

# COTTER, SPRING PINS AND SNAP RINGS



- Precision Manufactured to Exacting Specifications
- Protected with Special Chromate Plating
- Fast, Easy Installation
- Reuseable

**CHROMATE COTTER PINS, SPRING PINS AND SNAP RINGS ASSURE FAST, EASY INSTALLATIONS FOR THOUSANDS OF APPLICATIONS.** Manufactured from the finest materials, they prove to be stronger and more durable. Always use Chromate Cotter Pins, Spring Pins and Snap Rings when quality and reliability are of utmost importance.



**CHROMATE INDUSTRIAL CORP.**

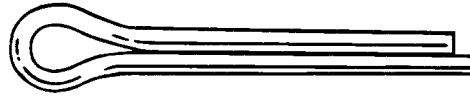
*EXCEPTIONAL PRODUCTS, SERVICE AND INNOVATIVE SOLUTIONS*



# COTTER PINS

**EASY TO INSERT, LOCK, REMOVE AND REUSE**

- PRECISION MADE AND PROTECTED WITH SPECIAL CHROMATE PLATING



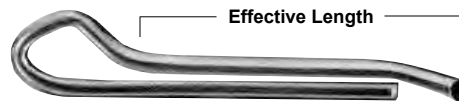
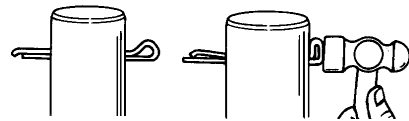
LENGTH	1/16	3/32	7/64	1/8	9/64	5/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2
1/2	U 915	U 920	-	T 905	-	-	-	-	-	-	-	-	-
3/4	U 916	U 921	T 91925	U 927	-	T 907	T 910	-	-	-	-	-	-
1	U 917	U 922	T 91926	T 928	-	T 935	T 941	-	T 900	-	-	-	-
1-1/4	U 918	U 923	T 91928	T 929	-	T 971	T 913	-	T 901	-	-	-	-
1-1/2	U 919	T 924	T 91927	T 930	-	936	T 942	T 914	R 948	N 974	-	-	-
1-3/4	-	T 925	T 91929	T 931	-	R 937	-	-	-	-	-	-	-
2	T 902	T 926	T 91930	R 932	T 912	R 938	R 943	-	R 949	N 954	R 959	-	-
2-1/4	-	-	-	-	-	T 908	-	-	-	-	-	-	-
2-1/2	T 903	-	-	R 933	-	R 939	R 944	-	R 950	N 955	R 985	-	-
3	T 904	-	-	R 934	-	R 940	R 945	T 969	N 951	N 956	R 960	-	I 965
3-1/2	-	-	-	T 906	-	-	R 946	-	N 952	N 957	I 961	-	-
4	-	-	-	-	-	T 909	R 947	-	N 953	N 958	I 962	I 970	E 966
5	-	-	-	-	-	-	-	-	N 973	N 984	I 963	I 972	E 967
6	-	-	-	-	-	-	-	-	-	N 911	I 964	-	E 968

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# HAMMERLOCK COTTER PINS

- MADE FROM LOW CARBON STEEL AND ZINC PLATED
- SPECIAL DESIGN LOCKS THE COTTER IN PLACE WITH ONE HAMMER BLOW
- MADE FOR SEMI-PERMANENT APPLICATIONS
- SIZE IS BASED UPON EFFECTIVE LENGTH AS MEASURED FROM UNDER HEAD TO END OF PRONG

1. INSERT      2. HIT HEAD WITH HAMMER



LENGTH	1/16	3/32	7/64	1/8	9/64	5/32
1/2	U 90100	U 90108	-	T 90121	-	-
3/4	U 90101	U 90109	T 90115	U 90122	-	T 90132
1	U 90102	U 90110	T 90116	T 90123	-	T 90133
1-1/4	U 90103	U 90111	T 90117	T 90124	-	T 90134
1-1/2	U 90104	T 90112	T 90118	T 90125	-	T 90135
1-3/4	-	T 90113	T 90119	T 90126	-	R 90136
2	T 90105	T 90114	T 90120	R 90127	T 90131	R 90137
2-1/4	-	-	-	-	-	T 90138
2-1/2	T 90106	-	-	R 90128	-	R 90139
3	T 90107	-	-	R 90129	-	R 90140
3-1/2	-	-	-	T 90130	-	-
4	-	-	-	-	-	T 90141

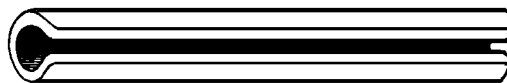
# HAMMERLOCK COTTER PINS (Cont'd)

LENGTH	3/16	7/32	1/4	5/16	3/8	7/16	1/2
<b>3/4</b>	T 90142	-	-	-	-	-	-
<b>1</b>	T 90143	-	T 90153	-	-	-	-
<b>1-1/4</b>	T 90144	-	T 90154	-	-	-	-
<b>1-1/2</b>	T 90145	T 90151	R 90155	N 90162	-	-	-
<b>1-3/4</b>	-	-	-	-	-	-	-
<b>2</b>	R 90146	-	R 90156	N 90163	R 90170	-	-
<b>2-1/2</b>	R 90147	-	R 90157	N 90164	R 90171	-	-
<b>3</b>	R 90148	T 90152	N 90158	N 90165	R 90172	-	I 90179
<b>3-1/2</b>	R 90149	-	N 90159	N 90166	I 90173	-	-
<b>4</b>	R 90150	-	N 90160	N 90167	I 90174	I 90177	E 90180
<b>5</b>	-	-	N 90161	N 90168	I 90175	I 90178	E 90181
<b>6</b>	-	-	-	N 90169	I 90176	-	E 90182

## SPRING PINS

**LIGHTWEIGHT, HIGH STRENGTH AND REUSEABLE**

- PRECISION MADE FROM CARBON SPRING STEEL AND CHROMATE PLATED
- TRIPLE HEAT TREATED



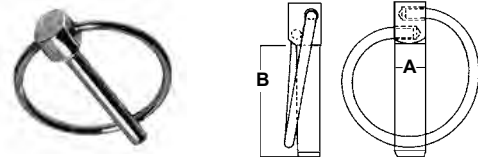
LENGTH	1/16 DIA.	5/64 DIA.	3/32 DIA.	1/8 DIA.	5/32 DIA.	3/16 DIA.
<b>1/4</b>	T 46800	T 46812	T 46826	-	-	-
<b>3/8</b>	T 46802	T 46814	T 46827	T 46834	-	-
<b>1/2</b>	T 46804	T 46816	T 46828	T 46836	T 46848	R 46860
<b>9/16</b>	-	T -	-	-	-	-
<b>5/8</b>	T 46806	T 46820	T 46829	T 46837	-	R 46862
<b>3/4</b>	T 46808	T 46822	T 46830	T 46838	T 46850	R 46864
<b>7/8</b>	-	-	-	T 46839	-	-
<b>1</b>	T 46810	T 46824	T 46832	T 46840	T 46852	R 46866
<b>1-1/4</b>	-	-	-	R 46842	T 46854	R 46868
<b>1-1/2</b>	-	-	T 46833	R 46844	R 46856	R 46870
<b>1-3/4</b>	-	-	-	-	-	R 46872
<b>2</b>	-	-	-	R 46846	R 46858	R 46874

LENGTH	7/32 DIA.	1/4 DIA.	5/16 DIA.	3/8 DIA.	7/16 DIA.	1/2 DIA.
	PART	PART	PART	PART	PART	PART
<b>5/8</b>	T 46875	-	-	-	-	-
<b>3/4</b>	T 46876	N 46888	R 46904	-	-	-
<b>1</b>	N 46878	N 46890	R 46906	N 46918	-	-
<b>1-1/4</b>	N 46880	N 46892	N 46908	N 46920	-	-
<b>1-1/2</b>	N 46882	N 46894	N 46910	N 46922	L 46932	I 46940
<b>1-3/4</b>	N 46884	N 46896	N 46912	L 46924	-	-
<b>2</b>	N 46886	N 46898	N 46913	I 46926	I 46934	I 46942
<b>2-1/4</b>	-	N 46899	-	-	-	-
<b>2-1/2</b>	-	N 46900	N 46914	I 46928	I 46936	E 46944
<b>3</b>	-	N 46902	L 46916	I 46930	I 46938	E 46946

# LYNCH PINS

## 1010 CARBON STEEL, ZINC PLATED

- 1010 STEEL, ZINC ELECTROPLATED AND DICHROMATE DIPPED FOR CORROSION RESISTANCE
- ROCKWELL HARDNESS OF Ra 50-60
- SELF-LOCKING RING ALLOWS THE PIN TO BE SECURELY HELD IN PLACE AND PROVIDES AN EASY GRIP FOR QUICK REMOVAL

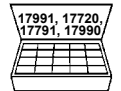


SIZE (A x B)	PART	SIZE (A x B)	PART	SIZE (A x B)	PART
3/16 x 1-9/16	L 47390	7/16 x 1-9/16	L 47393	7/16 x 1-3/4 with Heavy Duty Ring	I 47395
1/4 x 1-9/16	L 47391	7/16 x 1-31/32	I 47394	7/16 x 1-31/32 with Heavy Duty Ring	I 47396
5/16 x 1-9/16	L 47392	-	-	-	-

# HAIR PIN COTTERS

## QUICK INSTALLATION, STRONG AND REUSABLE

- ACCURATELY FORMED FROM QUALITY SPRING STEEL
- PROTECTED WITH CHROMATE PLATING

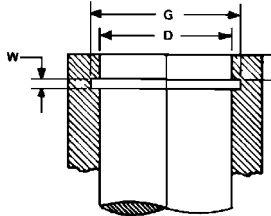


GAUGE	WIRE DIA.	LENGTH	I.D. OF EYE	SHAFT DIA.	DRILL HOLES	PART
22	.028	.600	.093	1/8 – 5/32	1/32	R 47365
20	.035	7/16	.078	7/64 – 9/64	.040	R 47366
19	.042	7/16	.080	1/16 – 1/8	.047	R 47367
19	.042	1	1/4	3/16 – 1/4	3/64	R 47368
18	.047	19/32	1/8	1/8 – 3/16	1/16	R 47369
18	.047	1-9/16	5/16	1/4 – 3/8	1/16	R 47370
17	.054	3/4	1/8	3/16 – 1/4	1/16	R 47371
17	.054	7/8	9/64	1/4 – 3/8	1/16	R 47372
16	.062	1-5/16	5/16	1/4 – 1/2	5/64	R 47373
16	.062	1-9/16	3/8	3/8 – 1/2	5/64	R 47374
15	.072	1-3/32	9/64	5/16 – 3/8	5/64	R 47375
15	.072	1-7/8	5/8	3/8 – 1/2	5/64	R 47376
14	.080	1-3/16	1/4	1/4 – 3/8	3/32	R 47377
13	.093	1-1/8	1/4	1/4 – 1/2	7/64	R 47379
12	.105	1-1/4	1/8	5/16 – 3/8	1/8	R 47380
14	.080	1-9/16	3/8	3/8 – 1/2	3/32 or 7/64	R 47098
13	.093	1-5/8	3/8	1/4 – 1/2	7/64	R 47090
13	.093	2-5/16	5/8	1/4 – 5/8	7/64	N 47092
13	.093	2	5/8	3/8 – 1/2	7/64	N 47378
13	.093	2-1/2	9/16	3/8 – 3/4	7/64	N 47096
11	.125	1-15/16	7/16	1/2 – 3/4	9/64	N 47097
11	.125	2-9/16	9/16	7/16 – 3/4	9/64	N 47095
9	.148	3-5/16	3/4	3/4 – 1-1/8	5/32 or 11/64	L 47094
9	.148	2-15/16	3/4	5/8 – 1	5/32	I 47383
7	.177	3-1/4	15/16	5/8 – 1	3/16 or 13/64	I 47091
7	.177	3-3/4	15/16	7/8 – 1-1/4	3/16 or 13/64	- 47093
3	.243	4	15/16	3/4 – 1	1/4 or 17/64	- 47099
3	.243	5-1/8	1-1/2	1-1/4 – 1-1/2	17/64	- 47387
0	.310	4-1/16	7/8	7/8 – 1	21/64	- 47389

# CIC 200™ INTERNAL SNAP (RETAINING) RINGS

## HIGH STRENGTH SPRING STEEL

Precision made from carbon spring steel and Chromate plated. Triple heat treated.



### SPECIFICATIONS

(D) HOUSING DIA.	RING THICKNESS	(G) GROOVE DIA.	(W) GROOVE WIDTH		PART
1/4	.015	.268	.018	R	47000
5/16	.015	.330	.018	R	47001
3/8	.025	.397	.029	R	47002
7/16	.025	.461	.029	R	47003
1/2	.035	.530	.039	R	47004
9/16	.035	.596	.039	R	47005
5/8	.035	.665	.039	R	47006
11/16	.035	.732	.039	R	47007
3/4	.035	.796	.039	R	47008
13/16	.042	.862	.046	R	47009
7/8	.042	.931	.046	R	47010
15/16	.042	1.000	.046	R	47011
1"	.042	1.066	.046	R	47012
1.023	.042	1.091	.046	R	47013
1-1/16	.050	1.130	.056	R	47014
1-1/8	.050	1.197	.056	N	47015
1-3/16	.050	1.262	.056	N	47016
1-1/4	.050	1.330	.056	N	47017
1-5/16	.050	1.396	.056	N	47018
1-3/8	.050	1.461	.056	N	47019
1-7/16	.050	1.528	.056	N	47020
1-1/2	.050	1.594	.056	N	47021
1-9/16	.062	1.658	.068	N	47022
1-5/8	.062	1.725	.068	N	47023
1-3/4	.062	1.858	.068	N	47072
1-7/8	.062	1.989	.068	N	47073
2"	.062	2.122	.068	N	47079
2-1/4	.078	2.490	.086	I	46997
2-3/8	.078	2.630	.086	I	46998
2-7/16	.078	2.700	.086	N	46999

### ADJUSTABLE INTERNAL SNAP RING PLIERS



#### DESCRIPTION

Set contains one internal pliers with four sets of tips:  
 Two of each: .038"/90°, .047"/straight, .047"/45° and  
 .067" straight. Overall pliers length: 6-1/4" (159 mm).  
 Plastic grips. Spring-loaded handles.

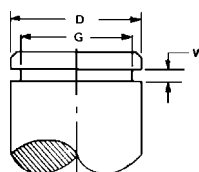
#### PART

A	47089
A	47080 (Replacement Tips)

# CIC 200™ EXTERNAL SNAP (RETAINING) RINGS

## HIGH STRENGTH SPRING STEEL

- PRECISION MADE FROM CARBON SPRING STEEL
- CHROMATE PLATED
- TRIPLE HEAT TREATED




\* Beryllium Copper Plated

### SPECIFICATIONS

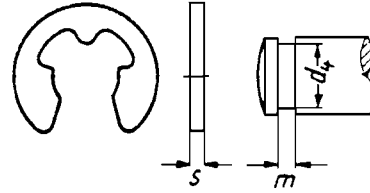
(D) HOUSING DIA.	RING THICKNESS	(G) GROOVE DIA.	(W) GROOVE WIDTH	PART	
1/8*	.010	.117	.012	R	47025
5/32	.010	.142	.012	R	47024
3/16*	.015	.175	.018	R	47026
7/32	.015	.196	.018	R	47050
1/4	.025	.230	.029	R	47027
5/16	.025	.290	.029	R	47028
11/32	.025	.309	.029	R	47051
3/8	.025	.352	.029	R	47029
7/16	.025	.412	.029	R	47030
1/2	.035	.468	.039	R	47031
9/16	.035	.530	.039	R	47032
5/8	.035	.588	.039	R	47033
11/16	.042	.646	.046	R	47034
3/4	.042	.704	.046	R	47035
25/32	.042	.733	.046	R	47036
13/16	.042	.762	.046	R	47037
7/8	.042	.821	.046	R	47038
15/16	.042	.882	.046	R	47039
1"	.042	.940	.046	R	47040
1.023	.042	.961	.046	R	47041
1-1/16	.050	.998	.056	R	47042
1-1/8	.050	1.059	.056	N	47043
1-3/16	.050	1.118	.056	N	47044
1-1/4	.050	1.176	.056	N	47045
1-5/16	.050	1.232	.056	N	47046
1-3/8	.050	1.291	.056	N	47047
1-7/16	.050	1.350	.056	N	47048
1-1/2	.050	1.406	.056	N	47049
1-9/16	.062	1.446	.068	N	46993
1-5/8	.062	1.503	.068	N	46992
1-3/4	.062	1.650	.068	N	47085
1-7/8	.062	1.769	.068	N	47086
2"	.062	1.886	.068	L	47087
2-1/4	.078	2.081	.086	I	46994
2-5/16	.078	2.139	.086	I	46995
2-7/16	.078	2.25	.086	I	46996

### ADJUSTABLE EXTERNAL SNAP RING PLIERS

	DESCRIPTION	PART
	<p>Set contains one external pliers with four sets of tips:                      Two of each: .038"/90°, .047"/straight, .047"/45° and 067" straight.                      Overall length: 6-1/4" (159 mm). Plastic grips. Spring-loaded handles.</p>	A 47088 47080 A (Replacement Tips)

# CIC 200™ "E" (RETAINING) RINGS

- PRECISION MADE FROM HIGH STRENGTH CARBON SPRING STEEL AND CHROMATE PLATED
- TRIPLE HEAT TREATED



## SPECIFICATIONS

SHAFT DIA.	RING THICKNESS (s)	GROOVE DIA. (d <sub>4</sub> )	GROOVE WIDTH (m)	PART	SHAFT DIA.	RING THICKNESS (s)	GROOVE DIA. (d <sub>4</sub> )	GROOVE WIDTH (m)	PART
1/16*	.010	.052	.012	T 47052	7/32	.025	.188	.029	T 47062
1/16**	.010	.052	.012	T 47053	1/4	.025	.210	.029	T 47063
3/32	.015	.074	.018	T 47054	5/16	.025	.250	.029	T 47064
1/8	.015	.095	.018	T 47055	3/8	.035	.303	.039	T 47065
9/64	.015	.102	.018	T 47056	7/16	.035	.343	.039	T 47066
9/64	.025	.105	.029	T 47057	7/16	.035	.380	.039	T 47067
5/32	.025	.116	.029	T 47058	1/2	.042	.396	.046	T 47068
11/64	.025	.127	.029	T 47059	5/8	.042	.485	.046	R 47069
3/16	.025	.147	.029	T 47060	.744	.050	.625	.056	R 47070
3/16	.025	.125	.029	T 47061	3/4	.050	.580	.056	R 47071

\*Ring O.D. .140

\*\*Ring O.D. .156



# CIC 200™ DOWEL PINS



- .0002" OVER LISTED DIAMETER
- RUST RESISTANT BLACK LUSTER FINISH
- PRECISION GROUND
- HEAT TREATED TO CORE HARDNESS OF HRC 47-58
- SURFACE HARDNESS OF HRC 60
- MEETS ASME/ANSI B18.8.2



SIZE	PART	SIZE	PART	SIZE	PART	SIZE	PART	SIZE	PART
1/8 x 3/8	R 47100	1/4 x 1-1/4	N 47123	3/8 x 1/2	N 47141	7/16 x 3	I 47192	5/8 x 2-1/2	I 47175
1/8 x 1/2	R 47101	1/4 x 1-1/2	N 47124	3/8 x 5/8	N 47142	1/2 x 3/4	N 47159	5/8 x 3	I 47176
1/8 x 5/8	R 47102	1/4 x 1-3/4	N 47125	3/8 x 3/4	N 47143	1/2 x 1	I 47160	5/8 x 3-1/2	E 47177
1/8 x 3/4	R 47103	1/4 x 2	N 47126	3/8 x 7/8	N 47144	1/2 x 1-1/4	I 47161	5/8 x 4	E 47178
1/8 x 1	R 47105	1/4 x 2-1/4	N 47127	3/8 x 1	N 47145	1/2 x 1-1/2	I 47162	3/4 x 2	E 47179
1/8 x 1-1/4	R 47106	1/4 x 2-1/2	N 47128	3/8 x 1-1/4	N 47146	1/2 x 1-3/4	I 47163	3/4 x 2-1/2	E 47180
1/8 x 1-1/2	N 47107	5/16 x 1/2	N 47129	3/8 x 1-1/2	N 47147	1/2 x 2	I 47164	3/4 x 3	E 47181
1/8 x 2	N 47108	5/16 x 5/8	N 47130	3/8 x 1-3/4	N 47148	1/2 x 2-1/4	I 47165	3/4 x 3-1/2	E 47182
3/16 x 1/2	R 47109	5/16 x 3/4	N 47131	3/8 x 2	N 47149	1/2 x 2-1/2	I 47166	3/4 x 4	E 47183
3/16 x 3/4	R 47111	5/16 x 7/8	N 47132	3/8 x 2-1/4	N 47150	1/2 x 3	I 47167	7/8 x 2	B 47184
3/16 x 1	R 47113	5/16 x 1	N 47133	3/8 x 2-1/2	N 47151	1/2 x 3-1/2	I 47168	7/8 x 2-1/2	B 47185
3/16 x 1-1/4	R 47114	5/16 x 1-1/4	N 47134	3/8 x 3	L 47152	1/2 x 4	I 47169	7/8 x 3	B 47186
3/16 x 1-1/2	N 47115	5/16 x 1-1/2	N 47135	7/16 x 1	L 47153	5/8 x 1	I 47170	7/8 x 4	B 47187
3/16 x 2	N 47117	5/16 x 1-3/4	N 47136	7/16 x 1-1/4	L 47154	5/8 x 1-1/4	I 47171	1 x 2	B 47188
1/4 x 1/2	R 47118	5/16 x 2	N 47137	7/16 x 1-1/2	L 47155	5/8 x 1-1/2	I 47172	1 x 2-1/2	B 47189
1/4 x 5/8	R 47119	5/16 x 2-1/4	N 47138	7/16 x 2	I 47157	5/8 x 1-3/4	I 47173	1 x 3	B 47190
1/4 x 3/4	R 47120	5/16 x 2-1/2	N 47139	7/16 x 2-1/2	I 47158	5/8 x 2	I 47174	1 x 4	B 47191
1/4 x 1	N 47122	5/16 x 3	I 47140	-	-	-	-	-	-

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# CIC 200™ UNIVERSAL CLEVIS PINS

**A MULTI-HOLE FASTENER FOR QUICK AND EASY LENGTH ADJUSTMENTS**



- EASY TO USE WITH STANDARD CHROMATE HAIR PIN COTTERS (SEE PAGE 19.3)
- MANUFACTURED WITH 1010, 1018 AND 1022 STEEL



SIZE	HOLES PER PIN	HOLE SIZE	PART #	SIZE	HOLES PER PIN	HOLE SIZE	PART #
3/16 x 1-1/2	3	3/32	N 46950	3/8 x 3	7	9/64	I 46969
3/16 x 2	5	3/32	N 46952	3/8 x 4	7	9/64	I 46971
1/4 x 1-1/2	3	7/64	N 46953	7/16 x 2	7	5/32	I 46972
1/4 x 2	7	7/64	N 46955	7/16 x 3	7	5/32	I 46974
1/4 x 3	7	7/64	N 46957	1/2 x 2	7	5/32	I 46977
5/16 x 1-1/2	3	7/64	N 46958	1/2 x 3	7	5/32	I 46979
5/16 x 2	7	7/64	N 46960	1/2 x 4	7	5/32	I 46981
5/16 x 3	7	7/64	N 46962	5/8 x 2	7	5/32	E 46982
5/16 x 4	7	7/64	I 46964	3/4 x 3	7	5/32	E 46985
3/8 x 1-1/2	3	9/64	I 46965	3/4 x 4	7	5/32	E 46987
3/8 x 2	7	9/64	I 46967	-	-	-	-

# CIC 200™ TAPER PINS

- AN AID IN HOLE ALIGNMENT
- LOW CARBON STEEL C-12L14 MACHINED TO A 63 MICRO-FINISH (MAX.)
- TOLERANCE OF +.0013 / -.0007 ON THE MAJOR DIA.
- CONFORMS TO SPECIFICATION MS 24692 AND ANSI 18.8.2.

A = ACTUAL DIAMETER OF LARGE END.  
SMALL END EQUALS A (LARGE END)  
MINUS (LENGTH X .0208").

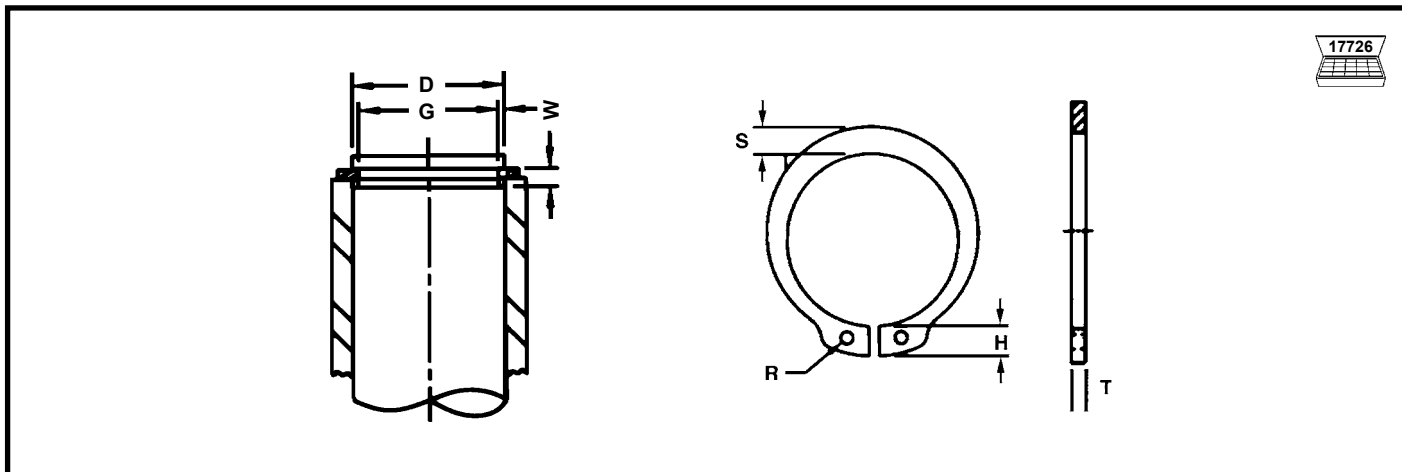


SIZE	LENGTH	A	PART #	SIZE	LENGTH	A	PART #
0	3/4	.156	R 46502	4	1-1/2	.250	L 46582
0	1	.156	R 46504	4	2	.250	L 46584
0	1-1/2	.156	R 46506	4	2-1/2	.250	L 46586
0	2	.156	R 46508	5	1	.289	L 46602
1	3/4	.172	R 46517	5	1-1/2	.289	L 46604
1	1	.172	R 46519	5	2	.289	L 46606
1	1-1/2	.172	R 46521	5	2-1/4	.289	L 46607
1	2	.172	R 46523	6	1	.341	L 46626
2	3/4	.193	R 46532	6	1-1/2	.341	L 46628
2	1	.193	R 46534	6	2	.341	L 46630
2	1-1/2	.193	R 46536	6	2-1/2	.341	L 46632
2	2	.193	R 46538	6	3	.341	L 46634
3	3/4	.219	R 46555	7	1	.409	L 46649
3	1	.219	R 46557	7	1-1/2	.409	L 46651
3	1-1/2	.219	R 46559	7	2	.409	L 46653
3	2	.219	L 46561	7	2-1/2	.409	I 46655
3	2-1/2	.219	L 46563	7	3	.409	I 46657
4	1	.250	L 46580	-	-	-	-

# CIC 200™ METRIC EXTERNAL RETAINING RINGS

## HIGH CARBON SPRING STEEL


Makes contact with the grooved shaft along its entire periphery, ensuring high thrust load capacity.



## SPECIFICATIONS

SHAFT DIA. (mm) (D)	GROOVE DIA. (G)	GROOVE WIDTH (W)	HOLE DIA. (R)	RING THICKNESS (T)	MAX. LUG HEIGHT (H)	MAXIMUM SEC. (S)	PART
4 mm	3.8	0.50	1.0	0.40	2.2	0.9	T 47304
6 mm	5.7	0.80	1.2	0.70	2.7	1.3	T 47306
8 mm	7.6	0.90	1.2	0.80	3.2	1.5	T 47308
10 mm	9.6	1.10	1.5	1.00	3.3	1.8	T 47310
12 mm	11.5	1.10	1.7	1.00	3.3	1.8	T 47312
14 mm	13.4	1.10	1.7	1.00	3.5	2.1	T 47314
15 mm	14.3	1.10	1.7	1.00	3.6	2.2	T 47315
16 mm	15.2	1.10	1.7	1.00	3.7	2.2	T 47316
18 mm	17.0	1.30	2.0	1.20	3.9	2.4	T 47318
20 mm	19.0	1.30	2.0	1.20	4.0	2.6	T 47320
22 mm	21.0	1.30	2.0	1.20	4.2	2.8	R 47322
25 mm	23.9	1.30	2.0	1.20	4.4	3.0	R 47325
28 mm	26.6	1.60	2.0	1.50	4.7	3.2	L 47328
30 mm	28.6	1.60	2.0	1.50	5.0	3.5	L 47330
32 mm	30.3	1.60	2.5	1.50	5.2	3.6	L 47332
35 mm	33.0	1.60	2.5	1.50	5.6	3.9	L 47335
36 mm	34.0	1.85	2.5	1.75	5.6	4.0	L 47336
38 mm	36.0	1.85	2.5	1.75	5.8	4.2	L 47338
40 mm	37.5	1.85	2.5	1.75	6.0	4.4	L 47340
42 mm	39.5	1.85	2.5	1.75	6.5	4.5	L 47342

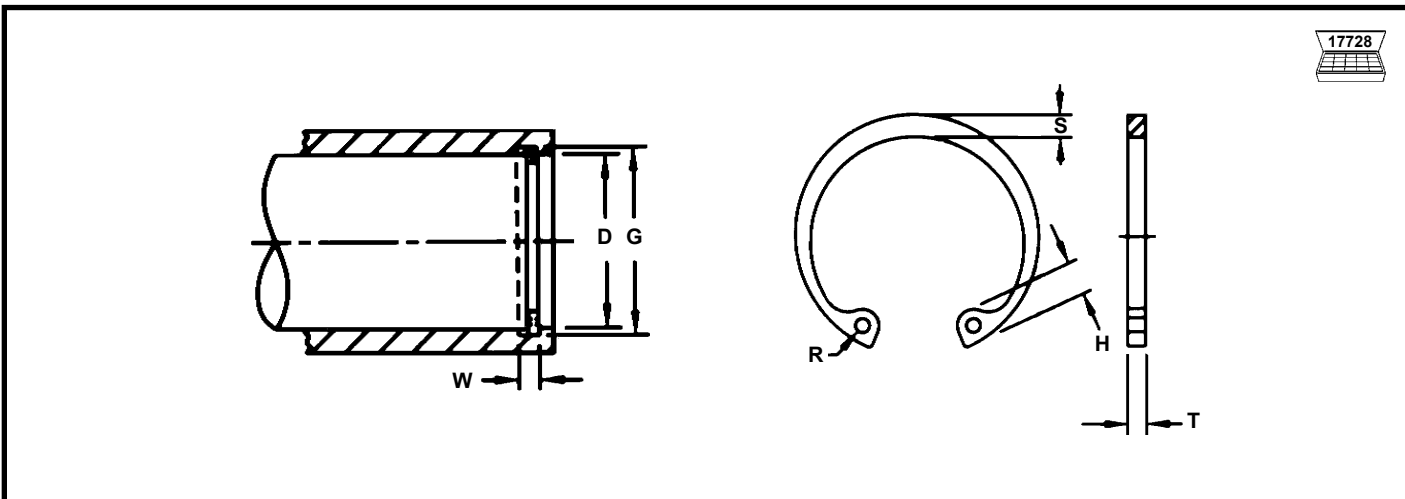
## ADJUSTABLE EXTERNAL SNAP RING PLIERS

	DESCRIPTION	PART
	<p>Set contains one external pliers with four sets of tips: Two of each: .038"/90°, .047"/straight, .047"/45° and 067" straight. Overall pliers length: 6-1/4" (159 mm). Plastic grips. Spring-loaded handles.</p>	A
	A	47080 (Replacement Tips)

# CIC 200™ METRIC INTERNAL RETAINING RINGS

## HIGH CARBON SPRING STEEL

Makes contact with the grooved housing along most of its periphery, ensuring high thrust load capacity.




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### SPECIFICATIONS

HOUSING DIA. (mm) (D)	GROOVE DIA. (G)	GROOVE WIDTH (W)	HOLE DIA. (R)	RING THICKNESS (T)	MAX. LUG HEIGHT (H)	MAXIMUM SEC. (S)	PART
10 mm	10.4	1.10	1.2	1.00	3.2	1.4	T 47510
12 mm	12.5	1.10	1.5	1.00	3.4	1.7	T 47512
14 mm	14.6	1.10	1.7	1.00	3.7	1.8	T 47514
15 mm	15.7	1.10	1.7	1.00	3.7	2.0	T 47515
16 mm	16.8	1.10	1.7	1.00	3.8	2.0	T 47516
18 mm	19.0	1.10	2.0	1.00	4.1	2.2	T 47518
19 mm	20.0	1.10	2.0	1.00	4.1	2.2	T 47519
20 mm	21.0	1.10	2.0	1.00	4.1	2.3	T 47520
22 mm	23.0	1.10	2.0	1.00	4.2	2.5	T 47522
24 mm	25.2	1.30	2.0	1.20	4.3	2.6	T 47524
25 mm	26.2	1.30	2.0	1.20	4.5	2.7	T 47525
27 mm	28.4	1.30	2.0	1.20	4.7	2.9	R 47527
28 mm	29.4	1.30	2.0	1.20	4.8	2.9	R 47528
29 mm	30.4	1.30	2.0	1.20	4.8	3.0	R 47529
30 mm	31.4	1.30	2.0	1.20	4.8	3.0	R 47530
32 mm	33.7	1.30	2.5	1.20	5.4	3.2	R 47532
35 mm	37.0	1.60	2.5	1.50	5.4	3.4	L 47535
38 mm	40.0	1.60	2.5	1.50	5.5	3.7	L 47538
40 mm	42.5	1.85	2.5	1.75	5.8	3.9	L 47540
42mm	44.5	1.85	2.5	1.75	5.9	4.1	L 47542

### ADJUSTABLE INTERNAL SNAP RING PLIERS

	DESCRIPTION	PART
	<p>Set contains one internal pliers with four sets of tips: Two of each: .038"/90°, .047"/straight, .047"/45° and 067" straight. Overall pliers length: 6-1/4" (159 mm). Plastic grips. Spring-loaded handles.</p>	A
A		47080 (Replacement Tips)

# METRIC SPRING PINS

**LIGHTWEIGHT, HIGH STRENGTH AND REUSEABLE**

Precision made from carbon spring steel. Triple heat treated.



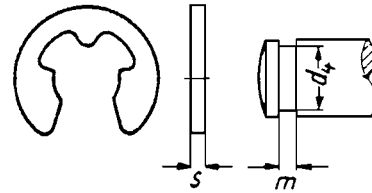
LENGTH	1mm DIA.	1.5mm DIA.	2mm DIA.	2.5mm DIA.
6mm	T 47550	T 47557	T 47563	T 47572
8mm	T 47551	—	—	—
10mm	T 47552	T 47558	T 47564	T 47573
12mm	T 47553	T 47559	T 47565	T 47574
14mm	—	—	T 47566	—
16mm	T 47554	T 47560	T 47567	T 47575
18mm	T 47555	T 47561	T 47568	T 47576
20mm	T 47556	T 47562	T 47569	T 47577
24mm	—	—	T 47570	T 47578
30mm	—	—	T 47571	T 47579

LENGTH	3mm DIA.	3.5mm DIA.	4mm DIA.	4.5mm DIA.	5mm DIA.
6mm	T 47580	—	—	—	—
10mm	T 47581	—	T 47597	—	—
12mm	T 47582	T 47590	T 47598	T 47606	T 47621
16mm	T 47583	T 47591	T 47599	—	T 47614
18mm	—	—	—	T 47607	—
20mm	T 47584	T 47592	T 47600	T 47608	T 47615
24mm	T 47585	—	—	—	—
26mm	—	T 47593	T 47601	T 47609	T 47616
28mm	T 47586	—	—	—	—
30mm	T 47587	T 47594	T 47602	T 47610	T 47617
36mm	T 47588	T 47595	T 47603	T 47611	—
40mm	T 47589	T 47596	T 47604	T 47612	T 47618
45mm	—	—	T 47605	R 47613	—
50mm	—	—	—	—	R 47619
60mm	—	—	—	—	R 47620

LENGTH	6mm DIA.	8mm DIA.	10mm DIA.	12mm DIA.
12mm	T 47622	—	—	—
16mm	T 47623	T 47630	R 47639	—
20mm	T 47624	R 47631	R 47640	—
24mm	T 47625	R 47632	R 47641	I 47648
30mm	R 47626	R 47633	N 47642	I 47649
36mm	R 47627	R 47634	N 47643	I 47650
40mm	R 47628	R 47635	N 47644	I 47651
50mm	R 47629	N 47636	N 47645	I 47652
60mm	—	N 47637	I 47646	I 47653
80mm	—	I 47638	I 47647	E 47654

# METRIC "E" (RETAINING) RINGS

- THE THREE PRONGS OF THIS POPULAR RETAINING RING MAKE CONTACT WITH THE BOTTOM OF THE GROOVE, RESULTING IN EXCEPTIONAL THRUST LOADINGS
- HARDNESS HRC 46 TO 54
- DIN 6799



## SPECIFICATIONS

SHAFT DIA.	RING THICKNESS (s)	GROOVE DIA. (d <sub>4</sub> )	GROOVE WIDTH (m)	PART	SHAFT DIA.	RING THICKNESS (s)	GROOVE DIA. (d <sub>4</sub> )	GROOVE WIDTH (M)	PART
1.2 mm	.3 mm	1.2 mm	.34 mm	T 47350	7 mm	.9 mm	7 mm	.94 mm	T 47358
1.5 mm	.4 mm	1.5 mm	.44 mm	T 47351	8 mm	1.0 mm	8 mm	1.05 mm	T 47359
1.9 mm	.5 mm	1.9 mm	.54 mm	T 47352	9 mm	1.1 mm	9 mm	1.15 mm	T 47360
2.3 mm	.6 mm	2.3 mm	.64 mm	T 47353	10 mm	1.2 mm	10 mm	1.25 mm	T 47361
3.2 mm	.6 mm	3.2 mm	.64 mm	T 47354	12 mm	1.3 mm	12 mm	1.35 mm	T 47362
4 mm	.7 mm	4 mm	.74 mm	T 47355	15 mm	1.5 mm	15 mm	1.55 mm	T 47363
5 mm	.7 mm	5 mm	.74 mm	T 47356	19 mm	1.75 mm	19 mm	1.80 mm	T 47364
6 mm	.7 mm	6 mm	.74 mm	T 47357	–	–	–	–	–

# METRIC DOWEL PINS



- STEEL HARDENED
- HARDNESS HRC 58 TO 62
- PRECISION GROUND



SIZE	PART	SIZE	PART	SIZE	PART
4mm x 10 mm	T 47655	6mm x 16mm	R 47665	10mm x 20mm	N 47675
4mm x 12mm	R 47656	6mm x 20mm	R 47666	10mm x 25mm	N 47676
4mm x 16mm	R 47657	6mm x 25mm	R 47667	10mm x 30mm	I 47677
4mm x 20mm	R 47658	6mm x 30mm	N 47668	10mm x 35mm	R 47678
4mm x 25mm	R 47659	6mm x 35mm	N 47669	10mm x 40mm	N 47679
5mm x 12mm	R 47660	8mm x 16mm	R 47670	12mm x 25mm	N 47680
5mm x 16mm	R 47661	8mm x 20mm	R 47671	12mm x 30mm	L 47681
5mm x 20mm	R 47662	8mm x 25mm	N 47672	12mm x 35mm	L 47682
5mm x 25mm	R 47663	8mm x 30mm	N 47673	12mm x 40mm	I 47683
5mm x 30mm	N 47664	8mm x 35mm	N 47674	12mm x 50mm	I 47684