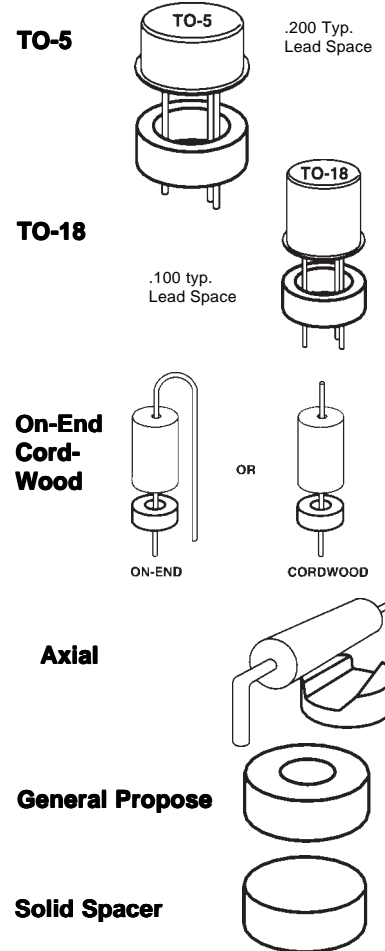


## STOCK ITEMS - Special Thickness on request

Part Number	I.D.	O.D.	Thickness (Specify)	Fig	Usage	
TO-5	.225	.375	03,04,05,06,07,09,10,12,13	A	TO-5 spacer	
TO-6	.250	.375	03,05,06,07,09,10,12,13	A	TO-5 (I.C.) spacer	
TO-9	.300	.437	05,07,10,13	A	TO-5 to .300 LS	
TO-13	.225	.310	03,05,07,09,10,12,13	A	TO-5 (Epoxy case)	
TO-12	.125	.310	08,10,12	B	TO-18 to .250 L.S.	
TO16	.125	.205	03,05,07,10,13	A	TO-18 (Epoxy case)	
TO-17	.170	.250	03,04,05,06,07,10,12,13	A	TO-18 (thin walls)	
TO-18	.125	.250	03,04,05,06,07,09,10,12,13	A	TO -18 (standard)	
TO-20	.125	.290	09,10,12,13	B	TO-18 to .200 L.S.	
TO-27	.125	.290	03,05,07,10,13	A	TO-18 (heavy walls)	
TO-7	.075	.175	03,05,07,10	A	Cordwood spacer	
TO-8	.062	.156	03,05,06,07,09,10,12	A	Cordwood spacer	
TO-10	.040	.085	03,04,05,06,07	A	Cordwood spacer	
TO-11	.045	.100	03,04,05,06,07	A	Cordwood spacer	
TO-26	.070	.187	03,04,05,06,07	A	Cordwood spacer	
TO-40	.045	.156	03,05,06,07,09,10,12	A	Cordwood spacer	
TO-64	.045	.140	03,05,06,07,09,10,12	A	Cordwood spacer	
TO-65	.075	.140	03,05,06,07,09,10,12	A	Cordwood spacer	
Part Number	I.D.	O.D.	Thickness	Slot Depth	Fig	Usage
TO-21	.125	.250	09,10,12,13	.045	C	Axial lead spacer (slot)
TO-35		.440	12,15	.065	C	Axial lead spacer (slot)
TO-36		.187	06,07,08,09,10,13	.040	C	Min. axial L.S. (slot)
TO-37		.156	05,07,09	.025	C	Min. axial L.S. (slot)
TO-19	.250	.480	05,07,10		A	GENERAL PURPOSE (Tubular)
TO-22	.225	.437	07,09,12		A	
TO-23	.090	.310	04,07,10		A	
TO-24	.090	.340	04,07,10		A	
TO-25	.180	.480	04,07,10		A	
TO-28	.172	.343	04,07,10		A	
TO-41	.156	.360	04,07,10		A	
TO-42	.250	.438	04,07,10		A	
TO-29		.156	05,07,10		D	GENERAL PURPOSE (Solid Spacer)
TO-31		.125	05,07,10		D	
TO-32		.187	05,07,10		D	
TO-33		.250	05,07,10		D	
TO-34		.375	05,07,10		D	

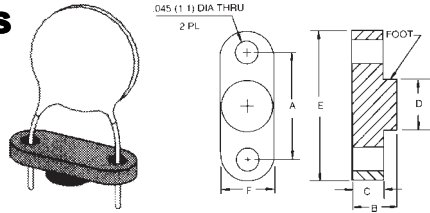


### Standard Tolerances: $\pm .005"$

TO ORDER : Simply specify PART NUMBER and follow by THICKNESS desired. EXAMPLE: TO-5-07 is the basic, TO-5 part, .070" thick.

FIG.	A	B	C	D

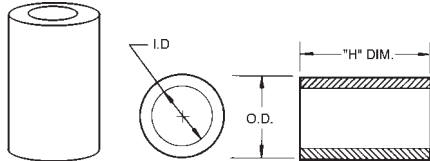
**PERM-O-PAD Mounts and Spacers**  
Discrete Component and Capacitor Mounts



Part No.	M38527/06	A	B	C	D	E	F
300-100	-008N	.100	.045	.022	.055	.180	.090
302-200	-010N	.200	.045	.022	.090	.290	.090

**Nylon Spacers For Standard Screw Sizes**  
96 Standard Fractional Sizes

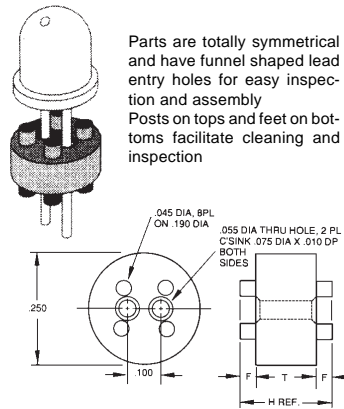
Fit Most commonly used screws  
6 different ID/ID combinations in fractional and metric sizes  
Easy assembly design  
Inexpensive way to provide board support



Series	Screw Size	I.D.	O.D.	"H" DIM	"H" DIM	DASH #
9913	# 2	.091 (2.3)	.187 (4.7)	Available in increments of 1/16 (1.6) from 1/16 through 1.0 (25.4) heights.  Specify height in thousandths by adding <b>-XXX</b> to Series numbers. See examples:  9913-250 in for a # 2 Screw, O.D. is .187 (4.7) Length is 1/4 (6.4). 9910-125 is for a # 2 Screw, O.D. is .250 (6.4) Length is 1/8 (3.2).  All Series are priced by lengths please call for current pricing.	1/6 (1.6)	-062
					1/8 (3.2)	-125
					3/16 (4.8)	-187
					1/4 (6.4)	-250
					5/16 (7.9)	-312
					3/8 (9.5)	-375
					7/16 (11.1)	-437
					1/2 (12.7)	-500
					9/16 (14.3)	-562
					5/8 (15.9)	-625
					11/16 (17.5)	-687
					3/4 (19.1)	-750
				13/16 (20.6)	-812	
				7/8 (22.2)	-875	
				15/16 (23.8)	-937	
				1.0 (25.4)	-1000	

**T-1-3/4 Individual L.E.D. Mounts**

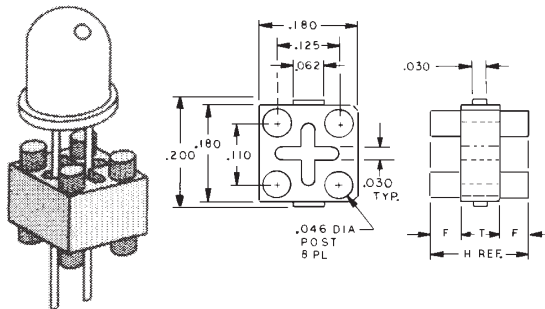
Recognizing a need for a cost-effective and accurate approach to mounting individual T-1-3/4" L.E.D.'s 78 new mounts are available as standard from stock. Due to space availability only a partial list in represented, please call for additional listings and current pricing. Different mounting heights are available for L.E.D.'s in heights of .050" through 1.080", in either .010" or .020" increments  
This simple, yet effective style is symmetrical, providing funnel shaped lead entry holes for assembly ease. Standoffs on both top and bottom allow room for proper filletting, inspection ease, thorough cleaning and heat dissipation.



Part No.	H	T	F
455-200	.200	.150	.025
455-210	.210	.150	.030
455-220	.220	.150	.035
455-230	.230	.150	.040
455-240	.240	.150	.045
455-250	.250	.150	.050
455-260	.260	.150	.055
455-270	.270	.150	.060
455-280	.280	.150	.065
455-290	.290	.150	.070
455-300	.300	.150	.075
455-310	.310	.150	.080
455-320	.320	.150	.085

**T-1 Individual L.E.D. Mounts**

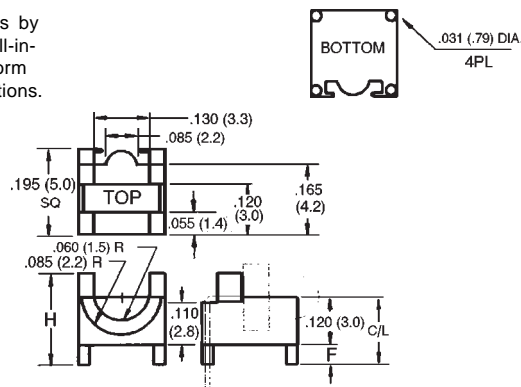
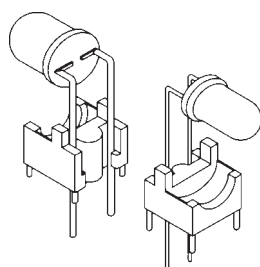
Perfectly suited for in-line or across alignment of L.E.D.'s these mounts provide a simple, yet effective solution to accurate L.E.D. installation, while standoffs on both top and bottom allow for board washing and removal of soldering residue. Mounts Keep L.E.D. leads from being bent or bulb tilted during handling or final assembly.



Part No.	H	T	F
460-100	.100	.040	.030
460-110	.110	.040	.035
460-120	.120	.040	.040
460-130	.130	.040	.045
460-140	.140	.040	.050
460-150	.150	.040	.055
460-160	.160	.040	.060
460-170	.170	.040	.065
460-180	.180	.040	.070
460-190	.190	.040	.075
460-200	.200	.040	.080
460-210	.210	.040	.085

**T-1 90° Right Angle L.E.D. Mounts**

These 90° Right Angle L.E.D. Mounts allow accurate and protective positioning of L.E.D.'s by providing a cradle-like, lead bending fixture all-in-one. A choice of bulb centerline elevations form 0.125" to 0.200" meets most industry applications.



PART NO.	C/L	H	F
999-125	.125	.180	.000
999-150	.150	.205	.025
999-175	.175	.230	.050
999-200	.200	.255	.075

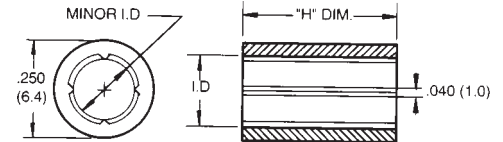
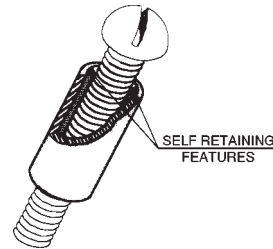
Natural or Black Color Please Specify.

## Self-Retaining PVC Screw Spacers

Simple pre-assembly convenience saves handling  
 Firm retention assured  
 5 standard sizes in lengths from .030"-1.250"  
 (.76-31.8) in .005" (.127) increments

Made from rigid PVC rated U.L. 94V-0  
 To answer the problems of extra handling when assembling PCB stacks or for any reasons where spacers will provide even spacing and rigidity, Bivar's SRS Series Self-Retaining Screw Spacers provide a low cost, quality solution for pre-assembly or faster, easier assembly on the manufacturing floor

Ribbed inner-wall design assures a snug fit onto #4, #6 and #8 screws, or M3 and M4 metric screws enabling the spacers to remain pre-assembled during handling and assembly. The SRS Series provides a dependable solution for otherwise awkward assembly steps and lost assembly time.



SRS-3-.50 is 1/2" long for #8 Screw  
 SRS-2-1.0 is 1" long for #6 screw

Part Number	Screw Size	Minor I.D.	I.D.	"H" DIM Specify when ordering
SRS-1-	4	.107 (2.7)	.142 (3.6)	.030-1.250 (.76-31.8)
SRS-2-	6 (M 3.5)	.131 (3.3)	.174 (4.4)	.030-1.250 (.76-31.8)
SRS-3-	8	.155 (3.9)	.177 (4.5)	.030-1.250 (.76-31.8)
SRS-4-	M 3	.113 (2.9)	.144 (3.7)	.030-1.250 (.76-31.8)
SRS-5-	M 4	.149 (3.9)	.185 (4.7)	.030-1.250 (.76-31.8)

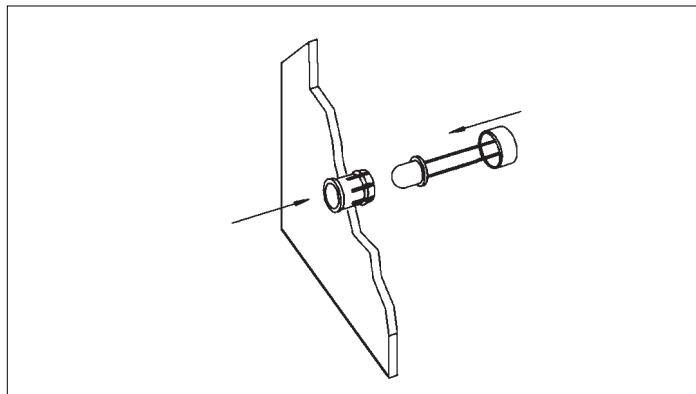
## Snap-in Mounting Hardware For Panel Mounted LEDs

Designed to provide an improved method of securely and uniformly mounting T-1 (3mm), T-1-3/4 (5mm), and rectangular (.245" x .145") L.E.D.s these easy-to-use devices also protect and enhance panel-mounted lighted displays, all at a low per station cost.  
 Precision molded to close tolerances from Black Polypropylene, the devices mate together by simply inserting the "clip" from the front of the panel, then assembling the L.E.D. into the "clip" from the rear of the panel. The "ring" is pressed onto the engaging rear part of the "clip" from the rear of the panel for

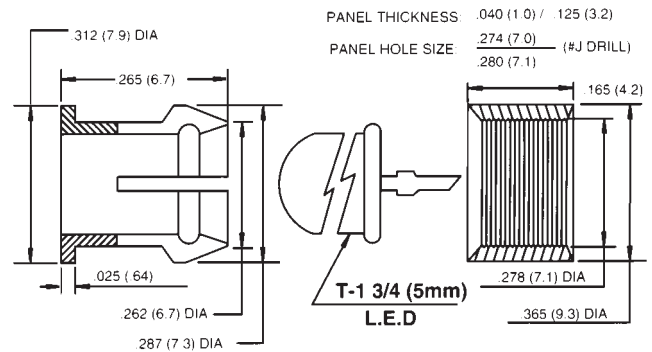
firm retention.

- Securely and uniformly positions panel-mounted LED's
- Three standard styles for T-1, T-1-3/4, and rectangular LED's available .
- Precision molded from Black Polypropylene
- Improves and enhances display appearance
- Sold in sets (Clip & Ring)

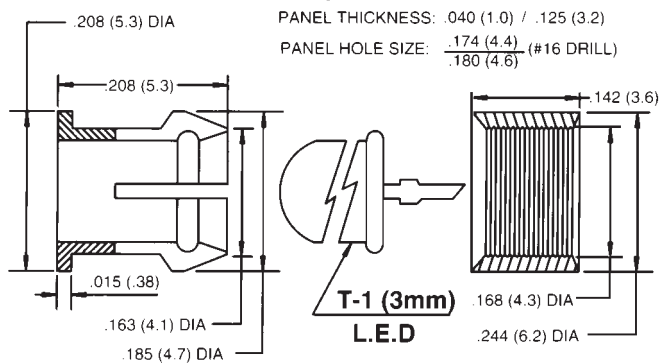
## CLIPS & RINGS FOR LEDs



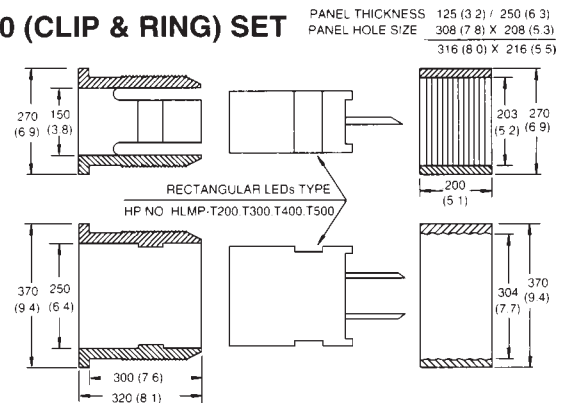
### CR-175 (CLIP & RING) SET



### CR-100 (CLIPS & RING) SET



### CR-300 (CLIP & RING) SET





## ECON-O-GIDE

Rigid, strong economical, Choose from 25 standard lengths and pick your density and air circulation pattern. Place guides just where you want. Spacing options are virtually unlimited and modifications become almost effortless.

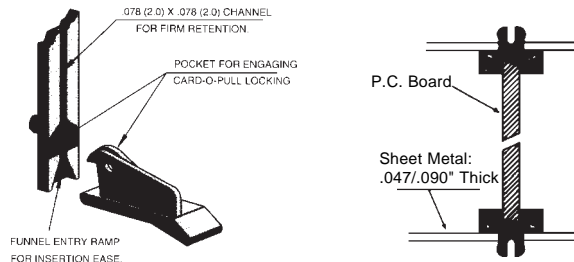
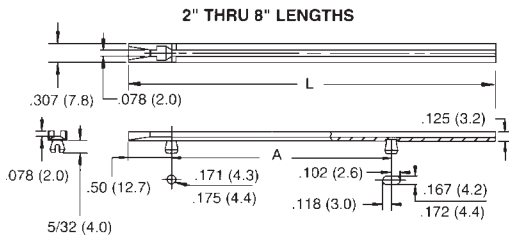
Locking ejectors can be used for positive card retention and insertion/extraction ease.

25 Standard lengths from 2" through 14" in 1/2" increments

Precision molded for rigidity strength, natural lubricity and heat resistance characteristics. 94V-0 U.L. Rated Material

Part No.	L ±.062	A +.016 -.032
E-250	2.5	1.516
E-300	3.0	1.516
E-350	3.5	1.516
E-400	4.0	3.016
E-450	4.5	3.016
E-500	5.0	3.016
E-550	5.5	3.016
E-600	6.0	5.016
E-650	6.5	5.016
E-700	7.0	6.031
E-750	7.5	6.031
E-800	8.0	6.031

Other lengths available thru 14 inches please call for additional information.



## GRIP-O-GIDE Deep Channel Card Guides

GRIP-O-GIDES have a .200" slot depth providing maximum board retention for wide boards and high vibration and shock applications.

These guides are double-ended, so that they may be used in various length combinations to obtain virtually any overall length desired.

STOCKED IN DEPTH

MOUNTING INFORMATION:

Snap-in metal plates:

0.47/.090 thick

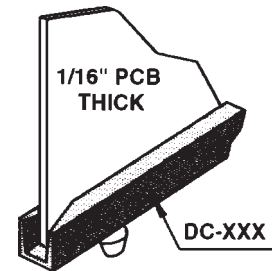
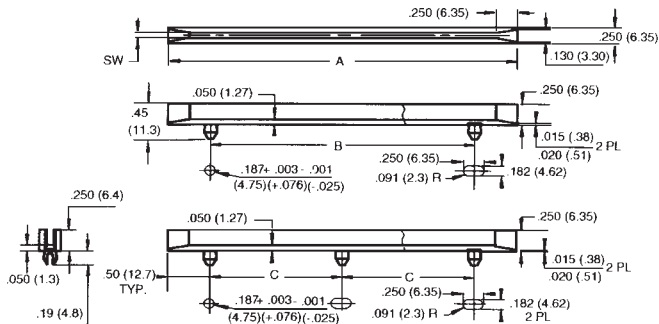
Hole Size: .187 dia., +.003" -.001"

(3/16 drill)

90V-0  
U.L. Rated Material



Part No.	A Dim.	B Dim. ±.032	C Dim. ±.015
DC-250	2.5	1.50	
DC-450	4.5	3.50	
DC-600	6.0	5.00	
DC-800	8.0	7.00	3.50



## NARR-O-GIDE Narrow Card Guides for 1/16" PCBs

17 Standard sizes, 2-1/2" through 8-1/2".

Simple press-fit, in .125" diameter holes to secure installation. No special tools required.

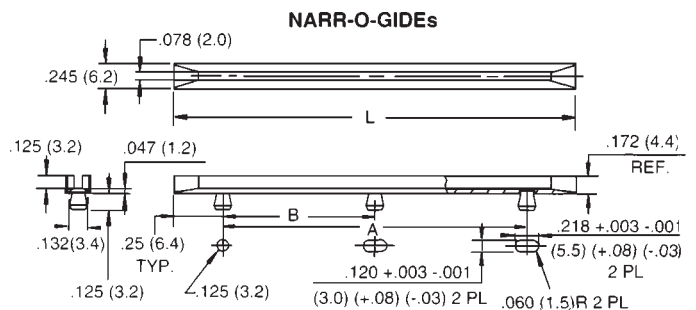
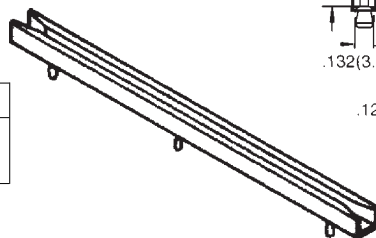
Narrow width (less than 1/4") allows maximum density and optimum airflow.

Available in colors (special order)

94V-2  
U.L. Rated Material

Part No.	"L" ±.030	"A" ±.024
N-300-2	3.0	2.5
N-350-2	3.5	3.0
N-600-2	6.0	5.5

Anit-Static Card Guides (UL94V-0) Also available.



By using a simple lever action CARD-O-PULL can eliminate your 1/16", 3/32" and 1/8" card problems by preventing undue stresses on your components, circuitry, connectors, PCB's and support system. Locking versions are available to prevent accidental release of cards from connectors. Easy to use and install, 18 standard designs are available which can be color coded and/or permanently marked for you.

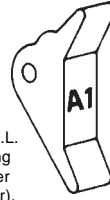
- **Spring pins furnished with each ejector**  
Protect components, circuitry, connectors PCBs and system from damage.  
Designed for 1/16", 3/32" and 1/8" PCB's.
- **Can be used in most systems.**
- **Aids Insertion and extraction of PCB's - eliminates extraction tools.**
- **Available in locking versions.**

### MARKING

CARD-O-PULLS can be marked numerically, alphabetically or both to code circuit boards. The hot stamping method is used and it's durability is accepted by both military and commercial users. See Below

### MATERIAL :

White Nylon per ASTM D 4066 PA111, U.L. rated 94V-2. 3/32" dia. x 1/4" or 5/16" long  
Passivated Stainless steel Spring Pins per MIL-P-10971 (furnished with each Ejector).



### MOUNTING SLOT DIMENSIONS

1/16" PCBs = .073  
3/32" PCBs = .100  
1/8" PCBs = .140  
NOTE: Flanges converge slightly.

### MARKING SIZE

Size	Approx. Overall Height	No. of Characters Per Inch
1	.075	.075
12		
2	.110	8

### COLOR CODING

CARD-O-PULLS can be colored in a variety of colors to code your circuit board for quick identification.

WHITE is standard, unless color is specified.  
RED PINK BLUE GRAY  
ORAGNE VIOLET GREEN BROWN  
YELLOW AQUA LIME BLACK

### PRINTED CIRCUIT BOARD EJECTOR INSTALLATION TOOL

