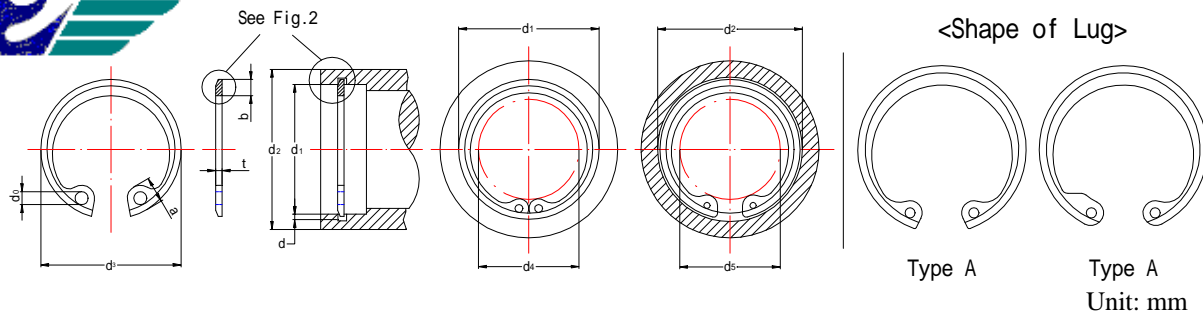




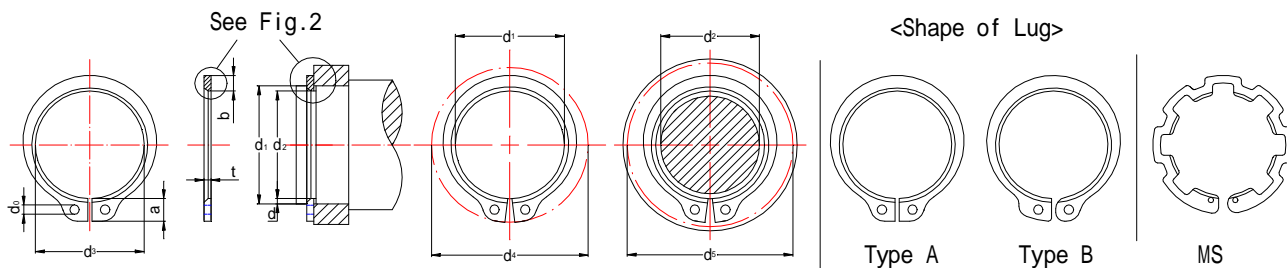
Beveled Retaining Rings (Internal)



Size-No.	Ring dimension										Groove dimension						
	d3		t		U		a	b	d0	Shape of Lug	d1	d2			m		d
	Max.	Min.	Max.	Min.	Max.	Min.						Max.	Min.	T.I.R	Max.	Min.	
MT-31011	35.05	33.9	1.32	1.22	1.05	0.99	4.6	3.1	1.9	B	31	33.3	33.2	0.13	1.2	1.1	1.1
32011	35.2	34.45	1.45	1.35	1.05	1.00	6.5	3.55	2.0	B	32	33.8	33.7	0.13	1.25	1.15	0.85
35011	38.6	37.6	1.55	1.45	1.12	1.07	5.2	3.5	2.5	A	35	37.1	37	0.13	1.35	1.25	1.0
35012	39.3	38.55	1.55	1.45	1.12	1.07	6.5	3.85	2.0	B	35	37.7	37.5	0.13	1.35	1.25	1.3
1 40011	44.4	43.6	2.08	1.92	1.55	1.45	5.7	4.2	2.5	A	40	42.4	42.3	0.13	1.85	1.7	1.15
40012	45.15	43.4	1.68	1.52	1.25	1.19	5.1	4	1.9	B	40	42.93	42.8	0.13	1.45	1.3	1.4
50511	57.7	56.15	1.68	1.52	1.13	1.07	6.5	4.5	2.5	B	50.5	55.06	54.94	0.15	1.45	1.3	2.25
54011	60.7	58.95	2.06	1.90	1.56	1.48	6.6	5	2.3	A	54	58.05	57.9	0.15	1.69	1.65	1.95
55001	59.65	58.75	2.06	1.94	1.4	1.3	6.5	5.1	2.5	A	55	58.15	58	0.15	1.85	1.7	1.5
85001	96.24	93.44	2.85	2.69	2.14	2.02	8.69	7.01	3.13	A	84.15	91.36	91.21	0.15	2.31	2.26	3.53
88912	100.2	97.4	2.84	2.70	2.14	2.02	8.69	7.34	3.17	A	88.925	95.66	95.5	0.2	2.31	2.26	3.33
90011	101.4	98.6	2.85	2.69	2.14	2.02	8.7	7.4	3.1	A	89.95	96.75	96.6	0.2	2.31	2.26	3.33
95011	107.25	103.95	2.84	2.70	2.14	2.02	8.69	7.85	3.17	A	95.25	102.15	102	0.2	2.31	2.26	3.37
98011	110.65	107.35	2.85	2.69	2.14	2.02	9.4	8.1	3.1	A	98.4	106.09	105.94	0.2	2.31	2.26	3.77
254011	279.66	275.08	4.88	4.62	3.59	3.43	18.67	17.15	4.44	A	254.05	273.2	273	0.2	3.92	3.87	9.48

1: Bevel-Angle 20°

Beveled Retaining Rings (External)



Size-No.	Ring dimension										Groove dimension						
	d3		t		U		a	b	d0	Shape of Lug	d1	d2			m		d
	Max.	Min.	Max.	Min.	Max.	Min.						Max.	Min.	T.I.R	Max.	Min.	
MS-30013	25.7	25	1.33	1.21	0.99	0.93	4.9		1.95	B	30	26.6	26	0.13	1.15	1.05	1.7
NT-32011	29.5	28.8	1.32	1.22	1.04	0.99	4.6	3.56	1.95	B	32	30.3	30.05	0.13	1.2	1.1	0.85
35011	32.45	31.95	1.32	1.22	1.02	0.96	5.4	4.2	2	B	35	33	32.75	0.13	1.2	1.1	1.0
38011	35.2	34.7	1.81	1.69	1.35	1.29	4.5	4.5	1.8	B	38	36	35.75	0.13	1.65	1.5	1.0
40011	37.4	36.6	1.81	1.69	1.27	1.21	5.7	4.5	2.5	B	40	38	37.75	0.13	1.65	1.5	1.0
40012	37.4	36.6	1.81	1.69	1.15	1.09	5	4.5	1.9	B	40	38	37.75	0.13	1.65	1.5	1.0
41011	38.2	37.4	2.07	1.93	1.55	1.49	6.1	5.2	2.3	A	41	39	38.75	0.13	1.85	1.7	1.0
42011	38.8	38.1	1.68	1.52	1.25	1.19	4.6	4.6	1.95	B	42	39.5	39.25	0.13	1.45	1.3	1.25
45011	41.9	41.1	1.67	1.53	1.25	1.19	6.3	4.8	2.5	A	45	42.5	42.25	0.13	1.65	1.5	1.25
45013	40.35	39.5	1.82	1.68	1.15	1.09	6	5.5	2.5	B	45	42.5	42.25	0.13	1.45	1.3	1.25
50001	46.2	45.4	2.06	1.94	1.45	1.39	6.7	5	2.5	A	50	47	46.75	0.13	1.85	1.7	1.5
50011	46.2	45.4	1.81	1.69	1.24	1.15	6.7	5	2.5	A	50	47	46.75	0.13	1.65	1.5	1.5

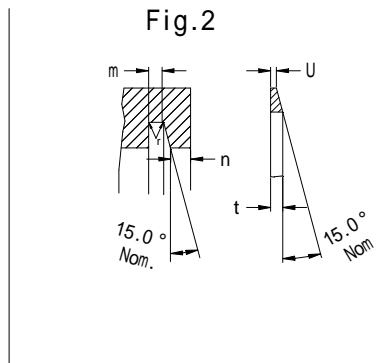
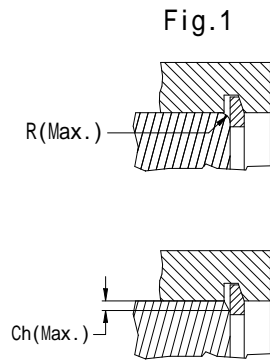
Unit: mm

Material=Carbon spring steel. Hardness=HRC44~52. Finish=Black phosphate coating (ACP),Zn plating chromate dip.

Note: The data of thrust load shows the value when the ring is tested by the shaft or the bore made of cold rolled steel.

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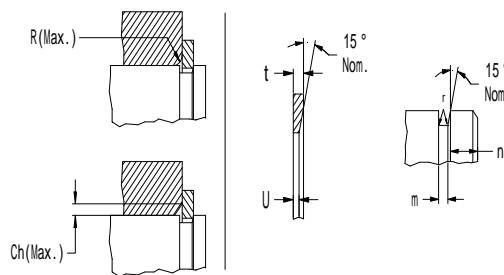
Size-No.	r(Max.)
50 Under	0.12
52 Above	0.25

Unit: mm

Size-No.	DATA							
	Clearance diameter		Allowable thrust load Sharp corner abutment		Maximum allowable Corner radii and Chamfers of Retained parts (Fig.1)		Rinid end-play take-up	n (Min.)
	When sprung into d1	When sprung into d2(d/2)	Rings (standard material) Safety Factor=4	Grooves (gold roled steel bores and housings) Safety Factor=2	R(Max.)	Ch(Max.)		
	d4	d2(d/2)	Pr(kgf)	Pg(kgf)				
MT-31011	21	22.1	3,900	1,000	1.0	0.8	0.15	1.65
32011	18.2	19	4,450	800	1.0	0.8	0.12	1.3
35011	23.8	24.8	5,200	1,000	1.0	0.8	0.14	1.5
35012	21.2	22.5	5,200	1,350	1.0	0.8	0.18	1.7
1 40011	27.8	28.9	7,900	1,350	1.6	1.3	0.16	1.8
40012	29	30.4	6,300	1,650	1.6	1.3	0.19	2.1
50511	36.7	38.9	8,000	3,350	2.0	1.6	0.30	3.4
54011	40	41.9	8,550	3,100	2.0	1.6	0.26	3.0
55001	41.2	42.7	10,900	2,450	2.0	1.6	0.20	2.3
85001	65.8	69.3	23,400	8,900	2.5	2.0	0.48	5.3
88912	70.5	73.8	24,450	8,800	2.5	2.0	0.45	5.0
90011	71.5	74.8	24,750	8,900	2.5	2.0	0.45	5.0
95011	76.8	80.1	26,150	9,550	2.5	2.0	0.46	5.1
98011	76.8	82.5	26,950	11,000	2.5	2.0	0.51	5.7
254011	215	224	119,900	71,750	2.5	2.0	1.27	14.3

Fig.1

Fig.2



Size-No.	r(Max.)
50 Under	0.12
52 Above	0.25

Unit: mm

Size-No.	DATA							
	Clearance diameter		Allowable thrust load Sharp corner abutment		Maximum allowable Corner radii and Chamfers of Retained parts (Fig.1)		Rinid end-play take-up	n (Min.)
	When sprung into d1	When sprung into d2(d/2)	Rings (standard material) Safety Factor=4	Grooves (gold roled steel bores and housings) Safety Factor=2	R(Max.)	Ch(Max.)		
	d4	d2(d/2)	Pr(kgf)	Pg(kgf)				
MS-30013	41	39.1	1,550	375			0.23	2.55
NT-32011	42.8	42	3,350	650	1.8	1.1	0.12	1.4
35011	47.5	48.5	3,650	850	2.0	1.2	0.11	1.3
38011	49.2	50.2	5,500	900	2.0	1.2	0.13	1.5
40011	53.3	54.3	5,750	950	2.0	1.2	0.13	1.5
40012	51.9	52.9	5,750	950	2.0	1.2	0.13	1.5
41011	56.1	57.1	6,750	1,000	2.0	1.2	0.13	1.5
42011	53.4	54.7	5,550	1,300	2.0	1.2	0.17	1.9
45011	60.4	61.7	5,950	1,350	2.0	1.2	0.17	1.9
45013	60.4	61.7	6,500	1,350	2.0	1.2	0.17	1.9
50001	66.2	67.7	8,250	1,850	2.0	1.2	0.2	2.25
500611	66.2	67.7	7,250	1,850	2.0	1.2	0.2	2.25

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