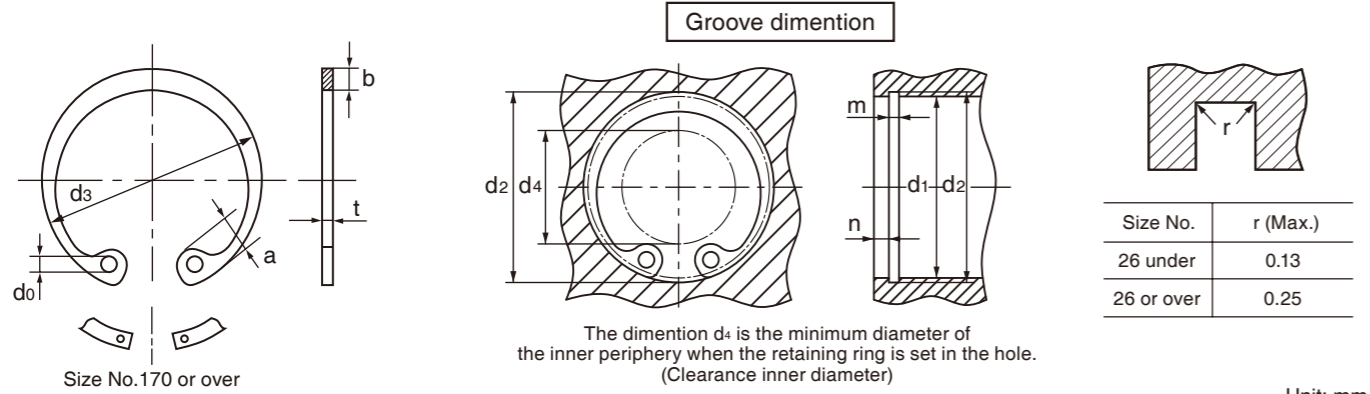


Basic Internal Ring [RTW-6 through 65]



The dimension d₄ is the minimum diameter of the inner periphery when the retaining ring is set in the hole. (Clearance inner diameter)

Unit: mm

Size No.	Retaining rings							d ₄ (Ref.)	Groove dimension					Ref. n
	d ₃		t		b	a	d ₀		d ₁	d ₂		m		
	Basic	Tol.	Basic	Tol.	Approx.	Approx.	Min.			Basic	Tol.	Basic	Tol.	
RTW- 6	6.7		0.4		0.7	1.6	0.8	2.5	6	6.25	^{+0.04} ₀	0.5		0.5
7	7.7		0.4	±0.03	0.8	1.7	0.8	3	7	7.3		0.5		0.5
8	8.8		0.4		0.9	1.7	0.8	3.5	8	8.4	^{+0.06} ₀	0.5		0.6
9	9.8		0.6	±0.04	1.1	2.2	0.8	4	9	9.4		0.7		0.6
10	10.7		1		1.5	2.8	1.2	4	10	10.4		1.15		0.6
11	11.8	±0.18	1		1.5	3	1.2	4	11	11.4		1.15		0.6
12	13		1		1.7	3.1	1.5	5	12	12.5		1.15		0.8
13	14.1		1		1.7	3.1	1.5	6	13	13.6	^{+0.11} ₀	1.15		0.9
14	15.1		1		1.9	3.6	1.7	6.4	14	14.6		1.15		0.9
15	16.2		1		1.9	3.6	1.7	7.4	15	15.7		1.15		1.1
16	17.3		1	±0.05	1.9	3.7	1.7	8	16	16.8		1.15		1.2
17	18.3		1		1.9	3.8	1.7	9	17	17.8		1.15		1.2
18	19.5		1		2.4	4	1.7	10	18	19		1.15		1.5
19	20.5		1		2.5	4	2	11	19	20		1.15		1.5
20	21.5		1		2.5	4	2	12	20	21		1.15		1.5
21	22.5	±0.2	1		2.5	4.1	2	12	21	22	^{+0.21} ₀	1.15		1.5
22	23.5		1		2.5	4.1	2	13	22	23		1.15		1.5
24	25.9		1.2		2.5	4.3	2	15	24	25.2		1.35		1.8
25	26.9		1.2		3	4.4	2	16	25	26.2		1.35		1.8
26	27.9		1.2		3	4.6	2	16	26	27.2		1.35		1.8
27	29.1		1.2		3	4.6	2	17	27	28.4		1.35		2.1
28	30.1		1.2		3	4.6	2	18	28	29.4		1.35		2.1
30	32.1		1.2		3	4.7	2	20	30	31.4		1.35		2.1
32	34.4		1.2	±0.06	3.5	5.2	2.5	21	32	33.7		1.35	^{+0.14} ₀	2.6
34	36.5	±0.25	1.5		3.5	5.2	2.5	23	34	35.7		1.65		2.6
35	37.8		1.5		3.5	5.2	2.5	24	35	37		1.65		3.0
36	38.8		1.5		3.5	5.2	2.5	25	36	38		1.65		3.0
37	39.8		1.5		3.5	5.2	2.5	26	37	39	^{+0.25} ₀	1.65		3.0
38	40.8		1.5		4	5.3	2.5	27	38	40		1.65		3.3
40	43.5	±0.4	1.75		4	5.7	2.5	28	40	42.5		1.9		3.8
42	45.5		1.75		4	5.8	2.5	30	42	44.5		1.9		3.8
45	48.5		1.75		4.5	5.9	2.5	33	45	47.5		1.9		3.8
46	49.7		1.75		5	6.1	2.5	33	46	48.5		1.9		3.8
47	50.5		1.75		4.5	6.1	2.5	34	47	49.5		1.9		3.8
48	51.5		1.75		4.5	6.2	2.5	35	48	50.5		1.9		4.5
50	54.2		2	±0.07	4.5	6.5	2.5	37	50	53		2.2		4.5
52	56.2		2		5.1	6.5	2.5	39	52	55		2.2		4.5
55	59.2		2		5.1	6.5	2.5	41	55	58		2.2		4.5
56	60.2	±0.45	2		5.1	6.6	2.5	42	56	59	^{+0.3} ₀	2.2		4.5
58	62.2		2		5.1	6.8	2.5	44	58	61		2.2		4.5
60	64.2		2		5.5	6.8	2.5	46	60	63		2.2		4.5
62	66.2		2		5.5	6.9	2.5	48	62	65		2.2		4.5
63	67.2		2		5.5	6.9	2.5	49	63	66		2.2		4.5
65	69.2		2.5	±0.08	5.5	7	2.5	50	65	68		2.7		4.5

Basic Internal Ring [RTW-68 through 300]



Unit: mm

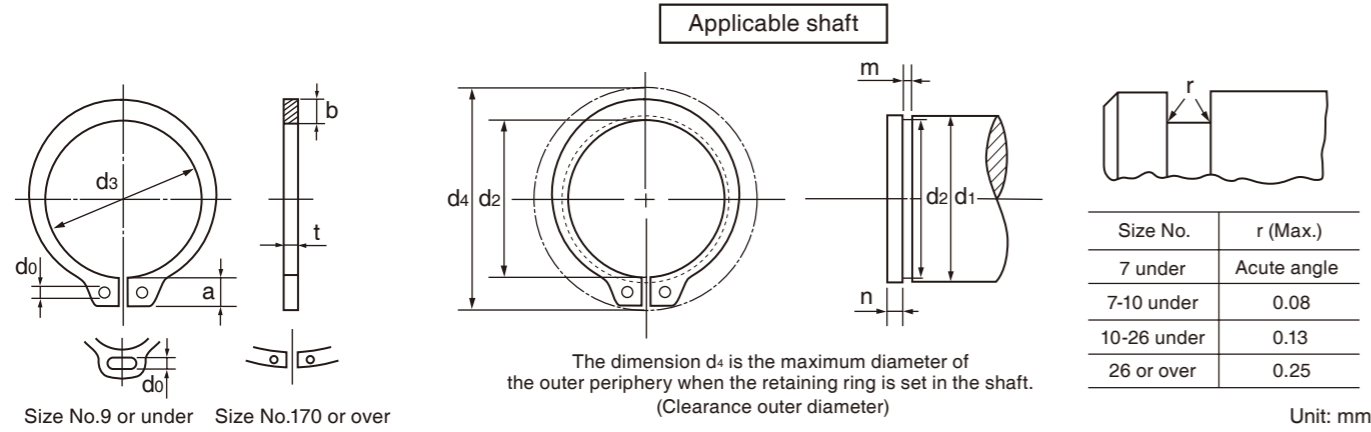
Size No.	Retaining rings							d ₄ (Ref.)	Groove dimension					Ref. n
	d ₃		t		b	a	d ₀		d ₁	d ₂		m		
	Basic	Tol.	Basic	Tol.	Approx.	Approx.	Min.			Basic	Tol.	Basic	Tol.	
RTW- 68	72.5		2.5		6	7.4	2.5	53	68	71		2.7		4.5
70	74.5	±0.45	2.5		6	7.4	2.5	55	70	73	^{+0.3} ₀	2.7		4.5
72	76.5		2.5	±0.08	6.6	7.4	2.5	57	72	75		2.7		4.5
75	79.5		2.5		6.6	7.8	2.5	59.2	75	78		2.7	^{+0.14} ₀	4.5
78	82.5		2.5		6.6	8	2.5	62	78	81		2.7		4.5
80	85.5		2.5		7	8	2.5	64	80	83.5		2.7		5.3
82	87.5		2.5		7	8	3	66	82	85.5		2.7		5.3
85	90.5		3		7	8	3	69	85	88.5		3.2		5.3
88	93.5		3		7.6	8.2	3	71	88	91.5	^{+0.35} ₀	3.2		5.3
90	95.5		3		7.6	8.3	3	73	90	93.5		3.2		5.3
92	97.5		3		8	8.3	3	74	92	95.5		3.2		5.3
95	100.5	±0.55	3		8	8.5	3	77	95	98.5		3.2		5.3
98	103.5		3		8.3	8.7	3	80	98	101.5		3.2		5.3
100	105.5		3		8.3	8.8	3	82	100	103.5		3.2	^{+0.18} ₀	5.3
102	108		4		8.9	9	3	83	102	106		4.2		6.0
105	112		4		8.9	9.1	3	86	105	109		4.2		6.0
108	115		4		8.9	9.5	3	87	108	112	^{+0.54} ₀	4.2		6.0
110	117		4		8.9	10.2	3	89	110	114		4.2		6.0
112	119		4		8.9	10.2	3	90	112	116		4.2		6.0
115	122		4		9.5	10.2	3	94	115	119		4.2		6.0
120	127	±0.65	4		9.5	10.7	3	98	120	124		4.2		6.0
125	132		4		10	10.7	3.5	103	125	129		4.2		6.0
130	137		4	±0.09	10	10.7	3.5	108	130	134		4.2		6.0
135	142		4		10.8	11	3.5	113	135	139		4.2		6.0
140	147		4		10.8	11	3.5	118	140	144		4.2		6.0
145	152		4		10.8	11	3.5	123	145	149	^{+0.63} ₀	4.2		6.0
150	158	+1.26	4		11.5	11.8	3.5	126	150	155		4.2		7.5
155	164	-0.63	4		11.5	11.8	3.5	130	155	160		4.2		7.5
160	169		4		12	12.5	3.5	134	160	165		4.2	^{+0.2} ₀	7.5
165	174.5		4		12	12.7	3.5	139	165	170		4.2		7.5
170	179.5		4		12	—	3.5	145	170	175		4.2		7.5
175	184.5		4		12.5	—	3.5	149	175	180		4.2		7.5
180	189.5		4		13	—	4	153	180	185		4.2		7.5
185	194.5		4		13.5	—	4	157	185	190		4.2		7.5
190	199.5	+1.44	4		13.5	—	4	162	190	195		4.2		7.5
195	204.5	-0.72	4		13.5	—	4	167	195	200	^{+0.72} ₀	4.2		7.5
200	209.5		4		14	—	4	171	200	205		4.2		7.5
210	222		5		14	—	4	181	210	216		5.2		9.0
220	232		5		14	—	4	191	220	226		5.2		9.0
230	242		5		14	—	4	201	230	236		5.2		9.0
240	252		5		14	—	4	211	240	246		5.2		9.0
250	262		5	±0.15	14	—	4	221	250	256		5.2	^{+0.25} ₀	9.0
260	275	+1.62	5		16	—	4	227	260	268		5.2		12.0
270	285	-0.81	5		16	—	4	237	270	278	^{+0.81} ₀	5.2		12.0
280	295		5		16	—	4	247	280	288		5.2		12.0
290	305		5		16	—	4	257	290	298		5.2		12.0
300	315		5		16	—	4	267	300	308		5.2		12.0

Material = Carbon spring steel - Up to RTW-200
 Hardness = 40 through 50HRC, Finish = Phosphate coating (ACP)
 - RTW-210 or over
 Hardness = 40 through 50HRC, Finish = Phosphate coating (ACP)

Notes
 Our products with little marketability may not be in stock. When employing our products, consult with us for their availability.

RETAINING RINGS | PUSH NUTS AND OTHERS | WAVE WASHERS AND OTHERS | SCREW TYPE PLATE NUTS | SPRING PINS | SNAP PINS | JOINT CLIPS | ASSEMBLY TOOLS

Basic External Ring [STW-3 through 56]



Size No.	Retaining rings							d4 (Ref.)	Groove dimension					Ref.n	
	d3		t		b	a	d0		d1	d2		m			
	Basic	Tol.	Basic	Tol.	Approx.	Approx.	Min.			Basic	Tol.	Basic	Tol.		Min.
STW-3	3	2.7	+0.04	0.25	±0.025	0.5	1.7	0.7	7	3	2.85	0	0.35	+0.1	0.3
4	4	3.7	-0.15	0.4	±0.03	0.9	2.2	0.8	9	4	3.8	0	0.5	0	0.3
5	5	4.7		0.6		1.1	2.4	0.8	10.5	5	4.8	-0.04	0.7	0	0.3
6	6	5.6		0.7	±0.04	1.3	2.8	1	12	6	5.7	0	0.8	0	0.5
7	7	6.5	+0.06	0.8		1.4	3	1	14	7	6.7	0	0.9		0.5
8	8	7.4	-0.2	0.8		1.6	3	1	15	8	7.6	-0.06	0.9		0.6
9	9	8.4		1		1.8	3.2	1	16	9	8.6		1.15		0.6
10	10	9.3	±0.15	1		1.8	3	1.2	17	10	9.6	-0.09	1.15		1.5
11	11	10.2		1		2	3.1	1.2	18	11	10.5		1.15		1.5
12	12	11.1		1	±0.05	2.1	3.2	1.5	19	12	11.5		1.15		1.5
13	13	12		1		2.1	3.3	1.5	20	13	12.4		1.15		1.5
14	14	12.9		1		2.2	3.4	1.7	22	14	13.4	0	1.15		1.5
15	15	13.8	±0.18	1		2.2	3.5	1.7	23	15	14.3	-0.11	1.15		1.5
16	16	14.7		1		2.2	3.6	1.7	24	16	15.2		1.15		1.5
17	17	15.7		1		2.2	3.7	1.7	25	17	16.2		1.15		1.5
18	18	16.5		1.2		2.6	3.8	1.7	26	18	17		1.35		1.5
19	19	17.5		1.2		2.7	3.8	2	27	19	18		1.35		1.5
20	20	18.5		1.2		2.7	3.9	2	28	20	19		1.35		1.5
21	21	19.5		1.2		2.7	4	2	30	21	20		1.35		1.5
22	22	20.5		1.2		2.7	4.1	2	31	22	21		1.35		1.5
23	23	21.4		1.2		2.9	4.5	2	32.5	23	22		1.35		1.5
24	24	22.2		1.2	±0.06	3.1	4.2	2	33	24	22.9	0	1.35		1.7
25	25	23.2	±0.2	1.2		3.1	4.3	2	34	25	23.9	-0.21	1.35		1.7
26	26	24.2		1.2		3.1	4.4	2	35	26	24.9		1.35	+0.14	1.7
27	27	25		1.2		3.3	4.5	2	36	27	25.8		1.35	0	1.8
28	28	25.9		1.5		3.1	4.6	2	38	28	26.6		1.65		2.1
29	29	26.9		1.5		3.5	4.7	2	39	29	27.6		1.65		2.1
30	30	27.9		1.5		3.5	4.8	2	40	30	28.6		1.65		2.1
32	32	29.6		1.5		3.5	5	2.5	43	32	30.3		1.65		2.6
34	34	31.5		1.5		4	5.3	2.5	45	34	32.3		1.65		2.6
35	35	32.2	±0.25	1.5		4	5.4	2.5	46	35	33		1.65		3
36	36	33.2		1.75		4	5.4	2.5	47	36	34		1.9		3
38	38	35.2		1.75		4.5	5.6	2.5	50	38	36		1.9		3
40	40	37		1.75		4.5	5.8	2.5	53	40	38	0	1.9		3
42	42	38.5		1.75	±0.07	4.5	6.2	2.5	55	42	39.5	-0.25	1.9		3.8
45	45	41.5		1.75		4.8	6.3	2.5	58	45	42.5		1.9		3.8
47	47	43.4	±0.4	1.75		5	6.6	2.5	61	47	44.5		1.9		3.8
48	48	44.5		1.75		4.8	6.5	2.5	62	48	45.5		1.9		3.8
50	50	45.8		2		5	6.7	2.5	64	50	47		2.2		4.5
52	52	47.8		2		5	6.8	2.5	66	52	49		2.2		4.5
55	55	50.8		2		5	7	2.5	70	55	52	0	2.2		4.5
56	56	51.8	±0.45	2		5	7	2.5	71	56	53	-0.3	2.2		4.5

Basic External Ring [STW-58 through 300]



Unit: mm

Size No.	Retaining rings							d4 (Ref.)	Groove dimension					Ref.n
	d3		t		b	a	d0		d1	d2		m		
	Basic	Tol.	Basic	Tol.	Approx.	Approx.	Min.			Basic	Tol.	Basic	Tol.	
STW-58	53.8		2		5.5	7.1	2.5	73	58	55		2.2		4.5
60	55.8		2	±0.07	5.5	7.2	2.5	75	60	57		2.2		4.5
62	57.8		2		5.5	7.2	2.5	77	62	59		2.2		4.5
63	58.8		2		5.5	7.3	2.5	78	63	60		2.2		4.5
65	60.8		2.5		6.4	7.4	2.5	81	65	62		2.7		4.5
68	63.5		2.5		6.4	7.8	2.5	84	68	65	0	2.7	+0.14	4.5
70	65.5	±0.45	2.5		6.4	7.8	2.5	86	70	67	-0.3	2.7	0	4.5
72	67.5		2.5	±0.08	7	7.9	2.5	88	72	69		2.7		4.5
75	70.5		2.5		7	7.9	2.5	92	75	72		2.7		4.5
78	73.5		2.5		7.4	8.1	2.5	95	78	75		2.7		4.5
80	74.5		2.5		7.4	8.2	2.5	97	80	76.5		2.7		5.3
82	76.5		2.5		7.4	8.3	3	99	82	78.5		2.7		5.3
85	79.5		3		8	8.4	3	103	85	81.5		3.2		5.3
88	82.5		3		8	8.6	3	106	88	84.5	0	3.2		5.3
90	84.5		3		8	8.7	3	108	90	86.5	-0.35	3.2		5.3
95	89.5		3		8.6	9.1	3	114	95	91.5		3.2		5.3
100	94.5		3		9	9.5	3	119	100	96.5		3.2	+0.18	5.3
105	98	±0.55	4		9.5	9.8	3	125	105	101		4.2		6
110	103		4		9.5	10	3	131	110	106	0	4.2		6
115	108		4		9.5	10.5	3	137	115	111	-0.54	4.2		6
120	113		4		10.3	10.9	3	143	120	116		4.2		6
125	118		4		10.3	11.3	3.5	148	125	121		4.2		6
130	123		4		11	11.5	3.5	154	130	126		4.2		6
135	128		4		11	11.5	3.5	159	135	131		4.2		6
140	133		4	±0.09	11	11.8	3.5	164	140	136		4.2		6
145	138		4		11.6	11.8	3.5	170	145	141		4.2		6
150	142		4		11.6	12.3	3.5	175	150	145	0	4.2		7.5
155	146	±0.63	4		12.2	12.7	3.5	181	155	150	-0.63	4.2		7.5
160	151	-1.26	4		12.2	12.9	3.5	186	160	155		4.2	+0.2	7.5
165	155.5		4		12.9	13.1	3.5	192	165	160		4.2	0	7.5
170	160.5		4		12.9	—	4	197	170	165		4.2		7.5
175	165.5		4		12.9	—	4	202	175	170		4.2		7.5
180	170.5		4		13.5	—	4	208	180	175		4.2		7.5
185	175.5		4		13.5	—	4	213	185	180		4.2		7.5
190	180.5		4		14	—	4	219	190	185		4.2		7.5
195	185.5		4		14	—	4	224	195	190		4.2		7.5
200	190.5		4		14	—	4	229	200	195		4.2		7.5
210	198	±0.72	5		14	—	4	239	210	204	0	5.2		9
220	208	-1.44	5		14	—	4	249	220	214	-0.72	5.2		9
230	218		5		14	—	4	259	230	224		5.2		9
240	228		5		14	—	4	269	240	234		5.2		9
250	238		5	±0.15	14	—	4	279	250	244		5.2	+0.25	9
260	245		5		16	—	4	293	260	252		5.2	0	12
270	255		5		16	—	4	303	270	262	0	5.2		12
280	265	±0.81	5		16	—	4	313	280	272	-0.81	5.2		12
290	275	-1.62	5		16	—	4	323	290	282		5.2		12
300	285		5		16	—	4	333	300	292		5.2		12

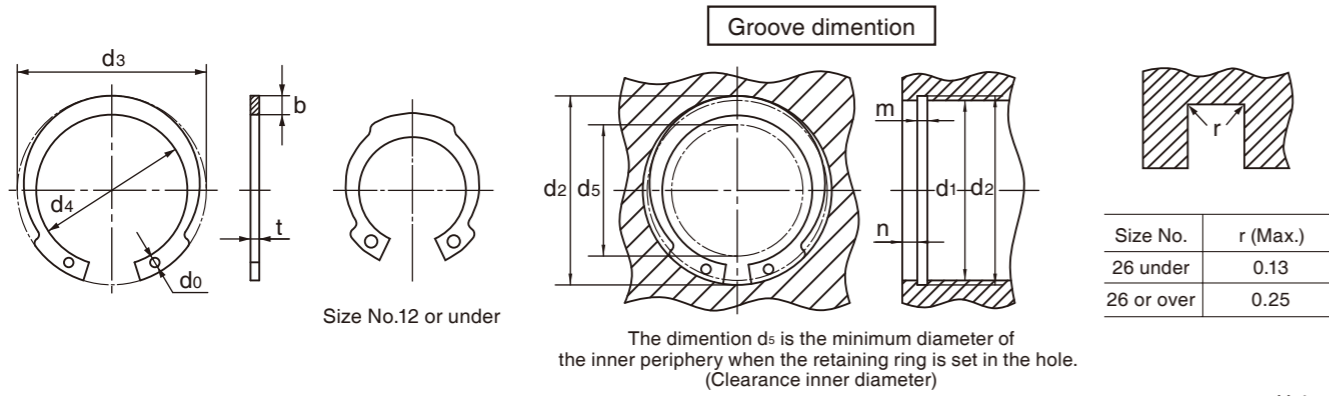
Material = Carbon spring steel

- Up to STW200
- Hardness = 40 through 50HRC, Finish = Phosphate coating (ACP)
- STW-210 or over
- Hardness = 40 through 50HRC, Finish = Phosphate coating (ACP)

Instructions

Our products with little marketability may not be in stock. When employing our products, consult with us for their availability.

Inverted Internal Ring



The dimension d_5 is the minimum diameter of the inner periphery when the retaining ring is set in the hole. (Clearance inner diameter)

Unit: mm

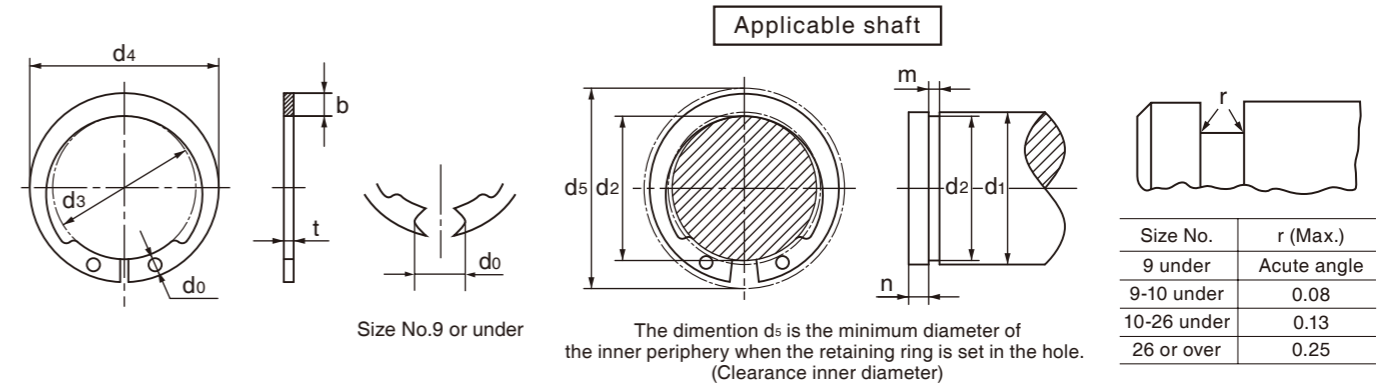
Size No.	Retaining rings						Groove dimension							
	d_3		d_4 (Ref.)	t		b	d_0	Tol.	d_5	d_1	d_2		m	n
	Basic	Tol.		Basic	Tol.						Basic	Tol.		
IRTW-10	11.1		7.7	1		1.7	0.9		5.9	10	10.4	1.15		1.5
11	12.2		8.6	1		1.8	0.9		6.6	11	11.4	1.15		1.5
12	13.3		9.7	1		1.8	0.9		7.6	12	12.5	1.15		1.5
13	14.1	± 0.18	10.9	1		1.6	0.9		9	13	13.6	1.15	$+0.11$	1.5
14	15.1		11.7	1		1.7	0.9		9.8	14	14.6	1.15	0	1.5
15	16.2		12.6	1		1.8	0.9	± 0.3	10.6	15	15.7	1.15		1.5
16	17.3		13.5	1	± 0.05	1.9	0.9		11.4	16	16.8	1.15		1.5
17	18.3		14.3	1		2	0.9		12.2	17	17.8	1.15		1.5
18	19.5		15.3	1		2.1	1		13	18	19	1.15		1.5
19	20.5		16.1	1		2.2	1		13.8	19	20	1.15		1.5
20	21.5		16.9	1		2.3	1		14.5	20	21	1.15		1.5
21	22.5	± 0.2	17.7	1		2.4	1.2		15	21	22	1.15	$+0.21$	1.5
22	23.5		18.7	1		2.4	1.2		16	22	23	1.15	0	1.5
24	25.9		20.7	1.2		2.6	1.2		17.5	24	25.2	1.35		1.8
25	26.9		21.5	1.2		2.7	1.2		18.5	25	26.2	1.35		1.8
26	27.9		22.3	1.2		2.8	1.2		19	26	27.2	1.35		1.8
28	30.1		24.1	1.2		3	1.2		20.5	28	29.4	1.35		2.1
30	32.1		25.7	1.2		3.2	1.4	± 0.4	22.5	30	31.4	1.35		2.1
32	34.4		27.4	1.2	± 0.06	3.5	1.6		23.5	32	33.7	1.35		2.55
34	36.5	± 0.25	29.1	1.5		3.7	1.6		25	34	35.7	1.65		2.55
35	37.8		30	1.5		3.9	1.6		26	35	37	1.65	$+0.14$	3
36	38.8		30.8	1.5		4	1.6		26.5	36	38	1.65	0	3
37	39.8		31.6	1.5		4.1	1.6		27.5	37	39	1.65	$+0.25$	3
38	40.8		32.4	1.5		4.2	1.6		28	38	40	1.65	0	3
40	43.5		34.7	1.75		4.4	2		30	40	42.5	1.9		3.75
42	45.5	± 0.4	36.3	1.75		4.6	2		31	42	44.5	1.9		3.75
45	48.5		38.9	1.75		4.8	2		33	45	47.5	1.9		3.75
47	50.5		40.7	1.75		4.9	2		35	47	49.5	1.9		3.75
48	51.5		41.5	1.75		5	2		36	48	50.5	1.9		3.75
50	54.2		44	2	± 0.07	5.1	2.2		38	50	53	2.2		4.5
52	56.2		45.8	2		5.2	2.2		40	52	55	2.2		4.5
55	59.2		48	2		5.6	2.2	± 0.5	42	55	58	2.2		4.5
56	60.2		48.8	2		5.7	2.5		43	56	59	2.2		4.5
58	62.2	± 0.45	50.4	2		5.9	2.5		44	58	61	2.2	$+0.3$	4.5
60	64.2		52	2		6.1	2.5		46	60	63	2.2	0	4.5
62	66.2		53.6	2		6.3	2.8		47	62	65	2.2		4.5
65	69.2		55.8	2.5		6.7	3.2		49	65	68	2.7		4.5
68	72.5		58.5	2.5		7	3.2		52	68	71	2.7		4.5
72	76.5		61.7	2.5	± 0.08	7.4	3.2		55	72	75	2.7		4.5
75	79.5		63.9	2.5		7.8	3.2		57	75	78	2.7		4.5
78	82.5		66.3	2.5		8.1	3.2		59	78	81	2.7		4.5
80	85.5		68.9	2.5		8.3	3.2	± 0.7	61	80	83.5	2.7		5.25
85	90.5	± 0.55	72.7	3		8.9	4		64	85	88.5	3.2	$+0.35$	5.25
90	95.5		76.7	3	± 0.09	9.4	4		68	90	93.5	3.2	0	5.25
100	105.5		84.5	3		10.5	4		76	100	103.5	3.2	0	5.25

Material = Carbon spring steel Hardness = 40 through 50HRC, Finish = Phosphate coating (ACP)

Notes

- Size Nos. IRTW-56 or over are available on a production by order basis.
- Our products with little marketability may not be in stock. When employing our products, consult with us for their availability.

Inverted External Ring



The dimension d_5 is the minimum diameter of the inner periphery when the retaining ring is set in the hole. (Clearance inner diameter)

Unit: mm

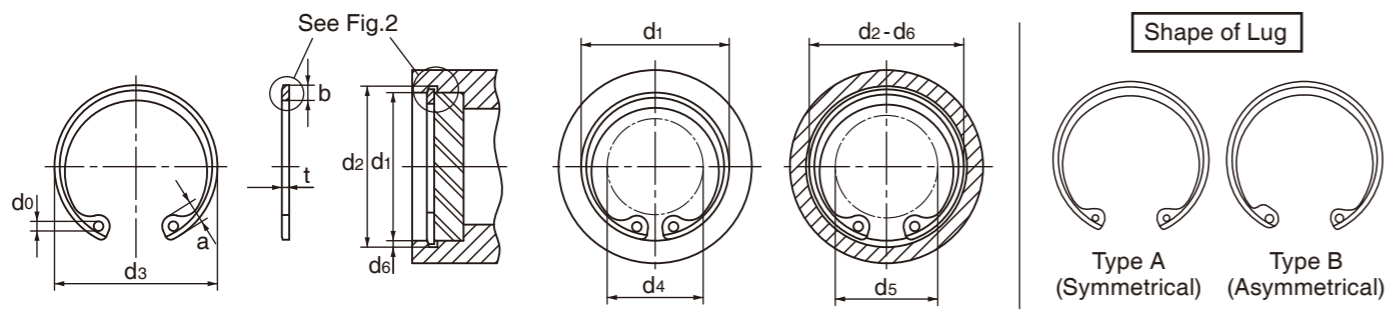
Size No.	Retaining rings						Groove dimension								
	d_3		d_4 (Ref.)	t		b	d_0	Tol.	d_5	d_1	d_2		m	n	
	Basic	Tol.		Basic	Tol.						Basic	Tol.			Basic
ISTW- 6	5.6		8	0.5	± 0.03	1.2	2.2		8.9	6	5.7	0		1.5	
7	6.5	$+0.1$	9.3	0.6		1.4	2.6		10	7	6.7	-0.04	0.6	$+0.1$	1.5
8	7.4	-0.2	10.6	0.7	± 0.04	1.6	3	± 0.2	12	8	7.6	0	0.8	0	1.5
9	8.4		12	0.8		1.8	3.4		13	9	8.6	-0.06	0.95		1.5
10	9.3		13.3	1		2	1.2		15	10	9.6	-0.09	1.15		1.5
11	10.2	± 0.15	14.4	1		2.1	1.2		16	11	10.5		1.15		1.5
12	11.1		15.5	1		2.2	1.2		17	12	11.5		1.15		1.5
13	12		16.6	1	± 0.05	2.3	1.2		18	13	12.4		1.15		1.5
14	12.9		17.5	1		2.3	1.2		19	14	13.4	0	1.15		1.5
15	13.8	± 0.18	18.6	1		2.4	1.2	± 0.3	21	15	14.3	-0.11	1.15		1.5
16	14.7		19.7	1		2.5	1.2		22	16	15.2		1.15		1.5
17	15.7		20.9	1		2.6	1.2		23	17	16.2		1.15		1.5
18	16.5		21.9	1.2		2.7	1.5		24	18	17		1.35		1.5
19	17.5		23.1	1.2		2.8	1.5		25	19	18		1.35		1.5
20	18.5		24.3	1.2		2.9	1.5		27	20	19		1.35		1.5
21	19.5		25.5	1.2		3	1.5		28	21	20		1.35		1.5
22	20.5		26.5	1.2		3	1.5		29	22	21		1.35		1.5
24	22.2		28.6	1.2		3.2	1.5		32	24	22.9	0	1.35		1.7
25	23.2	± 0.2	29.8	1.2	± 0.06	3.3	1.5		33	25	23.9	-0.21	1.35		1.7
26	24.2		31	1.2		3.4	1.5		34	26	24.9		1.35		1.7
28	25.9		33.1	1.5		3.6	1.8		37	28	26.6		1.65		2.1
30	27.9		35.3	1.5		3.7	1.8	± 0.4	39	30	28.6		1.65	$+0.14$	2.1
32	29.6		37.4	1.5		3.9	1.8		41	32	30.3		1.65	0	2.6
34	31.5		39.7	1.5		4.1	1.8		44	34	32.3		1.65		2.6
35	32.2	± 0.25	40.6	1.5		4.2	1.8		45	35	33		1.65		3
36	33.2		41.6	1.75		4.2	2		46	36	34		1.9		3
38	35.2		44	1.75		4.4	2		48	38	36		1.9		3
40	37		46.2	1.75		4.6	2		51	40	38	0	1.9		3
42	38.5	± 0.4	48.1	1.75		4.8	2		54	42	39.5	-0.25	1.9		3.8
45	41.5		51.3	1.75		4.9	2		57	45	42.5		1.9		3.8
48	44.5		55.1	1.75		5.3	2		61	48	45.5		1.9		3.8
50	45.8		56.8	2	± 0.07	5.5	2.5		63	50	47		2.2		4.5
52	47.8		59	2		5.6	2.5		65	52	49		2.2		4.5
55	50.8		62.6	2		5.9	2.5	± 0.5	69	55	52		2.2		4.5
58	53.8		66	2		6.1	2.5		72	58	55		2.2		4.5
60	55.8		68.4	2		6.3	2.5		75	60	57		2.2		4.5
62	57.8		70.8	2		6.5	2.5		77	62	59		2.2		4.5
63	58.8	± 0.45	72	2		6.6	2.5		78	63	60	0	2.2		4.5
65	60.8		74.4	2.5		6.8	3		81	65	62	-0.3	2.7		4.5
68	63.5		77.5	2.5		7	3		84	68	65		2.7		4.5
70	65.5		79.9	2.5	± 0.08	7.2	3		87	70	67		2.7		4.5
75	70.5		85.7	2.5		7.6	3		92	75	72		2.7		4.5
80	74.5		90.5	2.5		8	3	± 0.7	98	80	76.5		2.7		5.3

Material = Carbon spring steel Hardness = 40 through 50HRC, Finish = Phosphate coating (ACP)

Notes

- Size Nos. IRTW-56 or over are available on a production by order basis.
- Our products with little marketability may not be in stock. When employing our products, consult with us for their availability.

Beveled Internal Ring



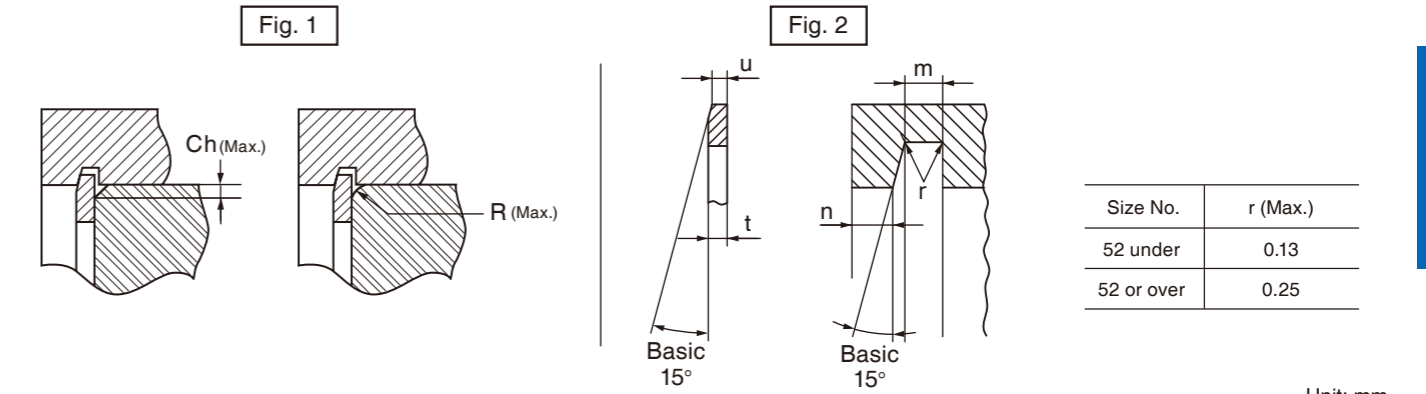
Unit: mm

Size No.	Retaining rings								Shape of Lug	Groove dimension						
	d ₃		t		u		a	b		d ₀	d ₁	d ₂		m		d ₆
	Basic	Tol.	Basic	Tol.	Basic	Tol.						Basic	Tol.	Basic	Tol.	
MT-26	28.9	+0.4 -0.25	1	±0.05	0.84	±0.025	4	2.7	1.5	B	26	28	+0.08 0	0.9	1	1
28	31.1		1.3		1.02		4.6	2.95	1.9	B	28	30.1		1.1	+0.1	1.05
30	33.4	+0.65	1.3	±0.06	1.02		4.6	3.05	1.9	B	30	32.1	+0.1	1.1	0	1.05
32	35.35	-0.5	1.3		0.99		4.6	3.15	1.9	A	32	34.3	0	1.1		1.15
35	38.75		1.3		0.97	±0.03	4.6	3.3	1.9	B	35	37.5		1.1		1.25
40	44.25		1.6		1.22		5.1	4	1.9	B	40	42.8		1.3		1.4
42	46.6	+0.9	1.6	±0.08	1.19		5.75	4.25	1.93	A	42	45	+0.13 0	1.3	+0.15	1.5
47	52.15	-0.65	1.6		1.17		5.94	4.3	2.31	B	47	50.4	0	1.3	0	1.7
52	57.9	+1.0 -0.75	2	±0.07	1.52	±0.04	6.4	4.7	2.3	B	52	55.7	+0.15	1.6		1.85
80	89.1	±1.4	2.77		2.1	±0.06	7.9	6.65	3.2	A	80	85.9	0	2.3		2.95

Material = Carbon spring steel Hardness = 44 through 52HRC, Finish = Phosphate coating (ACP)

Notes

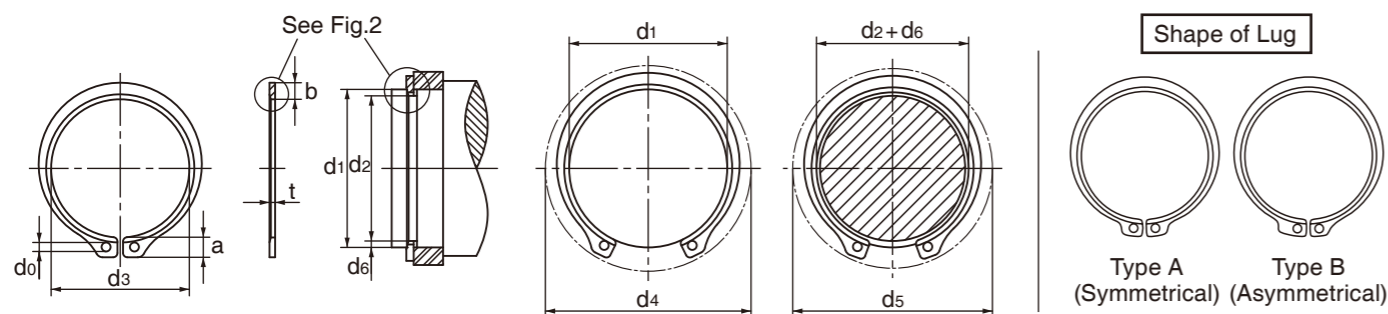
Our products with little marketability may not be in stock. When employing our products, consult with us for their availability.



Unit: mm

Size No.	Data					
	Clearance diameter		Maximum allowable corner radii and chamfers of retained parts (Fig. 1)		Take-up (End-play Take-up)	n (Min.)
	When sprung into d ₁	When sprung into d ₂ (d ₆ /2)	R (Max.)	Ch (Max.)		
MT-26	17.4	18.4	1	0.8	0.13	1.6
28	18.2	19.2	1	0.8	0.14	1.6
30	20	21	1	0.8	0.14	1.7
32	22	23.1	1	0.8	0.15	1.9
35	25	26.2	1	0.8	0.16	2.1
40	29.2	30.4	1.6	1.3	0.18	2.3
42	29.7	30.9	1.6	1.3	0.2	2.6
47	34.3	36	1.6	1.3	0.22	2.8
52	38.6	40.3	2	1.6	0.24	3.1
80	63	66	2.5	2	0.39	4.4

Beveled External Ring



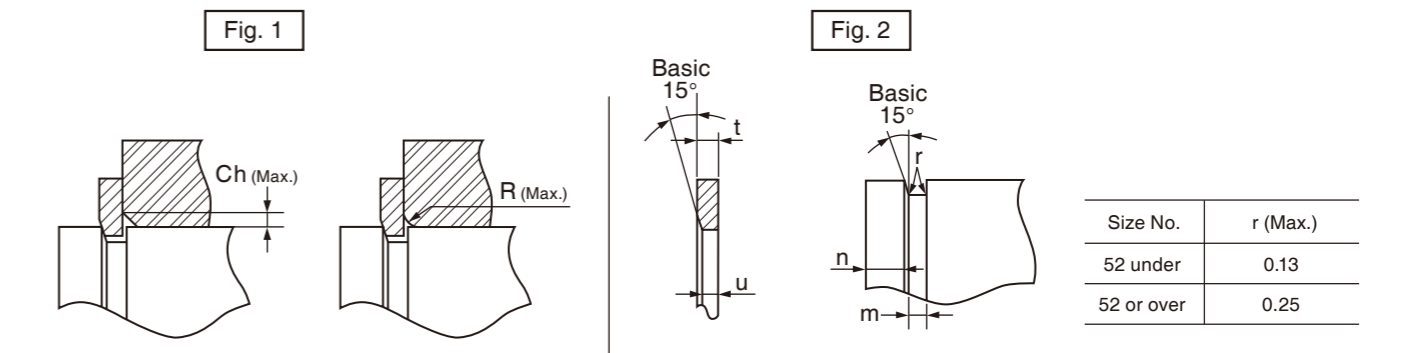
Unit: mm

Size No.	Retaining rings								Shape of Lug	Applicable shaft						
	d ₃		t		u		a	b		d ₀	d ₁	d ₂		m		d ₆
	Basic	Tol.	Basic	Tol.	Basic	Tol.						Basic	Tol.			
NT-30	27.9	+0.25	1.3	±0.06	1.04		4.9	3.3	1.9	B	30	28.15	0	1.1	+0.1	0.93
35	32.3	-0.4	1.3		0.99	±0.03	4.6	3.9	1.9	B	35	32.55	-0.1	1.1	0	1.23
50	46.2	+0.35 -0.5	1.6	±0.08	1.19		6.2	5.1	3.12	B	50	46.8	0	1.3	+0.15	1.6
60	55.8	+0.35 -0.65	2		1.52	±0.04	6.75	5.7	3.12	A	60	56.2	-0.15	1.7	0	1.9

Material = Carbon spring steel Hardness = 44 through 52HRC, Finish = Phosphate coating (ACP)

Notes

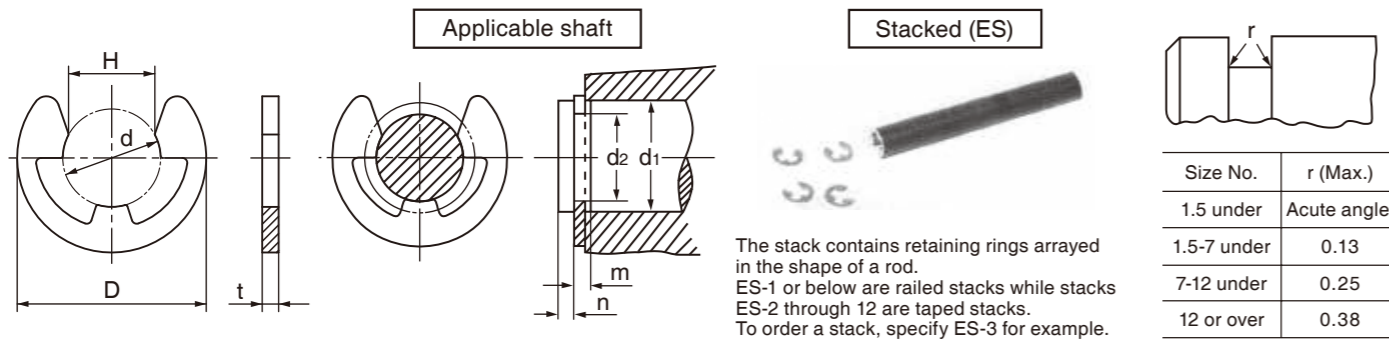
Our products with little marketability may not be in stock. When employing our products, consult with us for their availability.



Unit: mm

Size No.	Data					
	Clearance diameter		Maximum allowable corner radii and chamfers of retained parts (Fig. 1)		Take-up (End-play Take-up)	n (Min.)
	When sprung into d ₁	When sprung into d ₂ (d ₆ /2)	R (Max.)	Ch (Max.)		
NT-30	40.8	39.8	1.6	1	0.12	1.6
35	45.9	44.6	1.8	1.1	0.16	1.8
50	64.4	63.0	2	1.2	0.21	2.6
60	76.3	74.7	2.5	1.5	0.25	3.1

E-Ring



Unit: mm

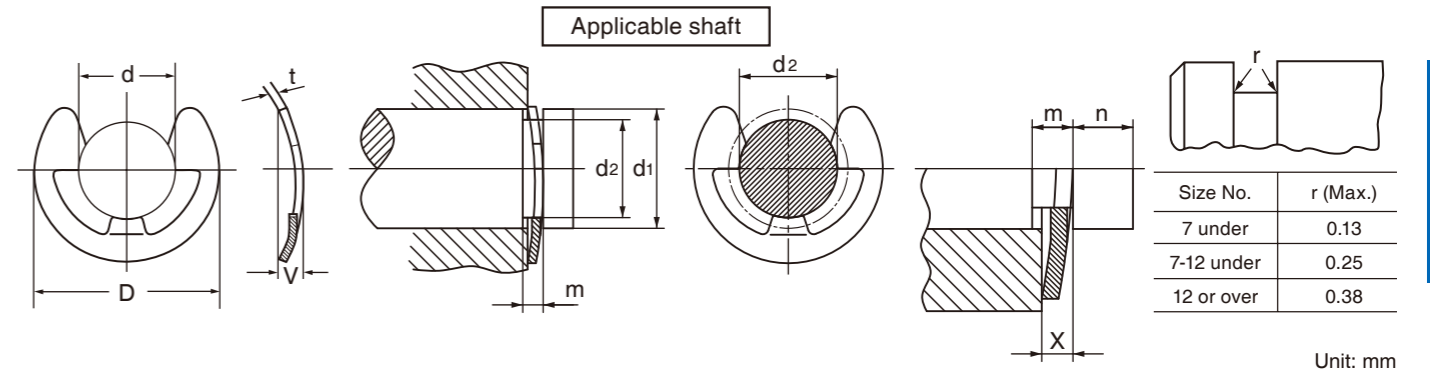
Size No.	Retaining rings								Applicable shaft								
	d		D		H		t		Class of d ₁		d ₂		m		n		
	Basic	Tol.	Basic	Tol.	Basic	Tol.	Basic	Tol.	Or over	Under	Basic	Tol.	Basic	Tol.	Min.	Max.	
ETW- 0.6	0.6	±0.02	1.5		0.45	±0.02	0.2		0.8	1	0.65		0.3		0.4		
0.7	0.67	0	2	±0.1	0.55	-0.1	0.2	±0.02	0.9	1.2	0.7	+0.05	0.3	0	0.4		
0.8	0.8	-0.08	2		0.7	0	0.2		1	1.4	0.82		0.3		0.4		
1	0.98		2.8	±0.1	0.88		0.2	±0.025	1.3	1.7	1	+0.05	0.3	0	0.5		
1.2	1.2		3		1	0	0.3		1.4	2	1.23		0.4		0.6		
1.5	1.5		4	±0.1	1.3	0	0.4	±0.03	2	2.5	1.53	+0.06	0.5	0	0.8		
1.9	1.9	0	4.5		1.7	-0.25	0.4		2.5	3	1.93		0.5		1		
2	2	-0.09	5	±0.1	1.7		0.4	±0.03	2.5	3.2	2.05	+0.06	0.5	0	1		
2.3	2.3		6		2	0	0.4		3	4	2.35		0.5		1		
2.5	2.5		6	±0.2	2.1		0.4	±0.04	3.2	4	2.55	+0.075	0.5	0	1		
3	3		7		2.6	0	0.6		4	5	3.05		0.7		1		
3.2	3.2		7	±0.2	2.8		0.6	±0.04	4	5	3.25	+0.075	0.7	0	1.2		
4	4	0	9		3.5	0	0.6		5	7	4.05		0.7		1.2		
5	5	-0.12	11	±0.2	4.3	-0.3	0.6	±0.04	6	8	5.05	+0.09	0.7	0	1.2		
6	6		12		5.2	0	0.8		7	9	6.05		0.9		1.2		
7	7		14	±0.2	6.1		0.8	±0.05	8	11	7.1	+0.09	0.9	0	1.5		
8	8	0	16		6.9	0	0.8		9	12	8.1		0.9		1.8		
9	9	-0.15	18	±0.2	7.8	-0.35	0.8	±0.05	10	14	9.1	+0.11	0.9	0	2		
10	10		20		8.7	0	1		11	15	10.15		1.15		2		
12	12	0	23	±0.3	10.4		1	±0.06	13	18	12.15	+0.14	1.15	0	2.5		
15	15	-0.18	29		13	0	1.5		16	24	15.15		1.65		3		
19	19	0	37	±0.3	16.5	-0.45	1.5	±0.07	20	31	19.15	+0.13	1.65	0	3.5		
24	24	-0.21	44		20.8	-0.5	2		25	38	24.15		2.2		4		

Material = Carbon spring steel Hardness = 44 through 53HRC, Finish =Zinc Plate plus Chromate Phosphate coating (ACP)
 Material = Stainless steel for spring

Notes

- ETW is bulk in small bags, ES is stacked.
- The stack packages for the E Ring include 3 types of stacks according to the size and material.
 - The package for ES-0.6 to ES-1 is stacked in a rail.
 - The package for ES-1.2 to ES-12 is stacked with paper tape.
 - The stainless package consists of rings of up to 10 dia. stacked with vinyl tape.
 - When requesting stack products, specify them.
- Our products with little marketability may not be in stock. When employing our products, consult with us for their availability.

Bowed E-Ring



Unit: mm

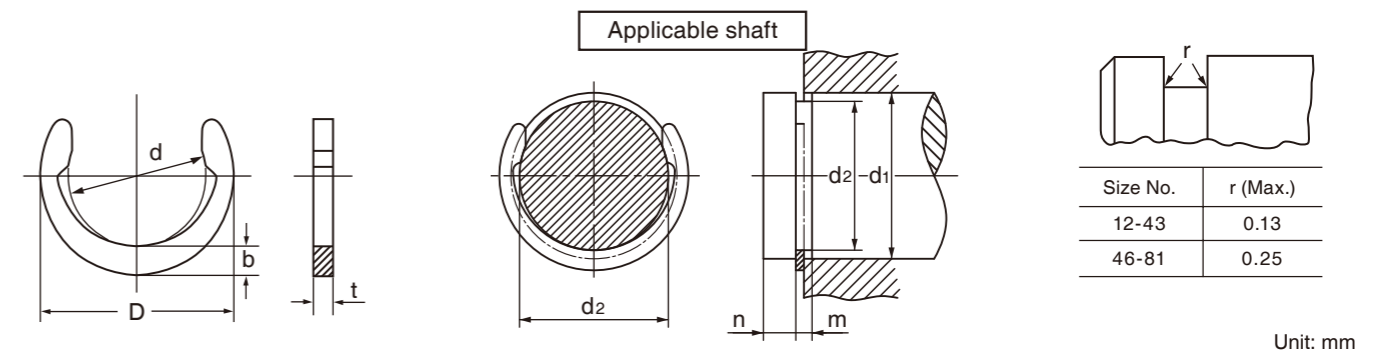
Size No.	Retaining rings						Applicable shaft											
	d		D		t		V		d ₁		d ₂		m		X		n	
	Basic	Tol.	Basic	Tol.	Basic	Tol.	Basic	Tol.	Min.	Max.	Basic	Tol.	Basic	Tol.	Min.	Max.	Min.	Max.
BETW- 1.5	1.5		4		0.4		0.8		2	2.5	1.53		0.8		0.55	0.65	0.8	
2	2		5		0.4		0.8	+0.15	2.5	3.2	2.05	+0.06	0.8		0.55	0.65	1	
2.5	2.5		6		0.4		0.8	-0.1	3.2	4	2.55	0	0.8		0.55	0.65	1	
3	3		7		0.6		1.1		4	5	3.05		1.1		0.85	1	1	
4	4		9		0.6		1.1	+0.25	5	7	4.05		1.1		0.85	1	1.2	
5	5		11		0.6		1.1	0	6	8	5.05	+0.075	1.1	+0.1	0.85	1	1.2	
6	6		12		0.8		1.3		7	9	6.05	0	1.3		0	1	1.2	1.2
7	7		14		0.8		1.3		8	11	7.1		1.3		1	1.2	1.5	
8	8		16		0.8		1.3	+0.4	9	12	8.1	+0.09	1.3		1	1.2	1.8	
9	9		18		0.8		1.3	0	10	14	9.1	0	1.3		1	1.2	2	
10	10		20		1		1.7		11	15	10.15		1.7		1.3	1.6	2	
12	12		23		1		1.7		13	18	12.15	+0.11	1.7		1.3	1.6	2.5	
15	15		29		1.5		2.3	+0.6	16	24	15.15	0	2.3		1.8	2.2	3	

Material = Carbon spring steel Hardness = 40 through 50HRC, Finish =Zinc Plate plus Chromate

Notes

Our products with little marketability may not be in stock. When employing our products, consult with us for their availability.

C-Ring



Unit: mm

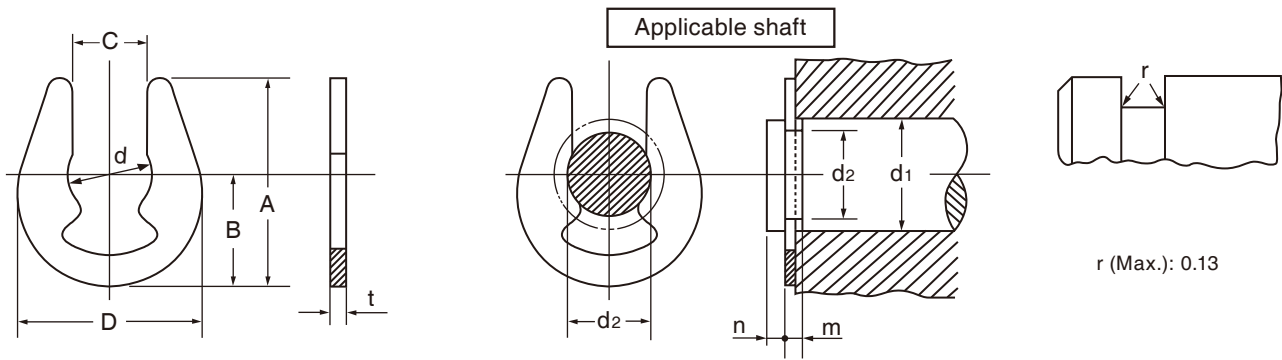
Size No.	Retaining rings						Applicable shaft							
	d		D		t		d ₁		d ₂		m		n	
	Basic	Tol.	Basic	Tol.	Basic	Tol.	Basic	Tol.	Basic	Tol.	Basic	Tol.	Min.	Max.
5103- 12	2.59	+0.05	4.17	0.79	0.4		3.2	2.69		0.48	+0.04	0.8		
18	4.09	-0.1	6.19	1.05	0.4	±0.03	4.8	4.19	±0.04	0.48	0	0.9		
21	4.75		6.99	1.12	0.6		5.6	4.9		0.7		1.1		
25	5.36		7.9	1.27	0.6	±0.04	6.4	5.59	±0.05	0.7		1.2		
31	6.86	+0.07	9.56	1.35	0.6		7.9	7.01		0.7	±0.06	1.3		
37	8.33	-0.13	11.37	1.52	0.6	±0.05	9.5	8.51	±0.07	0.7		0	1.5	
40	9.12		12.32	1.6	0.6		10.3	9.25		0.7		1.6		
43	9.8		13.1	1.65	0.6	±0.05	11.1	9.98	±0.07	0.7		1.7		
46	10.54		14	1.73	0.6		11.9	10.69		0.7		1.8		
50	11.2		14.76	1.78	0.9	±0.05	12.7	11.43	±0.07	1		1.9		
56	12.62	±0.15	16.56	1.98	0.9		14.3	12.88		1	±0.08	2.1		
81	18.31	±0.18	23.23	2.46	1.4	±0.06	20.6	18.59	1.5	0		3		

Material = Carbon spring steel Hardness = 44 through 52HRC, Finish =Zinc Plate plus Chromate

Notes

- Our products with little marketability may not be in stock. When employing our products, consult with us for their availability.
- When requesting stack products, specify them.(5103-81 available only as a bulk package)

U-Ring



Unit: mm

Size No.	Retaining rings								Applicable shaft							
	d		A	D	C		B	t		Class of d ₁		d ₂		m		n (Min.)
	Basic	Tol.			Basic	Tol.		Basic	Tol.	Or over	Under	Basic	Tol.	Basic	Tol.	
UTW- 3.2	3.2		8.7	8	2.8		4.6	0.6		4	5	3.26		0.7		1
4	4	+0.03	10	9	3.6	0	5.3	0.7	±0.04	5	7	4.08	+0.05	0.8	+0.1 0	1.4
5	5	-0.1	12.8	11.6	4.4	-0.2	6.8	0.7		6	8	5.1	0	0.8		1.4
6	6	+0.05	14.8	13.5	5.3	0	8	0.7	7	9	6.1	+0.08	0.8	1.4		
7	7	-0.15	17	15	6.2	-0.3	9	0.9	±0.05	8	11	7.1	0	1	1.4	
8	8	+0.05 -0.2	19.5	17.5	7.1		10.5	1		9	12	8.1		1.1	1.4	

Material = Carbon spring steel Hardness = 44 through 52HRC, Finish = Phosphate coating (ACP)

Notes

1. Our products with little marketability may not be in stock. When employing our products, consult with us for their availability.
2. It will be packaged in small bags or stack packaging.