

3 mm to 400 mm

Standard Material
3 Beryllium Copper
4 up Carbon Spring Steel

Standard Finish
3 Self Finish and oil
4 up Phosphate and oil

DIN 471



Lug for sizes 3 to 9 mm



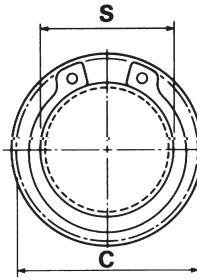
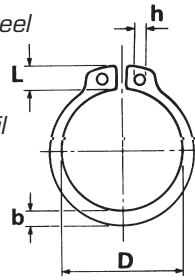
Alternative lug for sizes 4-8 mm



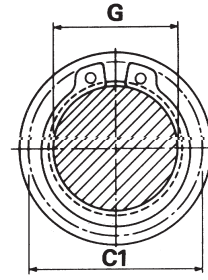
Most sizes over 185 mm are without lugs



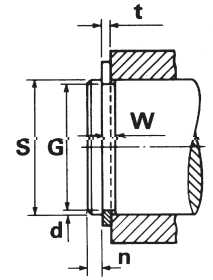
Beam configuration on some larger sizes



When Sprung onto Shaft



When Sprung into Groove



**STANDARD
METRIC
EXTERNAL**

† Thrust load calculations see page 5

PART NUMBER	SHAFT S mm	THICKNESS			FREE DIAMETER			CIRCLIP					GROOVE					APPROX Wt. KG / 1000 PCS.	Tc (N)	Tg (N)	PLIER No.
		t mm	Tol. mm	D mm	Tol. mm	C	C1	L (max)	b ~	h (min)	G mm	Tol. mm	W mm	Tol. mm	n (min)	d ~					
D1400-3	3	0.40		2.7		7.2	6.6	1.9	0.8	1.0	2.8		0.50		0.3	0.10	0.02	1100	110	Mini A	
D1400-4	4	0.40		3.7		8.8	8.2	2.2	0.9	1.0	3.8	+0.00	0.50		0.3	0.10	0.03	1600	150	Mini B	
D1400-5	5	0.60	+0.00	4.7	+0.075	10.7	9.8	2.5	1.1	1.0	4.8	-0.075	0.70		0.3	0.10	0.08	2000	180	Mini C	
D1400-6	6	0.70	-0.04	5.6	-0.15	12.2	11.1	2.7	1.3	1.1	5.7		0.80		0.5	0.15	0.13	4100	330		
D1400-7	7	0.80		6.5		13.8	12.9	3.1	1.4	1.2	6.7	+0.00	0.90		0.5	0.15	0.18	5500	390		
D1400-8	8	0.80		7.4	+0.09	15.2	14.0	3.2	1.5	1.2	7.6	-0.09	0.90		0.6	0.20	0.20	6200	590		
D1400-9	9	1.00		8.4	-0.18	16.4	15.2	3.3	1.7	1.2	8.6		1.10		0.6	0.20	0.32	8800	660		
D1400-10	10	1.00		9.3		17.6	16.2	3.3	1.8	1.5	9.6		1.10		0.6	0.20	0.40	9700	740		
D1400-11	11	1.00		10.2		18.6	17.1	3.3	1.8	1.5	10.5		1.10		0.8	0.25	0.41	10700	1010		
D1400-12	12	1.00		11.0		19.6	18.1	3.3	1.8	1.7	11.5	+0.00	1.10		0.8	0.25	0.45	11700	1110		
D1400-13	13	1.00		11.9		20.8	19.2	3.4	2.0	1.7	12.4	-0.11	1.10		0.9	0.30	0.52	12700	1440		
D1400-14	14	1.00		12.9		22.0	20.4	3.5	2.1	1.7	13.4		1.10		0.9	0.30	0.56	13600	1550		
D1400-15	15	1.00		13.8	+0.18	23.2	21.5	3.6	2.2	1.7	14.3		1.10		1.1	0.35	0.62	14600	1930	HA 1 or HB 1	
D1400-16	16	1.00		14.7	-0.36	24.4	22.6	3.7	2.2	1.7	15.2		1.10		1.2	0.40	0.69	15600	2350		
D1400-17	17	1.00		15.7		25.6	23.8	3.8	2.3	1.7	16.2		1.10		1.2	0.40	0.77	16600	2500		
D1400-18	18	1.20		16.5		26.8	24.8	3.9	2.4	2.0	17.0		1.30		1.5	0.50	0.99	21000	3300		
D1400-19	19	1.20		17.5		27.8	25.8	3.9	2.5	2.0	18.0		1.30		1.5	0.50	1.10	22200	3490		
D1400-20	20	1.20		18.5		29.0	27.0	4.0	2.6	2.0	19.0		1.30		1.5	0.50	1.18	23400	3680		
D1400-21	21	1.20		19.5		30.2	28.2	4.1	2.7	2.0	20.0		1.30		1.5	0.50	1.26	24500	3860		
D1400-22	22	1.20		20.5		31.4	29.4	4.2	2.8	2.0	21.0		1.30		1.5	0.50	1.39	25700	4050		
D1400-23	23	1.20		21.5		32.6	30.6	4.3	2.9	2.0	22.0	+0.00	1.30		1.5	0.50	1.54	26900	4240		
D1400-24	24	1.20		22.2		33.8	31.7	4.4	3.0	2.0	22.9	-0.21	1.30		1.7	0.55	1.52	28000	4860		
D1400-25	25	1.20		23.2		34.8	32.7	4.4	3.0	2.0	23.9		1.30		1.7	0.55	1.70	29200	5070		
D1400-26	26	1.20		24.2	+0.21	36.0	33.9	4.5	3.1	2.0	24.9		1.30		1.7	0.55	1.75	30400	5280		
D1400-27	27	1.20		24.9	-0.42	37.2	34.8	4.6	3.1	2.0	25.6		1.30		2.1	0.70	1.89	31600	6940	HA 2 or HB 2	
D1400-28	28	1.50		25.9		38.4	36.0	4.7	3.2	2.0	26.6		1.60		2.1	0.70	2.47	40900	7200		
D1400-29	29	1.50	+0.00	26.9		36.6	37.2	4.8	3.4	2.0	27.6		1.60		2.1	0.70	2.75	42400	7470		
D1400-30	30	1.50	-0.06	27.9		41.0	38.6	5.0	3.5	2.0	28.6		1.60		2.1	0.70	2.93	43800	7730		
D1400-32	32	1.50		29.6		43.4	40.7	5.2	3.6	2.5	30.3		1.60		2.6	0.85	3.02	46700	9980		
D1400-33	33	1.50		30.5		44.4	41.7	5.2	3.7	2.5	31.3		1.60	+0.14	2.6	0.85	3.30	48200	10300		
D1400-34	34	1.50		31.5		45.8	43.1	5.4	3.8	2.5	32.3		1.60	-0.00	2.6	0.85	3.72	49700	10600		
D1400-35	35	1.50		32.2	+0.25	47.2	44.2	5.6	3.9	2.5	33.0		1.60		3.0	1.00	3.78	51100	12800		
D1400-36	36	1.75		33.2	-0.50	48.2	45.2	5.6	4.0	2.5	34.0		1.85		3.0	1.00	4.55	51400	13200		
D1400-38	38	1.75		35.2		50.6	47.6	5.8	4.2	2.5	36.0	+0.00	1.85		3.0	1.00	5.08	54800	14000		
D1400-40	40	1.75		36.5		53.0	49.5	6.0	4.4	2.5	37.5	-0.25	1.85		3.8	1.25	5.54	56600	18300		
D1400-42	42	1.75		38.5		56.0	52.5	6.5	4.5	2.5	39.5		1.85		3.8	1.25	5.99	59500	19200		
D1400-45	45	1.75		41.5		59.4	55.9	6.7	4.7	2.5	42.5		1.85		3.8	1.25	6.75	63700	20600		
D1400-46	46	1.75		42.5		60.4	56.9	6.7	4.8	2.5	43.5		1.85		3.8	1.25	7.24	65100	21100		
D1400-47	47	1.75		43.5	+0.39	61.6	58.1	6.8	4.9	2.5	44.5		1.85		3.8	1.25	7.30	66500	21600		
D1400-48	48	1.75		44.5	-0.90	62.8	59.3	6.9	5.0	2.5	45.5		1.85		3.8	1.25	7.51	67900	22000		
D1400-50	50	2.00		45.8		64.8	60.8	6.9	5.1	2.5	47.0		2.15		4.5	1.50	9.88	80900	27400	HA 3 or HB 3	
D1400-52	52	2.00		47.8		67.0	63.0	7.0	5.2	2.5	49.0		2.15		4.5	1.50	9.5	84100	28600		
D1400-54	54	2.00		49.8		69.2	65.2	7.1	5.3	2.5	51.0		2.15		4.5	1.50	10.30	87400	29700		
D1400-55	55	2.00		50.8		70.4	66.4	7.2	5.4	2.5	52.0		2.15		4.5	1.50	10.41	89000	30300		
D1400-56	56	2.00		51.8		71.6	67.6	7.3	5.5	2.5	53.0		2.15		4.5	1.50	10.50	90600	30800		
D1400-58	58	2.00		53.8	+0.46	73.6	69.6	7.3	5.6	2.5	55.0		2.15		4.5	1.50	12.47	93800	32000		
D1400-60	60	2.00		55.8	-1.10	75.8	71.8	7.4	5.8	2.5	57.0	+0.00	2.15		4.5	1.50	13.69	97100	33100		
D1400-62	62	2.00		57.8		78.0	74.0	7.5	6.0	2.5	59.0	-0.30	2.15		4.5	1.50	12.36	100000	34200		
D1400-63	63	2.00		58.8		79.2	75.2	7.6	6.2	2.5	60.0		2.15		4.5	1.50	13.10	102000	34800		
D1400-65	65	2.50		60.8		81.6	77.6	7.8	6.3	3.0	62.0		2.65		4.5	1.50	20.44	131000	35900		
D1400-67	67	2.50		62.5		83.8	79.8	7.9	6.4	3.0	64.0		2.65		4.5	1.50	20.43	135000	37000		
D1400-68	68	2.50		63.5		85.0	81.0	8.0	6.5	3.0	65.0		2.65		4.5	1.50	19.55	138000	37600		
D1400-70	70	2.50		65.5		87.2	83.2	8.1	6.6	3.0	67.0		2.65		4.5	1.50	22.13	142000	38700		
D1400-72	72	2.50		67.5		89.4	85.4	8.2	6.8	3.0	69.0		2.65		4.5	1.50	21.60	146000	39900		





Lug for sizes 3 to 9 mm



Alternative lug for sizes 4-8 mm



Most sizes over 185 mm are without lugs



Beam configuration on some larger sizes

3 mm to 400 mm

Standard Material
3 Beryllium Copper
4 up Carbon Spring Steel

Standard Finish
3 Self Finish and oil
4 up Phosphate and oil

DIN 471



D1400

**STANDARD
METRIC
EXTERNAL**

When Sprung onto Shaft

When Sprung into Groove

† Thrust load calculations see page 5

PART NUMBER	SHAFT S mm	CIRCLIP									GROOVE						APPROX Wt. kg / 1000 PCS.	Tc (N)	Tg (N)	PLIER No.
		THICKNESS		FREE DIAMETER		C	C1	L (max)	b ~	h (min)	D mm	Tol. mm	G mm	Tol. mm	WIDTH					
t mm	Tol. mm	D mm	Tol. mm	W mm	Tol. mm										n (min)	d ~				
D1400-75	75	2.50		70.5	+0.46	92.8	88.8	8.4	7.0	3.0	72.0		2.65		4.5	1.50	24.65	152000	41600	
D1400-77	77	2.50		-	-1.10	95.0	91.0	8.5	7.2	3.0	74.0		2.65	+0.14	4.5	1.50	24.26	156000	42700	
D1400-78	78	2.50	+0.00	73.5		96.2	92.2	8.6	7.3	3.0	75.0		2.65	-0.00	4.5	1.50	28.10	158000	43300	
D1400-80	80	2.50	-0.06	74.5		98.2	93.7	8.6	7.4	3.0	76.5	+0.00	2.65		5.3	1.75	26.68	162000	51600	HA 3
D1400-82	82	2.50		76.5		101.0	95.9	8.7	7.6	3.0	78.5	-0.30	2.65		5.3	1.75	28.35	166000	53000	or HB 3
D1400-85	85	3.00		79.5		104.0	98.9	8.7	7.8	3.5	81.5		3.15		5.3	1.75	35.40	206000	54900	
D1400-88	88	3.00		82.5		107.0	102.0	8.8	8.0	3.5	84.5		3.15		5.3	1.75	39.85	214000	56900	
D1400-90	90	3.00		84.5		109.0	104.0	8.8	8.2	3.5	86.5	+0.00	3.15		5.3	1.75	38.89	218000	58200	
D1400-95	95	3.00		89.5		115.0	110.0	9.4	8.6	3.5	91.5	-0.35	3.15		5.3	1.75	42.39	231000	61500	
D1400-98	98	3.00		92.5		119.0	113.0	9.5	9.0	3.5	94.5		3.15		5.3	1.75	54.00	238000	63500	
D1400-100	100	3.00		94.5		121.0	116.0	9.6	9.0	3.5	96.5		3.15		5.3	1.75	48.86	243000	64800	
D1400-102	102	4.00		95.0	+0.54	123.0	117.0	9.7	9.2	3.5	98.0		4.15		6.0	2.00	68.73	330000	75400	
D1400-105	105	4.00		98.0	-1.30	126.0	121.0	9.9	9.3	3.5	101.0		4.15		6.0	2.00	73.16	340000	77700	
D1400-108	108	4.00		-		130.0	124.0	10.0	9.5	3.5	104.0	+0.00	4.15		6.0	2.00	83.45	349000	79900	
D1400-110	110	4.00		103.0		132.0	126.0	10.1	9.6	3.5	106.0	-0.54	4.15		6.0	2.00	75.24	356000	81400	
D1400-115	115	4.00		108.0		138.0	132.0	10.6	9.8	3.5	111.0		4.15		6.0	2.00	78.65	372000	85200	
D1400-120	120	4.00		113.0		143.0	138.0	11.0	10.2	3.5	116.0		4.15		6.0	2.00	85.58	388000	89000	
D1400-125	125	4.00		118.0		149.0	144.0	11.4	10.4	4.0	121.0		4.15		6.0	2.00	99.62	404000	62800	
D1400-130	130	4.00		123.0		155.0	149.0	11.6	10.7	4.0	126.0		4.15		6.0	2.00	98.10	421000	96500	
D1400-135	135	4.00		128.0		160.0	155.0	11.8	11.0	4.0	131.0		4.15		6.0	2.00	113.40	437000	100000	
D1400-140	140	4.00		133.0		165.0	160.0	12.0	11.2	4.0	136.0		4.15		6.0	2.00	119.18	453000	104000	
D1400-145	145	4.00		138.0		171.0	165.0	12.2	11.5	4.0	141.0		4.15		6.0	2.00	128.53	470000	108000	
D1400-150	150	4.00		142.0		177.0	171.0	13.0	11.8	4.0	145.0		4.15		7.5	2.50	132.80	485000	139000	
D1400-155	155	4.00		146.0	+0.63	182.0	176.0	13.0	12.0	4.0	150.0	+0.00	4.15	+0.18	7.5	2.50	136.06	501000	144000	
D1400-160	160	4.00		151.0	-1.50	188.0	182.0	13.3	12.2	4.0	155.0	-0.63	4.15	-0.00	7.5	2.50	137.50	518000	148000	
D1400-165	165	4.00	+0.00	155.5		193.0	187.0	13.5	12.5	4.0	160.0		4.15		7.5	2.50	151.96	534000	153000	MAJOR
D1400-170	170	4.00	-0.075	160.5		197.0	191.0	13.5	12.9	4.0	165.0		4.15		7.5	2.50	169.00	550000	158000	88
D1400-175	175	4.00		165.5		202.0	196.0	13.5	12.9	4.0	170.0		4.15		7.5	2.50	173.70	566000	163000	
D1400-180	180	4.00		170.5		208.0	202.0	14.2	13.5	4.0	175.0		4.15		7.5	2.50	188.00	582000	167000	
D1400-185	185	4.00		175.5		213.0	207.0	14.2	13.5	4.0	180.0		4.15		7.5	2.50	193.00	598000	172000	
D1400-190	190	4.00		180.5		219.0	213.0	14.2	14.0	4.0	185.0		4.15		7.5	2.50	203.00	615000	177000	
D1400-195	195	4.00		185.5		224.0	218.0	14.2	14.0	4.0	190.0		4.15		7.5	2.50	209.50	631000	181000	
D1400-200	200	4.00		190.5		229.0	223.0	14.2	14.0	4.0	195.0		4.15		7.5	2.50	214.00	647000	186000	
D1400-205	205	5.00		193.0		234.0	227.0	14.2	14.0	4.0	199.0	+0.00	5.15		9.0	3.00	278.00	721000	228000	
D1400-210	210	5.00		198.0	+0.72	239.0	232.0	14.2	14.0	4.0	204.0	-0.72	5.15		9.0	3.00	285.00	739000	234000	
D1400-220	220	5.00		208.0	-1.70	249.0	242.0	14.2	14.0	4.0	214.0		5.15		9.0	3.00	298.50	775000	345000	
D1400-230	230	5.00		218.0		259.0	252.0	14.2	14.0	4.0	224.0		5.15		9.0	3.00	312.00	809000	257000	
D1400-240	240	5.00		228.0		269.0	262.0	14.2	14.0	4.0	234.0		5.15		9.0	3.00	326.00	844000	268000	
D1400-250	250	5.00		238.0		279.0	272.0	14.2	14.0	4.0	244.0		5.15		9.0	3.00	340.00	880000	279000	
D1400-260	260	5.00		245.0		293.0	284.0	16.2	16.0	5.0	252.0		5.15		12.0	4.00	414.00	915000	386000	
D1400-270	270	5.00		255.0		303.0	294.0	16.2	16.0	5.0	262.0		5.15		12.0	4.00	430.50	950000	401000	
D1400-280	280	5.00		265.0	+0.81	313.0	304.0	16.2	16.0	5.0	272.0		5.15		12.0	4.00	446.50	985000	416200	
D1400-290	290	5.00		275.0	-2.00	323.0	314.0	16.2	16.0	5.0	282.0	+0.00	5.15		12.0	4.00	463.00	1020000	431200	
D1400-300	300	5.00		285.0		333.0	324.0	16.2	16.0	5.0	292.0	-0.81	5.15		12.0	4.00	479.00	1056000	446300	
D1400-310	310	6.00		293.0		349.0	340.0	20.2	20.0	6.0	300.0		6.20		15.0	5.00	710.50	1308920	575000	
D1400-320	320	6.00		303.0		359.0	350.0	20.2	20.0	6.0	310.0		6.20		15.0	5.00	734.00	1351000	593800	
D1400-330	330	6.00		313.0		369.0	360.0	20.2	20.0	6.0	320.0		6.20		15.0	5.00	757.00	1393000	612600	
D1400-340	340	6.00		323.0		379.0	370.0	20.2	20.0	6.0	330.0		6.20		15.0	5.00	780.00	1436000	631500	MAJOR
D1400-350	350	6.00	+0.00	333.0	+1.00	389.0	380.0	20.2	20.0	6.0	340.0		6.20	+0.22	15.0	5.00	805.00	1478000	650300	X 88
D1400-360	360	6.00	-0.18	343.0	-2.20	399.0	390.0	20.2	20.0	6.0	350.0	+0.00	6.20	-0.00	15.0	5.00	827.00	1520000	669000	
D1400-370	370	6.00		353.0		409.0	400.0	20.2	20.0	6.0	360.0	-0.89	6.20		15.0	5.00	850.00	1562000	688000	
D1400-380	380	6.00		363.0		419.0	410.0	20.2	20.0	6.0	370.0		6.20		15.0	5.00	873.00	1604000	706900	
D1400-390	390	6.00		373.0		429.0	420.0	20.2	20.0	6.0	380.0		6.20		15.0	5.00	896.00	1646000	725700	
D1400-400	400	6.00		383.0		439.0	430.0	20.2	20.0	6.0	390.0		6.20		15.0	5.00	919.00	1689000	744600	