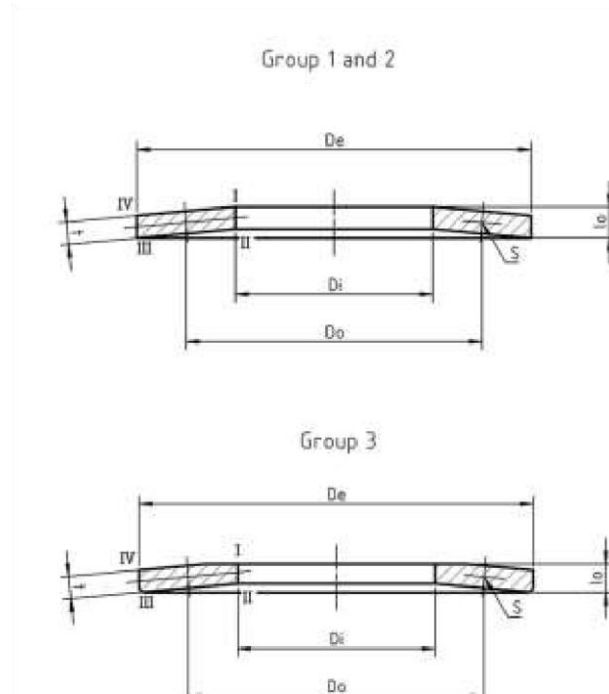




Product Dimensions, Standards and Weights

DIN 2093 Technical Specifications

Metric DIN 2093 Disc Spring Washers



Dimensions of Metric DIN 2093 Disc Spring Washers

Group	De h12	Di H12	t or (t')	h0	l0	F (N)	s	l0 - s	? OM (N/mm2)	? II (N/mm2)
1	8	4.2	0.4	0.2	0.6	210	0.15	0.45	1200	1220
	10	5.2	0.5	0.25	0.75	329	0.19	0.56	1210	1240
	12.5	6.2	0.7	0.3	1	673	0.23	0.77	1280	1420
	14	7.2	0.8	0.3	1.1	813	0.23	0.87	1190	1340
	16	8.2	0.9	0.35	1.25	1000	0.26	0.99	1160	1290
	18	9.2	1	0.4	1.4	1250	0.3	1.1	1170	1300
	20	10.2	1.1	0.45	1.55	1530	0.34	1.21	1180	1300



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Group	De h12	Di H12	t or (t')	h0	l0	F (N)	s	l0 - s	? OM (N/mm2)	? II (N/mm2)
2	22.5	11.2	1.25	0.5	1.75	1950	0.38	1.37	1170	1320
	25	12.2	1.5	0.55	2.05	2910	0.41	1.64	1210	1410
	28	14.2	1.5	0.65	2.15	2580	0.49	1.66	1180	1280
	31.5	16.3	1.75	0.7	2.45	3900	0.53	1.92	1190	1310
	35.5	18.3	2	0.8	2.8	5190	0.6	2.2	1210	1330
	40	20.1	2.25	0.9	3.15	6540	0.68	2.47	1210	1340
	45	22.4	2.5	1	3.5	7720	0.75	2.75	1150	1300
	50	25.4	3	1.1	4.1	12000	0.83	3.27	1250	1430
	56	28.5	3	1.3	4.3	11400	0.98	3.32	1180	1280
	63	31	3.5	1.4	4.9	15000	1.05	3.85	1140	1300
	71	36	4	1.6	5.6	20500	1.2	4.4	1200	1330
	80	41	5	1.7	6.7	33700	1.28	5.42	1260	1460
	90	46	5	2	7	31400	1.5	5.5	1170	1300
	100	51	6	2.2	8.2	48000	1.65	6.55	1250	1420
	112	57	6	2.5	8.5	43800	1.88	6.62	1130	1240
3	125	64	8 (7.5)	2.6	10.6	85900	1.95	8.65	1280	1330
	140	72	8 (7.5)	3.2	11.2	85300	2.4	8.8	1260	1280
	160	82	10 (9.4)	3.5	13.5	139000	2.63	10.87	1320	1340
	180	92	10 (9.4)	4	14	125000	3	11	1180	1200
	200	102	12 (11.25)	4.2	16.2	183000	3.15	13.05	1210	1230
	225	112	12 (11.25)	5	17	171000	3.75	13.25	1120	1140
	250	127	14 (13.1)	5.6	19.6	249000	4.2	15.4	1200	1220



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Metric DIN 2093 Disc Spring Washers (aka Belleville washers) are conical shaped washers that act as spring discs that are designed to be loaded in the axial direction. They can be statically loaded (either continuously or intermittently), or cyclically deflected i.e. dynamically loaded. Because these washers can be arranged in stacked columns, an infinite combination of spring characteristics can be achieved. The DIN 2093 specification classifies disc springs into three groups:

Group 1; Under 1.25mm thick: cold formed, radiused edges, without contact flats

Group 2; 1.25mm up to and including 6mm: cold formed-machined (or fine blanked), radiused edges, without contact flats

Group 3; Over 6mm thick: Fully machined from forged blanks, with contact flats, thickness reduced

Unique Fasteners offers one of the most complete ranges of metric washers and other inch and metric industrial fasteners for immediate delivery from stock. The following sizes of metric DIN 2093 Disc Spring Washers are available for immediate shipping from stock: Diameters ranging from M6 to M40 in 301 stainless steel.

DIN (**D**eutsches **I**nstitut für **N**ormung - German Institute for Standardization) standards are issued for a variety of components including industrial fasteners as Metric DIN 2093 Disc Spring Washers. The DIN standards remain common in Germany, Europe and globally even though the transition to ISO standards is taking place. DIN standards continue to be used for parts which do not have ISO equivalents or for which there is no need for standardization.