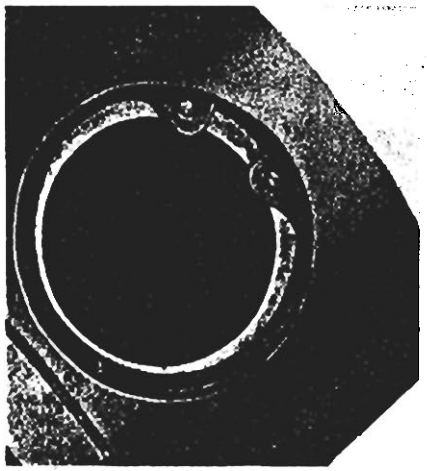
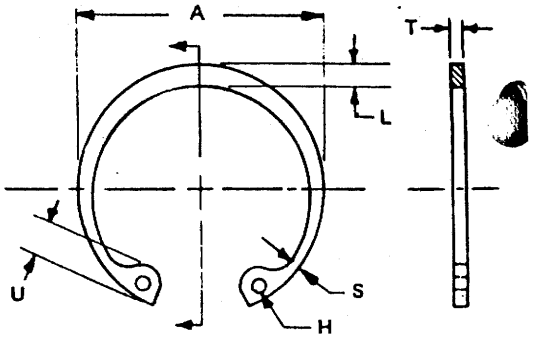
232



HANDout 20

"SNAP RING DATA"



INDUSTRIAL RING NO.	HOUSING DIAMETER			RING DIMENSIONS											
				FREE DIAMETER		THICKNESS†		LARGE SECTION		SMALL SECTION		LUG		HOLE DIAMETER	
	FRAC.	DEC.	MM.												
	D	D	D	A	TOL.	T	TOL.	L	TOL.	S	TOL.	U	TOL.	H	TOL.
3000-X25	1/4	.250	6.35	.280		.015		.025	±.002	.015	±.002	.065		.031	
3000-X31	5/16	.312	7.94	.346		.015		.033		.018		.066		.031	
3000-X37	3/8	.375	9.53	.415		.025		.040		.028		.082		.041	
3000-X43	7/16	.438	11.11	.482		.025		.049	±.003	.029	±.003	.098	±.003	.041	
3000-X45	29/64	.453	11.51	.498		.025		.050		.030		.098		.047	
3000-X50	1/2	.500	12.70	.548	+.010	.035		.053		.035		.114		.047	
3000-X51	—	.512	13.00	.560	−.005	.035		.053		.035		.114		.047	
3000-X56	9/16	.562	14.29	.620		.035		.053	±.004	.035	±.004	.132		.047	
3000-X62	5/8	.625	15.88	.694		.035		.060		.035		.132		.062	+.010
3000-X68	11/16	.688	17.46	.763		.035		.063		.036		.132		.062	−.002
3000-X75	3/4	.750	19.05	.831		.035		.070		.040		.142		.062	
3000-X77	—	.777	19.74	.859		.042		.074		.044		.146		.062	
3000-X81	13/16	.812	20.64	.901		.042		.077		.044		.155		.062	
3000-X86	—	.866	22.00	.961		.042	±.002	.081		.045		.155		.062	
3000-X87	7/8	.875	22.23	.971	+.015	.042		.084	±.005	.045	±.005	.155		.062	
3000-X90	—	.901	22.89	1.000	−.010	.042		.087		.047		.155		.062	
3000-X93	15/16	.938	23.81	1.041		.042		.091		.050		.155	±.005	.062	
3000-X100	1	1.000	25.40	1.111		.042		.104		.052		.155		.062	
3000-X102	—	1.023	26.00	1.136		.042		.106		.054		.155		.062	
3000-X106	1 1/16	1.062	26.99	1.180		.050		.110		.055		.180		.078	
3000-X112	1 1/8	1.125	28.58	1.249		.050		.116		.057		.180		.078	
3000-X118	—	1.181	30.00	1.319		.050		.120		.058		.180		.078	
3000-X118	1 3/16	1.188	30.16	1.319	+.025	.050		.120		.058		.180		.078	+.015
3000-X125	1 1/4	1.250	31.75	1.388	−.020	.050		.124	±.006	.062	±.006	.180		.078	−.002
3000-X125	—	1.259	32.00	1.388		.050		.124		.062		.180		.078	
3000-X131	1 5/16	1.312	33.34	1.456		.050		.130		.062		.180		.078	
3000-X137	1 3/8	1.375	34.93	1.526		.050		.130		.063		.180		.078	
3000-X137	—	1.378	35.00	1.526		.050		.130		.063		.180		.078	

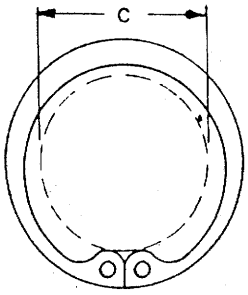
Standard Material: Carbon spring steel (SAE 1060-1090)
Standard Finish: Oil-dipped
3000-X25 through -X137: Bulk-packed or wire-stacked in 250-ring stacks

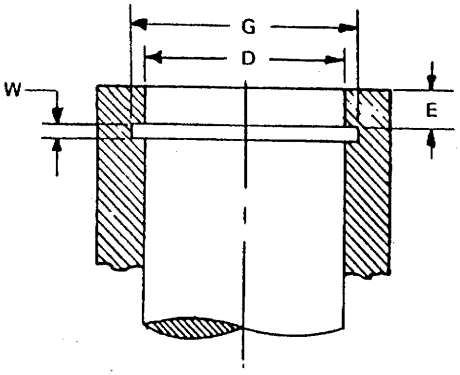
See page 50 for Industrial Pliers

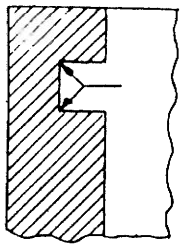
†Indicated thickness (T) is for unplated rings.

For plated, phosphate-coated, and stainless steel rings 3000-X102 or smaller, the maximum ring thickness will not exceed the minimum groove width (W) minus .0002". For 3000-X106 through -X137, the maximum ring thickness may be exceeded by .002".

RETAINING RING SERIES







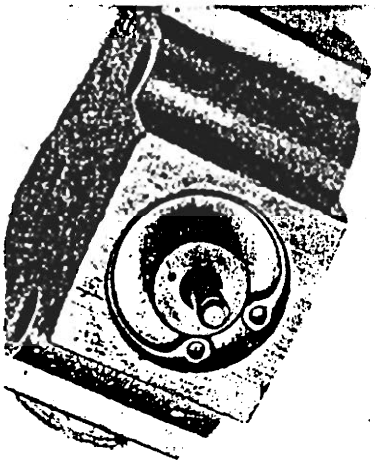
GROOVE DETAIL
Maximum Bottom Radii:
.005 for 3000-X25 through -X100
.010 for 3000-X102 through -X137

APPROX. WEIGHT PER 1000 RINGS (Lbs.)	ROCKWELL HARDNESS OF RING (Standard Material)	THRUST LOAD (Lbs.) Sharp Corner Abutment		RING CLEARANCE**	GROOVE DIMENSIONS				EDGE MARGIN	INDUSTRIAL RING NO.
		RING	GROOVE†		DIAMETER		WIDTH			
		Safety Factor								
		4	2	C	G	TOL.	W	TOL.	E	
.09	15N 86.0 - 88.0	420	190	.11	.268	±.001	.018	+.002 −.000	.027	3000-X25
.12	15N 86.0 - 88.0	530	240	.17	.330		.018		.027	3000-X31
.26	30N 69.5 - 73.0	1050	350	.20	.397		.029		.033	3000-X37
.39	30N 69.5 - 73.0	1230	450	.23	.461		.029		.036	3000-X43
.42	30N 69.5 - 73.0	1280	460	.25	.477		.029		.036	3000-X45
.72	30N 69.5 - 73.0	1980	630	.26	.530		.039		.045	3000-X50
.78	30N 69.5 - 73.0	2030	650	.27	.542	±.002	.039		.045	3000-X51
.84	30N 68.5 - 72.0	2220	810	.28	.596		.039		.051	3000-X56
.98	30N 68.5 - 72.0	2470	1060	.34	.665		.039		.060	3000-X62
1.15	30N 68.5 - 72.0	2700	1280	.40	.732		.039		.066	3000-X68
1.31	30N 68.5 - 72.0	3000	1460	.44	.796		.039	+.003 −.000	.069	3000-X75
1.65	30N 68.5 - 72.0	4600	1580	.47	.825		.046		.072	3000-X77
1.85	30N 67.5 - 71.0	4800	1710	.48	.862		.046		.075	3000-X81
2.10	30N 67.5 - 71.0	5100	1980	.53	.920		.046		.081	3000-X86
2.10	30N 67.5 - 71.0	5200	2080	.54	.931	±.003	.046		.084	3000-X87
2.30	30N 67.5 - 71.0	5350	2200	.57	.959		.046		.087	3000-X90
2.45	30N 67.5 - 71.0	5570	2460	.60	1.000		.046		.093	3000-X93
2.75	30N 67.5 - 71.0	5930	2800	.67	1.066		.046		.099	3000-X100
2.80	30N 67.5 - 71.0	6070	2950	.69	1.091		.046		.102	3000-X102
3.60	C 48 - 52	7500	3060	.68	1.130		.056		.102	3000-X106
3.91	C 48 - 52	7900	3400	.74	1.197		.056		.108	3000-X112
4.27	C 48 - 52	8400	3700	.79	1.255		.056		.111	3000-X118
4.27	C 48 - 52	8400	3700	.80	1.262		.056	+.004 −.000	.111	3000-X118
4.70	C 48 - 52	8830	4240	.86	1.330	±.004	.056		.120	3000-X125
4.70	C 48 - 52	8900	4300	.87	1.339		.056		.120	3000-X125
4.90	C 48 - 52	9270	4670	.93	1.396		.056		.126	3000-X131
5.35	C 48 - 52	9700	5000	.99	1.461		.056		.129	3000-X137
5.35	C 48 - 52	9700	5000	.99	1.464		.056		.129	3000-X137

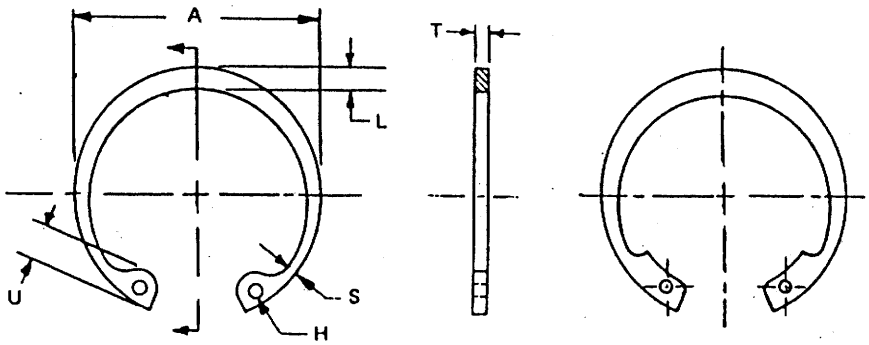
**C = Ring clearance diameter when ring is contracted into housing before insertion into groove

†Groove wall thrust loads shown are for grooves machined in cold-rolled steel with a tensile yield strength of 45,000 psi. For housing material with greater or lesser yield strength, groove wall thrust load increases or decreases proportionally.

NOTE: Rings must not be excessively contracted during installation, since this will lead to ring failure. Providing groove diameter has been machined to recommended dimensions, play between the groove diameter and the outside ring diameter indicates that the ring has been excessively contracted



INDUSTRIAL INT



Lugs: 3000-X206 through -X268

INDUSTRIAL RING NO.	HOUSING DIAMETER			RING DIMENSIONS											
				FREE DIAMETER		THICKNESS†		LARGE SECTION		SMALL SECTION		LUG		HOLE DIAMETER	
	FRAC.	DEC.	MM.												
	D	D	D	A	TOL.	T	TOL.	L	TOL.	S	TOL.	U	TOL.	H	TOL.
3000-X143	1 7/16	1.438	36.51	1.596	+.025 −.020	.050	±.002	.133	±.006	.065	±.006	.180		.078	
3000-X145	—	1.456	37.00	1.616		.050		.133		.065		.180		.078	
3000-X150	1 1/2	1.500	38.10	1.660		.050		.133		.066		.180		.078	
3000-X156	1 9/16	1.562	39.69	1.734		.062		.157		.078		.202		.078	
3000-X156	—	1.575	40.00	1.734		.062		.157		.078		.202		.078	
3000-X162	1 5/8	1.625	41.28	1.804		.062		.164		.082		.227		.078	
3000-X165	—	1.653	42.00	1.835		.062		.167		.083		.227		.078	
3000-X168	1 11/16	1.688	42.86	1.874		.062		.170		.085		.227		.078	
3000-X175	1 3/4	1.750	44.45	1.942	+.035 −.025	.062		.171		.083		.234		.078	
3000-X181	1 13/16	1.812	46.04	2.012		.062		.170		.084		.234		.093	
3000-X187	—	1.850	47.00	2.054		.062		.170		.085		.234		.093	
3000-X187	1 7/8	1.875	47.63	2.054		.062		.170		.085		.234		.093	
3000-X193	1 15/16	1.938	49.21	2.141		.062		.170		.085		.234		.093	+.015 −.002
3000-X200	2	2.000	50.80	2.210		.062		.170		.085		.240	±.005	.093	
3000-X206	—	2.047	52.00	2.280		.078		.186		.091		.250		.093	
3000-X206	2 1/16	2.062	52.39	2.280		.078	±.003	.186	±.007	.091	±.007	.250		.093	
3000-X212	2 1/8	2.125	53.98	2.350		.078		.195		.096		.260		.093	
3000-X218	—	2.165	55.00	2.415		.078		.199		.098		.264		.093	
3000-X218	2 3/16	2.188	55.56	2.415		.078		.199		.098		.264		.093	
3000-X225	2 1/4	2.250	57.15	2.490		.078		.203		.099		.270		.093	
3000-X231	2 5/16	2.312	58.74	2.560	+.040 −.030	.078		.206		.100		.270		.093	
3000-X237	2 3/8	2.375	60.33	2.630		.078		.207		.102		.270		.093	
3000-X244	2 7/16	2.440	62.00	2.702		.078		.209		.103		.280		.110	
3000-X250	2 1/2	2.500	63.50	2.775		.078		.210		.103		.280		.110	
3000-X250	2 17/32	2.531	64.29	2.775		.078		.210		.103		.280		.110	
3000-X256	2 9/16	2.562	65.09	2.844		.093		.222		.109		.290		.110	
3000-X262	2 5/8	2.625	66.68	2.910		.093		.226		.111		.290		.110	
3000-X268	—	2.677	68.00	2.980		.093		.230		.113		.300		.110	

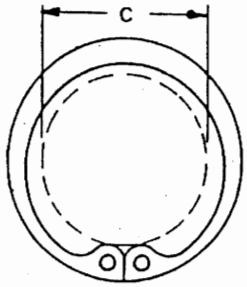
Standard Material: Carbon spring steel (SAE 1060-1090)
Standard Finish: Oil-dipped
3000-X143 through -X150: Bulk-packed or wire-stacked in 250-ring stacks
3000-X156 through -X200: Bulk-packed or wire-stacked in 100-ring stacks
3000-X206 through -X268: Bulk-packed, stacked on request

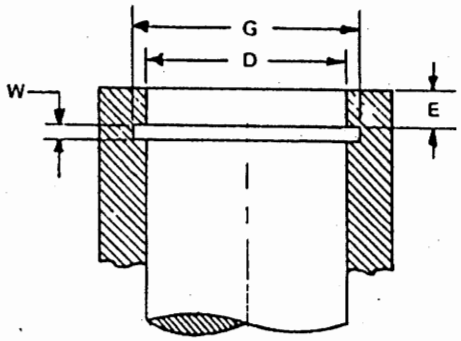
†Indicated thickness (T) is for unplated rings.

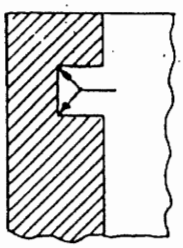
For plated, phosphate-coated, and stainless steel rings 3000-X143 through -X268, the maximum ring thickness may be exceeded by .002".

See page 50 for Industrial Pliers

RETAINING RING SERIES







GROOVE DETAIL
Maximum Bottom Radii:
.010 for 3000-X143 through -X268

APPROX. WEIGHT PER 1000 RINGS (Lbs.)	ROCKWELL HARDNESS OF RING (Standard Material)	THRUST LOAD (Lbs.) Sharp Corner Abutment		RING CLEARANCE**	GROOVE DIMENSIONS				EDGE MARGIN	INDUSTRIAL RING NO.
		RING	GROOVE†		DIAMETER		WIDTH			
		Safety Factor								
		4	2	C	G	TOL.	W	TOL.	E	
5.50	C 48 - 52	10200	5500	1.06	1.528	±.004	.056		.135	3000-X143
6.12	C 48 - 52	10300	5700	1.07	1.548		.056		.138	3000-X145
6.50	C 48 - 52	10600	6000	1.12	1.594		.056		.141	3000-X150
8.50	C 48 - 52	13700	6360	1.14	1.658		.068		.144	3000-X156
8.50	C 48 - 52	13800	6400	1.15	1.671		.068		.144	3000-X156
9.75	C 48 - 52	14200	6900	1.16	1.725		.068		.150	3000-X162
10.0	C 48 - 52	14500	7100	1.18	1.755		.068		.153	3000-X165
10.2	C 48 - 52	14800	7400	1.21	1.792		.068	+.004 −.000	.156	3000-X168
10.5	C 48 - 52	15300	8000	1.26	1.858	±.005	.068		.162	3000-X175
11.5	C 48 - 52	15900	8400	1.32	1.922		.068		.165	3000-X181
12.5	C 48 - 52	16200	8700	1.36	1.962		.068		.168	3000-X187
12.5	C 48 - 52	16400	9000	1.39	1.989		.068		.171	3000-X187
13.5	C 48 - 52	17000	9700	1.45	2.056		.068		.177	3000-X193
15.0	C 48 - 52	17500	10300	1.50	2.122		.068		.183	3000-X200
18.0	C 48 - 52	22600	10700	1.54	2.171		.086		.186	3000-X206
18.0	C 48 - 52	22700	10800	1.56	2.186		.086		.186	3000-X206
19.5	C 48 - 52	23400	11300	1.59	2.251		.086		.189	3000-X212
20.0	C 48 - 52	23900	12000	1.62	2.295		.086		.195	3000-X218
20.0	C 48 - 52	24000	12100	1.64	2.318		.086		.195	3000-X218
22.0	C 48 - 52	24800	12600	1.68	2.382		.086		.198	3000-X225
23.0	C 48 - 52	25500	13500	1.75	2.450	±.006	.086	+.005 −.000	.207	3000-X231
23.8	C 48 - 52	26100	14300	1.81	2.517		.086		.213	3000-X237
24.5	C 48 - 52	26900	14900	1.86	2.584		.086		.216	3000-X244
25.5	C 48 - 52	27600	15700	1.92	2.648		.086		.222	3000-X250
25.5	C 48 - 52	27900	16000	1.95	2.681		.086		.225	3000-X250
34.0	C 48 - 52	33700	16500	1.96	2.714		.103		.228	3000-X256
34.5	C 48 - 52	34500	17300	2.01	2.781		.103		.234	3000-X262
35.0	C 48 - 52	35200	18100	2.05	2.837		.103		.240	3000-X268

**C = Ring clearance diameter when ring is contracted into housing before insertion into groove

†Groove wall thrust loads shown are for grooves machined in cold-rolled steel with a tensile yield strength of 45,000 psi. For housing material with greater or lesser yield strength, groove wall thrust load increases or decreases proportionally.

NOTE: Rings must not be excessively contracted during installation, since this will lead to ring failure. Providing groove diameter has been machined to recommended dimensions, play between the groove diameter and the outside ring diameter indicates that the ring has been excessively contracted.