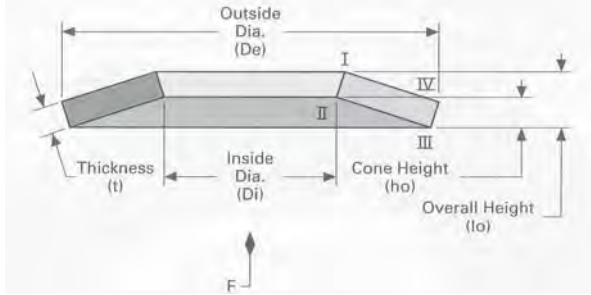




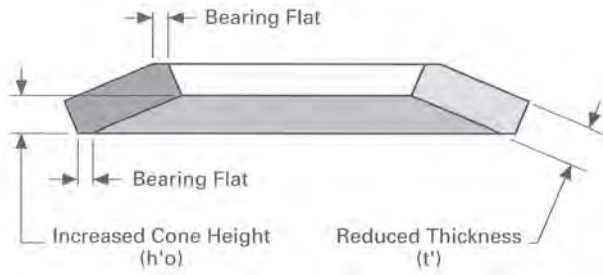
ASHLEY POWER

Disc Springs to DIN 2093

Disc Spring without Bearing Flats



Disc Spring with Bearing Flats

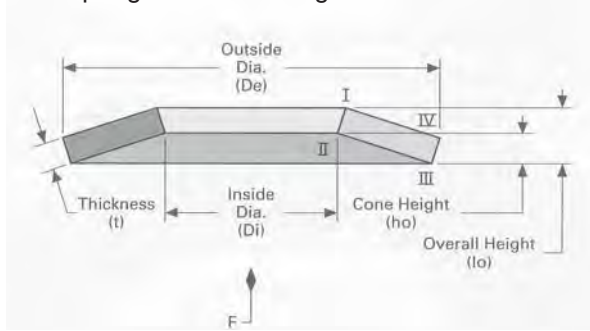


Product Code	Inner Dia. (Di) mm	Outer Dia. (De) mm	Thick. (t) mm	Reduced Thick. (t') mm	Cone Ht. (ho) mm	Overall Ht. (lo) mm	Cone Ht. To Thickness Ratio	Weight per 1000 pieces	15% Deflection		30% Deflection		45% Deflection		60% Deflection		75% Deflection		90% Deflection	
									Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N
									Stress δII N/mm2	Stress δIII N/mm2	Stress δII N/mm2	Stress δIII N/mm2	Stress δII N/mm2	Stress δIII N/mm2	Stress δII N/mm2	Stress δIII N/mm2	Stress δII N/mm2	Stress δIII N/mm2	Stress δII N/mm2	Stress δIII N/mm2
DS3.2X6X0.3	3.20	6.00	0.30		0.15	0.45	0.50	0.05	0.02	27	0.05	53	0.07	76	0.09	98	0.11	119	0.14	140
									198	273	420	531	664	774	930	1002	1220	1215	1532	1414
DS3.2X8X0.2	3.20	8.00	0.20		0.20	0.40	1.00	0.07	0.03	8	0.06	14	0.09	19	0.12	23	0.15	26	0.18	28
									37	144	97	276	179	396	283	504	409	600	558	684
DS3.2X8X0.3	3.20	8.00	0.30		0.25	0.55	0.83	0.10	0.04	29	0.08	53	0.11	73	0.15	90	0.19	104	0.23	117
									113	247	261	475	443	684	660	875	912	1046	1198	1199
DS3.2X8X0.4	3.20	8.00	0.40		0.20	0.60	0.50	0.13	0.03	43	0.06	82	0.09	119	0.12	153	0.15	186	0.18	217
									212	214	446	416	702	605	981	783	1281	949	1604	1102
DS3.2X8X0.5	3.20	8.00	0.50		0.20	0.70	0.40	0.17	0.03	79	0.06	153	0.09	223	0.12	291	0.15	357	0.18	422
									299	249	620	485	964	710	1329	922	1717	1123	2128	1311
DS4.2X8X0.2	4.20	8.00	0.20		0.25	0.45	1.25	0.06	0.04	14	0.08	24	0.11	32	0.15	36	0.19	39	0.23	41
									-7	253	21	483	85	690	185	873	319	1034	489	1172
DS4.2X8X0.3	4.20	8.00	0.30		0.25	0.55	0.83	0.09	0.04	33	0.08	60	0.11	83	0.15	102	0.19	118	0.23	133
									99	308	233	594	402	856	607	1095	847	1312	1123	1505
DS4.2X8X0.4	4.20	8.00	0.40		0.20	0.60	0.50	0.11	0.03	48	0.06	93	0.09	134	0.12	173	0.15	210	0.18	245
									198	268	419	522	663	761	929	985	1218	1194	1530	1389
DS3.2X10X0.3	3.20	10.00	0.30		0.35	0.65	1.17	0.17	0.05	34	0.11	59	0.16	77	0.21	90	0.26	98	0.32	105
									39	234	124	447	254	638	430	808	652	957	919	1085
DS3.2X10X0.4	3.20	10.00	0.40		0.30	0.70	0.75	0.22	0.05	48	0.09	88	0.14	123	0.18	153	0.23	179	0.27	204
									160	214	353	412	579	595	840	762	1134	913	1461	1048
DS3.2X10X0.5	3.20	10.00	0.50		0.25	0.75	0.50	0.28	0.04	64	0.08	123	0.11	178	0.15	229	0.19	279	0.23	326
									238	189	500	368	784	535	1092	692	1424	838	1779	972
DS4.2X10X0.4	4.20	10.00	0.40		0.30	0.70	0.75	0.20	0.05	50	0.09	93	0.14	129	0.18	161	0.23	189	0.27	215
									134	249	300	480	497	693	727	888	988	1066	1282	1225
DS4.2X10X0.5	4.20	10.00	0.50		0.25	0.75	0.50	0.25	0.04	68	0.08	130	0.11	188	0.15	242	0.19	294	0.23	344
									208	221	438	430	690	626	964	810	1260	981	1578	1140
DS4.2X10X0.6	4.20	10.00	0.60		0.25	0.85	0.42	0.30	0.04	111	0.08	216	0.11	315	0.15	410	0.19	502	0.23	592
									277	250	575	487	896	712	1239	925	1604	1125	1991	1313
DS5.2X10X0.25	5.20	10.00	0.25		0.30	0.55	1.20	0.11	0.05	20	0.09	35	0.14	45	0.18	53	0.23	58	0.27	61
									2	235	37	449	104	642	203	814	336	965	500	1095
DS5.2X10X0.4	5.20	10.00	0.40		0.30	0.70	0.75	0.18	0.05	56	0.09	103	0.14	143	0.18	178	0.23	209	0.27	238
									124	298	280	575	468	832	690	1067	943	1281	1230	1474
DS5.2X10X0.5	5.20	10.00	0.50		0.25	0.75	0.50	0.22	0.04	75	0.08	144	0.11	208	0.15	268	0.19	325	0.23	381
									198	266	419	517	663	753	929	975	1218	1182	1529	1375
DS4.2X12X0.4	4.20	12.00	0.40		0.40	0.80	1.00	0.31	0.06	55	0.12	98	0.18	132	0.24	158	0.3	178	0.36	195
									76	238	193	455	350	653	548	830	786	988	1064	1125
DS4.2X12X0.5	4.20	12.00	0.50		0.35	0.85	0.70	0.39	0.05	73	0.11	136	0.16	191	0.21	240	0.26	284	0.32	325
									165	219	361	423	589	612	847	785	1136	943	1456	1086
DS4.2X12X0.6	4.20	12.00	0.60		0.40	1.00	0.67	0.47	0.06	141	0.12	263	0.18	372	0.24	468	0.3	557	0.36	640
									239	295	519	569	839	824	1199	1058	1600	1273	2041	1467
DS5.2X12X0.5	5.20	12.00	0.50		0.40	0.90	0.80	0.36	0.06	96	0.12	176	0.18	243	0.24	300	0.3	350	0.36	395
									137	303	314	584	530	842	785	1078	1080	1291	1414	1482
DS5.2X12X0.6	5.20	12.00	0.60		0.35	0.95	0.58	0.43	0.05	122	0.11	231	0.16	330	0.21	421	0.26	506	0.32	588
									213	279	456	540	730	785	1033	1012	1367	1222	1730	1415
DS6.2X12X0.5	6.20	12.00	0.50		0.35	0.85	0.70	0.33	0.05	84	0.11	157	0.16	220	0.21	276	0.26	326	0.32	374
									139	291	308	563	509	815	740	1047	1001	1259	1294	1452
DS6.2X12X0.6	6.20	12.00	0.60		0.35	0.95	0.58	0.39	0.05	133	0.11	252	0.16	360	0.21	459	0.26	552	0.32	640
									204	325	440	631	706	916	1002	1182	1329	1429	1687	1655
DS5.2X12.5X0.5	5.20	12.50	0.50		0.35	0.85	0.70	0.40	0.05	70	0.11	131	0.16	183	0.21	230	0.26	272	0.32	312
									138	224	304	432	497	625	718	803	967	965	1244	1112
DS6.2X12.5X0.35	6.20	12.50	0.35		0.45	0.80	1.29	0.25	0.07	55	0.14	95	0.2	123	0.27	141	0.34	151	0.41	157
									-14	314	18	598	97	854	222	1080	393	1278	611	1446

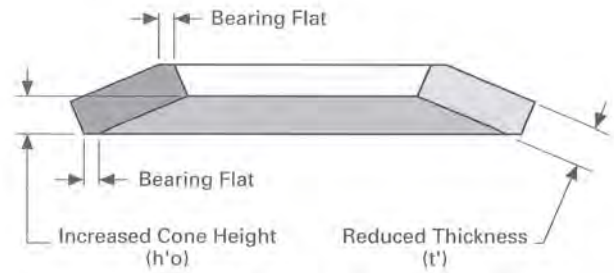
Disc Springs to DIN 2093



Disc Spring without Bearing Flats



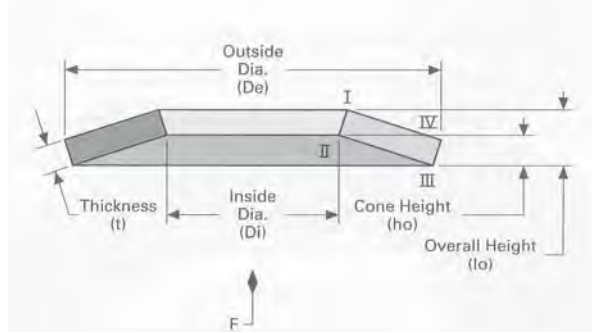
Disc Spring with Bearing Flats



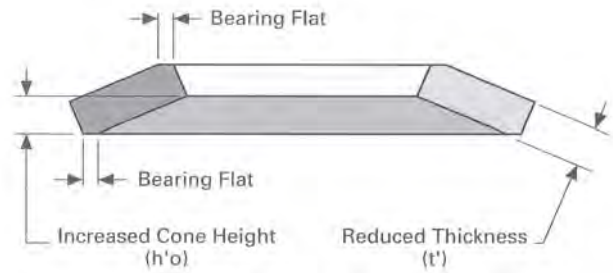
Product Code	Inner Dia. (Di) mm	Outer Dia. (De) mm	Thick. (t) mm	Reduced Thick. (t') mm	Cone Ht. (ho) mm	Overall Ht. (lo) mm	Cone Ht. To Thickness Ratio	Weight per 1000 pieces	15% Deflection		30% Deflection		45% Deflection		60% Deflection		75% Deflection		90% Deflection			
									Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N
Stress δ_{II} δ_{III} N/mm ²		Stress δ_{II} δ_{III} N/mm ²		Stress δ_{II} δ_{III} N/mm ²		Stress δ_{II} δ_{III} N/mm ²		Stress δ_{II} δ_{III} N/mm ²		Stress δ_{II} δ_{III} N/mm ²		Stress δ_{II} δ_{III} N/mm ²										
DS6.2X12.5X0.5	6.20	12.50	0.50		0.35	0.85	0.70	0.36	0.05	76	0.11	141	0.16	198	0.21	248	0.26	293	0.32	336	0.36	414
DS6.2X12.5X0.6	6.20	12.50	0.60		0.35	0.95	0.58	0.44	0.05	119	0.11	227	0.16	324	0.21	413	0.26	496	0.32	576	0.36	684
DS6.2X12.5X0.7	6.20	12.50	0.70		0.30	1.00	0.43	0.51	0.05	147	0.09	284	0.14	415	0.18	539	0.23	660	0.27	777	0.30	921
DS6.2X12.5X1	6.20	12.50	1.00		0.20	1.20	0.20	0.73	0.03	257	0.06	510	0.09	760	0.12	1008	0.15	1254	0.18	1499	0.20	1851
DS7.2X14X0.35	7.20	14.00	0.35		0.45	0.80	1.29	0.31	0.07	45	0.14	78	0.2	100	0.27	115	0.34	123	0.41	128	0.45	152
DS7.2X14X0.5	7.20	14.00	0.50		0.40	0.90	0.80	0.44	0.06	76	0.12	140	0.18	194	0.24	239	0.3	279	0.36	315	0.4	370
DS7.2X14X0.8	7.20	14.00	0.80		0.30	1.10	0.38	0.71	0.05	173	0.09	338	0.14	496	0.18	648	0.23	797	0.27	943	0.3	1131
DS5.2X15X0.4	5.20	15.00	0.40		0.55	0.95	1.38	0.49	0.08	67	0.17	115	0.25	147	0.33	166	0.41	176	0.5	180	0.55	210
DS5.2X15X0.5	5.20	15.00	0.50		0.50	1.00	1.00	0.61	0.08	86	0.15	154	0.23	206	0.3	246	0.38	278	0.45	305	0.5	366
DS5.2X15X0.6	5.20	15.00	0.60		0.45	1.05	0.75	0.73	0.07	108	0.14	200	0.2	278	0.27	347	0.34	407	0.41	463	0.45	540
DS5.2X15X0.7	5.20	15.00	0.70		0.40	1.10	0.57	0.85	0.06	133	0.12	252	0.18	361	0.24	461	0.3	555	0.36	645	0.4	777
DS6.2X15X0.5	6.20	15.00	0.50		0.50	1.00	1.00	0.58	0.08	89	0.15	160	0.23	214	0.3	256	0.38	289	0.45	317	0.5	380
DS6.2X15X0.6	6.20	15.00	0.60		0.45	1.05	0.75	0.69	0.07	112	0.14	208	0.2	290	0.27	360	0.34	424	0.41	482	0.45	576
DS6.2X15X0.7	6.20	15.00	0.70		0.40	1.10	0.57	0.81	0.06	138	0.12	262	0.18	376	0.24	480	0.3	578	0.36	671	0.4	813
DS8.2X15X0.5	8.20	15.00	0.50		0.50	1.00	1.00	0.49	0.08	103	0.15	184	0.23	247	0.3	295	0.38	334	0.45	365	0.5	436
DS8.2X15X0.7	8.20	15.00	0.70		0.40	1.10	0.57	0.68	0.06	159	0.12	303	0.18	433	0.24	553	0.3	666	0.36	774	0.4	924
DS8.2X15X0.8	8.20	15.00	0.80		0.40	1.20	0.50	0.78	0.06	226	0.12	434	0.18	628	0.24	809	0.3	982	0.36	1150	0.4	1392
DS8.2X16X0.4	8.20	16.00	0.40		0.50	0.90	1.25	0.47	0.08	55	0.15	96	0.23	124	0.3	143	0.38	154	0.45	162	0.5	192
DS8.2X16X0.6	8.20	16.00	0.60		0.45	1.05	0.75	0.70	-6	247	0.23	471	0.33	613	0.41	763	0.48	873	0.91	1013	1.0	1213
DS8.2X16X0.7	8.20	16.00	0.70		0.45	1.15	0.64	0.81	0.07	109	0.14	201	0.2	280	0.27	349	0.34	410	0.41	466	0.45	552
DS8.2X16X0.8	8.20	16.00	0.80		0.40	1.20	0.50	0.93	0.07	159	0.14	298	0.2	422	0.27	534	0.34	637	0.41	735	0.45	885
DS8.2X16X0.9	8.20	16.00	0.90		0.35	1.25	0.39	1.05	0.05	221	0.11	431	0.16	632	0.21	825	0.26	1013	0.32	1197	0.35	1457
DS6.2X18X0.4	6.20	18.00	0.40		0.60	1.00	1.50	0.70	0.09	57	0.18	96	0.27	121	0.36	134	0.45	139	0.54	138	0.6	162
DSX6.2X18X0.5	6.20	18.00	0.50		0.60	1.10	1.20	0.88	-32	198	-23	376	26	534	116	673	247	791	418	890	1.0	1080
DS6.2X18X0.6	6.20	18.00	0.60		0.60	1.20	1.00	1.06	0.09	85	0.18	149	0.27	194	0.36	225	0.45	245	0.54	259	0.6	310
DS6.2X18X0.7	6.20	18.00	0.70		0.55	1.25	0.79	1.23	0.08	150	0.17	276	0.25	382	0.33	473	0.41	553	0.5	625	0.55	755



Disc Spring without Bearing Flats



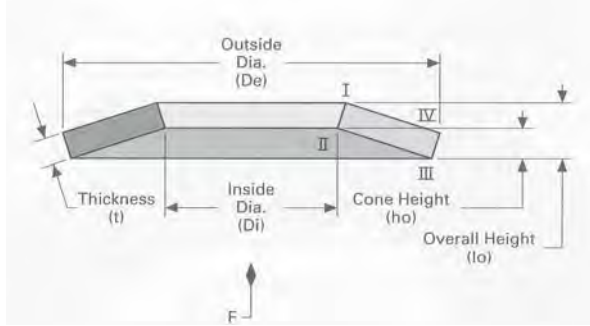
Disc Spring with Bearing Flats



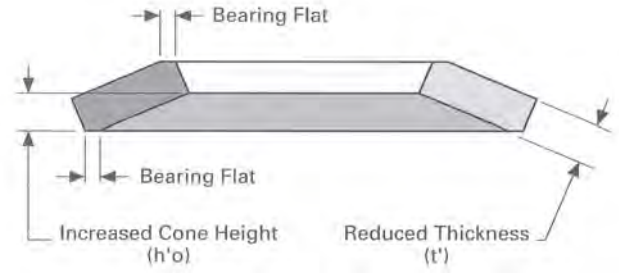
Product Code	Inner Dia. (Di) mm	Outer Dia. (De) mm	Thick. (t) mm	Reduced Thick. (t') mm	Cone Ht. (ho) mm	Overall Ht. (lo) mm	Cone Ht. To Thickness Ratio	Weight per 1000 pieces	15% Deflection		30% Deflection		45% Deflection		60% Deflection		75% Deflection		90% Deflection					
									Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N
									Stress δII δIII N/mm2		Stress δII δIII N/mm2		Stress δII δIII N/mm2		Stress δII δIII N/mm2		Stress δII δIII N/mm2		Stress δII δIII N/mm2		Stress δII δIII N/mm2			
DS6.2X18X0.8	6.20	18.00	0.80		0.50	1.30	0.63	1.41	0.08	179	0.15	337	0.23	479	0.3	607	0.38	726	0.45	838				
DS8.2X18X0.5	8.20	18.00	0.50		0.60	1.10	1.20	0.79	0.09	92	0.18	161	0.27	209	0.36	243	0.45	265	0.54	280				
DS8.2X18X0.7	8.20	18.00	0.70		0.55	1.25	0.79	1.11	0.08	161	0.17	297	0.25	412	0.33	510	0.41	596	0.5	674				
DS8.2X18X0.8	8.20	18.00	0.80		0.50	1.30	0.63	1.27	0.08	193	0.15	364	0.23	516	0.3	655	0.38	783	0.45	904				
DS8.2X18X1	8.20	18.00	1.00		0.40	1.40	0.40	1.58	0.06	260	0.12	505	0.18	739	0.24	963	0.3	1181	0.36	1395				
DS9.2X18X0.45	9.20	18.00	0.45		0.60	1.05	1.33	0.66	0.09	80	0.18	138	0.27	176	0.36	200	0.45	214	0.54	220				
DS9.2X18X0.7	9.20	18.00	0.70		0.50	1.20	0.71	1.03	0.08	147	0.15	274	0.23	383	0.3	480	0.38	566	0.45	647				
DS9.2X18X1	9.20	18.00	1.00		0.40	1.40	0.40	1.48	0.06	276	0.12	536	0.18	784	0.24	1023	0.3	1254	0.36	1481				
DS8.2X20X0.6	8.20	20.00	0.60		0.70	1.30	1.17	1.20	0.11	141	0.21	246	0.32	322	0.42	375	0.53	412	0.63	438				
DS8.2X20X0.7	8.20	20.00	0.70		0.65	1.35	0.93	1.40	0.23	267	0.2	303	0.29	411	0.39	498	0.49	569	0.59	630				
DS8.2X20X0.8	8.20	20.00	0.80		0.60	1.40	0.75	1.60	0.09	199	0.18	369	0.27	514	0.36	639	0.45	751	0.54	854				
DSX8.2X20X0.9	8.20	20.00	0.90		0.55	1.45	0.61	1.80	0.08	233	0.17	441	0.25	627	0.33	796	0.41	954	0.5	1103				
DS8.2X20X1	8.20	20.00	1.00		0.55	1.55	0.55	2.10	0.08	306	0.17	583	0.25	837	0.33	1073	0.41	1294	0.5	1508				
DS10.2X20X0.4	10.20	20.00	0.40		0.50	0.90	1.25	0.70	0.08	35	0.15	61	0.23	79	0.3	91	0.38	99	0.45	103				
DS10.2X20X0.5	10.20	20.00	0.50		0.65	1.15	1.30	0.90	0.1	94	0.2	161	0.29	208	0.39	237	0.89	254	0.59	264				
DS10.2X20X0.8	10.20	20.00	0.80		0.55	1.35	0.69	1.50	-15	261	8	498	69	711	168	899	305	1063	479	1203				
DS10.2X20X0.9	10.20	20.00	0.90		0.55	1.45	0.61	1.60	0.08	191	0.17	357	0.25	502	0.33	631	0.41	748	0.5	858				
DS10.2X20X1	10.20	20.00	1.00		0.55	1.55	0.55	1.80	129	258	285	499	469	723	679	929	917	1118	1182	1289				
DS10.2X20X1.1	10.20	20.00	1.10		0.45	1.55	0.41	2.00	0.08	257	0.17	485	0.25	690	0.33	877	0.41	1050	0.5	1215				
DS10.2X20X1.25	10.20	20.00	1.25		0.50	1.75	0.40	2.30	166	277	359	537	580	780	828	1005	1102	1212	1405	1403				
DS10.2X20X1.5	10.20	20.00	1.50		0.30	1.80	0.20	2.70	0.08	337	0.17	642	0.25	922	0.33	1181	0.41	1425	0.5	1660				
DS11.2X22.5X0.6	11.20	22.50	0.60		0.80	1.40	1.33	1.40	203	296	434	575	691	836	976	1080	1288	1307	1627	1516				
DS11.2X22.5X0.8	11.20	22.50	0.80		0.65	1.45	0.81	1.90	0.07	335	0.14	652	0.2	953	0.27	1241	0.34	1521	0.41	1795				
DS11.2X22.5X1	11.20	22.50	1.00		0.65	1.65	0.65	2.30	222	242	461	472	719	691	995	898	1290	1093	1602	1277				
DS11.2X22.5X1.25	11.20	22.50	1.25		0.50	1.75	0.40	2.90	0.08	544	0.15	1059	0.23	1549	0.3	2020	0.38	2477	0.45	2925				
DS11.2X22.5X1.5	11.20	22.50	1.50		0.30	1.80	0.20	3.30	283	303	588	592	916	867	1266	1127	1639	1373	2034	1605				
DS8.2X23X0.7	8.20	23.00	0.70		0.80	1.50	1.14	2.00	0.05	517	0.09	1026	0.14	1529	0.18	2027	0.23	2521	0.27	3013				
									254	187	515	368	785	544	1063	715	1349	881	1643	1042				
									0.12	160	0.24	274	0.36	351	0.48	399	0.6	425	0.72	439				
									-23	302	-1	576	66	821	178	1038	336	1227	538	1387				
									0.1	195	0.2	357	0.29	493	0.39	608	0.49	707	0.59	798				
									93	253	215	488	368	704	550	901	762	1079	1004	1239				
									0.1	334	0.2	627	0.29	887	0.39	1121	0.49	1335	0.59	1538				
									162	288	354	557	575	807	827	1039	1108	1251	1419	1445				
									0.08	424	0.15	824	0.23	1206	0.3	1573	0.38	1929	0.45	2278				
									224	234	465	457	724	669	1001	869	1296	1059	1608	1237				
									0.12	183	0.24	321	0.36	422	0.48	493	0.6	544	0.72	581				
									37	245	119	469	244	670	413	850	626	1007	882	1143				



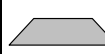
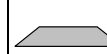
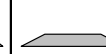



Disc Spring without Bearing Flats



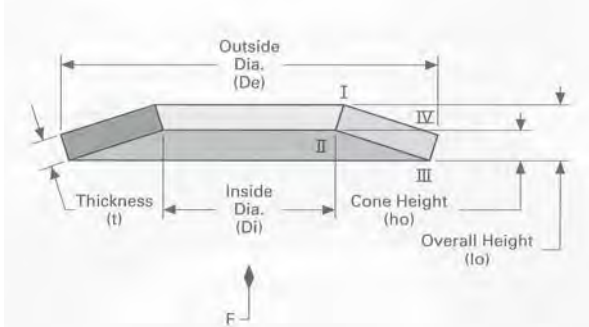
Disc Spring with Bearing Flats



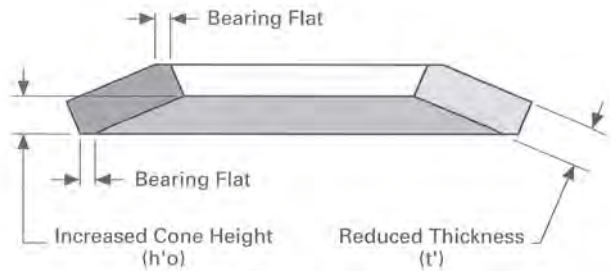
Product Code	Inner Dia. (Di) mm	Outer Dia. (De) mm	Thick. (t) mm	Reduced Thick. (t') mm	Cone Ht. (ho) mm	Overall Ht. (lo) mm	Cone Ht. To Thickness Ratio	Weight per 1000 pieces	15% Deflection		30% Deflection		45% Deflection		60% Deflection		75% Deflection		90% Deflection	
																				
									Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N
Stress δ_{II} N/mm2		Stress δ_{III} N/mm2		Stress δ_{II} N/mm2		Stress δ_{III} N/mm2		Stress δ_{II} N/mm2		Stress δ_{III} N/mm2		Stress δ_{II} N/mm2		Stress δ_{III} N/mm2		Stress δ_{II} N/mm2		Stress δ_{III} N/mm2		
DS8.2X23X0.8	8.20	23.00	0.80		0.75	1.55	0.94	2.30	0.11	214	0.23	385	0.34	521	0.45	630	0.56	719	0.68	795
DS8.2X23X0.9	8.20	23.00	0.90		0.70	1.60	0.78	2.60	92	237	223	454	392	653	600	831	846	991	1131	1131
DS8.2X23X1	8.20	23.00	1.00		0.70	1.70	0.70	2.80	0.11	248	0.21	457	0.32	634	0.42	785	0.53	919	0.63	1041
DS10.2X23X0.9	10.20	23.00	0.90		0.75	1.65	0.83	2.40	139	227	312	438	519	632	759	808	1032	969	1340	1112
DS10.2X23X1	10.20	23.00	1.00		0.70	1.70	0.70	2.60	0.11	309	0.21	595	0.32	835	0.42	1048	0.53	1240	0.63	1419
DS10.2X23X1.25	10.20	23.00	1.25		0.65	1.90	0.52	3.30	178	241	389	465	634	673	913	863	1225	1037	1571	1194
DS12.2X23X1	12.20	23.00	1.00		0.60	1.60	0.60	2.30	0.11	295	0.23	539	0.34	742	0.45	912	0.56	1058	0.68	1189
DS12.2X23X1.25	12.20	23.00	1.25		0.60	1.85	0.48	2.90	115	289	269	555	459	800	687	1024	953	1225	1257	1404
DS12.2X23X1.5	12.20	23.00	1.50		0.50	2.00	0.33	3.50	0.11	339	0.21	631	0.32	886	0.42	1112	0.53	1315	0.63	1506
DS10.2X25X1	10.20	25.00	1.00		0.75	1.75	0.75	3.20	158	277	349	535	573	774	829	994	1119	1195	1441	1377
DS12.2X25X0.7	12.20	25.00	0.70		0.90	1.60	1.29	2.10	0.1	537	0.2	1029	0.29	1483	0.39	1907	0.49	2310	0.59	1699
DS12.2X25X0.9	12.20	25.00	0.90		0.70	1.60	0.78	2.60	244	287	516	557	816	810	1145	1048	1502	1269	1887	1473
DS12.2X25X1	12.20	25.00	1.00		0.80	1.80	0.80	2.90	0.09	296	0.18	560	0.27	797	0.36	1015	0.45	1217	0.54	1410
DS12.2X25X1.25	12.20	25.00	1.25		0.70	1.95	0.56	3.70	155	263	334	510	538	740	767	954	1020	1152	1299	1334
DS12.2X25X1.5	12.20	25.00	1.50		0.55	2.05	0.37	4.40	0.09	532	0.18	1023	0.27	1483	0.36	1916	0.45	2331	0.54	2734
DS10.2X28X0.8	10.20	28.00	0.80		0.95	1.75	1.19	3.40	231	304	488	591	768	862	1074	1117	1404	1356	1760	1579
DS10.2X28X1	10.20	28.00	1.00		0.90	1.90	0.90	4.20	0.08	705	0.15	1382	0.23	2036	0.3	2673	0.38	3297	0.45	3912
DS10.2X28X1.25	10.20	28.00	1.25		0.80	2.05	0.64	5.20	278	273	573	535	886	785	1215	1025	1562	1253	1926	1470
DS10.2X28X1.5	10.20	28.00	1.50		0.70	2.20	0.47	6.30	0.11	311	0.23	575	0.34	801	0.45	997	0.56	1172	0.68	1333
DS12.2X28X0.8	12.20	28.00	0.80		1.00	1.80	1.25	3.60	136	244	304	470	504	679	736	871	1000	1045	1295	1201
DS12.2X28X1	12.20	28.00	1.00		0.95	1.95	0.95	3.90	0.14	219	0.27	378	0.41	487	0.54	558	0.68	600	0.81	624
DS12.2X28X1.25	12.20	28.00	1.25		0.85	2.10	0.68	4.90	-13	309	20	589	99	841	225	1064	0.96	1259	614	1425
DS12.2X28X1.5	12.20	28.00	1.50		0.75	2.25	0.50	5.90	0.11	233	0.21	429	0.32	595	0.42	737	0.53	862	0.63	977
DS14.2X28X0.8	14.20	28.00	0.80		1.00	1.80	1.25	3.60	99	239	227	461	382	666	565	853	776	1023	1015	1176
DS14.2X28X1	14.20	28.00	1.00		0.80	1.80	0.80	3.60	0.12	371	0.24	682	0.36	943	0.48	1165	0.6	1359	0.72	1534
DS14.2X28X1.25	14.20	28.00	1.25		0.85	2.10	0.68	4.90	120	308	276	593	469	855	699	1095	965	1312	1267	1507
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	0.11	526	0.21	1002	0.32	1436	0.42	1837	0.53	2214	0.63	2577
DS10.2X28X1.5	10.20	28.00	1.50		0.70	2.20	0.47	6.30	205	291	438	564	699	821	988	1059	1305	1281	1649	1485
DS12.2X28X1	12.20	28.00	1.00		0.95	1.95	0.95	3.90	0.08	634	0.17	1238	0.25	1818	0.33	2379	0.41	2926	0.5	3464
DS12.2X28X1.25	12.20	28.00	1.25		0.85	2.10	0.68	4.90	249	239	516	468	800	686	1101	894	1419	1091	1755	1277
DS12.2X28X1.5	12.20	28.00	1.50		0.75	2.25	0.50	5.90	0.14	229	0.29	399	0.43	521	0.57	605	0.71	662	0.86	701
DS14.2X28X0.8	14.20	28.00	0.80		1.00	1.80	1.25	3.60	23	232	88	443	195	633	343	802	532	950	763	1076
DS14.2X28X1	14.20	28.00	1.00		0.80	1.80	0.80	3.60	0.14	328	0.27	595	0.41	810	0.54	984	0.68	1130	0.81	1257
DS14.2X28X1.25	14.20	28.00	1.25		0.85	2.10	0.68	4.90	101	238	239	456	415	656	628	837	878	998	1166	1141
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	0.12	460	0.24	866	0.36	1227	0.48	1553	0.6	1853	0.72	2137
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	186	226	402	438	647	634	921	616	1225	982	1559	1134
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	0.11	617	0.21	1190	0.32	1726	0.42	2235	0.53	2723	0.63	3197
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	247	211	517	411	809	600	1124	777	1461	943	1821	1097
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	0.14	380	0.29	683	0.43	923	0.57	1114	0.71	1268	0.86	1400
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	80	288	201	553	362	765	564	1013	807	1208	1090	1379
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	0.13	530	0.26	991	0.38	1395	0.51	1755	0.64	2083	0.77	2390
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	169	277	371	534	605	774	872	994	1172	1196	1504	1379
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	0.11	709	0.23	1361	0.34	1966	0.45	2535	0.56	3077	0.68	3603
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	235	261	496	506	782	738	1094	955	1431	1157	1793	1345
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	0.15	287	0.3	497	0.45	644	0.6	741	0.75	801	0.9	839
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	-7	319	31	609	116	870	246	1101	422	1304	643	1477
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	0.12	303	0.24	556	0.36	769	0.48	949	0.6	1107	0.72	1250
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	94	254	218	490	371	707	553	906	765	1086	1006	1247
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	0.13	570	0.26	1065	0.38	1500	0.51	1887	0.64	2240	0.77	2570
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	161	315	356	609	583	882	844	1134	1138	1365	1465	1574
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	0.1	633	0.2	1227	0.29	1789	0.39	2324	0.49	2841	0.59	3346
DS14.2X28X1.5	14.20	28.00	1.50		0.75	2.25	0.50	5.90	216	246	451	479	706	701	980	910	1274	1106	1586	1291



Disc Spring without Bearing Flats



Disc Spring with Bearing Flats

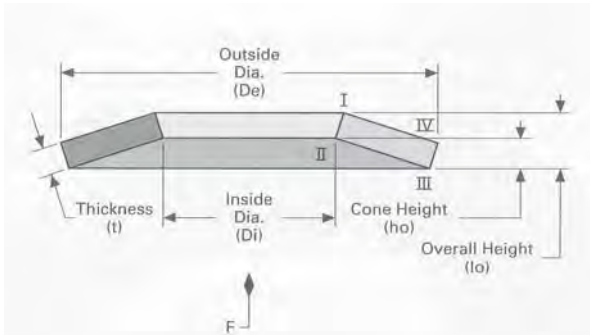


Product Code	Inner Dia. (Di) mm	Outer Dia. (De) mm	Thick. (t) mm	Reduced Thick. (t') mm	Cone Ht. (ho) mm	Overall Ht. (lo) mm	Cone Ht. To Thickness Ratio	Weight per 1000 pieces	15% Deflection		30% Deflection		45% Deflection		60% Deflection		75% Deflection		90% Deflection			
									Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N
									Stress		Stress		Stress		Stress		Stress		Stress			
									δII N/mm ²	δIII N/mm ²	δII N/mm ²	δIII N/mm ²	δII N/mm ²	δIII N/mm ²	δII N/mm ²	δIII N/mm ²	δII N/mm ²	δIII N/mm ²	δII N/mm ²	δIII N/mm ²		
DS12.2X31.5X1.25	12.20	31.50	1.25	0.95	2.20	0.76	6.50	6.50	0.14	481	0.29	890	0.43	1238	0.57	1539	0.71	1805	0.86	2050	1.01	2307
DS12.2X31.5X1.5	12.20	31.50	1.50	0.85	2.35	0.57	7.80	7.80	0.13	641	0.26	1219	0.38	1746	0.51	2232	0.64	2688	0.77	3126	0.91	3571
DS16.3X31.5X0.8	16.30	31.50	0.80	1.05	1.85	1.31	3.60	3.60	0.16	255	0.32	438	0.47	563	0.63	642	0.79	687	0.95	711	1.12	1163
DS16.3X31.5X1.25	16.30	31.50	1.25	0.90	2.15	0.72	5.60	5.60	0.14	498	0.27	926	0.41	1296	0.54	1621	0.68	1913	0.81	2184	0.97	2440
DS16.3X31.5X1.5	16.30	31.50	1.50	0.90	2.40	0.60	6.70	6.70	0.14	785	0.27	1485	0.41	2116	0.54	2693	0.68	3230	0.81	3742	0.98	4354
DS16.3X31.5X1.75	16.30	31.50	1.75	0.70	2.45	0.40	7.80	7.80	0.11	850	0.21	1655	0.32	2421	0.42	3157	0.53	3871	0.63	4572	0.75	5273
DS16.3X31.5X2	16.30	31.50	2.00	0.75	2.75	0.38	9.00	9.00	0.11	1342	0.23	2618	0.34	3841	0.45	5022	0.56	6173	0.68	7304	0.80	8435
DS12.2X34X1	12.20	34.00	1.00	1.25	2.25	1.25	6.20	6.20	0.19	420	0.38	727	0.56	942	0.75	1084	0.94	1172	1.13	1228	1.33	1329
DS12.2X34X1.25	12.20	34.00	1.25	1.10	2.35	0.88	7.80	7.80	0.17	521	0.33	946	0.5	1292	0.66	1576	0.83	1815	0.99	2026	1.17	2267
DS12.2X34X1.5	12.20	34.00	1.50	1.00	2.50	0.67	9.30	9.30	0.15	687	0.3	1287	0.45	1816	0.6	2288	0.75	2721	0.9	3127	1.08	3528
DS14.2X34X1.25	14.20	34.00	1.25	1.15	2.40	0.92	7.40	7.40	0.17	585	0.35	1056	0.52	1434	0.69	1738	0.86	1989	1.04	2206	1.23	2467
DS14.2X34X1.5	14.20	34.00	1.50	1.05	2.55	0.70	8.80	8.80	0.16	768	0.32	1432	0.47	2010	0.63	2521	0.79	2984	0.95	3415	1.13	3846
DS16.3X34X1.5	16.30	34.00	1.50	1.05	2.55	0.70	8.20	8.20	0.16	812	0.32	1514	0.47	2126	0.63	2666	0.79	3155	0.95	3612	1.14	4023
DS16.3X34X2	16.30	34.00	2.00	0.85	2.85	0.43	11.00	11.00	0.13	1284	0.26	2491	0.38	3634	0.51	4727	0.64	5783	0.77	6816	0.93	7849
DS18.3X35.5X0.9	18.30	35.50	0.90	1.15	2.05	1.28	5.10	5.10	0.17	303	0.35	523	0.52	675	0.69	773	0.86	832	1.04	867	1.24	931
DS18.3X35.5X1.25	18.30	35.50	1.25	1.00	2.25	0.80	7.10	7.10	0.15	464	0.3	853	0.45	1179	0.6	1457	0.75	1699	0.9	1918	1.09	2147
DS18.3X35.5X2	18.30	35.50	2.00	0.80	2.80	0.40	11.40	11.40	0.12	1139	0.24	2217	0.36	3243	0.48	4230	0.6	5187	0.72	6126	0.86	7065
DS14.2X40X1.25	14.20	40.00	1.25	1.40	2.65	1.12	11.00	11.00	0.21	590	0.42	1038	0.63	1369	0.84	1607	1.05	1778	1.26	1907	1.47	2036
DS14.2X40X1.5	14.20	40.00	1.50	1.25	2.75	0.83	13.00	13.00	0.19	709	0.38	1296	0.56	1783	0.75	2191	0.94	2542	1.13	2857	1.34	3168
DS14.2X40X2	14.20	40.00	2.00	1.05	3.05	0.53	17.00	17.00	0.16	1111	0.32	2126	0.47	3062	0.63	3935	0.79	4763	0.95	5563	1.16	6351
DS16.3X40X1.5	16.30	40.00	1.50	1.05	2.55	0.70	12.00	12.00	0.16	551	0.32	1027	0.47	1442	0.63	1808	0.79	2140	0.95	2449	1.15	2758
DS16.3X40X2	16.30	40.00	2.00	1.10	3.10	0.55	16.00	16.00	0.17	1222	0.33	2329	0.5	3343	0.66	4283	0.83	5169	0.99	6021	1.20	6873
DS18.3X40X2	18.30	40.00	2.00	1.15	3.15	0.58	16.00	16.00	0.17	1355	0.35	2574	0.52	3682	0.69	4701	0.86	5656	1.04	6571	1.25	7463
DS20.4X40X1	20.40	40.00	1.00	1.30	2.30	1.30	7.00	7.00	0.2	375	0.39	645	0.59	830	0.78	948	0.98	1017	1.17	1055	1.37	1123
DS20.4X40X1.5	20.40	40.00	1.50	1.15	2.65	0.77	11.00	11.00	0.17	702	0.35	1296	0.52	1801	0.69	2237	0.86	2621	1.04	2974	1.23	3327
DS20.4X40X2	20.40	40.00	2.00	1.10	3.10	0.55	15.00	15.00	0.17	1348	0.33	2569	0.5	3687	0.66	4724	0.83	5701	0.99	6641	1.20	7583

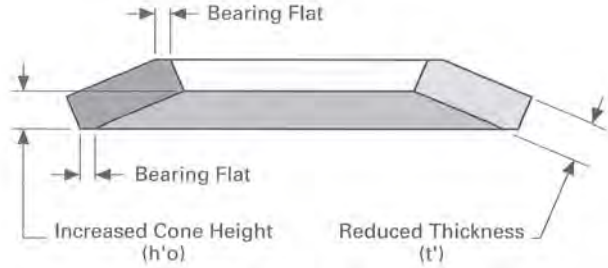
Disc Springs to DIN 2093



Disc Spring without Bearing Flats



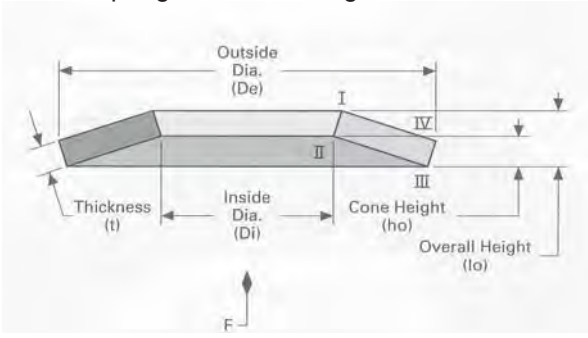
Disc Spring with Bearing Flats



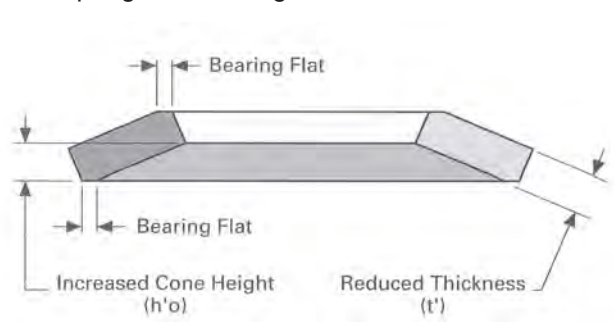
Product Code	Inner Dia. (Di) mm	Outer Dia. (De) mm	Thick. (t) mm	Reduced Thick. (t') mm	Cone Ht. (ho) mm	Overall Ht. (lo) mm	Cone Ht. To Thickness Ratio	Weight per 1000 pieces	15% Deflection		30% Deflection		45% Deflection		60% Deflection		75% Deflection		90% Deflection														
									Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N											
Stress δII N/mm2	Stress δIII N/mm2	Stress δII N/mm2	Stress δIII N/mm2	Stress δII N/mm2	Stress δIII N/mm2	Stress δII N/mm2	Stress δIII N/mm2	Stress δII N/mm2	Stress δIII N/mm2	Stress δII N/mm2	Stress δIII N/mm2	Stress δII N/mm2	Stress δIII N/mm2																				
														DS20.4X40X2.25	20.40	40.00	2.25	0.90	3.15	0.40	16.00	0.14	1428	0.27	2778	0.41	4064	0.54	5301	0.68	6500	0.81	7677
														DS20.4X40X2.5	20.40	40.00	2.50	0.95	3.45	0.38	18.00	0.14	2045	0.29	3989	0.43	5849	0.57	7643	0.71	9390	0.86	11106
DS22.4X45X1.25	22.40	45.00	1.25	1.60	2.85	1.28	12.00	0.24	689	0.48	1189	0.72	1534	0.96	1757	1.2	1891	1.44	1969														
DS22.4X45X1.75	22.40	45.00	1.75	1.30	3.05	0.74	16.00	0.2	963	0.39	1783	0.59	2488	0.78	3100	0.98	3646	1.17	4150														
DS22.4X45X2.5	22.40	45.00	2.50	1.00	3.50	0.40	23.00	0.15	1695	0.3	3298	0.45	4825	0.6	6292	0.75	7716	0.9	9113														
DS18.3X50X1.25	18.30	50.00	1.25	1.60	2.85	1.28	17.00	0.24	500	0.48	864	0.72	1114	0.96	1276	1.2	1373	1.44	1430														
DS18.3X50X1.5	18.30	50.00	1.50	1.80	3.30	1.20	20.00	0.27	906	0.54	1578	0.81	2058	1.08	2386	1.35	2603	1.62	2752														
DS18.3X50X2	18.30	50.00	2.00	1.50	3.50	0.75	27.00	0.23	1211	0.45	2241	0.68	3123	0.9	3887	1.13	4567	1.35	5193														
DS18.3X50X2.5	18.30	50.00	2.50	1.60	4.10	0.64	33.00	0.24	2312	0.48	4351	0.72	6163	0.96	7799	1.2	9305	1.44	10731														
DS18.3X50X3	18.30	50.00	3.00	1.40	4.40	0.47	40.00	0.21	3097	0.42	5975	0.63	8670	0.84	11224	1.05	13673	1.26	16058														
DS20.4X50X2	20.40	50.00	2.00	1.50	3.50	0.75	26.00	0.23	1243	0.45	2300	0.68	3205	0.9	3990	1.13	4687	1.35	5330														
DS20.4X50X2.5	20.40	50.00	2.50	1.35	3.85	0.54	32.00	0.2	1862	0.41	3555	0.61	5109	0.81	6554	1.01	7919	1.22	9234														
DS22.4X50X2	22.40	50.00	2.00	1.60	3.60	0.80	25.00	0.24	1427	0.48	2622	0.72	3625	0.96	4478	1.2	5222	1.44	5897														
DS22.4X50X2.5	22.40	50.00	2.50	1.40	3.90	0.56	31.00	0.21	2023	0.42	3850	0.63	5518	0.84	7060	1.05	8510	1.26	9903														
DS25.4X50X1.25	25.40	50.00	1.25	1.60	2.85	1.28	14.00	0.24	565	0.48	975	0.72	1258	0.96	1440	1.2	1550	1.44	1615														
DS25.4X50X1.5	25.40	50.00	1.50	1.60	3.10	1.07	17.00	0.24	808	0.48	1431	0.72	1900	0.96	2250	1.2	2512	1.44	2719														
DS25.4X50X2	25.40	50.00	2.00	1.40	3.40	0.70	23.00	0.21	1226	0.42	2285	0.63	3208	0.84	4024	1.05	4762	1.26	5451														
DS25.4X50X2.25	25.40	50.00	2.25	1.50	3.75	0.67	26.00	0.23	1821	0.45	3413	0.68	4816	0.9	6070	1.13	7217	1.35	8296														
DS25.4X50X2.5	25.40	50.00	2.50	1.40	3.90	0.56	29.00	0.21	2154	0.42	4101	0.63	5877	0.84	7519	1.05	9063	1.26	10546														
DS25.4X50X3	25.40	50.00	3.00	1.10	4.10	0.37	34.00	0.17	2594	0.33	5067	0.5	7441	0.66	9737	0.83	11976	0.99	14180														
DS28.5X56X1.5	28.50	56.00	1.50	1.95	3.45	1.30	21.00	0.29	966	0.59	1664	0.88	2141	1.17	2445	1.46	2622	1.76	2721														
DS28.5X56X2	28.50	56.00	2.00	1.60	3.60	0.80	29.00	0.24	1213	0.48	2228	0.72	3081	0.96	3806	1.2	4438	1.44	5012														
DS28.5X56X2.5	28.50	56.00	2.50	1.70	4.20	0.68	36.00	0.26	2283	0.51	4270	0.77	6014	1.02	7565	1.28	8978	1.53	10303														
DS28.5X56X3	28.50	56.00	3.00	1.30	4.30	0.43	43.00	0.2	2539	0.39	4920	0.59	7170	0.78	9316	0.98	11388	1.17	13414														
DS20.4X60X2	20.40	60.00	2.00	2.10	4.10	1.05	39.00	0.32	1505	0.63	2671	0.95	3556	1.26	4221	1.58	4727	1.89	5132														
DS20.4X60X2.5	20.40	60.00	2.50	1.80	4.30	0.72	49.00	0.27	1900	0.54	3533	0.81	4945	1.08	6184	1.35	7297	1.62	8331														



Disc Spring without Bearing Flats



Disc Spring with Bearing Flats



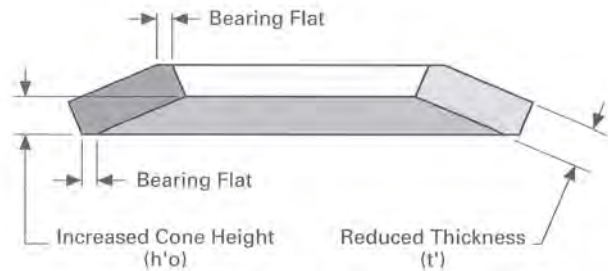
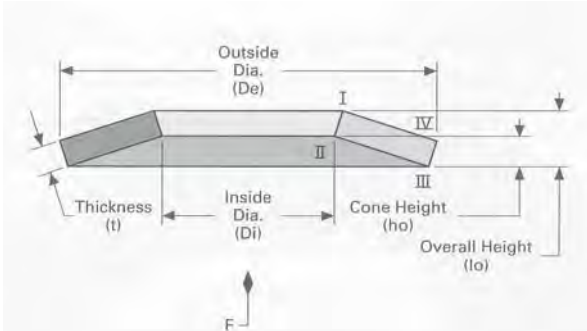
Product Code	Inner Dia. (Di) mm	Outer Dia. (De) mm	Thick. (t) mm	Reduced Thick. (t') mm	Cone Ht. (ho) mm	Overall Ht. (lo) mm	Cone Ht. To Thickness Ratio	Weight per 1000 pieces	15% Deflection		30% Deflection		45% Deflection		60% Deflection		75% Deflection		90% Deflection	
									Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N
									Stress		Stress		Stress		Stress		Stress		Stress	
									δII	δIII	δII	δIII	δII	δIII	δII	δIII	δII	δIII	δII	δIII
									N/mm2		N/mm2		N/mm2		N/mm2		N/mm2		N/mm2	
DS20.4X60X3	20.40	60.00	3.00		1.70	4.70	0.57	59.00	0.26	2760	0.51	5248	0.77	7515	1.02	9605	1.28	11569	1.53	13453
DS25.4X60X2.5	25.40	60.00	2.50		1.90	4.40	0.76	46.00	0.29	2178	0.57	4025	0.86	5599	1.14	6959	1.43	8164	1.71	9271
DS25.4X60X3	25.40	60.00	3.00		1.65	4.65	0.55	55.00	0.25	2782	0.5	5304	0.74	7611	0.99	9751	1.24	11768	1.49	13709
DS30.5X60X2.5	30.50	60.00	2.50		1.80	4.30	0.72	41.00	0.27	2172	0.54	4039	0.81	5653	1.08	7070	1.35	8342	1.62	9524
DS30.5X60X2.75	30.50	60.00	2.75		2.00	4.75	0.73	45.00	0.3	3232	0.6	6002	0.9	8391	1.2	10482	1.5	12356	1.8	14093
DS30.5X60X3	30.50	60.00	3.00		1.70	4.70	0.57	59.00	0.26	3155	0.51	6000	0.77	8591	1.02	10981	1.28	13226	1.53	15380
DS30.5X60X3.5	30.50	60.00	3.50		1.50	5.00	0.43	58.00	0.23	4039	0.45	7830	0.68	11417	0.9	14843	1.13	18153	1.35	21389
DS31X63X1.8	31.00	63.00	1.80		2.35	4.15	1.31	33.00	0.35	1566	0.71	2697	1.06	3467	1.41	3955	1.76	4238	2.12	4393
DS31X63X2.5	31.00	63.00	2.50		1.75	4.25	0.70	46.00	0.26	1850	0.53	3450	0.79	4843	1.05	6075	1.31	7189	1.58	8229
DS31X63X3	31.00	63.00	3.00		1.80	4.80	0.60	56.00	0.27	3046	0.54	5764	0.81	8214	1.08	10452	1.35	12536	1.62	14525
DS31X63X3.5	31.00	63.00	3.50		1.40	4.90	0.40	65.00	0.21	3301	0.42	6422	0.63	9395	0.84	12253	1.05	15025	1.26	17746
DS25.5X70X2	25.50	70.00	2.00		2.50	4.50	1.25	52.00	0.38	1590	0.75	2753	1.13	3565	1.5	4101	1.88	4437	2.25	4647
DS30.5X70X2.5	30.50	70.00	2.50		2.40	4.90	0.96	61.00	0.36	2421	0.72	4348	1.08	5866	1.44	7065	1.8	8031	2.16	8851
DS30.5X70X3	30.50	70.00	3.00		2.10	5.10	0.70	73.00	0.32	2941	0.63	5483	0.95	7698	1.26	9656	1.58	11426	1.89	13080
DS35.5X70X3	35.50	70.00	3.00		2.10	5.10	0.70	67.00	0.32	3162	0.63	5897	0.95	8278	1.26	10384	1.58	12287	1.89	14065
DS35.5X70X4	35.50	70.00	4.00		1.80	5.80	0.45	90.00	0.27	5376	0.54	10393	0.81	15115	1.08	19604	1.35	23923	1.62	28137
DS40.5X70X4	40.50	70.00	4.00		1.60	5.60	0.40	80.00	0.24	5130	0.48	9980	0.72	14601	0.96	19042	1.2	23351	1.44	27579
DS40.5X70X5	40.50	70.00	5.00		1.20	6.20	0.24	100.00	0.18	6977	0.36	13806	0.54	20515	0.72	27128	0.9	33672	1.08	40173
DS36X71X2	36.00	71.00	2.00		2.60	4.60	1.30	46.00	0.39	1895	0.78	3265	1.17	4201	1.56	4796	1.95	5144	2.34	5337
DS36X71X2.5	36.00	71.00	2.50		2.00	4.50	0.80	58.00	0.3	1838	0.6	3377	0.9	4669	1.2	5768	1.5	6725	1.8	7595
DS36.71X4	36.00	71.00	4.00		1.60	5.60	0.40	92.00	0.24	4511	0.48	8776	0.72	12840	0.96	16745	1.2	20535	1.44	24252
DS31X80X2.5	31.00	80.00	2.50		2.80	5.30	1.12	84.00	0.42	2404	0.84	4228	1.26	5573	1.68	6543	2.1	7239	2.52	7764
DS31X80X3	31.00	80.00	3.00		2.50	5.50	0.83	101.00	0.38	2887	0.75	5279	1.13	7261	1.5	8923	1.88	10352	2.25	11634
DS31X80X4	31.00	80.00	4.00		2.10	6.10	0.53	134.00	0.32	4525	0.63	8657	0.95	12467	1.26	16023	1.58	19394	1.89	22651
DS36X80X3	36.00	80.00	3.00		2.70	5.70	0.90	94.00	0.41	3464	0.81	6271	1.22	8540	1.62	10383	2.03	11919	2.43	13261
DS36X80X4	36.00	80.00	4.00		2.20	6.20	0.55	126.00	0.33	5059	0.66	9645	0.99	13841	1.32	17732	1.65	21400	1.98	24929

Disc Springs to DIN 2093



Disc Spring without Bearing Flats

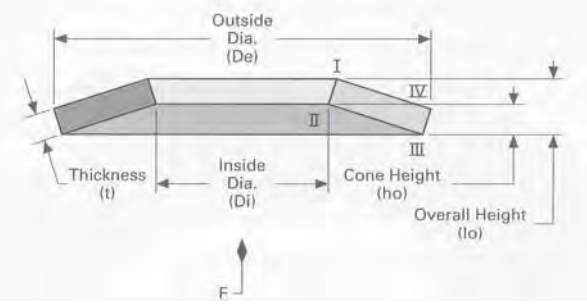
Disc Spring with Bearing Flats



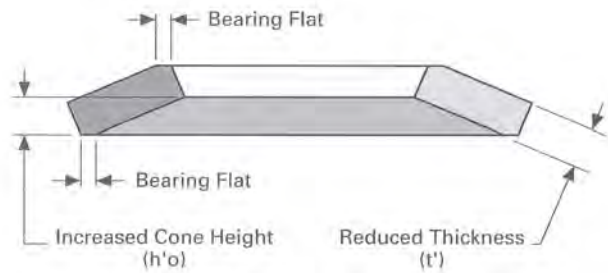
Product Code	Inner Dia. (Di) mm	Outer Dia. (De) mm	Thick. (t) mm	Reduced Thick. (t') mm	Cone Ht. (ho) mm	Overall Ht. (lo) mm	Cone Ht. To Thickness Ratio	Weight per 1000 pieces	15% Deflection		30% Deflection		45% Deflection		60% Deflection		75% Deflection		90% Deflection									
									Defl. mm		Force N		Defl. mm		Force N		Defl. mm		Force N		Defl. mm		Force N		Defl. mm		Force N	
									σII	σIII	σII	σIII	σII	σIII	σII	σIII	σII	σIII	σII	σIII	σII	σIII	σII	σIII	σII	σIII	σII	σIII
DS41X80X2.25	41.00	80.00	2.25	2.95	5.20	1.31	65.00	0.44	2452	0.89	4218	1.33	5419	1.77	6177	2.21	6613	2.66	6846	-22	337							
DS41X80X3	41.00	80.00	3.00	2.30	5.30	0.77	87.00	0.35	2817	0.69	5201	1.04	7228	1.38	8975	1.73	10518	2.07	11933	107	267							
DS41X80X4	41.00	80.00	4.00	2.20	6.20	0.55	116.00	0.33	5407	0.66	10309	0.99	14795	1.32	18953	1.65	22874	1.98	26646	203	298							
DS46X90X2.5	46.00	90.00	2.50	3.20	5.70	1.28	92.00	0.48	2800	0.96	4833	1.44	6234	1.92	7140	2.4	7684	2.88	8003	-14	315							
DS46X90X3.5	46.00	90.00	3.50	2.50	6.00	0.71	129.00	0.38	3675	0.75	6839	1.13	9581	1.5	11991	1.88	14131	2.25	16180	120	258							
DS46X90X5	46.00	90.00	5.00	2.00	7.00	0.40	184.00	0.3	6888	0.6	13401	0.9	19605	1.2	25568	1.5	31354	1.8	37031	223	240							
DS41X100X4	41.00	100.00	4.00	3.20	7.20	0.80	205.00	0.48	5535	0.96	10168	1.44	14059	1.92	17367	2.4	20251	2.88	22870	131	269							
DS41X100X5	41.00	100.00	5.00	2.75	7.75	0.55	256.00	0.41	7650	0.93	14585	1.24	20931	1.65	26814	2.06	32361	2.48	37698	216	247							
DS51X100X2.7	51.00	100.00	2.70	3.50	6.20	1.30	123.00	0.53	3165	1.05	5454	1.58	7021	2.1	8021	2.63	8609	3.15	8938	-17	303							
DS51X100X3.5	51.00	100.00	3.50	2.80	6.30	0.80	160.00	0.42	3572	0.84	6563	1.26	9074	1.68	11209	2.1	13070	2.52	14760	91	246							
DS51X100X4	51.00	100.00	4.00	3.00	7.00	0.75	182.00	0.45	5482	0.9	10145	1.35	14136	1.8	17597	2.25	20674	2.7	23510	124	292							
DS51X100X5	51.00	100.00	5.00	2.80	7.80	0.56	228.00	0.42	8637	0.84	16442	1.26	23563	1.68	30147	2.1	36339	2.52	42287	204	303							
DS51X100X6	51.00	100.00	6.00	2.20	8.20	0.37	274.00	0.33	10401	0.66	20318	0.99	29837	1.32	39043	1.65	48022	1.98	56858	249	250							
DS51X100X7	51.00	100.00	7.00	6.55	9.20	0.40	319.00	0.33	13882	0.66	27110	0.99	39775	1.32	51972	1.65	63793	1.98	75331	258	282							
DS57X112X3	57.00	112.00	3.00	3.90	6.90	1.30	172.00	0.59	3865	1.17	6657	1.76	8565	2.34	9779	2.93	10489	3.51	10883	-17	299							
DS57X112X4	57.00	112.00	4.00	3.20	7.20	0.80	229.00	0.48	4852	0.96	8914	1.44	12325	1.92	15224	2.4	17752	2.88	20048	94	255							
DS57X112X6	57.00	112.00	6.00	2.50	8.50	0.42	344.00	0.38	9672	0.75	18779	1.13	27421	1.5	35697	1.88	43707	2.25	51551	212	234							
DS41X125X4	41.00	125.00	4.00	4.20	8.20	1.05	344.00	0.63	5525	1.26	9801	1.89	13050	2.52	15492	3.15	17346	3.78	18833	67	229							
DS51X125X4	51.00	125.00	4.00	4.50	8.50	1.13	321.00	0.68	6602	1.35	11602	2.03	15283	2.7	17927	3.38	19817	4.05	21236	36	286							
DS51X125X5	51.00	125.00	5.00	3.90	8.90	0.78	401.00	0.59	8281	1.17	15258	1.76	21161	2.34	26222	2.93	30669	3.51	34732	133	258							
DS51X125X6	51.00	125.00	6.00	3.40	9.40	0.57	482.00	0.51	10568	1.02	20101	1.53	28779	2.04	36787	2.55	44307	3.06	51523	200	237							
DS61X125X5	61.00	125.00	5.00	4.00	9.00	0.80	367.00	0.6	9283	1.2	17054	1.8	23581	2.4	29129	3	33965	3.6	38358	120	308							
DS61X125X6	61.00	125.00	6.00	3.60	9.60	0.60	440.00	0.54	12323	1.08	23323	1.62	33234	2.16	42289	2.7	50722	3.24	58766	190	295							
DS61X125X8	61.00	125.00	8.00	7.50	10.90	0.45	587.00	0.435	21142	0.87	40862	1.305	59369	1.74	76871	2.175	93577	2.61	109695	242	300							
DS64X125X3.5	64.00	125.00	3.50	4.50	8.00	1.29	249.00	0.68	5635	1.35	9721	2.03	12530	2.7	14338	3.38	15416	4.05	16038	-16	323							
DS64X125X5	64.00	125.00	5.00	3.50	8.50	0.70	355.00	0.53	7897	1.05	14352	1.58	20150	2.1	25274	2.63	29908	3.15	34236	128	266							



Disc Spring without Bearing Flats



Disc Spring with Bearing Flats

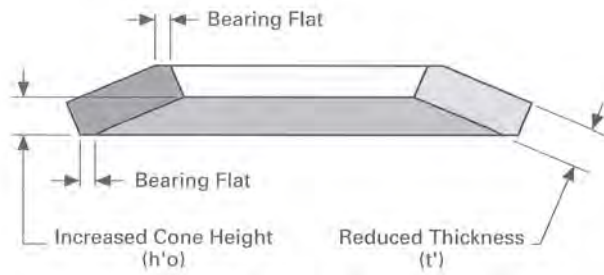
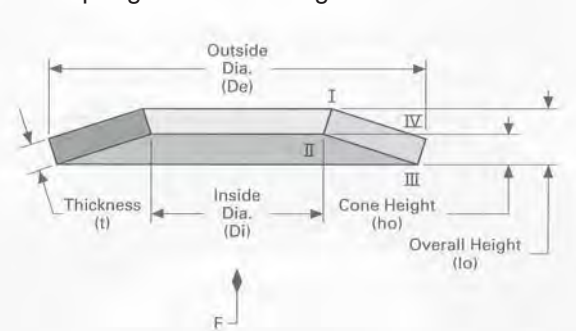


Product Code	Inner Dia. (Di) mm	Outer Dia. (De) mm	Thick. (t) mm	Reduced Thick. (t') mm	Cone Ht. (ho) mm	Overall Ht. (lo) mm	Cone Ht. To Thickness Ratio	Weight per 1000 pieces	15% Deflection		30% Deflection		45% Deflection		60% Deflection		75% Deflection		90% Deflection	
									Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N
									Stress δII δIII N/mm2		Stress δII δIII N/mm2		Stress δII δIII N/mm2		Stress δII δIII N/mm2		Stress δII δIII N/mm2		Stress δII δIII N/mm2	
DS64X125X6	64.00	125.00	6.00		3.60	9.60	0.60	426.00	0.54 189	12671 309	1.08 598	23982 598	1.62 656	34172 869	2.16 935	43484 1120	2.7 1243	52155 1352	3.24 1581	60426 1566
DS64X125X7	64.00	125.00	7.00	6.55	3.45	10.00	0.49	498.00	0.45 193	15783 299	0.9 411	30190 582	1.35 652	43427 849	1.8 918	55700 1101	2.25 1208	67216 1338	2.7 1522	78182 1559
DS64X125X8	64.00	125.00	8.00	7.50	3.10	10.60	0.39	569.00	0.39 229	19037 274	0.78 496	36993 536	1.17 741	54023 786	1.56 1024	70281 1025	1.95 1326	85926 1252	2.34 1646	101111 1468
DS71X125X6	71.00	125.00	6.00		3.30	9.30	0.55	392.00	0.5 188	12107 308	0.99 402	23083 599	1.49 642	33127 872	1.98 909	42438 1126	2.48 1201	51217 1363	2.97 1519	59663 1582
DS71X125X8	71.00	125.00	8.00	7.40	3.00	10.40	0.38	522.00	0.36 214	18866 286	0.72 444	36709 560	1.08 691	53668 823	1.44 955	69883 1074	1.8 1235	85494 1314	2.16 1533	100639 1542
DS71X125X10	71.00	125.00	10.00	9.20	2.60	11.80	0.26	653.00	0.27 237	26003 246	0.54 485	51340 485	0.81 741	76087 717	1.08 1008	100323 943	1.35 1284	124124 1162	1.62 1570	147567 1374
DS72X140X3.8	72.00	140.00	3.80		4.90	8.70	1.29	338.00	0.74 -16	6299 306	1.47 1.47	10861 585	2.21 8.21	13994 834	2.94 202	16003 1056	3.68 362	17195 1249	4.41 567	17877 1414
DS72X140X5	72.00	140.00	5.00		4.00	9.00	0.80	444.00	0.6 94	7631 258	1.2 217	14019 497	1.8 370	19384 717	2.4 553	23944 919	3 764	27920 1101	3.6 1005	31530 1265
DS72X140X8	72.00	140.00	8.00	7.50	3.70	11.20	0.46	711.00	0.48 199	19662 285	0.96 419	37789 556	1.44 662	54611 813	1.92 1055	70355 1213	2.4 1213	85251 1284	2.88 1521	99527 1498
DS61X150X5	61.00	150.00	5.00		5.30	10.30	1.06	579.00	0.8 54	9947 283	1.59 152	17623 541	2.39 294	23431 775	3.18 481	27770 985	3.98 712	31041 1171	4.77 988	33645 1332
DS61X150X6	61.00	150.00	6.00		4.80	10.80	0.80	695.00	0.72 131	12424 267	1.44 299	22824 515	2.16 503	31558 742	2.88 950	38983 1020	3.6 1138	45456 1284	4.32 1333	51334 1306
DS71X150X6	71.00	150.00	6.00		4.80	10.80	0.80	646.00	0.72 121	13161 299	1.44 279	24179 577	2.16 473	33432 832	2.88 704	41298 1066	3.6 970	48155 1277	4.32 1274	54382 1466
DS71X150X8	71.00	150.00	8.00	7.50	4.50	12.00	0.56	861.00	0.6 183	21981 307	1.2 395	41592 596	1.8 636	59198 867	2.4 906	75163 1121	3 1205	89851 1357	3.6 1534	103628 1575
DS81X150X8	81.00	150.00	8.00	7.50	4.20	11.70	0.53	786.00	0.555 178	21412 316	1.11 383	40756 614	1.665 612	58348 895	2.22 1160	74501 1150	2.775 1150	89532 1407	3.33 1457	103754 1637
DS81X150X10	81.00	150.00	10.00	9.30	3.70	13.00	0.37	983.00	0.45 233	30598 289	0.9 484	59586 566	1.35 753	87189 832	1.8 1039	113629 1086	2.25 1342	139128 1329	2.7 1663	163909 1559
DS82X160X4.3	82.00	160.00	4.30		5.60	9.90	1.30	500.00	0.84 -18	8058 304	1.68 8	13877 580	2.52 78	17850 828	3.36 192	20373 1047	4.2 350	21843 1238	5.04 553	22653 1401
DS82X160X6	82.00	160.00	6.00		4.50	10.50	0.75	698.00	0.68 109	10873 258	1.35 246	20124 498	2.03 412	28040 720	2.7 607	34905 924	3.38 830	41008 1109	5.05 1081	46633 1276
DS82X160X10	82.00	160.00	10.00	9.40	4.10	13.50	0.41	1164.00	0.525 228	30988 286	1.05 475	60029 558	1.575 743	87409 818	2.1 1031	113414 1065	2.625 1338	138331 1299	3.15 1666	162444 1521
DS92X180X4.8	92.00	180.00	4.80		6.20	11.00	1.29	708.00	0.93 -15	9698 295	1.86 12	16718 562	2.79 82	21534 802	3.72 194	24618 1015	4.65 350	26442 1201	5.58 548	27479 1360
DS91X180X6	91.00	180.00	6.00		5.10	11.10	0.85	892.00	0.77 77	10498 241	1.53 183	19145 464	2.3 317	26269 669	3.06 481	32196 856	3.83 673	37252 1024	4.59 894	41764 1174
DS92X180X10	92.00	180.00	10.00	9.40	4.60	14.00	0.46	1476.00	0.6 189	28864 266	1.2 400	55504 520	1.8 630	80254 760	2.4 881	103447 987	3 1153	125417 1201	3.6 1446	146498 1402
DS92X180X13	92.00	180.00	13.00	12.10	4.40	16.50	0.34	1918.00	0.525 258	51515 280	1.05 532	100753 549	1.575 822	148021 808	2.1 1129	193628 1056	2.625 1452	237883 1294	3.15 1791	281094 1521
DS82X200X8	82.00	200.00	8.00	7.50	6.70	14.20	0.84	1641.00	0.93 85	22758 282	1.86 207	41253 542	2.79 369	56173 782	3.72 568	68204 1000	4.65 806	78034 1198	5.58 1083	86350 1374
DS82X200X10	82.00	200.00	10.00	9.40	6.10	15.50	0.61	2052.00	0.825 172	32576 273	1.65 374	61189 530	2.475 607	86458 770	3.3 870	109003 992	4.125 1164	129445 1198	4.95 1489	148403 1387
DS82X200X12	82.00	200.00	12.00	11.25	5.35	16.60	0.45	2462.00	0.69 228	41757 246	1.38 479	80456 481	2.07 751	116551 703	2.76 1045	150494 913	3.45 1361	182737 1111	4.14 1699	213734 1297
DS92X200X10	92.00	200.00	10.00	9.40	6.20	15.60	0.62	1944.00	0.84 163	34868 305	1.68 357	65390 591	2.52 583	92246 858	3.36 841	116118 1106	4.2 1130	137688 1336	5.04 1451	157635 1547



Disc Spring without Bearing Flats

Disc Spring with Bearing Flats



Product Code	Inner Dia. (Di) mm	Outer Dia. (De) mm	Thick. (t) mm	Reduced Thick. (t') mm	Cone Ht. (ho) mm	Overall Ht. (lo) mm	Cone Ht. To Thickness Ratio	Weight per 1000 pieces	15% Deflection		30% Deflection		45% Deflection		60% Deflection		75% Deflection		90% Deflection	
									Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N	Defl. mm	Force N
									Stress δ_{II} δ_{III} N/mm ²		Stress δ_{II} δ_{III} N/mm ²		Stress δ_{II} δ_{III} N/mm ²		Stress δ_{II} δ_{III} N/mm ²		Stress δ_{II} δ_{III} N/mm ²		Stress δ_{II} δ_{III} N/mm ²	
DS92X200X12	92.00	200.00	12.00	11.25	5.55	16.80	0.46	2333.00	0.72	45959	1.44	88331	2.16	127650	2.88	164451	3.6	199269	4.32	232639
DS92X200X14	92.00	200.00	14.00	13.10	5.00	18.10	0.36	2722.00	0.615	58344	1.23	113839	1.845	166885	2.46	217881	3.075	267227	3.69	315322
DS102X200X5.5	102.00	200.00	5.50		7.00	12.50	1.27	1004.00	1.05	13104	2.1	22637	3.15	29229	4.2	33510	5.25	36111	6.3	37662
DS102X200X8	102.00	200.00	8.00	7.50	6.10	13.60	0.76	1460.00	0.84	21220	1.68	38903	2.52	53614	3.36	65917	4.2	76378	5.04	85661
DS102X200X10	102.00	200.00	10.00	9.40	6.20	15.60	0.62	1825.00	0.86	291	348	563	352	813	534	1044	747	1254	992	1443
DS102X200X12	102.00	200.00	12.00	11.25	4.95	16.20	0.41	2190.00	0.84	36810	1.26	69032	2.52	97384	3.36	122586	4.2	145357	5.04	166415
DS102X200X14	102.00	200.00	14.00	13.10	5.10	18.20	0.36	2555.00	1.05	13104	2.1	22637	3.15	29229	4.2	33510	5.25	36111	6.3	37662
DS102X200X16	102.00	200.00	16.00	14.80	4.00	18.80	0.25	2708.00	0.63	63356	1.05	123500	1.89	180883	2.52	235959	3.15	289181	3.78	341001
DS112X200X12	112.00	200.00	12.00	11.10	5.10	16.20	0.43	2031.00	0.63	44382	0.84	85728	1.89	124466	2.52	161024	3.15	195830	3.78	229311
DS112X200X14	112.00	200.00	14.00	12.90	4.60	17.50	0.33	2370.00	0.86	291	348	563	352	813	534	1026	1278	1259	1575	1483
DS112X200X16	112.00	200.00	16.00	14.80	4.00	18.80	0.25	2708.00	0.42	63667	0.84	125835	1.26	186679	1.68	246375	2.1	305100	2.52	363030
DS112X225X6.5	112.00	225.00	6.50	6.20	6.80	13.00	1.05	1526.00	234	231	477	457	729	676	990	889	1260	1096	1539	1297
DS112X225X8	112.00	225.00	8.00	7.50	7.00	14.50	0.88	1878.00	0.975	13079	1.9	23081	2.925	30521	3.9	35914	4.875	39775	5.85	42618
DS112X225X12	112.00	225.00	12.00	11.25	5.75	17.00	0.48	2817.00	14	242	61	463	140	664	251	845	394	1006	569	1147
DS102X250X10	102.00	250.00	10.00	9.40	8.60	18.00	0.86	3212.00	0.975	21136	1.9	38104	2.925	51580	3.9	62236	4.875	70749	5.85	77791
DS102X250X12	102.00	250.00	12.00	11.25	7.75	19.00	0.65	3854.00	51	277	136	533	254	768	406	983	591	1176	810	1348
DS127X250X7	127.00	250.00	7.00	6.70	8.10	14.80	1.16	2001.00	0.75	39817	1.5	76333	2.25	110040	3	141437	3.75	171016	4.5	199275
DS127X250X10	127.00	250.00	10.00	9.40	7.60	17.00	0.76	2859.00	176	253	372	493	589	721	826	935	1084	1137	1363	1326
DS127X250X12	127.00	250.00	12.00	11.25	8.05	19.30	0.67	3431.00	1.2	37336	2.4	67476	3.6	91587	4.8	110835	6	126387	7.2	139411
DS127X250X14	127.00	250.00	14.00	13.10	6.50	19.60	0.46	4003.00	82	293	205	563	368	811	572	1037	817	1241	1102	1422
DS127X250X16	127.00	250.00	16.00	15.00	6.80	21.80	0.43	4574.00	1.05	47155	2.1	88047	3.15	123658	4.2	154969	5.25	182962	6.3	206618
									155	273	342	529	560	767	811	987	1093	1190	1407	1376
									1.17	17689	2.34	30808	3.51	40130	4.68	46425	5.85	50466	7.02	53023
									-7	271	24	518	92	741	197	940	340	1116	519	1268
									94	265	216	512	367	741	546	952	752	1146	987	1321
									1.195	55205	2.19	102670	3.285	143612	4.38	179251	5.475	210806	6.57	239494
									139	345	313	668	522	968	766	1246	1045	1502	1369	1736
									0.84	57478	1.68	110428	2.52	159521	3.36	205431	4.2	248828	5.04	290385
									190	271	401	529	633	773	886	1004	1160	1221	1455	1425
									0.87	86536	1.74	167252	2.61	243002	3.48	314639	4.35	383017	5.22	448990
									241	311	504	609	789	891	1098	1160	1429	1414	1782	1663