

# Circlip Materials

710-0318 to 0963.

The standard material for all circlips with the exception of some small external types which are made from beryllium copper, is carbon spring steel. Other materials are available on request including stainless steel (DIN 1.4122), phosphor bronze and beryllium copper.

It should be noted that parts made from special materials cannot be guaranteed to meet the thickness specifications of standard parts, due to the wider tolerance bands available on raw materials. The nominal thicknesses are maintained but allowance should be made for additional thickness tolerances.

Care should be taken when specifying special materials that no galvanic interaction between the circlip and the groove material is likely to occur. This is usually only a problem when the assembly is in contact with conductive atmospheres.

## Plated and Other Finishes

Phosphate and oil is the standard finish on most circlips, the remainder being self finish and oil. Where improved properties or appearance are required for operation in corrosive environments plating provides additional protection.

Zinc plated finish, with either clear or yellow chromate passivation, is available and may be electrolytic or mechanical at our discretion. Plated thickness can be 6 micron or 12 micron and will increase the overall thickness of the circlip.

It is essential to select the finish required with a view to the operating conditions including the groove material or finish, since some combinations may actually accelerate corrosion.

Coloured lacquer finishes, for identification purposes, are available subject to enquiry as are copper flashed.

### KEY TO TABLE HEADINGS AND ABBREVIATIONS

<b>Al</b>	- Axial Load	<b>ins.</b>	- Inches
<b>b</b>	- Beam	<b>kN</b>	- Kilonewtons
<b>B</b>	- Bore Diameter	<b>lb.f</b>	- Pounds force
<b>Brg</b>	- Nominal Dimensions of Bearing	<b>L</b>	- Lug
<b>C</b>	- Circlip in Groove	<b>mm</b>	- Millimetres
<b>Cb</b>	- Clearance in Bore	<b>n</b>	- Edge Margin
<b>Cm</b>	- Circlip on Shaft	<b>N</b>	- Newtons
<b>Cs</b>	- Clearance on Shaft	<b>r</b>	- Radius
<b>D</b>	- Free Diameter	<b>Rd</b>	- Radial Depth
<b>Fn</b>	- Load Carrying Capacity of Groove	<b>RPM</b>	- Revs per Minute
<b>Fr</b>	- Load Carrying Capacity of Ring	<b>S</b>	- Shaft diameter
<b>g</b>	- Gap Size	<b>t</b>	- Thickness
<b>G</b>	- Groove Diameter	<b>Tol</b>	- Tolerance
<b>h</b>	- Hole Diameter	<b>W</b>	- Groove Width

FAO: KEITH.

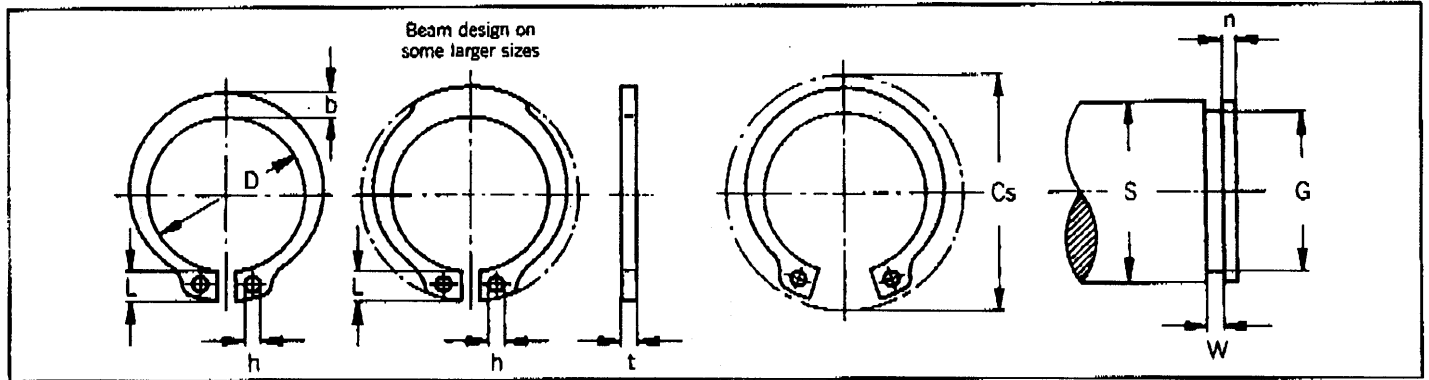
INFORMATION AS REQUESTED.

REGARDS  
LYNN

CIRCLIPS AND RETAINING RINGS

# Standard External Circlips

To DIN 471



Most sizes over 170mm are without lugs.

Code No.	Shaft S mm	Circlip Dimensions										Groove Dimensions				Code No.
		t mm	Tol mm	D mm	Tol mm	Cs mm	b mm	L mm	h mm	Fr kN	G mm	Tol mm	W mm	n mm	Fn kN	
EXT0030	3	0.40		2.7		7.0	0.8	1.9	1.0	0.47	2.8	+0.00/-0.04	0.5	0.3	0.15	EXT0030
EXT0040	4	0.40		3.7	+0.04	8.6	0.9	2.2	1.0	0.50	3.8	+0.00	0.5	0.3	0.20	EXT0040
EXT0050	5	0.60	+0.00	4.7	-0.15	10.3	1.1	2.5	1.0	1.00	4.8	-0.048	0.7	0.3	0.26	EXT0050
EXT0060	6	0.70	-0.05	5.6		11.7	1.3	2.7	1.2	1.45	5.7		0.8	0.5	0.46	EXT0060
EXT0070	7	0.80		6.5	+0.06	13.5	1.4	3.1	1.2	2.60	6.7		0.9	0.5	0.54	EXT0070
EXT0080	8	0.80		7.4	-0.18	14.7	1.5	3.2	1.2	3.00	7.6	+0.00	1.1	0.6	0.81	EXT0080
EXT0090	9	1.00		8.4		16.0	1.7	3.3	1.2	3.50	8.6	-0.06	1.1	0.6	0.92	EXT0090
EXT0100	10	1.00		9.3		17.0	1.8	3.3	1.5	4.00	9.6		1.1	0.6	1.01	EXT0100
EXT0110	11	1.00		10.2		18.0	1.8	3.3	1.5	4.50	10.5		1.1	0.8	1.40	EXT0110
EXT0120	12	1.00		11.0		19.0	1.8	3.3	1.7	5.00	11.5		1.1	0.8	1.53	EXT0120
EXT0130	13	1.00		11.9		20.2	2.0	3.4	1.7	5.80	12.4		1.1	0.9	2.00	EXT0130
EXT0140	14	1.00		12.9	+0.10	21.4	2.1	3.5	1.7	6.35	13.4	+0.00	1.1	0.9	2.15	EXT0140
EXT0150	15	1.00		13.8	-0.36	22.6	2.2	3.6	1.7	6.9	14.3	-0.11	1.1	1.1	2.66	EXT0150
EXT0160	16	1.00		14.7		23.8	2.2	3.7	1.7	7.4	15.2		1.1	1.2	3.26	EXT0160
EXT0170	17	1.00		15.7		25.0	2.3	3.8	1.7	8.0	16.2		1.1	1.2	3.46	EXT0170
EXT0180	18	1.20		16.5		26.2	2.4	3.9	2.0	17.0	17.0		1.3	1.5	4.58	EXT0180
EXT0190	19	1.20		17.5		27.2	2.5	3.9	2.0	17.0	18.0		1.3	1.5	4.84	EXT0190
EXT0200	20	1.20		18.5		28.4	2.6	4.0	2.0	17.1	19.0		1.3	1.5	5.06	EXT0200
EXT0210	21	1.20		19.5	+0.13	29.6	2.7	4.1	2.0	16.8	20.0		1.3	1.5	5.36	EXT0210
EXT0220	22	1.20		20.5	-0.42	30.8	2.8	4.2	2.0	16.9	21.0		1.3	1.5	5.65	EXT0220
EXT0230	23	1.20		21.5		32.0	2.9	4.3	2.0	16.6	22.0		1.3	1.5	5.90	EXT0230
EXT0240	24	1.20		22.2		33.2	3.0	4.4	2.0	16.1	22.9		1.3	1.7	6.75	EXT0240
EXT0250	25	1.20		23.2		34.2	3.0	4.4	2.0	16.2	23.9	+0.00	1.3	1.7	7.05	EXT0250
EXT0260	26	1.20		24.2		35.5	3.1	4.5	2.0	16.1	24.9	-0.21	1.3	1.7	7.34	EXT0260
EXT0270	27	1.20	+0.00	24.9	+0.21	36.7	3.1	4.6	2.0	16.4	25.6		1.3	2.1	9.63	EXT0270
EXT0280	28	1.50	-0.06	25.9	-0.42	37.9	3.2	4.7	2.0	32.1	26.6		1.6	2.1	10.00	EXT0280
EXT0290	29	1.50		26.9		39.1	3.4	4.8	2.0	31.8	27.6		1.6	2.1	10.37	EXT0290
EXT0300	30	1.50		27.9		40.5	3.5	5.0	2.0	32.1	28.6		1.6	2.1	10.73	EXT0300
EXT0310	31	1.50		28.6		41.5	3.5	5.0	2.5	31.5	29.3		1.6	2.6	13.85	EXT0310
EXT0320	32	1.50		29.6		43.0	3.6	5.2	2.5	31.2	30.3		1.6	2.6	13.85	EXT0320
EXT0330	33	1.50		30.5		44.0	3.7	5.2	2.5	31.6	31.3		1.6	2.6	14.30	EXT0330
EXT0340	34	1.50		31.5		45.4	3.8	5.4	2.5	31.3	32.3		1.6	2.6	14.72	EXT0340
EXT0350	35	1.50		32.2	+0.25	46.8	3.9	5.6	2.5	30.8	33.0		1.6	3.0	17.80	EXT0350
EXT0360	36	1.75		33.2	-0.50	47.8	4.0	5.6	2.5	49.4	34.0		1.85	3.0	18.33	EXT0360
EXT0370	37	1.75		34.2		49.0	4.1	5.7	2.5	50.0	35.0		1.85	3.0	18.80	EXT0370
EXT0380	38	1.75		35.2		50.2	4.2	5.8	2.5	49.5	36.0		1.85	3.0	19.30	EXT0380
EXT0390	39	1.75		36.0		51.4	4.3	5.9	2.5	49.8	37.0		1.85	3.8	19.90	EXT0390
EXT0400	40	1.75		36.5		52.6	4.4	6.0	2.5	51.0	37.5		1.85	3.8	25.30	EXT0400
EXT0410	41	1.75		37.5		54.1	4.5	6.2	2.5	50.1	38.5		1.85	3.8	26.00	EXT0410
EXT0420	42	1.75		38.5		55.7	4.5	6.5	2.5	50.0	39.5		1.85	3.8	26.70	EXT0420
EXT0430	43	1.75		39.5		56.7	4.6	6.5	2.5	49.0	40.5	+0.00	1.85	3.8	27.30	EXT0430
EXT0440	44	1.75		40.5		57.9	4.6	6.6	2.5	48.5	41.5	-0.25	1.85	3.8	28.00	EXT0440
EXT0450	45	1.75		41.5		59.1	4.7	6.7	2.5	49.0	42.5		1.85	3.8	28.06	EXT0450
EXT0460	46	1.75		42.5		60.1	4.8	6.7	2.5	48.9	43.5		1.85	3.8	29.04	EXT0460
EXT0470	47	1.75		43.5		61.3	4.9	6.8	2.5	49.5	44.5		1.85	3.8	30.00	EXT0470
EXT0480	48	1.75		44.5	+0.39	62.5	5.0	6.9	2.5	49.4	45.5		1.85	3.8	30.07	EXT0480
EXT0500	50	2.00		45.8	-0.90	64.5	5.1	6.9	2.5	73.3	47.0		2.15	4.5	38.00	EXT0500
EXT0510	51	2.00		46.8		65.7	5.2	7.0	2.5	73.2	48.0		2.15	4.5	38.80	EXT0510
EXT0520	52	2.00		47.8		66.7	5.2	7.0	2.5	73.1	49.0		2.15	4.5	39.70	EXT0520
EXT0530	53	2.00	+0.00	48.8		68.0	5.3	7.1	2.5	72.2	50.0		2.15	4.5	40.40	EXT0530
EXT0540	54	2.00	-0.07	49.8		69.0	5.3	7.1	2.5	71.2	51.0		2.15	4.5	41.2	EXT0540
EXT0550	55	2.00		50.8	+0.46	70.2	5.4	7.2	2.5	71.4	52.0	+0.00	2.15	4.5	42.0	EXT0550
EXT0560	56	2.00		51.8	-1.10	71.6	5.5	7.3	2.5	70.8	53.0	-0.30	2.15	4.5	42.8	EXT0560
EXT0570	57	2.00		52.8		72.4	5.5	7.3	2.5	70.9	54.0		2.15	4.5	43.7	EXT0570
EXT0580	58	2.00		53.8		73.6	5.6	7.3	2.5	71.1	55.0		2.15	4.5	44.3	EXT0580