



Material: Carbon Spring Steel

Finish: Phosphating or as per Requirements

Hardness: d1 - 8 to 48mm : 47 to 54HRC

d1 - 48 to 200mm : 44 to 51HRC

d1 - 200 to 300mm : 40 to 47HRc

shall Dia, d1 Nom. Size	Circlips							Groove					
	s		d3		a	b ^d	d ₅	d2t		mt	t	n	
	Size	Tolerranc.	Size	Tolerranc.	Max.	r	Min.	size	Tolerance	H13		Min	
8	0.8	± 0.03	8.7	+0.36 -0.10	2.4	1.1	1	8.4	+0.09 0 (H10)	0.9	0.2	0.6	
9	0.8		9.8		2.5	1.3	1	9.4		0.9	0.2	0.6	
10	1	± 0.04	10.8	+0.42 -0.13	3.2	1.4	1.2	10.4	+0.011 0 (H11)	1.1	0.2	0.6	
11	1		11.8		3.3	1.5	1.2	11.4		1.1	0.2	0.6	
12	1		13		3.4	1.7	1.5	12.5		1.1	0.25	0.8	
13	1		14.1		3.6	1.8	1.5	13.6		1.1	0.3	0.9	
14	1		15.1		3.7	1.9	1.7	14.6		1.1	0.3	0.9	
15	1		16.2		3.7	2	1.7	15.7	1.1	0.35	1.1		
16	1		17.3		3.8	2	1.7	16.8	1.1	0.4	1.2		
17	1		18.3		3.9	2.1	1.7	17.8	1.1	0.4	1.2		
18	1		19.5		4.1	2.2	2	19	+0.13 0 (H11)	1.1	0.5	1.5	
19	1		20.5		4.1	2.2	2	20		1.1	0.5	1.5	
20	1	21.5	4.2	2.3	2	21	1.1	0.5		1.5			
21	1	22.5	4.2	2.4	2	22	1.1	0.5		1.5			
22	1	23.5	4.2	2.5	2	23	1.1	0.5	1.5				
24	1.2	± 0.05	25.9	+0.42 -0.21	4.4	2.6	2	25.2	+0.21 0 (H12)	1.3	0.6	1.8	
25	1.2		26.9		4.5	2.7	2	26.2		1.3	0.6	1.8	
26	1.2		27.9		4.7	2.8	2	27.2		1.3	0.6	1.8	
28	1.2		30.1		4.8	2.9	2	29.4	1.3	0.7	2.1		
30	1.2		32.1		4.8	3	2	31.4	+0.25 0 (H12)	1.3	0.7	2.1	
31	1.2		33.4		5.2	3.2	2.5	32.7		1.3	0.85	2.6	
32	1.2		34.4		5.4	3.2	2.5	33.7		1.3	0.85	2.6	
34	1.5		36.5		5.4	3.3	2.5	35.7		1.6	0.85	2.6	
35	1.5		37.8		5.4	3.4	2.5	37		1.6	1	3	
36	1.5		38.8		5.4	3.5	2.5	38		1.6	1	3	
37	1.5	39.8	5.5	3.6	2.5	39	1.6	1		3			
38	1.5	40.8	5.5	3.7	2.5	40	1.6	1	3				
40	1.75	± 0.06	43.5	+0.9 -0.39	5.8	3.9	2.5	42.5	+0.25 0 (H12)	1.85	1.25	3.8	
42	1.75		45.5		5.9	4.1	2.5	44.5		1.85	1.25	3.8	
45	1.75		48.5		6.2	4.3	2.5	47.5		1.85	1.25	3.8	
47	1.75		50.5		6.4	4.4	2.5	49.5		1.85	1.25	3.8	
48	1.75		51.5		6.4	4.5	2.5	50.5		+0.30 0 (H12)	1.85	1.25	3.8
50	2		54.2		6.5	4.6	2.5	53			2.15	1.5	4.5
52	2		56.2		6.7	4.7	2.5	58			2.15	1.5	4.5
55	2		5.92		6.8	5	2.5	58			2.15	1.5	4.5
56	2		6.2		6.8	5.1	2.5	59			2.15	1.5	4.5
58	2		62.2		6.9	5.2	2.5	61			2.15	1.5	4.5
60	2	65.2	7.3	5.4	2.5	63	2.15	1.5	4.5				
62	2	66.2	7.3	5.5	2.5	65	2.15	1.5	4.5				
63	2	67.2	7.3	5.6	2.5	66	2.15	1.5	4.5				
65	2.5	69.2	7.6	5.8	3	68	2.65	1.5	4.5				
68	2.5	72.5	7.8	6.1	3	71	2.65	1.5	4.5				
70	2.5	74.5	7.8	6.2	3	73	2.65	1.5	4.5				
72	2.5	76.5	7.8	6.4	3	75	2.65	1.5	4.5				
75	2.5	79.5	7.8	6.6	3	78	2.65	1.5	4.5				



shall Dia, d1 Norm. Size	Circlips						Groove							
	s		d3		a	b ^d	d ₅	d2t		mt	t	n		
	Size	Tolerance	Size	Tolerance	Max.	±	Min.	size	Tolerance	H13		Min		
78	2.5	± 0.06	82.5	+1.3 -0.54	8.5	6.8	3	81	+0.35 0 (H12)	2.85	1.5	4.5		
80	2.5		85.5		8.5	7	3	83.5		2.65	1.75	5.3		
82	2.5		87.5		8.5	7	3	85.3		2.65	1.75	5.3		
85	3	± 0.07	90.5		8.6	7.2	3.5	88.5		3.15	1.75	5.3		
88	3		93.5		8.6	7.4	3.5	91.5		3.15	1.75	5.3		
90	3		95.5		8.6	7.6	3.5	93.5		3.15	1.75	5.3		
92	3		97.5		8.7	7.8	3.5	95.5		3.15	1.75	5.3		
95	3		100.5		8.8	8.1	3.5	98.5		3.15	1.75	5.3		
98	3		103.5		9	8.3	3.5	101.5		3.15	1.75	5.3		
100	3		105.5		9.2	8.4	3.5	103.5		3.15	1.75	5.3		
102	4		± 0.08		108	9.5	8.5	3.5		106	+0.54 0 (H13)	4.15	2	6
105	4				112	9.5	8.7	3.5		109		4.15	2	6
108	4			115	9.5	8.9	3.5	112	4.15	2		6		
110	4			117	10.4	9	3.5	114	4.15	2		6		
112	4			119	10.5	9.1	3.5	116	4.15	2		6		
115	4	122		11	9.3	3.5	119	4.15	2	6				
120	4	± 0.08		127	11	9.7	3.5	124	+0.63 0 (H13)	4.15	2	6		
125	4			132	11	10	4	129		4.15	2	6		
130	4			137	11.2	10.2	4	134		4.15	2	6		
135	4			142	11.2	10.5	4	139		4.15	2	6		
140	4			147	11.4	10.7	4	144		4.15	2	6		
145	4			152	12	10.9	4	149		4.15	2	6		
150	4		158	12	11.2	4	155	4.15		2	7.5			
155	4		164	13	11.4	4	160	4.15		2.5	7.5			
160	4		169	13	11.6	4	165	4.15		2.5	7.5			
165	4		174.5	13.5	11.8	4	170	4.15		2.5	7.5			
170	4		179.5	13.5	12.2	4	175	4.15		2.5	7.5			
175	4		184.5	14.2	12.7	4	180	4.15		2.5	7.5			
180	4	± 0.09	189.5	14.2	13.2	4	185	+0.72 0 (H13)	4.15	2.5	7.5			
185	4		194.5	14.2	13.7	4	190		4.15	2.5	7.5			
190	4		199.5	14.2	13.8	4	195		4.15	2.5	7.5			
195	4		204.5	14.2	13.8	4	200		4.15	2.5	7.5			
200	4		209.5	14.2	14	4	205		4.15	2.5	7.5			
210	5		222	14.2	14	4	216		5.15	3	9			
220	5		232	14.2	14	4	226	5.15	3	9				
230	5		242	14.2	14	4	236	5.15	3	9				
240	5		252	14.2	14	4	246	5.15	3	9				
250	5		262	14.2	14	4	256	+0.81 0 (H13)	5.15	3	9			
260	5		275	16.2	16	5	268		5.15	4	12			
270	5		285	16.2	16	5	278		5.15	4	12			
280	5	295	16.2	16	5	288	5.15		4	12				
290	5	305	16.2	16	5	298	5.15		4	12				
300	5	315	16.2	16	5	308	5.15		4	12				



shall Dia, d1 Nom. Size	Circlips							Groove						
	s		d3		a	b ^d	d ₅	d2t		mt	t	n		
	Size	Tolerance	Size	Tolerance	Max.	μ	Min.	size	Tolerance	H13		Min		
20	1.5	± 0.05	21.5	+0.42 -0.21	4.5	2.4	2	21	+0.13 0 (H11)	1.6	0.5	1.5		
22	1.5		23.5		4.7	4.8	2	23		1.6	0.5	1.5		
24	1.5		25.9		4.9	3	2	25.2		1.6	0.6	1.8		
25	1.5		26.9		5	3.1	2	26.2	+0.21 0 (H12)	1.6	0.6	1.8		
26	1.5		27.9	5.1	3.1	2	27.2	1.6		0.6	1.8			
28	1.5		30.1	+0.50 -0.25	5.3	3.2	2	29.4	+0.25 0 (H12)	1.6	0.7	2.1		
30	1.5		32.1		5.5	3.3	2	31.4		1.6	0.7	2.1		
32	1.5		34.4		5.7	3.4	2	33.7		1.6	0.85	2.6		
34	1.75		36.5		5.9	3.7	2.5	35.7		1.85	0.85	2.6		
35	1.75		37.8		6	3.8	2.5	37		1.85	1	3		
37	1.75		39.8		6.2	3.9	2.5	39		1.85	1	3		
38	1.75		40.8	6.3	3.9	2.5	40	1.85		1	3			
40	2		± 0.06	43.5	+0.90 -0.39	6.5	3.9	2.5		42.5	+0.30 0 (H12)	2.15	1.25	3.8
42	2			45.5		6.7	4.1	2.5		44.5		2.15	1.25	3.8
45	2	48.5		7		4.3	2.5	47.5		2.15		1.25	3.8	
47	2	50.5		+1.10 -0.46	7.2	4.4	2.5	49.5		2.15		1.25	3.8	
50	2.5	54.2			7.5	4.6	2.5	53		2.65		1.5	4.5	
52	2.5	56.2			7.7	4.7	2.5	55		2.65		1.5	4.5	
55	2.5	59.2	8	5	2.5	58	2.65	1.5		4.5				
60	3	± 0.07	64.2	+1.10 -0.46	8.5	5.4	2.5	63	+0.30 0 (H12)	3.15	1.5	4.5		
62	3		66.2		8.6	5.5	2.5	65		3.15	1.5	4.5		
65	3		69.2		8.7	5.8	3	68		3.15	1.5	4.5		
68	3		72.5		8.8	6.1	3	71		3.15	1.5	4.5		
70	3		74.5		9	6.2	3	73		3.15	1.5	4.5		
72	3		76.5		9.2	6.4	3	75		3.15	1.5	4.5		
75	3		79.5		9.3	6.6	3	78		3.15	1.5	4.5		
80	4		± 0.08		85.5	+1.30 -0.54	9.5	7		3	83.5	+0.35 0 (H12)	4.15	1.75
85	4	90.5		9.7	7.2		3.5	83.5	4.15	1.75	5.3			
90	4	95.5		10	7.8		3.5	93.5	4.15	1.75	5.3			
95	4	100.5		10.3	8.1		3.5	98.5	4.15	1.75	5.3			
100	4	105.5		10.5	8.4		3.5	103.5	4.15	1.75	5.3			