tol.	Basic	Tol.	Min.	Max.
M2	2.1	+0.3	4.4	0.9	±0.10	0.5	±0.10	1	1.2
M2.5	2.6		5.1	1		0.6		1.2	1.4
M3	3.1		6.2	1.3		0.8		1.6	1.9
M3.5	3.6	+0.4	6.7	1.3	±0.15	0.8	±0.10	1.6	1.9
M4	4.1		7.6	1.5		0.9		1.8	2.1
M5	5.1		9.2	1.8		1.2		2.4	2.8
M6	6.1	+0.5	11.8	2.5	±0.20	1.6	±0.15	3.2	3.8
M8	8.1		14.8	3		2		4.0	4.7
M10	10.2		18.1	3.5		2.2		4.4	5.2
M12	12.2	+0.8	21.1	4	±0.25	2.5	±0.15	5	5.9
M14	14.2		24.1	4.5		3		6	7.1
M16	16.2		27.4	5		3.5		7	8.3
M18	18.2	+1.0	29.4	5	±0.20	3.5	±0.20	7	8.3
M20	20.2		33.6	6		4		8	9.4
M22	22.5		35.9	6		4		8	9.4
M24	24.5	+1.2	40	7	±0.25	5	±0.25	10	11.8
M27	27.5		43	7		5		10	11.8
M30	30.5		48.2	8		6		12	14.2
M33	33.5	+1.5	55.2	10	±0.25	6	±0.25	12	14.2
M36	36.5		58.2	10		6		12	14.2
M39	39.5		61.2	10		6		12	14.2
M42	42.5	+1.5	68.2	12	±0.25	7	±0.25	14	16.5
M45	45.5		71.2	12		7		14	16.5
M48	49		75	12		7		14	16.5

SPRING WASHER

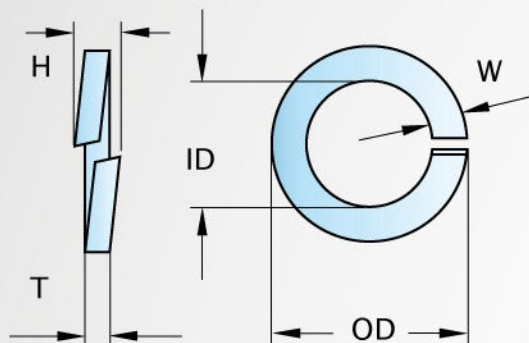
DIN 7980



Screw Size	ID		OD	T		H	
	Min.	Max	Max.	Basic	Tol.	Min	Max
M3	3.1	3.4	5.6	1	±0.10	2	2.36
M4	4.1	4.4	7	1.2		2.4	2.83
M5	5.1	5.4	8.8	1.6		3.2	3.78
M6	6.1	6.5	9.9	1.6		3.2	3.78
M8	8.1	8.5	12.7	2	±0.15	4	4.72
M10	10.2	10.7	16	2.5		5	5.9
M12	12.2	12.7	18	2.5	±0.20	5	5.9
M14	14.2	14.7	21.1	3		6	7.1
M16	16.2	17	24.4	3.5		7	8.25
M18	18.2	19	26.4	3.5		7	8.25
M20	20.2	21.2	30.6	4.5		9	10.6
M22	22.5	23.5	32.9	4.5		9	10.6
M24	24.5	25.5	35.9	5	±0.25	10	11.8
M27	27.5	28.5	38.9	5		10	11.8
M30	30.5	31.7	44.1	6		12	14.2
M33	33.5	34.7	47.1	6		12	14.2
M36	36.5	37.7	52.2	7	±0.25	14	16.5
M42	42.5	43.7	60.2	8		16	18.9
M48	49	50.5	67	8		16	18.9

SPRING WASHER

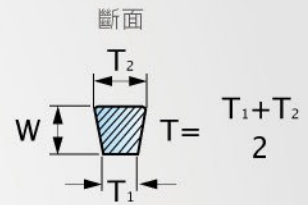
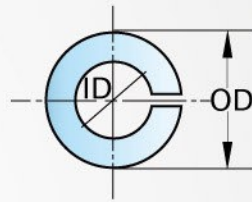
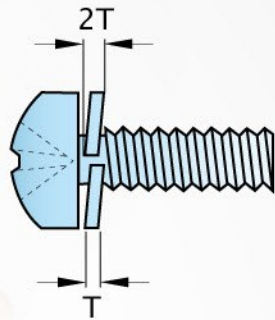
JIS B 1251



Screw Size	ID		No.2 (一般用)			No.3 (重荷重用)		
	Basic	Tol.	OD MAX	W MIN	T MIN	OD MAX	W MIN	T MIN
2	2.1	+0.25	4.4	0.9	0.5	—	—	—
2.5	2.6	+0.30	5.2	1	0.6			
3	3.1		5.9	1.1	0.7			
3.5	3.6		6.6	1.2	0.8			
4	4.1	+0.40	7.6	1.4	1			
4.5	4.6		8.3	1.5	1.2			
5	5.1		9.2	1.7	1.3			
6	6.1		12.2	2.7	1.5			
7	7.1	+0.50	13.4	2.8	1.6	13.4	2.8	2
8	8.2		15.4	3.2	2	15.6	3.3	2.5
10	10.2	+0.60	18.4	3.7	2.5	18.8	3.9	3
12	12.2		21.5	4.2	3	21.9	4.4	3.6
14	14.2	+0.80	24.5	4.7	3.5	24.7	4.8	4.2
16	16.2		28	5.2	4	28.2	5.3	4.8
18	18.2		31	5.7	4.6	31.4	5.9	5.4
20	20.2	+1.00	33.8	6.1	5.1	34.4	6.4	6
22	22.5		37.7	6.8	5.6	38.3	7.1	6.8
24	24.5		40.3	7.1	5.9	41.3	7.6	7.2
27	27.5	+1.20	45.3	7.9	6.8	46.7	8.6	8.3
30	30.5		49.9	8.7	7.5	—	—	—
33	33.5	54.7	9.5	8.2				
36	36.5	+1.40	59.1	10.2	9			
39	39.5		63.1	10.7	9.5			

SPRING WASHER

組裝用Spring Washer



一般用

Spring Washer

單位: mm

尺寸	內徑 (ID)		寬(W) MIN	厚度(T) MIN	外徑(OD) MAX
	MIN	Tol.			
M 2	1.71	+0.15 -1	0.9	0.5	3.90
M 3	2.64	+0.15 -0	1.1	0.7	5.35
M 4	3.70	+0.10 -0.15	1.4	1.0	7.0
M 5	4.70	+0.05 -0.20	1.7	1.3	8.5
M 6	5.65	+0.05 -0.25	2.7	1.5	11.5
M 8	7.65	+0.05 -0.30	3.2	2.0	14.5
M 10	9.65	+0.05 -0.30	3.7	2.5	17.5
M 12	11.60	+0.10 -0.35	4.2	3.0	20.5
M 14	13.30	+0.10 -0.40	4.7	3.5	23.2
M 16	15.50	+0.10 -0.40	5.2	4.0	26.5

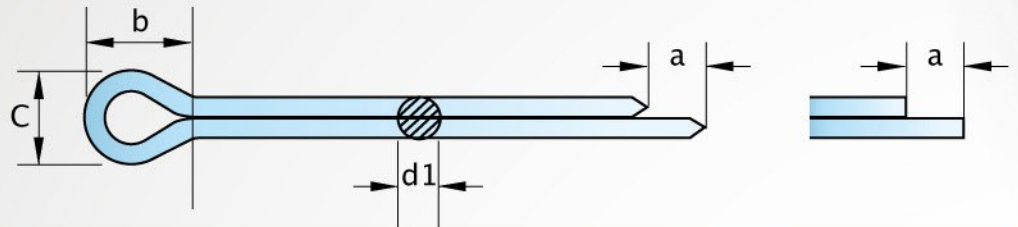
重荷重用

單位: mm

尺寸	內徑 (ID)		寬(W) MIN	厚度(T) MIN	外徑(OD) MAX
	MIN				
M 6	5.40		2.7	1.9	11.5
M 8	7.35		3.3	2.5	15.0
M 10	9.35		3.9	3.0	18.0
M 12	11.35		4.4	3.6	21.0

COTTER PIN

DIN 94

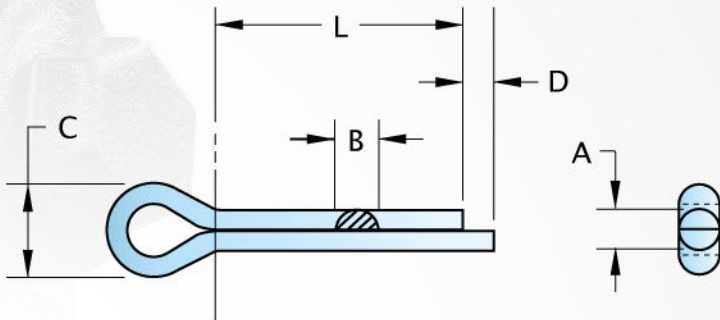


Nominal Dia		M1.6	M2	M2.5	M3.2	M4	M5	M6.3	M8	M10	M13	M16
d1	max	1.4	1.8	2.3	2.9	3.7	4.6	5.9	7.5	9.5	12.4	15.4
	min	1.3	1.7	2.1	2.7	3.5	4.4	5.7	7.3	9.3	12.1	15.1
a	max	2.5	2.5	2.5	3.2	4	4	4	4	6.3	6.3	6.3
	min	1.25	1.25	1.25	1.6	2	2	2	2	3.2	3.2	3.2
b	ref.	3.2	4	5	6.4	8	10	12.6	16	20	26	32
c	max	2.4	3.2	4	5.1	6.5	8	10.3	13.1	16.6	21.7	27
	min	2.8	3.6	4.6	5.8	7.4	9.2	11.8	15	19	24.8	30.8

Length		Nominal Dimension										
Basic	Tol.	M1.6	M2	M2.5	M3.2	M4	M5	M6.3	M8	M10	M13	M16
8	-0.75											
10	+0.75											
12												
14	-0.9											
16	+0.9											
18												
20												
22	-1.0											
25	+1.0											
28												
32												
36	-1.25											
40	+1.25											
45												
50												
56												
63	-1.5											
71	+1.5											
80												
90												
100	-1.75											
112	+1.75											
125												
140	-2.0											
160	+2.0											
180												
200												
224	-2.3											
250	+2.3											

COTTER PIN

ASME B18.8.1



Nominal Size or Basic Pin Diameter		1/32	3/64	1/16	3/32	1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8
		0.031	0.047	0.062	0.094	0.125	0.156	0.188	0.250	0.312	0.375	0.500	0.625
A	min	0.028	0.044	0.056	0.086	0.116	0.146	0.172	0.220	0.275	0.329	0.467	0.590
	max	0.032	0.048	0.060	0.090	0.120	0.150	0.176	0.225	0.280	0.335	0.473	0.598
B	min	0.022	0.035	0.044	0.069	0.093	0.116	0.137	0.176	0.220	0.263	0.373	0.472
	max	0.032	0.048	0.060	0.090	0.120	0.150	0.176	0.225	0.280	0.335	0.473	0.598
C	min	0.06	0.09	0.12	0.19	0.25	0.31	0.38	0.50	0.62	0.75	1.00	1.25
D	min	0.01	0.02	0.03	0.04	0.06	0.07	0.09	0.11	0.14	0.16	0.23	0.3
建議孔徑		0.047	0.062	0.078	0.109	0.141	0.172	0.203	0.266	0.312	0.375	0.500	0.625

Nominal Pin Length	Nominal Pin Size												
	1/32	3/64	1/16	3/32	1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	
1/2													
3/4													
1													
1-1/2													
2													
2-1/2													
3													
3-1/2													
4													
5													
6													