

# SPRING WASHERS

## FOR AEROSPACE AND OTHER DEMANDING APPLICATIONS

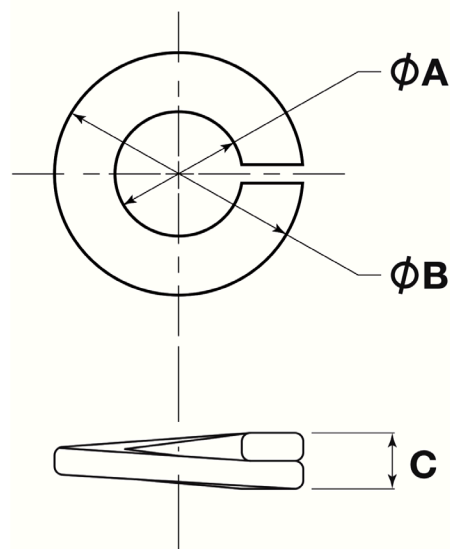


Publication No. CMR004/3, Issue date: 08/2019

Cross single coil spring washers are made by a novel process to satisfy the standards of quality and performance necessary for high technology industries.

The types listed are normally available from stock.

Washers can be manufactured to customers' requirements in various materials and finishes.



### Dimensions (Inches)

BRITISH STANDARD 2 SP. 47			Material: Spring Steel S 203 Finish: Cadmium Plate*			
Size	Standard Part Number	Cross Part Number	A	B	C	D
10 BA	Y	021001	0.071 0.068	0.137 0.124	0.060 0.040	0.023 0.020
8 BA	Z	021002	0.091 0.088	0.175 0.160	0.070 0.050	0.028 0.024
6 BA & 4-40 UNC	A	021003	0.116 0.113	0.244 0.225	0.092 0.072	0.041 0.036
4 BA & 6-32 UNC	B	021004	0.146 0.143	0.310 0.287	0.092 0.072	0.041 0.036
8-32 UNC	X	021005	0.168 0.165	0.348 0.325	0.100 0.080	0.045 0.040
2 BA & 10-32 UNF	C	021006	0.195 0.191	0.399 0.375	0.116 0.096	0.053 0.048
1/4	E	021007	0.256 0.251	0.532 0.507	0.150 0.120	0.061 0.056
5/16	G	021008	0.320 0.314	0.620 0.594	0.180 0.150	0.069 0.064
3/8	J	021009	0.383 0.376	0.723 0.696	0.200 0.170	0.077 0.072
7/16	L	021010	0.447 0.439	0.819 0.791	0.220 0.190	0.077 0.072
1/2	N	021011	0.510 0.501	0.950 0.921	0.240 0.210	0.085 0.080
9/16	P	021012	0.574 0.564	1.054 1.024	0.270 0.240	0.097 0.092
5/8	Q	021013	0.636 0.626	1.176 1.146	0.290 0.260	0.109 0.104

### Dimensions (Inches)

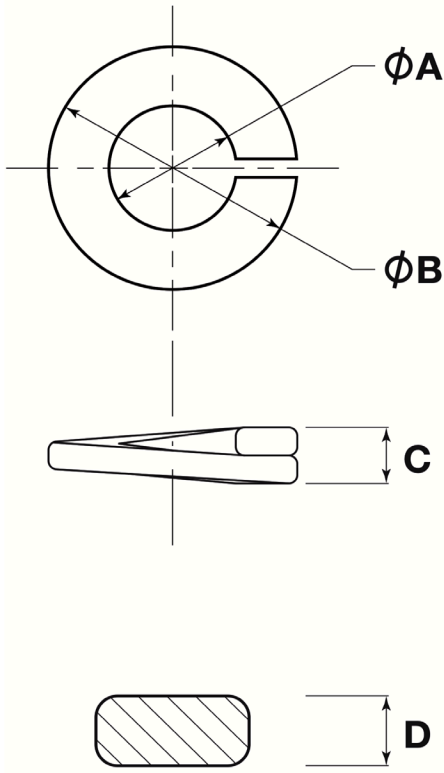
HEAT RESISTING			Material: 14% Tungsten High Speed Steel Finish: Nickel Plate Max. Operating Temperature 450 °C			
Size	Standard Part Number	Cross Part Number	A	B	C	D
10-32 UNF	UBS.7/D	024035	0.195 0.191	0.375 0.360	0.140 0.092	0.057 0.052
1/4	UBS.7/E	024036	0.256 0.251	0.475 0.460	0.157 0.097	0.061 0.057
5/16	UBS.7/G	024037	0.320 0.314	0.575 0.560	0.165 0.105	0.065 0.060
3/8	UBS.7/J	024038	0.383 0.376	0.675 0.660	0.173 0.113	0.069 0.064
7/16	UBS.7/L	024039	0.447 0.439	0.775 0.760	0.190 0.118	0.073 0.068
1/2	UBS.7/N	024040	0.510 0.501	0.885 0.870	0.198 0.126	0.077 0.072

\* Cadmium Plate

Important

See note on page 4

**Dimensions (Inches)**

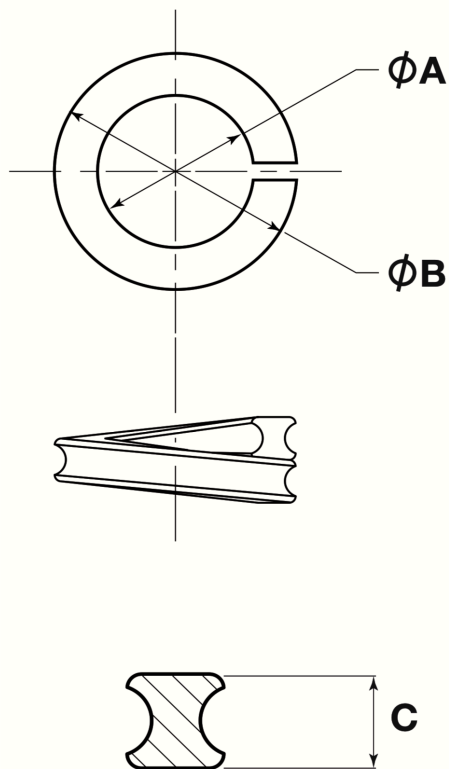


STAINLESS STEEL			Material Spec.: DTD 189 A			
Size	Standard Part Number	Cross Part Number	A	B	C	D
4 BA & 6-3 UNC	K 11402	186539	0.146 0.143	0.275 0.260	0.092 0.072	0.041 0.036
2 BA & 10-32 UNF	K 11403 GTS168-1 999-4-41533-003	023027	0.199 0.195	0.380 0.365	0.116 0.096	0.056 0.052
1/4	K 11404 GTS168-2 999-4-41533-004	023028	0.265 0.260	0.485 0.470	0.150 0.120	0.061 0.056
5/16	K 11405 GTS168-3 999-4-41533-005	023029	0.326 0.320	0.580 0.565	0.180 0.150	0.065 0.060
3/8	K 11406 GTS168-4	023030	0.390 0.383	0.685 0.670	0.200 0.170	0.069 0.064
3/8	999-4-41533-006	170001	0.390 0.383	0.685 0.670	0.200 0.170	0.069 0.064
7/16	K 11407 GTS168-5	023031	0.458 0.150	0.785 0.770	0.220 0.190	0.073 0.068
1/2	K 11408 GTS168-6	023032	0.524 0.515	0.900 0.885	0.240 0.210	0.077 0.072
9/16	K 11409	023033	0.585 0.575	1.005 0.990	0.270 0.240	0.081 0.076
5/8	K 11410	023034	0.650 0.640	1.090 1.075	0.290 0.260	0.085 0.080

**Dimensions (Inches)**

NON-CORRODIBLE STEEL			Material Spec.: DTD 189 or 734		
Size	Customer Part Drawing Number	Cross Part Number	A	B	D
10BA	CX112420-10	172130	0.08 0.073	0.168 0.155	0.025 0.019
8BA	CX112420-8	172170	0.094 0.087	0.168 0.155	0.035 0.029
6BA	CX112420-6	170751	0.12 0.113	0.226 0.211	0.033 0.027
4BA	CX112420-4	170984	0.161 0.154	0.265 0.25	0.051 0.045
3BA	CX112420-3	171276	0.175 0.168	0.309 0.296	0.051 0.045
2BA	CX112420-2	171110	0.208 0.201	0.358 0.343	0.051 0.045
1BA	CX112420-1	172899	0.239 0.232	0.434 0.421	0.051 0.045
0BA	CX112420-11	173131	0.26 0.253	0.452 0.439	0.051 0.045
1/4	CX112420-12	178796	0.27 0.263	0.462 0.449	0.067 0.061
5/16	CX112420-13	171302	0.335 0.328	0.528 0.515	0.067 0.061
3/8	CX112420-14	172560	0.395 0.388	0.685 0.67	0.067 0.061

Dimensions (Inches)



GROVER TYPE			Material: Spring Steel S 203 Finish: Cadmium Plate*		
Size	Standard Part Number	Cross Part Number	A	B	C
6 BA & 4-40 UNC	KJ 4502	022014	0.138 0.118	0.260 0.240	0.065 0.055
4 BA & 6-32 UNC	KJ 4503	022015	0.166 0.146	0.290 0.270	0.065 0.055
3 BA 8-32 UNC	KJ 4505	022016	0.180 0.160	0.310 0.290	0.070 0.060
2 BA & 10-32 UNF	KJ 4506	022017	0.207 0.187	0.353 0.333	0.075 0.065
1 BA	KJ 4507	022018	0.245 0.225	0.385 0.365	0.080 0.070
1/4	KJ 4508	022019	0.285 0.265	0.450 0.430	0.105 0.095
5/16	KJ 4509	022020	0.360 0.340	0.595 0.575	0.135 0.125
3/8	KJ 4510	022021	0.415 0.395	0.650 0.630	0.150 0.140

Dimensions (Inches)

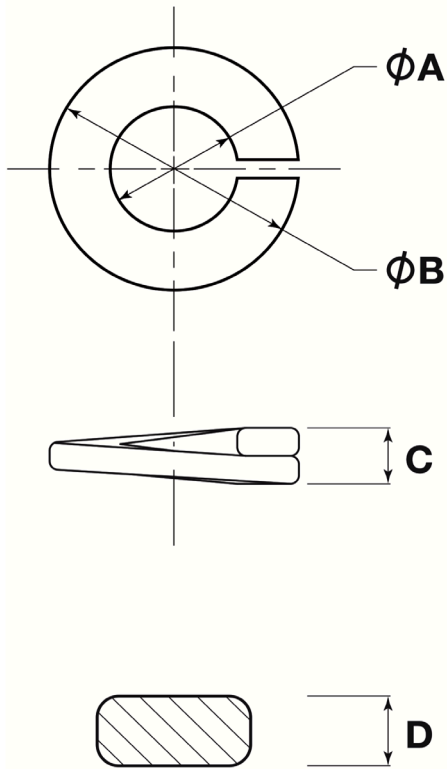
GROVER TYPE			Material: Spring Steel S 203 or S 201		
Size	Standard Part Number	Cross Part Number	A	B	C
6 BA & 4-40 UNC	GTS216-6 GTS28-6	177790	0.138 0.118	0.260 0.240	0.065 0.055
2 BA & 10-32 UNF	GTS216-3 GTS28-3	022024	0.166 0.146	0.290 0.270	0.065 0.055
1/4	GTS216-7 GTS28-7	177415	0.285 0.265	0.450 0.430	0.105 0.095
5/16	GTS216-8 GTS28-8	177601	0.360 0.340	0.595 0.575	0.135 0.125
3/8	GTS216-9 GTS28-9	177561	0.415 0.395	0.650 0.630	0.150 0.140

\* Cadmium Plate  
Important  
See note on page 4

Dimensions (Inches)

GROVER TYPE A19834, Similar to BS1802 TYPE C HEAVY							
Size	Standard Part Number	Cross Part Number			A	B	C
		Unplated	Cadmium Plated	Zinc Plated			
5/16	A19834/1	177929	172258	172516	0.3437 0.3281	0.5667 0.5111	0.121 0.111
3/8	A19834/2	172768	172205	172208	0.4062 0.3906	0.6782 0.6226	0.149 0.139
7/16	A19834/3	176333	173024	-	0.4687 0.4531	0.7687 0.7131	0.165 0.155
1/2	A19834/4	176475	172206	178577	0.5312 0.5156	0.8592 0.8036	0.181 0.171
5/8	A19834/5	176295	172209	156309	0.6875 0.6562	1.0785 1.0072	0.217 0.207
3/4	A19834/6	176951	172207	176950	0.8125 0.7812	1.2701 1.1988	0.255 0.245
7/8	A19834/7	175995	-	178806	0.9375 0.9062	1.4493 1.378	0.286 0.276
1	A19834/8	188795	174439	176078	1.0625 1.0312	1.6285 1.5572	0.317 0.307
1 1/8	A19834/9	178797	172330	178794	1.1875 1.1562	1.7535 1.6822	0.317 0.307

## Dimensions (Millimetres)



BS4464 TYPE B PASSIVATED						
Size	Standard Part Number	Cross Part Number	A	B Max	C	D
BS4464 M1.6 S203 Cad Plated	M1.6 BS4464 Cad	175425	1.90 1.70	3.50	0.92 0.68	0.5 0.3
BS4464 M1.6 316 SS	M1.6 BS4464	176079	1.90 1.70	3.50	0.92 0.68	0.5 0.3
BS4464 M2 316 SS	M2 BS4464	178805	2.30 2.10	4.30	1.15 0.85	0.6 0.4
BS4464 M2.5 316 SS	M2.5 BS4464	178799	2.80 2.60	5.00	1.38 1.02	0.7 0.5
BS4464 M3 316 SS	M3 BS4464	178800	3.30 3.10	6.10	1.84 1.36	0.9 0.7
BS4464 M4 316 SS	M4 BS4464	178801	4.35 4.10	7.55	2.07 1.53	1.0 0.8
BS4464 M5 316 SS	M5 BS4464	178802	5.35 5.10	9.15	2.76 2.04	1.3 1.1
BS4464 M6 S203 Cad Plated	M6 BS4464 Cad	171805	6.40 6.10	11.70	3.68 2.72	1.7 1.5
BS4464 M6 316 SS	M6 BS4464	178803	6.40 6.10	11.70	3.68 2.72	1.7 1.5
BS4464 M8 316 SS	M8 BS4464	175659	8.55 8.40	14.85	4.60 3.40	2.1 1.9

AS9100, Rev D  
ISO9001: 2015  
ISO14001: 2015



### Cross Manufacturing Company (1938) Ltd.

Head Office,  
Midford Road,  
Bath,  
BA2 5RR,  
England

**Tel:** +44 (0) 1225 837000

**Fax:** +44 (0) 1225 834115

mail@crossmanufacturing.com  
www.crossmanufacturing.com

### Cadmium - HSE Product Compliance

Cadmium (Cd) is a hazardous substance and is regulated under various regulations around the world.

Please refer to HSE leaflet on safe working with cadmium:  
<http://www.hse.gov.uk/pubns/indg391.pdf>