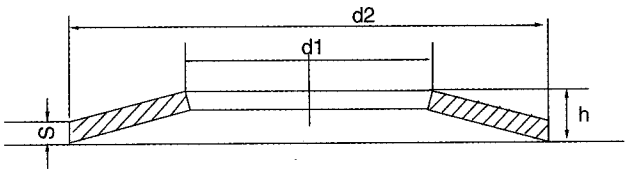
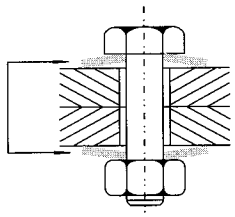
HEAVY DUTY BELLEVILLE WASHERS TO DIN 6796

BOLT SIZE MM	d1 H14	d2 h14	s	h max	h min	Approx Force to Flat N	Bolt Size Inches
2	2.2	5.0	0.4	0.60	0.50	628	
2.5	2.7	6.0	0.5	0.72	0.61	946	
3	3.2	7.0	0.6	0.85	0.72	1320	1/8
3.5	3.7	8.0	0.8	1.06	0.92	2410	
4	4.3	9.0	1.0	1.30	1.12	3770	5/32
5	5.3	11.0	1.2	1.55	1.35	5480	3/16
6	6.4	14.0	1.5	2.00	1.70	8590	1/4
7	7.4	17.0	1.75	2.30	2.00	11300	
8	8.4	18.0	2.0	2.60	2.24	14900	5/16
10	10.5	23.0	2.5	3.20	2.80	22100	3/8
12	13.0	29.0	3.0	3.95	3.43	34100	1/2
14	15.0	35.0	3.5	4.65	4.04	46000	
16	17.0	39.0	4.0	5.25	4.58	59700	5/8
18	19.0	42.0	4.5	5.80	5.08	74400	
20	21.0	45.0	5.0	6.40	5.60	93200	3/4
22	23.0	49.0	5.5	7.05	6.15	113700	7/8
24	25.0	56.0	6.0	7.75	6.77	131000	
27	28.0	60.0	6.5	8.35	7.30	154000	
30	31.0	70.0	7.0	9.20	8.00	172000	11/8



Belle ville washers / conical spring washers to Din 6796

Belleville Springs have been specifically designed for Heavy Bolted Sections such as Bus Bars, Transformers, Rectifiers, Heat Exchangers, Transmissions, etc. These springs are intended to counteract the effect of setting which results in bolt/nut assemblies working loose. They do not effectively prevent loosening of the assembly under varying radial load and are designed for use with short bolts predominantly subject to thrust.



Disc Spring Materials

Springs in accordance with this standard shall be made from high-grade steel with a modulus of elasticity, E of 206 000 N/mm as specified in either DIN 17221, DIN 17222 & DIN 17224. It being noted that Ck steel shall be only be used for the manufacture of group 1 Springs

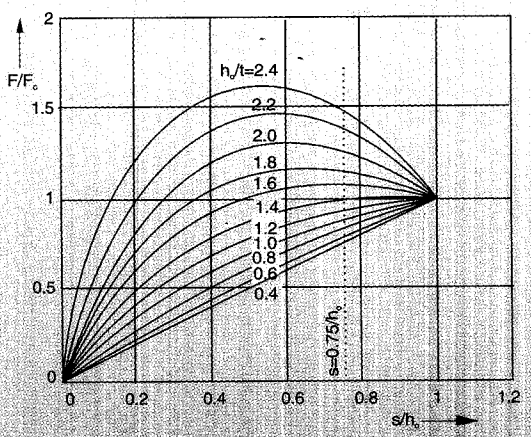
Material Grade	Din Ref No.	Chemical Composition								
		C	Si	Mn	P	S	Cr	V	Ni	Mo
50.CrV4 (Chrome Vanadinum)	1.8159	0.47 to 0.55	0.15 to 0.40	0.70 to 1.10	0.035	0.035	0.90 to 1.20	0.10 to 0.20	-	-
51 CrMoV4	1.7701	0.48-0.56	0.15-0.40	0.70-1.10	0.035	0.035	0.90-1.20	0.07-0.12	-	0.15-0.25
EN42J	-	0.75-0.90	0.35	0.6-0.9	0.05	0.05	-	-	-	-
(X22 Cr MOV 121 (High Temp steel)	1.4923)	0.2	0.3	0.6	0.035	0.035	12.0	0.3	0.6	1.0
Wark Hardened Stainless steel AISI 304	-	0.08	1.0	2.0	0.045	0.03	18-20	-	8-12	-

We can also make Disc Springs from other high temperature material like Inconel X-718, Nimonic 90 etc

Load/ deflection characteristic curve of Disc Spring

Depending upon the dimensions of the Disc Spring, it is possible to achieve load/ deflection characteristic curves which are nearly linear or strongly curved. The form of the Disc Spring characteristic curve is dependent upon the ratio h_o/t

Load / deflection characteristic curve with respect to h_o / t and s / h_o:



Disc Springs May be used Singly or in Combinations

Disc springs of differing thickness can be stacked in series to obtain a progressively rising load. This effect is also obtained using same thickness springs but incrementally increasing the units in the stack. Care must be taken not to over-stress the spring in the stack. Note : (Friction forces between springs must be considered.)