



# Engineering Preferred Parts

Number:	N-030
Date issued:	AUG 1990

## RETAINING RINGS GENERAL SPECIFICATIONS

A-JUL13  
B-DEC14  
C-DEC18

**GENERAL:** This specification consists of various types of internal and external retaining rings conforming essentially to industry standards. For additional types of retaining rings, refer to N-055 and N-060.

**MATERIAL:** The standard material for retaining rings shall be carbon spring steel within a range of SAE-1060 to 1090 with a hardness range of RC 44 to 53 and tensile strength of 211,000 to 280,000 psi, depending on size.

**FINISH:** Rings shall be furnished unplated or plated as follows.  
Unplated (PLN) rings made of carbon spring steel are to be supplied oil dipped or with a black corrosion resistant finish which may be either a black oxide or phosphate coating.

Plated (PLTD) rings made of carbon spring steel are to be plated per ZNM YCR, MAT0310, Class 8.

Plating of rings must be applied by a mechanical plating process to avoid the risk of hydrogen embrittlement.

The standard minimum plating thickness for cadmium and zinc is .0003".

**WORKMANSHIP:** Retaining rings shall be free from burrs, rust, pit marks, and all defects which might affect their serviceability.

All rings which have been subject to hardness identification tests shall be eliminated from all shipments.

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Date issued: AUG 1990

## VENDOR SERIES AND CROSS REFERENCE CHARTS

Internal Type				
Waldes	Anderton	Rotor Clip	Dimensional Page	Part No. Page
N5000	1300	HO	N-030.3	N-031
N5002	1302	VHO	N-030.6	N-032
5005	-	-	N-030.8	N-033
5008	1308	HOI	N-030.9	N-034

External Type				
Waldes	Anderton	Rotor Clip	Dimensional Page	Part No. Page
5100	1400	SH	N-030.10	N-040
5102	1402	VSH	N-030.19	N-044
5103	1800	C	N-030.16	N-042
5107	-	-	N-030.21	N-045
5108	1408	SHI	N-030.22	N-046
5115	-	-	N-030.23	N-047
5133	1500	E	N-030.15	N-041
5144	1540	RE	N-030.18	N-043
5160	1460	SHR	N-030.24	N-048
5555	1440	SHF	N-030.25	N-049

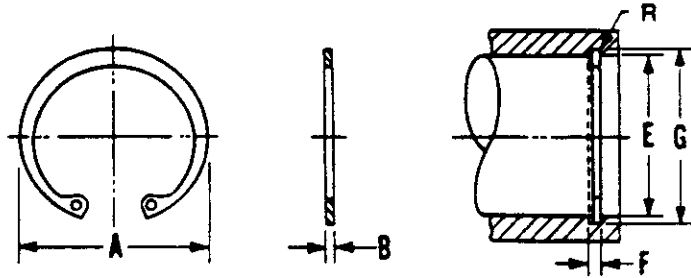




# Engineering Preferred Parts

Number: N-030  
Date issued: AUG 1990

## BASIC INTERNAL RETAINING RINGS SERIES N5000 \*



All dimensions are in inches

Size Number	Housing Diameter	Ring Dimensions				Groove Dimensions					
		Free Diameter		Thickness		Diameter		Width		Radii	
		E	A	Tol	B	Tol	G	Tol	F	Tol	R
25	.250	.280			.015		.268	±.001	.018	+ .002	
31	.312	.346			.015		.330	.0015 FIM	.018	- .000	
37	.375	.415			.025		.397	±.002	.029		
43	.438	.482			.025		.461	.002 FIM	.029		
50	.500	.548	+ .010		.035		.530		.039		
56	.562	.620	- .005		.035		.596	±.002	.039		
62	.625	.694			.035		.665	.004 FIM	.039		
68	.688	.763			.035		.732		.039		
75	.750	.831			.035		.796		.039	+ .003	.005 max.
77	.777	.859			.042		.825		.046	- .000	
81	.812	.901			.042		.862		.046		
86	.866	.961			.042		.920		.046		
87	.875	.971	+ .015		.042	±.002	.931	±.003	.046		
90	.901	1.000	- .010		.042		.959	.004 FIM	.046		
93	.938	1.041			.042		1.000		.046		
100	1.000	1.111			.042		1.066		.046		
102	1.023	1.136			.042		1.091		.046		
106	1.062	1.180			.050		1.130		.056		
112	1.125	1.249			.050		1.197		.056		
118	1.188	1.319			.050		1.262		.056		
125	1.250	1.388	+ .025		.050		1.330		.056		
131	1.312	1.456	- .020		.050		1.396	±.004	.056	+ .004	-.010 max.
137	1.375	1.526			.050		1.461	.005 FIM	.056	- .000	
143	1.438	1.596			.050		1.528		.056		
145	1.456	1.616			.050		1.548		.056		
150	1.500	1.660			.050		1.594		.056		

\* For Vendor Cross Reference see N-030.2  
For Part Numbers See N-031

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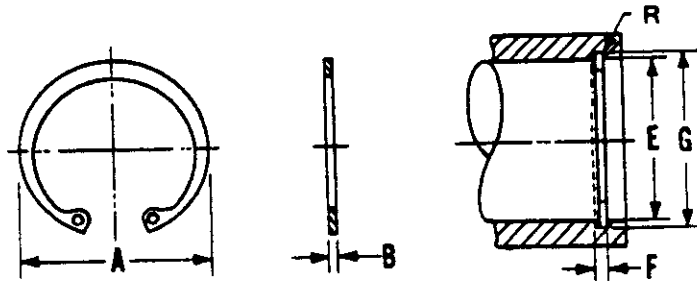




# Engineering Preferred Parts

Number: N-030  
Date Issued: AUG 1990

## BASIC INTERNAL RETAINING RINGS (Continued) SERIES N5000 \*



All dimensions are in inches

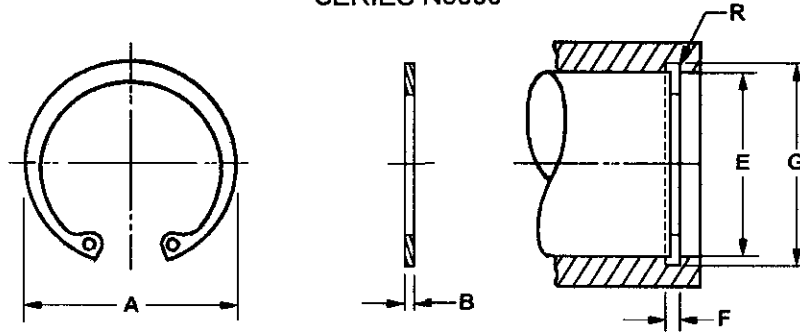
Size Number	Housing Diameter	Ring Dimensions				Groove Dimensions					
		Free Diameter		Thickness		Diameter		Width		Radii	
		E	A	Tol	B	Tol	G	Tol	F	Tol	R
156	1.562	1.734			.062		1.658		.068		
162	1.625	1.804			.062		1.725		.068		
165	1.653	1.835			.062		1.755		.068		
168	1.688	1.874			.062		1.792		.068		
175	1.750	1.942	+ .035		.062		1.858	± .005	.068	+ .004	
181	1.812	2.012	- .025		.062		1.922	.005 FIM	.068	- .000	
185	1.850	2.054			.062		1.962		.068		
187	1.875	2.072			.062		1.989		.068		
193	1.938	2.141			.062		2.056		.068		
200	2.000	2.210			.062		2.122		.068		
206	2.062	2.280			.078		2.186		.086		
212	2.125	2.350			.078		2.251		.086		
218	2.188	2.415			.078	± .003	2.318		.086		.010 max.
225	2.250	2.490			.078		2.382		.086		
231	2.312	2.535			.078		2.450		.086		
237	2.375	2.630			.078		2.517		.086		
244	2.440	2.702			.078		2.584		.086		
250	2.500	2.775	+ .040		.078		2.648	± .006	.086	+ .005	
256	2.562	2.844	- .030		.093		2.714	.006 FIM	.103	- .000	
262	2.625	2.910			.093		2.781		.103		
268	2.688	2.980			.093		2.837		.103		
275	2.750	3.050			.093		2.914		.103		
281	2.812	3.121			.093		2.980		.103		
287	2.875	3.191			.093		3.051		.103		
300	3.000	3.325			.093		3.182		.103		

\* For Vendor Cross Reference see N-030.2  
For Part Numbers See N-031



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### BASIC INTERNAL RETAINING RINGS (Continued) SERIES N5000\*



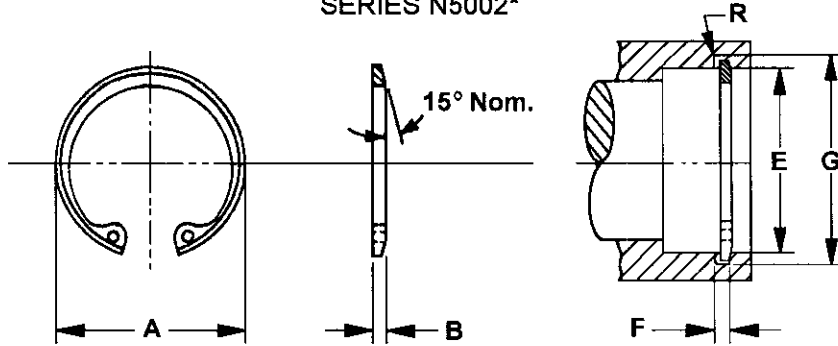
All dimensions are in inches

Size Number	Housing Dia. E	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol	B	Tol	G	Tol	F	Tol	R
306	3.062	3.418	±.055	.109	±.003	3.248	.006 FIM	.120	+.005 -.000	.010 max.
312	3.125	3.488		.109		3.315		.120		
315	3.156	3.523		.109		3.348		.120		
325	3.250	3.623		.109		3.446		.120		
334	3.346	3.734		.109		3.546		.120		
350	3.500	3.890		.109		3.710		.120		
354	3.562	3.936		.109		3.776		.120		
375	3.750	4.157		.109		3.974		.120		
387	3.875	4.291	.109	4.107	.120					
393	3.938	4.358	.109	4.174	.120					
400	4.000	4.425	.109	4.140	.120					
412	4.125	4.558	.109	4.365	.120					
425	4.250	4.691	.109	4.490	.120					
433	4.331	4.756	±.065	.109	4.571	.120				
450	4.500	4.940		.109	4.740	.120				
462	4.625	5.076		.109	4.865	.120				
475	4.750	5.213		.109	4.995	.120				
500	5.000	5.485		.109	5.260	.120				
550	5.500	6.066		.125	±.004	5.770	±.007	.139	+.006	
600	6.000	6.620		.125	±.004	6.270	.006 FIM	.139	-.000	
625	6.625	6.895		±.080	.156	±.005	6.530	±.008 .006 FIM	.174	0.008
725	7.500	7.995	±.090	.187	±.005	7.575	.209			
750	7.500	8.270		.187	7.840	.209				
775	7.750	8.545		.187	8.100	.209				

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-031

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### BEVELED INTERNAL RETAINING RINGS SERIES N5002\*



All dimensions are in inches

Size Number	Housing Dia.	Ring Dimensions				Groove Dimensions								
		Free Diameter		Thickness		Diameter		Width		Radii				
		E	A	Tol	B	Tol	G	Tol	F	Tol	R			
100	1.000	1.111	+0.015 - .010	.042	±.002	1.076	+0.003 - .000 .004 FIM	.036						
118	1.188	1.319	+0.025 - .020	.050		1.272	+0.004 - .000 .005 FIM	.043	+0.001 - .000		.005 max.			
156	1.562	1.734	+0.035 - .025	.062	±.003	1.674	+0.005 - .000 .005 FIM	.052	+0.0015 - .000					
162	1.625	1.804		.062		1.743		.051						
165	1.653	1.835		.062		1.773		.051						
185	1.850	2.054		.062		1.984		.050						
200	2.000	2.210		.062		2.144		.048						
206	2.062	2.280	.078	2.210		.065								
244	2.440	2.702	.078	2.618		.062								
250	2.500	2.775	+0.040 - .030	.078		2.684	.062	+0.006 - .000 .006 FIM				+0.002 - .000		
262	2.625	2.910	.093	2.820		.077								
275	2.750	3.050	.093	2.955		.076								
281	2.835	3.121	.093	3.043		.076								
300	3.000	3.325	.093	3.225		.074								
306	3.062	3.418	.109	3.290		.089								
315	3.156	3.523	.109	3.388		.089								
334	3.346	3.734	±.055	.109		3.591	.089							
350	3.500	3.890	.109	3.760	.089									
354	3.562	3.936	.109	3.830	.089									
387	3.875	4.291	.109	4.171	.089									
393	3.938	4.358	.109	4.236	.089									
433	4.331	4.756	±.065	.109	4.647	.089								
475	4.750	5.213	.109	5.086	.089									
500	5.000	5.485	.109	5.346	.089									

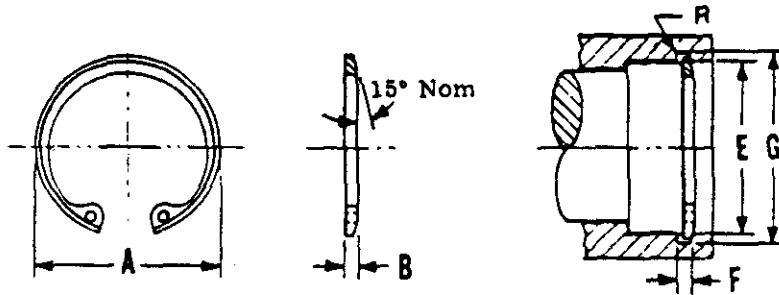
\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-032



# Engineering Preferred Parts

Number: N-030  
Date Issued: AUG 1990

## BEVELED INTERNAL RETAINING RINGS (Continued) SERIES N5002 \*



All dimensions are in inches

Size Number	Housing Diameter E	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol	B	Tol	G	Tol	F	Tol	R
550	5.500	6.066	$\pm .065$	.125	$\pm .004$	5.864	$\begin{matrix} +.007 \\ -.000 \\ \text{.006 FIM} \\ +.008 \\ -.000 \end{matrix}$	.102	$\begin{matrix} +.003 \\ -.000 \end{matrix}$	.010 max.
625	6.250	6.895	$\pm .080$	.156	$\pm .005$	6.642	$\begin{matrix} \text{.006 FIM} \end{matrix}$	.129		

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-032

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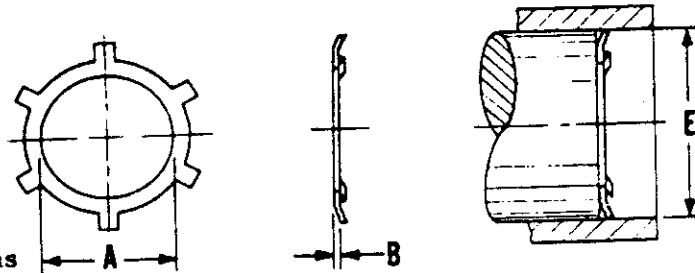




# Engineering Preferred Parts

Number: N-030  
Date issued: AUG 1990

## CIRCULAR PUSH-ON INTERNAL RETAINING RINGS SERIES 5005 \* NON-PREFERRED PARTS



All dimensions are in inches

Size Number	Housing Diameter E	Ring Dimensions				Number of Prongs
		Diameter		Thickness		
		A	Tol	B	Tol	
31	.312	.136	±.005	.010	±.001	6
37	.375	.175		.010		6
43	.438	.237		.010		6
44	.441	.258		.010		6
50	.500	.258		.010		6
56	.562	.312		.010		6
62	.625	.390	±.010	.010	±.002	8
75	.750	.500		.015		8
87	.875	.625		.015		10
93	.938	.687		.015		10
100	1.000	.750		.015		10
125	1.250	.938		.015		16
137	1.375	1.050	±.015	.015	12	
150	1.500	1.188	±.010		12	
175	1.750	1.438			12	
200	2.000	1.600			14	

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-033

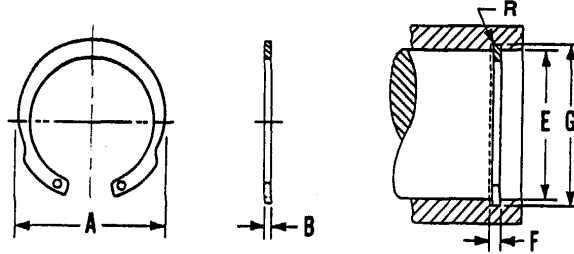


# Standard Parts

Number:	N-030
Date Issued:	B-DEC14

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## INVERTED INTERNAL RETAINING RINGS SERIES 5008 \* NON-PREFERRED PARTS



All dimensions are in inches

Size Number	Housing Dia.	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		E	A	Tol	B	Tol	G	Tol	F	Tol
62	.625	.675		.025			±.002			
75	.750	.808		.035		.796	.004 FIM	.039		
81	.812	.877	+.010 -.005	.042		.862	±.003 .004 FIM	.046	+.003 -.000	.005 max.
87	.875	.944		.042		.931		.046		
93	.938	1.015		.042		1.000		.046		
100	1.000	1.081		.042		1.066		.046		
106	1.062	1.150		.050	±.002	1.130		.056		
112	1.125	1.217		.050		1.197		.056		
118	1.188	1.283	+.015 -.010	.050		1.262		.056		
125	1.250	1.351		.050		1.330		.056		
131	1.312	1.418		.050		1.396	±.004 .005FIM	.056	+.004 -.000	
137	1.375	1.486		.050		1.461		.056		
143	1.438	1.552		.050		1.528		.056		
150	1.500	1.622		.050		1.594		.056		
156	1.562	1.688	+.020 -.013	.062		1.658	±.005 .005FIM	.068		
162	1.625	1.756		.062		1.725		.068		
187	1.875	2.025	+.025 -.015	.062		1.989		.068		
206	2.062	2.224		.078		2.186		.086		
237	2.375	2.567		.078	±.003	2.517		.086		.010 max.
243	2.438	2.634		.078		2.584		.086		
250	2.500	2.700	+.030 -.020	.078		2.648	±.006 .006 FIM	.086	±.005	
262	2.625	2.840		.093		2.781		.103		
275	2.750	2.975		.093		2.914		.103		
283	2.812	3.063		.093		2.980		.103		
300	3.000	3.245		.093		3.182		.103		
315	3.156	3.408		.109		3.348		.120		
334	3.346	3.611		.109		3.546		.120		

\* For Vendor Cross Reference see N-030.2 For Part Numbers see N-034

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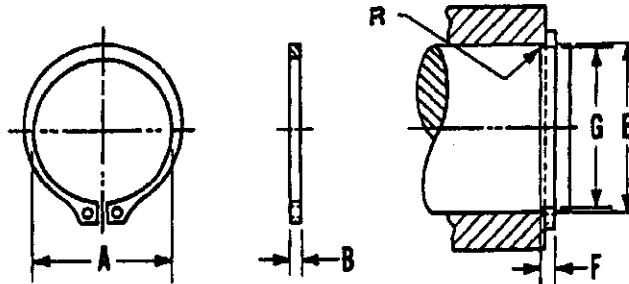


# Standard Parts

Number: N-030  
 Date Issued: A-27FEB2002

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## BASIC EXTERNAL RETAINING RINGS SERIES 5100 \*



All dimensions are in inches

Size Number	Shaft Dia. E	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol	B	Tol	G	Tol	F	Tol	R
			+ .002				±.0015			
			- .004				.0015			
25	.250	.225		.025		.230	T.I.R.	.029		.003 max.
27	.276	.250		.025		.255		.029		
28	.281	.256		.025		.261		.029		
31	.312	.281		.025		.290		.029		
34	.344	.309		.025		.321		.029		
35	.354	.320		.025		.330	±.002	.029		
37	.375	.338	+ .002	.025		.352	.002	.029		
39	.394	.354	- .005	.025	±.002	.369	T.I.R.	.029		
40	.406	.366		.025		.382		.029		
43	.438	.395		.025		.412		.029		
46	.469	.428		.025		.443		.029		
50	.500	.461		.035		.468	±.002	.039	+ .003 - .000	
55	.551	.509		.035		.519	.004	.039		
56	.562	.521		.035		.530	T.I.R.	.039		
59	.594	.550		.035		.559		.039		
62	.625	.579		.035		.588		.039		
66	.672	.621	+ .005	.035		.631	±.003	.039		.005 max.
68	.688	.635	- .010	.042	.646	.004	.046			
75	.750	.693		.042	.704	T.I.R.	.046			
78	.781	.722		.042	.733		.046			
81	.812	.751		.042	.762		.046			
84	.844	.780		.042	.791		.046			

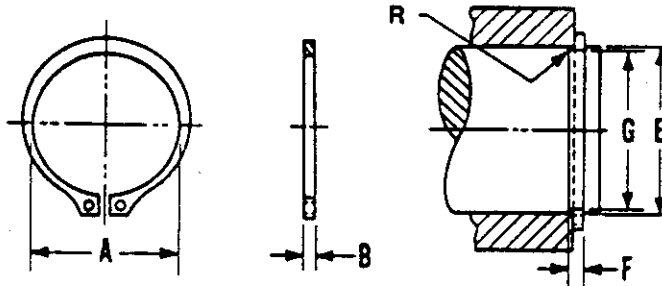
\* For Vendor Cross Reference see N-030.2  
 For Part Numbers see N-040



# Engineering Preferred Parts

Number N-030  
Date Issued: AUG 1990

## BASIC EXTERNAL RETAINING RINGS (Continued) SERIES 5100 \*



All dimensions are in inches

Size Number	Shaft Diameter	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol	B	Tol	G	Tol	F	Tol	R
87	.875	.810		.042		.821		.046		
93	.938	.867		.042		.882	±.003	.046		.005
98	.984	.910	+ .005	.042		.926	.004	.046	+ .003	max.
100	1.000	.925	- .010	.042		.940	T. I. R.	.046	- .000	
102	1.023	.946		.042		.961		.046		
106	1.062	.982		.050		.998		.056		
112	1.125	1.041		.050	±.002	1.059		.056		
118	1.188	1.098		.050		1.118		.056		
125	1.250	1.156	+ .010	.050		1.176	±.004	.056		
131	1.312	1.214	- .015	.050		1.232	.005	.056		
137	1.375	1.272		.050		1.291	T. I. R.	.056		
143	1.438	1.333		.050		1.350		.056		
150	1.500	1.387		.050		1.406		.056		
156	1.562	1.446		.062		1.468		.068	+ .004	.010
162	1.625	1.503		.062		1.529		.068	- .000	max.
168	1.688	1.560		.062		1.589		.068		
175	1.750	1.618		.062		1.650	±.005	.068		
177	1.772	1.637	+ .013	.062	±.003	1.669	.005	.068		
181	1.812	1.675	- .020	.062		1.708	T. I. R.	.068		
187	1.875	1.735		.062		1.769		.068		
196	1.969	1.819		.062		1.857		.068		
200	2.000	1.850		.062		1.886		.068		

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-040

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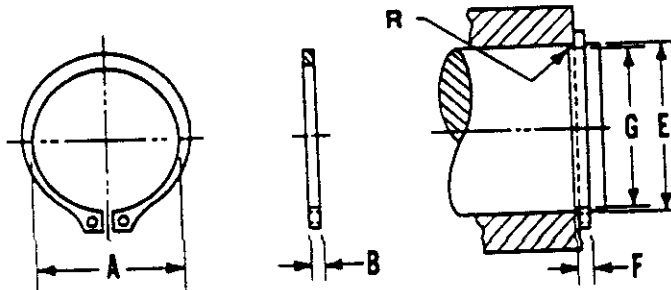




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Number: N-030  
Date issued: AUG 1990

## BASIC EXTERNAL RETAINING RINGS (Continued) SERIES 5100 \*



All dimensions are in inches

Size Number	Shaft Diameter E	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol	B	Tol	G	Tol	F	Tol	R
206	2.062	1.906		.078		1.946		.086		
212	2.125	1.964		.078		2.003		.086		
215	2.156	1.993		.078		2.032		.086		
225	2.250	2.081	+ .015	.078		2.120		.086		
231	2.312	2.139	- .025	.078		2.178		.086		
237	2.375	2.197		.078		2.239		.086		
243	2.438	2.255		.078		2.299	±.006	.086		
250	2.500	2.313		.078	±.003	2.360	.006	.086	+ .005	.010
255	2.559	2.377		.078		2.419	T.I.R.	.086	- .000	max.
262	2.625	2.428		.078		2.481		.086		
268	2.688	2.485		.078		2.541		.086		
275	2.750	2.543	+ .020	.093		2.602		.103		
287	2.875	2.659	- .030	.093		2.721		.103		
293	2.938	2.717		.093		2.779		.103		
300	3.000	2.775		.093		2.838		.103		

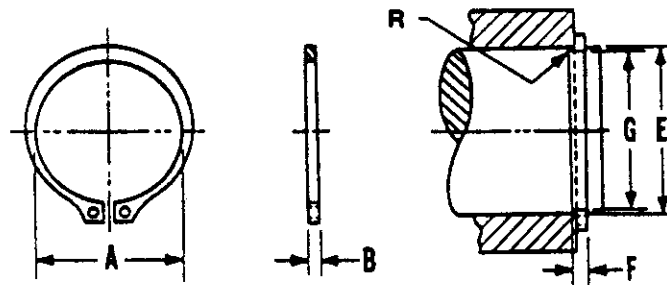
\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-040



# Engineering Preferred Parts

Number: N-030  
Date issued: AUG 1990

## BASIC EXTERNAL RETAINING RINGS (Continued) SERIES 5100 \*



All dimensions are in inches

Size Number	Shaft Diameter	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol	B	Tol	G	Tol	F	Tol	R
306	3.062	2.832		.093		2.898		.103		
312	3.125	2.892		.093		2.957		.103		
315	3.156	2.920		.093		2.986		.103		
325	3.250	3.006		.093		3.076		.103		
334	3.346	3.092		.093		3.166		.103		
343	3.438	3.179		.093		3.257		.103		
350	3.500	3.237		.109		3.316		.120		
354	3.543	3.277		.109		3.357		.120		
362	3.625	3.352		.109		3.435	±.006	.120		
368	3.688	3.410	+.020	.109	±.003	3.493	.006	.120	+.005	
375	3.750	3.468	-.030	.109		3.552	T.I.R.	.120	-.000	
387	3.875	3.584		.109		3.673		.120		.010
393	3.938	3.642		.109		3.734		.120		max.
400	4.000	3.700		.109		3.792		.120		
425	4.250	3.989		.109		4.065		.120		
437	4.375	4.106		.109		4.190		.120		
450	4.500	4.223		.109		4.310		.120		
475	4.750	4.458		.109		4.550		.120		
500	5.000	4.692		.109		4.790		.120		
525	5.250	4.927		.125		5.030		.139		
550	5.500	5.162	+.020	.125		5.265	±.007	.139	+.006	
575	5.750	5.396	-.040	.125	±.004	5.505	.006	.139	-.000	
600	6.000	5.631		.125		5.745	T.I.R.	.139		

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-040

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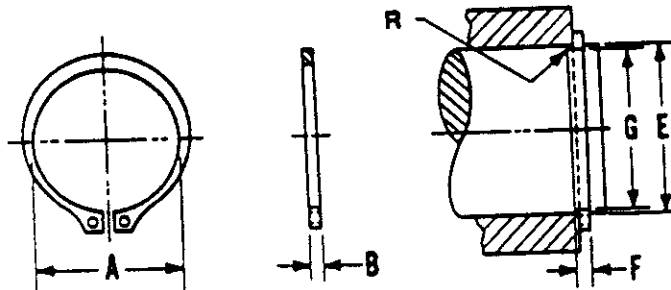




# Engineering Preferred Parts

Number: N-030  
Date issued: AUG 1990

## BASIC EXTERNAL RETAINING RINGS (Continued) SERIES 5100 \*



All dimensions are in inches

Size Number	Shaft Diameter	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol	B	Tol	G	Tol	F	Tol	R
625	6.250	5.866		.156		5.985		.174		
650	6.500	6.100	+ .020	.156		6.225		.174		
675	6.750	6.335	- .050	.156		6.465		.174		
700	7.000	6.570		.156		6.705		.174		
750	7.500	7.039		.187	± .005	7.180	± .008	.209	+ .008	.010 max.
800	8.000	7.508		.187		7.660	.006	.209	- .000	
850	8.500	7.977	+ .020	.187		8.140	T. I. R.	.209		
900	9.000	8.445	- .060	.187		8.620		.209		
950	9.500	8.915		.187		9.100		.209		
1000	10.000	9.385		.187		9.575		.209		

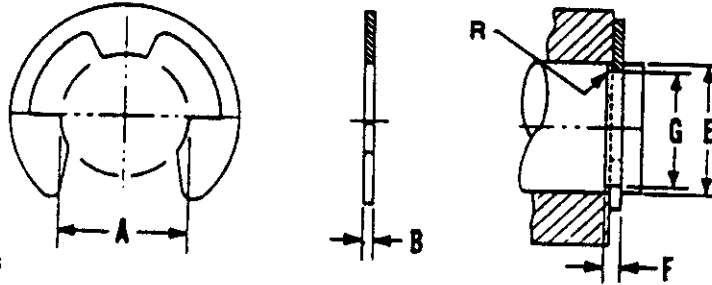
\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-040



# Engineering Preferred Parts

Number N-030  
Date Issued: AUG 1990

## E-RING EXTERNAL RETAINING RINGS SERIES 5133 \*



All dimensions are in inches

Size Number	Shaft Diameter	Ring Dimensions				Groove Dimensions					
		Free Diameter		Thickness		Diameter		Width		Radii	
		E	A	Tol	B	Tol	G	Tol	F	Tol	R
9	.094	.073			.015		.074	+.002	.018		
X 11	.110	.076			.015		.079	-.000	.018		
12	.125	.094			.015		.095	.0015	.018	+.002	
X 14	.140	.100			.015		.102	T.I.R.	.018	-.000	
Y 14	.140	.108			.015		.110		.018		
14	.140	.102	+.001		.025		.105		.029		.005 max.
15	.156	.114	-.003		.025		.116	+.002	.029		
X 17	.172	.125			.025		.127	-.000	.029		
X 18	.188	.122			.025		.125	.002	.029		
18	.188	.145			.025		.147	T.I.R.	.029		
X 21	.219	.185			.025		.188		.029		
25	.250	.207			.025		.210		.029		
X 31	.312	.243			.025	±.002	.250		.029		
37	.375	.300			.035		.303		.039		.010 max.
43	.438	.337	+.002		.035		.343		.039	+.003	
X 43	.438	.375	-.004		.035		.380	+.003	.039	-.000	
50	.500	.392			.042		.396	-.000	.046		
62	.625	.480			.042		.485	.004	.046		
X 74	.744	.616			.050		.625	T.I.R.	.056		
X 74	.750	.616			.050		.625		.056		
75	.750	.574	+.003		.050		.580		.056		
87	.875	.668	-.005		.050		.675		.056		
X 98	.984	.822			.050		.835		.056		.015 max.
X 98	1.000	.822			.050		.835		.056		
X118	1.188	1.066	+.006		.062			+.005			
X137	1.375	1.213	-.010		.062	±.003	1.079	-.000	.068	+.004	
							1.230	.005	.068	-.000	
								T.I.R.			

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-041

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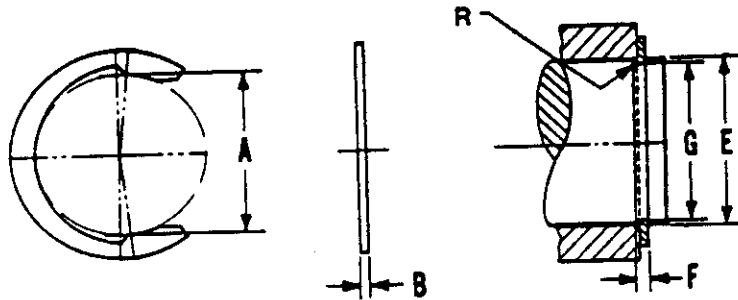




# Engineering Preferred Parts

Number: N-030  
Date issued: AUG 1990

## CRESCENT EXTERNAL RETAINING RINGS SERIES 5103 \* NON-PREFERRED PARTS



All dimensions are in inches

Size Number	Shaft Diameter	Ring Dimensions				Groove Dimensions					
		Free Diameter		Thickness		Diameter		Width		Radii	
		E	A	Tol	B	Tol	G	Tol	F	Tol	R
12	.125	.102			.015		.106	±.0015	.018		
15	.156	.131	+ .002	.015			.135	.0015	.018	+ .002	
18	.188	.161	- .004	.015			.165	T.I.R.	.018	- .000	
21	.219	.187		.025			.193	±.002	.029		
23	.236	.203		.025			.208	.0015	.029		.005 max.
25	.250	.211	+ .003	.025			.220		.029		
28	.281	.242	- .005	.025			.247	±.002	.029		
31	.312	.270		.025			.276	.002	.029		
37	.375	.328		.025			.335	T.I.R.	.029		
40	.406	.359		.025	±.002		.364		.029		
43	.438	.386		.025			.393		.029	+ .003	
50	.500	.441		.035			.450		.039	- .000	
56	.562	.497	±.006	.035			.507		.039		
62	.625	.553		.035			.563		.039		
68	.688	.608		.042			.619	±.003	.046		
75	.750	.665		.042			.676	.004	.046		
81	.812	.721		.042			.732	T.I.R.	.046		.010 max.
87	.875	.777	±.007	.042			.789		.046		
93	.938	.830		.042			.843		.046		
100	1.000	.887		.042			.900		.046		

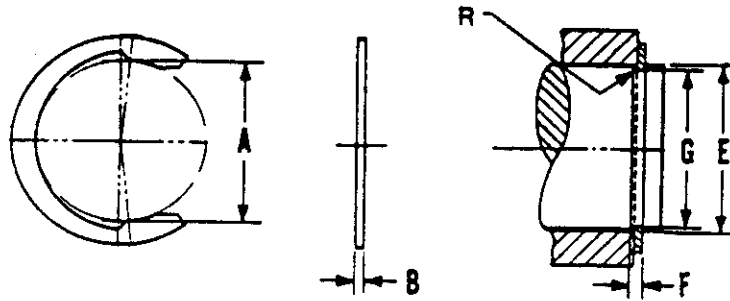
\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-042



# Engineering Preferred Parts

Number	N-030
Date Issued	AUG 1990

## CRESCENT EXTERNAL RETAINING RINGS (Continued) SERIES 5103 \* NON-PREFERRED PARTS



All dimensions are in inches

Size Number	Shaft Diameter E	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol	B	Tol	G	Tol	F	Tol	R
112	1.125	.997		.050		1.013		.056		
125	1.250	1.110		.050		1.126	±.004	.056		
137	1.375	1.220	±.008	.050	±.002	1.237	.005	.056		
150	1.500	1.331		.050		1.350	T.I.R.	.056	+ .004	.015
175	1.750	1.555	±.010	.062	±.003	1.576	±.005	.068	- .000	max.
200	2.000	1.777		.062		1.800	T.I.R.	.068		

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-042

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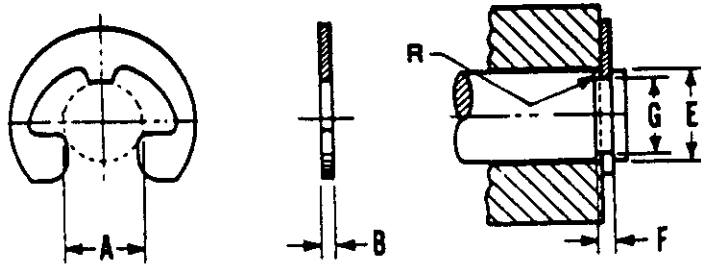


# Engineering Preferred Parts

Number: N-030  
Date issued: AUG 1990

## REINFORCED E EXTERNAL RETAINING RINGS SERIES 5144 \* NON-PREFERRED PARTS

A-JUL13



All dimensions are in inches

Size Number	Shaft Diameter	Ring Dimensions				Groove Dimensions					
		Free Diameter		Thickness		Diameter		Width		Radii	
		A	Tol	B	Tol	G	Tol	F	Tol	R	
9	.094	.072	+ .001	.015	± .002	.074	+ .002 - .000 .0015 T.I.R. ± .002 .002 T.I.R. ± .003 .003 T.I.R. ± .003 .004 T.I.R.	.020	+ .002	.005 max.	
12	.125	.093	- .003	.015		.095		.020	- .000		
15	.156	.113	+ .002	.025		.116		.029	.029		
18	.188	.143	- .003	.025		.147		T.I.R.			
21	.219	.182	± .003	.025		.188		.029	.029		+ .003
25	.250	.204	± .003	.025		.210		T.I.R.			
31	.312	.242		.025		.250		± .003	.039		- .000
37	.375	.292	± .004	.035		.303		.039	.039		.010 max.
43	.438	.332		.035		.343		T.I.R.			
50	.500	.385	± .004	.042		.396		.046	.046		.015 max.
56	.562	.430		.042		.437		T.I.R.			

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-043

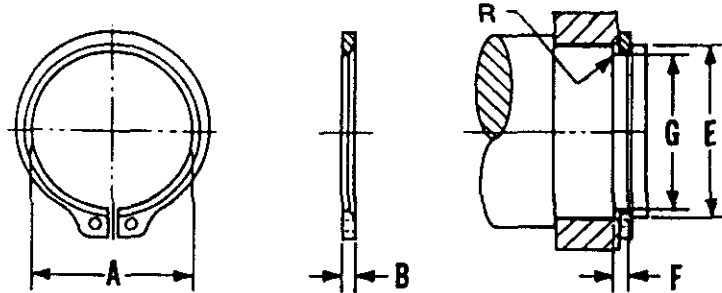




# Engineering Preferred Parts

Number	N-030
Date Issued	AUG 1990

## BEVELED EXTERNAL RETAINING RINGS SERIES 5102 \* NON-PREFERRED PARTS



All dimensions are in inches

Size Number	Shaft Diameter	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol	B	Tol	G	Tol	F	Tol	R
100	1.000	.925	+.005	.042		.930	+.000 -.003	.037		
102	1.023	.946	-.010	.042		.951	T. I. R.	.036		
106	1.062	.982		.050		.992		.044		
112	1.125	1.041		.050	±.002	1.051		.044		
118	1.188	1.098		.050		1.108	+.000	.044		
125	1.250	1.156	+.010	.050		1.166	-.004	.043		
131	1.312	1.214	-.015	.050		1.224	.005	.042		
137	1.375	1.272		.050		1.282	T. I. R.	.042	+.001	.005
143	1.438	1.333		.050		1.343		.042	-.000	max.
150	1.500	1.387		.050		1.397		.041		
156	1.562	1.446		.062		1.459		.053		
162	1.625	1.503		.062		1.516		.053		
168	1.688	1.560		.062		1.573		.052		
175	1.750	1.618		.062		1.631	+.000	.052		
177	1.772	1.637	+.013	.062	±.003	1.650	-.005	.052		
181	1.812	1.675	-.020	.062		1.688	.005	.052		
187	1.875	1.735		.062		1.748	T. I. R.	.052		
196	1.969	1.819		.062		1.832		.051		
200	2.000	1.850		.062		1.863		.051		

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-044

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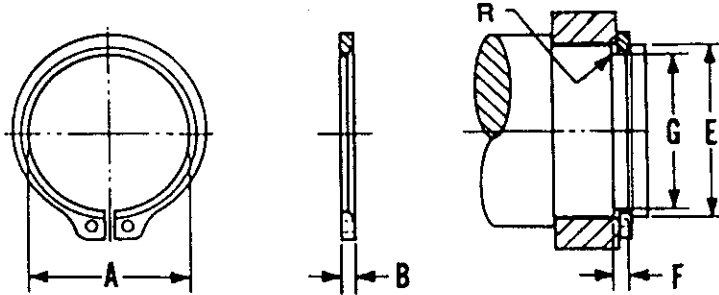




# Engineering Preferred Parts

Number: N-030  
Date Issued: AUG 1990

BEVELED EXTERNAL RETAINING RINGS (Continued)  
SERIES 5102 \*  
NON-PREFERRED PARTS



All dimensions are in inches

Size Number	Shaft Diameter	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol	B	Tol	G	Tol	F	Tol	R
206	2.062	1.906		.078		1.921		.067		
212	2.125	1.964		.078		1.979		.067		
215	2.156	1.993		.078		2.008		.067		
225	2.250	2.081	+ .015	.078		2.096		.066		
231	2.312	2.139	- .025	.078		2.154	+ .000	.065		
237	2.375	2.197		.078	± .003	2.212	- .006	.065	+ .0015	.010
243	2.438	2.255		.078		2.270	.006	.065	- .000	max.
250	2.500	2.313		.078		2.328	T.I.R.	.064		
255	2.559	2.377		.078		2.397		.064		
262	2.625	2.428	+ .020	.078		2.448		.064		
268	2.688	2.485	- .030	.078		2.505		.064		

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-044

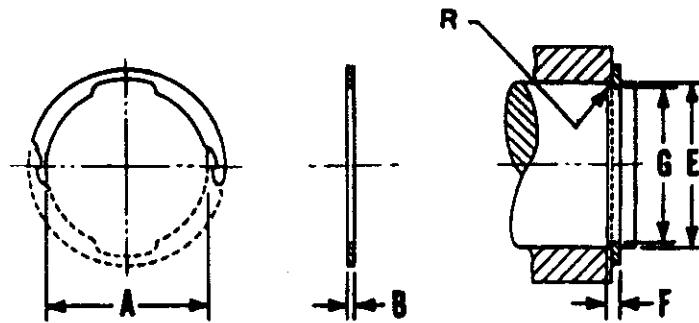
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**INTERLOCKING EXTERNAL RETAINING RINGS  
SERIES 5107 \*  
NON-PREFERRED PARTS**



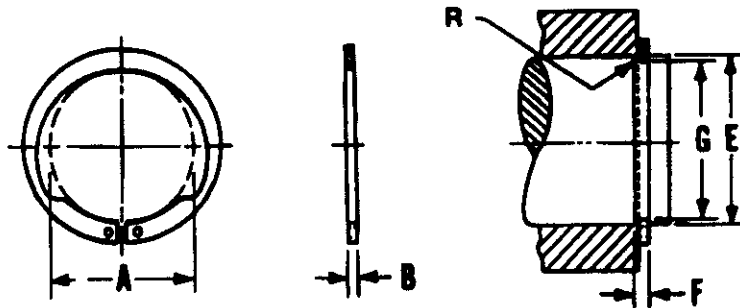
All dimensions are in inches

Size No.	Shaft Diameter	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol.	B	Tol.	G	Tol.	F	Tol.	R
156	1.562	1.412	±.005	.062	±.003	1.427		.068	+.004	.010 max.
175	1.750	1.597	±.005	.062	±.003	1.614	±.005	.068	-.000	
196	1.969	1.779	±.006	.078	±.003	1.797	.005 FIM	.086		
200	2.000	1.809	±.006	.078	±.003	1.828		.086		
212	2.125	1.933	±.006	.078	±.003	1.953	±.005	.086		.015 max.
250	2.500	2.304	±.006	.078	±.003	2.328	.006 FIM	.086	+.005	
262	2.625	2.428	±.006	.078	±.003	2.453		.086	-.000	
325	3.250	3.013	±.008	.093	±.003	3.044	±.006	.103		

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-045

**NOTE:** One interlocking external retaining ring consists of two identical semicircular pieces which are snapped together upon installation.

**INVERTED EXTERNAL RETAINING RINGS  
SERIES 5108 \*  
NON-PREFERRED PARTS**



All dimensions are in inches

Size No.	Shaft Diameter E	Ring Dimensions				Groove Dimensions				
		Free Diameter		Thickness		Diameter		Width		Radii
		A	Tol.	B	Tol.	G	Tol.	F	Tol.	R
50	.500	.461		.035		.468		.039		
56	.562	.521		.035		.530	±.002	.039		
62	.625	.579		.035		.588	.004 FIM	.039		
68	.688	.635	+.005	.042		.646		.046		
75	.750	.691	-.010	.042		.704		.046	+.003	
78	.781	.722		.042		.733	±.003	.046	-.000	.005 max.
81	.812	.751		.042		.762	.004 FIM	.046		
87	.875	.810		.042		.821		.046		
93	.938	.867		.042	±.002	.882		.046		
100	1.000	.925		.042		.940		.046		
106	1.062	.982		.050		.998		.056		
112	1.125	1.041		.050		1.059		.056		
118	1.188	1.098		.050		1.118		.056		
125	1.250	1.156	+.010	.050		1.176	±.004	.056		
131	1.312	1.214	-.015	.050		1.232	.005 FIM	.056		
137	1.375	1.272		.050		1.291		.056		
143	1.438	1.333		.050		1.350		.056	+.004	
150	1.500	1.387		.050		1.406		.056	-.000	
156	1.562	1.446		.062		1.468		.068		
162	1.625	1.503		.062		1.529		.068		.010 max.
168	1.688	1.560	+.013	.062		1.589	±.005	.068		
177	1.750	1.637	-.020	.062		1.650	.005 FIM	.068		
196	1.969	1.819		.062		1.857		.068		
200	2.000	1.850		.062	±.003	1.886		.068		
215	2.156	1.993	+.015	.078		2.032		.086		
250	2.500	2.313	-.025	.078		2.360	±.006	.086	+.005	
275	2.750	2.543	+.020	.093		2.602	.006 FIM	.103	-.000	
315	3.156	2.920	-.030	.093		2.986		.103		

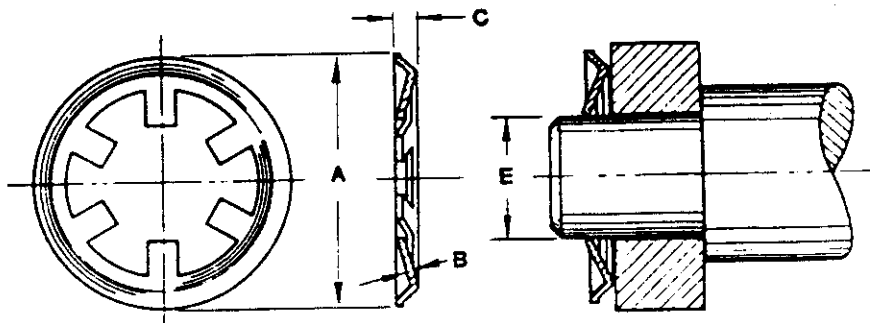
\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-046



# Engineering Preferred Parts

Number: N-030  
Date issued: AUG 1990

## REINFORCED CIRCULAR PUSH-ON EXTERNAL RETAINING RINGS SERIES 5115 \* NON-PREFERRED PARTS



All dimensions are in inches

Size Number	Shaft Diameter E	Ring Dimensions						
		Outside Diameter		Number of Prongs	Height		Thickness	
		A	Tol		C	Tol	B	Tol
9	.094	.326		3	.029			
12	.125	.366		4	.029	±.005		
15	.156	.397		4	.029			
18	.188	.444		6	.031	±.007	.010	±.001
25	.250	.522	±.005	6	.037			
31	.312	.584		8	.037	±.008		
37	.375	.645		8	.037			
43	.437	.737		10	.045	±.009		
50	.500	.828		10	.054			
56	.562	.889		12	.054			
62	.625	.951		12	.054		.015	±.002
75	.750	1.076	±.010	14	.054	±.010		
87	.875	1.203		16	.054			
100	1.000	1.327		18	.054			

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-047

Supersedes issue: Dated:

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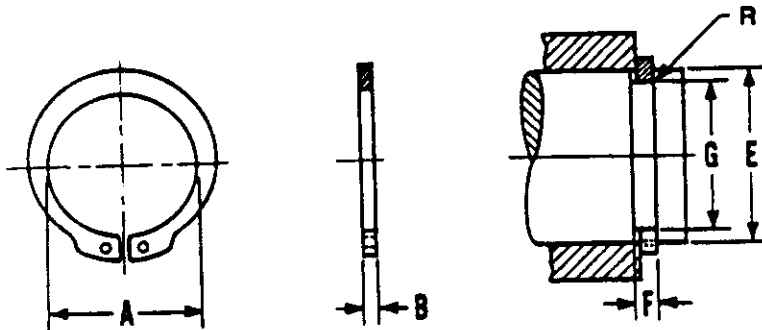




# Engineering Preferred Parts

Number: N-030  
Date Issued: AUG 1990

## HEAVY DUTY EXTERNAL RETAINING RINGS SERIES 5160 \* NON-PREFERRED PARTS



All dimensions are in inches

Size Number	Shaft Diameter	Ring Dimensions				Groove Dimensions					
		Free Diameter		Thickness		Diameter		Width		Radius	
		E	A	Tol	B	Tol	G	Tol	F	Tol	R
39	.394	.362	+.003	.035		.368	+.001	.039			
42	.428	.394	-.008	.035		.402	-.002	.039	+.003		
47	.473	.435		.042		.444	.002	.046	-.000		
50	.500	.460		.050	±.002	.468	T. I. R.	.056			
59	.591	.543		.050		.555		.056	+.004	.005	
62	.625	.575	+.005	.050		.588	+.001	.056	-.000	max.	
66	.669	.616	-.010	.050		.629	-.003	.056			
75	.750	.689		.078		.704	.002	.086			
87	.875	.804		.078		.821	T. I. R.	.086			
98	1.000	.906		.078		.938		.086			
106	1.062	.978		.093		.998		.103			
112	1.125	1.036		.093		1.059		.103			
118	1.188	1.087		.093	±.003	1.111	+.002	.103	+.005		
125	1.250	1.150	+.010	.093		1.174	-.004	.103	-.000		
131	1.312	1.208	-.015	.093		1.234	.004	.103			
137	1.375	1.268		.093		1.291	T. I. R.	.103		.010	
150	1.500	1.380		.109		1.406		.120		max.	
156	1.562	1.437		.109		1.468	+.003	.120			
175	1.750	1.608	+.013	.109		1.650	-.004	.120			
193	1.938	1.782	-.020	.125		1.826	.004	.139	+.006		
200	2.000	1.840		.125	±.004	1.880	T. I. R.	.139	-.000		

\* For Vendor Cross Reference see N-030.2  
For Part Numbers see N-048

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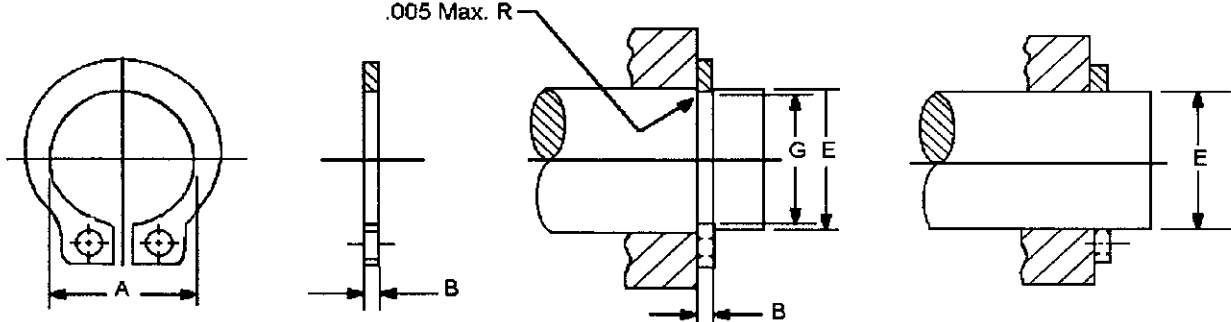
# Standard Parts

Number:	N-030
Date Issued:	OCT 1999

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## HEAVY SECTION EXTERNAL RETAINING RINGS SERIES 5555\*

NON-PREFERRED PARTS



All dimensions are in inches

May be used without grooves

Size Number	Shaft Diameter	Ring Dimension				Groove Dimensions			
		Free Diameter		Thickness		Diameter		Width	
		A	Tol	B	Tol	G	Tol	F	Tol
12	.125	.120	+ .002 - .003	.025	± .002	Not used with grooves			
19	.197	.187		.032		.191		.038	
21	.217	.205	± .003	.032		.207		.038	
23	.236	.224		.039		.228		.045	
25	.250	.238	+ .002 - .004	.035		.240	+ .0005 - .0015	.041	+ .003 - .000
27	.276	.264	± .004 + .003	.039		.266		.045	
31	.313	.298	- .005	.042	± .003	.303		.048	
35	.354	.341	± .004 + .003	.047		.344		.053	
37	.376	.354	+ .005	.042		.361		.048	
39	.394	.380	± .004	.047		.382		.053	
43	.436	.412	+ .003	.050		.419		.056	
47	.472	.457	- .005	.047		.461	+ .001	.053	
50	.500	.470		.050		.478	- .002	.056	+ .004 - .000
55	.553	.531		.059		.535		.065	
59	.590	.571	+ .004	.059		.572		.065	
62	.625	.593	- .006	.062		.599		.069	
75	.750	.706		.062	± .004	.718		.069	
							+ .002 - .003		

\* For vendor cross reference, see N-030.2  
For part numbers, see N-049

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