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Westfield Fasteners Product Specification:

DIN 471 - External Circlip

This product guide contains the specification for external circlips to the standard DIN 471. These circlips are standard parts available from Westfield Fasteners.

Product Description

An external circlip is also known as a retaining ring for shafts.

External circlips offer a strong grip and reduce the chance of slipping. They are often used in assemblies that are subject to strong centrifugal forces or high rotational speeds.

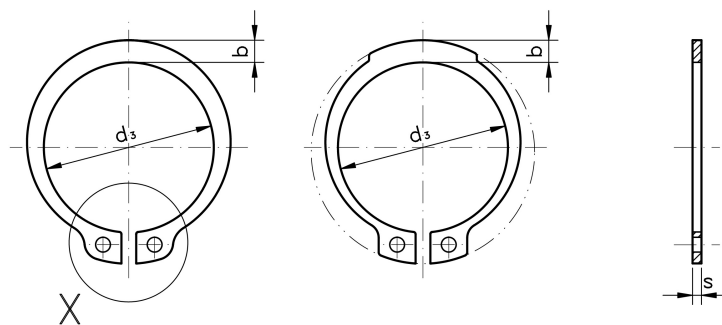
Scope of the DIN Standard.

DIN 471 gives the requirements for the design of the retaining rings and for the grooves into which they are fitted. The drawings of the rings are for illustrative purposes only. The standard gives dimensions and tolerances for the important details, but other shaping of the rings is left up to the manufacturer.

These external circlips/retaining rings for shafts are used to hold components or assemblies, such as bearings and other parts that will rotate around the shaft.

Made from a spring or stainless steel, retaining rings are assembled using pliers conforming to DIN 5254, or can be located using tapers.

Shape of ring at manufacturer's discretion



Detail X

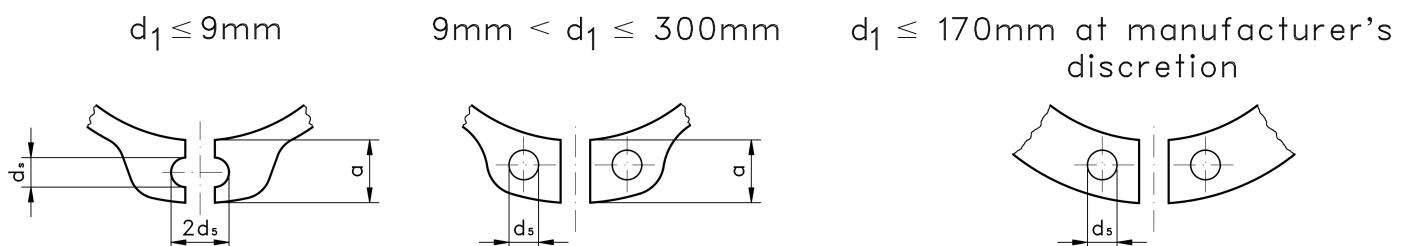


Figure 1: External Circlip, General Layout

Example of installation

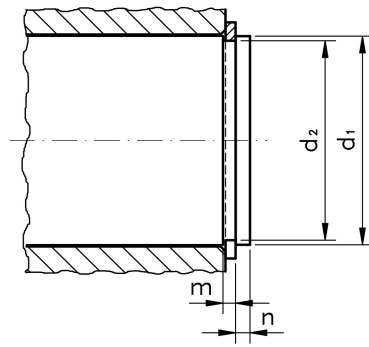


Figure 2: External Circlip, Sectional View of Fitment

Table 1: Dimensions & Tolerances according to DIN 471 (mm)

Shaft Diameter		Ring						Groove					
d_1	S		d_3	a	b	d_5	Mass per 1000 unit in kg	d_2	m	t	n_4		
Nom	-	perm. dev.	- perm. dev.	max	=	min	=	-	per. dev. H13	-	min		
3	0.4	0/-0.05	2.7	1.9	0.8	1.0	0.017	2.8	0/-0.04	0.5	0.10	0.3	
4	0.4		+0.04/-0.15	3.7	2.2	0.9	1.0	0.022		3.8	0.5	0.10	0.3
5	0.6			4.7	2.5	1.1	1.0	0.066		4.8	0/-0.05	0.7	0.10
6	0.7		5.6	2.7	1.3	1.2	0.084	5.7	0.8	0.15		0.5	
7	0.8		6.5	+0.06/-0.18	3.1	1.4	1.2	0.121	6.7	0/-0.06	0.9	0.15	0.5
8	0.8		7.4		3.2	1.5	1.2	0.158	7.6		0.9	0.20	0.6
9	1.0	0/-0.06	8.4	3.3	1.7	1.2	0.300	8.6	0/-0.11	1.1	0.20	0.6	
10	1.0		9.3	3.3	1.8	1.5	0.340	9.6		1.1	0.20	0.6	
11	1.0		10.2	3.3	1.8	1.5	0.410	10.5		1.1	0.25	0.8	
12	1.0		11.0	3.3	1.8	1.7	0.500	11.5		1.1	0.25	0.8	
13	1.0		11.9	3.4	2.0	1.7	0.530	12.4		1.1	0.30	0.9	
14	1.0		12.9	+0.10/-0.36	3.5	2.1	1.7	0.640		13.4	1.1	0.30	0.9
15	1.0		13.8		3.6	2.2	1.7	0.670		14.3	1.1	0.35	1.1
16	1.0		14.7		3.7	2.2	1.7	0.700		15.2	1.1	0.40	1.2
17	1.0		15.7		3.8	2.3	1.7	0.820		16.2	1.1	0.40	1.2
18	1.20		16.5	3.9	2.4	2.0	1.110	17.0		1.30	0.50	1.5	
19	1.20		17.5	3.9	2.5	2.0	1.220	18.0		1.30	0.50	1.5	
20	1.20		18.5	+0.13/-0.42	4.0	2.6	2.0	1.300		19.0	0/-0.13	1.30	0.50
21	1.20	19.5	4.1		2.7	2.0	1.420	20.0	1.30	0.50		1.5	
22	1.20	20.5	4.2		2.8	2.0	1.500	21.0	1.30	0.50		1.5	
23	-	-	-	-	-	-	-	-	-	-	-		
24	1.20	22.2	+0.21/-0.42	4.4	3.0	2.0	1.770	22.9	0/-0.21	1.30	0.55	1.7	
25	1.20	23.2		4.4	3.0	2.0	1.900	23.9		1.30	0.55	1.7	
26	1.20	24.2		4.5	3.1	2.0	1.960	24.9		1.30	0.55	1.7	
27	-	-		-	-	-	-	-		-	-	-	-
28	1.50	25.9		4.7	3.2	2.0	2.920	26.6		1.60	0.70	2.1	
29	1.50	26.9		4.8	3.4	2.0	3.200	27.6		1.60	0.70	2.1	
30	1.50	27.9	5.0	3.5	2.0	3.310	28.6	1.60	0.70	2.1			

Table 2: Dimensions & Tolerances according to DIN 471 (mm), cont.

Shaft Diameter		Ring						Groove						
d ₁	S		d ₃	a	b	d ₅	Mass per 1000 unit in kg	d ₂	m	t	n			
Nom	-	perm. dev.	- perm. dev.	max	=	min	=	-	per. dev. H13	-	min			
30	1.50	0/-0.06	27.9	+0.21/-0.42	5.0	3.5	2.0	3.31	28.6	0/-0.21	1.60	0.70	2.1	
32	1.50		29.6		5.2	3.6	2.5	3.54	30.3		1.60	0.85	2.6	
34	1.50		31.5		5.4	3.8	2.5	3.80	32.3		1.60	0.85	2.6	
35	1.50		32.2	+0.25/-0.5	5.6	3.9	2.5	4.00	33.0		1.60	1.00	3.0	
36	1.75		33.2		5.6	4.0	2.5	5.00	34.0		1.85	1.00	3.0	
37	-		-		-	-	-	-	-		-	-	-	-
38	1.75		35.2		5.8	4.2	2.5	5.62	36.0		1.85	1.00	3.0	
39	-		-	-	-	-	-	-	-		-	-	-	-
40	1.75		36.5	+0.39/-0.9	6.0	4.4	2.5	6.03	37.5		0/-0.25	1.85	1.25	3.8
42	1.75		38.5		6.5	4.5	2.5	6.50	39.5			1.85	1.25	3.8
44	-	-	-		-	-	-	-	-	-		-	-	
45	1.75	41.5	6.7		4.7	2.5	7.50	42.5	1.85	1.25		3.8		
46	-	-	-		-	-	-	-	-	-		-	-	
47	-	-	-		-	-	-	-	-	-		-	-	
48	1.75	44.5	6.9		5.0	2.5	7.90	45.5	1.85	1.25		3.8		
50	2.0	45.8	6.9		5.1	2.5	10.20	47.0	2.15	1.50		4.5		
52	2.0	47.8	7.0		5.2	2.5	11.10	49.0	2.15	1.50		4.5		
55	2.0	50.8	+0.46/-1.1		7.2	5.4	2.5	11.40	52.0	0/-0.30		2.15	1.50	4.5
56	2.0	51.5		7.3	5.5	2.5	11.80	53.0	2.15		1.50	4.5		
58	2.0	53.5		7.3	5.6	2.5	12.60	55.0	2.15		1.50	4.5		
60	2.0	55.8		7.4	5.8	2.5	12.90	57.0	2.15		1.50	4.5		
62	2.0	57.8		7.5	6.0	2.5	14.30	59.0	2.15		1.50	4.5		
63	2.0	58.8		7.6	6.2	2.5	15.90	60.0	2.15		1.50	4.5		
65	2.5	60.8		7.8	6.3	3.0	18.20	62.0	2.65		1.50	4.5		
68	2.5	63.5		8.0	6.5	3.0	21.80	65.0	2.65		1.50	4.5		
70	2.5	65.5		8.1	6.6	3.0	22.00	67.0	2.65		1.50	4.5		
72	2.5	67.5		8.2	6.8	3.0	22.50	69.0	2.65		1.50	4.5		
75	2.5	70.5	8.4	7.0	3.0	24.60	72.0	2.65	1.50	4.5				
78	2.5	73.5	8.6	7.3	3.0	26.20	75.0	2.65	1.50	4.5				
80	2.5	74.5	8.6	7.4	3.0	27.30	76.5	2.65	1.75	5.3				
82	2.5	76.5	8.7	7.6	3.0	31.20	78.5	2.65	1.75	5.3				
85	3.0	79.5	8.7	7.8	3.5	36.40	81.5	0/-0.54	3.15	1.75	5.3			
88	3.0	82.5	+0.54/-1.3	8.8	8.0	3.5	41.20		84.5	3.15	1.75	5.3		
90	3.0	84.5		8.8	8.2	3.5	44.50		86.5	3.15	1.75	5.3		
95	3.0	89.5		9.4	8.6	3.5	49.00		91.5	3.15	1.75	5.3		
100	3.0	94.5		9.6	9.0	3.5	53.70		96.5	3.15	1.75	5.3		

For verification of details, and for further information, please refer to the DIN standard document for this item.

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