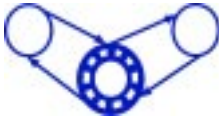


Townsend Bearings



Circlips

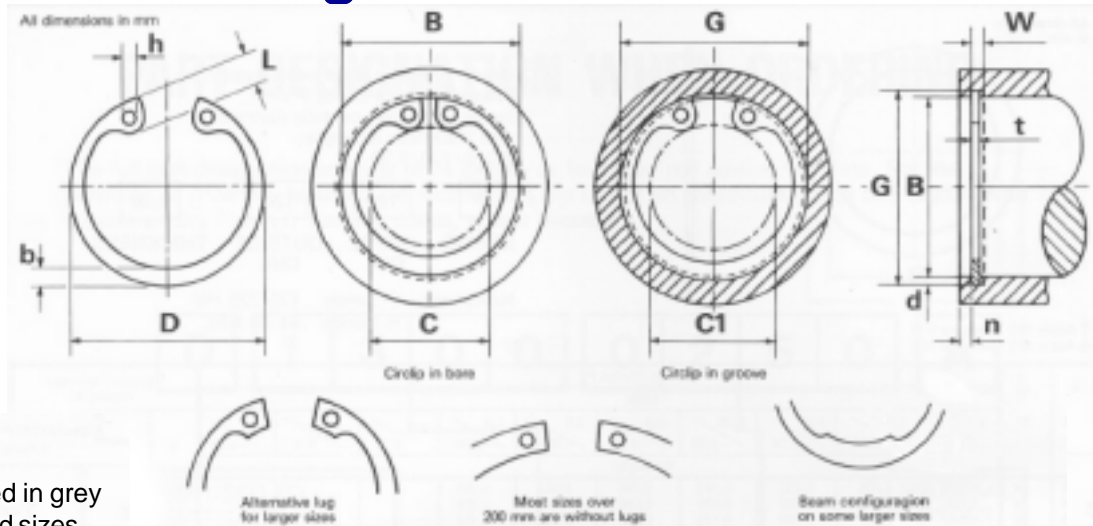


**Townsend
Bearings**



Contents

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Sizes printed in grey are preferred sizes.

SIZE CODE	Bore		Groove (G)					Circlip (F)								Wt. (kg/k)	Tc† (N)	Tg† (N)		
	B	G	Tol.	W	Tol.	n (min)	d ~	t	Tol.	D	Tol.	C	C1	L (max)	b ~				h (min)	
0080	8	8.4	+0.09 -0.00	0.90	+0.14 -0.00	0.6	0.2	0.80	+0.00	8.7	+0.36 -0.10	3.0	3.6	2.4	1.1	1.0	0.11	6200	600	
0090	9	9.4		0.90		0.6	0.2	0.80	-0.05	9.8		3.7	4.4	2.5	1.3	1.0	1.0	1.0	0.17	7000
0095	9.5	9.9	1.10	0.6		0.2	1.00		10.3	3.2		3.9	3.0	1.3	1.2	1.2	1.2	0.22	9300	720
0100	10	10.4	1.10	0.6		0.2	1.00		10.8	3.3		4.0	3.2	1.4	1.2	1.2	1.2	0.24	9700	750
0110	11	11.4	1.10	0.6		0.2	1.00		11.8	4.1		4.8	3.3	1.5	1.2	1.2	1.2	0.30	10700	830
0120	12	12.5	+0.11 -0.00	1.10		0.8	0.3	1.00		13.0		4.9	5.7	3.4	1.7	1.5	1.5	0.34	11700	1130
0130	13	13.6		1.10		0.9	0.3	1.00		14.1		5.4	6.4	3.6	1.8	1.5	1.5	0.39	12700	1470
0140	14	14.6		1.10		0.9	0.3	1.00		15.1		6.2	7.2	3.7	1.9	1.7	1.7	0.45	13600	1580
0150	15	15.7		1.10		1.1	0.4	1.00		16.2		7.2	8.3	3.7	2.0	1.7	1.7	0.48	14600	1980
0160	16	16.8		1.10		1.2	0.4	1.00		17.3		8.0	9.2	3.8	2.0	1.7	1.7	0.54	15600	2410
0170	17	17.8	+0.13 -0.00	1.10	1.2	0.4	1.00		18.3	8.8	10.0	3.9	2.1	1.7	1.7	0.59	16600	2560		
0180	18	19.0		1.10	1.5	0.5	1.00		19.5	9.4	10.8	4.1	2.2	2.0	2.0	0.61	17500	3390		
0190	19	20.0		1.10	1.5	0.5	1.00		20.5	10.4	11.8	4.1	2.2	2.0	2.0	0.72	18500	3580		
0200	20	21.0		1.10	1.5	0.5	1.00		21.5	11.2	12.6	4.2	2.3	2.0	2.0	0.75	19500	3770		
0210	21	22.0		1.10	1.5	0.5	1.00		22.5	12.2	13.6	4.2	2.4	2.0	2.0	0.84	20400	3960		
0220	22	23.0	+0.21 -0.00	1.10	1.5	0.5	1.00		23.5	13.2	14.6	4.2	2.5	2.0	2.0	0.86	21400	4150		
0230	23	24.1		1.30	1.7	0.6	1.20		24.6	14.2	15.7	4.2	2.5	2.0	2.0	1.20	26900	4770		
0240	24	25.2		1.30	1.8	0.6	1.20		25.9	14.8	16.4	4.4	2.6	2.0	2.0	1.21	28000	5430		
0250	25	26.2		1.30	1.8	0.6	1.20		26.9	15.5	17.2	4.5	2.7	2.0	2.0	1.33	29200	5650		
0260	26	27.2		1.30	1.8	0.6	1.20		27.9	16.1	17.8	4.7	2.8	2.0	2.0	1.35	30400	5880		
0270	27	28.4		1.30	2.1	0.7	1.20		29.1	17.1	19.0	4.7	2.9	2.0	2.0	1.55	31600	7130		
0280	28	29.4	+0.25 -0.00	1.30	2.1	0.7	1.20		30.1	17.9	19.8	4.8	2.9	2.0	2.0	1.64	32700	7390		
0290	29	30.4		1.30	2.1	0.7	1.20		31.1	18.9	20.8	4.8	3.0	2.0	2.0	1.74	33900	7650		
0300	30	31.4		1.30	2.1	0.7	1.20		32.1	19.9	21.8	4.8	3.0	2.0	2.0	1.87	35100	7920		
0310	31	32.7		1.30	2.6	0.9	1.20		33.4	20.0	22.3	5.2	3.2	2.5	2.5	2.20	36200	9930		
0320	32	33.7		1.30	2.6	0.9	1.20		34.4	20.6	22.9	5.4	3.2	2.5	2.5	1.98	37400	10300		
0330	33	34.7		1.30	2.6	0.9	1.20		35.5	21.6	23.9	5.4	3.3	2.5	2.5	2.13	36800	10600		
0340	34	35.7		1.60	2.6	0.9	1.50		36.5	22.6	24.9	5.4	3.3	2.5	2.5	2.88	49700	10900		
0350	35	37.0		1.60	3.0	1.0	1.50		37.8	23.6	26.2	5.4	3.4	2.5	2.5	2.93	51100	13200		
0360	36	38.0		1.60	3.0	1.0	1.50		38.8	24.6	27.2	5.4	4.0	2.5	2.5	3.23	52600	13600		
0370	37	39.0		+0.25 -0.00	1.60	3.0	1.0	1.50		39.8	25.4	28.0	5.5	3.2	2.5	2.5	2.98	54100	13900	
0380	38	40.0	1.60		3.0	1.0	1.50		40.8	26.4	29.0	5.5	3.7	2.5	2.5	3.54	55500	14300		
0400	40	42.5	1.85		3.8	1.3	1.75		43.5	27.8	30.9	5.8	3.9	2.5	2.5	4.63	56600	18800		
0410	41	43.5	1.85		3.8	1.3	1.75		44.5	28.6	31.7	5.9	4.0	2.5	2.5	5.37	58000	19300		
0420	42	44.5	1.85		3.8	1.3	1.75		45.5	29.6	32.7	5.9	4.1	2.5	2.5	5.21	59500	19800		
0450	45	47.5	+0.30 -0.00	1.85	3.8	1.3	1.75		48.5	32.0	35.1	6.2	4.3	2.5	2.5	5.88	63700	21200		
0470	47	49.5		1.85	3.8	1.3	1.75		50.5	33.5	36.7	6.4	4.4	2.5	2.5	6.13	66500	22100		
0480	48	50.5		1.85	3.8	1.3	1.75		51.5	34.5	37.7	6.4	4.5	2.5	2.5	6.31	68000	22600		
0500	50	53.0		2.15	4.5	1.5	2.00		54.2	36.3	40.0	6.5	4.6	2.5	2.5	8.01	80900	28300		
0510	51	54.0		2.15	4.5	1.5	2.00		55.2	37.3	41.0	6.5	4.7	2.5	2.5	8.72	82500	28800		
0520	52	55.0		2.15	4.5	1.5	2.00		56.2	37.9	41.6	6.7	4.7	2.5	2.5	8.91	84100	29400		
0550	55	58.0	2.15	4.5	1.5	2.00		59.2	40.7	44.4	6.8	5.0	2.5	2.5	9.44	89000	31100			
0560	56	59.0	2.15	4.5	1.5	2.00		60.2	41.7	45.4	6.8	5.1	2.5	2.5	9.75	90600	31700			
0570	57	60.0	2.15	4.5	1.5	2.00		62.2	42.7	46.4	6.8	5.1	2.5	2.5	9.56	92200	32200			
0580	58	61.0	2.15	4.5	1.5	2.00		62.2	43.5	47.2	6.9	5.2	2.5	2.5	10.36	93800	32800			
0600	60	63.0	+0.00 -0.07	2.15	4.5	1.5	2.00		64.2	44.7	48.4	7.3	5.4	2.5	2.5	11.15	97100	33900		
0620	62	65.0		2.15	4.5	1.5	2.00		66.2	46.7	50.4	7.3	5.5	2.5	2.5	11.59	100000	35100		
0630	63	66.0		2.15	4.5	1.5	2.00		67.2	47.7	51.4	7.3	5.6	2.5	2.5	11.78	102000	35600		
0640	64	67.0		2.15	4.5	1.5	2.00		68.2	48.7	52.4	7.3	5.2	2.5	2.5	16.80	104000	36200		
0650	65	68.0		2.65	4.5	1.5	2.50		69.2	49.0	52.8	7.6	5.8	3.0	3.0	17.71	131000	36800		

Standard material - carbon spring steel. Standard finish - phosphate and oil.

Standard Internal Circlips (Euro Spec.) D1300 (continued)



Townsend Bearings

Reference to Table Headings

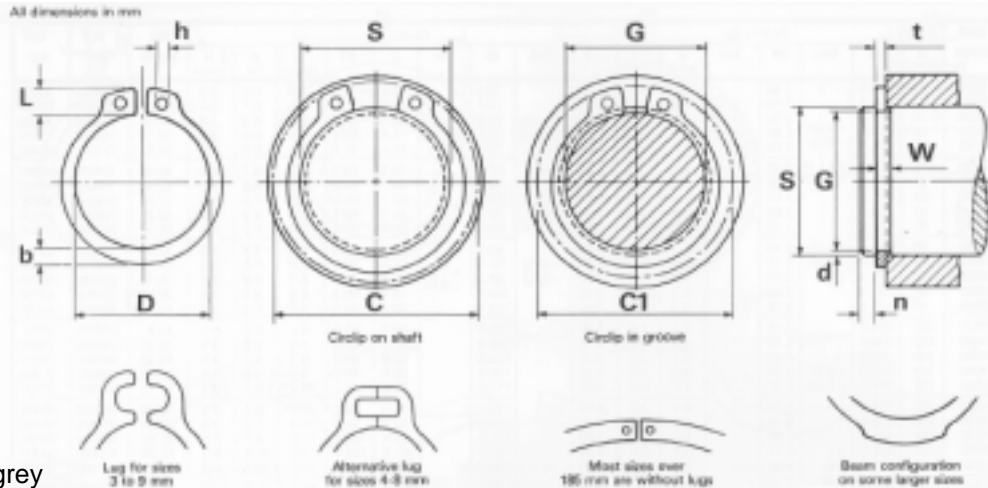
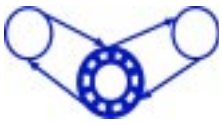
- A = Free gap
- a = Radial depth
- B = Bore diameter
- b = Beam dimension
- C = Clearance on shaft or in bore
- C₁ = Clearance in groove
- D = Free diameter (Working)
- D₁ = Free diameter (Non-functional)
- d = Groove depth
- E = End play take-up
- F = Circlip details
- G = Groove diameter
- H = Height

- h = Hole diameter
- L = Lug depth
- n = Edge margin
- n₁ = Shaft or bore face to retained face
- r = Radius
- S = Shaft diameter
- Tc = Thrust load for circlip
- Tg = Thrust load of groove
- t = Thickness
- W = Groove width
- w = Wing dimension
- Wt = Weight
- X = Outer groove wall to retained face

Abbreviations used

- B.S. = British Standard
- dec. = Decimal
- frac. = Fraction
- kg/k = Kilogrammes per thousand
- lb.f = Pounds force
- lb/k = Pounds per thousand
- max. = Maximum
- min. = Minimum
- N = Newton
- Nom. = Nominal
- Tol. = Tolerance

SIZE CODE	Bore		Groove (G)					Circlip (F)							Wt. (kg/k)	T _c † (N)	T _g † (N)		
	B	G	Tol.	W	Tol.	n (min)	d	t	Tol.	D	Tol.	C	C1	L (max)				b	h (min)
0670	67	70.0	+0.30 -0.00	2.65	+0.14 -0.00	4.5	1.5	2.50	+0.00 -0.07	72.5	+1.10 -0.46	50.8	54.6	7.7	6.0	3.0	17.71	136000	37900
0680	68	71.0		2.65		4.5	1.5	2.50		72.5		51.6	55.4	7.8	6.1	3.0	17.72	138000	38500
0700	70	73.0		2.65		4.5	1.5	2.50		74.5		53.6	57.4	7.8	6.2	3.0	17.65	142000	39600
0720	72	75.0		2.65		4.5	1.5	2.50		76.5		55.6	59.4	7.8	6.4	3.0	19.70	146000	40700
0750	75	78.0		2.65		4.5	1.5	2.50		79.5		58.6	62.4	7.8	6.6	3.0	20.62	152000	42400
0760	76	79.0	+0.35 -0.00	2.65	+0.14 -0.00	4.5	1.5	2.50	+0.00 -0.08	80.7	+1.30 -0.54	59.6	63.4	7.8	6.1	3.0	22.68	154000	43000
0780	78	81.0		2.65		4.5	1.5	2.50		82.5		60.1	64.0	8.5	6.8	3.0	22.46	158000	44100
0800	80	83.5		2.65		5.3	1.8	2.50		85.5		62.1	66.5	8.5	7.0	3.0	21.38	162000	52800
0820	82	85.5		2.65		5.3	1.8	2.50		87.5		64.1	68.5	8.5	6.2	3.0	22.27	166000	54100
0850	85	88.5		3.15		5.3	1.8	3.00		90.5		66.9	71.3	8.6	7.2	3.5	31.78	206000	56100
0880	88	91.5	+0.35 -0.00	3.15	+0.14 -0.00	5.3	1.8	3.00	+0.00 -0.08	93.5	+1.30 -0.54	69.9	74.3	8.6	7.4	3.5	32.94	214000	58100
0900	90	93.5		3.15		5.3	1.8	3.00		95.5		71.9	76.3	8.6	7.6	3.5	33.35	218000	59400
0920	92	95.5		3.15		5.3	1.8	3.00		97.5		73.7	78.1	8.7	7.8	3.5	35.72	223000	60700
0950	95	98.5		3.15		5.3	1.8	3.00		100.5		76.5	80.9	8.8	8.1	3.5	38.88	231000	62700
0980	98	101.5		3.15		5.3	1.8	3.00		103.5		79.0	83.5	9.0	8.3	3.5	42.16	238000	64700
1000	100	103.5	+0.54 -0.00	3.15	+0.14 -0.00	5.3	1.8	3.00	+0.00 -0.10	105.5	+1.50 -0.63	80.6	85.1	9.2	8.4	3.5	43.41	243000	66000
1020	102	106.0		4.15		6.0	2.0	4.00		108.0		82.0	87.0	9.5	8.5	3.5	55.20	330000	76900
1050	105	109.0		4.15		6.0	2.0	4.00		112.0		85.0	90.0	9.5	8.7	3.5	59.20	340000	79200
1080	108	112.0		4.15		6.0	2.0	4.00		115.0		88.0	93.0	9.5	8.9	3.5	62.60	350000	81400
1100	110	114.0		4.15		6.0	2.0	4.00		117.0		88.2	93.2	10.4	9.0	3.5	71.75	356000	82900
1120	112	116.0	+0.63 -0.00	4.15	+0.18 -0.00	6.0	2.0	4.00	+0.00 -0.12	119.0	+1.70 -0.72	90.0	95.0	10.5	9.1	3.5	70.68	362000	84400
1150	115	119.0		4.15		6.0	2.0	4.00		122.0		93.0	98.0	10.5	9.3	3.5	73.16	372000	86700
1200	120	124.0		4.15		6.0	2.0	4.00		127.0		96.9	102.0	11.0	9.7	3.5	80.40	388000	90500
1250	125	129.0		4.15		6.0	2.0	4.00		132.0		101.9	107.0	11.0	10.0	4.0	81.20	405000	94300
1270	127	131.0		4.15		6.0	2.0	4.00		135.0		103.9	109.0	11.0	10.0	4.0	80.80	411000	95800
1300	130	134.0	+0.63 -0.00	4.15	+0.18 -0.00	6.0	2.0	4.00	+0.00 -0.10	137.0	+1.50 -0.63	106.9	112.0	11.0	10.2	4.0	85.13	421000	98000
1350	135	139.0		4.15		6.0	2.0	4.00		142.0		111.5	116.0	11.2	10.5	4.0	94.79	437000	102000
1400	140	144.0		4.15		6.0	2.0	4.00		147.0		116.5	121.0	11.2	10.7	4.0	98.61	453000	106000
1450	145	149.0		4.15		6.0	2.0	4.00		152.0		121.0	126.0	11.4	10.9	4.0	106.50	469000	109000
1500	150	155.0		4.15		7.5	2.5	4.00		158.0		124.8	131.0	12.0	11.2	4.0	106.80	485000	114100
1550	155	160.0	+0.72 -0.00	4.15	+0.18 -0.00	7.5	2.5	4.00	+0.00 -0.12	164.0	+1.70 -0.72	129.8	136.0	12.0	11.4	4.0	128.00	502000	146000
1600	160	165.0		4.15		7.5	2.5	4.00		169.0		132.7	139.0	13.0	11.6	4.0	130.50	518000	151000
1650	165	170.0		4.15		7.5	2.5	4.00		174.5		137.7	144.0	13.0	11.8	4.0	132.00	534000	156000
1700	170	175.0		4.15		7.5	2.5	4.00		179.5		141.6	148.0	13.5	12.0	4.0	149.50	550000	160000
1750	175	180.0		4.15		7.5	2.5	4.00		184.5		146.6	153.0	13.5	12.0	4.0	158.50	566000	165000
1800	180	185.0	+0.72 -0.00	4.15	+0.18 -0.00	7.5	2.5	4.00	+0.00 -0.12	189.5	+1.70 -0.72	150.2	156.0	14.2	13.0	4.0	168.00	583000	170000
1850	185	190.0		4.15		7.5	2.5	4.00		194.5		155.2	161.0	14.2	13.0	4.0	177.50	599000	174000
1900	190	195.0		4.15		7.5	2.5	4.00		199.5		160.2	166.0	14.3	13.0	4.0	184.00	615000	179000
1950	195	200.0		4.15		7.5	2.5	4.00		204.5		165.2	171.0	14.2	13.0	4.0	189.60	631000	184000
2000	200	205.0		4.15		7.5	2.5	4.00		209.5		170.2	176.0	14.3	13.0	4.0	196.00	647000	188000
2100	210	216.0	+0.81 -0.00	5.15	+0.22 -0.00	9.0	3.0	5.00	+0.00 -0.12	222.0	+2.00 -0.81	180.2	187.0	14.2	14.0	4.0	263.00	739000	237000
2200	220	226.0		5.15		9.0	3.0	5.00		232.0		190.2	197.0	14.2	14.0	4.0	276.00	774000	249000
2300	230	236.0		5.15		9.0	3.0	5.00		242.0		200.2	207.0	14.2	14.0	4.0	291.00	809000	260000
2400	240	246.0		5.15		9.0	3.0	5.00		252.0		210.2	217.0	14.2	14.0	4.0	304.00	845000	271000
2500	250	256.0		5.15		9.0	3.0	5.00		262.0		220.2	227.0	14.2	14.0	4.0	318.50	880000	283000
2600	260	268.0	+0.81 -0.00	5.15	+0.22 -0.00	12.0	4.0	5.00	+0.00 -0.12	275.0	+2.00 -0.81	226.0	235.0	16.2	16.0	5.0	385.00	915000	392000
2700	270	278.0		5.15		12.0	4.0	5.00		285.0		236.0	245.0	16.2	16.0	5.0	401.50	950000	407000
2800	280	288.0		5.15		12.0	4.0	5.00		295.0		246.0	255.0	16.2	16.0	5.0	417.50	985000	422000
2900	290	298.0		5.15		12.0	4.0	5.00		305.0		256.0	265.0	16.2	16.0	5.0	433.40	1020000	437000
3000	300	308.0		5.15		12.0	4.0	5.00		315.0		266.0	275.0	16.2	16.0	5.0	446.00	1060000	452000
3100	310	320.0	+0.89 -0.00	6.20	+0.22 -0.00	15.0	5.0	6.00	+0.00 -0.18	327.0	+2.50 -1.00	267.8	279.0	20.2	20.0	6.0	658.50	1310000	584000
3200	320	330.0		6.20		15.0	5.0	6.00		337.0		277.8	289.0	20.2	20.0	6.0	682.00	1350000	603000
3300	330	340.0		6.20		15.0	5.0	6.00		347.0		287.8	299.0	20.2	20.0	6.0	705.00	1390000	622000
3400	340	350.0		6.20		15.0	5.0	6.00		357.0		297.8	309.0	20.2	20.0	6.0	729.00	1440000	641000
3500	350	360.0		6.20		15.0	5.0	6.00		367.0		307.8	319.0	20.2	20.0	6.0	752.50	1480000	660000
3600	360	370.0	+0.89 -0.00	6.20	+0.22 -0.00	15.0	5.0	6.00	+0.00 -0.18	377.0	+2.50 -1.00	317.8	329.0	20.2	20.0	6.0	769.00	1520000	679000
3700	370	380.0		6.20		15.0	5.0	6.00		387.0		327.8	339.0	20.2	20.0	6.0	793.00	1560000	697000
3800	380	390.0		6.20		15.0	5.0	6.00		397.0		337.8	349.0	20.2	20.0	6.0	817.00	1610000	716000
3900	390	400.0		6.20		15.0	5.0	6.00		407.0		347.8	359.0	20.2	20.0	6.0	838.50	1650000	735000
4000	400	410.0		6.20		15.0	5.0	6.00		417.0		357.8	369.0	20.2	20.0	6.0	862.50	1690000	754000



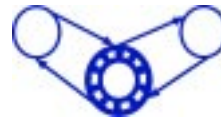
Sizes printed in grey are preferred sizes.

SIZE CODE	Shaft S	Groove (G)				Circlip (F)											Wt. (kg/k)	Tc† (N)	Tg† (N)
		G	Tol.	W	Tol.	n (min)	d	t	Tol.	D	Tol.	C	C1	L (max)	b	h (min)			
0030	3	2.8	+0.00 -0.04	0.50		0.3	0.10	0.40		2.7		7.0	6.6	1.9	0.8	1.0	0.02	1170	110
0040	4	3.8		0.50		0.3	0.10	0.40	+0.00	3.7	+0.04	8.6	8.2	2.2	0.9	1.0	0.03	1600	150
0050	5	4.8	+0.00	0.70		0.3	0.10	0.60		4.7	-0.15	10.3	9.8	2.5	1.1	1.0	0.08	2900	190
0060	6	5.7	-0.048	0.80		0.5	0.15	0.70		5.6		11.7	11.1	2.7	1.3	1.2	0.13	4100	340
0070	7	6.7		0.90		0.5	0.15	0.80		6.5	+0.06	13.5	12.9	3.1	1.4	1.2	0.18	5500	400
0080	8	7.6	+0.00	0.90		0.6	0.20	0.80		7.4	-0.18	14.7	14.0	3.2	1.5	1.2	0.20	6200	600
0090	9	8.6	-0.06	1.10		0.6	0.20	1.00		8.4		16.0	15.2	3.3	1.7	1.2	0.32	8800	680
0100	10	9.6		1.10		0.6	0.20	1.00		9.3		17.0	16.2	3.3	1.8	1.5	0.40	9700	750
0110	11	10.5		1.10		0.8	0.25	1.00		10.2		18.0	17.1	3.3	1.8	1.5	0.41	10700	1040
0120	12	11.5		1.10		0.8	0.25	1.00		11.0		19.0	18.1	3.3	1.8	1.7	0.45	11700	1130
0130	13	12.4		1.10		0.9	0.30	1.00		11.9	+0.10	20.2	19.2	3.4	2.0	1.7	0.52	12700	1470
0140	14	13.4		1.10		0.9	0.30	1.00		12.9	-0.36	21.4	20.4	3.5	2.1	1.7	0.56	13600	1580
0150	15	14.3	+0.00	1.10		1.1	0.35	1.00		13.8		22.6	21.5	3.6	2.2	1.7	0.62	14600	1980
0160	16	15.2	-0.11	1.10		1.2	0.40	1.00		14.7		23.8	22.6	3.7	2.2	1.7	0.69	15600	2410
0170	17	16.2		1.10		1.2	0.40	1.00		15.7		25.0	23.8	3.8	2.3	1.7	0.77	16600	2560
0180	18	17.0		1.30		1.5	0.50	1.20		16.5		26.2	24.8	3.9	2.4	2.0	0.99	21000	3390
0190	19	18.0		1.30		1.5	0.50	1.20		17.5		27.2	25.8	3.9	2.5	2.0	1.10	22200	3580
0200	20	19.0		1.30		1.5	0.50	1.20		18.5		28.4	27.0	4.0	2.6	2.0	1.18	23400	3770
0210	21	20.0	+0.00	1.30		1.5	0.50	1.20		19.5	+0.13	29.6	28.2	4.1	2.7	2.0	1.26	24500	3960
0220	22	21.0	-0.13	1.30		1.5	0.50	1.20		20.5	-0.42	30.8	29.4	4.2	2.8	2.0	1.39	25700	4150
0230	23	22.0		1.30		1.5	0.50	1.20		21.5		32.0	30.6	4.3	2.9	2.0	1.54	26900	4340
0240	24	22.9		1.30		1.7	0.55	1.20	+0.00	22.2	-0.06	33.2	31.7	4.4	3.0	2.0	1.52	28000	4980
0250	25	23.9		1.30		1.7	0.55	1.20		23.2		34.2	32.7	4.4	3.0	2.0	1.70	29200	5180
0260	26	24.9	+0.00	1.30		1.7	0.55	1.20		24.2		35.5	33.9	4.5	3.1	2.0	1.75	30400	5390
0270	27	25.6	-0.21	1.30	+0.14	2.1	0.70	1.20		24.9	+0.21	36.7	34.8	4.6	3.1	2.0	1.89	31600	7130
0280	28	26.6		1.60	-0.00	2.1	0.70	1.50		25.9	-0.42	37.9	36.0	4.7	3.2	2.0	2.47	40900	7390
0290	29	27.6		1.60		2.1	0.70	1.50		26.9		39.1	37.2	4.8	3.4	2.0	2.75	42400	7650
0300	30	28.6		1.60		2.1	0.70	1.50		27.9		40.5	38.6	5.0	3.5	2.0	2.93	43800	7920
0320	32	30.3		1.60		2.6	0.85	1.50		29.6		43.0	40.7	5.2	3.6	2.5	3.02	46700	10300
0330	33	31.3		1.60		2.6	0.85	1.50		30.5		44.0	41.7	5.2	3.7	2.5	3.30	48200	10600
0340	34	32.3		1.60		2.6	0.85	1.50		31.5	+0.25	45.4	43.1	5.4	3.8	2.5	3.72	49700	10900
0350	35	33.0		1.60		3.0	1.00	1.50		32.2	-0.50	46.8	44.2	5.6	3.9	2.5	3.78	51100	13200
0360	36	34.0		1.85		3.0	1.00	1.75		33.2		47.8	45.2	5.6	4.0	2.5	4.55	51400	13600
0380	38	36.0		1.85		3.0	1.00	1.75		35.2		50.2	47.6	5.8	4.2	2.5	5.08	54800	14300
0400	40	37.5	+0.00	1.85		3.8	1.25	1.75		36.5		52.6	49.5	6.0	5.0	2.5	5.54	56600	18800
0420	42	39.5	-0.25	1.85		3.8	1.25	1.75		38.5		55.7	52.5	6.5	5.0	2.5	5.99	59500	19800
0450	45	42.5		1.85		3.8	1.25	1.75		41.5		59.1	55.9	6.7	5.0	2.5	6.75	63700	21200
0460	46	43.5		1.85		3.8	1.25	1.75		42.5	+0.39	60.1	56.9	6.7	5.0	2.5	7.24	65100	21700
0470	47	44.5		1.85		3.8	1.25	1.75		43.5	-0.90	61.3	58.1	6.8	5.0	2.5	7.30	66500	22100
0480	48	45.5		1.85		3.8	1.25	1.75		44.5		62.5	59.3	6.9	5.0	2.5	7.51	67900	22600
0500	50	47.0		2.15		4.5	1.50	2.00		45.8		64.5	60.8	6.9	5.5	2.5	9.88	80900	28300
0520	52	49.0		2.15		4.5	1.50	2.00		47.8		66.7	63.0	7.0	5.5	2.5	9.53	84100	29400
0540	54	51.0		2.15		4.5	1.50	2.00		49.8		69.0	65.2	7.1	5.5	2.5	10.30	87400	30500
0550	55	52.0		2.15		4.5	1.50	2.00		50.8		70.2	66.4	7.2	5.5	2.5	10.41	89000	31100
0560	56	53.0	+0.00	2.15		4.5	1.50	2.00		51.8		71.6	67.6	7.3	5.5	2.5	10.50	90600	31700
0580	58	55.0	-0.30	2.15		4.5	1.50	2.00	+0.00	53.8	+0.46	73.6	69.6	7.3	5.6	2.5	12.47	93800	32800
0600	60	57.0		2.15		4.5	1.50	2.00	-0.07	55.8	-1.10	75.6	71.8	7.4	5.8	2.5	13.69	97100	33900
0620	62	59.0		2.15		4.5	1.50	2.00		57.8		77.8	74.0	7.5	6.0	2.5	12.36	100000	35100
0630	63	60.0		2.15		4.5	1.50	2.00		58.8		79.0	75.2	7.6	6.2	2.5	13.10	102000	35600
0650	65	62.0		2.65		4.5	1.50	2.50		60.8		81.4	77.6	7.8	6.3	3.0	20.44	131000	36800

Standard material - carbon spring steel. Standard finish - phosphate and oil.

Standard External Circlips (Euro Spec.)

D1400 (continued)



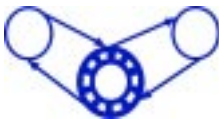
Townsend Bearings

Competitors Equivalents

Anderton	Seeger	Waldes/Salter	Anderton	Seeger	Waldes/Salter	Anderton	Seeger	Waldes/Salter
A0500	—	—	D1400	DIN471 (A)	7100*	N1500	—	5133
A0600	—	—	N1400	—	5100	A1500U,C&S	—	2025, 2021, 2026*
A0700	—	—	B1400	AZ	6100*	N1501	—	5131
A0900	—	—	M1408	AV	—	N1540	—	5144
A1000	—	—	N1408	—	5108	M1700	—	—
A1100	—	—	M1440	G	—	M1800	H	—
A1200	—	—	N1440	—	5555	N1800	—	5103
D1300	DIN472 (J)	7000*	D1460	DIN471 (AS)	—	D2000	DIN984 (JK)	—
N1300	—	N5000	N1460	—	5160	D2100	DIN983 (AK)	—
B1300	JZ	6000*	M1465	—	7115*	M2300	SB	—
N1302	—	N5002	N1465	—	5115	M2400	SW	—
N1305	—	5005	B1500	—	6133*	M2500	—	—
M1308	JV	—	D1500	DIN6799 (RS)	7133*	M3200	DIN5417 (SP)	—
N1308	—	5008						

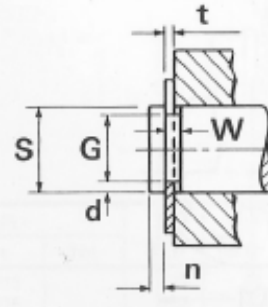
*Salter only

SIZE CODE	Shaft		Groove (G)					Circlip (F)								Wt. (kg/k)	Tc† (N)	Tg† (N)	
	S	G	Tol.	W	Tol.	n (min)	d ~	t	Tol.	D	Tol.	C	C1	L (max)	b ~				h (min)
0670	67	64.0		2.65		4.5	1.50	2.50		62.5		83.6	79.8	7.9	6.4	3.0	20.43	135000	37900
0680	68	65.0		2.65		4.5	1.50	2.50		63.5		84.4	81.0	8.0	6.5	3.0	19.55	138000	38500
0700	70	67.0		2.65		4.5	1.50	2.50		65.5		87.0	83.2	8.1	6.6	3.0	22.13	142000	39600
0720	72	69.0	+0.00	2.65	+0.14	4.5	1.50	2.50	+0.00	67.5		89.2	85.4	8.2	6.8	3.0	21.60	146000	40700
0750	75	72.0	-0.30	2.65	-0.00	4.5	1.50	2.50	-0.07	70.5	+0.46	92.7	88.8	8.4	7.0	3.0	24.65	152000	42400
0770	77	74.0		2.65		4.5	1.50	2.50		72.5	-1.10	94.9	91.0	8.5	7.2	3.0	24.26	156000	43500
0780	78	75.0		2.65		4.5	1.50	2.50		73.5		96.1	92.2	8.6	7.3	3.0	28.10	158000	44100
0800	80	76.5		2.65		5.3	1.75	2.50		74.5		98.1	93.7	8.6	7.4	3.0	26.68	162000	52800
0820	82	78.5		2.65		5.3	1.75	2.50		76.5		100.3	95.9	8.7	7.6	3.0	28.35	166000	54100
0850	85	81.5		3.15		5.3	1.75	3.00		79.5		103.3	98.9	8.7	7.8	3.5	35.40	206000	56100
0880	88	84.5	+0.00	3.15		5.3	1.75	3.00	+0.00	82.5		106.5	102.0	8.8	8.0	3.5	39.85	214000	58100
0900	90	86.5	-0.35	3.15		5.3	1.75	3.00	-0.08	84.5		108.5	104.0	8.8	8.2	3.5	38.89	218000	59400
0950	95	91.5		3.15		5.3	1.75	3.00		89.5		114.8	111.0	9.4	8.6	3.5	42.39	231000	62700
0980	98	94.5		3.15		5.3	1.75	3.00		91.5		118.6	114.0	9.8	9.0	3.5	54.00	238000	64700
1000	100	96.5		3.15		5.3	1.75	3.00		94.5		120.2	116.0	9.6	9.0	3.5	48.86	243000	66000
1020	102	98.0		4.15		6.0	2.00	4.00		95.0	+0.54	122.4	118.0	9.7	9.2	3.5	68.73	330000	76900
1050	105	101.0		4.15		6.0	2.00	4.00		98.0	-1.30	126.2	122.0	10.1	9.3	3.5	73.16	340000	79200
1080	108	104.0	+0.00	4.15		6.0	2.00	4.00		100.0		129.0	124.0	10.0	9.5	3.5	83.45	349000	81400
1100	110	106.0	-0.54	4.15		6.0	2.00	4.00		103.0		131.2	127.0	10.1	9.6	3.5	75.24	356000	82900
1150	115	111.0		4.15		6.0	2.00	4.00		108.0		137.3	133.0	10.6	9.8	3.5	78.65	327000	86700
1200	120	116.0		4.15		6.0	2.00	4.00		113.0		143.1	138.0	11.0	10.2	3.5	85.58	388000	90500
1250	125	121.0		4.15		6.0	2.00	4.00		118.0		149.0	144.0	11.4	10.4	4.0	99.62	404000	94200
1300	130	126.0		4.15		6.0	2.00	4.00		123.0		154.4	150.0	11.6	10.7	4.0	98.10	421000	98000
1350	135	131.0		4.15		6.0	2.00	4.00		128.0		159.8	155.0	11.8	11.0	4.0	113.40	437000	102000
1400	140	136.0		4.15		6.0	2.00	4.00	+0.00	133.0		165.2	160.0	12.0	11.2	4.0	119.18	453000	106000
1450	145	141.0		4.15		6.0	2.00	4.00	-0.10	138.0		170.6	166.0	12.2	11.5	4.0	128.53	470000	109000
1500	150	145.0	+0.00	4.15		7.5	2.50	4.00		142.0		177.3	171.0	13.0	11.8	4.0	132.80	485000	114000
1550	155	150.0	-0.63	4.15	+0.18	7.5	2.50	4.00		146.0	+0.63	182.3	176.0	13.0	12.0	4.0	136.06	501000	146000
1600	160	155.0		4.15	-0.00	7.5	2.50	4.00		151.0	-1.50	188.0	182.0	13.3	12.2	4.0	137.50	518000	151000
1650	165	160.0		4.15		7.5	2.50	4.00		155.5		193.4	187.0	13.5	12.5	4.0	151.96	534000	156000
1700	170	165.0		4.15		7.5	2.50	4.00		160.5		198.4	192.0	13.5	12.9	4.0	169.00	550000	160000
1750	175	170.0		4.15		7.5	2.50	4.00		165.5		203.4	197.0	13.5	12.9	4.0	173.70	566000	165000
1800	180	175.0		4.15		7.5	2.50	4.00		170.5		210.0	204.0	14.2	13.5	4.0	188.00	582000	170000
1850	185	180.0		4.15		7.5	2.50	4.00		175.5		215.2	209.0	14.3	13.5	4.0	193.00	598000	174000
1900	190	185.0		4.15		7.5	2.50	4.00		180.5		220.0	214.0	14.2	14.0	4.0	203.00	615000	179000
1950	195	190.0		4.15		7.5	2.50	4.00		185.5		225.0	219.0	14.2	14.0	4.0	209.50	631000	184000
2000	200	195.0		4.15		7.5	2.50	4.00		190.5		230.0	224.0	14.2	14.0	4.0	214.00	647000	188000
2050	205	199.0	+0.00	5.15		9.0	3.00	5.00		193.0		235.0	228.0	14.2	14.0	4.0	278.00	721000	232000
2100	210	204.0	-0.72	5.15		9.0	3.00	5.00		198.0	+0.72	240.0	233.0	14.2	14.0	4.0	285.00	739000	238000
2200	220	214.0		5.15		9.0	3.00	5.00		208.0	-1.70	250.0	243.0	14.2	14.0	4.0	298.50	775000	249000
2300	230	224.0		5.15		9.0	3.00	5.00	+0.00	218.0		260.0	253.0	14.2	14.0	4.0	312.00	809000	260000
2400	240	234.0		5.15		9.0	3.00	5.00	-0.12	228.0		270.0	263.0	14.2	14.0	4.0	326.00	844000	271000
2500	250	244.0		5.15		9.0	3.00	5.00		238.0		280.0	272.0	14.2	14.0	4.0	340.00	880000	283000
2600	260	252.0		5.15		12.0	4.00	5.00		245.0		294.0	285.0	16.2	16.0	5.0	414.00	915000	392000
2700	270	262.0		5.15		12.0	4.00	5.00		255.0		304.0	295.0	16.2	16.0	5.0	430.50	950000	407000
2800	280	272.0	+0.00	5.15		12.0	4.00	5.00		265.0	+0.81	314.0	305.0	16.2	16.0	5.0	446.50	985000	422000
2900	290	282.0	-0.81	5.15		12.0	4.00	5.00		275.0	-2.00	324.0	315.0	16.2	16.0	5.0	463.00	1020000	437000
3000	300	292.0		5.15		12.0	4.00	5.00		285.0		334.0	325.0	16.2	16.0	5.0	479.00	1056000	452000
3100	310	300.0		6.20		15.0	5.00	6.00		293.0		352.2	341.0	20.2	20.0	6.0	710.50	1309000	584000
3200	320	310.0		6.20		15.0	5.00	6.00		303.0		362.2	351.0	20.2	20.0	6.0	734.00	1351000	603000
3300	330	320.0		6.20	+0.22	15.0	5.00	6.00	+0.00	313.0	+1.00	372.2	361.0	20.2	20.0	6.0	757.00	1393000	622000
3400	340	330.0		6.20	-0.00	15.0	5.00	6.00		323.0		382.2	371.0	20.2	20.0	6.0	780.00	1436000	641000
3500	350	340.0		6.20		15.0	5.00	6.00		333.0		392.2	381.0	20.2	20.0	6.0	805.00	1478000	660000
3600	360	350.0	+0.00	6.20		15.0	5.00	6.00	-0.18	343.0	-2.50	402.2	391.0	20.2	2				



All dimensions in mm

Standard material - carbon spring steel.
Standard finish - phosphate and oil.



Circlip in groove

*This size in Beryllium copper only

SIZE CODE	B.S. Ref	Shaft (S)		Groove (G)				Circlip (F)						Tc† (N)	Tg† (N)	Applicator	BASE		
		S.	Tol.	G.	Tol.	W.	Tol.	n (min)	d Nom	t	Tol.	D1	C1					A	Tol.
*0008	008MS	1.20	±0.20	0.8	+0.00 -0.04	0.24	+0.04 -0.00	0.4	0.20	0.20	±0.02	1.95	2.25	0.58	±0.04	63	30	—	—
0012	012MS	1.70	±0.30	1.2		0.34		0.6	0.25	0.30		2.90	3.25	1.01		203	53	2B	DR 1.2
0015	015MS	2.25		1.5		0.44		0.8	0.38	0.40		3.85	4.25	1.28		358	105	21A	DR 1.5
0019	019MS	2.75	±0.25	1.9	+0.00 -0.06	0.54		1.0	0.43	0.50		4.40	4.8	1.61		546	145	22	DR 1.9
0023	023MS	3.50	±0.50	2.3		0.64		1.0	0.60	0.60		5.90	6.3	1.94		835	260	3C	DR 2.3
0032	032MS	4.50		3.2		0.64	+0.05 -0.00	1.0	0.65	0.60	±0.03	6.80	7.3	2.70	±0.048	1070	365	AM9	DR 3.2
0040	040MS	6.00		4.0	+0.00	0.74		1.2	1.00	0.70		8.80	9.3	3.34		1670	745	23B	DR 4
0050	050MS	7.00	±1.00	5.0	-0.075	0.74		1.2	1.00	0.70		10.75	11.3	4.11		1950	870	7B	DR 5
0060	060MS	8.00		6.0		0.74		1.2	1.00	0.70		11.75	12.3	5.26		2220	995	24	DR 6
0070	070MS	9.50	±1.50	7.0		0.94		1.5	1.25	0.90		13.80	14.3	5.84		3400	1480	15	FR 7
0080	080MS	10.50		8.0	+0.00	1.05		1.8	1.25	1.00	±0.03	15.60	16.3	6.52	±0.058	4170	1630	AM20	FR 8
0090	090MS	12.00		9.0	-0.09	1.15		2.0	1.50	1.10		18.20	18.8	7.63		5250	2240	25	FR 9
0100	100MS	13.00	±2.00	10.0		1.25		2.0	1.50	1.20		19.65	20.4	8.32		6200	2430	26	FR 10
0120	120MS	15.50	±2.50	12.0	+0.00	1.35	+0.08 -0.00	2.5	1.75	1.30		22.65	23.4	10.45		8010	3370	27	FR 12
0150	150MS	20.00	±4.00	15.0	-0.11	1.55		3.0	2.50	1.50		28.60	29.4	12.61		11900	6220	20B	FR 15
0190	190MS	25.50	±5.50	19.0	+0.00	1.85		3.5	3.25	1.75	±0.03	36.70	37.6	15.92	±0.084	17700	10300	32A	FR 19
0240	240MS	31.50	±6.50	24.0	-0.13	2.05		4.0	3.75	2.00		43.65	44.6	21.88		25000	14700	—	—

Sizes printed in grey are preferred sizes.

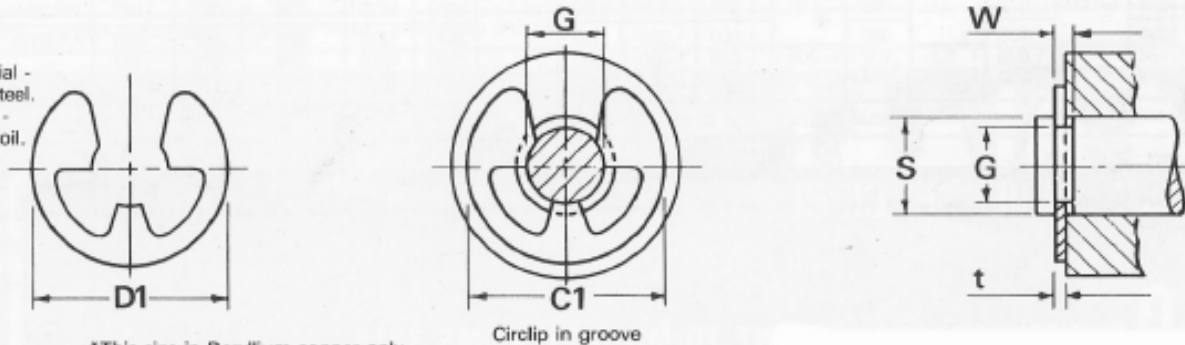
Standard Series 'E' Clips
N1500 incorporating BS 3673 Pt 2
 and MIL-R-21248 / MS 1663



Townsend Bearings

All dimensions in inches

Standard material - carbon spring steel.
 Standard finish - phosphate and oil.



*This size in Beryllium copper only

SIZE CODE	B.S. Ref.	Shaft (S)		Groove (G)				Circlip (F)				Tc† (lb.f)	Tg† (lb.f)	Appli-cator	Base	SIZE CODE
		S	Tol.	G	Tol.	W	Tol.	D1	C1	t	Tol.					
*X004	028PS	.040	+ .010 - .000	.026	+ .002 - .000	.012	.002	.079	.090	.010	± .001	15	5	—	—	X004
X006	—	.062		.052		.012		.140	.150	.010		36	6	AM2	SF2	X006
0006	054PS	.062		.052		.012		.156	.165	.010		36	6	AM3	SF3	0006
Y006	—	.062	+ .030	.052		.023		.187	.200	.020		72	6	—	—	Y006
X009	—	.094	- .000	.074		.018		.230	.245	.015		81	17	AM7	SF4	X009
0009	076PS	.094		.074		.018		.187	.200	.015		81	17	AM5	SF5	0009
X011	081A2	.110		.079		.018		.375	.390	.015		95	32	AM6	SF6	X011
0012	097PS	.125		.095		.018		.230	.240	.015		108	35	AM7	SF7	0012
X014	104PS	.140	+ .040	.102		.018		.203	.214	.015		121	50	AM8	SF8	X014
Y014	112A1	.140	- .000	.110	.018	.250	.265	.015	121	39	AM10	SF10	Y014			
0014	107A1	.140		.105	+ .003 - .000	.029	.003	.270	.285	.025	± .002	202	46	AM9	SF9	0014
0015	118A1	.156	+ .050	.116		.029		.282	.295	.025		225	58	AM11	SF11	0015
X017	129PS	.172	- .000	.127		.029		.312	.325	.025		248	72	AM12	SF12	X017
X018	—	.188	+ .060	.125		.029		.375	.390	.025		271	110	AM13	SF13	X018
0018	149PS	.188	- .000	.147		.029		.335	.350	.025		271	72	AM14	SF14	0018
X021	190PS	.219		.188		.029		.437	.450	.025		316	63	AM15	SF15	X021
0025	212PS	.250		.210		.029		.527	.540	.025		361	93	AM16	SF16	0025
X031	252PS	.312	+ .100	.250		.029		.500	.520	.025		450	180	AM16	SF17	X031
0037	308PS	.375	- .000	.303		.039		.660	.680	.035		757	252	AM18	SF18	0037
0043	346PS	.438		.343	.039	.687	.710	.035	885	388	AM19	SF19	0043			
X043	383A1	.438		.380	+ .003 - .000	.039	.003	.600	.620	.035	± .003	884	237	AM20	SF20	X043
0050	399PS	.500		.396		.046		.800	.820	.042		1210	485	AM21	SF21	0050
0062	488PS	.625		.485		.046		.940	.960	.042		1510	816	AM22	SF22	0062
X074	628A1	.744	+ .120	.625		.056		1.000	1.020	.050		2160	1190	AM23	SF23	X074
0075	583PS	.750	- .000	.580		.056		1.120	1.140	.050		2520	1630	AM24	SF24	0075
0087	678PS	.875		.675		.056		1.300	1.320	.050		2840	1370	AM25	SF25	0087
X098	—	.984		.835		.056		1.500	1.530	.050		4250	1210	AM26	SF26	X098
X118	—	1.188	+ .200	1.079		+ .005		1.626	1.670	.062		4920	1860	AM27	SF27	X118
X137	—	1.375	- .000	1.230		- .000		1.875	1.920	.062		4920	1860	—	—	X137

Sizes printed in grey are preferred sizes.

Townsend Bearings & Transmissions Limited

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