

WASHERS



Countersunk Type Washers

Screw Size	I.D.	O.D.	Nickel Plated Brass			Black Zinc Plated Brass		Plain Brass	
			Unit Pkg. 100	Unit Pkg. 144	Unit Pkg. 1000	Part No.	Unit Pkg.	Part No.	Unit Pkg.
#4	9/64"	3/8"	612		7613				
#6	11/64"	7/16"	614	7143	7615	16011	100		
#8	13/64"	1/2"	616	7145	7616	16012	100		
#10	1/4"	19/32"	618	7147	7618	16013	100	16593	100
#12	9/32"	11/16"	619	7148					



Flanged Type Countersunk Washers

Screw Size	I.D.	O.D.	Nickel on Brass Part No.	Black Zinc on Brass Part No.	Stainless Steel Part No.	Unit Pkg.
#6	5/32"	1/2"	3469		3470	100
#8	13/64"	5/8"	2515	16009	2597	100
#10	1/4"	11/16"	3471		3472	100



Flush Type Washers Nickel Plated on Brass

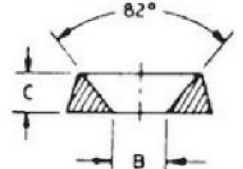
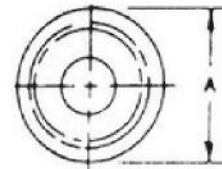
Unit Pkg. 100	Unit Pkg. 144	Unit Pkg. 1000	Screw Size	I.D.	O.D.
602	7137	7624	#6	5/32"	11/32"
604	7138	7625	#8	3/16"	3/8"
16015		16016	#10	13/64"	15/32"

Nylon Finishing Washers

Available in natural or black nylon.

These molded washers protect cabinets from scratching, cover misaligned holes, etc.

May also be used as guides, bumpers and spacers.



Part No.	Screw Size	O.D. (A)	I.D. (B)	Thickness (C)	Color	Unit Pkg.
13717	#6	.437" (11.10mm)	.143" (3.63mm)	.100" (2.54mm)	Black	50
13718	#8	.515" (13.08mm)	.171" (4.34mm)	.115" (2.92mm)	Natural	50
13719	#8	.515" (13.08mm)	.171" (4.34mm)	.115" (2.92mm)	Black	50
13720	#10	.580" (14.73mm)	.191" (4.85mm)	.152" (3.86mm)	Natural	50
13721	#10	.580" (14.73mm)	.191" (4.85mm)	.152" (3.86mm)	Black	50
13723	#12	.609" (15.47mm)	.225" (5.72mm)	.160" (4.06mm)	Black	50
13724	#14	.683" (17.35mm)	.251" (6.38mm)	.183" (4.65mm)	Natural	50
13725	#14	.683" (17.35mm)	.251" (6.38mm)	.183" (4.65mm)	Black	50



USS (Wrought) Washers

Bolt Size	I.D.	O.D.	Thick-ness	Zinc Part No.	Plain Part No.	Unit Pkg.
3/16"	1/4"	9/16"	3/64"	8605		100
1/4"	5/16"	3/4"	1/16"	8606	3929	100
5/16"	3/8"	7/8"	1/16"	8607	3930	100
3/8"	7/16"	1"	5/64"	8608	3931	100
7/16"	1/2"	1-1/4"	5/64"	8609	3932	100
1/2"	9/16"	1-3/8"	7/64"	8610	3933	100
9/16"	5/8"	1-1/2"	7/64"	8611		100
5/8"	11/16"	1-3/4"	9/64"	8612	3935*	50
3/4"	13/16"	2"	5/32"	8613		50



SAE Washers Zinc

Part No.	Bolt Size	I.D.	O.D.	Thick-ness	Unit Pkg.
3984	#6 (1/8")	5/32"	3/8"	3/64"	100
16721	#8 (5/32")	3/16"	7/16"	3/64"	100
3985	#10 (3/16")	7/32"	1/2"	1/16"	100
3986	1/4"	9/32"	5/8"	1/16"	100
3987	5/16"	11/32"	11/16"	1/16"	100
3988	3/8"	13/32"	13/16"	1/16"	100
3989	7/16"	15/32"	15/16"	1/16"	100
3990	1/2"	17/32"	1-1/16"	3/32"	100
3991	9/16"	19/32"	1-3/16"	3/32"	100
3992	5/8"	21/32"	1-5/16"	3/32"	100
3993	3/4"	13/16"	1-1/2"	1/8"	100
8621	7/8"	29/32"	1-3/4"	1/8"	100

* Unit package quantity is 100

WASHERS



High Strength Grade 8 Washers

1035 Steel • R/C38-45 Hardness • Zinc & Gold Dichromate Finish
For use with Grades 5 and 8 Bolts

USS Sizes

Part No.	Bolt Size	I.D.	O.D.	Thick-ness	Unit Pkg.
12771	1/4"	5/16"	3/4"	.051/.080"	100
12772	5/16"	3/8"	7/8"	.064/.104"	100
12773	3/8"	7/16"	1"	.064/.104"	100
12774	7/16"	1/2"	1-1/4"	.064/.104"	50
12775	1/2"	9/16"	1-3/8"	.097/.121"	50
12776	9/16"	5/8"	1-1/2"	.097/.121"	25
12777	5/8"	11/16"	1-3/4"	.108/.160"	25
12778	3/4"	13/16"	2"	.122/.177"	10
12779	7/8"	15/16"	2-1/4"	.136/.192"	10

SAE Sizes

Part No.	Bolt Size	I.D.	O.D.	Thick-ness	Unit Pkg.
12781	1/4"	9/32"	5/8"	.055/.072"	100
12782	5/16"	11/32"	11/16"	.055/.072"	100
12783	3/8"	13/32"	13/16"	.055/.072"	100
12784	7/16"	15/32"	59/64"	.055/.072"	50
12785	1/2"	17/32"	1-1/16"	.097/.121"	50
12786	9/16"	19/32"	1-3/16"	.097/.121"	50
12787	5/8"	11/16"	1-5/16"	.122/.146"	25
12788	3/4"	13/16"	1-15/32"	.122/.146"	25
12789	7/8"	15/16"	1-3/4"	.136/.160"	15
12790	1"	1-1/8"	2"	.136/.160"	10



Spring Type Lock Washers

Grade 5 • Zinc

Part No.	Bolt Size	Unit Pkg.
5717	#6 (1/8")	200
5718	#8 (5/32")	200
5719	#10 (3/16")	200
5720	1/4"	200
5721	5/16"	200
5722	3/8"	200
5723	7/16"	200
5724	1/2"	200
8649	9/16"	100
8650	5/8"	100
14879	3/4"	50



Copper Washers

Part No.	Bolt Size	I.D.	O.D.	Thick-ness	Unit Pkg.
15911	3/16"	1/4"	7/16"	1/32"	50
15914	3/16"	1/4"	5/8"	1/16"	25
15912	1/4"	5/16"	1/2"	1/32"	50
15915	1/4"	5/16"	11/16"	1/16"	25
15913	5/16"	3/8"	9/16"	1/32"	50
15916	5/16"	3/8"	3/4"	1/16"	25
15917	3/8"	7/16"	13/16"	1/16"	25
15918	7/16"	1/2"	7/8"	1/16"	25
15919	1/2"	9/16"	13/16"	3/32"	25



Belleville Washers

Phosphate and Oil

Part No.	Bolt Size	I.D.	O.D.	Thick-ness	Unit Pkg.
14847	1/4"-6mm	.255"	.500"	.022"	50
14848	1/4"-6mm	.255"	.500"	.038"	50
14850	5/16"-8mm	.317"	.625"	.047"	50
14851	3/8"-10mm	.380"	.750"	.034"	25
14852	3/8"-10mm	.380"	.750"	.056"	25
14854	1/2"-12mm	.505"	1.00"	.050"	25



Bowed Spring Washers

Black Parkerized

Part No.	Bolt Size	I.D.	O.D.	Thick-ness	Unit Pkg.
9630	3/8"	25/64"	3/4"	1/64"	50



High Alloy Lock Washers

Grade 8
Zinc & Yellow Dichromate
For use with Grade 5 & 8 Bolts

Part No.	Bolt Size	Unit Pkg.
11925	1/4"	100
11926	5/16"	100
11927	3/8"	100
11928	7/16"	50
11929	1/2"	50
11931	5/8"	50
11933	7/8"	25

WASHERS



Fender Washers Zinc Plated

Part No.	Bolt Size	I.D.	O.D.	Thick-ness	Unit Pkg.
2007	3/16"	7/32"	1/2"	3/64"	100
1183	3/16"	7/32"	3/4"	3/64"	100
16018	3/16"	7/32"	1"	3/64"	100
16019	3/16"	7/32"	1-1/4"	3/64"	50
2008	1/4"	9/32"	5/8"	3/64"	100
16020	1/4"	9/32"	1"	1/16"	100
2333	1/4"	9/32"	1-1/4"	1/16"	100
16021	1/4"	9/32"	1-1/2"	3/64"	50
1376	5/16"	21/64"	3/4"	1/16"	100
768	5/16"	11/32"	1-1/4"	3/64"	100
17095	5/16"	11/32"	1-1/4"	1/8"	25
1700	5/16"	11/32"	1-1/2"	3/64"	50
3553	3/8"	13/32"	1-1/4"	1/16"	100
2227	3/8"	13/32"	1-1/2"	3/64"	50
16022	3/8"	27/64"	1-5/8"	1/16"	50
1294	3/8"	7/16"	1-3/4"	1/16"	25
17094	3/8"	7/16"	1-3/4"	1/8"	25
3554	1/2"	17/32"	1-1/4"	3/64"	100
3556	1/2"	17/32"	1-1/2"	3/64"	100
16023	1/2"	17/32"	2"	1/16"	25



Vibration Proof Lock Washers Zinc Flake Coated For use with Grade 5, Grade 8 & ASTM 574 High Grade Bolts

These washers have cams or wedges on one side, a lead angle greater than a thread angle, and radial teeth or ribs on the other side. The washers are installed cam face to cam face. When tightening the fastener to preload, the teeth penetrate and seat against the joint material and the nut and/or fastener head. When subjected to vibration the interacting cams create a wedge action which prevents the fastener from vibrating loose.

Material: Carbon Steel
Hardness: Through Hardened: 465HVI

Part No.	Bolt Size	O.D.	Unit Pkg.
19282	3/16" (5mm)	11/32"	50 (25 pr.)
19283	1/4" (6mm)	27/64"	50 (25 pr.)
19284	5/16" (8mm)	17/32"	50 (25 pr.)
19285	3/8" (10mm)	21/32"	50 (25 pr.)
19286	7/16" (11mm)	23/32"	30 (15 pr.)
19287	1/2" (12mm)	49/64"	20 (10 pr.)
19288	9/16" (14mm)	29/32"	20 (10 pr.)
19289	5/8" (16mm)	1"	20 (10 pr.)
19290	3/4" (20mm)	1-7/32"	10 (5 pr.)
19291	1" (25mm)	1-17/32"	10 (5 pr.)



External Lock Washers Zinc

Part No.	Bolt Size	O.D.	Unit Pkg.
5249	#4 (3/32")	1/4"	100
5250	#6 (1/8")	5/16"	100
5251	#8 (5/32")	3/8"	100
5252	#10 (3/16")	3/8"	100
5253	#12 (7/32")	15/32"	100
5254	#14 (1/4")	1/2"	100
5255	5/16"	19/32"	100
5256	3/8"	11/16"	100
5257	7/16"	3/4"	100
5258	1/2"	7/8"	100
16676	5/8"	1-1/32"	50
16677	3/4"	1-3/16"	50



Countersunk External Lock Washers Zinc

Part No.	Bolt Size	O.D.	Unit Pkg.
5270	#6 (1/8")	9/32"	100
5271	#8 (5/32")	5/16"	100
5272	#10 (3/16")	11/32"	100
5274	#14 (1/4")	7/16"	100



Internal Lock Washers Zinc

Part No.	Bolt Size	O.D.	Unit Pkg.
5259	#4 (3/32")	1/4"	100
5260	#6 (1/8")	9/32"	100
5261	#8 (5/32")	5/16"	100
5262	#10 (3/16")	3/8"	100
5263	#12 (7/32")	13/32"	100
5264	#14 (1/4")	15/32"	100
5265	5/16"	19/32"	100
5266	3/8"	11/16"	100
5267	7/16"	25/32"	100
5268	1/2"	7/8"	100
16672	5/8"	1-1/16"	100
16673	3/4"	1-7/32"	50
16675	1"	1-19/32"	10



**Internal-External
Combination
Lock Washers**
Zinc

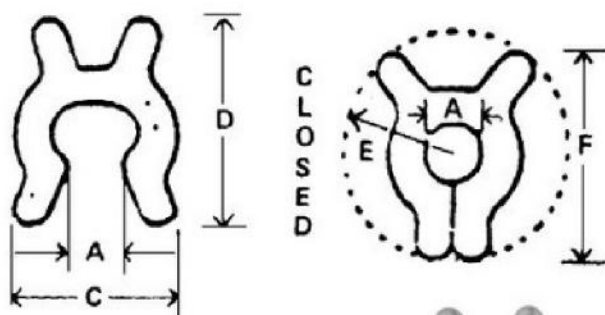
Part No.	Bolt Size	O.D.	Unit Pkg.
17017	#6 (1/8")	1/2"	100
17018	#8 (5/32")	1/2"	100
17019	#10 (3/16")	9/16"	100
17020	#14 (1/4")	23/32"	100
17021	5/16"	7/8"	100
17022	3/8"	31/32"	100
17023	7/16"	1-1/32"	50
17024	1/2"	1-7/32"	50



**Natural Nylon Flat
Washers**

Part No.	Bolt Size	I.D. + .015	O.D. + .015	Thick. + .010	Unit Pkg.
13888	1/16"	.115"	.250"	.032"	100
13891	1/16"	.140"	.312"	.062"	100
13892	1/8"	.171"	.375"	.032"	100
13893	1/8"	.171"	.375"	.062"	100
13894	1/8"	.194"	.375"	.032"	100
13895	1/8"	.194"	.375"	.062"	100
13896	3/16"	.242"	.375"	.062"	100
13897	1/8"	.200"	.437"	.062"	100
13898	3/16"	.257"	.500"	.062"	100
13899	1/4"	.281"	.500"	.030"	100
13900	1/4"	.317"	.500"	.062"	100
13902	3/16"	.260"	.562"	.062"	100
13903	1/8"	.187"	.625"	.062"	50
13904	5/16"	.380"	.625"	.062"	50
13905	3/16"	.260"	.687"	.060"	50
13906	3/8"	.421"	.687"	.062"	50
13907	1/2"	.568"	.687"	.062"	50
13908	1/4"	.317"	.750"	.062"	50
13909	5/16"	.390"	.750"	.062"	50
13910	3/8"	.443"	.750"	.062"	50
13911	7/16"	.505"	.750"	.062"	50
13912	3/16"	.257"	.875"	.062"	50
13913	5/16"	.343"	.885"	.062"	50
13914	3/8"	.406"	1.000"	.062"	25
13916	7/16"	.516"	1.250"	.062"	25
13918	5/16"	.390"	1.260"	.062"	25
13919	7/16"	.500"	1.375"	.062"	25
13920	7/16"	.525"	1.375"	.125"	25
13921	5/8"	.665"	1.500"	.094"	25

WASHERS



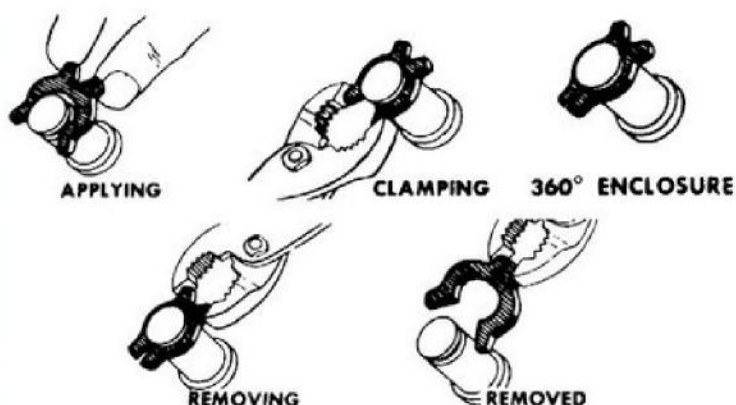
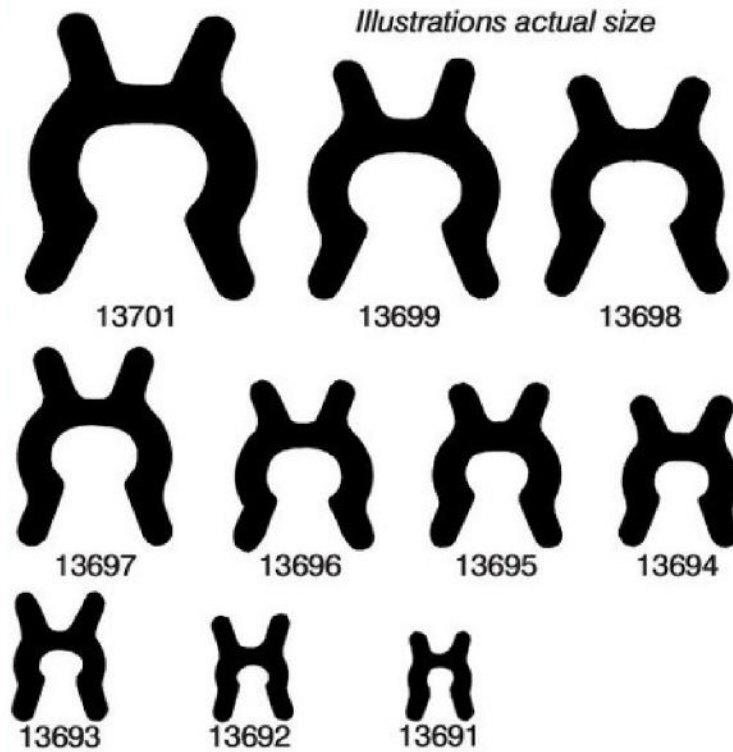
X-Washers
Zinc



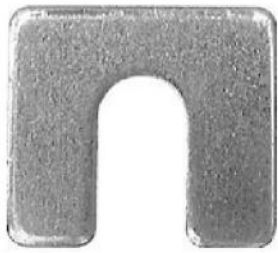
Part No.	Material Thickness	A	C	D	E	F	Unit Pkg.
13691	.025	.086	.320	.406	.210	.406	50
13692	.055	.098	.364	.490	.297	.475	50
13693	.055	.130	.438	.576	.338	.558	50
13694	.065	.164	.523	.687	.422	.665	50
13695	.065	.190	.593	.745	.437	.730	25
13696	.075	.222	.622	.776	.469	.775	25
13697	.075	.256	.698	.905	.500	.890	25
13698	.075	.285	.822	.986	.563	.984	25
13699	.089	.317	.872	1.100	.609	1.078	25
13701	.089	.381	1.060	1.297	.797	1.281	10

Commercial tolerances all X-Washers

Illustrations actual size

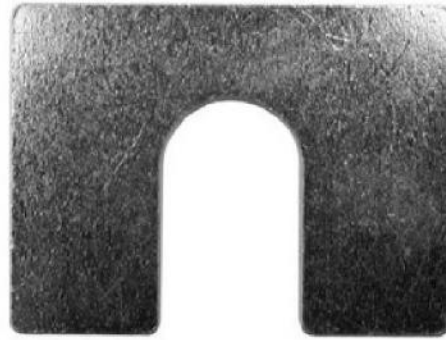


SHIMS



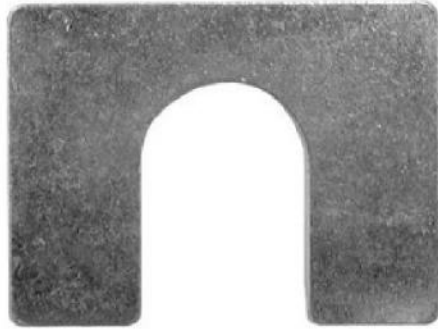
1-1/4" x 1-1/8"
Slot: 3/8"
Zinc

3155 Thick: 1/16" UNIT PKG: 100
3156 Thick: 1/8" UNIT PKG: 100



2" x 1-1/2"
Slot: 5/8"
Zinc

2999
1/8" Thick
UNIT PKG: 50



2" x 1-1/2"
Slot: 3/4"
Zinc

3000
Thick: 1/8"
UNIT PKG: 50



Outer Diameter: 15/16"
Slot: 3/8"
Zinc

20448 Thick: 1/16" UNIT PKG: 50
20449 Thick: 1/8" UNIT PKG: 50



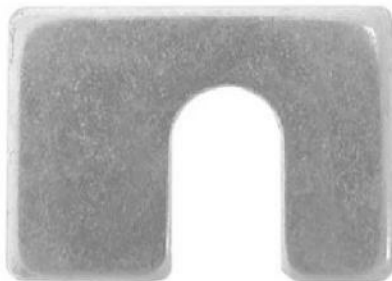
1-3/8" x 1-1/4"
Slot: 5/8"
Zinc

20322
Thick: 1/8"
UNIT PKG: 50



1-3/4" x 1-1/4"
Slot: 1/2"
Zinc

8445
Thick: 1/8"
(10 Gauge Steel)
UNIT PACKAGE: 50



1-3/4" x 1-1/4"
Slot: 1/2"
Zinc

2452 Thick: 1/16" UNIT PKG: 50

2453 Thick: 1/8" UNIT PKG: 50



Universal Alignment Shim

1-3/16" x 1-15/32"
Slot: 5/8"
Zinc

Part No.	Thickness	Unit Pkg.
11187	1/32"	25



Caster and Camber and Ball Joints Ford

1-1/8" x 1-1/8"
Slot: 1/2"
Zinc

Part No.	Thickness	Unit Pkg.
5074	1/64"	50
5075	1/32"	50
5076	1/16"	50
5077	1/8"	50



Caster and Camber Shims Chevrolet and GMC Trucks

1-1/2" x 2-1/2"
Slot: 9/16"
Zinc

Part No.	Thickness	Unit Pkg.
5096	1/32"	50
5097	1/16"	50

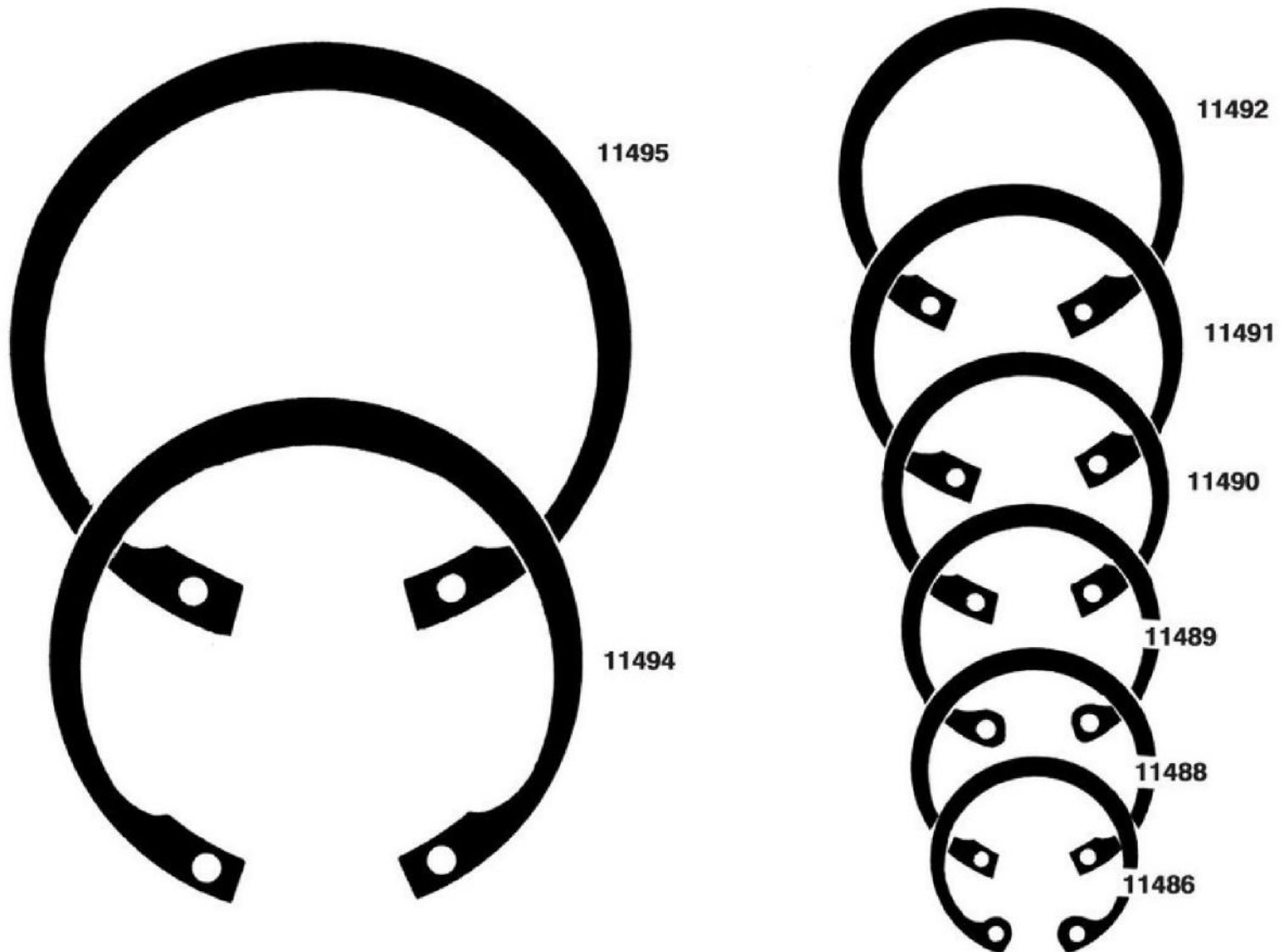
METRIC RETAINING RINGS

Metric Basic Internal Retaining Rings

DIN 472 - 1300

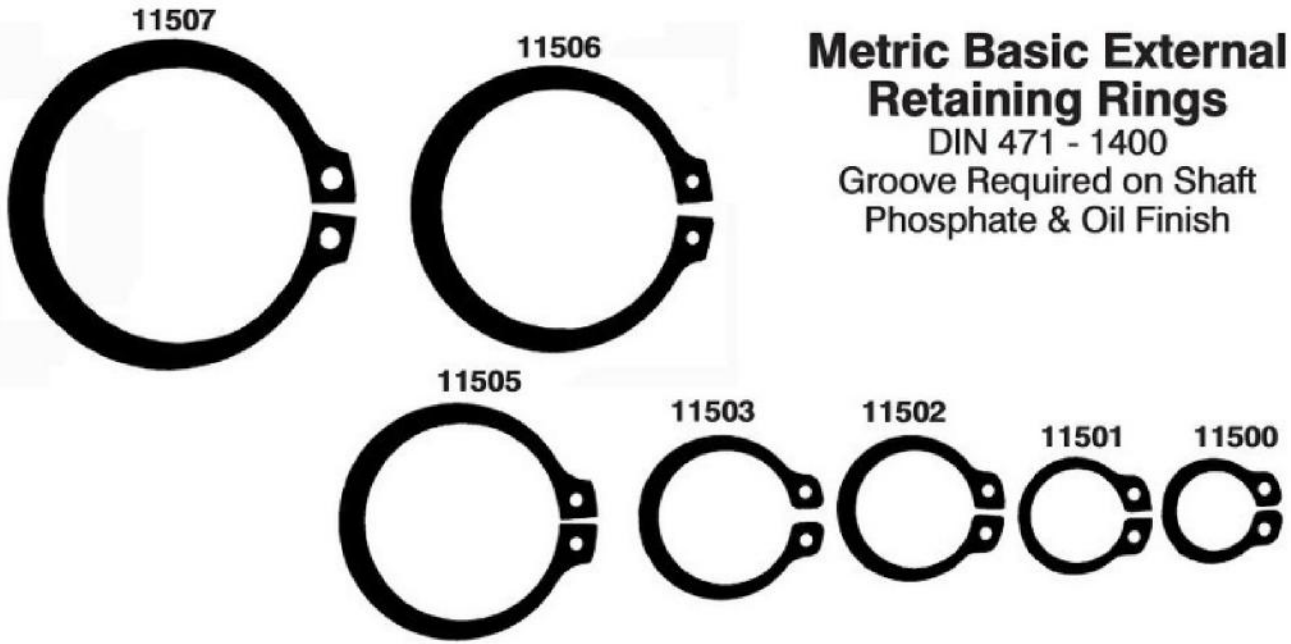
Groove Required in Bore

Phosphate & Oil Finish



Part No.	Shaft Diameter		Groove Diameter		Groove Width		Unit Pkg.
	mm	Inches	mm	Inches	mm	Inches	
11486	26	1.024	27.2	1.072	1.30	.051	50
11488	30	1.181	31.4	1.237	1.30	.051	50
11489	32	1.260	33.7	1.328	1.30	.051	50
11490	35	1.378	37.0	1.457	1.60	.063	50
11491	40	1.575	42.5	1.675	1.85	.073	25
11492	42	1.654	44.5	1.753	1.85	.073	25
11494	52	2.047	55.0	2.165	2.15	.085	25
11495	62	2.441	65.0	2.559	2.15	.085	10

METRIC RETAINING RINGS



Part No.	Shaft Diameter		Groove Diameter		Groove Width		Unit Pkg.
	mm	Inches	mm	Inches	mm	Inches	
11500	10.0	.394	9.6	.378	1.10	.043	100
11501	12.0	.472	11.5	.452	1.10	.043	100
11502	15.0	.591	14.3	.563	1.10	.043	100
11503	17.0	.670	16.2	.637	1.10	.043	50
11505	25.0	.985	23.9	.941	1.30	.051	50
11506	30.0	1.182	28.6	1.126	1.60	.063	50
11507	35.0	1.378	33.0	1.299	1.60	.063	50

E Type Retaining Rings

DIN 6799 - 1500
Phosphate & Oil Finish



Part No.	Shaft Diameter		Groove Diameter		Groove Width		Unit Pkg.
	mm	Inches	mm	Inches	mm	Inches	
11513	1.4	.055	1.2	.047	0.34	.0134	100
11514	2.0	.079	1.5	.059	0.44	.0173	100
11515	2.5	.098	1.9	.075	0.54	.0213	100
11516	3.0	.118	2.3	.091	0.64	.0252	100
11517	4.0	.157	3.2	.126	0.64	.0252	100
11518	5.0	.197	4.0	.157	0.74	.0291	100
11519	6.0	.236	5.0	.197	0.74	.0291	100
11520	7.0	.276	6.0	.236	0.74	.0291	100
11521	8.0	.315	7.0	.276	0.94	.0370	100
11523	10.0	.394	9.0	.354	1.15	.0453	100
11527	20.0	.787	19.0	.748	1.85	.0728	50

RETAINING RINGS

Internal Self-Locking Retaining Rings

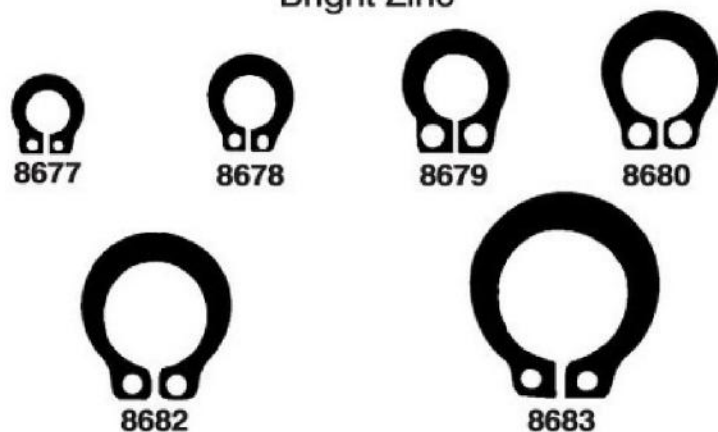


No Groove Required
Bright Zinc

Part No.	Shaft Diameter	Unit Pkg.
8715	3/16" - (.184 to .192 Shaft)	100

External Grip Rings

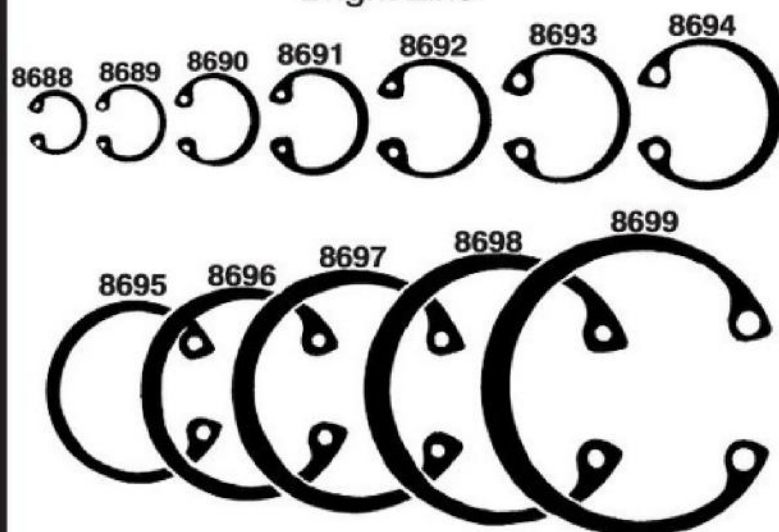
No Groove Required
Bright Zinc



Part No.	Shaft Diameter	Unit Pkg.
8677	3/16" - (.185 to .189 Shaft)	50
8678	1/4" - (.248 to .252 Shaft)	50
8680	3/8" - (.373 to .379 Shaft)	50
8682	1/2" - (.497 to .503 Shaft)	50
8683	5/8" - (.622 to .628 Shaft)	50

Basic Internal Retaining Rings

Groove Required on Shaft
Bright Zinc



Part No.	Housing Dia.	Groove Dia.	Groove Width	Unit Pkg.
8688	1/4"	.268"	.020"	50
8689	5/16"	.330"	.020"	50
8690	3/8"	.397"	.029"	50
8691	7/16"	.461"	.029"	50
8692	1/2"	.530"	.039"	50
8693	9/16"	.596"	.039"	50
8694	5/8"	.665"	.039"	50
8695	3/4"	.796"	.039"	50
8696	7/8"	.931"	.046"	50
8697	1"	1.066"	.046"	50
8698	1-1/8"	1.197"	.056"	50
8699	1-1/4"	1.330"	.056"	50

Basic External Retaining Rings

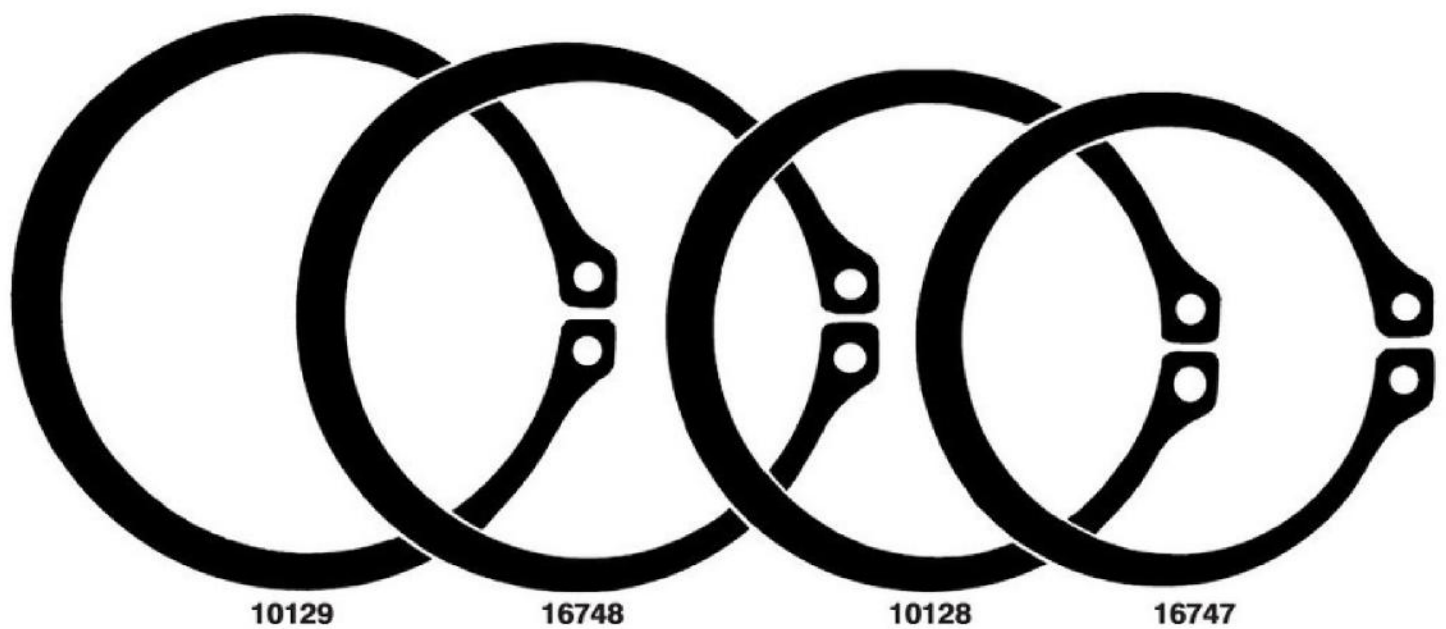
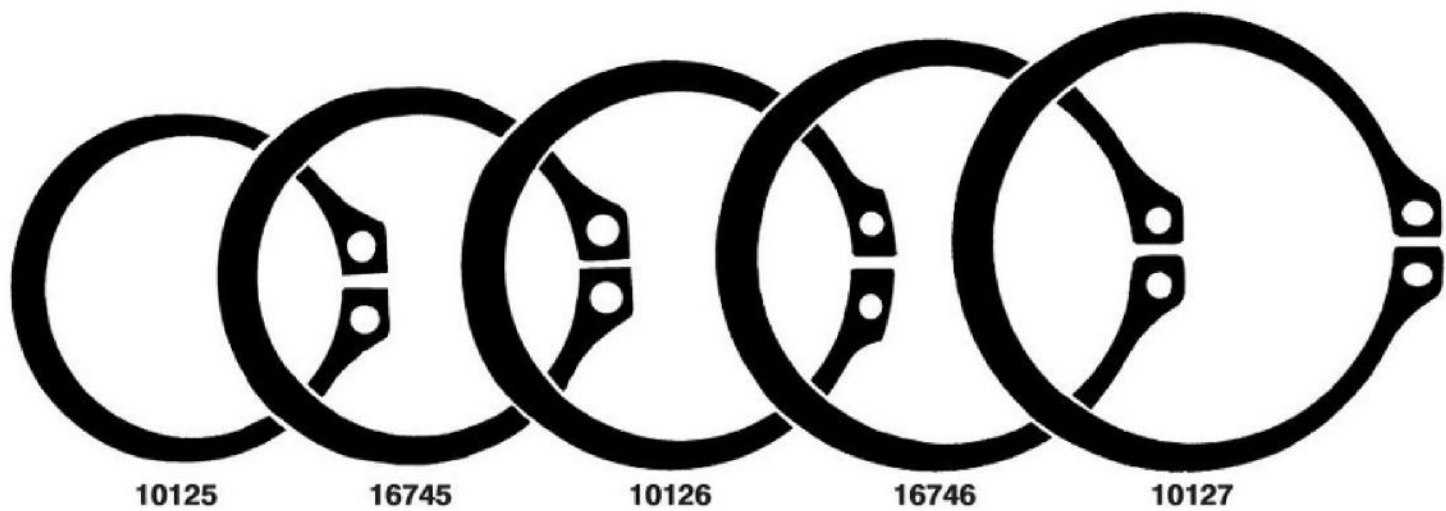
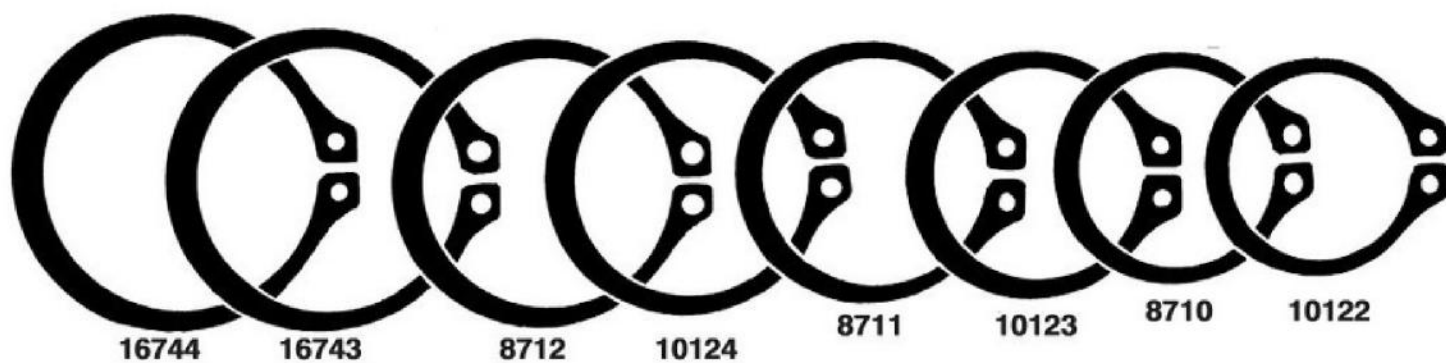
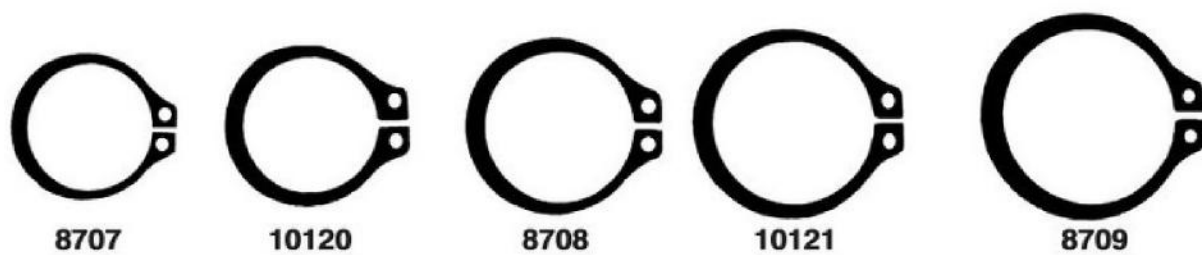
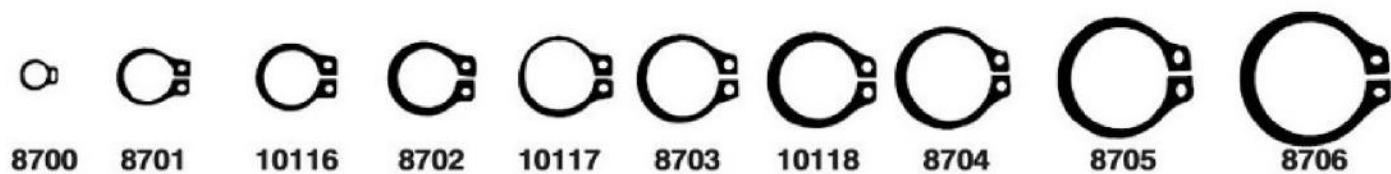
Groove Required on Shaft
Zinc

Actual Size Illustrations to the right

Part No.	Shaft Diameter	Groove Diameter	Groove Width	Unit Pkg.
8700	1/8"	.117"	.012"	50
8701	1/4"	.230"	.029"	50
10116	9/32"	.261"	.029"	50
8702	5/16"	.290"	.029"	50
10117	11/32"	.321"	.029"	50
8703	3/8"	.352"	.029"	50
10118	13/32"	.382"	.029"	50
8704	7/16"	.412"	.029"	50
8705	1/2"	.468"	.039"	50
8706	9/16"	.530"	.039"	50
8707	5/8"	.588"	.039"	50
10120	11/16"	.646"	.046"	50
8708	3/4"	.704"	.046"	50
10121	13/16"	.762"	.046"	50
8709	7/8"	.821"	.046"	50
10122	15/16"	.882"	.046"	50

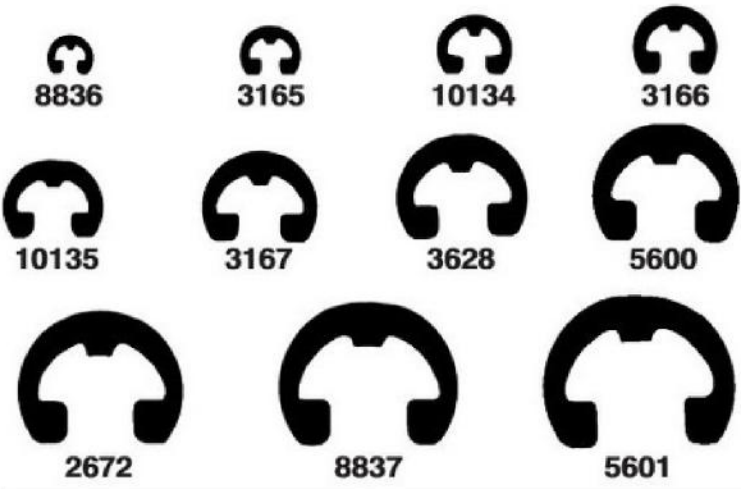
Part No.	Shaft Diameter	Groove Diameter	Groove Width	Unit Pkg.
8710	1"	.940"	.046"	50
10123	1-1/16"	.998"	.056"	50
8711	1-1/8"	1.059"	.056"	50
10124	1-3/16"	1.118"	.056"	50
8712	1-1/4"	1.176"	.056"	50
16743	1-5/16"	1.232"	.056"	50
16744	1-3/8"	1.291"	.056"	50
10125	1-1/2"	1.406"	.056"	25
16745	1-5/8"	1.529"	.068"	25
10126	1-3/4"	1.650"	.068"	25
16746	1-7/8"	1.769"	.068"	25
10127	2"	1.886"	.068"	10
16747	2-1/8"	2.003"	.086"	10
10128	2-1/4"	2.120"	.086"	10
16748	2-3/8"	2.239"	.086"	10
10129	2-1/2"	2.360"	.086"	10

BASIC EXTERNAL RETAINING RINGS



RETAINING RINGS

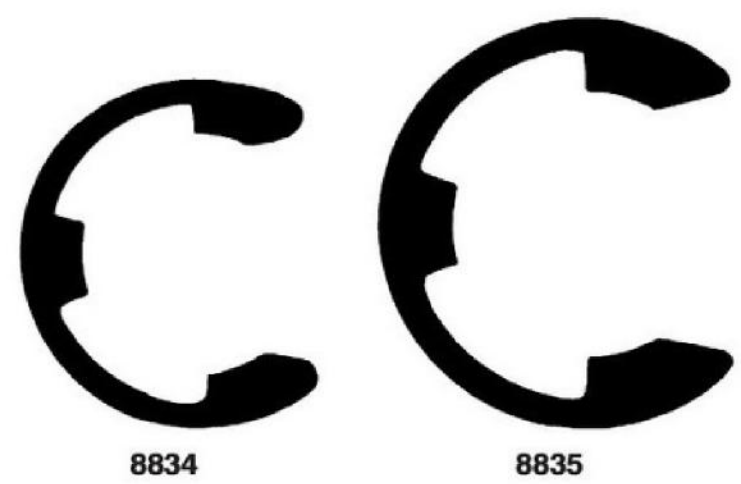
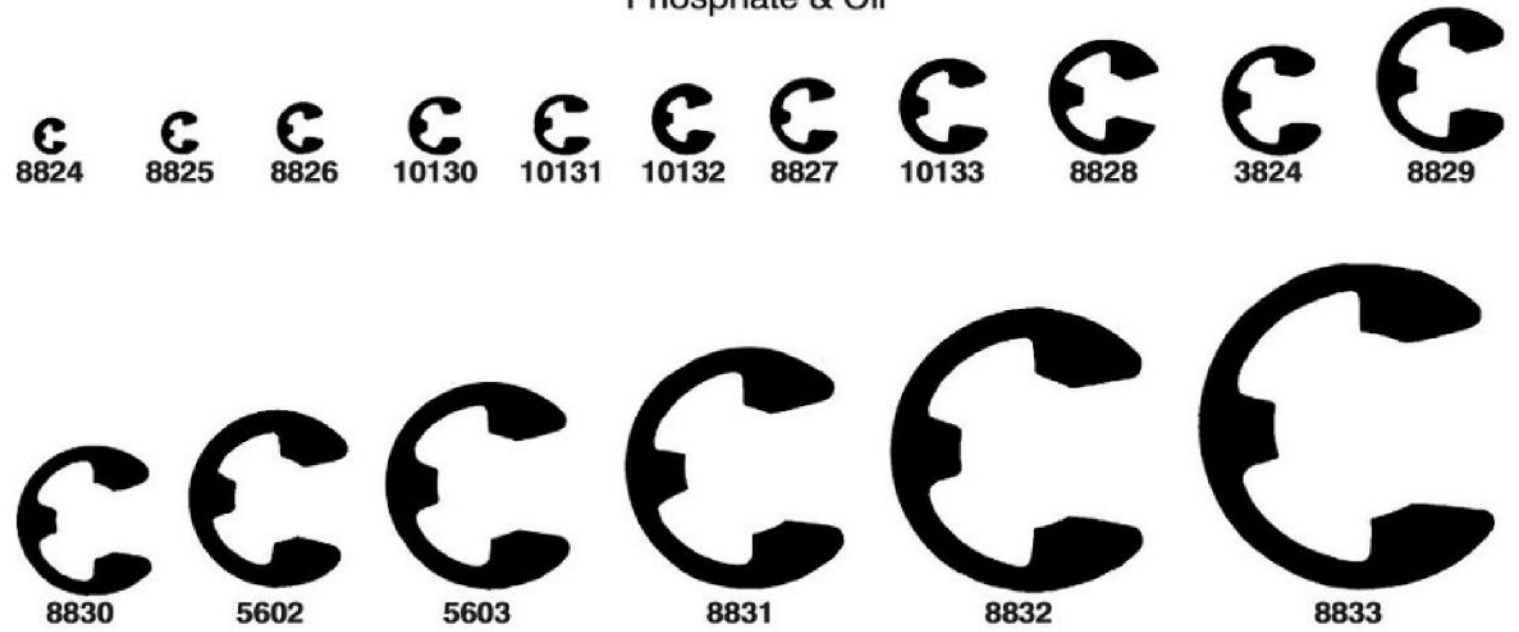
Reinforced E Type Retaining Rings



Part No.	Shaft Dia.	Groove Dia.	Groove Width	Unit Pkg.
8836	3/32"	.074"	.018"	100
3165	1/8"	.095"	.018"	100
10134	5/32"	.116"	.029"	100
3166	3/16"	.147"	.029"	100
10135	7/32"	.188"	.029"	100
3167	1/4"	.210"	.029"	100
3628	5/16"	.250"	.039"	100
5600	3/8"	.303"	.039"	100
2672	7/16"	.343"	.039"	100
8837	1/2"	.396"	.046"	100
5601	9/16"	.437"	.046"	100

E Type Retaining Rings

Phosphate & Oil

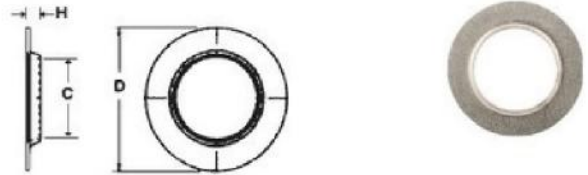


Part No.	Shaft Dia.	Groove Dia.	Groove Width	Unit Pkg.
8824	1/16"	.052"	.012"	100
8825	3/32"	.074"	.018"	100
8826	1/8"	.095"	.018"	100
10130	9/64"	.105"	.018"	100
10131	5/32"	.116"	.029"	100
10132	11/64"	.127"	.029"	100
8827	3/16"	.147"	.029"	100
10133	7/32"	.188"	.029"	100
8828	1/4"	.210"	.029"	100
3824	5/16"	.250"	.029"	100
8829	3/8"	.303"	.039"	100
8830	7/16"	.343"	.039"	100
5602	1/2"	.396"	.046"	100
5603	5/8"	.485"	.046"	100
8831	3/4"	.580"	.056"	50
8832	7/8"	.675"	.056"	50
8833	1"	.835"	.056"	50
8834	1-3/16"	1.079"	.068"	50
8835	1-3/8"	1.230"	.068"	50

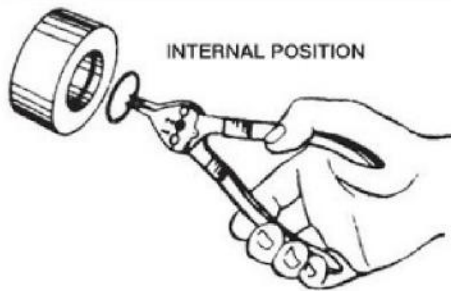
RETAINING RINGS

Grooveless Retainer Ring 300 Series Stainless Steel

These Grooveless Retainer Rings press over studs, shafts or any round shape with a .375" diameter. They become an integral part of the axial application replacing snap or bearing rings and cotter pins. Designed without slots or shears, these rings will not "walk-off" or spring free.



Part No.	Unit Pkg.	Stud Size	Outside Dia. (C)	Height (D)	Material Thickness (H)
14113	25	.375"	.625"	.030"	.010"

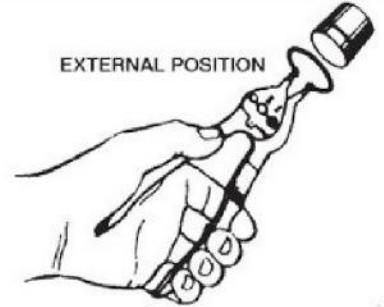


INTERNAL POSITION

Convertible Retaining Ring Pliers

For Internal and External Retaining Rings

Illustrations and photos not actual size



EXTERNAL POSITION



7909

Tip Diameter: .042"
Use with Auveco Retaining Rings:
8677 to 8678 (External)
8688 to 8697 (Internal)
8700 to 8709 (External)
10116 to 10121 (External)

UNIT PACKAGE: 1



7910

Tip Diameter: .070"
Use with Auveco Retaining Rings:
8679 to 8683 (External)
8698 & 8699 (Internal)
8710 to 8712 (External)
10122 to 10129 (External)
16743 to 16748 (External)

UNIT PACKAGE: 1

SPRINGS



Type 1

Extension Springs

Zinc

Photos not actual size



Type 2 (Double loop on both ends)



Type 5



Type 6



Type 3



Type 4

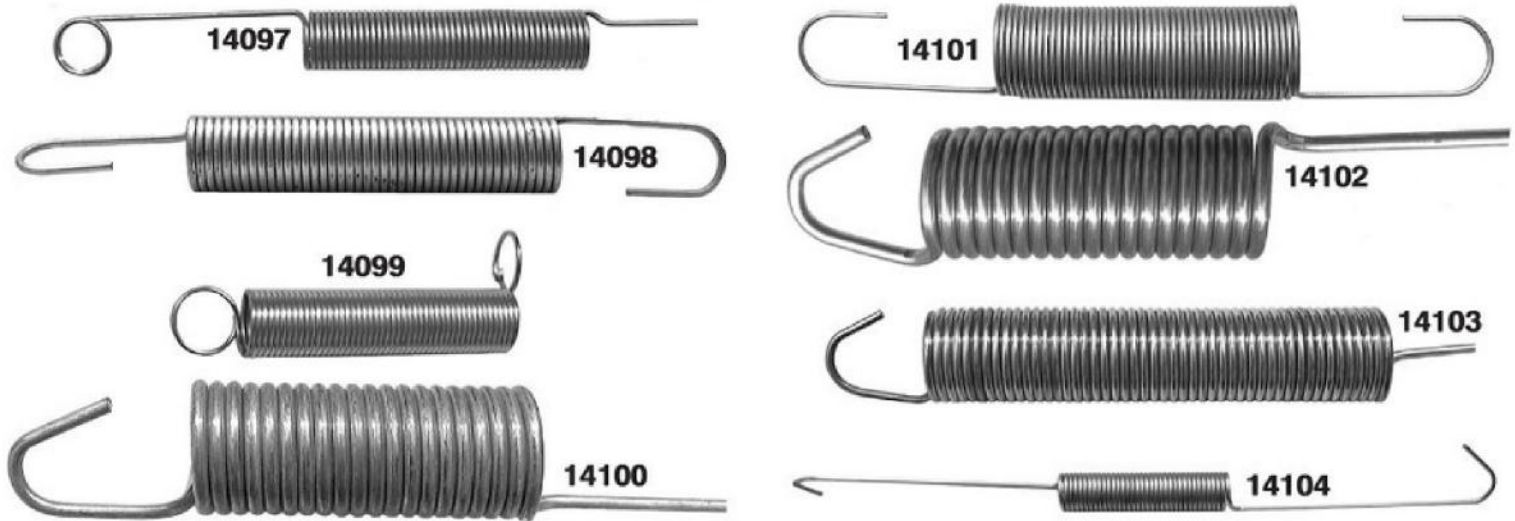
Part No.	Unit Pkg.	Type	Length Overall	Coil Length	O.D.	Wire Size	Lbs Rate /Inch	Approx. Lbs Load at Reference Ext.
14059	5	2	6.438"	5.575	.438"	.048"	1.1	4.2 @ 8.437"
14060	5	1	6.500"	5.925"	.328"	.035"	7.5 oz.	2.2 @ 8.500"
14063	5	4	3.250"	2.750"	.375"	.041"	1.9	5.2 @ 5.250"
14064	5	1	4.00"	3.450"	.250"	.028"	13 oz.	1.9 @ 6.00"
14065	5	3	4.500"	3.575"	.484"	.063"	6.2	14 @ 6.500"
14066*	5	1	4.062"	2.750"	.734"	.062"	1.4	4.3 @ 6.062"
14067	5	3	4.00"	2.825"	.719"	.105"	12.5	36.5 @ 5.00"
14068	10	6	5.250"	3.000"	.531"	.062"	5.0	8.5 @ 6.250"
14070	5	5	2.656"	1.500"	.750"	.080"	10.3	12.5 @ 3.656"
14072	10	3	1.438"	.825"	.344"	.048"	15.0	10 @ 1.812"
14074	10	1	1.125"	.700"	.234"	.020"	12.0	9 oz. @ 1.625"

*Not Zinc Plated

SPRINGS, PINS & CLIPS

Universal Springs

Galvanized • *Photos not actual size*



Part No.	Unit Pkg.	Length Overall	Coil Length	O.D.	Wire Size
14097	10	11-1/2"	1-7/8"	25/64"	1/32"
14098	10	4-3/8"	2-1/2"	1/2"	1/16"
14099	10	1-13/16"	1-1/2"	3/8"	1/32"
14100	10	8-1/2"	1-7/8"	3/4"	3/32"
14101	10	5-3/4"	2-3/8"	25/32"	3/64"
14102	10	18-1/2"	2"	13/16"	3/32"
14103	10	17-1/2"	3-1/2"	3/4"	1/16"
14104	10	8-1/4"	2"	7/16"	1/16"



Compression Springs

Zinc

Part No.	Unit Pkg.	Length Overall	O.D.	Wire Size	Approx. Solid Ht.	Lbs. Rate /Inch
14089	20	2.193"	.590"	.040"	.380"	3.1
14094*	20	.781"	.375"	.042"	.378"	7.4
14095	10	2.625"	.438"	.048"	.950"	6.0
14096	10	2.500"	.500"	.063"	1.00"	18.0

*Brass

Throttle Rod Clips

Black Phosphate



Left-hand Type



Right-hand Type

Part No.	Rod Diameter	Ind. Std.	Unit Pkg.
3609	5/32"	2	Right 100
3610	5/32"	2	Left 100
3611	3/16"	4	Right 100
3612	3/16"	4	Left 100
3613	1/4"	7	Right 100
3614	1/4"	7	Left 100

Retainer Pins

Zinc

Photo not actual size

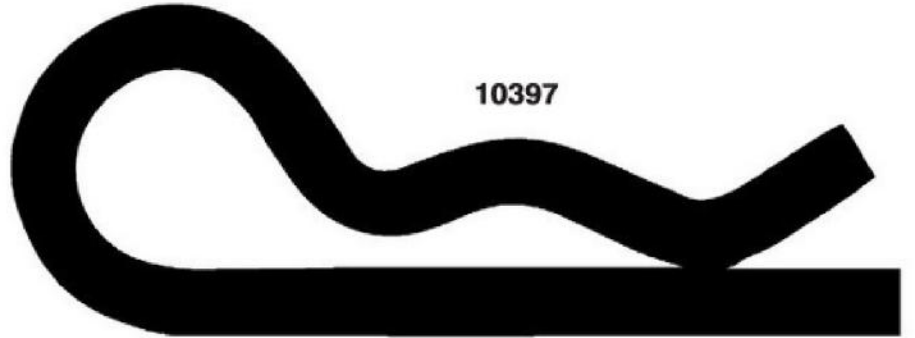
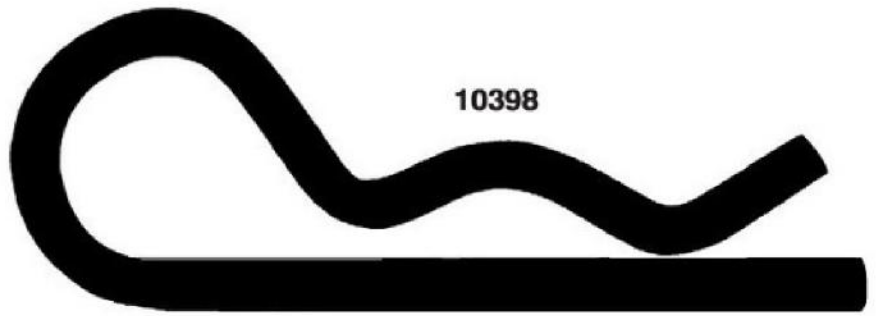
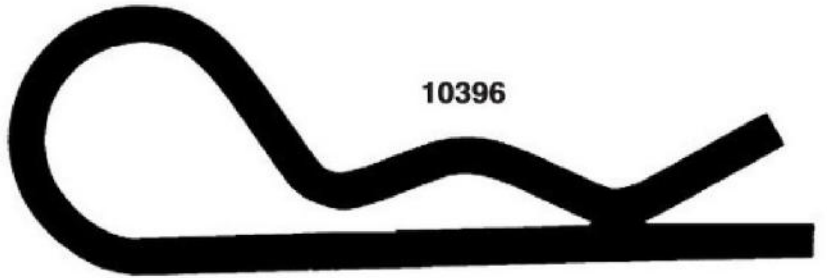
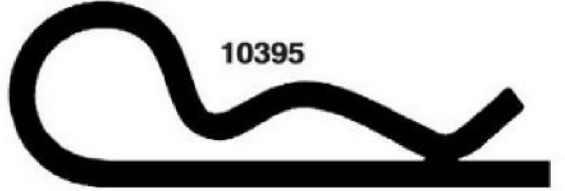
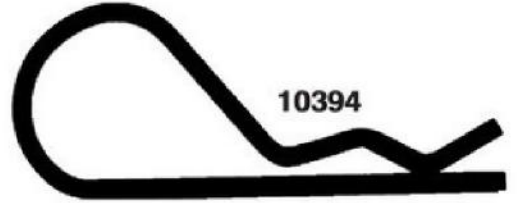
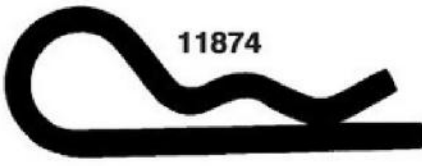
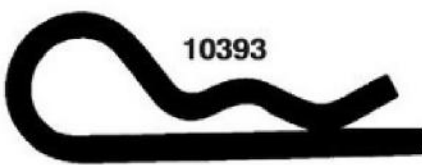
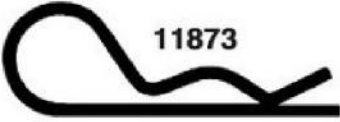
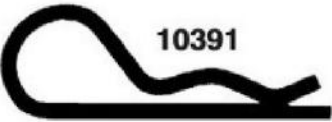
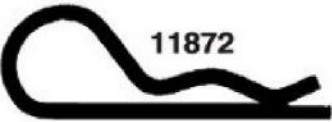


Part No.	Inside Diameter	Overall Length	Wire Dia.	Unit Pkg.
9114	1/16"	3/8"	.035"	100
9894	1/16"	19/32"	.045"	100
10390	7/64"	3/4"	.050"	100
9112	1/8"	1-1/8"	.070"	100
9110	3/16"	1-3/16"	.070"	100

PINS

Hair Pin Cotters

Zinc



Part No.	Wire Dia.	Drill Hole Size	Min. Shaft Dia.	Max Shaft Dia.	Overall Length	Inside Dia. of Eye	Unit Pkg.
16934	.042" (3/64")	3/64"	3/16"	1/4"	1"	1/4"	100
16727	.080" (5/64")	3/32"	1/4"	3/8"	1-3/16"	1/4"	100
11872	.080" (5/64")	3/32"	3/8"	1/2"	1-9/16"	5/16"	100
10391	.080" (5/64")	3/32"	3/8"	1/2"	1-9/16"	5/16"	100
11873	.062" (1/16")	5/64"	3/8"	1/2"	1-9/16"	5/16"	100
10392	.062" (1/16")	5/64"	3/8"	1/2"	1-9/16"	5/16"	100
10393	.125" (1/8")	9/64"	1/2"	3/4"	1-15/16"	7/16"	50
11874	.125" (1/8")	9/64"	1/2"	3/4"	1-15/16"	7/16"	50
10394	.093" (3/32")	7/64"	1/4"	5/8"	2-5/16"	5/8"	50
10395	.125" (1/8")	9/64"	5/8"	7/8"	2-1/2"	1/2"	25
10396	.177" (3/16")	3/16"	7/8"	1-1/4"	3-3/4"	7/8"	10
10398	.243" (1/4")	17/64"	3/4"	1"	4"	15/16"	10
10397	.310" (5/16")	21/64"	7/8"	1"	3-15/16"	7/8"	5

PINS

Hair Pin Cotters



Part No.	Inside Diameter	Overall Length	Wire Diameter	Unit Pkg.
3168	1/16"	23/64"	.025"	200
9890	3/32"	3/8"	.025"	100
2598	7/32"	3/4"	.060"	100
9892	5/16"	1"	.060"	100



Lynch Pins

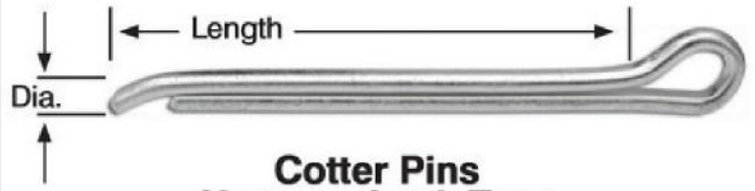
Part No.	Pin Size	Ring I.D.	Ring O.D.	Unit Pkg.
11733	7/16" O.D. x 2-1/2" Long Black Powder Coated	1-7/8"	2-1/4"	5
11736	1/4" O.D. x 2-1/8" Long Zinc Plated	1-5/8"	1-7/8"	10



Clevis Pins Drilled for Cotter Pins Zinc

Part No.	Dia.	Use Pin Dia.	Length Under Head to Ctr of Hole	Length Under Head to End of Pin
9433	1/4"	1/16"	29/32"	1"
9435	5/16"	3/32"	7/8"	1"
9436	5/16"	3/32"	1"	1-1/8"
9438	5/16"	3/32"	1-1/4"	1-3/8"
9440	3/8"	3/32"	7/8"	1"
9441	3/8"	3/32"	1"	1-1/8"
9443	3/8"	3/32"	1-1/8"	1-1/4"
9444	3/8"	3/32"	1-3/8"	1-1/2"
9446	1/2"	1/8"	1-11/32"	1-1/2"
9447	1/2"	1/8"	1-19/32"	1-3/4"

UNIT PACKAGE: 25



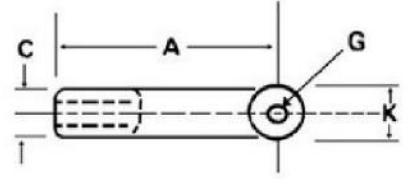
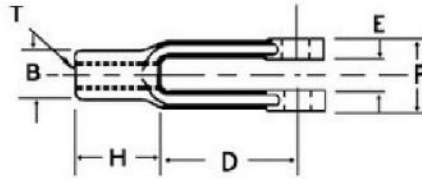
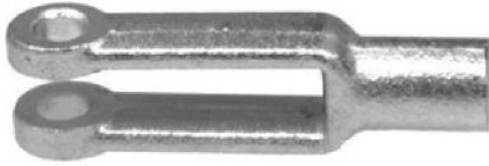
Cotter Pins Hammer-Lock Type C 1008 Steel

Part No. Plated	Part No. Plain	Size	Unit Pkg.
8477	3502	1/16" x 1/2"	200
8478	3503	1/16" x 3/4"	200
8479	3504	1/16" x 1"	200
14901	3505	1/16" x 1-1/4"	200
8480	3506	1/16" x 1-1/2"	200
	3508	1/16" x 2"	200
14903	3509	3/32" x 1/2"	200
8481		3/32" x 3/4"	200
8482	3511	3/32" x 1"	200
8483	3512	3/32" x 1-1/4"	200
8484	3513	3/32" x 1-1/2"	200
8485	3515	3/32" x 2"	200
14904	3519	1/8" x 3/4"	200
8486	3520	1/8" x 1"	200
8487	3521	1/8" x 1-1/4"	200
8488	3522	1/8" x 1-1/2"	200
8489		1/8" x 1-3/4"	200
8490	3524	1/8" x 2"	200
8491	3526	1/8" x 2-1/2"	200
8492		5/32" x 1"	100
14905	8506	5/32" x 1-1/4"	100
8493	8507	5/32" x 1-1/2"	100
14906	8508	5/32" x 1-3/4"	100
8494	8509	5/32" x 2"	100
14907	8511	5/32" x 2-1/2"	100
14908		5/32" x 3"	100
14909		3/16" x 1"	100
14910		3/16" x 1-1/4"	100
8495	8516	3/16" x 1-1/2"	100
8496	8518	3/16" x 2"	100
8497		3/16" x 2-1/2"	100
14911	8521	3/16" x 3"	100
8498		1/4" x 1-1/2"	100
8499		1/4" x 2"	100
8500		1/4" x 2-1/2"	100
8501	8530	1/4" x 3"	100
14912		1/4" x 4"	100
8502		5/16" x 2-1/2"	50
8503		5/16" x 3"	50

YOKE ENDS & SPRING PINS

Yoke Ends

Drop Forged • Adjustable • Zinc Finish



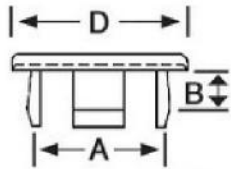
Part No.	"T" Tap Size	A	B	C	D	E	F	G	H	K	Unit Pkg.
10737	1/4"-28	2"	7/16"	7/16"	1-1/4"	9/32"	5/8"	1/4"	3/4"	1/2"	10
10788	1/4"-28	2"	7/16"	7/16"	1-1/4"	9/32"	5/8"	1/4"	3/4"	1/2"	2
10738	5/16"-24	2-1/4"	1/2"	1/2"	1-7/16"	11/32"	3/4"	5/16"	13/16"	19/32"	10
10789	5/16"-24	2-1/4"	1/2"	1/2"	1-7/16"	11/32"	3/4"	5/16"	13/16"	19/32"	2
10739	3/8"-24	2-1/2"	5/8"	5/8"	1-5/8"	7/16"	7/8"	3/8"	7/8"	11/16"	10
10790	3/8"-24	2-1/2"	5/8"	5/8"	1-5/8"	7/16"	7/8"	3/8"	7/8"	11/16"	2
10740	7/16"-20	2-7/8"	23/32"	23/32"	1-7/8"	1/2"	1"	7/16"	1"	13/16"	10
10791	7/16"-20	2-7/8"	23/32"	23/32"	1-7/8"	1/2"	1"	7/16"	1"	13/16"	2
10741	1/2"-20	3"	13/16"	13/16"	1-7/8"	9/16"	1-1/8"	1/2"	1-1/8"	15/16"	10
10792	1/2"-20	3"	13/16"	13/16"	1-7/8"	9/16"	1-1/8"	1/2"	1-1/8"	15/16"	2
10742	5/8"-18	4-15/16"	1-1/16"	1-1/16"	3-11/16"	11/16"	1-3/8"	5/8"	1-1/4"	1-3/16"	10
10793	5/8"-18	4-15/16"	1-1/16"	1-1/16"	3-11/16"	11/16"	1-3/8"	5/8"	1-1/4"	1-3/16"	2



Spring Pins Zinc

Part No.	Dia.	Length	Wall Thick.	Unit Pkg.	Part No.	Dia.	Length	Wall Thick.	Unit Pkg.
8981	1/16"	3/16"	.012"	50	9019	3/16"	1/2"	.040"	50
8983	1/16"	1/2"	.012"	50	9021	3/16"	3/4"	.040"	50
8985	1/16"	3/4"	.012"	50	9022	3/16"	1"	.040"	50
8987	1/16"	1"	.012"	50	9023	3/16"	1-1/4"	.040"	50
8988	5/64"	1/4"	.018"	50	9024	3/16"	1-1/2"	.040"	50
8989	5/64"	1/2"	.018"	50	9025	3/16"	1-3/4"	.040"	50
8991	5/64"	3/4"	.018"	50	9026	3/16"	2"	.040"	50
8992	5/64"	1"	.018"	50	9027	7/32"	5/8"	.048"	50
8993	5/64"	1-1/4"	.018"	50	9028	7/32"	1-3/8"	.048"	50
8994	5/64"	1-1/2"	.018"	50	9029	7/32"	1-3/4"	.048"	50
8995	3/32"	5/16"	.022"	50	9030	1/4"	5/8"	.050"	50
8996	3/32"	1/2"	.022"	50	9031	1/4"	3/4"	.050"	50
8997	3/32"	5/8"	.022"	50	9033	1/4"	1"	.050"	50
8998	3/32"	3/4"	.022"	50	9034	1/4"	1-1/4"	.050"	50
8999	3/32"	7/8"	.022"	50	9035	1/4"	1-1/2"	.050"	50
9000	3/32"	1"	.022"	50	9036	1/4"	1-3/4"	.050"	50
9001	3/32"	1-1/4"	.022"	50	9037	1/4"	2"	.050"	50
9002	3/32"	1-1/2"	.022"	50	9038	1/4"	2-1/4"	.050"	50
9003	1/8"	3/8"	.028"	50	9039	1/4"	2-1/2"	.050"	50
9004	1/8"	1/2"	.028"	50	9040	5/16"	3/4"	.062"	50
9005	1/8"	5/8"	.028"	50	9042	5/16"	1"	.062"	50
9006	1/8"	3/4"	.028"	50	9043	5/16"	1-1/2"	.062"	50
9007	1/8"	7/8"	.028"	50	9044	5/16"	1-3/4"	.062"	25
9008	1/8"	1"	.028"	50	9045	5/16"	2"	.062"	25
9009	1/8"	1-1/4"	.028"	50	9046	5/16"	2-1/2"	.062"	25
9010	1/8"	1-1/2"	.028"	50	9048	3/8"	1"	.077"	25
9011	1/8"	1-3/4"	.028"	50	9049	3/8"	1-1/2"	.077"	25
9012	1/8"	2"	.028"	50	9050	3/8"	2"	.077"	25
9013	5/32"	1/2"	.032"	50	9051	3/8"	2-1/2"	.077"	25
9015	5/32"	3/4"	.032"	50					
9016	5/32"	1"	.032"	50					
9017	5/32"	1-1/4"	.032"	50					
9018	5/32"	1-1/2"	.032"	50					

PLUG BUTTONS



Nylon Hole Plug

Nylon 6/6 • Matte Finish



Part No.	Hole Size (A)	Panel Thickness (B)	Head Size (D)	Head Height	Color	Unit Pkg.
13863	3/16"	1/32"-9/64"	11/32"	.040"	Black	100
13864	1/4"	1/32"-1/16"	27/64"	.040"	Natural	100
13865	1/4"	1/32"-1/16"	27/64"	.040"	Black	100
13866	5/16"	1/32"-9/64"	29/64"	.050"	Natural	100
13867	5/16"	1/32"-9/64"	29/64"	.050"	Black	100
13869	3/8"	1/32"-9/64"	37/64"	.050"	Black	100
13871	7/16"	1/32"-11/64"	39/64"	.050"	Black	50
13872	1/2"	1/32"-9/64"	43/64"	.062"	Natural	50
13873	1/2"	1/32"-9/64"	43/64"	.062"	Black	50
13875	9/16"	1/32"-9/64"	47/64"	.062"	Black	50
13876	5/8"	1/32"-5/64"	51/64"	.062"	Natural	50
13877	5/8"	1/32"-5/64"	51/64"	.062"	Black	50
13879	11/16"	1/32"-7/64"	57/64"	.062"	Black	50
13880	3/4"	1/32"-7/64"	63/64"	.062"	Natural	50
13881	3/4"	1/32"-7/64"	63/64"	.062"	Black	50
13883	13/16"	1/32"-7/64"	1-1/32"	.062"	Black	50
13885	7/8"	1/32"-7/64"	1-5/64"	.062"	Black	50
13887	1"	1/32"-7/64"	1-7/32"	.062"	Black	50



Plastic Plug Buttons

Depressed Center
Black Polyethylene

Part No.	Hole Size	Head Dia.	Working Thickness	Unit Pkg.
9288	1/2"	7/8"	.02 -.07"	100
9289	3/4"	1-5/32"	.02 -.14"	100
9290	7/8"	1-1/4"	.02 -.10"	100
9291	1"	1-3/8"	.04 -.10"	100
9292	1-1/4"	1-5/8"	.04 -.10"	100
9293	1-1/2"	1-7/8"	.04 -.10"	100
17207	1-3/4"	2-1/8"	.15 -.17"	50
17208	2"	2-3/8"	.17 -.19"	50
18798	2-1/2"	3"	.15 -.17"	25
18799	3"	3-1/2"	.18 -.20"	10



Plug Buttons

Nickel Plated

Part No.	Hole Size	Head Dia.	Working Thickness	Unit Pkg.
3750	1/4"	13/32"	.035" -.062"	50
3751	3/8"	1/2"	.037" -.078"	50
3752	1/2"	21/32"	.037" -.062"	50
3753	5/8"	13/16"	.062" -.078"	50
3754	3/4"	15/16"	.037" -.093"	50
3755	7/8"	1-1/16"	.031" -.093"	50
3756	1"	1-1/8"	.062" -.093"	50
10231	1-1/4"	1-7/16"	.062" -.093"	10
10232	1-1/2"	1-21/32"	.038" -.141"	10



Flush Sheet Metal Plugs

Fits 14 to 26 Gauge Material
Black Polyethylene

Part No.	Hole Size	Head Dia.	Unit Pkg.
14923	3/8"	3/4"	100
11746	1/2"	7/8"	100
18750	5/8"	1-3/64"	100
11747	3/4"	1"	100
11748	7/8"	1-5/32"	100
11749	1"	1-7/16"	100
18800	1-1/4"	1-5/8"	50
18801	1-1/2"	1-7/8"	25
18802	1-3/4"	2-1/8"	25
18803	2"	2-7/16"	10
18804	2-1/2"	3"	10
18806	3"	3-3/8"	5



BLACK NYLON LOCKING HOLE PLUGS



These hole plugs are designed with multiple locks to positively snap into panel thicknesses ranging from 1/64" to 1/8". Excellent for paintless dent repair. Made of heat stabilized nylon and suitable for elevated temperatures.

Part No.	Panel Hole Diameter	Maximum Panel Thickness	Plug Dimensions		Unit Pkg.
			Head Diameter	Thickness	
19764	3/16"	1/16"	1/4"	15/64"	100
18900	1/4"	1/16"	5/16"	5/16"	50
19765	5/16"	1/16"	3/8"	5/16"	50
18901	3/8"	1/8"	15/32"	13/32"	50
19766	7/16"	1/8"	17/32"	13/32"	50
18902	1/2"	1/8"	37/64"	13/32"	50
19767	9/16"	1/8"	21/32"	13/32"	50
18903	5/8"	1/8"	23/32"	13/32"	50
18904	3/4"	1/8"	59/64"	13/32"	50
19769	13/16"	1/8"	57/64"	13/32"	50
18905	7/8"	1/8"	1-1/64"	29/64"	50
18906	1"	1/8"	1-13/64"	29/64"	50
19770	1-3/32"	1/8"	1-7/32"	29/64"	50
19771	1-3/16"	1/8"	1-5/16"	29/64"	50
18907	1-1/4"	1/8"	1-3/8"	29/64"	50
19772	1-3/8"	1/8"	1-1/2"	29/64"	25
18908	1-1/2"	1/8"	1-43/64"	29/64"	25
18909	1-3/4"	1/8"	1-29/32"	29/64"	25
18910	2"	1/8"	2-9/64"	29/64"	25

KEYS

Woodruff Keys

1035 Carbon Steel • Plain



3877

3878

3879

3883

3886

3887

3894

3880

3882

3888

3889

3890

3881

3884

3891

3892

3893

3896

Part No.	Size	Unit Pkg.	Part No.	Size	Unit Pkg.
3877	(No. 3) 1/8" x 1/2"	100	3887	(No. 16) 3/16" x 1-1/8"	50
3878	(No. 5) 1/8" x 5/8"	100	3888	(No. 12) 7/32" x 7/8"	50
3879	(No. 7) 1/8" x 3/4"	100	3889	(No. 14) 7/32" x 1"	50
3880	(No. 4) 3/32" x 5/8"	100	3890	(No. 17) 7/32" x 1-1/8"	50
3881	(No. 6) 5/32" x 5/8"	100	3891	(No. A) 1/4" x 7/8"	50
3882	(No. 8) 5/32" x 3/4"	100	3892	(No. 15) 1/4" x 1"	50
3883	(No. 10) 5/32" x 7/8"	100	3893	(No. 18) 1/4" x 1-1/8"	50
3884	(No. 9) 3/16" x 3/4"	100	3894	(No. 21) 1/4" x 1-1/4"	50
3885	(No. 11) 3/16" x 7/8"	100	3895	(No. B) 5/16" x 1"	50
3886	(No. 13) 3/16" x 1"	50	3896	(No. C) 5/16" x 1-1/8"	50

Straight Keys

Plain



Part No.	Size	Unit Pkg.
Short Lengths		
9759	1/4" x 1/4" x 2-1/2"	10
Long Lengths		
9794	3/16" x 3/16" x 12"	5
9795	1/4" x 1/4" x 12"	5
9796	5/16" x 5/16" x 12"	5
9800	3/8" x 3/8" x 12"	5
9801	7/16" x 7/16" x 12"	5
9802	1/2" x 1/2" x 12"	5