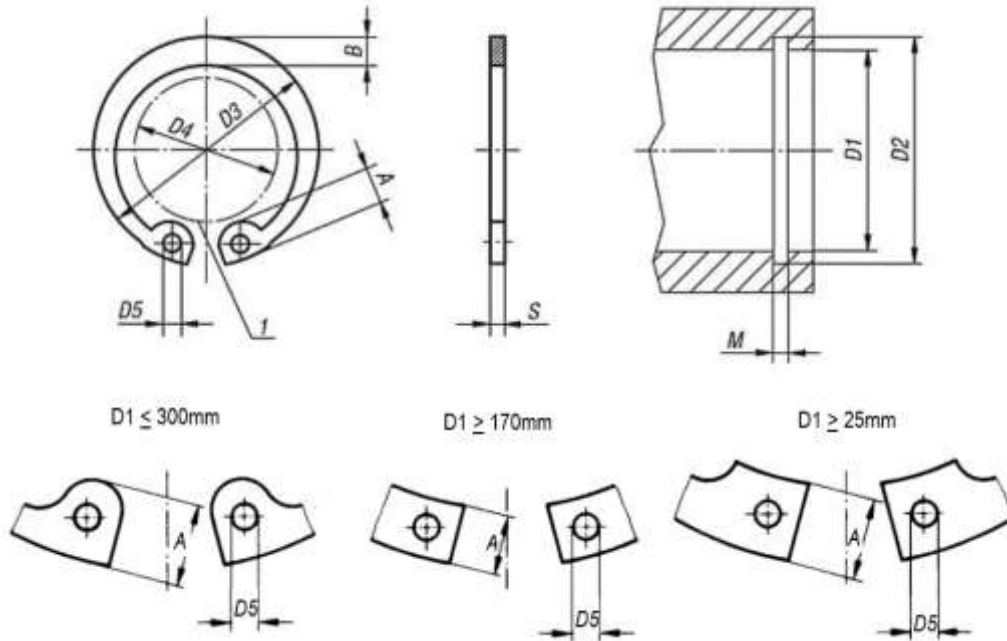


# Metric DIN 472 Internal Retaining Rings for Bores

Visit our [online store](#) for product availability



Dimensions of Metric DIN 472 Retaining Rings

All measurements are in mm

Shaft dia		Clip						Groove					Supplementary data							
d1	s	d3		a	b	d5	weight kg/1000pcs	d2		m	t	n	d4	FN	FR	g	FRg	Nominal size of pliers per DIN 5254		
Nominal size	per. dev.	per. dev.	max.	approx.	min.	per. dev.		H13	min.	kN	kN	kN								
8	0.8	0	8.7	-0.1	2.4	1.1	1	0.14	8.4	0	0.9	0.2	0.6	3	0.86	2	1		1.5	8
		-0.05								(H11)										
9	0.8		9.8		2.5	1.3	1	0.15	9.4	0.11	0.9	0.2	0.6	3.7	0.96	2	1	1.5		

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measurements are in mm

Shaft dia		Clip						Groove				Supplementary data							
d1	s	d3		a	b	d5	weight kg/1000pcs	d2		m	t	n	d4	FN	FR	g	FRg	Nominal size of pliers per DIN 5254	
Nominal size			per. dev.	max.	approx.	min.			per. dev.	H13		min.			kN		kN		
10	1	0	10.8		3.2	1.4	1.2	0.18	10.4	0	1.1	0.2	0.6	3.3	1.08	4	1		2.2
11	1	-0.06	11.8		3.3	1.5	1.2	0.31	11.4	(H11)	1.1	0.2	0.6	4.1	1.17	4	1	2.3	
12	1		13		3.4	1.7	1.5	0.37	12.5		1.1	0.3	0.8	4.9	16	4	1	2.3	
13	1		14.1		3.6	1.8	1.5	0.42	13.6		1.1	0.3	0.9	5.4	2.1	4.2	1	2.3	
14	1		15.1		3.7	1.9	1.7	0.52	14.6		1.1	0.3	0.9	6.2	2.25	4.5	1	23	
15	1		16.2		3.7	2	1.7	0.56	15.7		1.1	0.4	1.1	7.2	2.8	5	1	2.3	
16	1		17.3		3.8	2	1.7	0.6	16.8		1.1	0.4	1.2	8	3.4	5.5	1	2.6	
17	1		18.3	0.42	3.9	2.1	1.7	0.65	17.8		1.1	0.4	1.2	8.8	3.6	6	1	2.5	
18	1		19.5	-0.13	4.1	2.2	2	0.74	19	0.13	1.1	0.5	1.5	9.4	4.8	6.5	1	2.6	
19	1		20.5		4.1	2.2	2	0.83	20	0	1.1	0.5	1.5	10.4	5.1	6.8	1	2.5	19
20	1		21.5		4.2	2.3	2	0.9	21	(H11)	1.1	0.5	1.5	11.2	5.4	7.2	1	2.5	
21	1		22.5		4.2	2.4	2	1	22		1.1	0.5	1.5	12.2	5.7	7.6	1	2.6	
22	1		23.5		4.2	2.5	2	1.1	23		1.1	0.5	1.5	13.2	5.9	8	1	2.7	
24	1.2		25.9	0.42	4.4	2.6	2	1.42	25.2	0.21	1.3	0.6	1.8	14.8	7.7	13.9	1	4.6	
25	1.2		26.9	-0.21	4.5	2.7	2	1.5	26.2	0	1.3	0.6	1.8	15.5	8	14.6	1	4.7	
26	1.2		27.9		4.7	2.8	2	1.6	27.2	(H12)	1.3	0.6	1.8	16.1	8.4	13.9	1	4.6	
28	1.2		30.1	0.5	4.8	2.9	2	1.8	29.4		1.3	0.7	2.1	17.9	10.5	13.3	1	4.5	
30	1.2		32.1	-0.25	4.8	3	2	20.6	31.4	0.25	1.3	0.7	2.1	19.9	11.3	137	1	4.6	
31	1.2		33.4		5.2	3.2	2.5	2.1	32.7	0	1.3	0.9	2.6	20	14.1	13.8	1	4.7	
32	1.2		34.4		5.4	3.2	2.5	2.21	33.7	(H12)	1.3	0.9	2.6	20.6	14.6	13.8	1	4.7	
34	1.5		36.5		5.4	3.3	2.5	3.2	35.7		1.6	0.9	2.6	22.6	15.4	26.2	2	6.3	

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All measurements are in mm

Shaft dia		Clip						Groove				Supplementary data						
d1	s	d3		a	b	d5	weight kg/1000pcs	d2		m	t	n	d4	FN	FR	g	FRg	Nominal size of pliers per DIN 5254
Nominal size	per. dev.	per. dev.	max.	approx.	min.	per. dev.		H13	min.	kN	kN	kN						
35	1.5		37.8	5.4	3.4	2.5	3.54	37		1.6	1	3	23.6	18.8	26.9	2	6.4	
36	1.5		38.8	5.4	3.5	2.5	3.7	38		1.6	1	3	24.6	19.4	26.4	2	6.4	
37	1.5		39.8	5.5	3.6	2.5	3.74	39		1.6	1	3	25.4	19.8	27.1	2	6.5	
38	1.5		40.8	5.5	3.7	2.5	3.9	40		1.6	1	3	26.4	22.5	28.2	2	6.7	
40	1.8		43.5	5.8	3.9	2.5	4.7	42.5		1.9	1.3	3.8	27.8	27	44.6	2	8.3	40
42	1.8		45.5	5.9	4.1	2.5	5.4	44.5		1.9	1.3	3.8	29.6	28.4	44.7	2	8.4	
45	1.8		48.5	6.2	4.3	2.5	6	47.5		1.9	1.3	3.8	32	30.2	43.1	2	8.2	
47	1.8		50.5	6.4	4.4	2.5	6.1	49.5		1.9	1.3	3.8	33.5	31.4	43.5	2	8.3	
48	1.8		51.5	6.4	4.5	2.5	6.7	50.5	0.3	1.9	1.3	3.8	34.5	32	43.2	2	8.4	
50	2	0	54.2	6.5	4.6	2.5	7.3	53	0	2.2	1.5	4.5	36.3	40.5	60.8	2	12	
52	2	-0.07	26.2	6.7	4.7	2.5	8.2	55	(H12)	2.2	1.5	4.5	37.9	42	60.3	2	12	
55	2		29.2	6.8	5	2.5	8.3	58		2.2	1.5	4.5	40.7	44.4	60.3	2	13	
56	2		60.2	6.8	5.1	2.5	8.7	59		2.2	1.5	4.5	41.7	45.2	60.3	2	13	
58	2		62.2	6.9	5.2	2.5	10.5	61		2.2	1.5	4.5	43.5	46.7	60.8	2	13	
60	2		64.2	7.3	5.4	2.5	11.1	63		2.2	1.5	4.5	44.7	48.3	61	2	13	
62	2		66.2	7.3	5.5	2.5	11.2	65		2.2	1.5	4.5	46.7	49.8	60.9	2	13	
63	2		67.2	7.3	5.6	2.5	12.4	66		2.2	1.5	4.5	47.7	50.6	60.8	2	13	
65	2.5		69.2	7.6	5.8	3	14.3	68		2.7	1.5	4.5	49	51.8	121	3	21	
68	2.5		72.5	7.8	6.1	3	16	71		2.7	1.5	4.5	51.6	54.5	122	3	21	
70	2.5		74.5	7.8	6.2	3	16.5	73		2.7	1.5	4.5	53.6	56.3	119	3	21	

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measurements are in mm

Shaft dia		Clip						Groove						Supplementary data					
d1	s	d3		a	b	d5	weight kg/1000pcs	d2		m	t	n	d4	FN	FR	g	FRg	Nominal size of pliers per DIN 5254	
Nominal size	per. dev.	per. dev.	max.	approx.	min.	per. dev.		H13	min.	kN	kN	kN							
72	2.5		76.6	7.8	6.4	3	18.1	75		2.7	1.5	4.5	55.6	58	119	3	21		40
75	2.5		79.5	7.8	6.6	3	18.8	78		2.7	1.5	4.5	58.6	60	118	3	21		
78	2.5		82.5	1.3	8.5	6.8	3	20.4	81	0.35	2.7	1.5	4.5	60.1	62.3	123	3	22	
80	2.5		85.5	-0.54	8.5	7	3	22	83.5	0	2.7	1.8	5.3	62.1	74.6	121	3	22	
82	3		87.5		8.5	7	3	24	85.5	(H13)	2.7	1.8	5.3	64.1	76.6	119	3	21	
85	3	0	90.5		8.6	7.2	3.5	25.3	88.5		3.2	1.8	5.3	66.9	79.5	201	3	31	85
88	3	-0.08	93.5		8.6	7.4	3.5	28	91.5		3.2	1.8	5.3	69.9	82.1	209	3	33	
90	3		95.6		8.6	7.6	3.5	31	93.5		3.2	1.8	5.3	71.9	84	199	3	31	
92	3		97.5		8.7	7.8	3.5	32	95.5		3.2	1.8	5.3	73.7	85.8	201	3	32	
95	3		101		8.8	8.1	3.5	35	98.5		3.2	1.8	5.3	76.5	88.6	195	3	31	
98	3		104		9	8.3	3.5	37	102		3.2	1.8	5.3	79	91.3	191	3	31	
100	3		106		9.2	8.4	3.5	38	104		3.2	1.8	5.3	80.6	93.1	188	3	31	
102	4	0	108		9.5	8.5	3.5	55	106	0.54	4.2	2	6	82	109	439	3	73	
105	4	-0.1	112		9.5	8.7	3.5	56	109	0	4.2	2	6	85	112	436	3	73	
108	4		115		9.5	8.9	3.5	60	112	(H13)	4.2	2	6	88	115	419	3	71	
110	4		117		10.4	9	3.5	64.5	114		4.2	2	6	88.2	117	415	3	71	
112	4		119		10.5	9.1	3.5	72	116		4.2	2	6	90	119	418	3	72	
115	4		122	1.5	10.5	9.3	3.5	74.5	119		4.2	2	6	93	122	409	3	71	
120	4		127	-0.63	11	9.7	3.5	77	124	0.63	4.2	2	6	96.9	127	396	3	70	
125	4		132		11	10	4	79	129	0	4.2	2	6	102	132	385	3	70	125
130	4		137		11	10.2	4	82	134	(H13)	4.2	2	6	107	138	374	3	69	

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Shaft dia		Clip						Groove						Supplementary data					
d1	s	d3		a	b	d5	weight kg/1000pcs	d2		m	t	n	d4	FN	FR	g	FRg	Nominal size of pliers per DIN 5254	
Nominal size		per. dev.	per. dev.	max.	approx.	min.		per. dev.	H13		min.			kN	kN		kN		
135	4		142	11.2	10.5	4	84	139		4.2	2	6	112	143	358	3	67		125
140	4		147	11.2	10.7	4	87.5	144		4.2	2	6	117	148	350	3	67		
145	4		152	11.4	10.9	4	93	149		4.2	2	6	121	153	336	3	65		
150	4		158	12	11.2	4	105	155		4.2	2.5	7.5	125	191	326	3	64		
155	4		164	12	11.4	4	107	160		4.2	2.5	7.5	130	206	324	4	55		
160	4		169	13	11.6	4	110	165		4.2	2.5	7.5	133	212	321	4	55		
165	4		175	13	11.8	4	125	170		4.2	2.5	7.5	138	219	319	4	54		
170	4		180	13.5	12.2	4	140	175		4.2	2.5	7.5	142	225	349	4	59		
175	4		185	1.7	13.5	12.7	4	150	180		4.2	2.5	7.5	147	232	351	4	59	
180	4		190	-0.72	14.2	13.2	4	165	185	0.72	4.2	2.5	7.5	150	238	347	4	59	
185	4		195		14.2	13.7	4	170	190	0	4.2	2.5	7.5	155	245	349	4	59	
190	4		200		14.2	13.8	4	175	195	(H13)	4.2	2.5	7.5	160	251	340	4	58	
195	4		205		14.2	13.8	4	183	200		4.2	2.5	7.5	165	258	330	4	56	
200	4		210		14.2	14	4	195	205		4.2	2.5	7.5	170	265	325	4	55	
210	5	0	222		14.2	14	4	270	216		5.2	3	9	180	333	601	4	90	
220	5	-0.12	232		14.2	14	4	315	226		5.2	3	9	190	349	574	4	85	
230	5		242		14.2	14	4	330	236		5.2	3	9	200	365	549	4	81	
240	5		252	2	14.2	14	4	345	246		5.2	3	9	210	380	525	4	78	
250	5		262	-0.81	14.2	14	4	360	256		5.2	3	9	220	396	504	4	75	
260	5		275		16.2	16	5	375	268	0.81	5.2	4	12	226	553	538	4	80	
270	5		285		16.2	16	5	388	278	0	5.2	4	12	236	573	518	4	77	

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Shaft dia		Clip						Groove				Supplementary data						
d1	s	d3		a	b	d5	weight kg/1000pcs	d2	m	t	n	d4	FN	FR	g	FRg	Nominal size of pliers per DIN 5254	
Nominal size	per. dev.	per. dev.	max.	approx.	min.	per. dev.		H13	min.	kN	kN		kN					
280	5		295	16.2	16	5	400	288	(H13)	5.2	4	12	246	593	499	4		74
290	5		305	16.2	16	5	415	298		5.2	4	12	256	615	482	4	72	
300	5		315	16.2	16	5	435	308		5.2	4	12	266	636	466	4	69	

Metric DIN 472 Internal Retaining Rings (aka circlips) are thin, circular, metal stampings that are used to prevent movement between mating components. The internal design is in order axial assembly into machined grooves in housings and bores They function to reduce vibration and maintain proper position of two parts in an assembly and permit easy disassembly of the components by removing the retaining ring. The tapered section design allows for uniform circular deformation and even contact with the surface in the groove. Aspen Fasteners offers one of the most complete ranges of metric retaining rings and other inch and metric industrial fasteners for immediate delivery from stock. The following sizes of metric DIN 472 Retaining Rings are available for immediate shipping from stock: Diameters ranging from M3 to M120 in A2 stainless steel. View parts by clicking on the following link: Metric DIN 472 Retaining Rings: [DIN 472 Retaining Rings](#)

DIN (Deutsches Institut für Normung - German Institute for Standardization) standards are issued for a variety of components including industrial fasteners as metric DIN 472 Retaining Rings. The DIN standards remain common in Germany. Europe and globally even though the transition to ISO standards is taking place. DIN standards continue to be used for parts which do not have ISO equivalents or for which there is no need for standardization like DIN 472 Retaining Rings.

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**1) Mechanical properties of stainless steel for metric DIN 472 Retaining Rings**

Stainless steels can be divided into three groups of steel - austenitic, ferritic and martensitic. Austenitic steel is by far the most common type (>90% of commercial fasteners). The steel groups and strength classes are designated by a four-digit sequence of letters and numbers (eg A2-70) as shown in the following table. DIN EN ISO 3506 governs screws and nuts made from stainless steel.

Steel group	Steel grade	Strength class	Screws, Nuts and Bolts			
			Tensile strength N/mm <sup>2</sup>	Tensile strength PSI	Dia range	Nut Load N/mm <sup>2</sup>
Austenitic	A2 and A4	50	500	70.000	<=M39	500
		70	700	100.000	<=M20	700
		80	800	118.000	<=M20	800

The tensile stress is calculated with reference to the tensile stress area (see DIN EN ISO 3506-1979). Nuts to be paired with same grade of stainless steel screws

Steel group	Property Strength class	Made From	Characteristics
Austenitic	50	A1, A2	Soft; cold worked, turned and soft pressed fasteners
	70	A2, A4	Cold worked, normal strength formed fasteners
	80	A2, A4	Extreme cold worked, high strength, special

**2) Chemical composition of stainless steel metric DIN 472 Retaining Rings**

Grade	USA Grade	Material designation	Material no.	C %	Si ≤ %	Mn ≤ %	Cr %	Mo %	Ni %
<b>A 2</b>	<b>304</b>	X 5Cr Ni 1810	1.4301	≤ 0.07	1.0	2.0	17.5 to	-	8.0 to
		X 2 Cr Ni 1811	1.4306	≤ 0.03	1.0	2.0	18.0 to	-	1.0 to
		X 8 Cr Ni 19/10	1.4303	≤ 0.07	1.0	2.0	17.0 to	-	11.0 to
<b>A 4</b>	<b>316</b>	X 5 Cr Ni Mo 1712	1.4401	≤ 0.07	1.0	2.0	16.5 to	2.0 to	10.0 to
		X 2 Cr Ni Mo 1712	1.4404	≤ 0.03	1.0	2.0	16.5 to	2.0 to	1.0 to

**3) Chemical composition of steel metric DIN 472 Retaining Rings**

PROPERTY CLASS	MATERIAL AND TREATMENT	CHEMICAL COMPOSITION LIMITS %				TEMPERING TEMP °C MIN.
		C		P	S	
		min.	max.	max.	max.	
4.6. 4.8. 5.8. 6.8	Low or medium carbon steel	-	0.55	0.05	0.06	-
8.8	Medium carbon steel quenched. tempered	0.25	0.55	0.04	0.05	425
9.8	Medium carbon steel quenched. tempered	0.25	0.55	0.04	0.05	425
10.9	Medium carbon steel additives e.g. boron. Mn. Cr or Alloy steel - quenched. tempered	0.20	0.55	0.04	0.05	425
12.9	Alloy steel - quenched. tempered	0.20	0.50	0.035	0.035	380



#### 4) Mechanical properties of steel for metric DIN 472 Retaining Rings

MECHANICAL PROPERTY		PROPERTY CLASS									
		4.8	5.6	5.8	6.8	8.8		9.8	10.9	12.9	
						Up to	Over				
Tensile Strength	nom.	400	500		600	800		900	100	120	
	min.	420	500	520	600	800	830	900	104	122	
Vickers Hardness	min.	130	155	160	190	250	255	290	320	385	
	max.	250				320	336	360	380	435	
Brinell Hardness	min.	124	147	152	181	319	242	266	295	353	
	max.	238				385	319	342	363	412	
Rockwell Hardness	min.	71	79	82	89	-					
	HRC	-	-	-	-	20	23	28	32	39	
	HR	95				99	-				
	max.	-	-	-	-	32	34	37	39	44	
Yield Stress ReL	nom.	320	300	400	480	-					
	min.	340	300	420	480	-					
Stress at permanent set	nom.	-				640		720	900	108	
	min.	-				640	660	720	940	110	

#### Disclaimer

Dimensional data and technical information for metric DIN 472 Retaining Rings was obtained from publicly available sources and not acquired through standards agencies. It has been completed and compiled for reference purposes only; where discrepancies are found they are subject to change without notice. Aspen Fasteners makes no warranties or representations regarding the accuracy and validity of the compiled information and data. Contact the relevant standards authorities for accurate and detailed information.