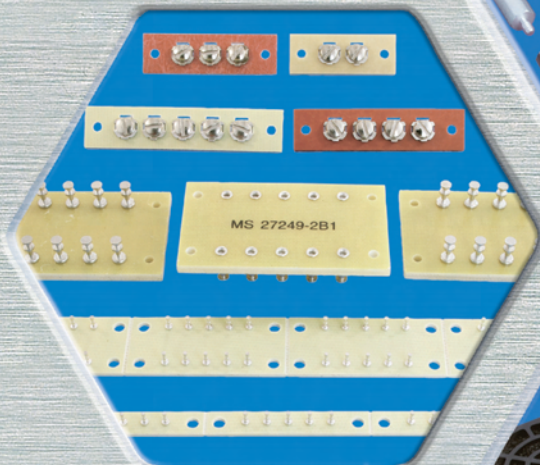
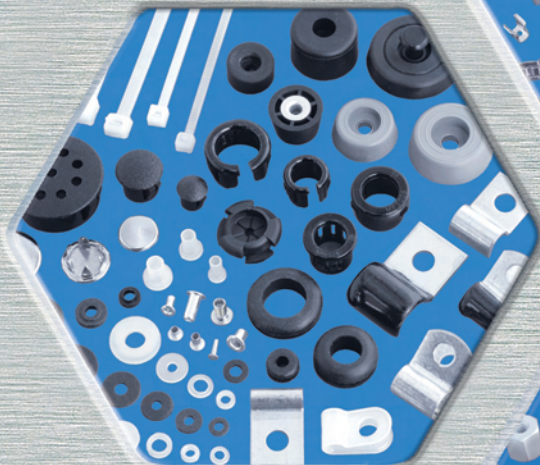


INTERCONNECT COMPONENTS & HARDWARE

CATALOG M55



DESIGNERS AND MANUFACTURERS

KEYSTONE

ELECTRONICS CORP.

RoHS COMPLIANT ~ ISO 9001-CERTIFIED

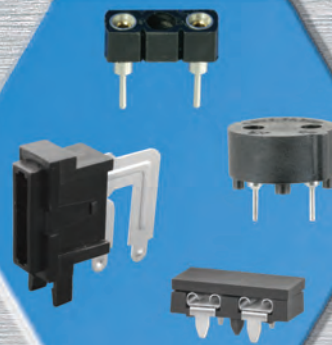
PRODUCT SPOTLIGHT



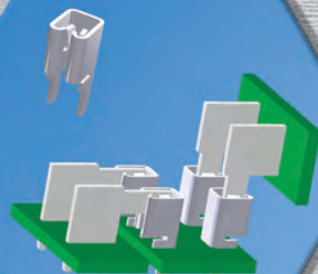
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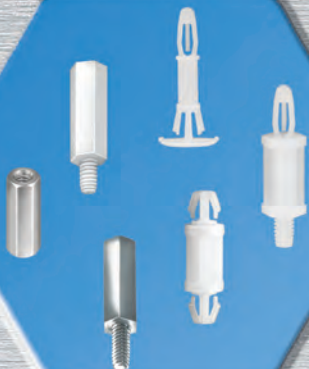
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FOR EASY REFERENCE**



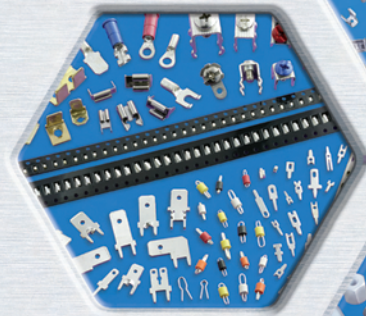





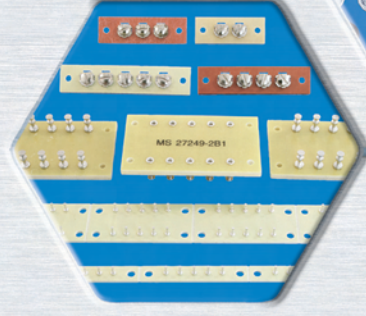
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FSCM
91833

ABOUT KEYSTONE



For over fifty-five years, Keystone has been designing and manufacturing quality interconnects and electronic hardware. Our engineering and design specialists utilize the most advanced design and production capabilities such as 3D CAD modeling to develop innovative and reliable products for the marketplace. Add to this a commitment to solving design challenges, backed by skilled and experienced production and customer service teams.

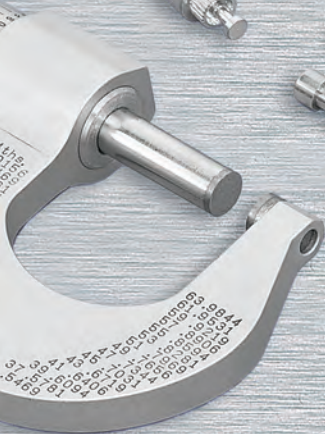
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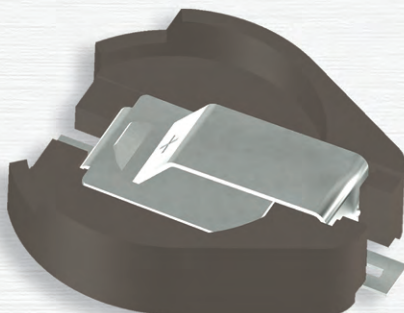
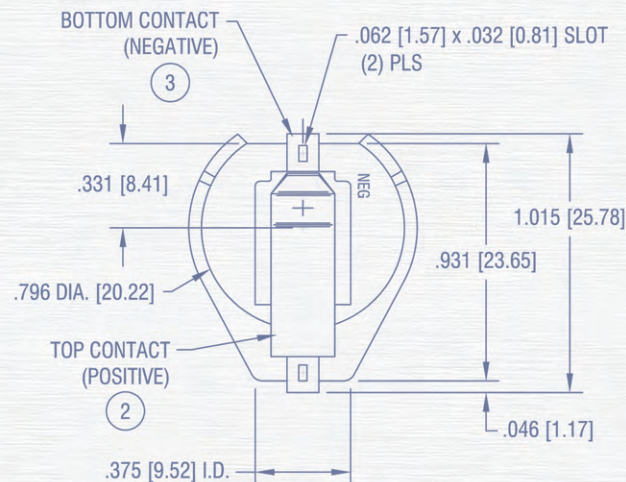
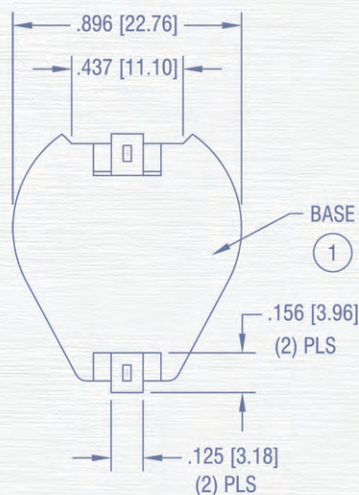
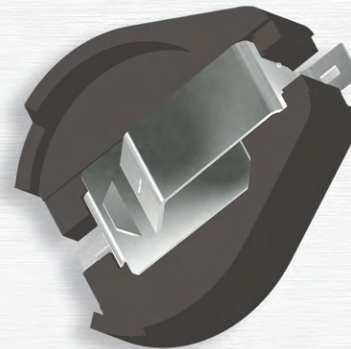
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Our products are in compliance with the RoHS directive and our quality system is ISO 9001:2000 certified. It is Keystone's quality policy to continuously improve its products to better satisfy the needs of its customers and to deliver quality products, every time and on time.

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BATTERY CLIPS, CONTACTS & HOLDERS

Our battery clips, contacts and holders are designed with leading edge technology in mind, to accommodate all major manufacturers' batteries. Available in a wide range of materials and mounting styles including surface mount, thru hole and off board, some of the applications include:

- Telecommunications and Video power back-up
- Laptop and mobile computing applications
- Communication system's power requirements
- Microcomputer and memory hold
- Preprogrammed electronic and video games
- Emergency power systems
- Industrial and commercial security and alarm systems
- Miniature battery power devices
- Computer memory, power transfer and back-up systems
- Personal medical monitoring devices

Our quality system is ISO 9001:2000 certified. Our products are in compliance with the RoHS directive. We provide 3D modeling, CAD and other application-engineering support for modifications, special designs or assembly requirements to assist you in choosing the right Keystone product for your application.

DATE	DESCRIPTION	REV.

BATTERY CLIPS, CONTACTS & HOLDERS



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12mm TO 30mm COIN CELL HOLDERS

Single and Dual "Printed Circuit" Cell Holders for Lithium Coin Cells. Designed for easy battery replacement. Will accommodate diameters from 12mm to 30mm and heights from 1.6mm to 7.7mm. Some holders will accept more than two cells if they fall within the heights specified. Designed to accept: Duracell, Eveready, Panasonic, Ray-O-Vac, Sanyo, Varta, Toshiba, Seiko and other major battery manufacturers.

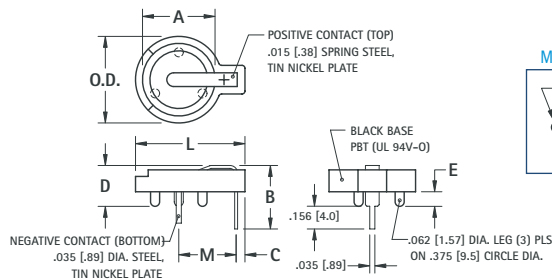
DESIGN ADVANTAGES...

- Low profile for high density packaging
- Contacts feature clearly marked polarities to help guard against improper insertion.
- Reliable spring tension assures low contact resistance
- Retains battery securely to withstand shock and vibration
- Unique notched slots assure quick and easy battery insertion and replacement
- Base material UL Rated 94V-0. Impervious to most industrial solvents
- Operating temperature range: -60°F to +293°F (-50°C to +145°C)
- Advanced air-flow design pattern enhances air circulation around battery

IDEALLY SUITED FOR...

- Computer memory, power transfer and back-up systems
- Video and telecommunications power back-up
- Preprogrammed video and electronic games
- Microprocessors and Microcomputer memory hold (desktop and laptop applications)
- Industrial and commercial security and alarm systems
- Communications power sources
- PC/104 applications

For 12mm to 16mm & "1/3N"

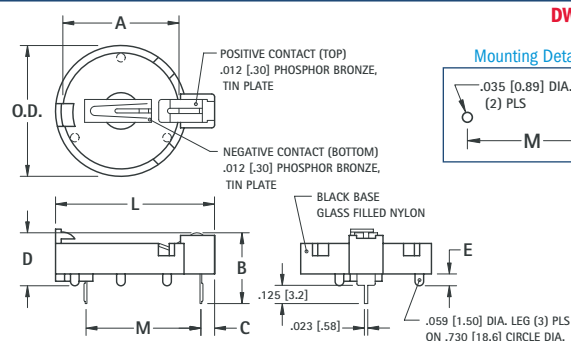


DWG. 1

For 20mm



- Suitable for 2025 and 2032 cells
- Battery "Pop-in" design for compact applications
- Finger pressure lever disengages battery



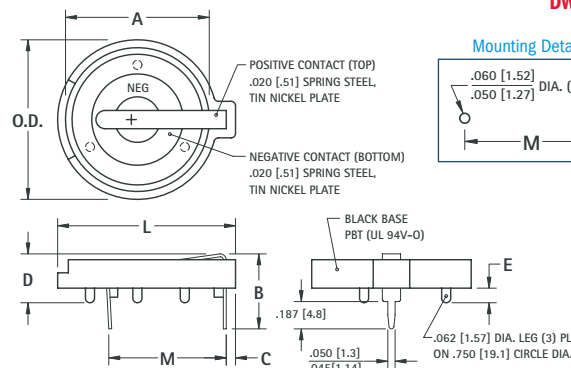
DWG. 2

For 20mm to 30mm



SINGLE CELL HOLDER
(3-VOLT)

DUAL CELL HOLDER
(6-VOLT)



DWG. 3

NEW - SPACE SAVING DESIGN



- **Cat. No. 101** is designed to maximize PC Board Capacity
- Allows components to be placed underneath the holder
- Ideal when board space is more important than board height; such as PC/104 applications

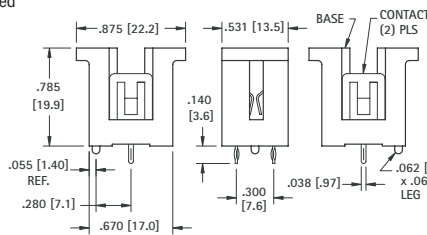
CAT. NO.	DWG. NO.	NO. OF CELLS	A	B	C	D	E	L	O.D.	M	CELL	BATTERY CROSS REFERENCE
499	1	1	.495 (12.6)	.695 (17.7)	.060 (1.5)	.580 (14.7)	.100 (2.6)	.750 (19.1)	.593 (15.1)	.393 (10.0)	"1/3N"	DL 1/3N, K58L, CR 1/3N
500	1	1	.495 (12.6)	.435 (11.0)	.060 (1.5)	.280 (7.1)	.100 (2.6)	.750 (19.1)	.593 (15.1)	.393 (10.0)	12mm	BR1216, CR1216, BR1220, CL1220, CR1220, BR1225
501	1	2	.495 (12.6)	.505 (12.8)	.060 (1.5)	.380 (9.7)	.100 (2.6)	.750 (19.1)	.593 (15.1)	.393 (10.0)	16mm	BR1616, CR1612, CR1616, CR1620, CR1632*
502	1	1	.635 (16.1)	.460 (11.7)	.060 (1.5)	.285 (7.3)	.100 (2.6)	.897 (22.8)	.750 (19.1)	.463 (11.8)	20mm	BR2025, CR2025, DL2025, BR2032, CR2032
502-3	1	1	.635 (16.1)	.505 (12.8)	.060 (1.5)	.312 (7.9)	.100 (2.6)	.897 (22.8)	.750 (19.1)	.463 (11.8)	20mm	BR2025, CR2025, DL2025, BR2032, CR2032, DL2032
1066	2	1	.807 (20.1)	.485 (12.3)	.093 (2.4)	.363 (9.2)	.081 (2.1)	1.089 (27.7)	.906 (23.0)	.787 (20.0)	20mm	BR2025, CR2025, DL2025, BR2032, CR2032
101	3	1	.796 (20.2)	.593 (15.1)	.070 (1.8)	.374 (9.5)	.179 (4.6)	1.130 (28.7)	.896 (22.8)	.807 (20.5)	20mm	BR2016, CR2016, DL2016, BR2020, CL2020, BR2025, CR2025, DL2025, BR2032, CR2032, DL2032
103	3	1	.796 (20.2)	.513 (13.0)	.070 (1.8)	.335 (8.5)	.100 (2.6)	1.130 (28.7)	.896 (22.8)	.807 (20.5)	20mm	BR2016, CR2016, DL2016, BR2020, CL2020, BR2025, CR2025, DL2025, BR2032, CR2032, DL2032
106	3	1	.796 (20.2)	.513 (13.0)	.064 (1.6)	.335 (8.5)	.100 (2.6)	1.219 (31.0)	1.093 (27.8)	.807 (20.5)	23mm	BR2320, CL2320, CR2320, BR2325, CR2325, DL2325, BR2330, CL2330, BR2335, CR2335**
1026	3	2	.796 (20.2)	.630 (16.0)	.064 (1.6)	.452 (11.5)	.100 (2.6)	1.219 (31.0)	1.093 (27.8)	.807 (20.5)	24mm	CR2430, DL2430, CR2450***, DL2450***, CR2477****
104	3	1	.911 (23.1)	.513 (13.0)	.060 (1.5)	.335 (8.5)	.100 (2.6)	1.150 (29.2)	1.000 (25.4)	.807 (20.5)	30mm	BR3032
107	3	1	.911 (23.1)	.513 (13.0)	.082 (2.1)	.335 (8.5)	.100 (2.6)	1.219 (31.0)	1.093 (27.8)	.807 (20.5)	30mm	BR3032
1027	3	2	.911 (23.1)	.630 (16.0)	.064 (1.6)	.452 (11.5)	.100 (2.6)	1.219 (31.0)	1.093 (27.8)	.807 (20.5)	30mm	BR3032
105	3	1	.935 (23.7)	.513 (13.0)	.064 (1.6)	.335 (8.5)	.100 (2.6)	1.219 (31.0)	1.093 (27.8)	.807 (20.5)	30mm	BR3032
1025	3	2	.935 (23.7)	.630 (16.0)	.064 (1.6)	.452 (11.5)	.100 (2.6)	1.219 (31.0)	1.093 (27.8)	.807 (20.5)	30mm	BR3032
1025-7	3	1	.935 (23.7)	.681 (17.3)	.064 (1.6)	.503 (12.8)	.100 (2.6)	1.219 (31.0)	1.093 (27.8)	.807 (20.5)	30mm	BR3032
301	3	1	1.187 (30.1)	.513 (13.0)	.070 (1.8)	.335 (8.5)	.100 (2.6)	1.425 (36.2)	1.297 (32.9)	.807 (20.5)	30mm	BR3032

*For Cat. No. 502-3 (1) cell only. ** For Cat. No. 1027 (1) cell only. *** For Cat. No. 1025 (1) cell only. ****For Cat. No. 1025-7 (1) cell only.

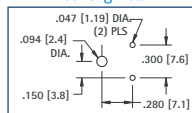
VERTICAL 20mm COIN CELL

This space saving vertical design features a rugged, lightweight body that mounts squarely and securely on PC boards for easy installation and replacement of batteries. Reliable spring tension assures low contact resistance.

- Accepts all major manufacturers' 20mm diameter batteries
- Molded notch prevents improper insertion of 2032 size cells
- Space saving design for high density packaging
- Retains cells securely, withstands shock and vibration
- Polarity clearly marked
- Mounts securely for wave soldering
- Temperature range -60°F to +293°F (-50°C to +145°C)



Mounting Detail



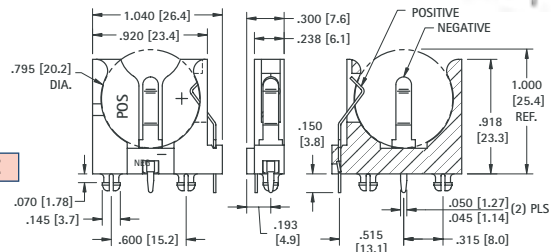
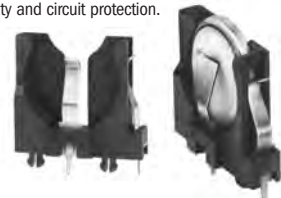
MATERIAL:

Contacts: .012 (.30) thick Spring Steel, Tin Nickel Plate
Base: PBT, UL Rated 94V-0

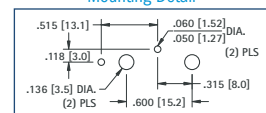
CAT. NO. 1067

A "unique" space saving design. The battery is installed vertically from the top. The contacts of this holder are polarized to assure proper continuity and circuit protection.

- Polarized holder
- Mounts securely for wave soldering
- Reliable spring tension assures low contact resistance
- Retains 20mm batteries securely to withstand shock and vibration
- Temperature range -60°F to +293°F (-50°C to +145°C)



Mounting Detail



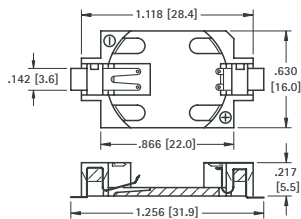
MATERIAL:

Contacts: .016 (.41) thick Spring Steel, Tin Nickel Plate
Base: PBT, UL Rated 94V-0

CAT. NO. 1065

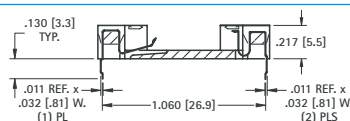
LOW PROFILE SURFACE & THRU HOLE MOUNT COIN CELL HOLDERS

AVAILABLE ON TAPE AND REEL



CAT. NO. 1060 (Bulk) **CAT. NO. 1060TR (Tape & Reel)**

Tape & Reel Spec's: 44mm wide; 24mm pitch; 13 inch reel (500 pieces per reel)



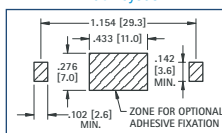
CAT. NO. 1059

Designed for quick and easy installation and replacement of 1220 and 2032 coin cell lithium batteries. The contacts of these holders are polarized to assure proper continuity and circuit protection.

- Polarized Holder
- Retains cell securely to withstand shock and vibration
- Reliable dual spring contacts assure low contact resistance

2032 SURFACE MOUNT

Pad Layout

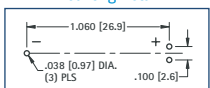


MATERIAL:

Contacts: .006 (.15) thick Phosphor Bronze
Cat. No. 1060 - Gold Plate
Cat. No. 1059 - Tin Plate
Base: Glass Filled LCP, UL Rated 94V-0

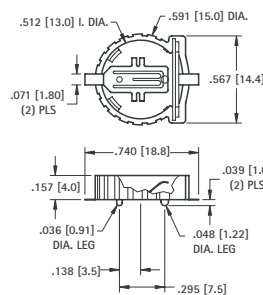
2032 THRU HOLE MOUNT

Mounting Detail



- Low Profile for densely packaged PCB's
- Compatible with vacuum and mechanical pick & place assembly systems
- Conductive polystyrene carrier tape meets ANSI/EIA - 481 standard

AVAILABLE ON TAPE AND REEL



CAT. NO. 1056 (Bulk)

CAT. NO. 1056TR (Tape & Reel)

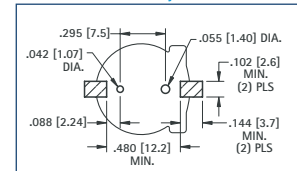
Tape & Reel Spec's: 32mm wide; 20mm pitch; 13 inch reel (500 pieces per reel)

MATERIAL:

Contacts: .008 (.20) thick Phosphor Bronze, Gold Plate
Base: Glass filled PPS, UL Rated 94V-0

1220 SURFACE MOUNT

Pad Layout



SURFACE MOUNT COIN CELL HOLDERS



AVAILABLE ON TAPE AND REEL

SMT Design - Holders for 20mm and 23mm Lithium Coin Cell Batteries

- Temp. range -60°F to +540°F (-50°C to +282°C)
- Ideal for memory back-up applications
- Polarity clearly marked (+)
- UL approved material, 94V-0
- Rugged construction, light weight
- Compatible with vacuum and mechanical pick & place assembly systems
- Low profile for high density packaging
- SMT solder tail with "Flow-Hole" design for increased joint strength
- Viewable solder tails assures reliable joint inspection
- Safe for all soldering & reflow operations
- All conductive polystyrene carrier tape meets ANSI/EIA - 481 standard

SMALL PAD PATTERN

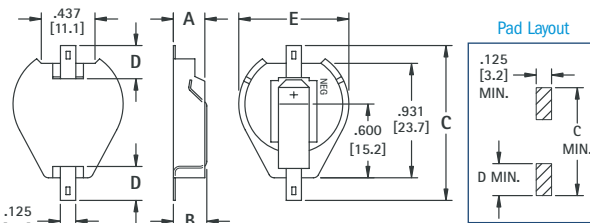
CAT. NO.	ON TAPE	CELLS	A	B	C	D	E	CELL	BATTERY
1061	1061TR	1	.256 (6.5)	.290 (7.4)	1.015 (25.8)	.156 (4.0)	.896 (22.8)	20mm	2016*, 2020, 2025, 2032
1062	1062TR	2	.375 (9.5)	.406 (10.3)	1.015 (25.8)	.156 (4.0)	.896 (22.8)	23mm	2320, 2325, 2330
1071	1071TR	1	.256 (6.5)	.290 (7.4)	1.015 (25.8)	.156 (4.0)	1.000 (25.4)		

*Cat. No. 1061 (1 or 2 cells); Cat. No. 1062 (3 cells)

LARGE PAD PATTERN

CAT. NO.	ON TAPE	CELLS	A	B	C	D	E	CELL	BATTERY
1063	1063TR	1	.256 (6.5)	.290 (7.4)	1.250 (31.8)	.278 (7.1)	.896 (22.8)	20mm	2016*, 2020, 2025, 2032
1064	1064TR	2	.375 (9.5)	.406 (10.3)	1.250 (31.8)	.278 (7.1)	.896 (22.8)	23mm	2320, 2325, 2330
1073	1073TR	1	.256 (6.5)	.290 (7.4)	1.250 (31.8)	.278 (7.1)	1.000 (25.4)		

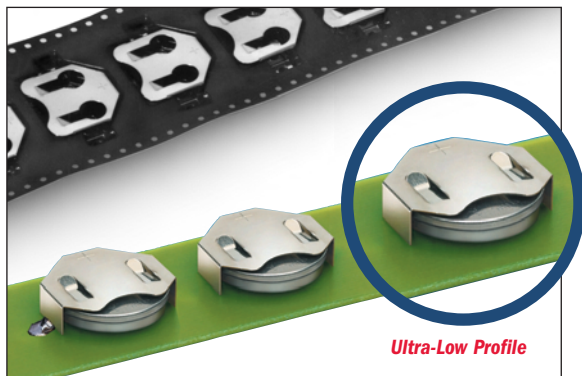
*Cat. No. 1063 (1 or 2 cells); Cat. No. 1064 (3 cells)



MATERIAL: **Contacts:** .015 (.38) thick Steel, Tin Nickel Plate **Base:** Nylon 46, UL Rated 94V-0
Tape & Reel Spec's: 44mm wide; 32mm pitch; 13 inch reel (200 pieces per reel)

SURFACE & THRU HOLE MOUNT COMPACT CONTACTS

COIN CELL RETAINERS & CONTACTS

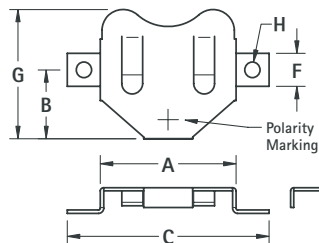


Ultra-Low Profile

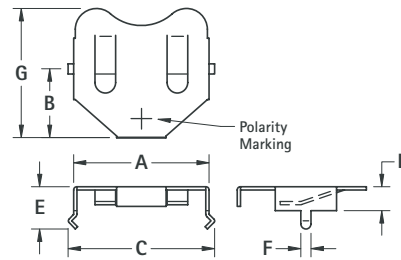
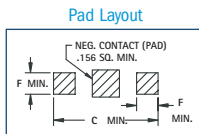
AVAILABLE ON TAPE AND REEL

Economical and reliable retainer contacts are designed for quick and easy battery installation and replacement. Perfect for memory back-up applications. Surface and Thru Hole mount retainer contacts are available for 6.8mm to 24mm lithium coin cell batteries.

- Low profile for densely packed PCBs
- Retains cell securely, withstands shock & vibrations
- Reliable dual spring contacts assure low contact resistance
- Polarity clearly marked (+)
- Stable thru mount legs for increased strength
- Balanced & lightweight for reliable pick-up & placement
- Compatible with vacuum and mechanical pick & place assembly systems
- "Flow-Hole" SMT solder tail design for increased joint strength
- Viewable solder tails assures reliable joint inspection
- All conductive polystyrene carrier tape meets ANSI/EIA- 481 standard

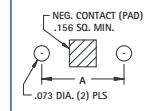


DWG. 1 - SURFACE MOUNT (SMT) MATERIAL: .010 (.25) thick Phosphor Bronze, Tin Nickel Plate



DWG. 2 - THRU HOLE MOUNT (THM) MATERIAL: .010 (.25) thick Phosphor Bronze, Tin Nickel Plate

Mounting Detail



CAT. NO.	ON TAPE & REEL	DWG. NO.	MTG. TYPE	A	B	C	D	E	F	G	H DIA.	CELL DIA.	BATTERY REFERENCE	TAPE & REEL SPEC'S
2996	2996TR	1	SMT	.520 (13.2)	.265 (6.7)	.700 (17.8)	.235 (6.0)	—	.125 (3.2)	.500 (12.7)	NO HOLE	11.6mm	SR44, LR44, 357, MS76, PX76A, G-13, 303, V313	32mm wide; 16mm pitch; 13 inch reel (600 pieces per reel)
2997	—	2	THM	.520 (13.2)	.265 (6.7)	.585 (14.9)	.238 (6.1)	.328 (8.3)	.062 (1.6)	.500 (12.7)	—	12mm	BR1216, CR1216, BR1220, CL1220, CR1220, BR1225	32mm wide; 16mm pitch; 13 inch reel (1000 pieces per reel)
3000	3000TR	1	SMT	.520 (13.2)	.265 (6.7)	.745 (18.9)	.125 (3.2)	—	.125 (3.2)	.500 (12.7)	.047 (1.2)	16mm	BR1616, CR1612, CR1616, CR1620, CR1632	44mm wide; 24mm pitch; 13 inch reel (600 pieces per reel)
3001	—	2	THM	.520 (13.2)	.265 (6.7)	.585 (14.9)	.118 (3.0)	.210 (5.3)	.062 (1.6)	.500 (12.7)	—	20mm	BR2016, CR2016, DL2016, BR2020, CL2020, BR2025, CR2025, DL2025, DR2032, CR2032, DL2032	44mm wide; 24mm pitch; 13 inch reel (500 pieces per reel)
3012	3012TR	1	SMT	.664 (16.9)	.344 (8.7)	.914 (23.2)	.156 (4.0)	—	.125 (3.2)	.594 (15.1)	.047 (1.2)	23mm	BR2320, CL2330, CR2320, BR2325, CR2325, DL2325	56mm wide; 32mm pitch; 13 inch reel (400 pieces per reel)
3013	—	2	THM	.664 (16.9)	.344 (8.7)	.723 (18.4)	.145 (3.7)	.265 (6.7)	.062 (1.6)	.594 (15.1)	—	23mm	CR2354, DL2354	56mm wide; 32mm pitch; 13 inch reel (200 pieces per reel)
3002	3002TR	1	SMT	.831 (21.1)	.416 (10.6)	1.210 (30.7)	.156 (4.0)	—	.200 (5.1)	.782 (19.9)	.093 (2.4)	24mm	CR2430, DL2430	56mm wide; 32mm pitch; 13 inch reel (400 pieces per reel)
3003	—	2	THM	.831 (21.1)	.416 (10.6)	.890 (22.6)	.145 (3.7)	.265 (6.7)	.062 (1.6)	.782 (19.9)	—	24mm	CR2450, DL2450	56mm wide; 32mm pitch; 13 inch reel (200 pieces per reel)
3004	3004TR	1	SMT	.939 (23.9)	.475 (12.1)	1.339 (34.0)	.145 (3.7)	—	.200 (5.1)	.939 (23.9)	.093 (2.4)	24mm	—	—
3005	—	2	THM	.939 (23.9)	.475 (12.1)	1.004 (25.5)	.145 (3.7)	.256 (6.5)	.062 (1.6)	.939 (23.9)	—	24mm	—	—
3010	3010TR	1	SMT	.939 (23.9)	.475 (12.1)	1.339 (34.0)	.240 (6.1)	—	.200 (5.1)	.819 (20.8)	.093 (2.4)	24mm	—	—
3011	—	2	THM	.939 (23.9)	.475 (12.1)	1.004 (25.5)	.240 (6.1)	.351 (8.9)	.062 (1.6)	.819 (20.8)	—	24mm	—	—
3006	3006TR	1	SMT	1.000 (25.4)	.506 (12.9)	1.400 (35.6)	.156 (4.0)	—	.200 (5.1)	.918 (23.3)	.093 (2.4)	24mm	—	—
3007	—	2	THM	1.000 (25.4)	.506 (12.9)	1.065 (27.1)	.145 (3.7)	.265 (6.7)	.062 (1.6)	.918 (23.3)	—	24mm	—	—
3008	3008TR	1	SMT	1.000 (25.4)	.506 (12.9)	1.400 (35.6)	.230 (5.8)	—	.200 (5.1)	.890 (22.6)	.093 (2.4)	24mm	—	—
3009	—	2	THM	1.000 (25.4)	.506 (12.9)	1.059 (26.9)	.230 (5.8)	.350 (8.9)	.062 (1.6)	.890 (22.6)	—	24mm	—	—

For 6.8mm BUTTON CELLS

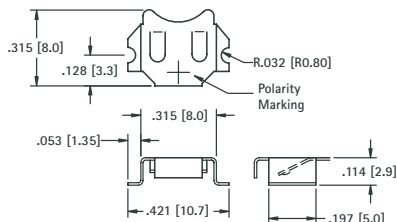
AVAILABLE ON TAPE AND REEL

MATERIAL: .010 (.25) thick Phosphor Bronze, Tin Nickel Plate

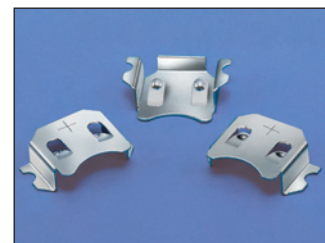
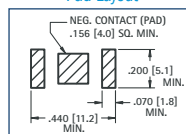
Tape & Reel Spec's: 24mm wide; 12mm pitch; 13 inch reel (1250 pieces per reel)

CAT. NO. 2998 (Bulk)

CAT. NO. 2998TR (Tape and Reel)



Pad Layout



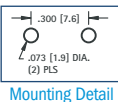
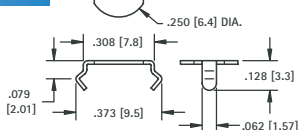
For use with Batteries MC621, V364 and SC621

NEGATIVE BATTERY CONTACTS

- Economical
- Space saving
- Ideal for self-contained battery compartments
- Contact us for modifications and custom design

THRU HOLE MOUNT

• Snap-In



Mounting Detail

CAT. NO. 2990

MATERIAL: .008 (.20) thick Phosphor Bronze, Tin Nickel Plate

SURFACE MOUNT

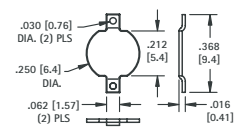


MATERIAL: .008 (.20) thick Brass, Tin Nickel Plate

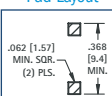
Tape & Reel Spec's: 16mm wide; 8mm pitch; 7 inch reel (1500 pieces per reel)

CAT. NO. 2991 (Bulk)

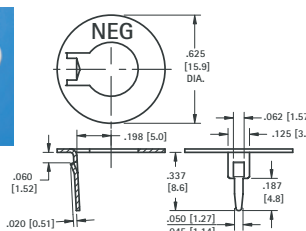
CAT. NO. 2991TR (Tape and Reel)



Pad Layout



THRU HOLE MOUNT



CAT. NO. 105-3

MATERIAL: .020 (.51) thick Spring Steel, Tin Nickel Plate

- Ideal contacts for "A" • "AA" • "AAA" • "N" size batteries
- Space saving design installs directly onto the PC board
- Contacts available for .062 (1.57) to .093 (2.36) thick PC boards
- Reliable spring and/or button assures low contact resistance
- Ideal for self-contained battery compartments

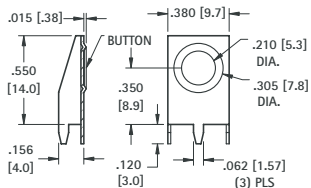


For "A"

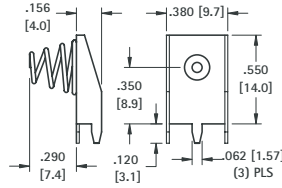
Refer to page 24 for
Battery Contact Layout & Mounting Details

For "AA" • "AAA" • "N"

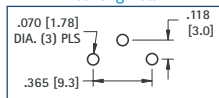
(+) POSITIVE BUTTON



(-) NEGATIVE SPRING



Mounting Detail



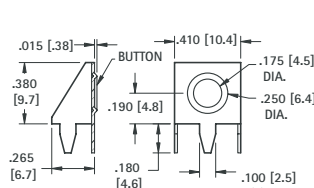
MATERIAL:
Frame: .015 (.38) thick
Steel, Tin Nickel Plate

CAT. NO. 595

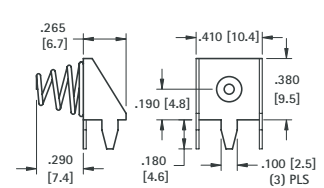
MATERIAL:
Frame: .015 (.38) thick
Steel, Tin Plate

CAT. NO. 628

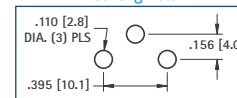
(+) POSITIVE BUTTON



(-) NEGATIVE SPRING



Mounting Detail



MATERIAL:
Frame: .015 (.38) thick
Steel, Tin Nickel Plate

CAT. NO. 637

MATERIAL:
Frame: .015 (.38) thick
Steel, Tin Plate

CAT. NO. 629



- Space saving design installs directly onto the PC board
- Suitable for .062 (1.57) to .093 (2.36) thick PC boards
- Reliable leaf-spring assures low contact resistance
- Ideal for self-contained battery compartments

MATERIAL: .012 (.30) thick Spring Steel, Tin Nickel Plate

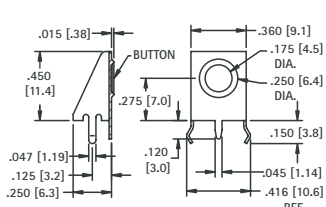


For "AA" & "N"

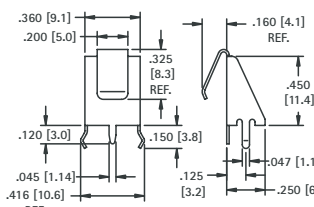
Refer to page 24 for
Battery Contact Layout & Mounting Details

For "AAA"

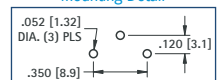
(+) POSITIVE BUTTON



(-) NEGATIVE LEAF-SPRING



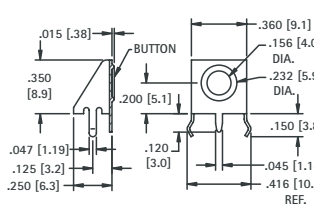
Mounting Detail



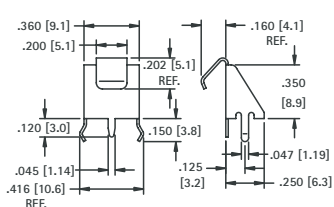
CAT. NO. 596

CAT. NO. 590

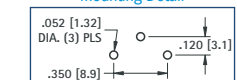
(+) POSITIVE BUTTON



(-) NEGATIVE LEAF-SPRING



Mounting Detail



CAT. NO. 597

CAT. NO. 591

AVAILABLE ON TAPE AND REEL

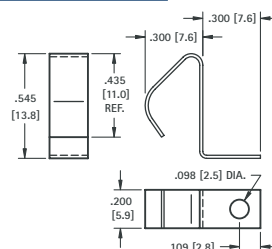
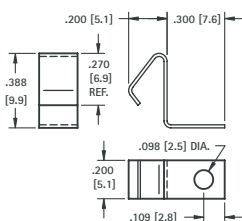
- Economical & reliable contacts are ideal for surface mount applications
- Unique spring tension contacts adjust to variations in battery length
- Reliable spring tension contacts assure low contact resistance
- SMT solder tail with "flow-hole" design for increased joint strength

MATERIAL: .010 (.25) thick Spring Steel, Tin Nickel Plate

For "AAA" • "AAAA"

Refer to page 24 for
Battery Contact Layout & Mounting Details

For "A" • "AA" • "9V"



CAT. NO. 5230 (Bulk)

CAT. NO. 5230TR (Tape & Reel)

Tape and Reel Spec's: 24mm wide; 12mm pitch; 13 inch reel (400 pieces per reel)

CAT. NO. 5231 (Bulk)

CAT. NO. 5231TR (Tape & Reel)

Tape and Reel Spec's: 32mm wide; 16mm pitch; 13 inch reel (250 pieces per reel)

SNAP-IN PC CLIPS

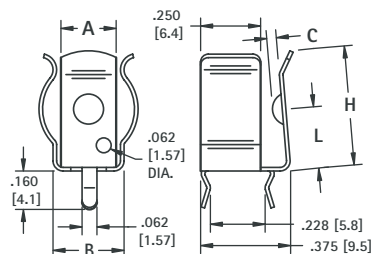


No Ears

- Available for "A" • "AA" • "AAA" • "AAAA" • "N" size batteries
- Mounts securely to the PC board with advanced "Snap-In" design for thru hole mounting
- "Snap-In" clip holds firmly for wave soldering
- Reliable spring tension assures low contact resistance
- Low profile, economical design
- Retains battery securely to withstand shock and vibration

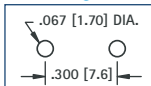


For "A" • "AA" • "AAA" • "N"



Refer to page 25 for Battery Contact Layout & Mounting Details

Mounting Detail

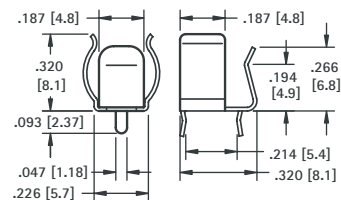


MATERIAL:

Spring Steel Tin Nickel Plate

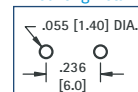
CAT. NO.	A	B	C	H	L	MATERIAL THICKNESS	BATTERY DIAMETER	BATTERY SIZE
52	.250 (6.4)	—	—	.032 (0.8)	.280 (7.1)	.010 (.25)	No Ears	"A" • "AA"
92	.312 (7.9)	.375 (9.5)	.056 (1.4)	.593 (15.1)	.359 (9.1)	.012 (.30)	531-.665 (13.5-16.9)	
2915	.312 (7.9)	.375 (9.5)	.050 (1.3)	.593 (15.1)	.359 (9.1)	.015 (.39)		"AAA" • "N"
82	.250 (6.4)	.300 (7.6)	.040 (1.0)	.500 (12.7)	.280 (7.1)	.010 (.25)	.375-.460 (9.5-11.7)	
51	See drawing for Cat. No. 51					.010 (.25)	.300-.350 (7.6-8.9)	"AAAA"

For "AAAA"



MATERIAL: .010 (.25) thick Spring Steel, Tin Nickel Plate

Mounting Detail



CAT. NO. 51

SURFACE MOUNT BATTERY CLIPS

AVAILABLE ON TAPE AND REEL

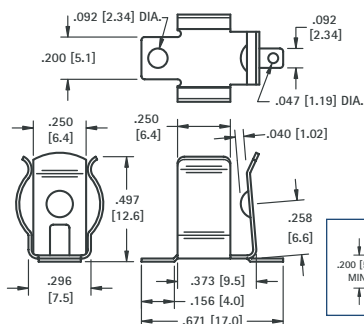
- Low profile for densely packed PCBs
- "Flow-Hole" SMT solder tail design for increased joint strength
- Retains cell securely, withstands shock and vibration
- All conductive polystyrene carrier tape meets ANSI/EIA -481 standard

MATERIAL: .010 (.25) thick Spring Steel, Tin Nickel Plate

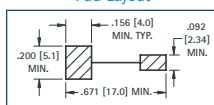
Refer to page 25 for Battery Contact Layout & Mounting Details



For "AAA" • "N"



Pad Layout

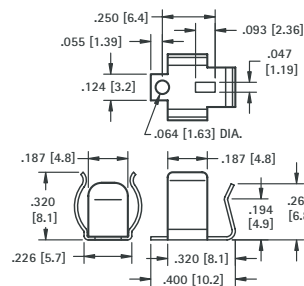


CAT. NO. 55 (Bulk)

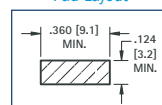
CAT. NO. 55TR (Tape & Reel)

Tape & Reel Spec's: 32mm wide; 16mm pitch; 13 inch reel, (300 pieces per reel)

For "AAAA"



Pad Layout



CAT. NO. 50 (Bulk)

CAT. NO. 50TR (Tape & Reel)

Tape & Reel Spec's: 24mm wide; 16mm pitch; 13 inch reel, (500 pieces per reel)

ECONOMY CONTACTS

For "AA" • "C" • "D"

- Designed for mounting in self-contained, non-metallic battery compartments.
- Reliable spring tension assures low contact resistance.
- Recessed contact holds battery in place.
- All clips have anti-rotation tab.

MATERIAL: .016 (.41) thick Spring Steel, Nickel Plate

CAT. NO.	FIG. NO.	B	C	H	M MTG. HOLE	CELL SIZE
206	1	.625 (15.9)	.480 (12.2)	.500 (12.7)	.128 (3.3)	"AA"
207	2	.687 (17.4)	.547 (13.9)	.875 (22.2)	.128 (3.3)	"C"
208	2	.750 (19.1)	.562 (14.3)	1.260 (32.0)	.128 (3.3)	"D"

Refer to page 25 for Battery Contact Layout & Mounting Details



FIG. 1

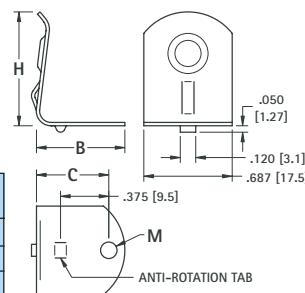
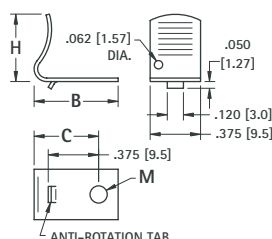
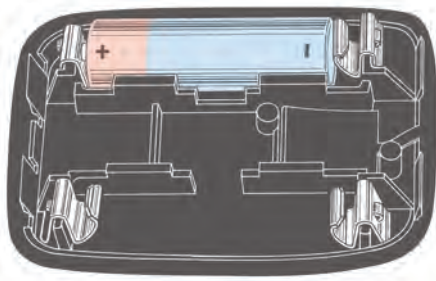


FIG. 2



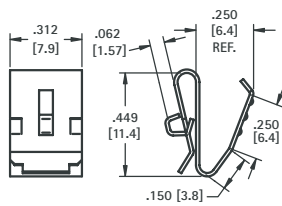
Refer to page 26
for Battery Contact Layout & Mounting Details

- Economical and reliable contacts are ideal for molded cases with self contained battery compartments
- Single & dual contact designs available for "A" - "AA" - "AAA" - "AAAA" - "N" size batteries
- Solder "ear" to facilitate soldering of wire lead
- Unique spring tension contact adjusts to variations in battery length
- Reliable spring tension contacts assure low contact resistance
- Clips easily onto .060 (1.52) to .070 (1.78) thick panel edge
- Sharp barbs securely anchor contact in place

For "A" - "AA"



CAT. NO. 209

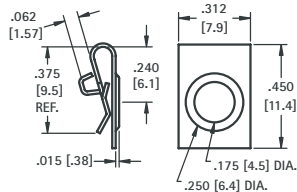


MATERIAL: .012 (.30) thick Spring Steel, Nickel Plate

For "A" - "AA"



CAT. NO. 228

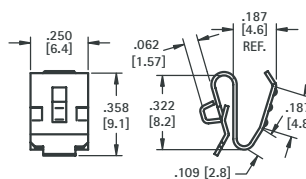


MATERIAL: .010 (.25) thick Spring Steel, Nickel Plate

For "AAA" - "AAAA" - "N"



CAT. NO. 204

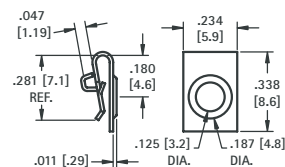


MATERIAL: .010 (.25) thick Spring Steel, Nickel Plate

For "AAA" - "AAAA" - "N"



CAT. NO. 238



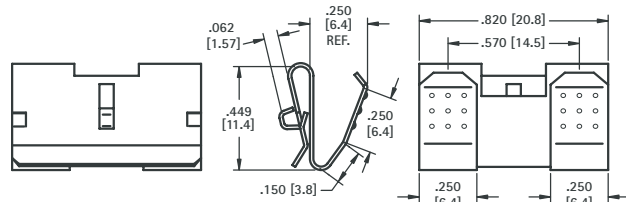
MATERIAL: .010 (.25) thick Spring Steel, Nickel Plate

For "A" - "AA"

- The (2) two leaf contacts are held together by a web. This design offers greater stability.



CAT. NO. 210



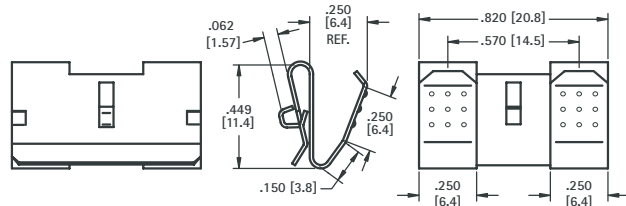
MATERIAL: .012 (.30) thick Spring Steel, Nickel Plate

For "A" - "AA"

- The (2) two leaf contacts are separate, allowing a divider between the batteries.



CAT. NO. 288



MATERIAL: .012 (.30) thick Spring Steel, Nickel Plate

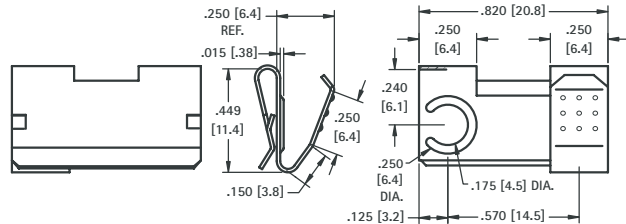
For "A" - "AA"



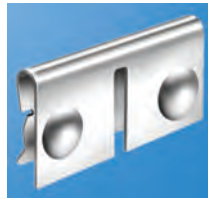
CAT. NO. 290 Left (shown)

CAT. NO. 291 Right

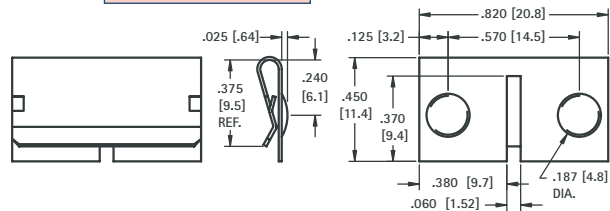
MATERIAL: .012 (.30) thick Spring Steel, Nickel Plate



For "A" - "AA"



CAT. NO. 292

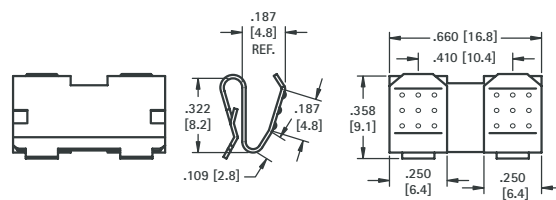


MATERIAL: .010 (.25) thick Spring Steel, Nickel Plate

For "AAA" - "AAAA" - "N"



CAT. NO. 202

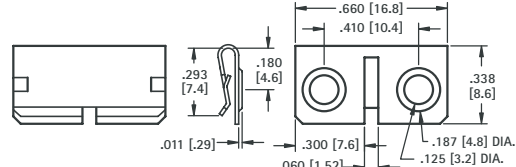


MATERIAL: .010 (.25) thick Spring Steel, Nickel Plate

For "AAA" - "AAAA" - "N"



CAT. NO. 294



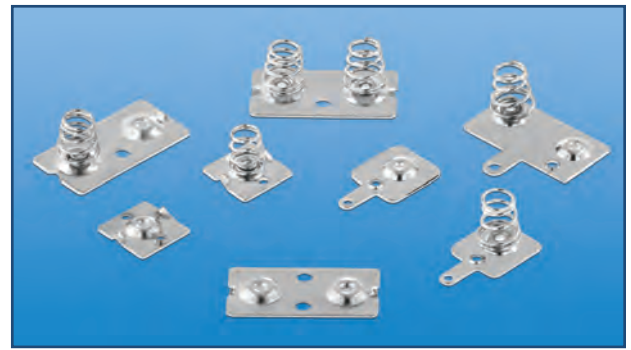
MATERIAL: .010 (.25) thick Spring Steel, Nickel Plate

For "A" • "AA"

- Economical and reliable contacts are ideal for molded cases with self contained battery compartments
- Single and dual contact designs available for "A" & "AA" size batteries
- "Solder tab" design for either wire lead or PC mounting
- Unique spring contacts adjust to variations in battery lengths
- Reliable spring contacts assure low contact resistance and a dependable connection
- Space saving, economical, excellent mechanical construction

MATERIAL:

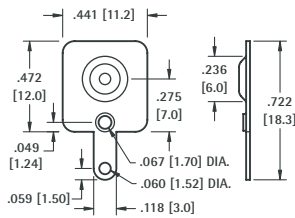
Plate: .020 (.51) thick Steel, Nickel Plate **Spring:** Spring Steel, Nickel Plate



Refer to page 27 for Battery Contact Layout & Mounting Details

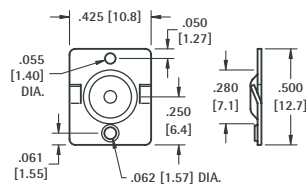
For "A" • "AA"

(+) POSITIVE BUTTON WITH TAB



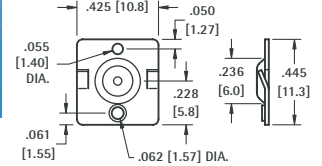
CAT. NO. 5223

(+) POSITIVE BUTTON



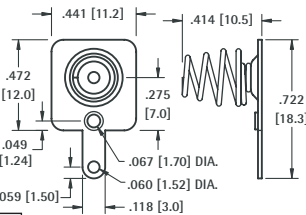
CAT. NO. 5221

(+) POSITIVE BUTTON



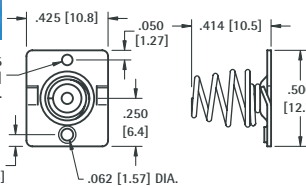
CAT. NO. 5224

(-) NEGATIVE SPRING WITH TAB



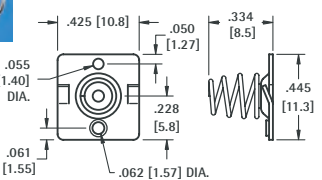
CAT. NO. 5201

(-) NEGATIVE SPRING



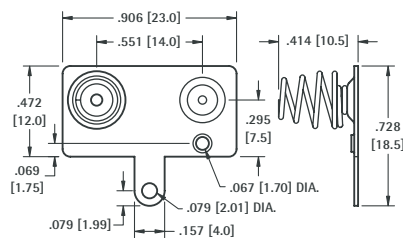
CAT. NO. 5222

(-) NEGATIVE SPRING



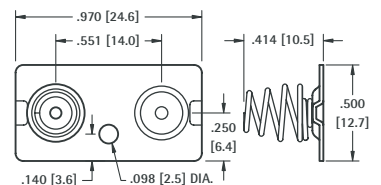
CAT. NO. 5202

DUAL CONTACTS WITH TAB



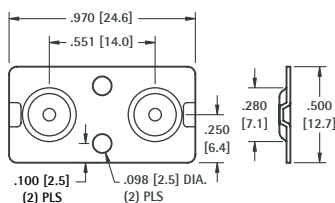
CAT. NO. 5211

DUAL CONTACTS



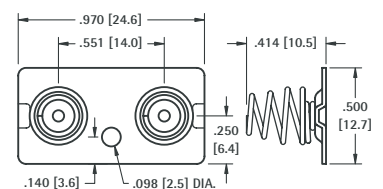
CAT. NO. 5212

DUAL BUTTON CONTACT



CAT. NO. 5227

DUAL SPRING CONTACT



CAT. NO. 5228

SPRING & BUTTON CONTACTS

For "AAA" - "N"

- Economical and reliable contacts are ideal for molded cases with self contained battery compartments
- Single and dual contact designs available for "AAA" & "N" size batteries
- "Solder tab" design for either wire lead or PC mounting
- Unique spring contacts adjust to variations in battery lengths
- Reliable spring contacts assure low contact resistance and a dependable connection
- Space saving, economical, excellent mechanical construction

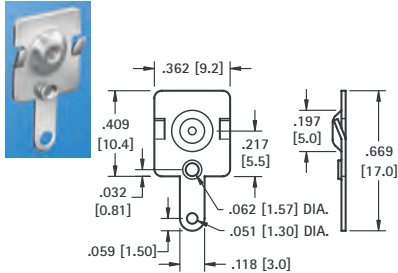
MATERIAL:

Plate: .020 (.51) thick Steel, Nickel Plate **Spring:** Spring Steel, Nickel Plate

Refer to page 27 for Battery Contact Layout & Mounting Details

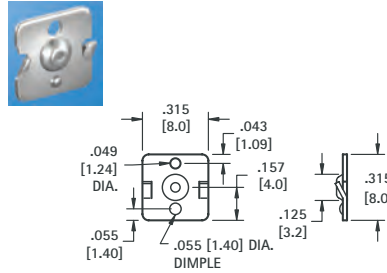
For "AAA" - "N"

(+) POSITIVE BUTTON WITH TAB



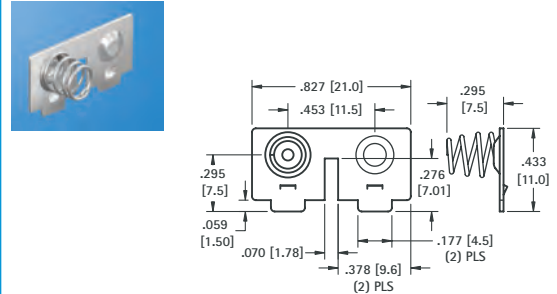
CAT. NO. 5226

(+) POSITIVE BUTTON



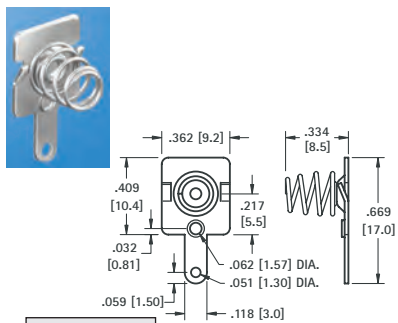
CAT. NO. 5225

DUAL CONTACT (RIGHT)



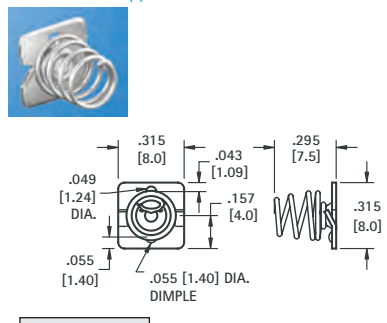
CAT. NO. 5213

(-) NEGATIVE SPRING WITH TAB



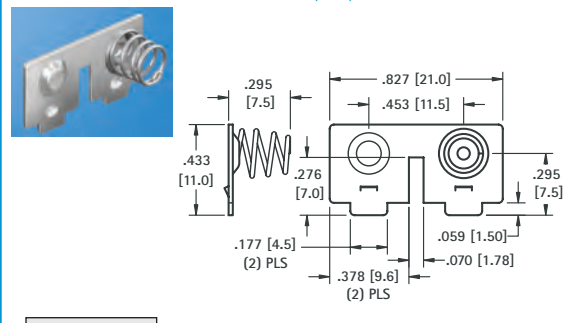
CAT. NO. 5204

(-) NEGATIVE SPRING



CAT. NO. 5203

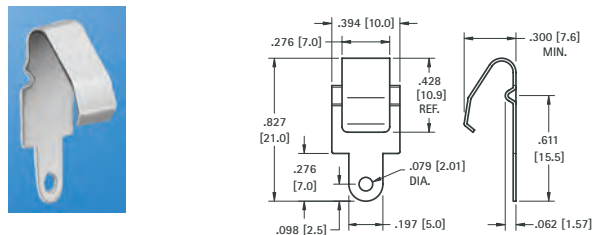
DUAL CONTACT (LEFT)



CAT. NO. 5214

LEAF-SPRING CONTACTS

For "A" - "AA" - "9V"



CAT. NO. 5209

MATERIAL: .012 (.30) thick Phosphor Bronze, Nickel Plate

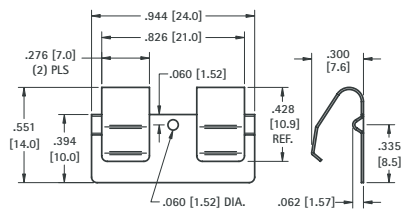
Refer to page 27 for Battery Contact Layout & Mounting Details



CAT. NO. 5208

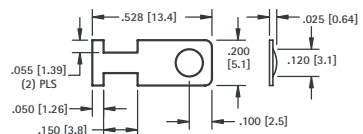
MATERIAL: .012 (.30) thick Phosphor Bronze, Nickel Plate

For "A" - "AA"



For "AAA" - "AAAA" - "N" - "12V"

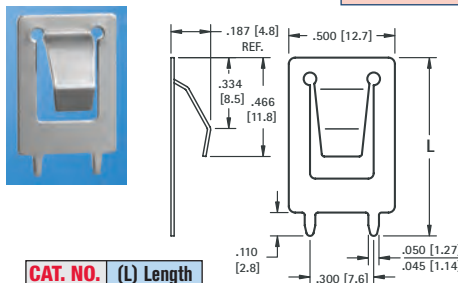
- Designed for remote control applications



CAT. NO. 230-1

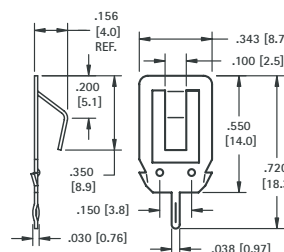
MATERIAL: .008 (.20) thick Spring Steel, Tin Nickel Plate

UNIVERSAL BATTERY SIZES



CAT. NO.	(L) Length
109-2	.840 (21.3)
109-3	1.000 (25.4)

MATERIAL: .012 (.30) thick Spring Steel, Nickel Plate



CAT. NO. 108-2

MATERIAL: .012 (.30) thick Spring Steel, Tin Nickel Plate

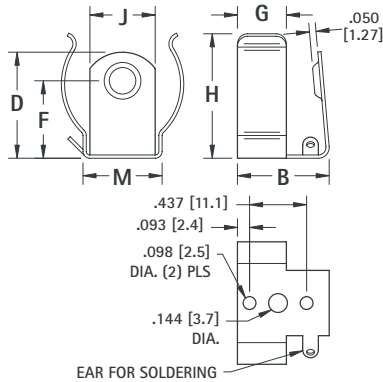
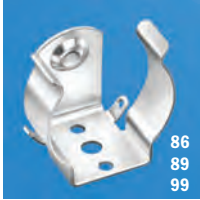


RUGGED STEEL BATTERY CLIPS

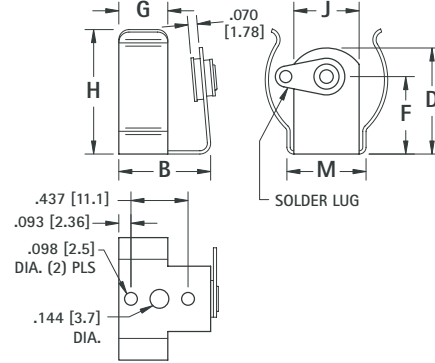
For "AA" • "C" • "D"

SPECIFICATIONS Clips: Spring Steel, Nickel Plate **Contact Eyelets:** Brass, Nickel Plate
Insulating Washers: Moisture Proof, Resin Impregnated Fibre **Solder Lugs:** Brass, Tin Plate

- Available with insulated or non-insulated contact. Positive contact grips battery securely.



DWG. 1
Non-Insulated Contact



DWG. 2
Insulated Contact

CAT. NO.	DWG. NO.	B	C	D	F	G	H	J	M	STEEL THICKNESS	BATTERY DIAMETER MIN. - MAX.	CELL SIZE
86	1	.703 (17.9)	.391 (9.9)	.812 (20.6)	.593 (15.1)	.375 (9.5)	.937 (23.8)	.500 (12.7)	.605 (15.4)	.020 (.51)	.875 to 1.125 (22.2 to 28.6)	"C"
87	2	.775 (19.7)	.463 (11.8)	1.075 (27.3)	.750 (19.1)	.437 (11.1)	1.187 (30.1)	.500 (12.7)	.609 (15.5)	.020 (.51)	1.187 to 1.350 (30.1 to 34.3)	"D"
88	1	.703 (17.9)	.391 (9.9)	.609 (15.5)	.375 (9.5)	.375 (9.5)	.609 (15.5)	.312 (7.9)	.353 (9.0)	.015 (.39)	.531 to .650 (13.5 to 16.5)	"AA"
89	1	.703 (17.9)	.391 (9.9)	.609 (15.5)	.375 (9.5)	.375 (9.5)	.609 (15.5)	.312 (7.9)	.353 (9.0)	.015 (.39)	.531 to .650 (13.5 to 16.5)	"AA"
99	1	.703 (17.9)	.391 (9.9)	.609 (15.5)	.375 (9.5)	.375 (9.5)	.609 (15.5)	.312 (7.9)	.353 (9.0)	.015 (.39)	.531 to .650 (13.5 to 16.5)	"AA"
100	2	.703 (17.9)	.391 (9.9)	.609 (15.5)	.375 (9.5)	.375 (9.5)	.609 (15.5)	.312 (7.9)	.353 (9.0)	.015 (.39)	.531 to .650 (13.5 to 16.5)	"AA"

BATTERY RETAINER CLIPS

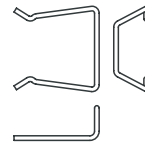
- Prevents battery from loosening in battery holder
- Retainer clip slips on the ears of the battery holder clip



Retainer for "AA" or cells with diameters of .532 (13.5) to .562 (14.3).
Used with Keystone Battery Clips
Cat. No. 91, 92, 95, 99, 100 and 2915.

MATERIAL: Stainless Steel

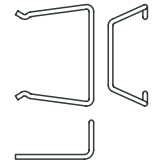
CAT. NO. 61



Retainer for "C" cells or similar size batteries to 1.032 (26.2) diameter.
Used with Keystone Battery Clips
Cat. No. 86, 87, 93 and 222.

MATERIAL: Spring Steel, Nickel Plate

CAT. NO. 62



Retainer for "D" cells or similar size batteries to 1.343 (34.1) diameter. Used with Keystone Battery Clips Cat. No. 88, 89 and 94.

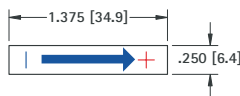
MATERIAL: Spring Steel, Nickel Plate

CAT. NO. 63

POLARITY INDICATING LABEL

- No Gluing or Wetting Needed
- Pressure Sensitive Adhesive Back
- Economical
- Adheres To All Surfaces

Recommended where proper polarity of battery insertion or circuit polarity is to be shown. Labels are two color, (+) positive side red; arrow, (-) negative side blue.

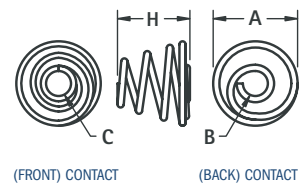


CAT. NO. 58

BATTERY SPRING CONTACTS

For "A" • "AA" • "C" • "D"

Easy to assemble with eyelets or rivets. Refer to page 124.



CAT. NO.	H	A	B	C	MATERIAL	CELL SIZE
211	.290 (7.4)	.335 (8.5)	.100 (2.5)	.140 (3.6)	.025 (.64) Dia. Spring Steel, Nickel Plate	"A" • "AA"
211-D	.850 (21.6)	.650 (16.5)	.162 (4.1)	.300 (7.6)	.040 (1.0) Dia. Spring Steel, Nickel Plate	"C" • "D"

INSULATED POLARIZING WASHERS

Prevents improper connection of battery which may cause damage to electronic equipment. Washers hold securely when snapped over eyelets. Used on our standardized battery holders. For "AA", "C" & "D" cells.



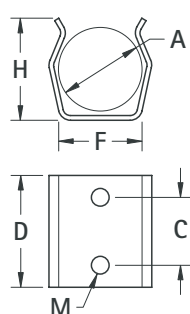
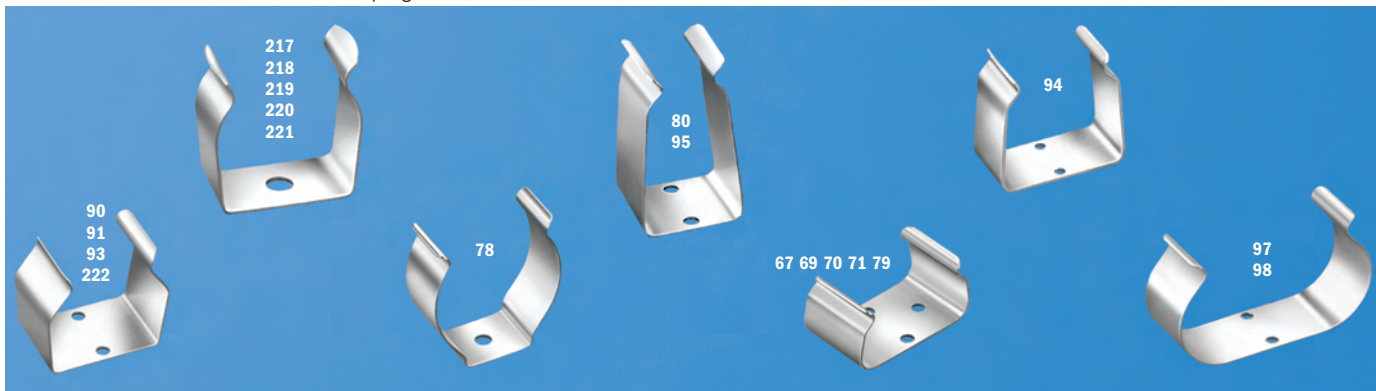
CAT. NO. 59 (RED)

CAT. NO. 60 (BLACK)

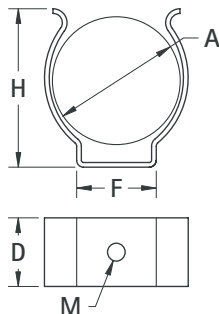
MATERIAL: Molded Polyethylene

ALUMINUM & STEEL CLIPS

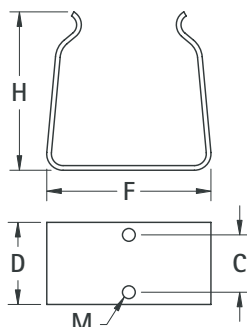
Precision made spring clips are available in a wide range of sizes. These clips will hold round, square and rectangular batteries or components with similar dimensions. Clips are manufactured from Aluminum or Spring Steel.



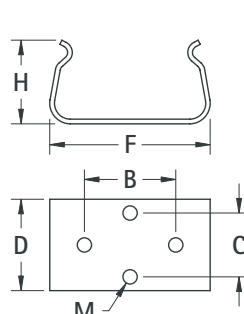
DWG. 1



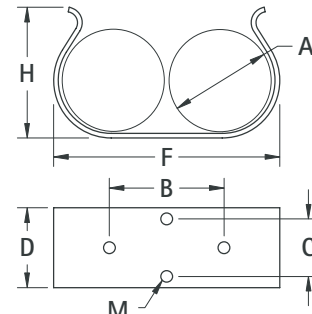
DWG. 2



DWG. 3



DWG. 4



DWG. 5

MATERIAL: Steel Clips: Spring Steel, Nickel Plate Aluminum Clips: 2024-T3

CAT. NO.	DWG. NO.	A MIN MAX DIA. OR SIZE	FOR CELLS	B	C	D	F	G	H	M MTG HOLE(S)	MATERIAL THICKNESS	TYPE
67	3	.375 × .125 (9.5 × 3.2)	CRYSTAL	—	.187 (4.7)	.350 (8.9)	.410 (10.4)	.093 (2.4)	.210 (5.3)	.067 (1.7)	.016 (.41)	Steel
69	4	.562 (14.3)	AA (2)	.625 (15.9)	.437 (11.1)	.625 (15.9)	1.125 (28.6)	.093 (2.4)	.562 (14.3)	.098 (2.5)	.015 (.39)	Steel
70	4	.656 (16.7)	RM12 (2)	.625 (15.9)	.437 (11.1)	.625 (15.9)	1.343 (34.1)	.093 (2.4)	.740 (18.8)	.098 (2.5)	.020 (.51)	Alum.
71	3	.593 × 1.031 (15.1 × 26.2)	9 VOLT	—	.437 (11.1)	.625 (15.9)	1.031 (26.2)	.093 (2.4)	.687 (17.4)	.098 (2.5)	.015 (.39)	Steel
78	2	1.187 to 1.350 (30.1 to 34.3)	D	—	—	.500 (12.7)	.562 (14.3)	.250 (6.4)	1.218 (30.9)	.136 (3.5)	.020 (.51)	Steel
79	4	.650 × 1.280 (16.5 × 32.5)	9 VOLT	.625 (15.9)	.437 (11.1)	.625 (15.9)	1.050 (26.7)	.093 (2.4)	.765 (19.4)	.098 (2.5)	.015 (.39)	Steel
80	3	.650 × 1.280 (16.5 × 32.5)	9 VOLT	—	.437 (11.1)	.625 (15.9)	.675 (17.1)	.093 (2.4)	1.187 (30.1)	.098 (2.5)	.015 (.39)	Steel
90	1	.375 to .468 (9.5 to 11.9)	AAA	—	.437 (11.1)	.625 (15.9)	.312 (7.9)	.093 (2.4)	.453 (11.5)	.098 (2.5)	.020 (.51)	Alum.
91	1	.531 to .656 (13.5 to 16.7)	AA	—	.437 (11.1)	.625 (15.9)	.406 (10.3)	.093 (2.4)	.562 (14.3)	.098 (2.5)	.020 (.51)	Alum.
93	1	.875 to 1.125 (22.2 to 28.6)	C	—	.437 (11.1)	.625 (15.9)	.937 (23.8)	.093 (2.4)	.921 (23.4)	.098 (2.5)	.020 (.51)	Alum.
94	3	1.187 to 1.375 (30.1 to 34.9)	D	—	.437 (11.1)	.625 (15.9)	1.250 (31.8)	.093 (2.4)	1.218 (30.9)	.098 (2.5)	.032 (.81)	Alum.
95	3	.625 × 1.000 (15.9 × 25.4)	9 VOLT	—	.437 (11.1)	.625 (15.9)	.656 (16.7)	.093 (2.4)	1.125 (28.6)	.098 (2.5)	.020 (.51)	Alum.
97	5	1.031 (26.2)	C (2)	—	.437 (11.1)	.625 (15.9)	2.062 (52.4)	.093 (2.4)	1.125 (28.6)	.098 (2.5)	.020 (.51)	Alum.
98	5	1.312 (33.3)	D (2)	1.125 (28.6)	.437 (11.1)	1.000 (25.4)	2.656 (67.5)	.281 (7.1)	1.437 (36.5)	.098 (2.5)	.032 (.81)	Alum.
217	2	1.375 to 1.500 (34.9 to 38.1)	NiCd	—	—	.812 (20.6)	1.218 (30.9)	.406 (10.3)	1.430 (36.3)	.157 (4.0)	.025 (.64)	Steel
218	2	1.437 to 1.687 (36.5 to 42.8)	NiCd	—	—	.812 (20.6)	1.375 (34.9)	.406 (10.3)	1.531 (38.9)	.157 (4.0)	.025 (.64)	Steel
219	2	2.000 to 2.500 (50.8 to 63.5)	NiCd	—	—	.812 (20.6)	1.687 (42.8)	.406 (10.3)	2.156 (54.8)	.157 (4.0)	.025 (.64)	Steel
220	2	.187 to .203 (4.7 to 5.2)	5mm	—	—	.315 (8.0)	.158 (4.0)	.157 (4.0)	.280 (7.1)	.093 (2.4)	.010 (.25)	Steel
221	2	.859 to .890 (21.8 to 22.6)	.875 (22.2)	—	—	.468 (11.9)	.828 (21.0)	.234 (5.9)	.906 (23.0)	.157 (4.0)	.020 (.51)	Steel
222	1	.875 to 1.125 (22.2 to 28.6)	C	—	.437 (11.1)	.625 (15.9)	.937 (23.8)	.093 (2.4)	.921 (23.4)	.098 (2.5)	.020 (.51)	Steel

DIMENSIONS ARE FOR REFERENCE ONLY

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NOTES

[illegible]

RUGGED STEEL BATTERY HOLDERS



An established design that has gained wide acceptance for commercial and military applications. Batteries are held under constant spring tension assuring low contact resistance. Retainer clips are available to lock batteries in place and prevent shifting or loosening. Refer to page 10. Recommended for use where shock or severe vibration is encountered. Special fabrication for more than four batteries or variations from standard stock parts can be assembled to meet your requirements.

- Ideal for NiCd, Alkaline, NiMH, Carbon, Zinc and Lithium Cells
- Corrosion Resistant, Nickel Plate
- Brass Contacts, Nickel Plate
- Moisture Proof Resin Impregnated, Fibre Insulating Washers

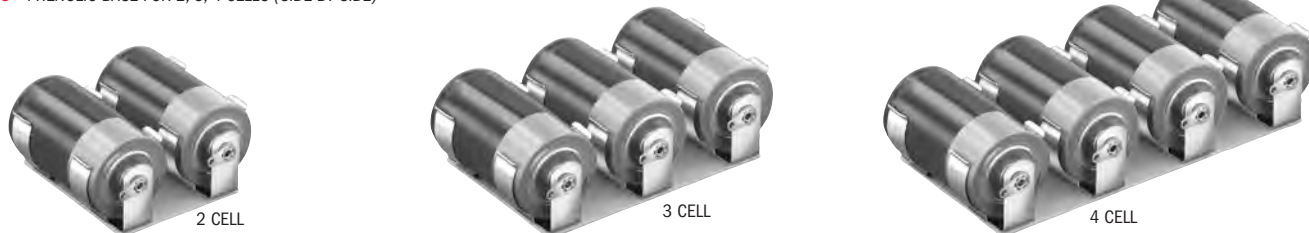
FIG. 1 STAINLESS STEEL BASE. INSULATOR TUBES SUPPLIED FOR 2-3-4 CELLS (END TO END)



FIG. 2 STEEL BASE. LITHIUM (SINGLE CELL)

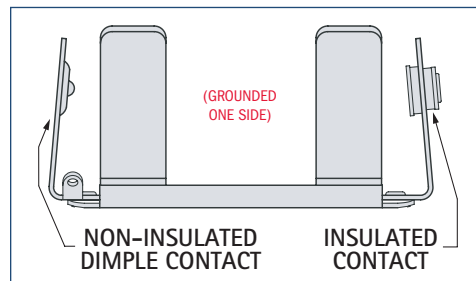


FIG. 3 PHENOLIC BASE FOR 2, 3, 4 CELLS (SIDE BY SIDE)

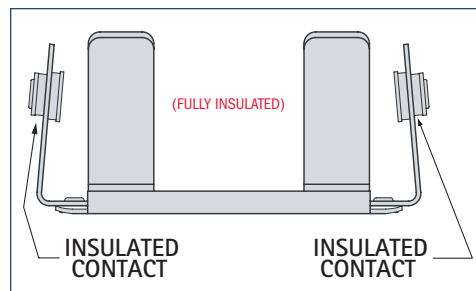


1100 SERIES	2100 SERIES	BATTERY CROSS REFERENCE							
ONE CONTACT INSULATED	ALL CONTACTS INSULATED	HOLDS NO. OF CELLS	FIG. NO.	EVEREADY	DURACELL	RAY-O-VAC	NEDA		
CAT. NO.	CAT. NO.								
"AA" CELL HOLDERS				(BATTERY SIZE $\frac{.531 (13.4)}{.565 (14.5)} \times \frac{1.906 (48.4)}{1.988 (50.0)} L$)					
1139	2139	1	1	E9, EV15, EN91,	ZM9, RM12R, NC15AA,	5AA, 615, 815, 7AA	15, 15A, 15C, 15D, 15F, 15M, 15NC, 221, 1101M, 1113M, 1306AP, 1306M, 1314M, 1606M		
—	2140*	2	3	CH15, E133, E133N, E177,	M15F, M15AA, TR133R, TR177,				
—	2171*	3	3	505, 523, 1015, 1215	M505, MN1500, PC1500				
—	2182*	4	3						
1189	2189	2	1						
1191	2191	3	1						
1194	2194	4	1						
"C" CELL HOLDERS				(BATTERY SIZE $\frac{.875 (22.2)}{1.125 (28.6)} \times \frac{1.875 (47.6)}{1.969 (50.5)} L$)					
1173	2173	1	1		M14F, M14HD, NC14C,	1C, 614, 814	14A, 14C, 14D, 14F, 14NC, 1600M		
—	2174*	2	3	CH35, E93, 935, 1235, EV35, EN93	TR286, MN1400, PC1400				
—	2187*	3	3						
—	2188*	4	3						
1185	2185	2	1						
1195	2195	3	1						
1198	2198	4	1						
"D" CELL HOLDERS				(BATTERY SIZE $\frac{1.187 (30.1)}{1.375 (34.9)} \times \frac{2.312 (48.4)}{2.412 (50.0)} L$)					
1175	2175	1	1		M13F, NC13D, S42, M13HD, TR289, MN1300, PC1300	2D, 6D, 613, 813	13A, 13C, 13D, 13F, 13NC, 1115M, 1810M		
—	2176*	2	3	CH50, E95, 950, 1250, EV50, EN95					
—	2190*	3	3						
—	2192*	4	3						
1186	2186	2	1						
1199	2199	3	1						
1162	2162	4	1						

1100 SERIES



2100 SERIES



MODIFICATIONS

We welcome the opportunity to quote on variations of standard items. Use our engineering service for your custom - built holders. Holders with PC and Quick-Fit terminals available on special order.

LITHIUM CELL HOLDERS	BATTERY	FIG. NO.	BATTERY SIZE	DURACELL	PANASONIC	SANYO
ALL CONTACTS INSULATED						
1103	"1/2 AA"	2	.510 (12.95) × .990 (25.15)	Px28L	CR14250	CR14250SE
1105	"1/2 A"	2	.661 (16.80) × .886 (22.50)	BR-1/2A	—	—

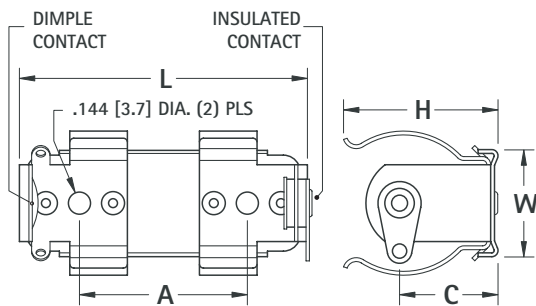
*Clips mounted on .062 (1.57) thick Phenolic board.

DIMENSIONAL DRAWINGS FOR STEEL BATTERY HOLDERS

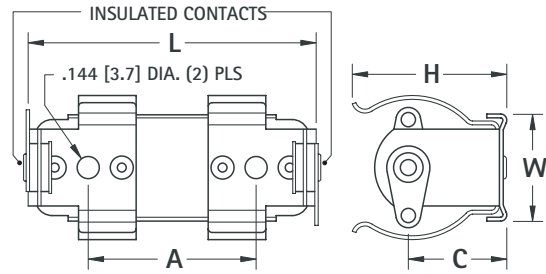
MATERIAL SPECIFICATIONS:

Clips: Spring Steel, Nickel Plate
Contact Eyelets: Brass, Nickel Plate
Insulating Washers: Moisture Proof, Resin Impregnated Fibre
Solder Lugs: Brass, Tin Plate

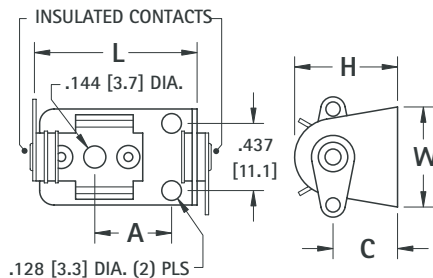
Phenolic Base: Type PBE, Per MIL-P-3115C
Stainless Steel Base: Ribbed, For Added Support
Steel Base: Spring Steel, Nickel Plate



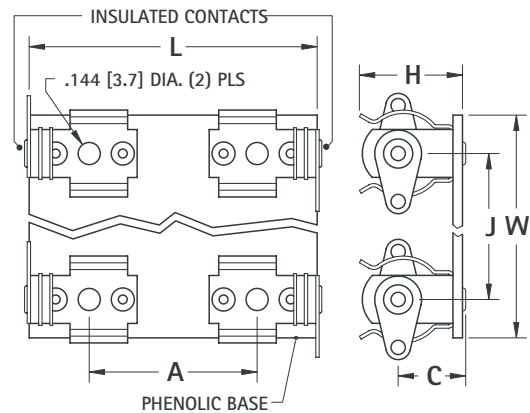
DWG. 1 FOR 1100 SERIES STAINLESS STEEL BASE (END-TO-END)



DWG. 1 FOR 2100 SERIES STAINLESS STEEL BASE (END-TO-END)



DWG. 2 FOR LITHIUM STEEL BASE (SINGLE CELL)

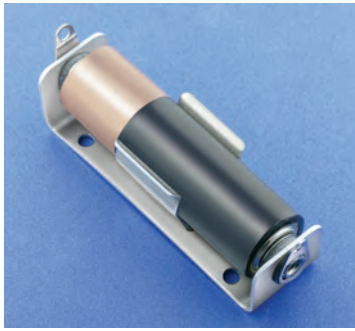


DWG. 3 FOR 2100 SERIES PHENOLIC BASE (SIDE-BY-SIDE)

1100 SERIES	2100 SERIES	HOLDS NO. OF CELLS	DWG. NO.	W	L	H	C	J	A
ONE CONTACT INSULATED	ALL CONTACTS INSULATED			Width Of Base	Length Of Base	Height Of Holder	Height to Battery Center	Mounting Hole Distance	Mounting Holes Center To Center
CAT. NO.	CAT. NO.								
"AA" CELL HOLDERS									
1139	2139	1	1	.687 (17.4)	2.125 (54.0)	.656 (16.7)	.437 (11.1)	—	1.343 (34.1)
—	2140*	2	3	1.250 (31.8)	2.125 (54.0)	.656 (16.7)	.437 (11.1)	.750 (19.1)	1.343 (34.1)
—	2171*	3	3	2.000 (50.8)	2.125 (54.0)	.656 (16.7)	.437 (11.1)	.750 (19.1)	1.343 (34.1)
—	2182*	4	3	2.750 (69.9)	2.125 (54.0)	.656 (16.7)	.437 (11.1)	.750 (19.1)	1.343 (34.1)
1189	2189	2	1	.687 (17.4)	4.093 (104.0)	.656 (16.7)	.437 (11.1)	—	3.312 (84.1)
1191	2191	3	1	.687 (17.4)	6.030 (153.2)	.656 (16.7)	.437 (11.1)	—	5.250 (133.4)
1194	2194	4	1	.687 (17.4)	8.010 (203.5)	.656 (16.7)	.437 (11.1)	—	7.230 (183.6)
"C" CELL HOLDERS									
1173	2173	1	1	.687 (17.4)	2.125 (54.0)	1.000 (25.4)	.625 (15.9)	—	1.343 (34.1)
—	2174*	2	3	1.750 (44.5)	2.062 (52.4)	1.000 (25.4)	.625 (15.9)	1.187 (30.1)	1.343 (34.1)
—	2187*	3	3	2.937 (74.6)	2.062 (52.4)	1.000 (25.4)	.625 (15.9)	1.187 (30.1)	1.343 (34.1)
—	2188*	4	3	4.125 (104.8)	2.062 (52.4)	1.000 (25.4)	.625 (15.9)	1.187 (30.1)	1.343 (34.1)
1185	2185	2	1	.687 (17.4)	4.093 (104.0)	1.000 (25.4)	.625 (15.9)	—	3.312 (84.1)
1195	2195	3	1	.687 (17.4)	5.937 (150.8)	1.000 (25.4)	.625 (15.9)	—	5.156 (131.0)
1198	2198	4	1	.687 (17.4)	7.906 (200.8)	1.000 (25.4)	.625 (15.9)	—	7.125 (181.0)
"D" CELL HOLDERS									
1175	2175	1	1	.687 (17.4)	2.562 (65.1)	1.281 (32.5)	.796 (20.2)	—	1.625 (41.3)
—	2176*	2	3	2.125 (54.0)	2.562 (65.1)	1.281 (32.5)	.796 (20.2)	1.562 (39.7)	1.625 (41.3)
—	2190*	3	3	3.687 (93.6)	2.562 (65.1)	1.281 (32.5)	.796 (20.2)	1.562 (39.7)	1.625 (41.3)
—	2192*	4	3	5.250 (133.4)	2.562 (65.1)	1.281 (32.5)	.796 (20.2)	1.562 (39.7)	1.625 (41.3)
1186	2186	2	1	.687 (17.4)	4.937 (125.4)	1.281 (32.5)	.796 (20.2)	—	4.000 (101.6)
1199	2199	3	1	.687 (17.4)	7.281 (184.9)	1.281 (32.5)	.796 (20.2)	—	6.343 (161.1)
1162	2162	4	1	.687 (17.4)	9.625 (244.5)	1.281 (32.5)	.796 (20.2)	—	8.687 (220.6)
LITHIUM CELL HOLDERS									
1103		1	2	.625 (15.9)	1.156 (29.4)	.595 (15.1)	.345 (8.8)	—	.531 (13.5)
1105		1	2	.390 (9.9)	1.044 (26.5)	.670 (17.0)	.420 (10.7)	—	.500 (12.7)

*Clips mounted on .062 (1.57) thick Phenolic board.

DIMENSIONS ARE FOR REFERENCE ONLY



Lightweight yet strong, constructed of aircraft grade aluminum. Batteries snap-fit securely into clips.

- Brass Eyelets, Nickel Plate
- Brass Lugs, Nickel Plate
- Moisture Proof, Resin Impregnated, Fibre Insulating Washers
- Aluminum 2024-T3, Frame & Clip

ALUMINUM BATTERY HOLDERS

FIG. 1



1 CELL

FIG. 2



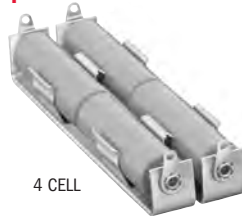
2 CELL

FIG. 3

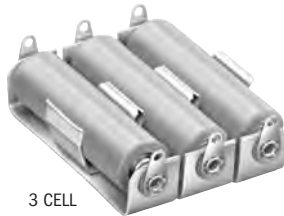


2 CELL

FIG. 4



4 CELL



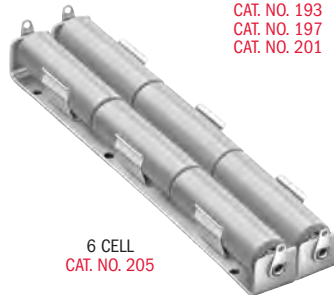
3 CELL



6 CELL
CAT. NO. 193
CAT. NO. 197
CAT. NO. 201



4 CELL



6 CELL
CAT. NO. 205

FIG. 5



FIG. 6



MODIFICATIONS

We welcome the opportunity to quote on variations of standard items. Use our engineering service for your custom-built holders. Holders with PC and Quick-Fit terminals available on special order.

CAT. NO.	HOLDS NO. OF CELLS	FIG. NO.	BATTERY CROSS REFERENCE			
			EVEREADY	DURACELL	RAY-O-VAC	NEDA
"AAA" CELL HOLDERS			$\left(\begin{array}{l} \text{BATTERY SIZE} \end{array} \begin{array}{l} .375 (9.5) \\ .468 (11.9) \end{array} \text{O.D.} \times \begin{array}{l} 1.673 (42.5) \\ 1.752 (44.5) \end{array} \text{L} \right)$			
137	1	1	E92, 912, CH12	M24F, MN2400	824	24A, 24F, 24P
138	2	3				
169	3	3				
170	4	3				
"AA" CELL HOLDERS			$\left(\begin{array}{l} \text{BATTERY SIZE} \end{array} \begin{array}{l} .531 (13.4) \\ .561 (14.5) \end{array} \text{O.D.} \times \begin{array}{l} 1.906 (48.4) \\ 1.988 (50.5) \end{array} \text{L} \right)$			
139	1	1	E9, EV15, EN91, CH15, E133, E133N, E177, 505, 523, 1015, 1215	ZM9, RM12R, NC15AA, M15F, M15AA, TR133R, TR177, M505, MN1500, PC1500	5AA, 615, 815, 7AA	15, 15A, 15C, 15D, 15F, 15M, 15NC, 221, 1101M, 1113M, 1306AP, 1306M, 1314M, 1606M
140	2	3				
171	3	3				
182	4	3				
189	2	2				
192	4	4				
193	6	4				
"C" CELL HOLDERS			$\left(\begin{array}{l} \text{BATTERY SIZE} \end{array} \begin{array}{l} .875 (22.2) \\ 1.125 (28.6) \end{array} \text{O.D.} \times \begin{array}{l} 1.875 (47.6) \\ 1.969 (50.5) \end{array} \text{L} \right)$			
173	1	1	CH35, E93, 935,1235,EV35, EN93	M14F, M14HD, NC14C, TR286, MN1400, PC1400	1C, 614, 814,	14A, 14C, 14D, 14F, 14NC, 1600M
174	2	3*				
185	2	3				
187	3	2				
196	4	4**				
197	6	4				
"D" CELL HOLDERS			$\left(\begin{array}{l} \text{BATTERY SIZE} \end{array} \begin{array}{l} 1.187 (30.1) \\ 1.375 (34.9) \end{array} \text{O.D.} \times \begin{array}{l} 2.312 (58.7) \\ 2.412 (61.3) \end{array} \text{L} \right)$			
175	1	1	CH50, E95, 950, 1250, EV50, EN95	M13F, NC13D, S42, M13HD, TR289, MN1300, PC1300	2D, 6D, 613, 813	13A, 13C, 13D, 13F, 13NC, 1115M, 1810M
176	2	3*				
190	3	2				
186	2	3				
200	4	4**				
201	6	4				
205	6	4***				
"N" CELL HOLDERS			$\left(\begin{array}{l} \text{BATTERY SIZE} \end{array} \begin{array}{l} .375 (9.5) \\ .468 (11.9) \end{array} \text{O.D.} \times \begin{array}{l} 1.110 (28.2) \\ 1.189 (30.2) \end{array} \text{L} \right)$			
154	1	1	E90, E340E, E401E, EP401, EP401E	MP401H	R401, RP401, 810	910A, 910F, 910M, 1117M, 1118M, MN9100
155	2	3				
156	3	3				
"9 VOLT" BATTERY HOLDERS						
203-P	REFER TO PAGE 21		CH22, EN22, E146X, 216, 522, 1222, E303396	TR146X, M1604, M1604HD, MN16 PC146X,	A1604, D1604, 1604	1604A, 1604C, 1604D, 1604M, 1604NC, 1619M
303-P						
1290†						
1290-79						
1291†						
1291-79						
LITHIUM "2/3A" CELL HOLDER						
131	1	1	—	DL-2/3A	BR-2/3A	CR-173355E
"15 VOLT" BATTERY HOLDERS						
161	1	5	—	—	—	224
163	1	5	411	—	—	208
167	2	6*				
"22½ VOLT" BATTERY HOLDERS						
139	1	1	505	—	—	221
168	1	5	420	—	—	225
177	1	5	M215	M215	—	215
178	2	6*				
"30 VOLT" BATTERY HOLDERS						
183	1	5	413	—	—	210
184	1	6*				

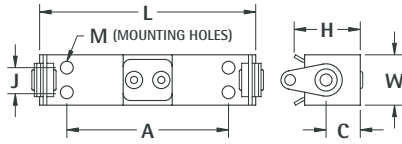
* 1 Clip holds two batteries in place. ** 2 Clips hold four batteries in place. *** 3 Clips hold six batteries in place.
† Recommended for battery thickness under .640 (16.3)

DIMENSIONAL DRAWINGS FOR ALUMINUM BATTERY HOLDERS

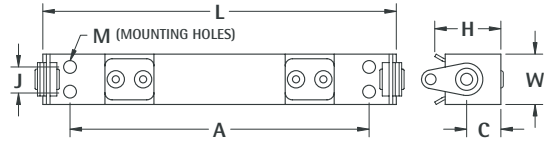
MATERIAL SPECIFICATIONS

Insulating Washers: Moisture proof, resin impregnated fibre
Terminal Lugs: Brass, Tin Plate

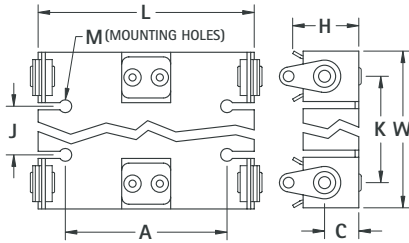
Frame and Clips: Aluminum 2024-T3
Contact Eyelet: Brass, Nickel Plate



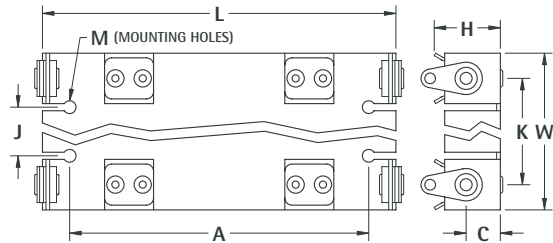
DWG. 1



DWG. 2



DWG. 3



DWG. 4

CAT. NO.	DWG. NO.	W Width Of Base	L Length Of Base	H Height Of Base	C Height to Battery Center	K Distance Between Battery Centers	J Mounting Holes Spacing	A Mounting Holes Center to Center	M Mounting Holes (Diameter)
"AAA" CELL HOLDERS									
137	1	.437 (11.1)	1.915 (48.6)	.484 (12.3)	.468 (11.9)	—	.250 (6.4)	1.500 (38.1)	.111 (2.8)
138	3	.812 (20.6)	1.915 (48.6)	.484 (12.3)	.468 (11.9)	.437 (11.1)	—	.875 (22.2)	.140 (3.6)
169	3	1.250 (31.8)	1.915 (48.6)	.467 (11.9)	.281 (7.1)	.437 (11.1)	.438 (11.1)	.875 (22.2)	.144 (3.7)
170	3	1.687 (42.8)	1.915 (48.6)	.484 (12.3)	.468 (11.9)	.437 (11.1)	.875 (22.2)	.875 (22.2)	.140 (3.6)
"AA" CELL HOLDERS									
139	1	.625 (15.9)	2.140 (54.4)	.580 (14.7)	.625 (15.9)	—	.406 (10.3)	1.500 (38.1)	.111 (2.8)
140	3	1.125 (28.6)	2.140 (54.4)	.625 (15.9)	.625 (15.9)	.625 (15.9)	—	1.218 (30.9)	.140 (3.6)
171	3	1.750 (44.5)	2.140 (54.4)	.625 (15.9)	.625 (15.9)	.625 (15.9)	.625 (15.9)	1.218 (30.9)	.140 (3.6)
182	3	2.656 (67.5)	2.140 (54.4)	.625 (15.9)	.625 (15.9)	.718 (18.2)	1.437 (36.5)	1.218 (30.9)	.140 (3.6)
189	2	.625 (15.9)	4.075 (103.5)	.625 (15.9)	.625 (15.9)	—	.437 (11.1)	3.000 (76.2)	.128 (3.3)
192	4	1.125 (28.6)	4.093 (104.0)	.625 (15.9)	.625 (15.9)	.625 (15.9)	—	3.093 (78.6)	.140 (3.6)
193	4	1.750 (44.5)	4.075 (103.5)	.625 (15.9)	.625 (15.9)	.625 (15.9)	.625 (15.9)	3.125 (79.4)	.140 (3.6)
"C" CELL HOLDERS									
173	1	.750 (19.1)	2.093 (53.2)	.953 (24.2)	.781 (19.8)	—	.437 (11.1)	1.500 (38.1)	.140 (3.6)
174	3*	1.625 (41.3)	2.093 (53.2)	1.105 (28.1)	.781 (19.8)	1.000 (25.4)	—	1.750 (44.5)	.140 (3.6)
185	3	.750 (19.1)	4.025 (102.2)	.953 (24.2)	.812 (20.6)	—	.500 (12.7)	3.187 (80.9)	.140 (3.3)
187	2	2.840 (72.1)	2.093 (53.2)	.953 (24.2)	.781 (19.8)	1.125 (28.6)	1.125 (28.6)	1.250 (31.8)	.140 (3.6)
196	4**	1.625 (41.3)	4.025 (102.2)	1.125 (28.6)	.781 (19.8)	1.000 (25.4)	—	3.187 (80.9)	.140 (3.6)
197	4	2.875 (73.0)	4.025 (102.2)	.968 (24.6)	.812 (20.6)	1.171 (29.7)	1.000 (25.4)	3.187 (80.9)	.140 (3.6)
"D" CELL HOLDERS									
175	1	1.000 (25.4)	2.562 (65.1)	1.218 (30.9)	.937 (23.8)	—	.750 (19.1)	1.750 (44.5)	.128 (3.3)
176	3*	2.062 (52.4)	2.578 (65.5)	1.437 (36.5)	.937 (23.8)	1.312 (33.3)	—	2.093 (53.2)	.140 (3.6)
186	2	1.000 (25.4)	4.865 (123.6)	1.218 (30.9)	.968 (24.6)	—	.687 (17.4)	4.125 (104.8)	.128 (3.3)
190	3	3.375 (85.7)	2.578 (65.5)	1.218 (30.9)	.968 (24.6)	1.343 (34.1)	1.125 (28.6)	1.937 (49.2)	.140 (3.6)
200	4**	2.062 (52.4)	4.865 (123.6)	1.468 (37.3)	.968 (24.6)	1.312 (33.3)	—	4.375 (111.1)	.140 (3.6)
201	4	3.375 (85.7)	4.865 (123.6)	1.218 (30.9)	.968 (24.6)	1.343 (34.1)	1.125 (28.6)	4.275 (108.6)	.140 (3.6)
205	4***	2.062 (52.4)	7.230 (183.6)	1.437 (36.5)	.937 (23.8)	1.312 (33.3)	—	6.812 (173.0)	.140 (3.6)
"N" CELL HOLDERS									
154	1	.437 (11.1)	1.343 (34.1)	.531 (13.5)	.468 (11.9)	—	.250 (6.4)	.906 (23.0)	.111 (2.8)
155	3	.937 (23.8)	1.343 (34.1)	.531 (13.5)	.484 (12.3)	.500 (12.7)	—	.875 (22.2)	.128 (3.3)
156	3	1.500 (38.1)	1.343 (34.1)	.531 (13.5)	.475 (12.1)	.531 (13.5)	.562 (14.3)	.875 (22.2)	.111 (2.8)
LITHIUM "2/3A" CELL HOLDER									
131	1	.625 (15.9)	1.478 (37.5)	.625 (15.9)	.437 (11.1)	—	.437 (11.1)	1.125 (28.6)	.111 (2.8)
"15 VOLT" BATTERY HOLDERS									
161	1	1.125 (28.6)	1.625 (41.3)	.594 (15.1)	.375 (9.5)	—	.562 (14.3)	1.000 (25.4)	.140 (3.6)
163	1	1.000 (25.4)	1.750 (44.5)	1.218 (30.9)	.687 (17.4)	—	.718 (18.2)	1.125 (28.6)	.140 (3.6)
167	1*	1.125 (28.6)	1.593 (40.5)	1.264 (32.1)	.760 (19.3)	.593 (15.1)	—	1.000 (25.4)	.140 (3.6)
"22 1/2 VOLT" BATTERY HOLDERS									
139	1	.625 (15.9)	2.140 (54.4)	.578 (14.7)	.390 (9.9)	—	.406 (10.3)	1.500 (38.1)	.111 (2.8)
168	1	.750 (19.1)	2.275 (57.8)	.937 (23.8)	.718 (18.2)	—	.500 (12.7)	1.500 (38.1)	.140 (3.6)
177	1	.750 (19.1)	2.125 (54.0)	1.156 (29.4)	.781 (19.8)	—	.437 (11.1)	1.500 (38.1)	.140 (3.6)
178	3*	1.125 (28.6)	2.215 (56.3)	1.218 (30.9)	.781 (19.8)	.625 (15.9)	—	1.218 (30.9)	.140 (3.6)
"30 VOLT" BATTERY HOLDERS									
183	1	.750 (19.1)	2.687 (68.2)	1.156 (29.4)	.812 (20.6)	—	.562 (14.3)	1.750 (44.5)	.111 (2.8)
184	3*	1.125 (28.6)	2.640 (67.1)	1.218 (30.9)	.812 (20.6)	.625 (15.9)	—	1.812 (46.0)	.140 (3.6)

* 1 Clip holds two batteries in place. ** 2 Clips hold four batteries in place. *** 3 Clips hold six batteries in place.

DIMENSIONS ARE FOR REFERENCE ONLY



- Economical design, available with PC terminals or wire leads
- Batteries securely held in place to assure a positive connection and maintain a low contact resistance
- Contact springs self-adjust to variations in battery length
- Withstands shock and vibration
- Available with solder lugs or male/female snap fasteners
- For easy removal, available with ribbon

SPECIFICATIONS

Holder: Polypropylene

Springs: Spring Steel, Nickel Plate

PC Pins: .031 (.79) thick Brass, Nickel Plate

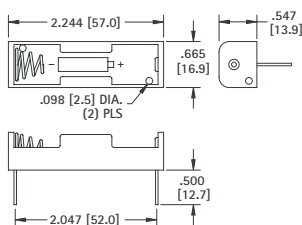
Wires (Red & Black): #26 AWG, Tinned, .187 (4.8) end strip UL/CSA1007

MODIFICATIONS

We welcome the opportunity to quote on variations of standard items. Use our Engineering services for your custom-built holders. Holders for "C" and "D" cell are available on request.

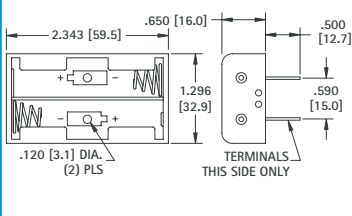
For "AA" - "AAA"

Holds One (1) "AA" Cell



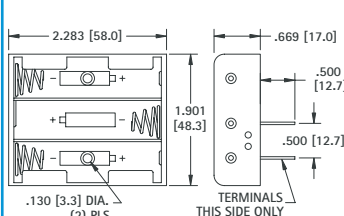
CAT. NO. 2460	PC Mount
CAT. NO. 2460RB	PC Mount w/ribbon
CAT. NO. 2461	Wire Leads - 6.0 (150)

Holds Two (2) "AA" Cells in Series



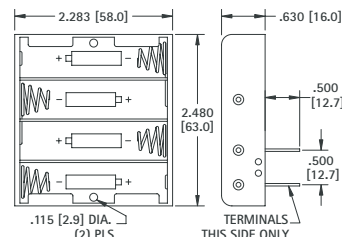
CAT. NO. 2462	PC Mount
CAT. NO. 2462RB	PC Mount w/ribbon
CAT. NO. 2463	Wire Leads - 6.0 (150)

Holds Three (3) "AA" Cells in Series



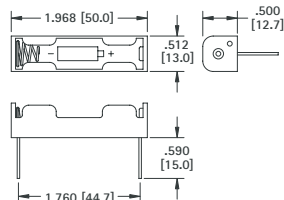
CAT. NO. 2464	PC Mount
CAT. NO. 2464RB	PC Mount w/ribbon
CAT. NO. 2465	Wire Leads - 6.0 (150)

Holds Four (4) "AA" Cells in Series



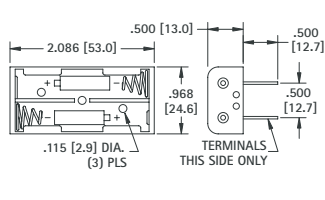
CAT. NO. 2477	PC Mount
CAT. NO. 2477RB	PC Mount w/ribbon
CAT. NO. 2478	Wire Leads - 6.0 (150)

Holds One (1) "AAA" Cell



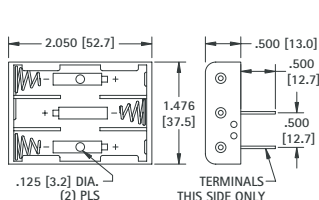
CAT. NO. 2466	PC Mount
CAT. NO. 2466RB	PC Mount w/ribbon
CAT. NO. 2467	Wire Leads - 6.0 (150)

Holds Two (2) "AAA" Cells in Series



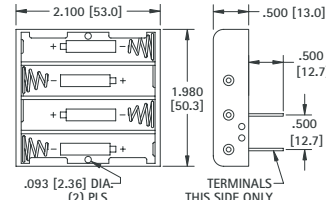
CAT. NO. 2468	PC Mount
CAT. NO. 2468RB	PC Mount w/ribbon
CAT. NO. 2469	Wire Leads - 6.0 (150)

Holds Three (3) "AAA" Cells in Series



CAT. NO. 2479	PC Mount
CAT. NO. 2479RB	PC Mount w/ribbon
CAT. NO. 2480	Wire Leads - 6.0 (150)

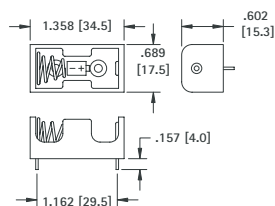
Holds Four (4) "AAA" Cells in Series



CAT. NO. 2481	PC Mount
CAT. NO. 2481RB	PC Mount w/ribbon
CAT. NO. 2482	Wire Leads - 6.0 (150)

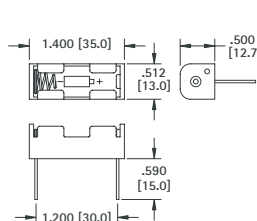
For "1/2 AA" - "N"

Holds One (1) "1/2 AA" Cell



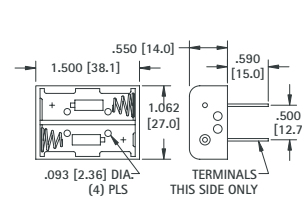
CAT. NO. 2485	PC Mount
CAT. NO. 2485RB	PC Mount w/ribbon
CAT. NO. 2486	Wire Leads - 6.0 (150)

Holds One (1) "N" Cell



CAT. NO. 2470	PC Mount
CAT. NO. 2470RB	PC Mount w/ribbon
CAT. NO. 2471	Wire Leads - 6.0 (150)

Holds Two (2) "N" Cells in Series



CAT. NO. 2472	PC Mount
CAT. NO. 2472RB	PC Mount w/ribbon
CAT. NO. 2473	Wire Leads - 6.0 (150)

- Supports high density packaging on or off board, positions anywhere for easy access to battery
- Economical design
- Batteries securely held in place to assure a positive connection and maintain a low contact resistance
- Contact springs self-adjust to variations in battery length
- Snap-on cover protects battery
- Recessed or fully enclosed contacts
- Withstands shock and vibration

SPECIFICATIONS

Holder: ABS

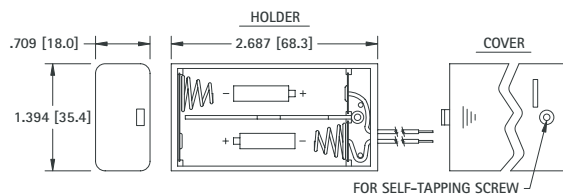
Springs: Spring Steel, Nickel Plate

Wires (Red & Black): 6.0 (150) long, #26 AWG, Tinned, .187 (4.8) end strip UL/CSA1007



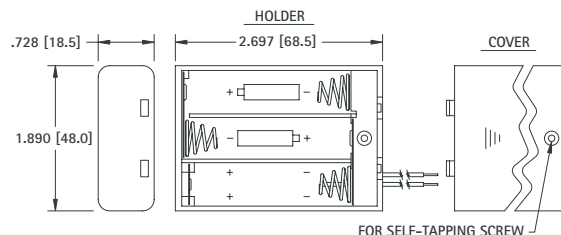
For "AA"

Holds Two (2) "AA" Cells in Series



CAT. NO. 2490

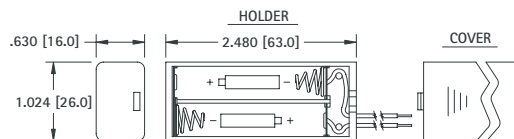
Holds Three (3) "AA" Cells in Series



CAT. NO. 2487

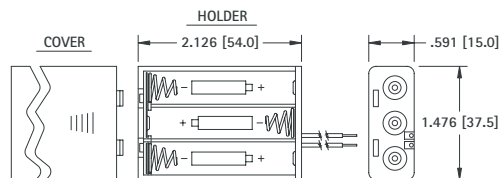
For "AAA"

Holds Two (2) "AAA" Cells in Series



CAT. NO. 2489

Holds Three (3) "AAA" Cells in Series



CAT. NO. 2484

PLASTIC BATTERY HOLDERS WITH SNAP-ON CONNECTORS

- Features separable "snap-on/snap-off" battery connector (9 Volt type) to assure reliable connections to battery powered equipment, controls and systems
- Economical design, holders available for two, three or four cells. Wired in series to accept connector (9 Volt type)
- Batteries securely held in place to maintain a positive contact and a low contact resistance
- Battery contact springs self adjust to variations in battery length
- Withstands shock and vibration
- Ideally mates with Keystone 9 Volt battery straps and connectors (Refer to pages 22 & 23)

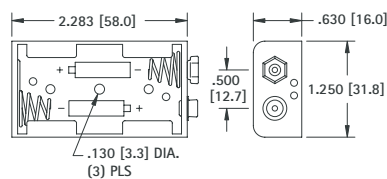
SPECIFICATIONS

Holder: Polypropylene

Male/Female Contacts: Brass, Nickel Plate

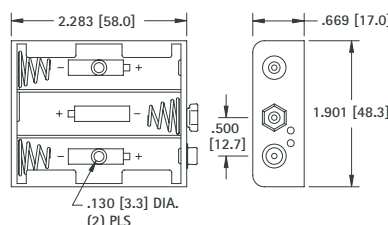
Springs: Spring Steel, Nickel Plate

Holds Two (2) "AA" Cells in Series



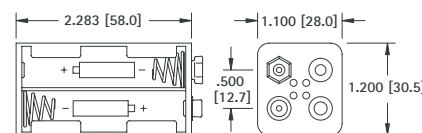
CAT. NO. 2474

Holds Three (3) "AA" Cells in Series



CAT. NO. 2475

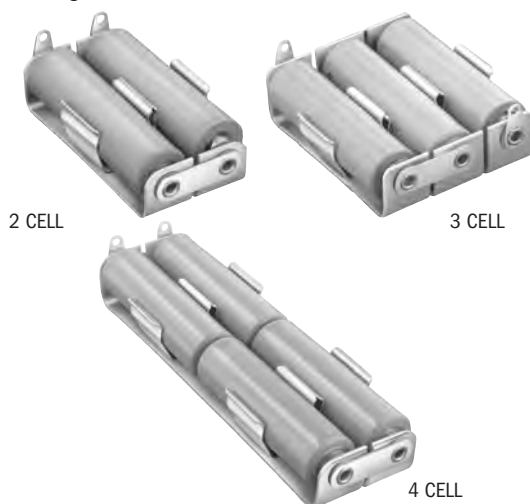
Holds Four (4) "AA" Cells in Series



CAT. NO. 2476

ELIMINATES WIRING · LABOR SAVING

Features jumper straps insulated from the Aluminum base. Batteries held in series circuit without need of additional wiring.

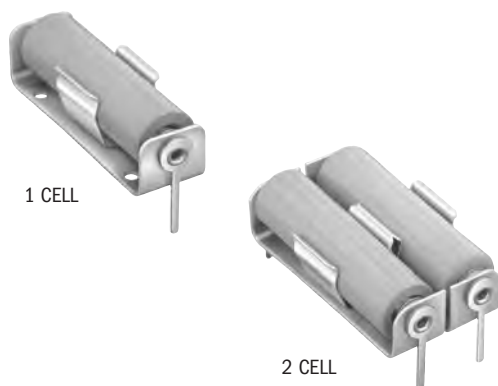


CAT. NO.	HOLDS NO. OF CELLS	BATTERY CROSS REFERENCE			
		EVEREADY	DURACELL	RAY-O-VAC	NEDA
“AA” CELL HOLDERS		(BATTERY .531 (13.4) O.D.×1.906 (48.4) L) SIZE .565 (14.5) 1.988 (50.5)			
146	2	E9, EV15, EN91, CH15, E133, E133N, E177, 505, 523, 1015, 1215	ZM9, RM12R, NC15AA, M15F, M15AA, TR133R, TR177, M505, MN1500, PC1500	5AA, 615, 815, 7AA	15, 15A, 15C, 15D, 15F, 15M, 15NC, 221, 1101M, 1113M, 1306AP, 1306M, 1314M, 1606M
147	3				
148	4				
“C” CELL HOLDERS		(BATTERY .875 (22.2) O.D.×1.875 (47.6) L) SIZE 1.125(28.6) 1.969 (50.0)			
149	2	CH35, E93, 935, 1235, EV35, EN93	M14F, M14HD, NC14C, TR286, MN1400, PC1400	1C, 614, 814,	14A, 14C, 14D, 14F, 14NC, 1600M
150	3				
151	4				
“D” CELL HOLDERS		(BATTERY 1.187 (30.1) O.D.×2.312 (58.7) L) SIZE 1.375 (34.9) 2.412 (61.3)			
152	2	CH50, E95, 950, 1250, EV50, EN95	M13F, NC13D, S42, M13HD, TR289, MN1300, PC1300	2D, 6D, 613, 813	13A, 13C, 13D, 13F, 13NC, 1115M, 1810M
153	3				
158	4				

ALUMINUM HOLDERS WITH PC LUGS

ELIMINATES WIRING · LABOR SAVING

For printed circuitry we have standardized our most popular holders with PC Lugs. Choice of single or multiple holders. "AA" assembled with Cat. No. 4002 lug. "C" and "D" assembled with Cat. No. 4003 lug. (Refer to page 50)

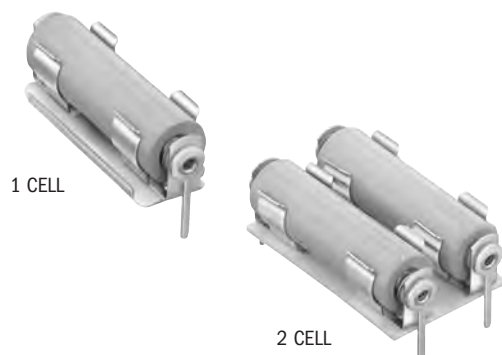


CAT. NO.	HOLDS NO. OF CELLS	BATTERY CROSS REFERENCE			
		EVEREADY	DURACELL	RAY-O-VAC	NEDA
“AA” CELL HOLDERS		(BATTERY .531 (13.4) O.D.×1.906 (48.4) L) SIZE .565 (14.5) 1.988 (50.5)			
2222	1	E9, EV15, EN91, CH15, E133, E133N, E177, 505, 523, 1015, 1215	ZM9, RM12R, NC15AA, M15F, M15AA, TR133R, TR177, M505, MN1500, PC1500	5AA, 615, 815, 7AA	15, 15A, 15C, 15D, 15F, 15M, 15NC, 221, 1101M, 1113M, 1306AP, 1306M, 1314M, 1606M
2223	2				
“C” CELL HOLDERS		(BATTERY .875 (22.2) O.D.×1.875 (47.6) L) SIZE 1.125 (28.6) 1.969 (50.0)			
2224	1	CH35, E93, 935, 1235, EV35, EN93	M14F, M14HD, NC14C, TR286, MN1400, PC1400	1C, 614, 814,	14A, 14C, 14D, 14F, 14NC, 1600M
2225	2				
“D” CELL HOLDERS		(BATTERY 1.187 (30.1) O.D.×2.312 (58.7) L) SIZE 1.375 (34.9) 2.412 (61.3)			
2226	1	CH50, E95, 950, 1250, EV50, EN95	M13F, NC13D, S42, M13HD, TR289, MN1300, PC1300	2D, 6D, 613, 813	13A, 13C, 13D, 13F, 13NC, 1115M, 1810M
2227	2				

STEEL HOLDERS WITH PC LUGS

ELIMINATES WIRING · LABOR SAVING

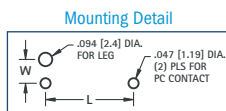
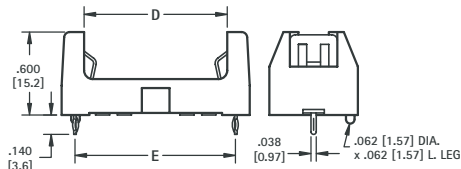
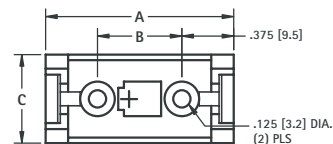
For printed circuitry we have standardized our most popular holders with PC Lugs. Choice of single or multiple holders. "AA" assembled with Cat. No. 4002 lug. "C" and "D" assembled with Cat. No. 4003 lug. (Refer to page 50)



CAT. NO.	HOLDS NO. OF CELLS	BATTERY CROSS REFERENCE			
		EVEREADY	DURACELL	RAY-O-VAC	NEDA
		(BATTERY .531 (13.4) O.D.×1.906 (48.4) L) SIZE .565 (14.5) 1.988 (50.5)			
“AA” CELL HOLDERS					
2228	1	E9, EV15, EN91, CH15, E133, E133N, E177, 505, 523, 1015, 1215	ZM9, RM12R, NC15AA, M15F, M15AA, TR133R, TR177, M505, MN1500, PC1500	5AA, 615, 815, 7AA	15, 15A, 15C, 15D, 15F, 15M, 15NC, 221, 1101M, 1113M, 1306AP, 1306M, 1314M, 1606M
2229	2				
		(BATTERY .875 (22.2) O.D.×1.875 (47.6) L) SIZE 1.125 (28.6) 1.969 (50.0)			
“C” CELL HOLDERS					
2230	1	CH35, E93, 935, 1235, EV35, EN93	M14F, M14HD, NC14C, TR286, MN1400, PC1400	1C, 614, 814,	14A, 14C, 14D, 14F, 14NC, 1600M
2231	2				
		(BATTERY 1.187 (30.1) O.D.×2.312 (58.7) L) SIZE 1.375 (34.9) 2.412 (61.3)			
“D” CELL HOLDERS					
2232	1	CH50, E95, 950, 1250, EV50, EN95	M13F, NC13D, S42, M13HD, TR289, MN1300, PC1300	2D, 6D, 613, 813	13A, 13C, 13D, 13F, 13NC, 1115M, 1810M
2233	2				

For "1/2AA" · "AA" · "2/3A"

SHOWN
WITH OPTIONAL
RETAINER COVER
INSTALLED



SPECIFICATIONS

Base: PBT, UL Rated 94V-0

Retainer Cover: PBT, UL Rated 94V-0

Contacts: .012 (.30) thick Spring Steel,
Tin Nickel Plate

FEATURES

- Snap-In PC contact holds in position for wave soldering
- Tin Nickel Plated contacts for excellent solderability and durability
- Polarity clearly marked for orientation
- Low Profile, space-saving
- Snap-on retainer cover (optional) retains battery securely to withstand shock and vibration. Helps protect against shorting. Tamper-proof.

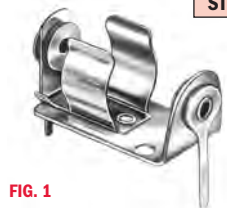
APPLICATIONS

- Computer memory, power transfer and back-up systems
- Video and telecommunications power back-up requirements
- Preprogrammed video and electronic games
- Microprocessor, microcomputers, minicomputers, notebook, laptop and handheld computer memory hold applications
- Emergency power systems
- Residential, industrial and commercial security and fire alarm systems

HOLDER	COVER	DIMENSIONS					MTG HOLES		CELL SIZE	BATTERY CROSS REFERENCE
CAT. NO.	CAT. NO.	A (MAX)	B	C	D	E	L	W		
108	108C	1.360 (34.5)	.610 (15.5)	.640 (16.3)	1.030 (26.2)	1.160 (29.5)	1.160 (29.5)	.279 (7.1)	"1/2 AA"	Eveready: 544, Duracell: PX28L, Kodak: K28A & KS28, Panasonic: CR14250, Saft: LCP3, Electrochem: 3B955, Maxell: 4LR44, Sanyo: CR14250SE
1028	1028C	2.360 (59.9)	1.610 (40.9)	.640 (16.3)	2.030 (51.6)	2.160 (54.9)	2.160 (54.9)	.279 (7.1)	"AA"	Eveready: E9, EV15, E91, E177, 505, 1015, Duracell: ZM9, NC15, M15F, TR177, M505, MN1500, PC1500, Panasonic: UM-3 & P-45AA, Sanyo: N-600AA & N-700AA, Rayovac: 5AA, 7AA, 615, 815
1029	1029C 1029LC	1.700 (43.2)	.950 (24.1)	.720 (18.3)	1.375 (34.9)	1.500 (38.1)	1.500 (38.1)	.320 (8.1)	"2/3 A"	Duracell: DL2/3A, Panasonic: CR123A, Saft: 450SC & VR0450, Electrochem: 3B793 & 3B950, Sanyo: CR17335SE, Kodak: K123L

RUGGED STEEL & ALUMINUM LITHIUM CELL HOLDERS

STEEL HOLDERS

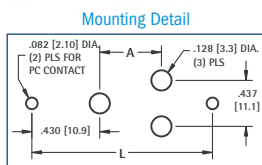
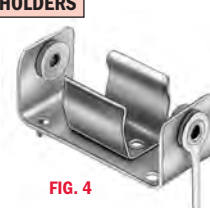


- Available in steel and aluminum
- Ideal for punishing applications
- Sturdily constructed of quality materials
- Contacts made from Brass, Nickel Plate

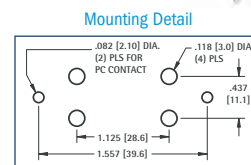
ADDITIONAL SPECIFICATIONS

Steel Holders: Refer to page 13
Aluminum Holders: Refer to page 15

ALUMINUM HOLDERS



STD LUGS	FIG. NO.	PC LUGS	FIG. NO.	BATTERY SIZE	BATTERY DIA.	DURA-CELL	PANA-SONIC	SANYO (G.E.)
1103	2	2103	1	"1/2 AA"	.510 × .990 (13.0 × 25.1)	P × 28L	CR14250	CR14250SE
1105	2	2105	1	"1/2 A"	.611 × .866 (15.5 × 22.0)	—	BR-1/2A	—
132	3	131	4	"2/3 A"	.661 × 1.315 (16.8 × 33.4)	DL-2/3A	BR-2/3A	CR17335SE



6 VOLT LITHIUM CELL HOLDERS

224



223



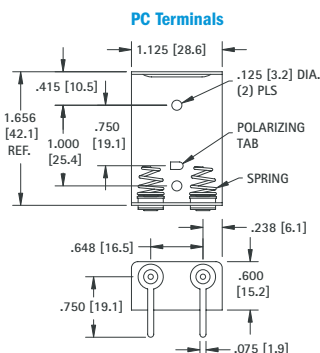
- Polarizing Tab for proper orientation
- Lightweight, ideal for rugged applications
- DL223A or Equivalent Batteries

SPECIFICATIONS

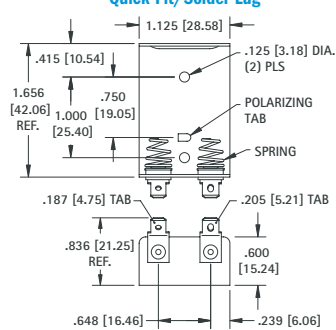
Frame: Aluminum 2024-T3 **Terminals:** Brass, Tin Plate

Spring Contacts: .025 (.64) Dia. Spring Steel, Nickel Plate

CAT. NO. 224



Quick Fit/Solder Lug



CAT. NO. 223

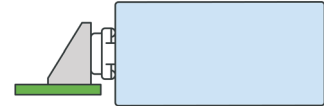
HORIZONTAL 9 VOLT PC SNAP-ON CONTACTS

Mounts Directly to Printed Circuit Board

- Space saving design installs directly onto the PC board
- Suitable for .062 (1.57) to .093 (2.36) thick PC boards
- Ideal for self-contained battery compartments



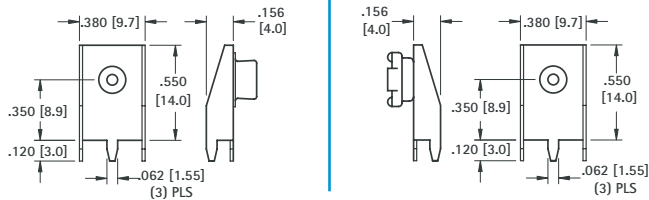
To Mount Battery "On" PC Board
Use Cat. No. 593 and Cat. No. 594



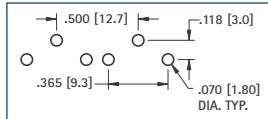
To Mount Battery "Off" PC Board
Use Cat. No. 635 and Cat. No. 636

MATERIAL: Frame: .015 (.38) thick Steel, Tin Plate; **Contacts:** Steel, Nickel Plate

"On-Board"



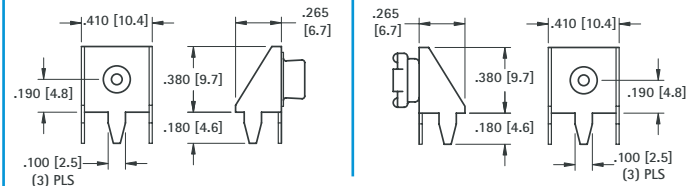
Mounting Detail for Two Contacts



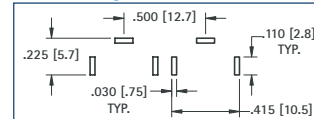
CAT. NO. 593 (Male)

CAT. NO. 594 (Female)

"Off-Board"



Mounting Detail for Two Contacts



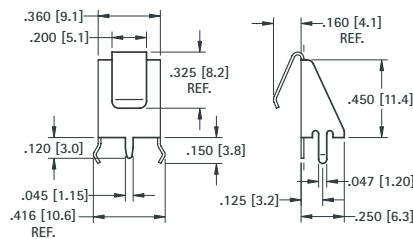
CAT. NO. 635 (Male)

CAT. NO. 636 (Female)

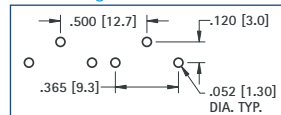
HORIZONTAL 9 VOLT PC LEAF-SPRING CONTACT

- Ideal "Slide-In" contact for easy installation and removal of 9 Volt batteries
- Space saving design installs directly onto the PC board
- Suitable for .062 (1.57) to .093 (2.36) thick PC boards
- Reliable leaf-spring assures low contact resistance
- Ideal for self-contained battery compartments
- Snap-in mounting legs holds contact secure during wave soldering

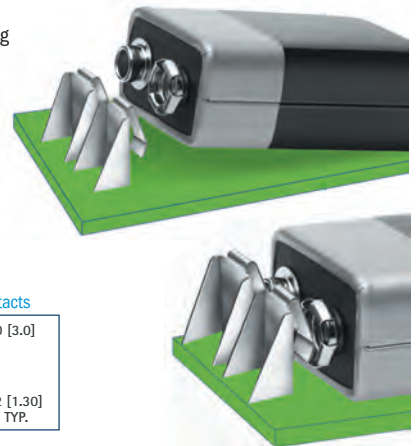
MATERIAL: .012 (.30) thick Spring Steel, Tin Nickel Plate



Mounting Detail for Two Contacts



CAT. NO. 590



VERTICAL 9 VOLT PC SNAP-ON CONTACT

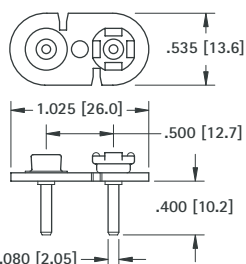
- Space saving, economical
- Excellent mechanical strength
- Low contact resistance
- Durable fibre base
- Wave solderable
- Anti-Wicking Design



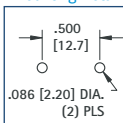
SPECIFICATIONS

Base: .062 (1.57) thick Fibre
Contacts: Steel, Nickel Plate
Pins: Brass, Tin Plate

CAT. NO. 968 (with PC Pins)



Mounting Detail



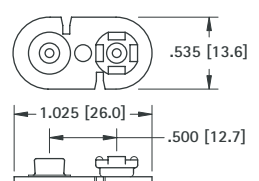
9 VOLT SNAP-ON CONTACT

- Cost saving design
- Ideal for custom applications
- Attach your own terminals and wire leads



SPECIFICATIONS

Base: .062 (1.57) thick Fibre
Contacts: Steel, Nickel Plate



CAT. NO. 68 (without PC Pins)



1294



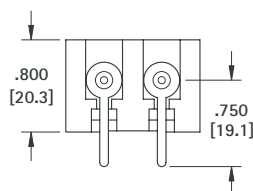
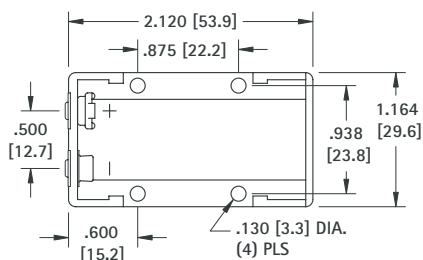
1295

SPECIFICATIONS

Body: Molded from high impact, Glass Filled Nylon

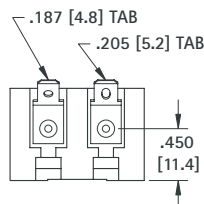
Terminals: Brass, Tin Plate

Contacts: Steel, Nickel Plate



CAT. NO. 1294

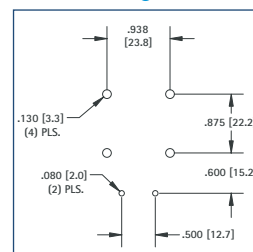
PC Terminals



CAT. NO. 1295

Quick-Fit Terminals

Mounting Detail



Holds any size, any shape, standard 9 Volt battery. Eliminates need to specify an exact battery brand, size or shape. Ideal for power source or memory back-up use in PLC, telecommunications, data processing, security systems, clocks, radios, toys and appliances.

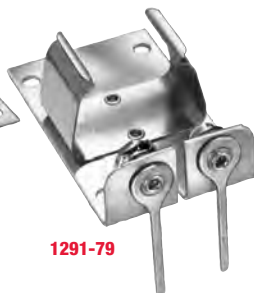
- Male-female snap-in terminals assure positive contact and proper polarity
- Durable, rugged construction
- Excellent spring retention — holds battery in place
- Withstands severe shock and vibration
- Operating temperature range: -40°F to +266°F (-40°C to +130°C)
- Impervious to most industrial solvents

9 VOLT SNAP-IN BATTERY HOLDERS

For use with standard 9 Volt battery. Battery snaps in place to insure positive contact. Ideal where severe shock and vibration are encountered. Available with standard solder lugs or printed circuit lugs.



1290-79



1291-79

SPECIFICATIONS

Frame: Aluminum

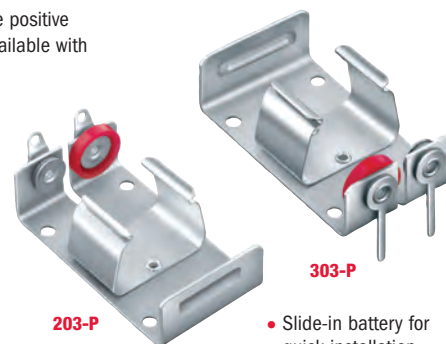
Solder Lugs: Brass, Tin Plate

PC Lugs: Brass, Tin Plate

Contacts & Clips: Steel, Nickel Plate

Insulation: Resin Impregnated

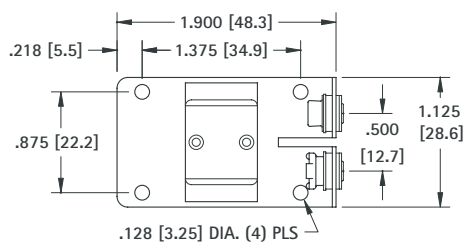
Polarizing Washer: Polyethylene



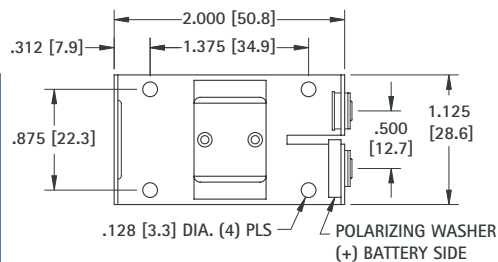
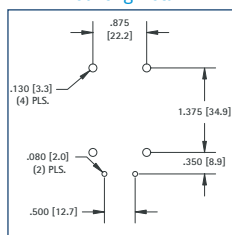
303-P

203-P

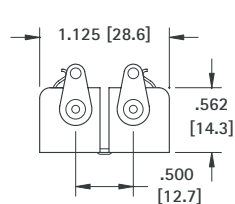
- Slide-in battery for quick installation and replacement
- Polarity clearly marked



Mounting Detail

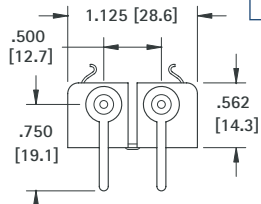


POLARIZING WASHER (+) BATTERY SIDE



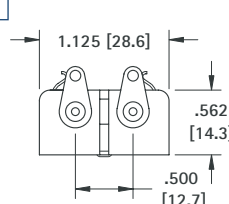
CAT. NO. 1290-79

Solder Lugs



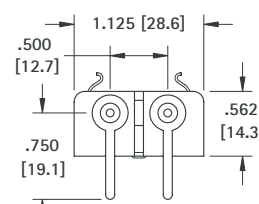
CAT. NO. 1291-79

PC Lugs



CAT. NO. 203-P

Solder Lugs



CAT. NO. 303-P

PC Lugs

NOTE: For battery thicknesses under .640 (16.3); specify Cat. No. 1290 or 1291.

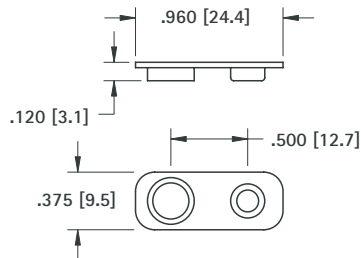
PROTECTIVE BATTERY CAP

- Protects 9 Volt batteries and battery packs when they are not in use
- Snap-fits onto battery contacts
- Both male and female contacts are covered, minimizing physical damage which can occur during battery handling, shipping and storage
- Shields the battery contacts and reduces the potential of a short circuit between battery poles
- Protects sensitive electronic equipment, systems and circuits, cap prevents unwanted electrical discharges
- Protects the battery contacts from damage due to dust, dirt and contamination

MATERIAL:

Impact Resistant Polypropylene, Black

CAT. NO. 96

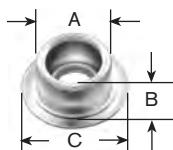


BATTERY SNAP-ONS

For most electronic applications requiring a quick connect and disconnect of circuit. Commonly used with 9 Volt or other batteries designed with snap fasteners. Ideal for temporary or permanent means of connecting without soldering. Can be cascaded together for multiple connections.

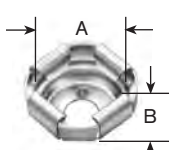
SOCKET OR STUD ONLY

FIG. 1



Stud only

FIG. 2



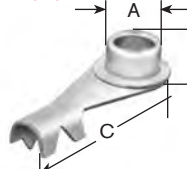
Socket only

CAT. NO.	FIG. NO.	A	B	C	HOLE	SIZE	MATERIAL
261*	1	.225 (5.7)	.135 (3.4)	.312 (7.9)	.093 (2.4)	Junior	Steel, Nickel Plate
269*	2	.205 (5.2)	.156 (4.0)	—	—		
262	1	.283 (7.2)	.143 (3.6)	.425 (10.8)	.125 (3.2)	Senior	Brass, Nickel Plate
270	2	.265 (6.7)	.156 (4.0)	—	—		

*Use Jr. Socket and stud for standard 9 Volt Battery

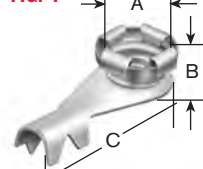
SOCKET OR STUD W/CRIMP LUG

FIG. 3



Stud w/Crimp Lug

FIG. 4



Socket w/Crimp Lug

CAT. NO.	FIG. NO.	A	B	C	SIZE	MATERIAL
263*	3	.225 (5.7)	.170 (4.3)	.790 (20.1)	Junior	Stud: Steel, Nickel Plate Lug: Brass, Tin Plate
271*	4	.205 (5.2)	.200 (5.1)	.790 (20.1)		
264	3	.283 (7.2)	.185 (4.7)	.840 (21.3)	Senior	Stud: Brass, Nickel Plate Lug: Brass, Tin Plate
272	4	.265 (6.7)	.185 (4.7)	.835 (21.2)		

*Use Jr. Socket and stud for standard 9 Volt Battery

DIMENSIONS ARE FOR REFERENCE ONLY

DUAL 9 VOLT BATTERY STRAP

This dual battery strap is pre-wired for connecting two 9 Volt batteries. Base made from fibre material with steel, nickel plated contacts. Wires have tinned copper conductors, PVC insulation and the ends are stripped for easy connection. Wires meet UL/CSA #1061 requirements.

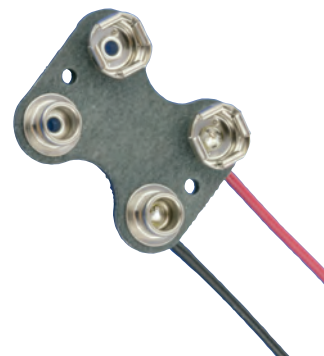
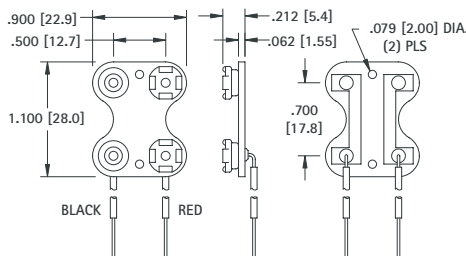
SPECIFICATIONS

Contacts: Steel, Nickel Plate
Wire: #22 AWG, 7/30 Prebond
End Strip: .375 (9.5) Long, Tinned

CAT. NO.	*LEAD LENGTH
227	7.00 (177.8)

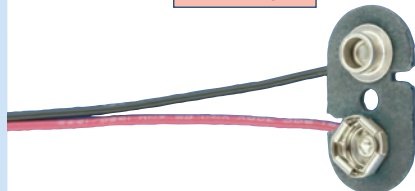
*Tolerance on lead length +/- .250 (6.4)

PARALLEL



PREMIUM 9 VOLT BATTERY STRAPS

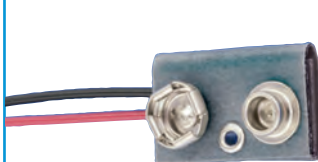
FIBRE BASE



CAT. NO.	*LEAD LENGTH	Base Size:
68	NONE	1.025 (26.0) x .535 (13.6)
72-4	4.00 (101.6)	.062 (1.57) thick
72	7.00 (177.8)	Contacts: Steel, Nickel Plate
72-8	8.00 (203.2)	Wire: #22 AWG, 7/30 Prebond
		End Strip: .375 (9.5) Long, Tinned

*Tolerance on lead length +/- .250 (6.4)

FIBRE COVER



Cover Size:
.900 (22.9) x .575 (14.6)
Contacts: Steel, Nickel Plate
Wire: #22 AWG, 7/30 Prebond
End Strip: .375 (9.5) Long, Tinned

*Tolerance on lead length +/- .250 (6.4)

- Fully Insulated
- Flexible assembly

I - STYLE

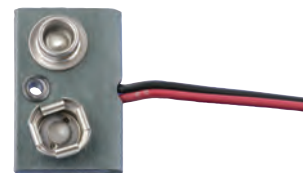
CAT. NO.	*LEAD LENGTH
83-4	4.00 (101.6)
83	6.50 (165.1)
83-8	8.00 (203.2)

Cover Size:
.900 (22.9) x .575 (14.6)
Contacts: Steel, Nickel Plate
Wire: #22 AWG, 7/30 Prebond
End Strip: .375 (9.5) Long, Tinned

*Tolerance on lead length +/- .250 (6.4)

T - STYLE

CAT. NO.	*LEAD LENGTH
85-4	4.00 (101.6)
85-6	6.50 (165.1)
85-8	8.00 (203.2)



SHIELDED 9 VOLT BATTERY STRAPS

- Insulates and shields 9 Volt battery snap-on connector contacts
- Assures safe secure use, reduces the potential of short circuits and prevents tampering with battery contacts
- Protects circuits, prevents unwanted electrical discharge due to unintended grounding
- Protects battery contacts from dust, dirt, and physical damage
- Ideal for rugged applications, made of high impact molded plastic with integral wire lead strain relief

Modifications available with different wire lengths.

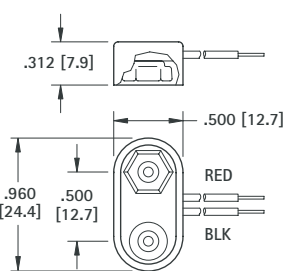
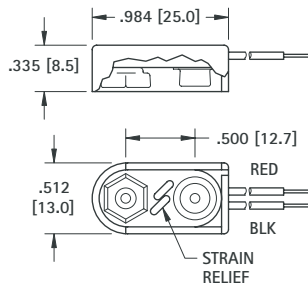
SPECIFICATIONS

Base: ABS

Male/Female Contacts: Brass, Nickel Plate

Wires (Red & Black): #26 AWG, Tinned, .187 (4.8) end strip, UL/CSA1007

*Tolerance on lead length +/- .250 (6.4)



I STYLE		T STYLE	
MOLDED		MOLDED	
CAT. NO.	*LEAD LENGTH	CAT. NO.	*LEAD LENGTH
84-4	4.00 (101.6)	81-4	4.00 (101.6)
84-6	6.00 (152.4)	81-6	6.00 (152.4)
84-8	8.00 (203.2)	81-8	8.00 (203.2)



PREMIUM 9 VOLT BATTERY STRAPS

- Fully Assembled
- Rigid Assembly
- Ideal for rugged applications, made of high impact molded plastic with integral wire lead strain relief

Rigidly constructed. Nickel plate, male and female contacts. Female contacts are spring temper. Accepts numerous insertions to meet U.L. approved standards. Provides excellent mechanical strength and low contact resistance. Wires have tinned copper conductors, PVC insulation and the ends are stripped for easy connection.

Wires are rated to 176°F (80°C) and 300V and meet UL/CSA #1061/#1007 requirements.

Modifications available with different wire lengths.

SPECIFICATIONS

Contacts: Phosphor Bronze, Nickel Plate

Wire: #26 AWG, 7/34

End Strip: .250 (6.4) Long, Tinned

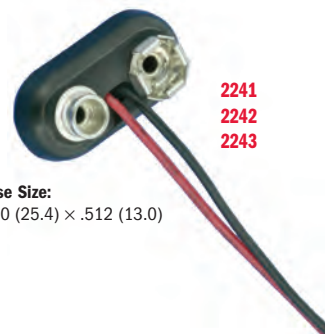
Base: Polyethylene

*Tolerance on lead length +/- .250 (6.4)

I STYLE		T STYLE	
MOLDED		MOLDED	
CAT. NO.	*LEAD LENGTH	CAT. NO.	*LEAD LENGTH
2238	4.00 (101.6)	2241	4.00 (101.6)
2239	6.00 (152.4)	2242	6.00 (152.4)
2240	8.00 (203.2)	2243	8.00 (203.2)



Base Size:
1.062 (27.0) x .512 (13.0)



Base Size:
1.00 (25.4) x .512 (13.0)

ECONOMY 9 VOLT BATTERY STRAPS

- Fully Assembled
- Rigid Assembly

When product cost is of the utmost importance these economy battery straps will suit your needs. Brass contacts, nickel plated with vinyl or ABS covering. Wires have tinned copper conductors, PVC insulation and the ends are stripped for easy connection. Wires meet UL/CSA #1007 requirements.

Modifications available with different wire lengths

SPECIFICATIONS

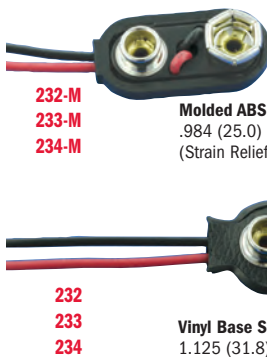
Contacts: Brass, Nickel Plate

Wire: #26 AWG, 7/34

End Strip: .250 (6.4) Long, Tinned

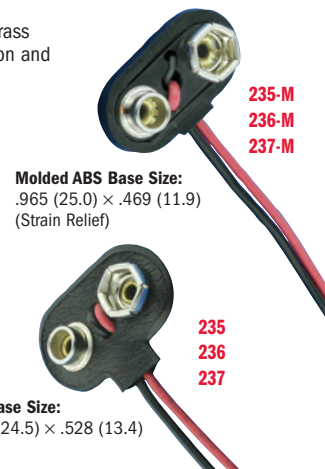
*Tolerance on lead length +/- .250 (6.4)

I STYLE			T STYLE		
MOLDED VINYL			MOLDED VINYL		
CAT. NO.	CAT. NO.	*LEAD LENGTH	CAT. NO.	CAT. NO.	*LEAD LENGTH
232-M	232	4.00 (101.6)	235-M	235	4.00 (101.6)
233-M	233	6.00 (152.4)	236-M	236	6.00 (152.4)
234-M	234	8.00 (203.2)	237-M	237	8.00 (203.2)



Molded ABS Base Size:
.984 (25.0) x .469 (11.9)
(Strain Relief)

Vinyl Base Size:
1.125 (31.8) x .530 (13.5)



Molded ABS Base Size:
.965 (25.0) x .469 (11.9)
(Strain Relief)

Vinyl Base Size:
1.000 (24.5) x .528 (13.4)

FIGURE 1

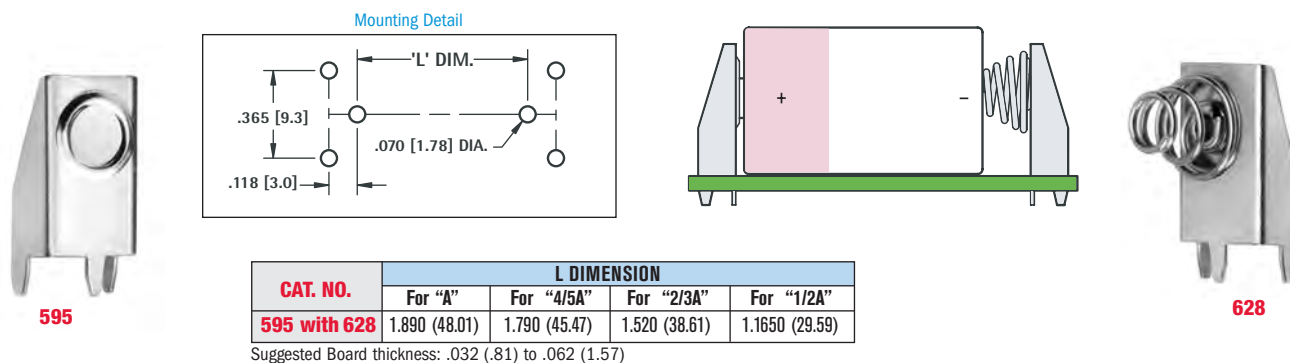


FIGURE 2

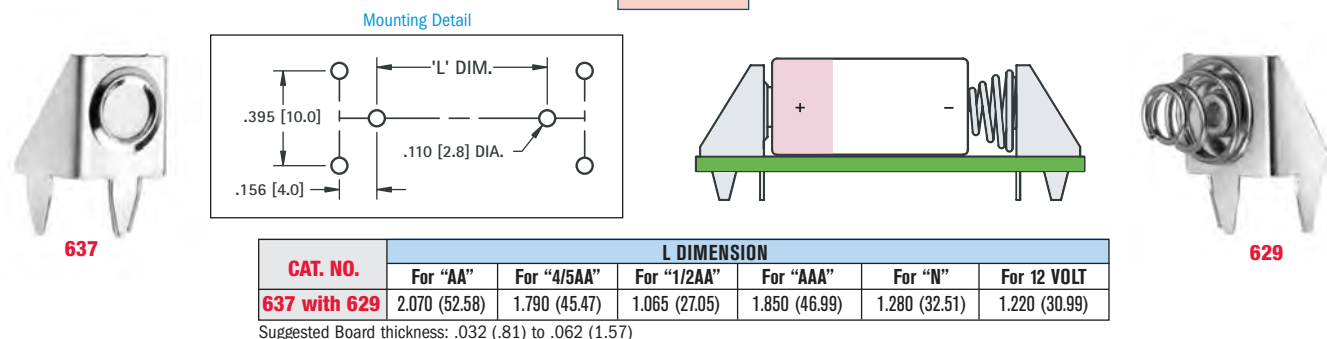


FIGURE 3

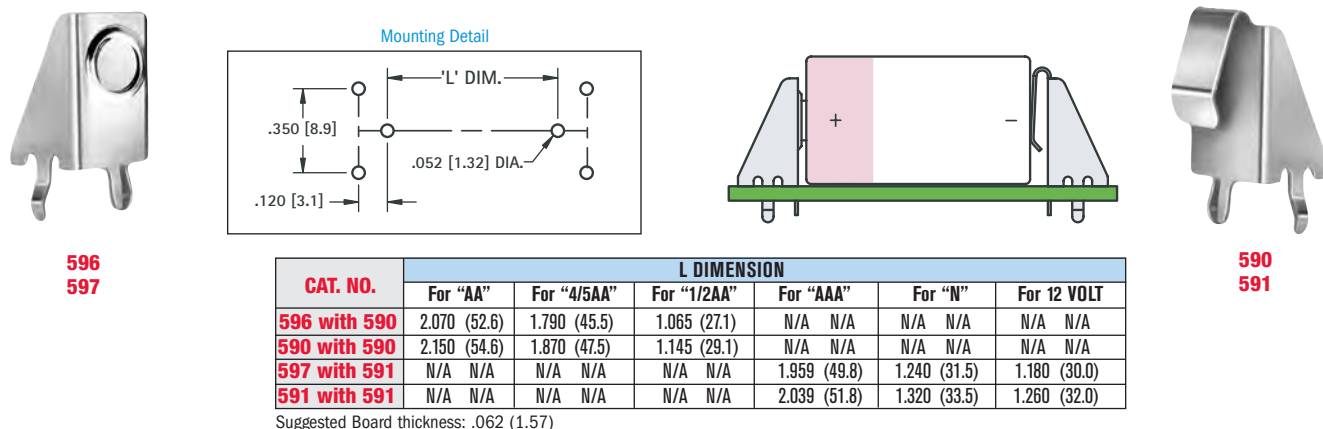
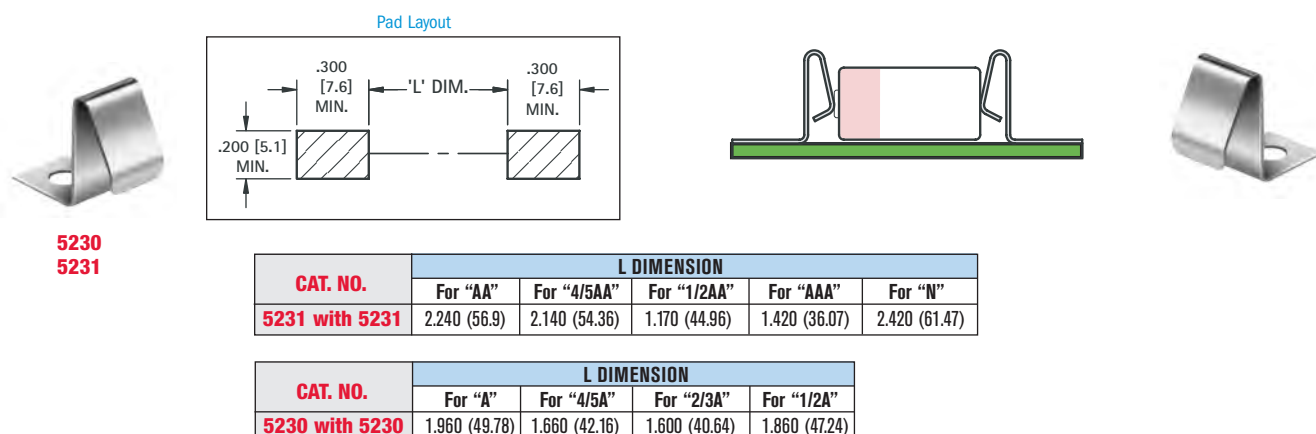


FIGURE 4



REFER TO PAGE 6 FOR PART DIMENSIONS

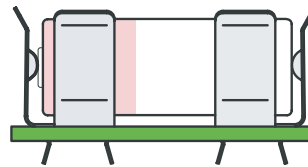
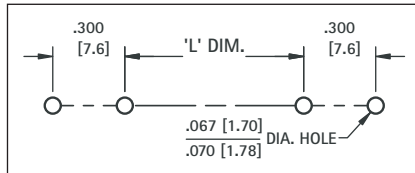
NOTE: ALL MOUNTING DIMENSIONS ARE FOR REFERENCE ONLY. VERIFY YOUR BATTERY LAYOUT PRIOR TO FABRICATION.

FIGURE 5



82
92
2915

Mounting Detail



52

CAT. NO.	L DIMENSION		
	For "AAA"	For "N"	For 12 VOLT
82 with 82	1.080 (27.4)	.510 (13.0)	.450 (11.4)

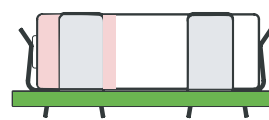
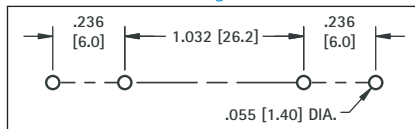
CAT. NO.	L DIMENSION						
	For "A"	For "4/5A"	For "2/3A"	For "1/2A"	For "AA"	For "4/5AA"	For "1/2AA"
52 with 52	1.120 (28.5)	1.020 (25.9)	.645 (16.4)	.300 (7.6)	1.320 (33.5)	1.020 (25.9)	.300 (7.6)
92 with 92	1.120 (1.12)	1.020 (25.9)	.645 (16.4)	.300 (7.6)	1.320 (33.5)	1.020 (25.9)	.300 (7.6)
2915 with 2915	1.120 (1.12)	1.020 (25.9)	.645 (16.4)	.300 (7.6)	1.320 (33.5)	1.020 (25.9)	.300 (7.6)

FIGURE 6



51

Mounting Detail



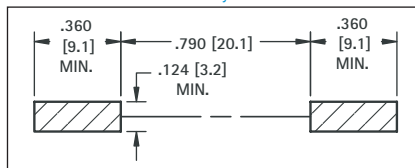
CAT. NO.	L DIMENSION
	For "AAAA"
51 with 51	1.032 (26.2)

FIGURE 7

Pad Layout



50



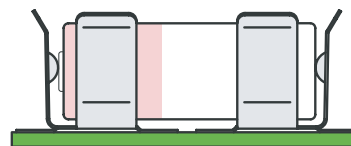
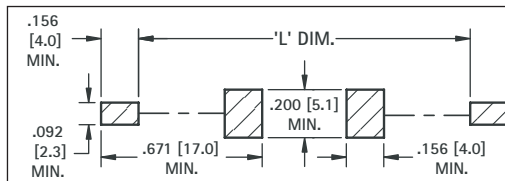
CAT. NO.	L DIMENSION
	For "AAAA"
50 with 50	1.032 (26.2)

FIGURE 8

Pad Layout



55



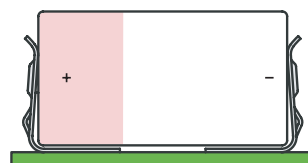
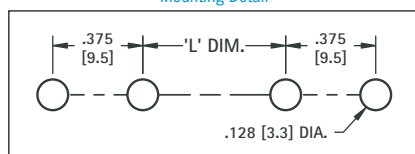
CAT. NO.	L DIMENSION		
	For "A"	For "4/5A"	For "2/3A"
55 with 55	1.880 (47.8)	1.280 (32.5)	1.220 (31.0)

FIGURE 9

Mounting Detail



206



207
208

CAT. NO.	L DIMENSION
	For "AA"
206 with 206	1.100 (27.9)

CAT. NO.	L DIMENSION
	For "C"
207 with 207	.812 (20.6)

CAT. NO.	L DIMENSION
	For "D"
208 with 208	1.250 (31.8)



204
209



202
288
210



290
291



228
238



292
294

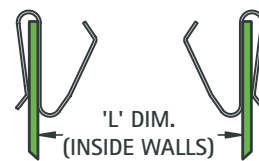


FIGURE 10

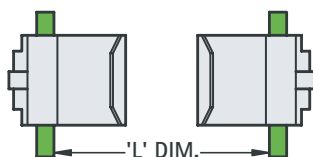


FIGURE 11



FIGURE 12

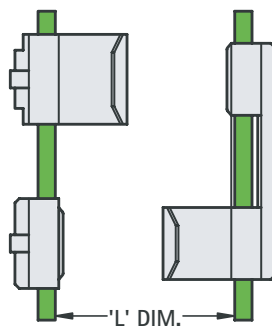


FIGURE 13

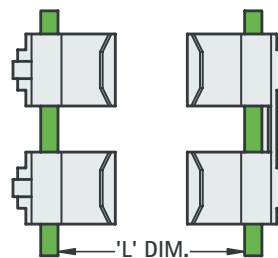
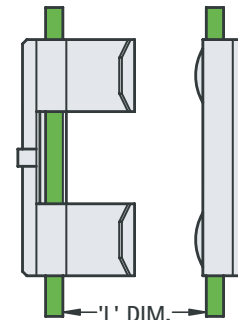


FIGURE 14



CAT. NO.	FIG NO.	L DIMENSION			
		For "AAAA"	For "AAA"	For "N"	For 12 VOLT
204 with 204	10	1.860 (47.2)	1.964 (49.9)	1.390 (35.3)	1.330 (33.8)
204 with 238	11	1.790 (45.5)	1.870 (47.5)	1.300 (33.0)	1.240 (31.5)
204 with 294	11	1.790 (45.5)	1.870 (47.5)	1.300 (33.0)	1.240 (31.5)
204 (2) with 202	13	1.860 (47.2)	1.964 (49.9)	1.390 (35.3)	1.330 (33.8)
202 with 294	14	1.790 (45.5)	1.870 (47.5)	1.300 (33.0)	1.240 (31.5)

CAT. NO.	FIG NO.	L DIMENSION				
		For "A"	For "4/5A" & "4/5AA"	For "2/3A"	For "1/2A" & "1/2AA"	For "AA"
209 with 209	10	2.090 (53.1)	1.990 (50.6)	1.620 (41.2)	1.270 (32.3)	2.270 (57.7)
209 with 228	11	1.950 (49.5)	1.850 (47.0)	1.480 (37.6)	1.130 (28.7)	2.130 (54.1)
209, 228 with 290	12	1.950 (49.5)	1.850 (47.0)	1.480 (37.6)	1.130 (28.7)	2.130 (54.1)
209, 228 with 291	12	1.950 (49.5)	1.850 (47.0)	1.480 (37.6)	1.130 (28.7)	2.130 (54.1)
209 (2) with 288	13	2.090 (53.1)	1.990 (50.6)	1.620 (41.2)	1.270 (32.3)	2.270 (57.7)
209 (2) with 210	13	2.090 (53.1)	1.990 (50.6)	1.620 (41.2)	1.270 (32.3)	2.270 (57.7)
210 with 292	14	1.980 (50.3)	1.880 (47.8)	1.500 (38.1)	1.150 (29.2)	2.160 (54.9)

Suggested wall thickness: .062 (1.57) through .078 (1.98)

FIGURE 15

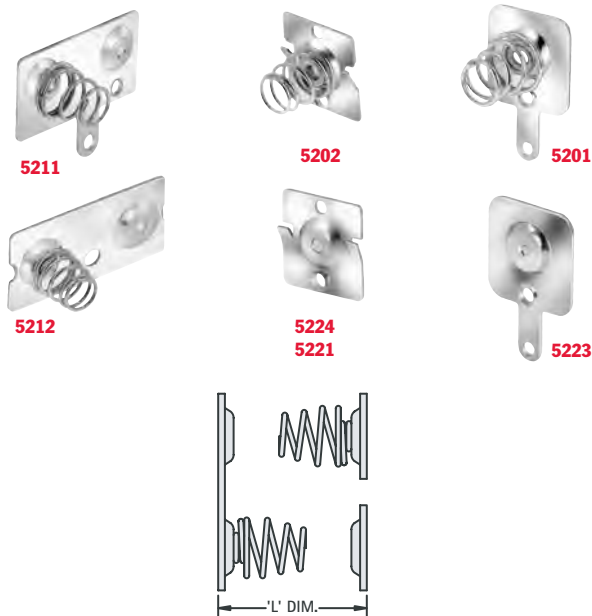


FIGURE 16



FIGURE 17



FIGURE 18

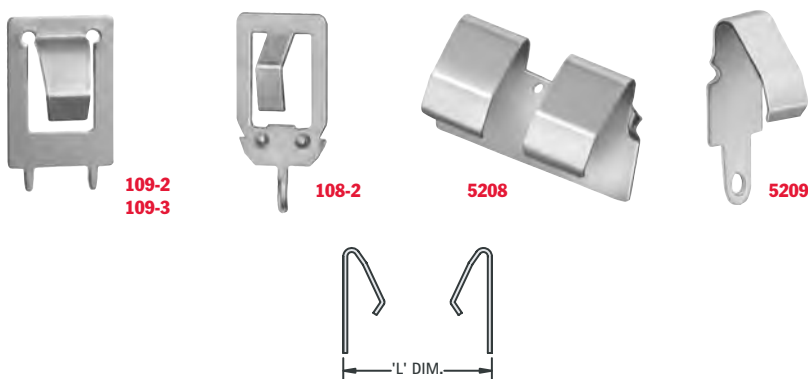
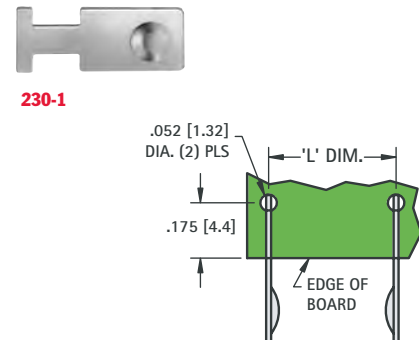
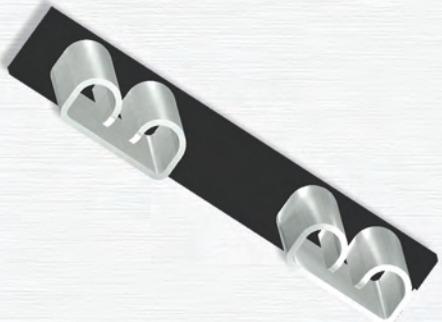
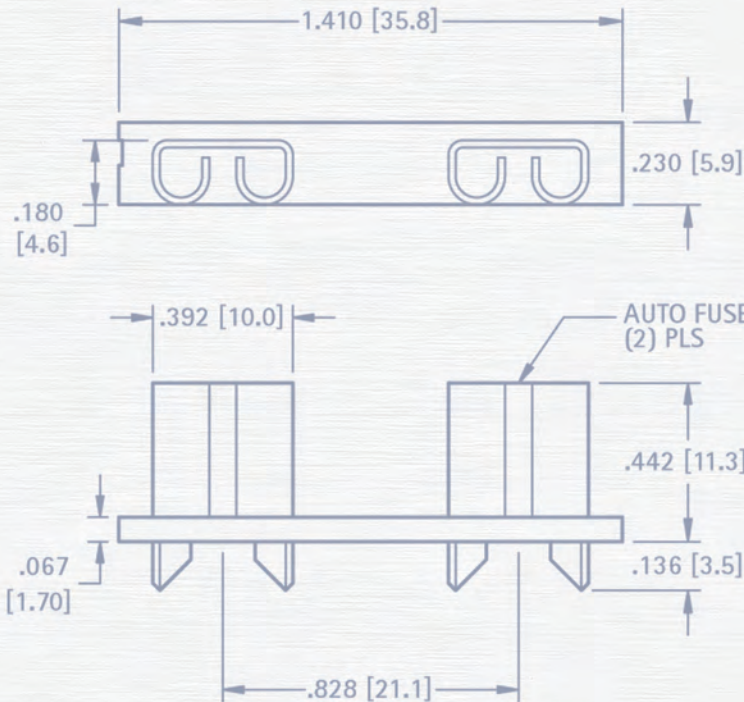


FIGURE 19



CAT. NO.	FIG NO.	PAGE NO.	"L" DIMENSION				
			For "A"	For "4/5A" "4/5AA"	For "2/3A"	For "1/2A" "1/2AA"	For "AA"
5211 with 5201, 5223	15	8	2.070 (52.58)	1.970 (50.04)	1.600 (40.64)	1.250 (31.75)	2.250 (57.15)
5212 with 5221, 5222	15	8	2.070 (52.58)	1.970 (50.04)	1.600 (40.64)	1.250 (31.75)	2.250 (57.15)
5227 with 5228	16	8	2.070 (52.58)	1.970 (50.04)	1.600 (40.64)	1.250 (31.75)	2.250 (57.15)
5224 with 5202	17	8	2.080 (52.83)	1.980 (50.29)	1.610 (40.89)	1.260 (32.00)	2.260 (57.40)
5223 with 5201	17	8	2.070 (52.58)	1.970 (50.04)	1.600 (40.64)	1.250 (31.75)	2.250 (57.15)
5221 with 5222	17	8	2.070 (52.58)	1.970 (50.04)	1.600 (40.64)	1.250 (31.75)	2.250 (57.15)
5208 with 5209, 5209	18	9	2.280 (57.91)	2.180 (55.37)	1.810 (45.97)	1.460 (37.08)	2.460 (62.48)
5209 with 5209	18	9	2.280 (57.91)	2.180 (55.37)	1.810 (45.97)	1.460 (37.08)	2.460 (62.48)
108-2 with 108-2	18	9	1.990 (50.55)	1.890 (48.01)	1.520 (38.61)	1.170 (29.72)	2.170 (55.12)
109-2 with 109-2	18	9	1.990 (50.55)	1.890 (48.01)	1.520 (38.61)	1.170 (29.72)	2.170 (55.12)
109-3 with 109-3	18	9	1.990 (50.55)	1.890 (48.01)	1.520 (38.61)	1.170 (29.72)	2.170 (55.12)

CAT. NO.	FIG. NO.	PAGE NO.	"L" DIMENSION			
			For "AAAA"	For "AAA"	For "N"	For 12 VOLT
5214 with 5225, 5203	15	9	1.880 (47.75)	1.980 (50.29)	1.380 (35.05)	1.320 (33.53)
5213 with 5203, 5225	15	9	1.880 (47.75)	1.980 (50.29)	1.380 (35.05)	1.320 (33.53)
5226 with 5204	17	9	1.880 (47.75)	1.980 (50.29)	1.380 (35.05)	1.320 (33.53)
5225 with 5203	17	9	1.880 (47.75)	1.980 (50.29)	1.380 (35.05)	1.320 (33.53)
108-2 with 108-2	18	9	1.840 (46.74)	1.940 (49.28)	1.340 (34.04)	1.280 (32.51)
230-1 with 230-1	19	9	1.642 (41.71)	1.732 (43.99)	1.142 (29.01)	1.102 (27.99)



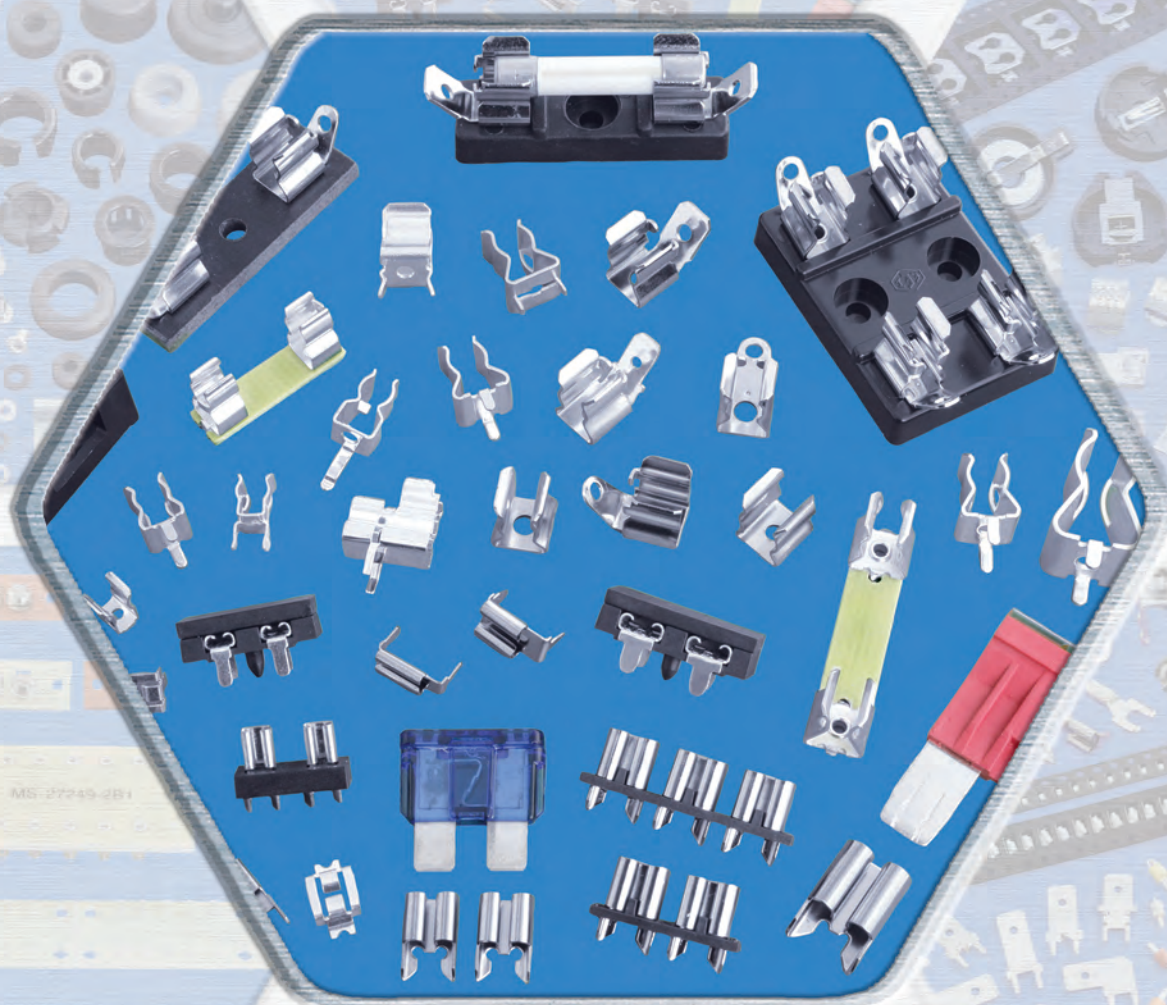
FUSE CLIPS & HOLDERS

Our comprehensive line of fuse clips, contacts and holders are ideally suited for use in today's industrial, electronic and automotive devices. Applications include:

- Delicate microcircuitry
- Consumer Electronics
- Telecom and Datacom devices
- Mini, Standard & Maxi blade Automotive Fuses
- High Shock and Vibration applications
- High Amperage applications
- UL approved devices

Our quality system is ISO 9001:2000 certified. Our products are in compliance with the RoHS directive. We provide 3D modeling, CAD and other application-engineering support for modifications, special designs or assembly requirements to assist you in choosing the right Keystone product for your application.

DATE	DESCRIPTION	REV.



SECTION CONTENTS

CLIPS

1AG thru 8AG, 5mm. 30-31
Automotive 34-36

HOLDERS

1AG thru 8AG, 5mm. 32-33
Automotive 34-36
Subminiature 37
MOUNTING DETAILS 38-41

FUSE CLIPS

- PC thru mount, surface mount and rivet types for 5mm, 1AG, 2AG, 3AG, 4AG, 5AG, 7AG & 8AG fuse sizes
- Low contact resistance
- Withstands shock and vibration
- Rated 6.3 to 30 Amps
- Custom designs and modifications available to your specifications

PC THRU MOUNT TYPES

- Available for 5mm, 1AG, 2AG, 3AG, 5AG, 7AG & 8AG sizes
- Low profile, space saving
- Snap-fit design enhances assembly and PC retention for wave soldering
- Available with orientation legs to assure proper PC installation
- Available with or without end stops

SURFACE MOUNT & RIVET TYPES

- Available for 5mm, 1AG, 2AG, 3AG, 4AG, 7AG & 8AG sizes
- Available with straight or 45° solder lugs
- Available with .187 (4.7), .205 (5.2) or .250 (6.4) or quick-fit tabs
- Low profile, space saving
- Available with or without end stops

Refer to pages 38-40 for Fuse Clip Layout and Mounting Details

5mm PC Clips

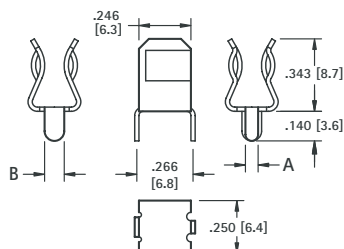


MATERIAL:

.020 (.51) thick Brass, Tin Plate

Current Rating: 15 Amps

CAT. NO.	A	B
3517	.060 (1.5)	.060 (1.5)
3518P	.060 (1.5)	.093 (2.4)



With or Without Orientation Legs



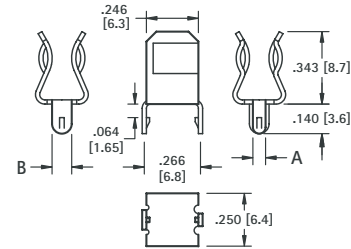
- With snap-in PC legs

MATERIAL:

.020 (.51) thick Brass, Tin Plate

Current Rating: 15 Amps

CAT. NO.	A	B
3512	.060 (1.5)	.060 (1.5)
3512P	.060 (1.5)	.093 (2.4)



With or Without Orientation Legs

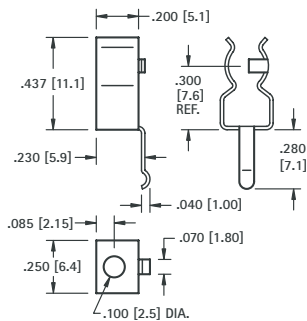


MATERIAL:

.016 (.41) thick Brass, Tin Plate

Current Rating: 6.3 Amps

CAT. NO. 3520

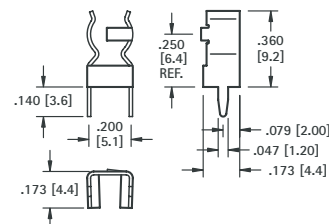


MATERIAL:

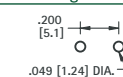
.016 (.41) thick Brass, Tin Plate

Current Rating: 10 Amps

CAT. NO. 3519



Mounting Detail



For 2AG or 5mm



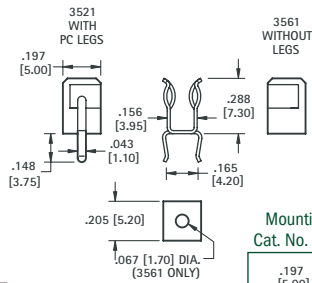
MATERIAL:

.016 (.41) thick Brass, Tin Plate

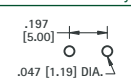
Current Rating: 10 Amps

CAT. NO. 3521 (THM with PC Legs)

CAT. NO. 3561 (SMT with Hole)



Mounting Detail Cat. No. 3521 Only



For 5mm/3AG

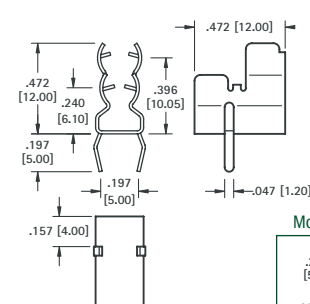


MATERIAL:

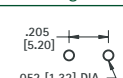
.016 (.41) thick Brass, Tin Plate

Current Rating: 15 Amps

CAT. NO. 3562



Mounting Detail



For 4AG (9/32 Dia.)

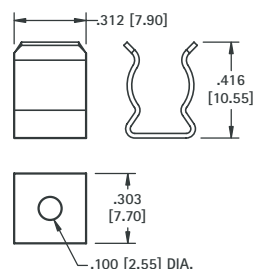


MATERIAL:

.020 (.51) thick Brass, Nickel Plate

Current Rating: 15 Amps

CAT. NO. 3565 (Without End Stops)



For 5AG (13/32 Dia.)

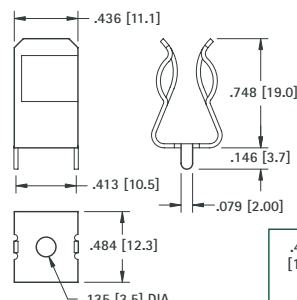


MATERIAL:

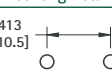
.030 (.76) thick Brass, Tin Plate

Current Rating: 30 Amps

CAT. NO. 3566



Mounting Detail



.250 (6.4) DIAMETER FUSE CLIPS

Refer to pages 38-40 for Fuse Clip Layout and Mounting Details

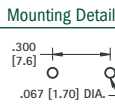
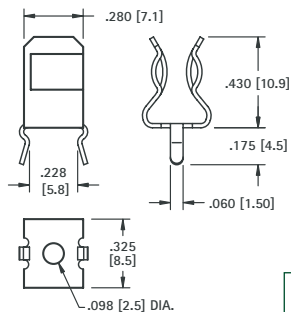
For 1AG, 3AG, 7AG, 8AG
THRU HOLE MOUNT TYPES

WITH SNAP-IN PC LEGS



MATERIAL:
.020 (.51) thick Brass, Tin Plate
Current Rating: 15 Amps

CAT. NO. 3513

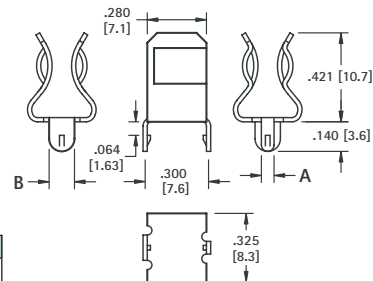


WITH SNAP-IN PC LEGS



MATERIAL:
.020 (.51) thick Brass, Tin Plate
Current Rating: 15 Amps

CAT. NO.	A	B
3515	.060 (1.5)	.060 (1.5)
3515P	.060 (1.5)	.093 (2.4)
3516P	.060 (1.5)	.120 (3.0)



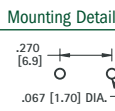
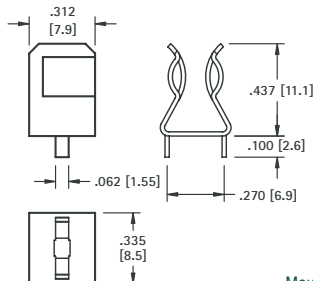
With or Without Orientation Legs

WITH STRAIGHT PC LEGS



MATERIAL:
.020 (.51) thick Brass, Tin Plate
Current Rating: 15 Amps

CAT. NO. 3530

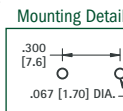
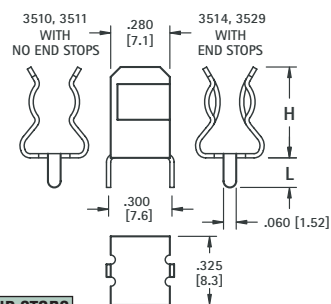


WITH STRAIGHT PC LEGS



MATERIAL:
.020 (.51) thick Brass, Tin Plate
Current Rating: 15 Amps

CAT. NO.	H	L	END STOPS
3510	.421 (10.7)	.140 (3.6)	NO
3529	.421 (10.7)	.140 (3.6)	YES
3511	.430 (10.9)	.250 (6.4)	NO
3514	.430 (10.9)	.250 (6.4)	YES

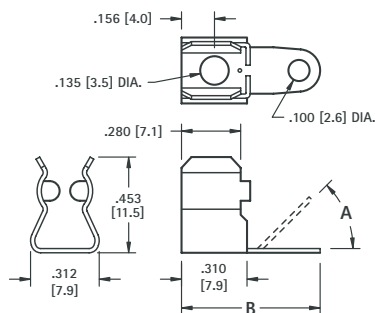


WITH SOLDER LUG



MATERIAL:
.020 (.51) thick Brass, Nickel Plate
Current Rating: 15 Amps

CAT. NO.	A	B
3533	Flat	.656 (16.7)
3535	45°	.562 (14.3)
3570	—	NO TAB



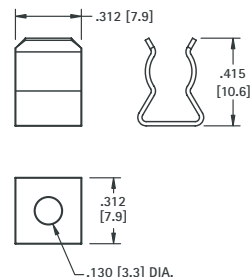
For 1AG, 3AG, 7AG, 8AG
RIVET & SURFACE MOUNT TYPES

LOW PROFILE



MATERIAL:
.020 (.51) thick Brass, Nickel Plate
Current Rating: 15 Amps

CAT. NO. 3531 (Without End Stops)

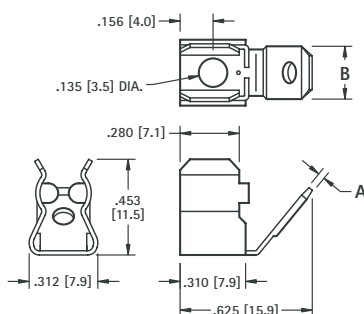


WITH QUICK-FIT TAB



MATERIAL:
.020 (.51) thick Brass, Nickel Plate
Current Rating: 15 Amps

CAT. NO.	A	B
4246	.020 (0.5)	.187 (4.7)
4247	.020 (0.5)	.205 (5.2)
4244	.032 (0.8)	.250 (6.4)

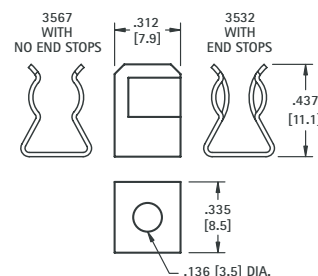


WITH OR WITHOUT END STOPS



MATERIAL:
.020 (.51) thick Brass, Nickel Plate
Current Rating: 15 Amps

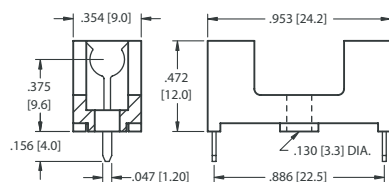
CAT. NO.	END STOPS
3532	YES
3567	NO



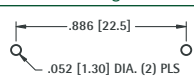
5mm FUSE HOLDERS

SLIM LINE & OPTIONAL COVER

- For 5mm x 20mm Fuse



Mounting Detail



- Optional cover with window protects and insulates fuse
- Flame Retardant

CAT. NO. 4628 - Holder

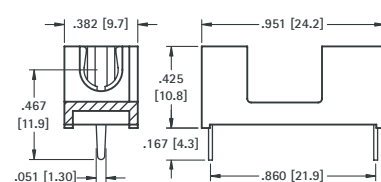
CAT. NO. 4628C - Cover only (with window)

SPECIFICATIONS

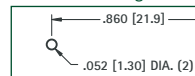
Base & Cover: Nylon,
UL Rated 94V-0
Clips: Brass, Tin Plate
Rated: 5 Amps @ 250V AC

LOW PROFILE & OPTIONAL COVER

- For 5mm x 20mm Fuse



Mounting Detail



- Low profile, space saving design
- Optional cover protects and insulates fuse
- Flame Retardant

CAT. NO. 4527 - Holder

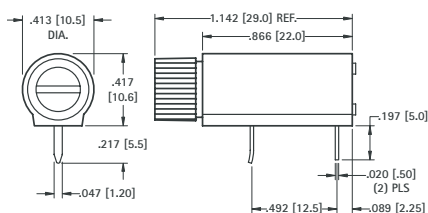
CAT. NO. 4527C - Cover only

SPECIFICATIONS

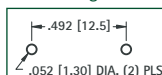
Base & Cover: Nylon,
UL Rated 94V-0
Clips: Brass, Tin Plate
Rated: 5 Amps @ 250V AC

FULLY INSULATED

- For 5mm x 20mm Fuse



Mounting Detail



- Shock resistant
- Ideal for board edge designs
- Fuse can be accessed from board edge
- Fuse is completely enclosed, protecting fuse from shorting and breaking
- End cap and body supplied unassembled

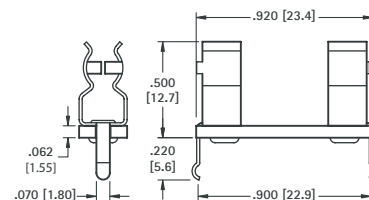
CAT. NO. 4525

SPECIFICATIONS

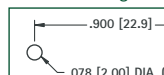
Base: PBT
Contacts: Brass, Tin Plate
Rated: 10 Amps @ 250V AC

PC SNAP-IN FUSE HOLDER

- For 5mm x 20mm Fuse



Mounting Detail



- Snap-in design for wave soldering
- Flame Retardant
- Optional cover protects and insulates fuse - Cat. No. 3527C

CAT. NO. 3527 - Holder

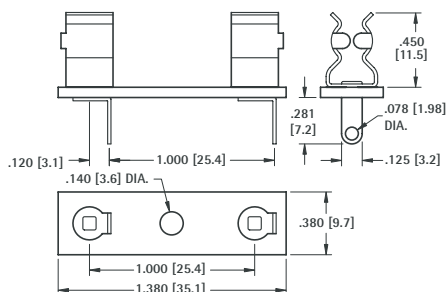
SPECIFICATIONS

Base: .062 (1.57) G-10, UL Rated 94V-0
Clips: Brass, Tin Plate
Rated: 6.3 Amps @ 250V AC

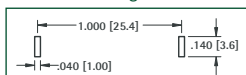
3AG FUSE HOLDERS

- For 3AG Fuses .250 x 1.250 (6.35 x 31.8)
- Provides greater mechanical strength than individual clips
- Flame Retardant
- One piece construction assures proper fuse clip orientation which also increases production efficiency
- Rated: 15 Amps @ 500V AC

TERMINATION LUGS CAN BE USED WITH WIRES OR PC MOUNT



Mounting Detail



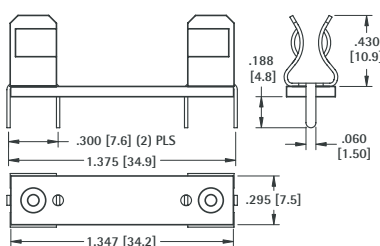
SPECIFICATIONS

Base: .062 (1.57) GPO-3,
UL Rated 94V-0
Clips: Brass, Tin Plate

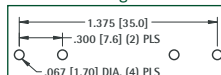
CAT. NO. 3526

Optional cover available - Cat. No. 4245C

PRESS-FIT, IDEAL FOR WAVE SOLDERING



Mounting Detail



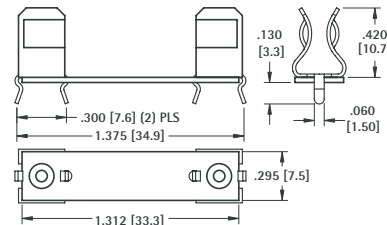
SPECIFICATIONS

Base: .062 (1.57) GPO-3,
UL Rated 94V-0
Clips: Brass, Tin Plate

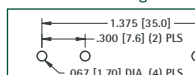
CAT. NO. 4245

Optional cover available - Cat. No. 4245C

SNAP-IN DESIGN ASSURES STABILITY DURING WAVE SOLDERING



Mounting Detail



SPECIFICATIONS

Base: .032 (1.57) G-10,
UL Rated 94V-0
Clips: Brass, Tin Plate

CAT. NO. 4250

Optional cover available - Cat. No. 4245C

3AG RIVET TYPE FUSE HOLDERS

- Available in Flame Retardant fiberglass base or Phenolic base
- Fuse clips riveted to .125 (3.2) thick base for rugged applications

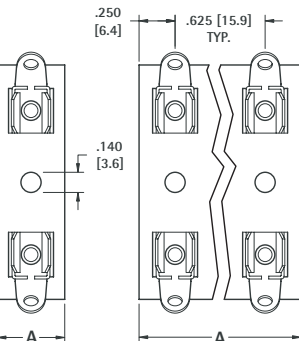
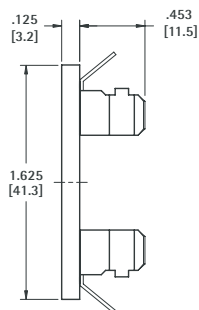
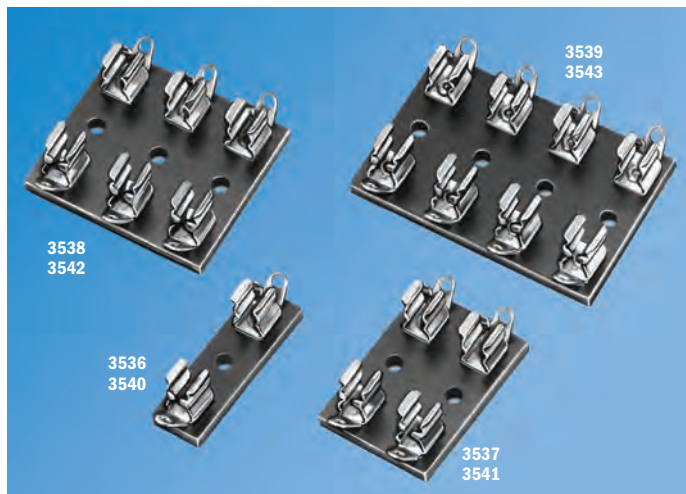


FIG. 1

FIG. 2

SPECIFICATIONS

Black Phenolic Base: .125 (3.2) thick NEMA Grade XP & FED L-P-509. Max. operating temperature 266°F (130°C) continuous. UL Rated 94-HB

Fiberglass Base: .125 (3.2) thick NEMA Grade GPO 3. Max. operating temperature 300°F (148°C) continuous. UL Rated 94V-0, Flame Retardant

Clips: Brass, Nickel Plate (Cat. No. 3535)

Rated: 15 Amps @ 500V AC

BLACK PHENOLIC CAT. NO.	FIBER-GLASS CAT. NO.	HOLDS NO. OF FUSES	FIG. NO.	A
3536	3540	1	1	.500 (12.7)
3537	3541	2	2	1.125 (28.6)
3538	3542	3	2	1.750 (44.5)
3539	3543	4	2	2.375 (60.3)

MOLDED 3AG FUSE HOLDERS

- Quick-Fit Tab, .250 (6.4) × .032 (.81) size, accepts standard .250 (6.4) quick-fit female terminals. Eliminates the need for soldering
- Available with solder lugs or .250 (6.4) Quick-Fit Tabs
- Molded with barriers to prevent and withstand test of 1080 VRMS at 60Hz for 1 minute at 3000V DC
- Flame Retardant

SPECIFICATIONS

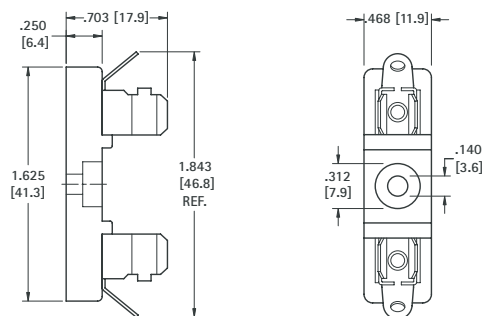
Molded Base: LCP, UL Rated 94V-0.

Clips: Brass, Nickel Plate

Rated: 15 Amps @ 500V AC



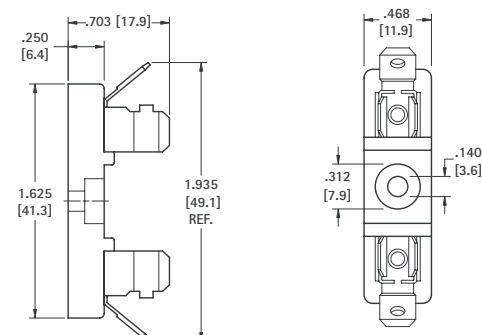
SOLDER LUG



Assembled with Clip, Cat. No. 3535

CAT. NO. 3523

QUICK-FIT

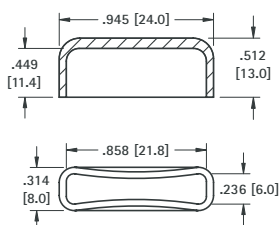


Assembled with Clip, Cat. No. 4244

CAT. NO. 4243

5mm & 3AG FUSE COVERS

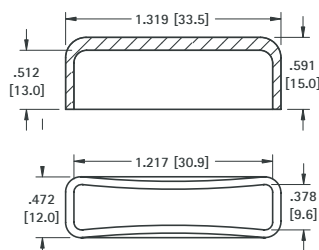
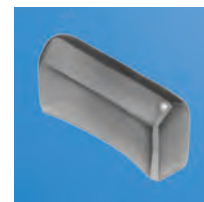
5mm



CAT. NO. 3527C

MATERIAL: PVC, UL Rated 94V-0

3AG



CAT. NO. 4245C

MATERIAL: PVC, UL Rated 94V-0

"AUTO" FUSE CLIPS & HOLDERS

- 34

FOR .205 (5.2) × .025 (.64) STANDARD BLADE FUSES

For Littelfuse ATO 257 series/Bussmann ATC series or equivalent

- Thru hole PC mountable, maintains position during wave soldering
- Holder design prevents solder wicking
- Withstands the rigors of shock and vibration
- Holds fuse securely, even after multiple insertions

VERTICAL FUSE ENTRY

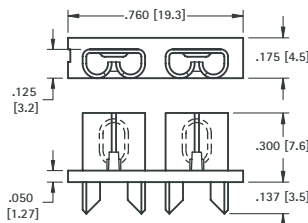
SPECIFICATIONS

Contacts: .016 (.41) thick Brass, Tin Nickel Plate

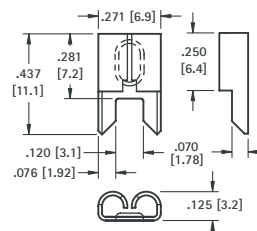
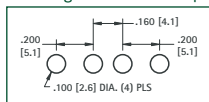
Insulator: Glass filled Nylon, UL Rated 94V-0

Current Rating: 30 Amps @ 500V AC

Temperature Rating: -58°F to +292°F (-50°C to +145°C)



Mounting Detail For Two Clips



CAT. NO. 3522-2

CAT. NO. 3522-3

CAT. NO. 3522

HORIZONTAL FUSE ENTRY

- Designed for low height clearance applications
- Fuse will be inserted parallel to board
- Thru hole PC mountable, maintains position during wave soldering
- Fuse holder fully insulates clips to protect fuse from shorting
- Holder assures proper spacing and reduces assembly time
- Polarized legs assure proper orientation of clips onto board

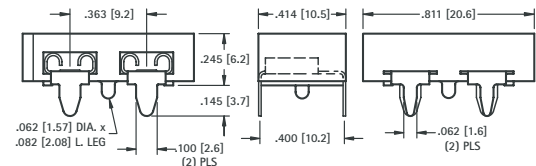
SPECIFICATIONS

Contacts: .012 (.30) thick Brass, Tin Nickel Plate

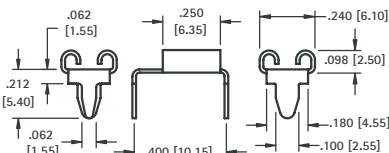
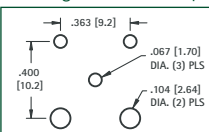
Insulator: PBT, UL Rated 94V-0

Current Rating: 30 Amps @ 500V AC

Temperature Rating: -58°F to +292°F (-50°C to +145°C)



Mounting Detail For Two Clips



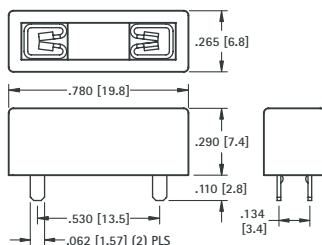
CAT. NO. 3550-2

CAT. NO. 3550

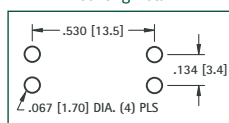
2 IN 1 FUSE HOLDER

For Littelfuse ATO 257 series/Bussmann ATC series, Littelfuse Low Profile Mini 897 series or equivalents

- Accepts Standard Auto Fuses or Low Profile Mini Fuses
- Low insertion force
- Fuse holder fully insulates clips to protect fuse from shorting
- Holder assures proper spacing and reduces assembly time
- Thru hole PC mountable, maintains position during wave soldering



Mounting Detail



SPECIFICATIONS

Contacts: .016 (.41) thick Brass, Tin Nickel Plate

Insulator: PBT, UL Rated 94V-0

Current Rating: 20 Amps @ 500V AC

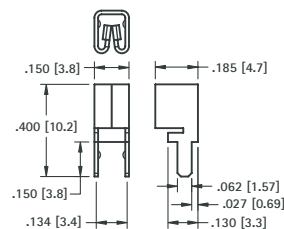
Temperature Rating: -58°F to +292°F (-50°C to +145°C)

CAT. NO. 3557-2

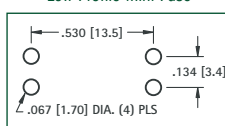
UNIVERSAL CLIP

For Littelfuse ATO 257 series/Bussmann ATC series, Littelfuse Mini 297 or 997 series/Bussmann ATM series, Littelfuse Low Profile Mini 897 series or equivalents

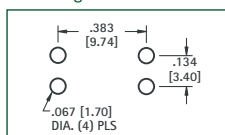
- Accepts most Auto-Blade Fuses
- Low insertion force
- Thru hole PC mountable, maintains position during wave soldering



Mounting Detail for Standard Auto Fuses and Low Profile Mini Fuse



Mounting Detail for Mini Fuse



SPECIFICATIONS

Contacts: .016 (.41) thick Brass, Tin Nickel Plate

Current Rating: 20 Amps @ 500V AC

CAT. NO. 3557

"MINI" AUTOMOTIVE FUSE CLIPS & HOLDERS

For .110 (2.8) × .032 (.80) MINI BLADE FUSES

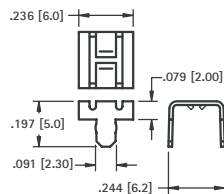
For Littelfuse Mini 297 or 997 series/Bussmann ATM series or equivalent

VERTICAL FUSE ENTRY

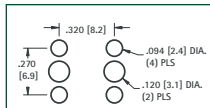
Thru Hole Mount



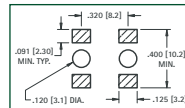
- Low Profile



Mounting Detail For Two Clips



Pad Layout For Two Clips



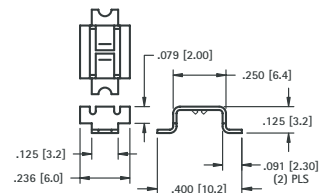
CAT. NO. 3564

AVAILABLE ON TAPE AND REEL

Surface Mount



- Low Profile



CAT. NO. 3563 (Bulk)

CAT. NO. 3563TR (Tape & Reel)

Tape & Reel Spec's: 24mm wide; 12mm pitch; 13 inch reel (1500 pieces per reel)

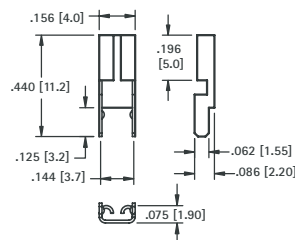
SPECIFICATIONS

Material: .012 (.30) thick Brass, Tin Nickel Plate

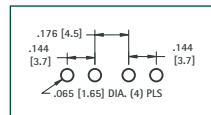
Insulator: Glass filled Nylon, UL Rated 94V-0

Current Rating: 30 Amps @ 500V AC

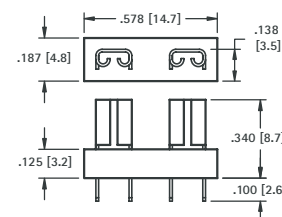
Temperature Rating: -58°F to +292°F (-50°C to +145°C)



Mounting Detail For Two Clips



CAT. NO. 3544



CAT. NO. 3544-2

LOW PROFILE MINI FUSE HOLDER

For Littelfuse Low Profile Mini 897 series or equivalent

- Low insertion force
- Thru hole PC mountable, maintains position during wave soldering
- Fuse holder fully insulates clips to protect fuse from shorting
- Holder assures proper spacing and reduces assembly time

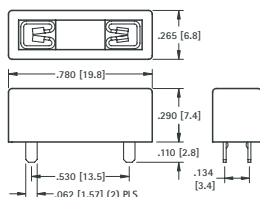
SPECIFICATIONS

Contacts: .016 (.41) thick Brass, Tin Nickel Plate

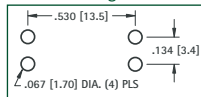
Insulator: PBT, UL Rated 94V-0

Current Rating: 20 Amps @ 500V AC

Temperature Rating: -58°F to +292°F (-50°C to +145°C)

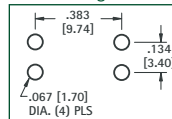


Mounting Detail



Refer to page 35 for Cat. No. 3557 Clip details

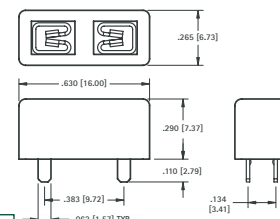
Mounting Detail



CAT. NO. 3557-2

MINI FUSE HOLDER

For Littelfuse Mini 297 or 997 series/Bussmann ATM or equivalents



CAT. NO. 3568

HORIZONTAL FUSE ENTRY

For Littelfuse Mini 297 or 997 series/Bussmann ATM series or equivalent

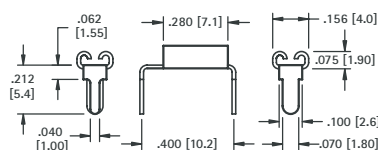
SPECIFICATIONS

Contacts: .012 (.30) thick Brass, Tin Nickel Plate

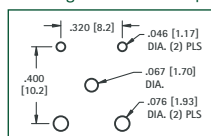
Insulator: PBT, UL Rated 94V-0

Current Rating: 30 Amps @ 500V AC

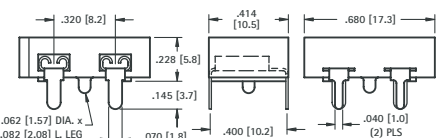
Temperature Rating: -58°F to +292°F (-50°C to +145°C)



Mounting Detail For Two Clips



CAT. NO. 3549



CAT. NO. 3549-2



SUBMINIATURE FUSE HOLDERS

- Fuse holders allow for quick changing of subminiature fuses
- Ideal for high density circuit board applications
- Standard or low profile versions available
- Reliable spring tension assures low contact resistance

SPECIFICATIONS

Base: Thermoplastic, UL Rated 94V-0

Springs: Beryllium Copper, Gold Plate

Pins: Brass, Tin Plate

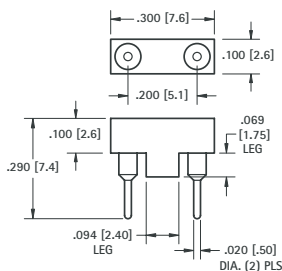
Current Rating: 5 Amps @ 250V AC

For .335 (8.5) × .158 (4.0) FUSE

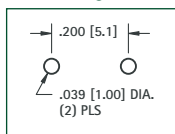
For Littelfuse 392/395 Type TE5®
Bussmann: PC Series

STURDI-MOUNT

- Securely mounts to PCB
- Barrier protects leads from arcing

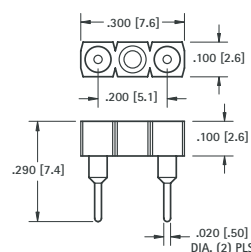


Mounting Detail



SPACE SAVER

- Designed to maximize PC Board Capacity
- Allows components to be placed underneath the holder
- Ideal when board space is more important than board height



CAT. NO. 3552

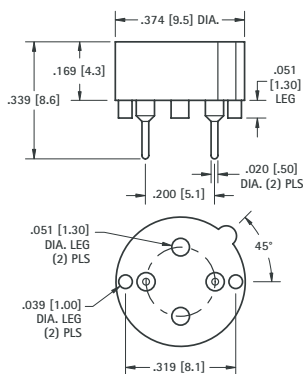
CAT. NO. 3553

For .335 (8.5) DIA. FUSE

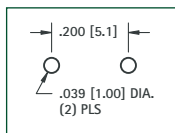
For Littelfuse 370 Type TR5®
Bussmann: BK-EFF series

STURDI-MOUNT

- Securely mounts to PCB
- Lead-in chamfer body aides in fuse assembly

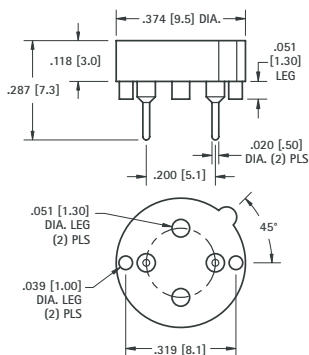


Mounting Detail



LOW PROFILE

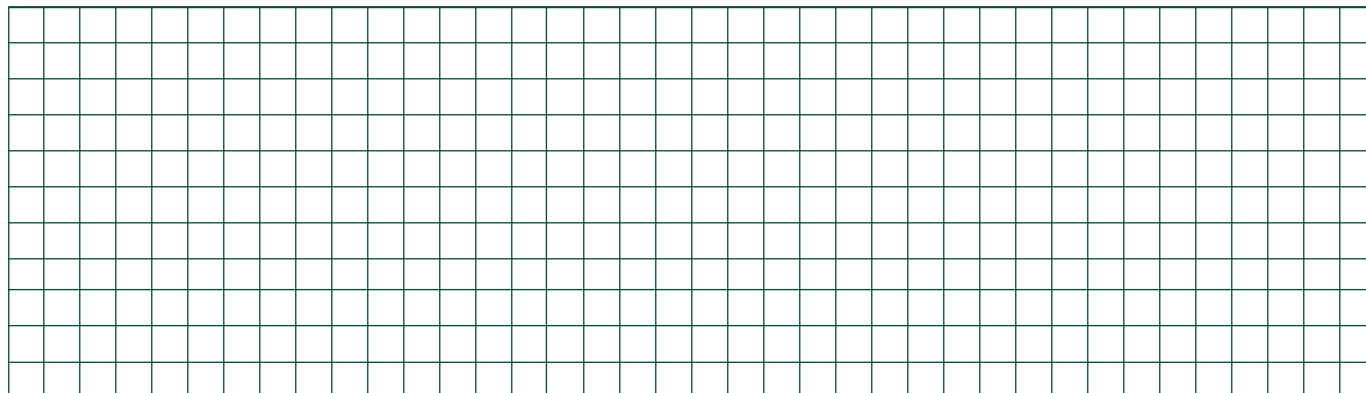
- Securely mounts to PCB



CAT. NO. 3556

CAT. NO. 3554

NOTES





3517

CAT. NO. 3517	
FUSE SIZE	L DIM.
5mm × 20mm	.910 (23.1)

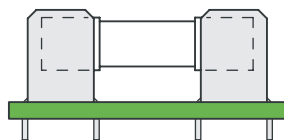
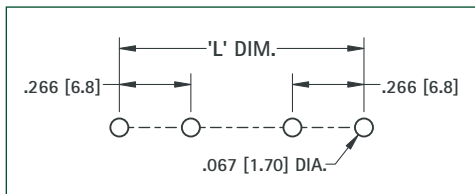


FIGURE 1

Mounting Detail



3517



3518P

CAT. NO. 3518P	
FUSE SIZE	L DIM.
5mm × 20mm	.910 (23.1)

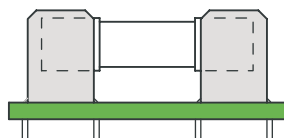
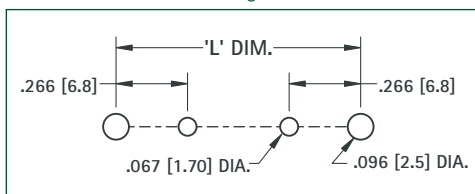


FIGURE 2

Mounting Detail



3518P



3512

CAT. NO. 3512	
FUSE SIZE	L DIM.
5mm × 20mm	.910 (23.1)

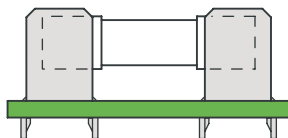
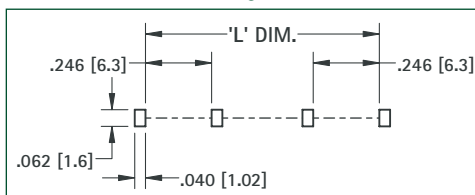


FIGURE 3

Mounting Detail



3512



3512P

CAT. NO. 3512P	
FUSE SIZE	L DIM.
5mm × 20mm	.910 (23.1)

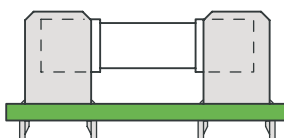
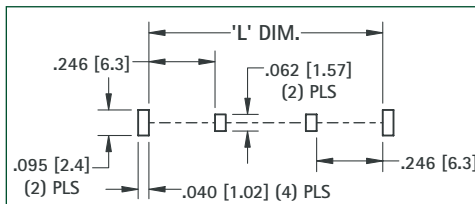


FIGURE 4

Mounting Detail



3512P



3520

CAT. NO. 3520	
FUSE SIZE	L DIM.
5mm × 20mm	.900 (22.9)

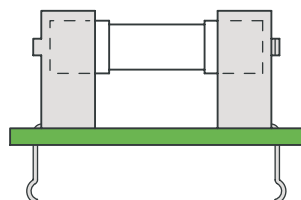
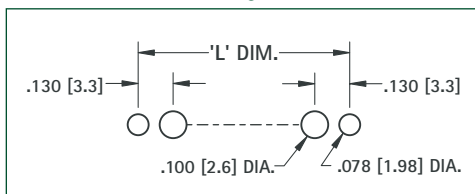


FIGURE 5

Mounting Detail

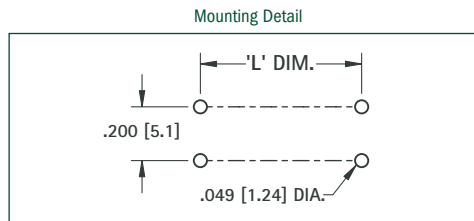
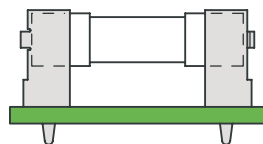


3520



3519

FIGURE 6



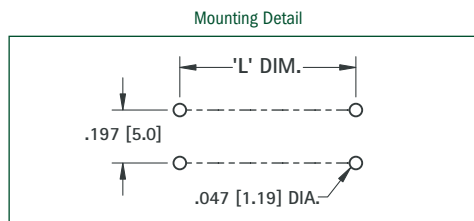
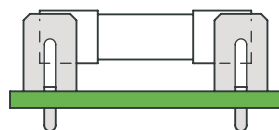
3519

CAT. NO. 3519	
FUSE SIZE	L DIM.
5mm × 20mm	.800 (20.3)



3521

FIGURE 7



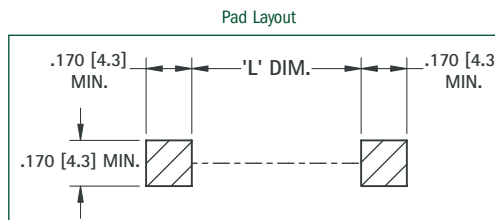
3521

CAT. NO. 3521	
FUSE SIZE	L DIM.
2AG	.514 (13.1)
5mm × 20mm	.710 (18.1)



3561

FIGURE 8



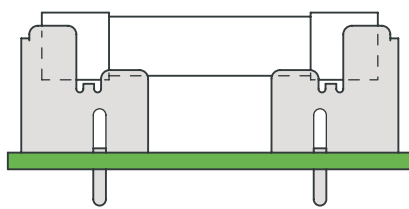
3561

CAT. NO. 3561	
FUSE SIZE	L DIM.
2AG	.354 (9.0)
5mm × 20mm	.550 (14.0)

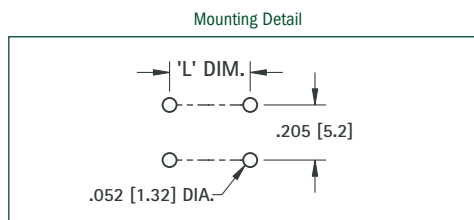


3562

FIGURE 9

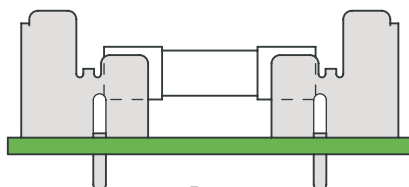


3AG



3562

CAT. NO. 3562	
FUSE SIZE	L DIM.
5mm × 20mm	.820 (20.9)
3AG	



5mm

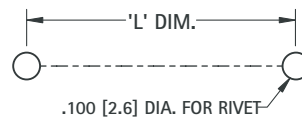
FIGURE 10



3565



Mounting Detail



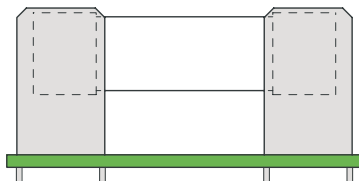
3565

CAT. NO. 3565		
DESIGNATION	FUSE SIZE	L DIM.
4AG	.281 (7.1) × 1.250 (31.8)	1.000 (25.4)

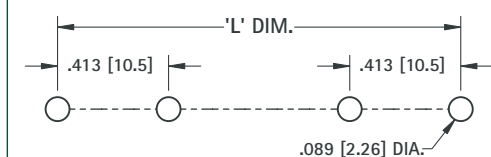
FIGURE 11



3566



Mounting Detail



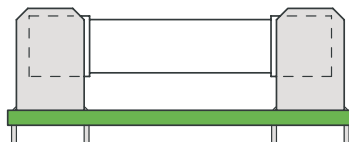
3566

CAT. NO. 3566		
DESIGNATION	FUSE SIZE	L DIM.
SM/SS	.406 (10.3) × 1.375 (34.9)	1.515 (38.5)
5AG	.406 (10.3) × 1.500 (38.1)	1.640 (41.7)

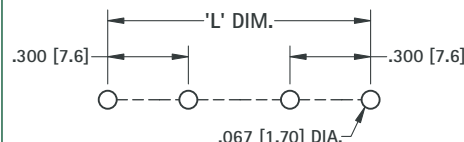
FIGURE 12



3529



Mounting Detail



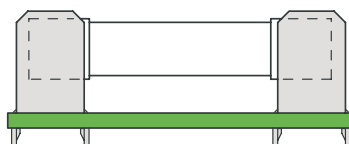
3514

CAT. NO. 3510, 3511, 3513, 3514, 3529		
DESIGNATION	FUSE SIZE	L DIM.
1AG	.250 (6.4) × .625 (15.9)	.750 (19.1)
7AG	.250 (6.4) × .875 (22.2)	1.000 (25.4)
8AG	.250 (6.4) × 1.000 (25.4)	1.125 (28.6)
3AG	.250 (6.4) × 1.250 (31.8)	1.375 (34.9)

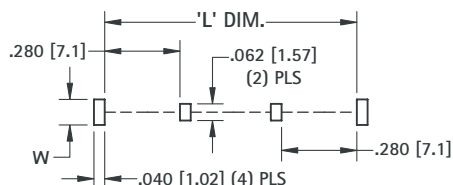
FIGURE 13



3516P



Mounting Detail



3515

CAT. NO. 3515, 3515P, 3516P		
DESIGNATION	FUSE SIZE	L DIM.
1AG	.250 (6.4) × .625 (15.9)	.735 (18.7)
7AG	.250 (6.4) × .875 (22.2)	.985 (25.0)
8AG	.250 (6.4) × 1.000 (25.4)	1.100 (28.0)
3AG	.250 (6.4) × 1.250 (31.8)	1.360 (34.6)

ORIENTATION LEGS	
CAT. NO.	W
3515	.062 (1.57)
3515P	.095 (2.4)
3516P	.122 (3.1)

REFER TO PAGE 31 FOR PART DIMENSIONS

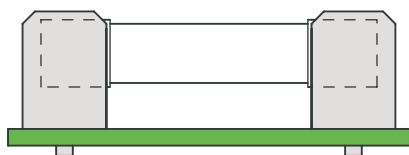
NOTE: ALL MOUNTING DIMENSIONS ARE FOR REFERENCE ONLY. VERIFY YOUR FUSE LAYOUT PRIOR TO FABRICATION.

FIGURE 14

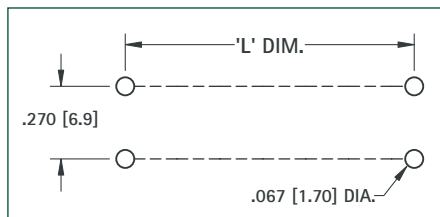
FOR THRU HOLE MOUNT APPLICATIONS



3530



Mounting Detail



3530

FOR CAT. NO. 3530

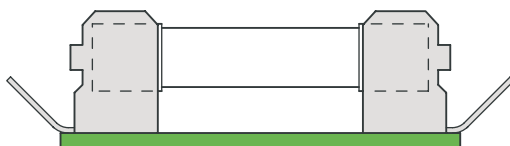
DESIGNATION	FUSE SIZE	L DIM.
1AG	.250 (6.4) × .625 (15.9)	.450 (11.4)
7AG	.250 (6.4) × .875 (22.2)	.700 (17.8)
8AG	.250 (6.4) × 1.000 (25.4)	.825 (21.0)
3AG	.250 (6.4) × 1.250 (31.8)	1.075 (27.3)

FIGURE 15

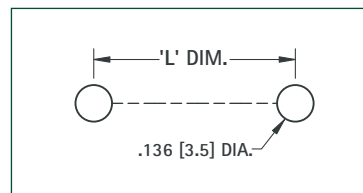
FOR RIVET MOUNT APPLICATIONS



3570



Mounting Detail



3535

FOR CAT. NO. 3531, 3533, 3535, 3570, 4244, 4246, 4247

DESIGNATION	FUSE SIZE	L DIM.
1AG	.250 (6.4) × .625 (15.9)	.450 (11.4)
7AG	.250 (6.4) × .875 (22.2)	.700 (17.8)
8AG	.250 (6.4) × 1.000 (25.4)	.825 (21.0)
3AG	.250 (6.4) × 1.250 (31.8)	1.075 (27.3)

FIGURE 16

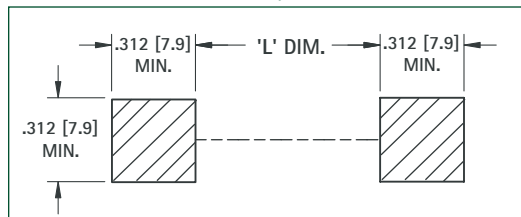
FOR SURFACE MOUNT APPLICATIONS



4244



Pad Layout



3533

FOR CAT. NO. 3531, 3533, 3535, 3570, 4244, 4246, 4247

DESIGNATION	FUSE SIZE	L DIM.
1AG	.250 (6.4) × .625 (15.9)	.120 (3.0)
7AG	.250 (6.4) × .875 (22.2)	.365 (9.3)
8AG	.250 (6.4) × 1.000 (25.4)	.490 (12.4)
3AG	.250 (6.4) × 1.250 (31.8)	.740 (18.8)

FIGURE 17

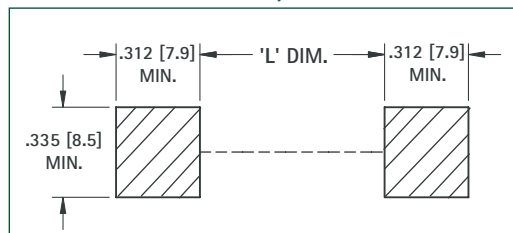
FOR SURFACE MOUNT APPLICATIONS



3532



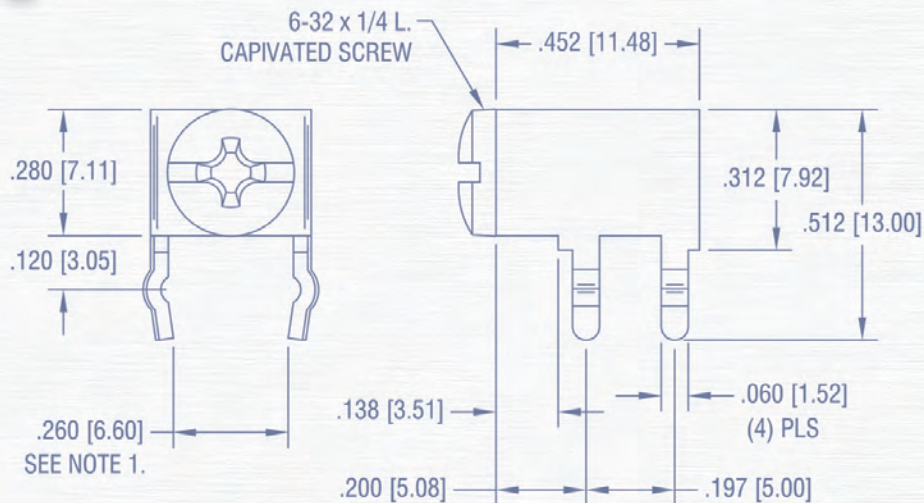
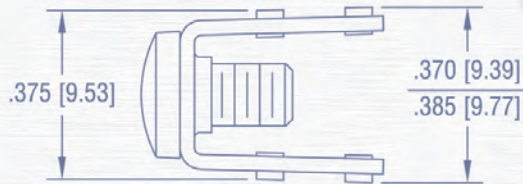
Pad Layout



3567

FOR CAT. NO. 3532, 3567

DESIGNATION	FUSE SIZE	L DIM.
1AG	.250 (6.4) × .625 (15.9)	.195 (5.0)
7AG	.250 (6.4) × .875 (22.2)	.445 (11.3)
8AG	.250 (6.4) × 1.000 (25.4)	.570 (14.5)
3AG	.250 (6.4) × 1.250 (31.8)	.820 (20.8)



TERMINALS & TEST POINTS

Today's high tech electronics require space saving, low cost methods for connecting and testing circuitry. Our complete line of PC terminals, screw terminals, headers and test points are designed to meet the interconnect and testing challenges for electronic and electrical component termination points. Applications include:

- Multi-Insertion applications
- Replacement for pc screw edge connectors, blocks or strips
- Surface mount and thru-hole PCB designs
- UL approved devices

Our quality system is ISO 9001:2000 certified. Our products are in compliance with the RoHS directive. We provide 3D modeling, CAD and other application-engineering support for modifications, special designs or assembly requirements to assist you in choosing the right Keystone product for your application.

DATE

DESCRIPTION

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SECTION CONTENTS

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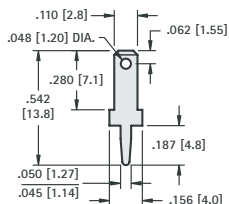
Underwriters Laboratories, Inc.
Recognized Component Program — UL File Number E201546

UL file number E201546 has been assigned to Keystone Electronics' "Quick-Fit" terminals (Refer to pages 44-47) indicating recognition by Underwriters Laboratories Inc. that they are in compliance with their component program.

Underwriters Laboratories Inc. component program assures that "Quick-Fit" terminals meet the dimensional and performance requirements of the National Electrical Manufacturers Association specification number NEMA2-1982-(1988) and UL310.

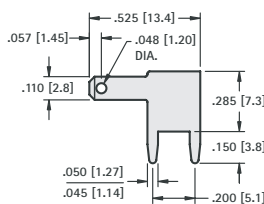
.110 (2.8), .187 (4.8), .205 (5.2) MALE TABS

.110 (2.8) TAB



CAT. NO.	MATERIAL	MTG. HOLE
1267	.020 (.50) Brass, Tin Plate	.046 (1.2) Dia.
1211	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

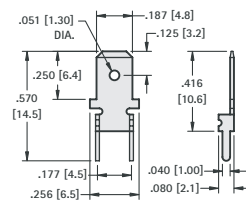
.110 (2.8) TAB



CAT. NO.	MATERIAL	MTG. HOLES
4903	.020 (.50) Brass, Tin Plate	.046 (1.2) Dia.
4906	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

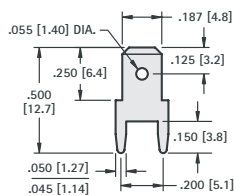
.187 (4.8) TAB

STURDI-MOUNT



CAT. NO.	MATERIAL	MTG. HOLES
4900	.020 (.50) Brass, Tin Plate	.043 (1.1) Dia.

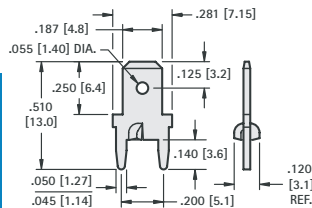
.187 (4.8) TAB



CAT. NO.	MATERIAL	MTG. HOLES
1285	.020 (.50) Brass, Tin Plate	.046 (1.2) Dia.
1212	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

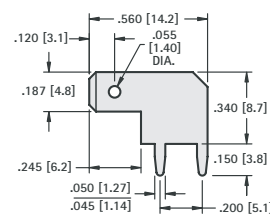
.187 (4.8) TAB

STURDI-MOUNT



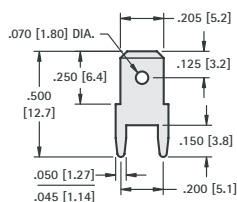
CAT. NO.	MATERIAL	MTG. HOLES
1285-ST	.020 (.50) Brass, Tin Plate	.046 (1.2) Dia.
1212-ST	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

.187 (4.8) TAB



CAT. NO.	MATERIAL	MTG. HOLES
4904	.020 (.50) Brass, Tin Plate	.046 (1.2) Dia.
4907	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

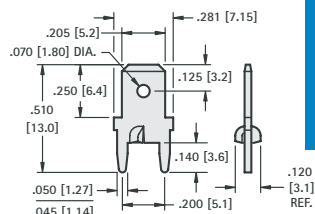
.205 (5.2) TAB



CAT. NO.	MATERIAL	MTG. HOLES
1286	.020 (.50) Brass, Tin Plate	.046 (1.2) Dia.
1213	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

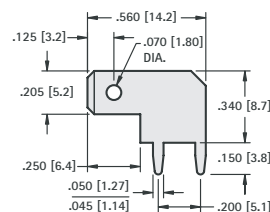
.205 (5.2) TAB

STURDI-MOUNT



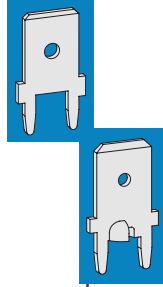
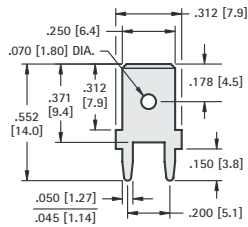
CAT. NO.	MATERIAL	MTG. HOLES
1286-ST	.020 (.50) Brass, Tin Plate	.046 (1.2) Dia.
1213-ST	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

.205 (5.2) TAB



CAT. NO.	MATERIAL	MTG. HOLES
4905	.020 (.50) Brass, Tin Plate	.046 (1.2) Dia.
4909	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

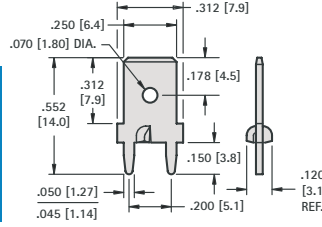
.250 (6.4) TAB



CAT. NO.	MATERIAL	MTG. HOLES
1287	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

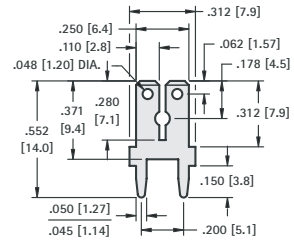
.250 (6.4) TAB

STURDI-MOUNT



CAT. NO.	MATERIAL	MTG. HOLES
1287-ST	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

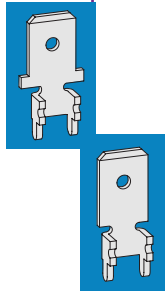
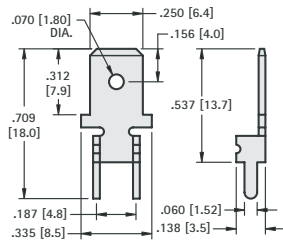
DUAL .110 (2.8)/.250 (6.4) TAB



CAT. NO.	MATERIAL	MTG. HOLES
1282	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

.250 (6.4) TAB

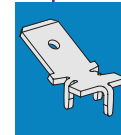
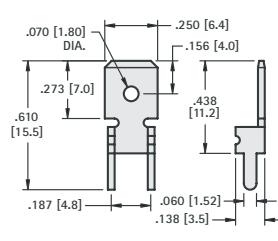
STURDI-MOUNT



CAT. NO.	MATERIAL	MTG. HOLES
4901	.032 (.80) Brass, Tin Plate	.067 (1.7) Dia.

.250 (6.4) TAB

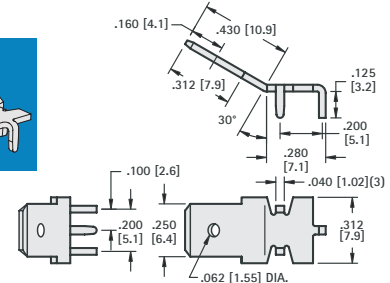
STURDI-MOUNT



CAT. NO.	MATERIAL	MTG. HOLES
4902	.032 (.80) Brass, Tin Plate	.067 (1.7) Dia.

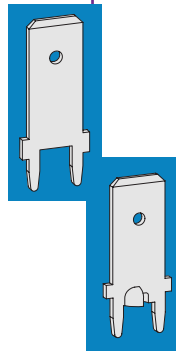
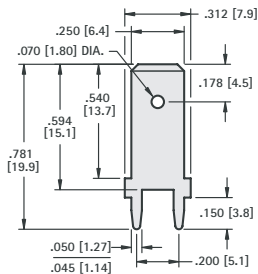
.250 (6.4) TAB

STURDI-MOUNT



CAT. NO.	MATERIAL	MTG. HOLES
4908	.032 (.80) Brass, Tin Plate	.067 (1.7) Dia.

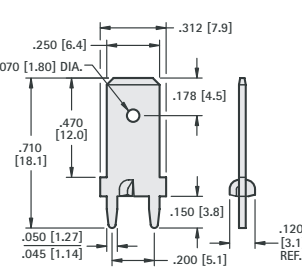
.250 (6.4) TAB



CAT. NO.	MATERIAL	MTG. HOLES
1289	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

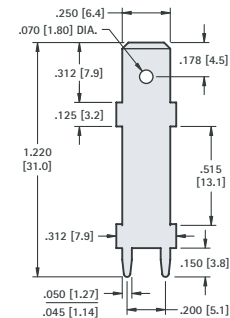
.250 (6.4) TAB

STURDI-MOUNT



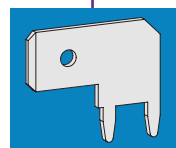
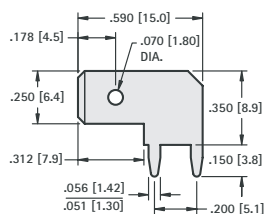
CAT. NO.	MATERIAL	MTG. HOLES
1289-ST	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

.250 (6.4) TAB



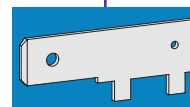
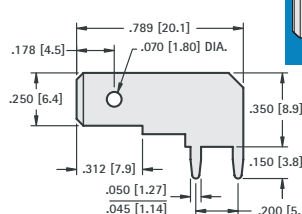
CAT. NO.	MATERIAL	MTG. HOLES
1281	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

.250 (6.4) TAB



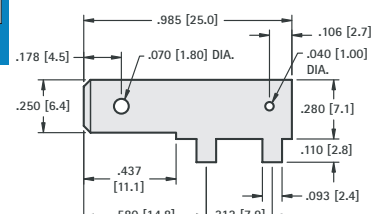
CAT. NO.	MATERIAL	MTG. HOLES
4966	.032 (.80) Brass, Tin Plate	.056 (1.4) Dia.

.250 (6.4) TAB



CAT. NO.	MATERIAL	MTG. HOLES
1266	.032 (.80) Brass, Tin Plate	.052 (1.3) Dia.

.250 (6.4) TAB



CAT. NO.	MATERIAL	MTG. HOLES
1265	.032 (.80) Brass, Tin Plate	.106 (2.7) Dia.

NOTE: .250 TAB HAND INSERTION TOOL; CAT. NO. 1288, REFER TO PAGE 46

.250 (6.4) "STURDI-MOUNT" PC QUICK-FIT HEADERS

AVAILABLE IN BRASS OR STEEL TABS



- Ideal for rugged multi-insertion applications
- Pre-assembled header reduces PC assembly costs
- Increases PC board retention strength
- Keeps terminals perpendicular
- Maintains position for wave soldering

SPECIFICATIONS

Material: .032 (.80) thick Brass or Steel, Tin Plated

Insulator: Thermoplastic, UL Rated 94V-0

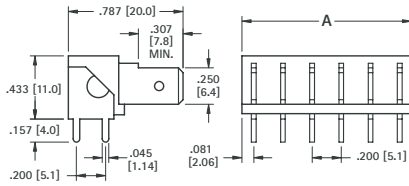
Current Rating: 15 Amps @ 500V AC

Temperature Rating: -58°F to +292°F (-50°C to +145°C)



.250 (6.4) HORIZONTAL

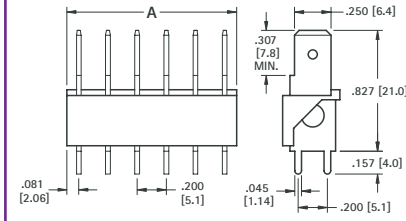
BRASS TABS	STEEL TABS	NO. OF TABS	A DIM.
CAT. NO.	CAT. NO.		
7802	7822	2	.362 (9.2)
7803	7823	3	.562 (14.3)
7804	7824	4	.762 (19.4)
7805	7825	5	.962 (24.4)
7806	7826	6	1.162 (29.5)



Mtg. Holes: .052 (1.3) Dia. on .200 (5.1) Centers

.250 (6.4) VERTICAL

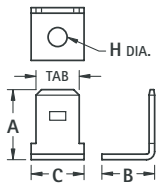
BRASS TABS	STEEL TABS	NO. OF TABS	A DIM.
CAT. NO.	CAT. NO.		
7812	7832	2	.362 (9.2)
7813	7833	3	.562 (14.3)
7814	7834	4	.762 (19.4)
7815	7835	5	.962 (24.4)
7816	7836	6	1.162 (29.5)



RIVET MOUNT QUICK-FIT TERMINALS



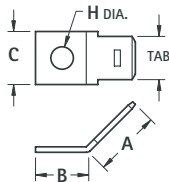
.110 (2.8) - .187 (4.8) - .250 (6.4) TABS



90° TAB

MATERIAL: Bright Brass

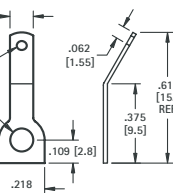
CAT. NO.	TAB SIZE	MAT'L THICK	A	B	C	HOLE DIA.
2002	.110 (2.8)	.020 (.51)	.375 (9.5)	.270 (6.9)	.180 (4.6)	.096 (2.4)
1261	.187 (4.8)	.020 (.51)	.375 (9.5)	.250 (6.4)	.250 (6.4)	.099 (2.5)
1256	.250 (6.4)	.032 (.81)	.405 (10.3)	.343 (8.7)	.312 (7.9)	.130 (3.3)



45° TAB

MATERIAL: Bright Brass

CAT. NO.	TAB SIZE	MAT'L THICK	A	B	C	HOLE DIA.
2004	.110 (2.8)	.020 (.51)	.350 (8.9)	.270 (6.9)	.180 (4.6)	.096 (2.4)
1271	.187 (4.8)	.020 (.51)	.375 (9.5)	.250 (6.4)	.250 (6.4)	.099 (2.5)
1280	.250 (6.4)	.032 (.81)	.405 (10.3)	.312 (7.9)	.312 (7.9)	.130 (3.3)

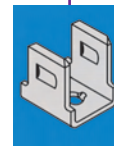
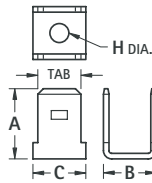


30° TAB

CAT. NO. 1270

MATERIAL: .020 (.51) thick Brass, Tin Plate

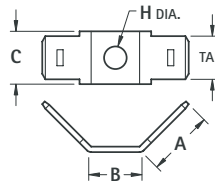
.110 (2.8) - .187 (4.8) - .250 (6.4) TABS



90° TABS

MATERIAL: Bright Brass

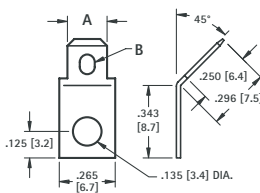
CAT. NO.	TAB SIZE	MAT'L THICK	A	B	C	HOLE DIA.
2003	.110 (2.8)	.020 (.51)	.350 (8.9)	.383 (9.7)	.180 (4.6)	.096 (2.4)
1262	.187 (4.8)	.020 (.51)	.312 (7.9)	.250 (6.4)	.250 (6.4)	.099 (2.5)
1257	.250 (6.4)	.032 (.81)	.405 (10.3)	.343 (8.7)	.312 (7.9)	.130 (3.3)



45° TABS

MATERIAL: Bright Brass

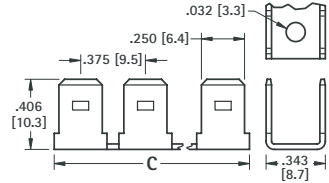
CAT. NO.	TAB SIZE	MAT'L THICK	A	B	C	HOLE DIA.
2005	.110 (2.8)	.020 (.51)	.350 (8.9)	.383 (9.7)	.180 (4.6)	.096 (2.4)
1263	.187 (4.8)	.020 (.51)	.312 (7.9)	.375 (9.5)	.265 (6.7)	.099 (2.5)
1258	.250 (6.4)	.032 (.81)	.405 (10.3)	.343 (8.7)	.312 (7.9)	.130 (3.3)



45° TAB MATERIAL: .020 (.51) thick Brass, Tin Plate

CAT. NO.	A	B
4005	.205 (5.2)	.132 (3.4) × .070 (1.78) Slot
4095	.187 (4.7)	.078 (1.98) Dia. Hole

.250 (6.4) TAB



MULTIPLE 90°

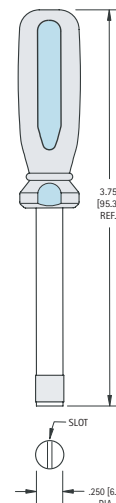
MATERIAL: Bright Brass

CAT. NO.	PAIRS	C	TAB SIZE
1005	2	.687 (17.4)	.250 (6.4)
1006	3	1.062 (27.0)	
1007	4	1.441 (36.6)	
1008	5	1.820 (46.2)	

.250 (6.4) MALE TAB INSERTION TOOL

Designed to install .250 (6.4) male "Quick-Fit" terminals quickly and easily. Refer to pages 44 and 45.

- Insert terminal into slot, spring clip will hold terminal securely for positioning
- Align terminal with mounting holes and "press-fit" to secure firmly in place
- Lift tool to release terminal



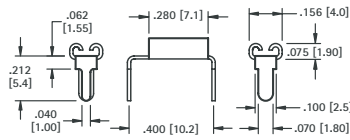
CAT. NO. 1288

FEMALE PC QUICK-FIT TERMINALS

FEMALE PC QUICK-FIT TERMINALS

ACCEPTS .110 (2.8) TAB

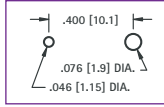
HORIZONTAL ENTRY



MATERIAL:

.012 (.30) thick Brass,
Tin Nickel Plate

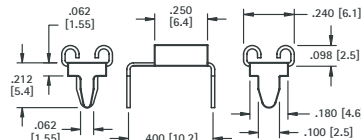
Mounting Detail



CAT. NO.	ACCEPTS TAB
3545	.110 (2.8) × .020 (.50)
3549	.110 (2.8) × .032 (.80)

ACCEPTS .205 (5.2) TAB

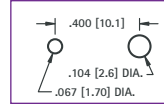
HORIZONTAL ENTRY



MATERIAL:

.012 (.30) thick Brass,
Tin Nickel Plate

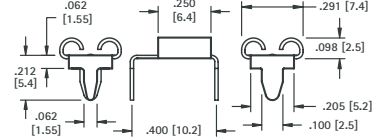
Mounting Detail



CAT. NO.	ACCEPTS TAB
3546	.205 (5.2) × .020 (.50)
3550	.205 (5.2) × .032 (.80)

ACCEPTS .250 (6.4) TAB

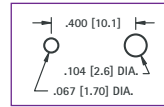
HORIZONTAL ENTRY



MATERIAL:

.016 (.41) thick Brass,
Tin Nickel Plate

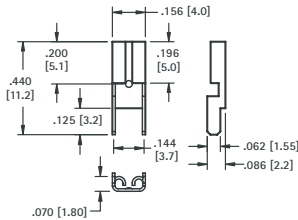
Mounting Detail



CAT. NO.	ACCEPTS TAB
3547	.250 (6.4) × .032 (.80)

ACCEPTS .110 (2.8) TAB

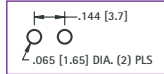
VERTICAL ENTRY



MATERIAL:

.012 (.30) thick Brass,
Tin Nickel Plate

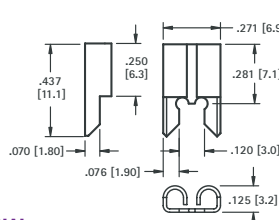
Mounting Detail



CAT. NO.	ACCEPTS TAB
3534	.110 (2.8) × .020 (.50)
3544	.110 (2.8) × .032 (.80)

ACCEPTS .205 (5.2) TAB

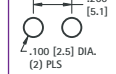
VERTICAL ENTRY



MATERIAL:

Brass, Tin Nickel Plate

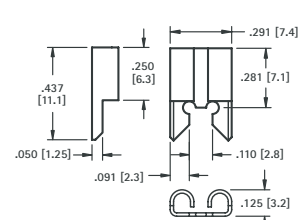
Mounting Detail



CAT. NO.	ACCEPTS TAB	MAT'L THICK
3525	.205 (5.2) × .020 (.50)	.012 (.30)
3522	.205 (5.2) × .025 (.60)	.016 (.40)
	.205 (5.2) × .032 (.80)	.016 (.40)

ACCEPTS .250 (6.4) TAB

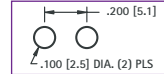
VERTICAL ENTRY



MATERIAL:

.016 (.41) thick Brass,
Tin Nickel Plate

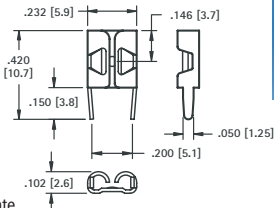
Mounting Detail



CAT. NO.	ACCEPTS TAB
3528	.250 (6.4) × .032 (.80)

ACCEPTS .187 (4.8) TAB

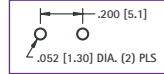
VERTICAL ENTRY



MATERIAL:

.016 (.41) thick
Brass, Tin Nickel Plate

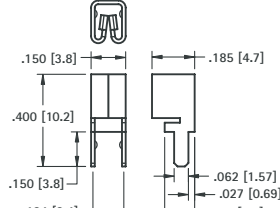
Mounting Detail



CAT. NO.	ACCEPTS TAB
3548	.187 (4.8) × .020 (.50)
3551	.187 (4.8) × .032 (.80)

ACCEPTS ALL TABS

VERTICAL OR HORIZONTAL ENTRY



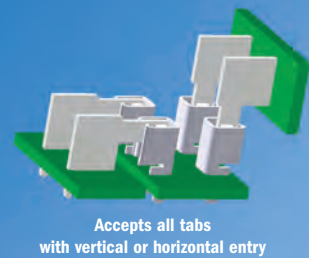
MATERIAL:

.016 (.41) thick Brass,
Tin Nickel Plate

CAT. NO.

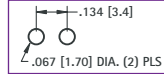
3557 .110 (2.8) to .250 (6.4) × .020 (.50) to .032 (.80)

UNIVERSAL QUICK-FIT TERMINAL



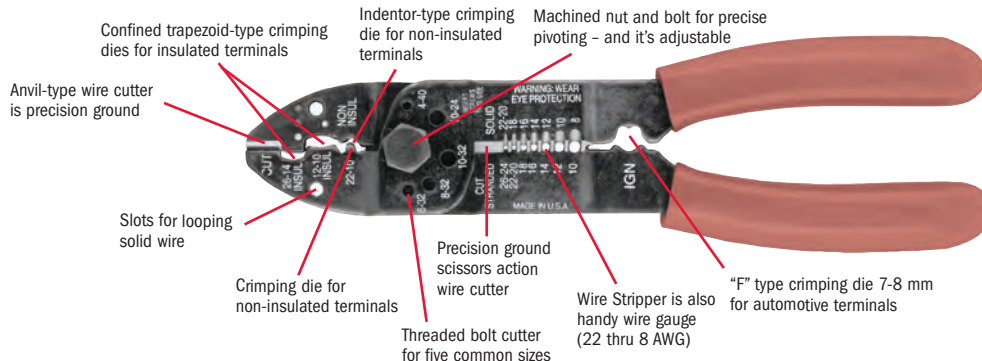
Accepts all tabs
with vertical or horizontal entry

Mounting Detail



MULTI-PURPOSE HAND TOOL

- This Multi-purpose tool is all that is required to crimp wires into solderless terminals. Refer to pages 48 and 49.



CAT. NO. 1345

Tel (718) 956-8900 • Fax (718) 956-9040
(800) 221-5510 • kec@keyelco.com

KEYSTONE
RoHS COMPLIANT ~ ISO 9001 CERTIFIED

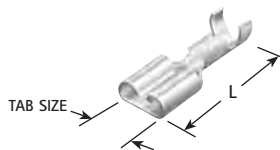
www.keyelco.com
31-07 20th Road - Astoria, NY 11105-2017

QUICK-FIT FEMALES

VINYL BOOT



FEMALE NON-INSULATED



For .250 (6.4) QUICK-FITS

- Easily slips over terminal
- Insulates and protects

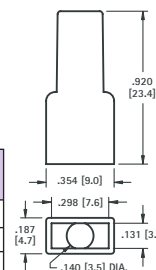


Boot and Quick-Fit sold separately

MATERIAL: Tinned Brass

CAT. NO.	MATES WITH MALE TAB WIDTH × THICK	L	AWG SIZE	MAT'L THICK
1252	.110 (2.8) × .020 (.51)	.640 (16.3)	18-22	.010 (.25)
1264	.187 (4.8) × .020 (.51)	.576 (14.6)	16-22	.013 (.33)
4469	.205 (5.2) × .020 (.51)	.640 (16.3)	16-20	.013 (.33)
4470	.250 (6.4) × .020 (.51)	.750 (19.1)	16-20	.016 (.41)

CAT. NO.	BOOT COLOR
4471	CLEAR
4472	RED
4473	BLUE
4474	YELLOW



SOLDERLESS QUICK-FIT TERMINALS

Solderless terminals are made of pure electrolytic (ETP) copper annealed and tin plated. Insulation is color coded vinyl.

MALE NON-INSULATED

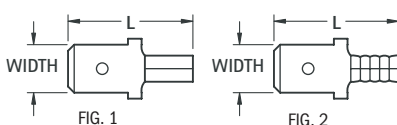


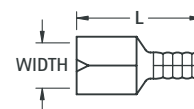
FIG. 1

FIG. 2

Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	FIG.	MALE TAB WIDTH × THICK	L	BARREL LENGTH	I.D.
8281	22/18	2	.187 (4.8) × .020 (.51)	.64 (16.3)	.24 (6.3)	.080 (2.03)
8282	22/18	1	.250 (6.4) × .032 (.81)	.73 (18.5)	.25 (6.4)	.065 (1.65)
8283	16/14	2	.187 (4.8) × .020 (.51)	.64 (16.3)	.24 (6.3)	.080 (2.03)
8284	16/14	1	.250 (6.4) × .032 (.81)	.73 (18.5)	.25 (6.4)	.085 (2.16)
8285	12/10	1	.250 (6.4) × .032 (.81)	.75 (19.1)	.25 (6.4)	.150 (3.8)

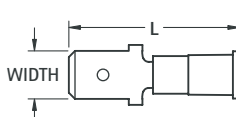
FEMALE NON-INSULATED



Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	MATES WITH MALE TAB WIDTH × THICK	L	BARREL .250 (6.4) I.D.
8272	22/18	.187 (4.8) × .020 (.51)	.58 (14.7)	.085 (2.16)
8273	22/18	.250 (6.4) × .032 (.81)	.66 (16.8)	.080 (2.03)
8274	16/14	.187 (4.8) × .020 (.51)	.58 (14.7)	.085 (2.16)
8275	16/14	.250 (6.4) × .032 (.81)	.66 (16.8)	.080 (2.03)

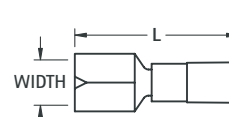
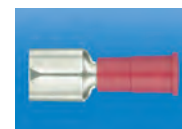
MALE VINYL INSULATED



Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	MALE TAB WIDTH × THICK	L	BARREL LENGTH	I.D.	MAX INSULATION DIAMETER
8286	22/18	.187 (4.8) × .020 (.51)	.85 (21.6)	.24 (6.3)	.080 (2.03)	.145 (3.7)
8287	(Red)	.250 (6.4) × .032 (.81)	.93 (23.6)	.25 (6.4)	.065 (1.65)	.145 (3.7)
8288	16/14	.187 (4.8) × .020 (.51)	.85 (21.6)	.24 (6.3)	.080 (2.03)	.145 (3.7)
8289	(Blue)	.250 (6.4) × .032 (.81)	.93 (23.6)	.25 (6.4)	.085 (2.16)	.170 (4.3)
8290	12/10 (Yellow)	.250 (6.4) × .032 (.81)	1.05 (26.7)	.25 (6.4)	.150 (3.8)	.250 (6.4)

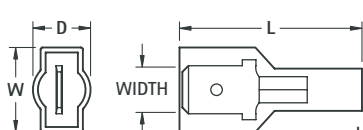
FEMALE VINYL INSULATED



Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	MATES WITH MALE TAB WIDTH × THICK	L	BARREL .250 (6.4) I.D.	MAX INSULATION DIAMETER
8276	22/18	.187 (4.8) × .020 (.51)	.78 (19.8)	.085 (2.16)	.145 (3.7)
8277	(Red)	.250 (6.4) × .032 (.81)	.87 (22.1)	.080 (2.03)	.145 (3.7)
8278	16/14	.187 (4.8) × .020 (.51)	.78 (19.8)	.085 (2.16)	.145 (3.7)
8279	(Blue)	.250 (6.4) × .032 (.81)	.87 (22.1)	.080 (2.03)	.145 (3.7)
8280	12/10 (Yellow)	.250 (6.4) × .032 (.81)	.96 (24.4)	.165 (4.2)	.250 (6.4)

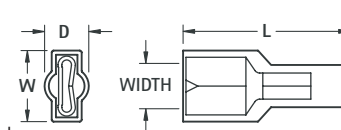
MALE FULLY INSULATED NYLON



Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	MALE TAB WIDTH × THICK	L	W	D	BARREL .250 (6.4) LENGTH	I.D.	MAX. INSUL. DIA.
8296	22/18	.187 (4.8) × .020 (.51)	.87 (22.1)	.37 (9.4)	.30 (7.6)	.24 (6.3)	.080 (2.03)	.145 (3.7)
8297	(Red)	.250 (6.4) × .032 (.81)	.95 (24.1)	.44 (11.2)	.30 (7.6)	.25 (6.4)	.065 (1.65)	.145 (3.7)
8298	16/14	.187 (4.8) × .020 (.51)	.87 (22.1)	.37 (9.4)	.30 (7.6)	.24 (6.3)	.080 (2.03)	.170 (4.3)
8299	(Blue)	.250 (6.4) × .032 (.81)	.95 (24.1)	.44 (11.2)	.30 (7.6)	.25 (6.4)	.085 (2.16)	.170 (4.3)
8300	12/10 (Yellow)	.250 (6.4) × .032 (.81)	1.05 (26.7)	.47 (11.9)	.39 (9.9)	.25 (6.4)	.150 (3.8)	.250 (6.4)

FEMALE FULLY INSULATED NYLON



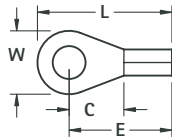
Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	MATES WITH MALE TAB WIDTH × THICK	L	W	D	BARREL .250 (6.4) I.D.	MAX. INSUL. DIA.
8291	22/18	.187 (4.8) × .020 (.51)	.81 (20.6)	.30 (7.6)	.23 (5.8)	.085 (2.16)	.145 (3.7)
8292	(Red)	.250 (6.4) × .032 (.81)	.87 (22.1)	.37 (9.4)	.23 (5.8)	.080 (2.03)	.145 (3.7)
8293	16/14	.187 (4.8) × .020 (.51)	.81 (20.6)	.30 (7.6)	.23 (5.8)	.085 (2.16)	.145 (3.7)
8294	(Blue)	.250 (6.4) × .032 (.81)	.87 (22.1)	.37 (9.4)	.23 (5.8)	.080 (2.03)	.170 (4.3)
8295	12/10 (Yellow)	.250 (6.4) × .032 (.81)	.99 (25.1)	.39 (9.9)	.32 (8.1)	.165 (4.2)	.250 (6.4)

RING TONGUE TERMINALS

Solderless terminals are made of pure electrolytic (ETP) copper and tin plated. Insulation is color coded vinyl.

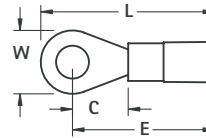
NON-INSULATED



Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	FOR STUD SIZE	W	C	L	E	THICK	BARREL I.D.
8200	22/18	6	.25 (6.4)	.22 (5.6)	.60 (15.2)	.47 (11.9)	.030 (.76)	.070 (1.78)
8201		8	.33 (8.4)	.29 (7.4)	.70 (17.8)	.54 (13.7)		
8202		10	.33 (8.4)	.29 (7.4)	.70 (17.8)	.54 (13.7)		
8203	16/14	6	.25 (6.4)	.22 (5.6)	.60 (15.2)	.47 (11.9)	.030 (.76)	.090 (2.29)
8204		8	.33 (8.4)	.29 (7.4)	.70 (17.8)	.54 (13.7)		
8205		10	.33 (8.4)	.29 (7.4)	.70 (17.8)	.54 (13.7)		
8206	12/10	6	.28 (7.1)	.29 (7.4)	.68 (17.3)	.54 (13.7)	.040 (1.02)	.135 (3.4)
8207		8	.38 (9.7)	.29 (7.4)	.73 (18.5)	.54 (13.7)		
8208		10	.38 (9.7)	.29 (7.4)	.73 (18.5)	.54 (13.7)		

VINYL INSULATED



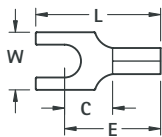
Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	FOR STUD SIZE	W	C	L	E	THICK	BARREL .250 (6.4) LONG I.D.	MAX. INSUL. DIA.
8209	22/18 (Red)	6	.25 (6.4)	.22 (5.6)	.80 (20.3)	.67 (17.0)	.030 (.76)	.070 (1.78)	.145 (3.7)
8210		8	.33 (8.4)	.29 (7.4)	.90 (22.9)	.74 (18.8)			
8211		10	.33 (8.4)	.29 (7.4)	.90 (22.9)	.74 (18.8)			
8212	16/14 (Blue)	6	.25 (6.4)	.22 (5.6)	.80 (20.3)	.67 (17.0)	.030 (.76)	.090 (2.29)	.170 (4.3)
8213		8	.33 (8.4)	.29 (7.4)	.90 (22.9)	.74 (18.8)			
8214		10	.33 (8.4)	.29 (7.4)	.90 (22.9)	.74 (18.8)			
8215	12/10 (Yellow)	6	.28 (7.1)	.29 (7.4)	.98 (24.9)	.84 (21.3)	.040 (1.02)	.135 (3.4)	.250 (6.4)
8216		8	.38 (9.7)	.29 (7.4)	1.03 (26.2)	.84 (21.3)			
8217		10	.38 (9.7)	.29 (7.4)	1.03 (26.2)	.84 (21.3)			

BLOCK SPADE TERMINALS

Solderless terminals are made of pure electrolytic (ETP) copper and tin plated. Insulation is color coded vinyl.

NON-INSULATED

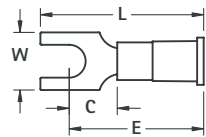


Flanged

Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	FOR STUD SIZE	W	C	L	E	THICK	BARREL .250 (6.4) LONG I.D.	FLANGED CAT. NO.
8218	22/18	6	.30 (7.6)	.25 (6.4)	.65 (16.5)	.50 (12.7)	.030 (.76)	.070 (1.78)	8236
8219		8							8237
8220		10							8238
8221	16/14	6	.30 (7.6)	.25 (6.4)	.65 (16.5)	.50 (12.7)	.030 (.76)	.090 (2.29)	8239
8222		8							8240
8223		10							8241
8224	12/10	6	.32 (8.1)	.29 (7.4)	.73 (18.5)	.54 (13.7)	.040 (1.02)	.135 (3.4)	8242
8225		8							8243
8226		10							8244

VINYL INSULATED



Flanged

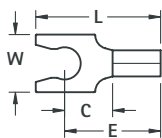
Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	FOR STUD SIZE	W	C	L	E	THICK	BARREL .250 (6.4) LONG I.D.	MAX. INSUL. DIA.	FLANGED CAT. NO.
8227	22/18 (Red)	6	.30 (7.6)	.25 (6.4)	.85 (21.6)	.70 (17.8)	.030 (.76)	.070 (1.78)	.145 (3.7)	8245
8228		8								8246
8229		10								8247
8230	16/14 (Blue)	6	.30 (7.6)	.25 (6.4)	.85 (21.6)	.70 (17.8)	.030 (.76)	.090 (2.29)	.175 (4.4)	8248
8231		8								8249
8232		10								8250
8233	12/10 (Yellow)	6	.32 (8.1)	.29 (7.4)	1.03 (26.2)	.84 (21.3)	.040 (1.02)	.135 (3.4)	.255 (6.5)	8251
8234		8								8252
8235		10								8253

SNAP-SPADE TERMINALS

Solderless terminals are made of pure electrolytic (ETP) copper and tin plated. Insulation is color coded vinyl.

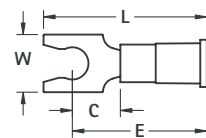
NON-INSULATED



Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	FOR STUD SIZE	W	C	L	E	THICK	BARREL .250 (6.4) LONG I.D.
8254	22/18	6	.25 (6.4)	.25 (6.4)	.68 (17.3)	.50 (12.7)	.030 (.76)	.070 (1.78)
8255		8	.30 (7.6)					
8256		10	.32 (8.1)					
8257	16/14	6	.25 (6.4)	.25 (6.4)	.68 (17.3)	.50 (12.7)	.030 (.76)	.090 (2.29)
8258		8	.30 (7.6)					
8259		10	.32 (8.1)					
8260	12/10	6	.28 (7.3)	.28 (7.3)	.73 (18.5)	.53 (13.6)	.040 (1.02)	.135 (3.4)
8261		8	.32 (8.1)					
8262		10	.32 (8.1)					

VINYL INSULATED

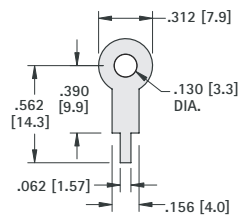


Hand Crimp Tool
CAT. NO. 1345

CAT. NO.	WIRE RANGE (AWG)	FOR STUD SIZE	W	C	L	E	THICK	BARREL .250 (6.4) LONG I.D.	MAX. INSUL. DIA.
8263	22/18 (Red)	6	.25 (6.4)	.25 (6.4)	.88 (22.4)	.70 (17.8)	.030 (.76)	.070 (1.78)	.145 (3.7)
8264		8	.30 (7.6)						
8265		10	.32 (8.1)						
8266	16/14 (Blue)	6	.25 (6.4)	.25 (6.4)	.88 (22.4)	.70 (17.8)	.030 (.76)	.090 (2.29)	.170 (4.3)
8267		8	.30 (7.6)						
8268		10	.32 (8.1)						
8269	12/10 (Yellow)	6	.28 (7.3)	.28 (7.3)	1.03 (26.2)	.83 (21.2)	.040 (1.02)	.135 (3.4)	.250 (6.4)
8270		8	.32 (8.1)						
8271		10	.32 (8.1)						

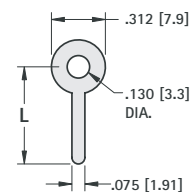


PC TERMINAL LUGS



MATERIAL: .015 (.38) thick Brass, Tin Plate

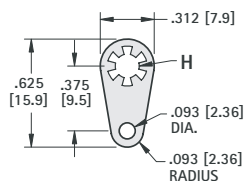
CAT. NO. 680



MATERIAL: .020 (.51) thick Brass, Tin Plate

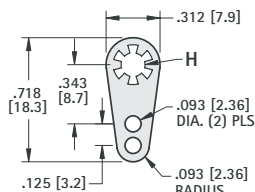
CAT. NO.	L
4000	.500 (12.7)
4001	.562 (14.3)
4002	.750 (19.1)
4003	1.000 (25.4)

LOCKWASHER TERMINAL LUGS



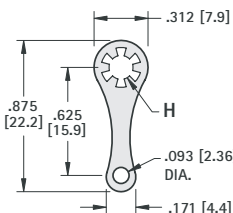
MATERIAL: .018 (.46) thick Brass, Tin Plate

CAT. NO.	H	STUD SIZE
908	.120 (3.1)	#4
914	.140 (3.6)	#6
915	.171 (4.4)	#8



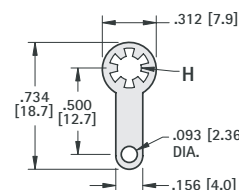
MATERIAL: .018 (.46) thick Brass, Tin Plate

CAT. NO.	H	STUD SIZE
910	.120 (3.1)	#4
918	.140 (3.6)	#6
906	.171 (4.4)	#8



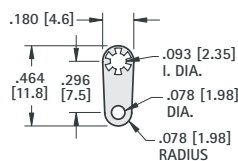
MATERIAL: .018 (.46) thick Brass, Tin Plate

CAT. NO.	H	STUD SIZE
903	.120 (3.1)	#4
904	.140 (3.6)	#6
905	.171 (4.4)	#8



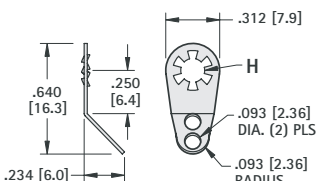
MATERIAL: .018 (.46) thick Brass, Tin Plate

CAT. NO.	H	STUD SIZE
909	.120 (3.1)	#4
916	.140 (3.6)	#6
917	.171 (4.4)	#8



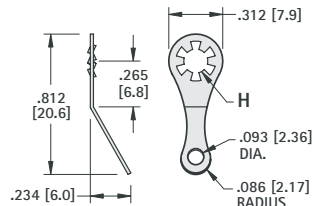
MATERIAL: .013 (.33) thick Brass, Tin Plate

CAT. NO. 907



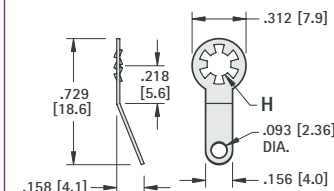
MATERIAL: .018 (.46) thick Brass, Tin Plate

CAT. NO.	H	STUD SIZE
7311	.120 (3.1)	#4
7312	.140 (3.6)	#6
7313	.171 (4.4)	#8



MATERIAL: .018 (.46) thick Brass, Tin Plate

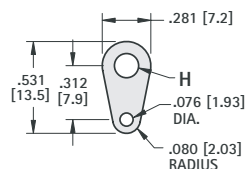
CAT. NO.	H	STUD SIZE
7317	.120 (3.1)	#4
7318	.140 (3.6)	#6
7319	.171 (4.4)	#8



MATERIAL: .018 (.46) thick Brass, Tin Plate

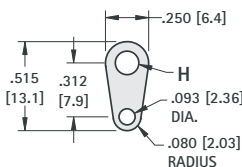
CAT. NO.	H	STUD SIZE
7314	.120 (3.1)	#4
7315	.140 (3.6)	#6
7316	.171 (4.4)	#8

SOLDER TERMINAL LUGS



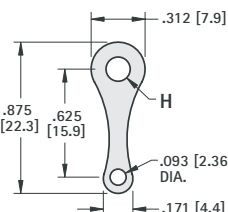
MATERIAL: .015 (.38) thick Brass, Tin Plate

CAT. NO.	H	STUD SIZE
7328	.120 (3.1)	#4
7329	.140 (3.6)	#6
7330	.171 (4.4)	#8



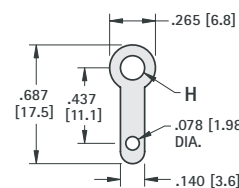
MATERIAL: .016 (.41) thick Brass, Tin Plate

CAT. NO. 4004



MATERIAL: .020 (.51) thick Brass, Tin Plate

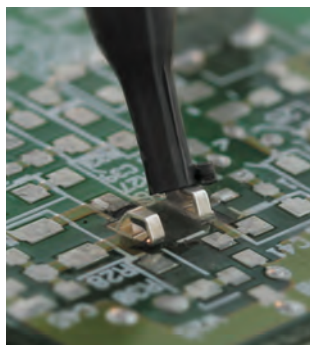
CAT. NO.	H	STUD SIZE
7331	.120 (3.1)	#4
7332	.140 (3.6)	#6
7333	.171 (4.4)	#8



MATERIAL: .020 (.51) thick Brass, Tin Plate

CAT. NO.	H	STUD SIZE
7325	.120 (3.1)	#4
7326	.140 (3.6)	#6
7327	.171 (4.4)	#8

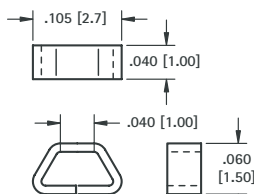
(SMT) SURFACE MOUNT TEST POINTS ON TAPE & REEL



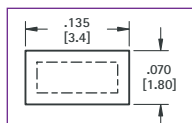
MINIATURE

- Ultra low profile, ideally suited for advanced surface mount printed circuit board applications
- Designed for long life and durability
- Manufactured using flat wire to provide a large mounting surface area
- Ideal for use with miniature probes, clips, and hooks
- Efficient, safe, board level testing

SUPPLIED ON TAPE AND REEL



Pad Layout



SPECIFICATIONS

Contact Material:

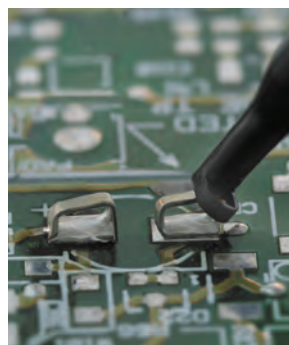
.010 (.25) thick Phosphor Bronze

Contact Finish: Silver Plate

Tape Material: 8mm wide; 4mm pitch; conductive polycarbonate carrier tape meets ANSI/EIA-481 standard

CAT. NO. 5015 - 1000 pieces per reel

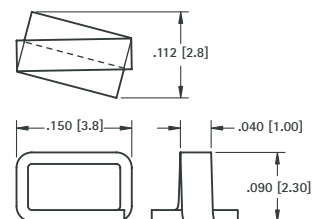
CAT. NO. 5017 - 5000 pieces per reel



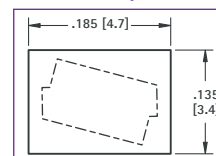
COMPACT

- Unique design provides exceptional strength and durability
- Simplifies testing on dense SMT circuit boards
- Ideal for use with most standard probes, clips and hooks
- Efficient, safe, board level testing

SUPPLIED ON TAPE AND REEL



Pad Layout



SPECIFICATIONS

Contact Material:

.015 (.38) thick Phosphor Bronze

Contact Finish: Silver Plate

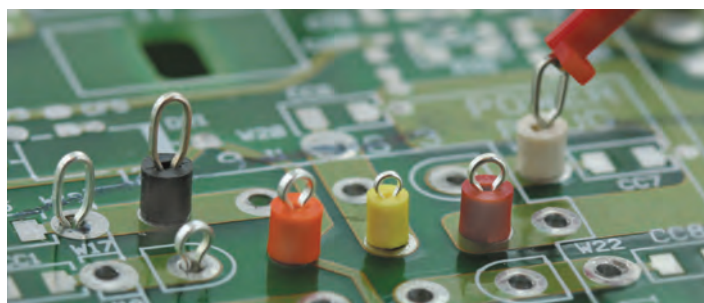
Tape Material: 12mm wide; 4mm pitch; conductive polycarbonate carrier tape meets ANSI/EIA-481 standard

CAT. NO. 5016 - 1000 pieces per reel

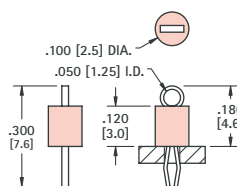
CAT. NO. 5018 - 5000 pieces per reel

(THM) THRU HOLE MOUNT TEST POINTS - COLOR KEYED

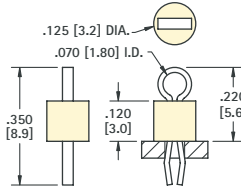
- Color keyed for visibility and quick identification
- Economical choice for PC test point terminations
- Snap-fit mounting provides positive retention for wave soldering
- Wire form loop for safe, non-slip testing
- Space saving, ultra low and low profile designs
- High profile design for difficult to reach applications
- Suitable for high density packaging on .062 (1.57) and .093 (2.36) PC boards
- Practical replacement for wire-wrap posts and turrets
- Secure grip for J hooks, EZ hooks, grabbers, alligator clips, tips or probes
- LCP base ideal for reflow soldering
- Ideal for reliable production testing and field service troubleshooting



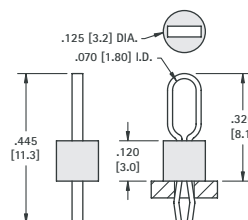
MINIATURE



COMPACT



MULTIPURPOSE



SPECIFICATIONS

Terminal:

.010 (.25) x .020 (.51) thick Phosphor Bronze Wire, Silver Plate

Base: PBT, UL Rated 94V-0

Mtg. Hole: .040 (1.0) Diameter

CAT. NO.	BASE COLOR
5000	RED
5001	BLACK
5002	WHITE
5003	ORANGE
5004	YELLOW

SPECIFICATIONS

Terminal:

.015 (.38) x .032 (.81) thick Phosphor Bronze Wire, Silver Plate

Base: PBT, UL Rated 94V-0

Mtg. Hole: .063 (1.6) Diameter

CAT. NO.	BASE COLOR
5005	RED
5006	BLACK
5007	WHITE
5008	ORANGE
5009	YELLOW

SPECIFICATIONS

Terminal:

.015 (.38) x .032 (.81) thick Phosphor Bronze Wire, Silver Plate

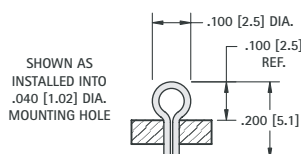
Base: PBT, UL Rated 94V-0

Mtg. Hole: .063 (1.6) Diameter

CAT. NO.	BASE COLOR
5010	RED
5011	BLACK
5012	WHITE
5013	ORANGE
5014	YELLOW

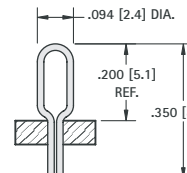
ULTRA LOW PROFILE

WITHOUT BASE



SHOWN AS INSTALLED INTO .040 [1.02] DIA. MOUNTING HOLE

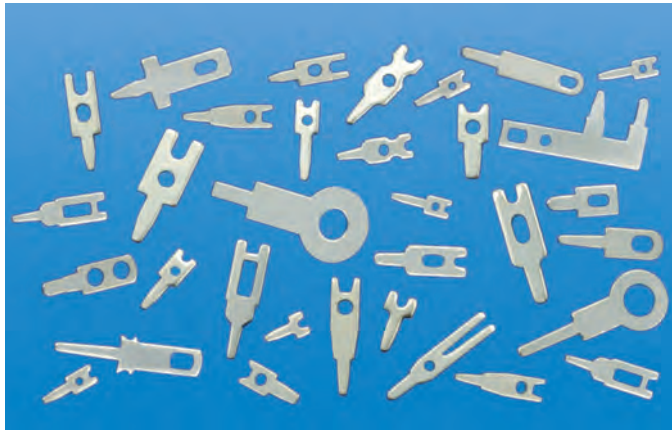
MATERIAL: .017 (.43) Diameter Phosphor Bronze, Silver Plate
Mtg. Hole: .040 (1.0) Diameter



SHOWN AS INSTALLED INTO .040 [1.02] DIA. MOUNTING HOLE

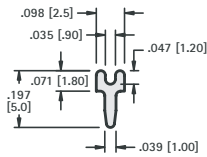
CAT. NO. 5021

CAT. NO. 5020



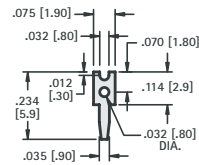
- Low profile, space saving designs for dense packaging
- Wide variety of configurations to suit most applications
- Safe, practical, economical replacement for wire-wrap posts
- Easy mount design, ideal for wave soldering
- Re-fit PC boards without need for re-design
- Provides easy access for production testing and field service troubleshooting
- Positive grip when using J hooks, EZ hooks, grabbers, clips, tips and probes
- Custom test point terminals can be manufactured to your specifications
- Other platings and materials available upon request

PC TEST POINTS - SLOTTED



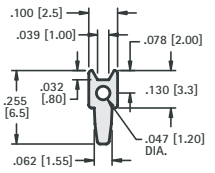
MATERIAL:
.025 (.64) thick Brass,
Tin Plate

CAT. NO. 4950



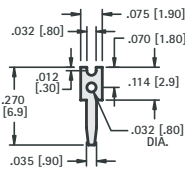
MATERIAL:
.025 (.64) thick Brass,
Tin Plate

CAT. NO. 1030



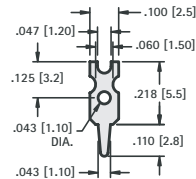
MATERIAL:
.025 (.64) thick Brass,
Tin Plate

CAT. NO. 1032



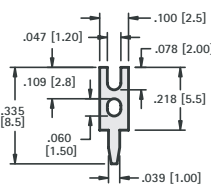
MATERIAL:
.020 (.51) thick Brass,
Tin Plate

CAT. NO. 1031



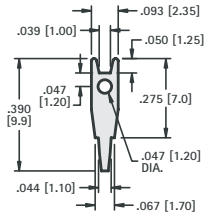
MATERIAL:
.025 (.64) thick Brass,
Tin Plate

CAT. NO. 1034



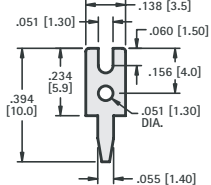
MATERIAL:
.020 (.51) thick Brass,
Tin Plate

CAT. NO. 1035



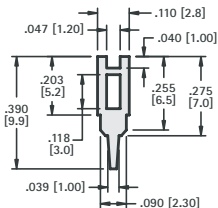
MATERIAL:
.025 (.64) thick Brass,
Tin Plate

CAT. NO. 1036



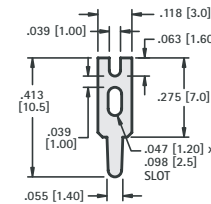
MATERIAL:
.025 (.64) thick Brass,
Tin Plate

CAT. NO. 1039



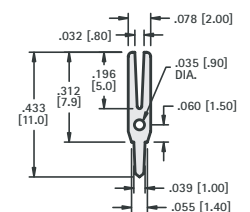
MATERIAL:
.025 (.64) thick Brass,
Tin Plate

CAT. NO. 1040



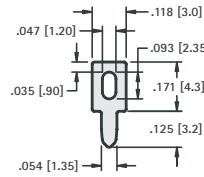
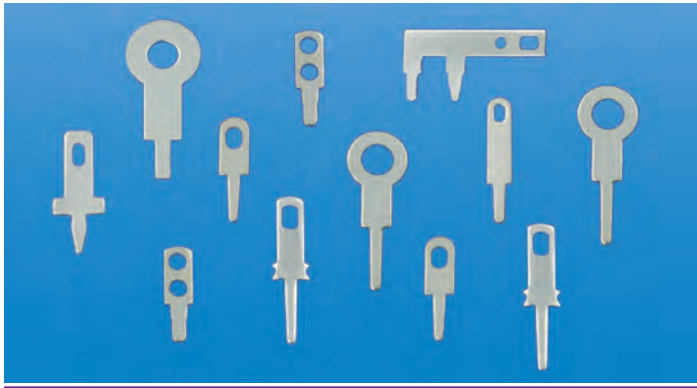
MATERIAL:
.025 (.64) thick Brass,
Tin Plate

CAT. NO. 4951



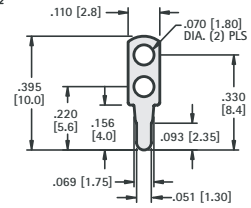
MATERIAL:
.016 (.41) thick Brass,
Tin Plate

CAT. NO. 1037



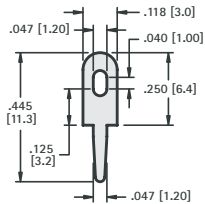
CAT. NO. 1033

MATERIAL:
.025 (.64) thick Brass,
Tin Plate



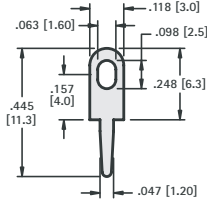
CAT. NO. 1038

MATERIAL:
.020 (.51) thick Brass,
Tin Plate



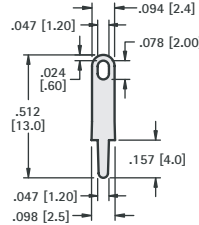
CAT. NO. 1249

MATERIAL:
.025 (.64) thick Brass,
Tin Plate



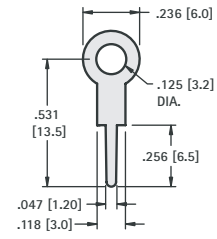
CAT. NO. 4952

MATERIAL:
.025 (.64) thick Brass,
Tin Plate



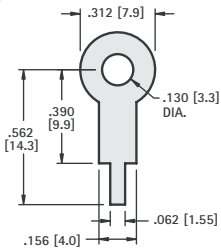
CAT. NO. 4953

MATERIAL:
.020 (.51) thick Brass,
Tin Plate



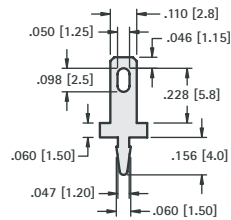
CAT. NO. 4954

MATERIAL:
.020 (.51) thick Brass,
Tin Plate



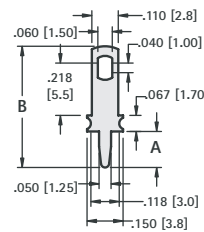
CAT. NO. 680

MATERIAL:
.015 (.38) thick Brass,
Tin Plate



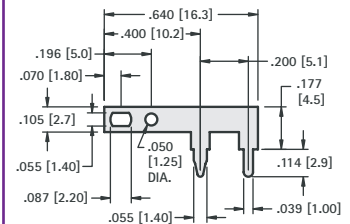
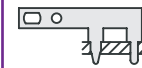
CAT. NO. 1250

MATERIAL:
.020 (.51) thick Brass,
Tin Plate



MATERIAL: .032 (.81) thick Brass, Tin Plate

CAT. NO.	A	B
1041	.275 (7.0)	.630 (16.0)
1046	.150 (3.8)	.503 (12.8)



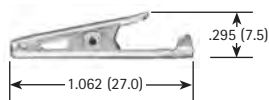
CAT. NO. 1045

MATERIAL:
.025 (.64) thick Brass,
Tin Plate

ALLIGATOR CLIPS

SMALL CLIP

- Solder Connection with Strain Relief
- Insulated or Non-Insulated



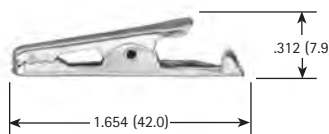
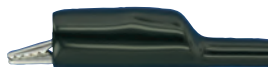
CAT. NO.	INSULATOR COLOR
5033	NONE
5034	RED
5035	BLACK
5036	GREEN
5037	YELLOW

JAW SPREAD
.236 (6.0) max.

MATERIAL:
Clip: Steel, Nickel Plate
Insulator: Vinyl

MEDIUM CLIP

- Solder Connection with Strain Relief
- Insulated or Non-Insulated



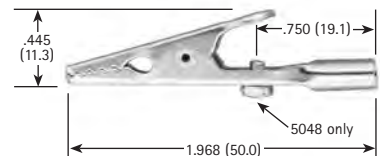
CAT. NO.	INSULATOR COLOR
5038	NONE
5039	RED
5040	BLACK

JAW SPREAD
.236 (6.0) max.

MATERIAL:
Clip: Steel, Nickel Plate
Insulator: Vinyl

LARGE CLIP

- Solder Connection or Screw Connection (Barrel Accepts Wire or Standard Banana Plugs)
- Insulated or Non-Insulated



CAT. NO.	INSULATOR COLOR
5044	NONE
5045	RED
5046	BLACK
5048	SCREW INSTALLED

JAW SPREAD
.315 (8.0) max.

MATERIAL:
Clip: Steel, Nickel Plate
Insulator: Vinyl

PC SCREW TERMINALS

These easy-to-mount, multipurpose screw type terminals are a practical, low-cost alternative to PC screw type edge connectors, barrier blocks, terminal boards and terminal strips. Steadfast and easy to install, will accommodate solid or stranded wire, crimp type terminals or lugs. Multi-placement of these low-profile terminals make them ideally suited for high density packaging. Supplied unassembled or with screw installed and captivated.

PRINCIPAL FEATURES

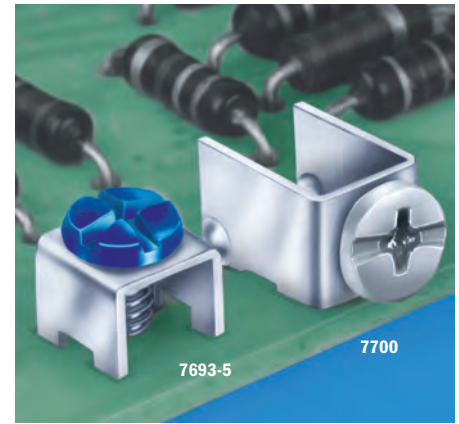
- Low profile
- Stable, no-rock design with exclusive anti-rotational feature
- Easily mounts with four legs into pre-drilled or punched holes
- Accepts 14-22 AWG solid or stranded wire, crimp type terminals or lugs
- Ideally suited for high-density packaging
- Available in horizontal or vertical mounting
- Space-saving and time saving
- Easy accessibility for PC board testing
- Binding screw is positioned above board level to avoid wicking during wave soldering
- Terminals are made of Brass with Tin Plate
- Supplied with a combination drive 6-32 binding head screw
- Color coded screws available (add color screw suffix to Cat. No.)

COLOR SELECTION:

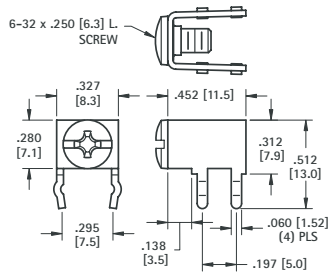
Select desired screw terminal and add color suffix to the screw terminal Cat. No.

HEAD COLOR	SUFFIX
RED	-2
BLACK	-3
WHITE	-4
BLUE	-5
GREEN	-6
YELLOW	-7
NICKEL	none

CAT. NO. COLOR SUFFIX
Ex: XXXX -X



SNAP-IN
PC MOUNT



HORIZONTAL TYPE

SPECIFICATIONS

Rated: 15 Amps

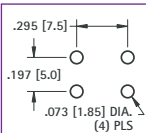
Terminal:

.032 (.81) thick Brass, Tin Plate

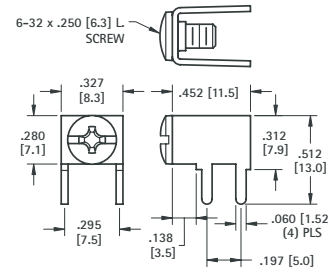
Binding Head Screw:

Brass, Nickel Plate

Mounting Detail



Color coded screws available
(add color screw suffix to Cat. No.)



PC MOUNT

CAT. NO. 7779 (Supplied Less Screw)

CAT. NO. 7690 (Screw Supplied Unassembled)

CAT. NO. 7692 (Screw Installed & Captivated)

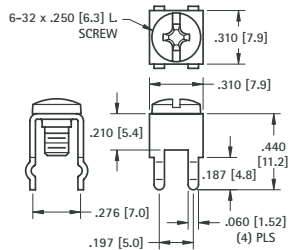
CAT. NO. 7781 (Supplied Less Screw)

CAT. NO. 8190 (Screw Supplied Unassembled)

CAT. NO. 7700 (Screw Installed & Captivated)



SNAP-IN
PC MOUNT



VERTICAL TYPE

SPECIFICATIONS

Rated: 15 Amps

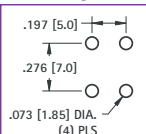
Terminal:

.032 (.81) thick Brass, Tin Plate

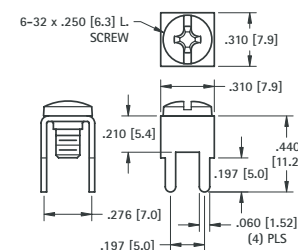
Binding Head Screw:

Brass, Nickel Plate

Mounting Detail



Color coded screws available
(add color screw suffix to Cat. No.)



PC MOUNT

CAT. NO. 7780 (Supplied Less Screw)

CAT. NO. 7691 (Screw Supplied Unassembled)

CAT. NO. 7693 (Screw Installed & Captivated)

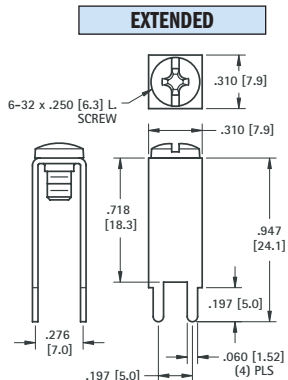
CAT. NO. 7782 (Supplied Less Screw)

CAT. NO. 8191 (Screw Supplied Unassembled)

CAT. NO. 7701 (Screw Installed & Captivated)



PC MOUNT



EXTENDED

SPECIFICATIONS

Rated: 15 Amps

Terminal:

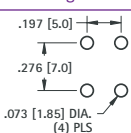
.032 (.81) thick Brass, Tin Plate

Binding Head Screw:

Brass, Nickel Plate

Color coded screws available
(add color screw suffix to Cat. No.)

Mounting Detail

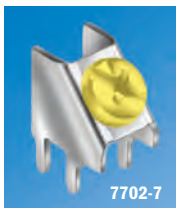
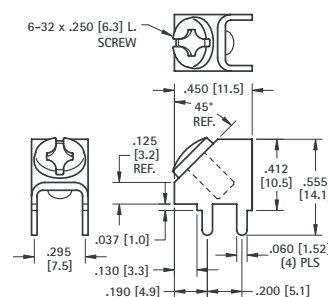


CAT. NO. 7789 (Supplied Less Screw)

CAT. NO. 7697 (Screw Supplied Unassembled)

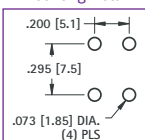
CAT. NO. 7699 (Screw Installed & Captivated)

45°



PC MOUNT

Mounting Detail



CAT. NO. 7783 (Supplied Less Screw)

CAT. NO. 8189 (Screw Supplied Unassembled)

CAT. NO. 7702 (Screw Installed & Captivated)

COLOR CODED SCREW TERMINAL SELECTION GUIDE



Color Coded Screw Terminals provide:

- Quick identification
- Visibility for field service troubleshooting

SPECIFICATIONS

Combination Binding Head:

Standard screw is Brass, Nickel Plate. For painted, color head, add suffix as shown.



6-32 x .250 [6.3] L. THREAD

COLOR SELECTION:
Select desired screw terminal and add color suffix to the screw terminal Cat. No.

HEAD COLOR	SUFFIX
RED	-2
BLACK	-3
WHITE	-4
BLUE	-5
GREEN	-6
YELLOW	-7
NICKEL	none

CAT. NO. COLOR SUFFIX
Ex: XXXX -X



Refer to page 123 for color screws only

- Available for screw terminals where noted.

LOW PROFILE - PC SCREW TERMINALS

These easy to mount screw terminals are ideally suited for high density packaging and are available unassembled or with the screw installed and captivated. They are a practical alternative to PC screw type edge connectors, barrier blocks, terminal boards and terminal strips.

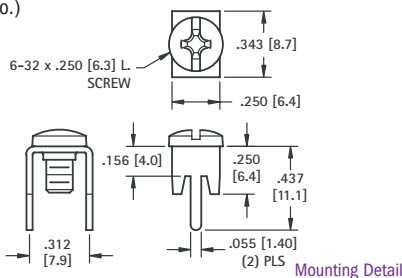


PRINCIPAL FEATURES

- Low profile
- Stable, no-rock design
- Easily mounts in pre-drilled or stamped holes
- Accepts 12-22 AWG solid or stranded wire, crimp type terminals or lugs
- Space saving and time saving
- Combination drive, binding head screw
- Color coded screws available (add color screw suffix to Cat. No.)

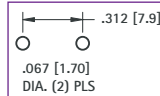
SPECIFICATIONS

Rated: 15 Amps
Terminal: .032 (.81) thick Brass, Tin Plate
Binding Head Screw: Brass, Nickel Plate



Mounting Detail

- CAT. NO. 7784** (Supplied Less Screw)
- CAT. NO. 8198** (Screw Supplied Unassembled)
- CAT. NO. 7778** (Screw Installed & Captivated)

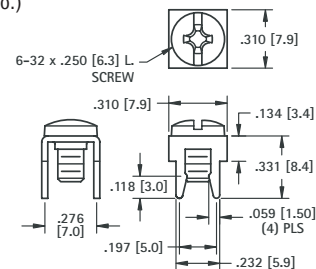


PRINCIPAL FEATURES

- Low profile
- Stable, no-rock design with exclusive anti-rotational feature
- Ideally suited for high-density packaging
- Space saving and time saving
- Combination drive, binding head screw
- Color coded screws available (add color screw suffix to Cat. No.)

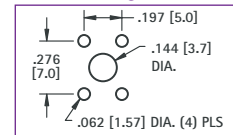
SPECIFICATIONS

Rated: 15 Amps
Terminal: .032 (.81) thick Brass, Tin Plate
Binding Head Screw: Brass, Nickel Plate



Mounting Detail

- CAT. NO. 7785** (Supplied Less Screw)
- CAT. NO. 8195** (Screw Supplied Unassembled)
- CAT. NO. 7775** (Screw Installed & Captivated)



30 AMP - PC SCREW TERMINALS

A practical, low-cost alternative to PC screw type edge connectors, barrier blocks, terminal boards and terminal strips. Supplied unassembled or with screw installed and captivated.

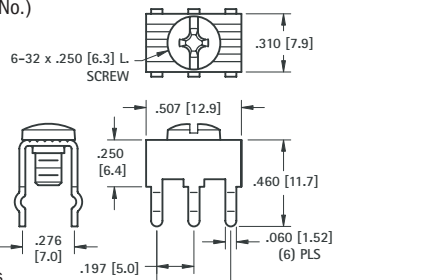


PRINCIPAL FEATURES

- Compact, heavy duty design
- Six snap-in legs for total stability
- Serrated top surface secures connection
- Combination drive, binding head screw
- Color coded screws available (add color screw suffix to Cat. No.)

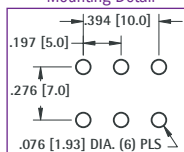
SPECIFICATIONS

Rated: 30 Amps
Terminal: .032 (.81) thick Brass, Tin Plate
Binding Head Screw: Brass, Nickel Plate



Mounting Detail

- CAT. NO. 7786** (Supplied Less Screw)
- CAT. NO. 8197** (Screw Supplied Unassembled)
- CAT. NO. 8199** (Screw Installed & Captivated)



HEAVY DUTY

This heavy duty screw terminal has been designed to carry 30 Amps, while maintaining a space saving compact profile, making it ideal for high density packaging.

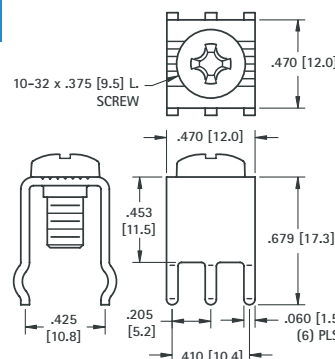


PRINCIPAL FEATURES

- Compact, heavy duty design
- Six snap-in legs for total stability
- Serrated top surface secures connection

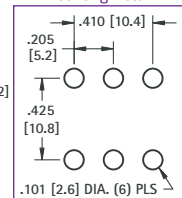
SPECIFICATIONS

Rated: 30 Amps
Terminal: .045 (1.14) thick Brass, Tin Plate
Screw: Stainless Steel



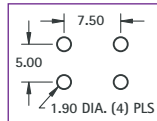
Mounting Detail

- CAT. NO. 7787** (Supplied Less Screw)
- CAT. NO. 8196** (Screw Supplied Unassembled)





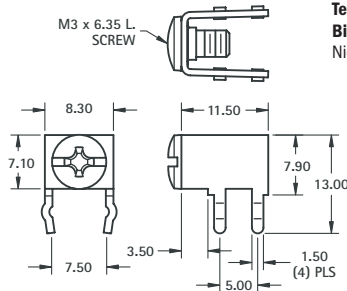
Mounting Detail



CAT. NO. 7790 (Supplied Less Screw)

CAT. NO. 7689 (Screw Supplied Unassembled)

CAT. NO. 7695 (Screw Installed & Captivated)



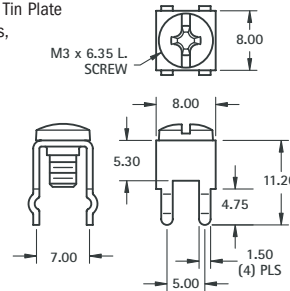
**M3
HORIZONTAL**

SPECIFICATIONS

Rated: 15 Amps

Terminal: 0.81 thick Brass, Tin Plate

Binding Head Screw: Brass, Nickel Plate



**M3
VERTICAL**

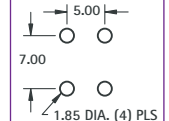
CAT. NO. 7788 (Supplied Less Screw)

CAT. NO. 7698 (Screw Supplied Unassembled)

CAT. NO. 7696 (Screw Installed & Captivated)



Mounting Detail



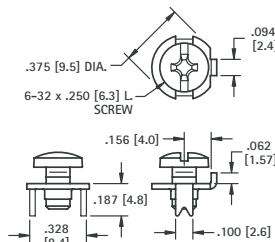
NOTE: All dimensions are in millimeters

LOW PROFILE SCREW TERMINALS

These sturdy, low cost screw terminals, feature an anti-rotation tab for use with spade terminals. They are available with the screw installed and captivated, the screw unassembled or without a screw.



6-32



SPECIFICATIONS

Rated: 15 Amps

Terminal: .032 (.81) thick Brass, Tin Plate

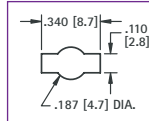
Screw: Combination drive, Stainless Steel

CAT. NO. 1284 (Supplied Less Screw)

CAT. NO. 1298 (Screw Supplied Unassembled)

CAT. NO. 1201 (Screw Installed & Captivated)

Mounting Detail

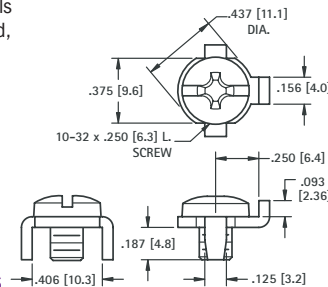


PRINCIPLE FEATURES

- Easy to connect using solid or stranded wire, crimp lugs or terminals
- Anti-rotation tab for use with spade terminals
- Supplied with screw installed and captivated, with screw unassembled, or without screw
- Stainless steel screw will not wick



10-32



SPECIFICATIONS

Rated: 30 Amps

Terminal: .062 (1.6) thick Brass, Tin Plate

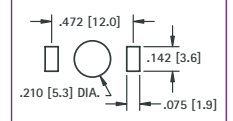
Screw: Combination drive, Stainless Steel

CAT. NO. 1293 (Supplied Less Screw)

CAT. NO. 1299 (Screw Supplied Unassembled)

CAT. NO. 1202 (Screw Installed & Captivated)

Mounting Detail

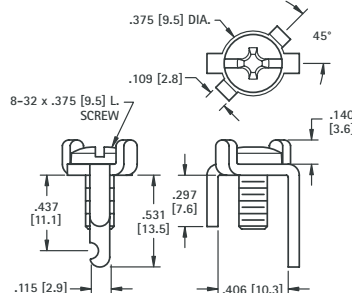


HEAVY DUTY SCREW TERMINALS

These heavy duty terminals are available with the screw installed or unassembled, and feature easy access to connect solid or stranded wire, crimp type lugs or terminals.



8-32



SPECIFICATIONS

Rated: 15 Amps

Terminal: .064 (1.6) thick Brass, Tin Plate

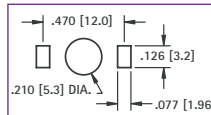
Screw: Brass, Nickel Plate

CAT. NO. 1205 (Supplied Less Screw)

CAT. NO. 1207 (Screw Supplied Unassembled)

CAT. NO. 1209 (Screw Installed)

Mounting Detail

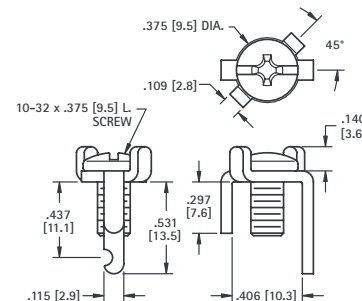


PRINCIPLE FEATURES

- Anti-rotation tab for use with spade terminals
- Below the board notched leg, to facilitate mechanical and solder connections
- Easy to connect using solid or stranded wire, crimp lugs or terminals
- Available with screw installed, unassembled, or without screw



10-32



SPECIFICATIONS

Rated: 30 Amps

Terminal: .064 (1.6) thick Brass, Tin Plate

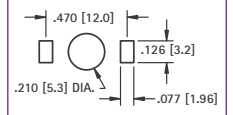
Screw: Steel, Nickel Plate

CAT. NO. 1206 (Supplied Less Screw)

CAT. NO. 1208 (Screw Supplied Unassembled)

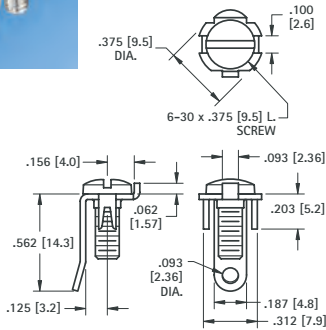
CAT. NO. 1283 (Screw Installed)

Mounting Detail



OFFSET LEG

6-32

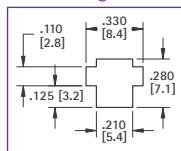


Mounting Detail

SPECIFICATIONS

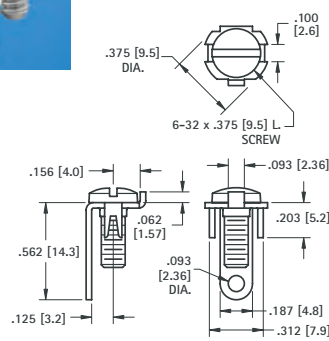
Terminal: .032 (.81) thick Steel, Tin Plate
Screw: Steel, Nickel Plate
 (Screw Installed & Captivated)

CAT. NO. 1248



STRAIGHT LEG

6-32

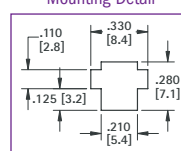


Mounting Detail

SPECIFICATIONS

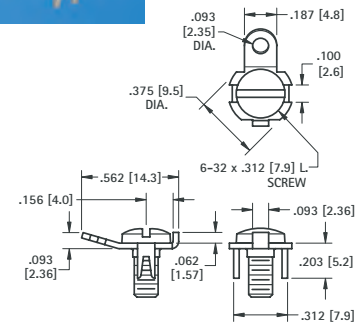
Terminal: .032 (.81) thick Steel, Tin Plate
Screw: Steel, Nickel Plate
 (Screw Installed & Captivated)

CAT. NO. 1215



SOLDER TAB

6-32

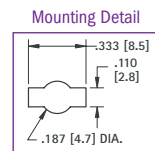


Mounting Detail

SPECIFICATIONS

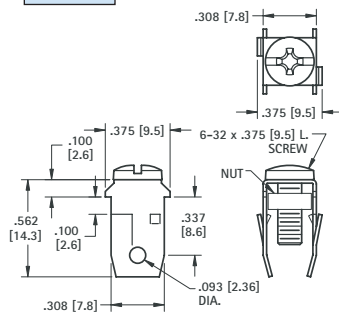
Terminal: .032 (.81) thick Steel, Tin Plate
Screw: Steel, Nickel Plate
 (Screw Installed & Captivated)

CAT. NO. 1232



SNAP-FIT SCREW TERMINALS

SOLDER

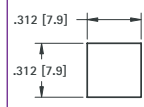


Mounting Detail

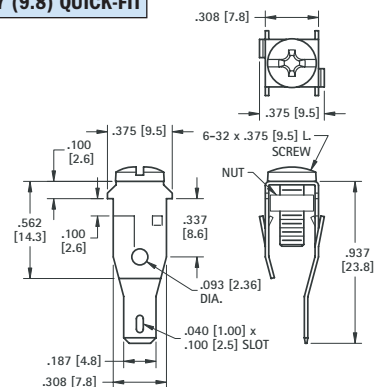
SPECIFICATIONS

Terminal: .020 (.51) thick Spring Steel, Tin Plate
Screw: Steel, Zinc Plate
 (Screw Installed & Captivated)

CAT. NO. 1272



.187 (9.8) QUICK-FIT



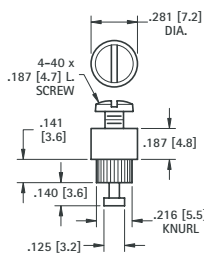
SPECIFICATIONS

Terminal: .020 (.51) thick Spring Steel, Tin Plate
Screw: Steel, Zinc Plate
 (Screw Installed & Captivated)

CAT. NO. 1273

BINDING POST TERMINALS (RIVET TYPE)

4-40



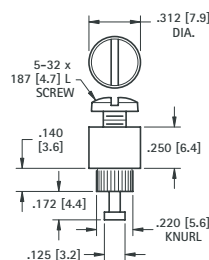
FOR .093 (2.38) BOARD

SPECIFICATIONS

Terminal: Brass, Tin Plate
Screw: Steel, Zinc Plate
 (Screw Supplied Unassembled)
Mounting Hole: .220 (5.6)

CAT. NO. 1537

6-32



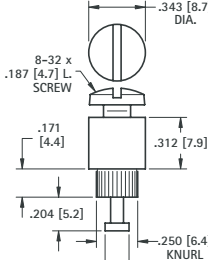
FOR .093 (2.38) BOARD

SPECIFICATIONS

Terminal: Brass, Tin Plate
Screw: Steel, Zinc Plate
 (Screw Supplied Unassembled)
Mounting Hole: .225 (5.7)

CAT. NO. 1535

8-32



FOR .125 (3.2) BOARD

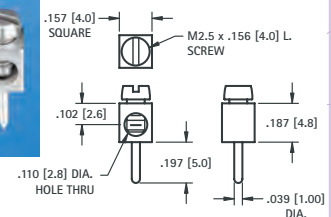
SPECIFICATIONS

Terminal: Brass, Tin Plate
Screw: Steel, Zinc Plate
 (Screw Supplied Unassembled)
Mounting Hole: .255 (6.5)

CAT. NO. 1536

MINI BINDING POST

M2.5



SPECIFICATIONS

Terminal: Brass, Tin Plate
Screw: Steel, Zinc Plate
 (Screw Installed)
Mounting Hole: .047 (1.2)

CAT. NO. 8730

PC TERMINAL BLOCKS

These versatile PC terminal blocks provide a quick and easy method to attach wire leads to a circuit board. Multiple units may

be interlocked for strips as long as 24 positions inline. Because of accumulating tolerances, we do not recommend longer strips.

- Wire access available in horizontal, 45° or vertical wire entry
- Simplifies termination of removable leads
- Individual leads can be disconnected without disturbing others
- Wire guard helps prevent damage to conductors
- Accepts 22-16 AWG wire
- Mounts easily in pre-drilled or stamped holes
- 5mm spacing

SPECIFICATIONS

MATERIAL:

Contact: Brass, Tin Plate
Housing: Blue PBT, UL Rated 94V-0
Screw: Steel, Zinc Plate
 & Clear Chromate (captivated)

ELECTRICAL:

Current Rating: 16 Amps
Dielectric Strength: 2500V
Insulation Breakdown:
 1500VAC/min.
Rated Voltage: 250V

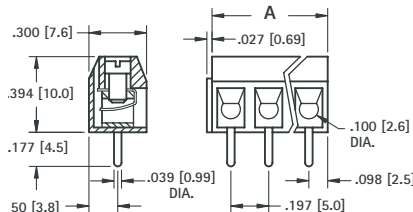
MECHANICAL:

Operating Temp:
 22°F to 248°F (-30°C to 120°C)
Peak Temp: +393°F (+200°C)
Wire Size: Accepts #22-14 AWG

HORIZONTAL WIRE ENTRY

5mm SPACING

CAT. NO.	POSITIONS	A DIM.
8718	2	.394 (10.0)
8719	3	.591 (15.0)



Recommended Mtg. Hole Size: .047 (1.19)



8718

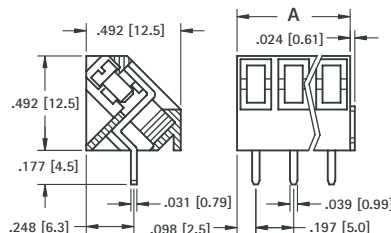


8719

45° WIRE ENTRY

5mm SPACING

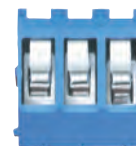
CAT. NO.	POSITIONS	A DIM.
8720	2	.394 (10.0)
8721	3	.591 (15.0)



Recommended Mtg. Hole Size: .051 (1.30)



8720

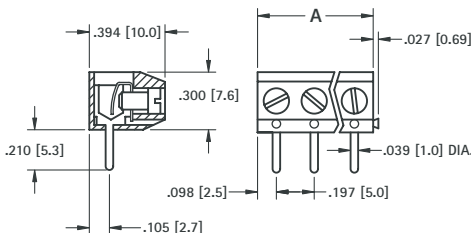


8721

VERTICAL WIRE ENTRY

5mm SPACING

CAT. NO.	POSITIONS	A DIM.
8738	2	.394 (10.0)
8739	3	.591 (15.0)



Recommended Mtg. Hole Size: .047 (1.19)



8739



8738

SCREWLESS - PUSH BUTTON TYPE

SPECIFICATIONS

MATERIAL:

Terminal: Brass, Tin Plate
Contact: Stainless Steel
Housing: Blue Nylon 6/6,
 UL Rated 94V-0

ELECTRICAL:

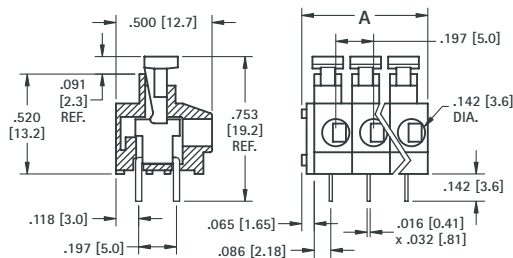
Current Rating: 10 Amps
Dielectric Strength: 2500V
Insulation Breakdown: 1500V AC/min.

MECHANICAL:

Operating Temp:
 22°F to 248°F (-30°C to 120°C)
Peak Temp: +392°F (+200°C)

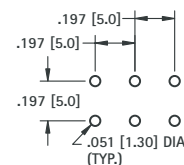
Particularly useful when quick reliable connections are required or when temporary connections are needed, such as on test sets and bread boards. They may be interlocked to achieve the required number of positions.

- Available with two or three terminal positions
- Mounts easily in predrilled or stamped holes
- Suited for both solid and stranded wire
- Accepts #20-18 AWG wire*
- Stainless Steel spring assures good contact
- Quick reliable connection
- Because of accumulating tolerances, we recommend a maximum of 24 positions per row.



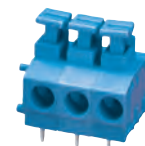
*Recommended wire strip length: .300 (7.6)

Mounting Detail
for (3) Positions



8728

HORIZONTAL WIRE ENTRY



8729

CAT. NO.	POSITIONS	A DIM.
8728	2	.459 (11.7)
8729	3	.656 (16.7)

supplied in strips of 24. Simply snap off the desired number of positions required and insert into PC board. The modular terminal block can be plugged into the header strip at anytime.

- Accepts #22-16 AWG wire
- Because of accumulating tolerances, we recommend a maximum of 24 positions per row
- Header strips and terminal blocks sold separately

MATERIAL:

ELECTRICAL:

MECHANICAL:

Operating Temp:
22°F to 248°F (-30°C to 120°C)
Peak Temp: +393°F (+200°C)

- Use header strip to connect to PCB



3.5mm SPACING			
CAT. NO.	POSITIONS	A DIM.	CURRENT RATING
8722	2	.276 (7.0)	6 Amps
8723	3	.413 (10.5)	

- Use header strip to connect to PCB



5mm SPACING			
CAT. NO.	POSITIONS	A DIM.	CURRENT RATING
8725	2	.394 (10.0)	10 Amps
8726	3	.591 (15.0)	

Pin Header Strips
(24 pins per strip)

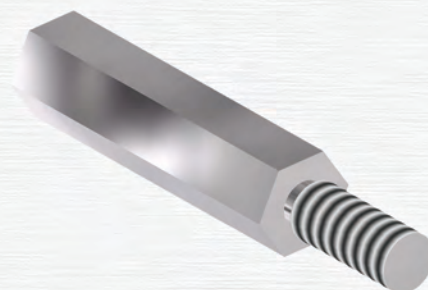
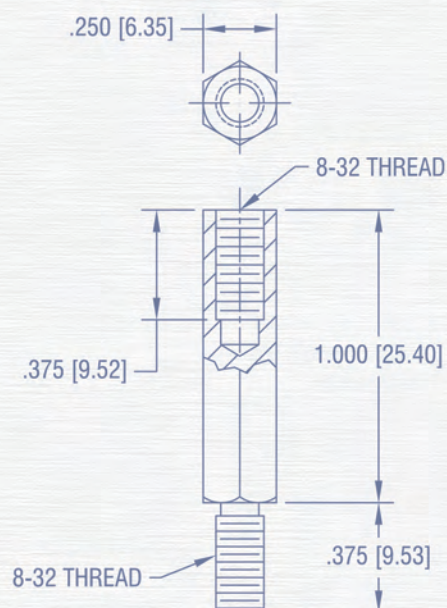
CAT. NO. 8724

Pin Header Strips
(24 pins per strip)

CAT. NO. 8727

NOTES

[illegible]



SPACERS & STANDOFFS

Designed for reliability and close tolerance dimensions our diverse selection of spacers and standoffs provide solutions for any design requirements. Available in a wide range of materials and styles, some of the applications include:

- Mechanical support
- Component-to-board mounting requirements
- Board-to-Board PCB mounting
- Board-to-Chassis device mounting
- Eliminate the cost and bulk of backplanes and card cages
- PC/104 & PC/104 plus module mounting
- High Temperature conditions
- Commercial, Military & Industrial environments

Our quality system is ISO 9001:2000 certified. Our products are in compliance with the RoHS directive. We provide 3D modeling, CAD and other application-engineering support for modifications, special designs or assembly requirements to assist you in choosing the right Keystone product for your application.

DATE

DESCRIPTION

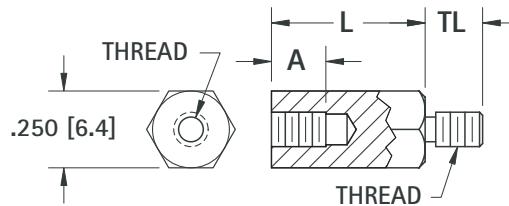
REV.



SECTION CONTENTS

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MALE/FEMALE THREADED STANDOFFS



THREAD SIZE	TL EXTERNAL	A INTERNAL
4-40	.187 (4.7)	.250 (6.4)
6-32	.250 (6.4)	.375 (9.5)
8-32	.375 (9.5)	.375 (9.5)

Application Note:
For PC/104 applications use
length .600 (15.3) 4-40 Thread

CHOICE OF:		
Stainless: ASTM A581/A582	Brass: ASTM-B16 Plating: Nickel (QQ-N-290)	Aluminum: ASTM B211 Plating: Clear Iridite (Mil-C-5541)

4-40 THREAD			
L LENGTH	STAINLESS STEEL CAT NO.	BRASS CAT NO.	ALUMINUM CAT NO.
.250 (6.4)***	8712	8713	8714
.375 (9.5)	2087	7200	8400
.500 (12.7)	2088	1944	8401
.600 (15.3)*	5799	8799	6799
.625 (15.9)	2089	1945	8402
.750 (19.1)	2090	1946	8403
.875 (22.2)	2091	7201	8404
1.000 (25.4)	2092	1947	8405
1.125 (28.6)	2093	7202	8406
1.250 (31.8)	2094	1948	8407
1.375 (34.9)	2095	1949	8408
1.500 (38.1)	2096	1950	8409
1.625 (41.3)	2097	7203	8410
1.750 (44.5)	2098	7205	8411
2.000 (50.8)	2099	1951	8412

*PC/104 Standard Length
***Internal Thread .130 (3.3)/.150 (3.8) Deep

6-32 THREAD			
L LENGTH	STAINLESS STEEL CAT NO.	BRASS CAT NO.	ALUMINUM CAT NO.
.250 (6.4)***	8715	8716	8717
.375 (9.5)**	2119	7210	8413
.500 (12.7)	2120	1952	8414
.625 (15.9)	2121	1953	8415
.750 (19.1)	2122	1954	8416
.875 (22.2)	2123	7211	8417
1.000 (25.4)	2124	1644	8418
1.125 (28.6)	2125	7212	8419
1.250 (31.8)	2126	1955	8420
1.375 (34.9)	2127	1956	8421
1.500 (38.1)	2128	1645	8422
1.625 (41.3)	2129	7214	8423
1.750 (44.5)	2130	7215	8424
2.000 (50.8)	2131	1646	8425

** Internal Thread .250 (6.4) Deep
*** Internal Thread .130 (3.3)/.150 (3.8) Deep

8-32 THREAD			
L LENGTH	STAINLESS STEEL CAT NO.	BRASS CAT NO.	ALUMINUM CAT NO.
.250 (6.4)***	8731	8732	8733
.375 (9.5)**	2149	7220	8426
.500 (12.7)	2150	1957	8427
.625 (15.9)	2151	1958	8428
.750 (19.1)	2152	1959	8429
.875 (22.2)	2153	7221	8430
1.000 (25.4)	2154	1960	8431
1.125 (28.6)	2155	7222	8432
1.250 (31.8)	2156	1961	8433
1.375 (34.9)	2157	1962	8434
1.500 (38.1)	2158	1963	8435
1.625 (41.3)	2159	7224	8436
1.750 (44.5)	2160	7225	8437
2.000 (50.8)	2161	1964	8438
2.500 (63.5)	2180	1965	8439
3.000 (76.2)	2181	1966	8440

** Internal Thread .250 (6.4) Deep
*** Internal Thread .130 (3.3)/.150 (3.8) Deep

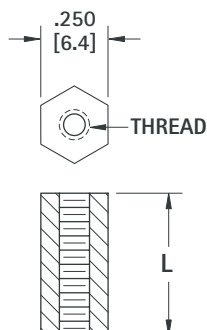
THREADED NYLON STANDOFFS

MATERIAL: Nylon 6/6

FEMALE STANDOFFS
UL RATED 94V-2



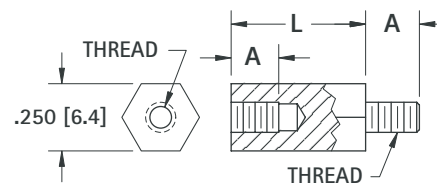
L LENGTH	THREAD SIZE		
	4-40 CAT. NO.	6-32 CAT. NO.	8-32 CAT. NO.
.250 (6.4)	1902A	1903A	1904A
.375 (9.5)	1902B	1903B	1904B
.500 (12.7)	1902C	1903C	1904C
.625 (15.8)	1902F	1903F	1904F
.750 (19.1)	1902D	1903D	1904D
.875 (22.2)	1902G	1903G	1904G
1.000 (25.4)	1902E	1903E	1904E



FLAME RETARDANT
FEMALE STANDOFFS
UL RATED 94V-0

L LENGTH	THREAD SIZE		
	4-40 CAT. NO.	6-32 CAT. NO.	8-32 CAT. NO.
.250 (6.4)	8440A	8441A	8442A
.375 (9.5)	8440B	8441B	8442B
.500 (12.7)	8440C	8441C	8442C
.625 (15.8)	8440D	8441D	8442D
.750 (19.1)	8440E	8441E	8442E
.875 (22.2)	8440F	8441F	8442F
1.000 (25.4)	8440G	8441G	8442G

MALE/FEMALE STANDOFFS
UL RATED 94V-2



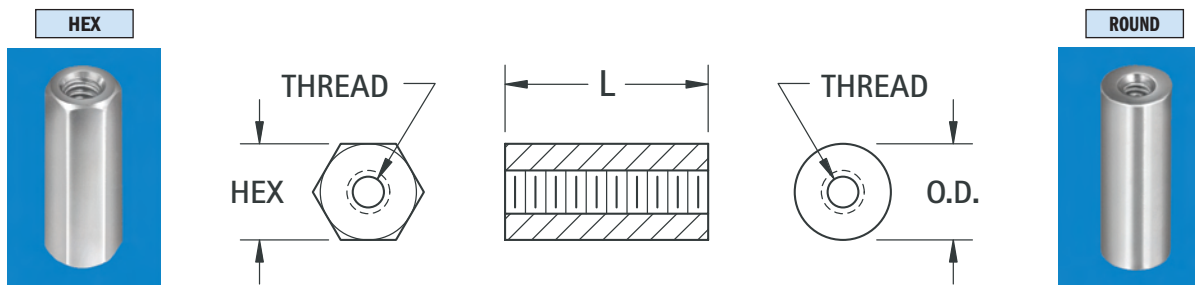
L LENGTH	THREAD SIZE		
	4-40 CAT. NO.	6-32 CAT. NO.	8-32 CAT. NO.
.250 (6.4)***	4800	4814	4828
.375 (9.5)	4801	4815	4829**
.500 (12.7)	4802	4816	4830
.600 (15.3)*	4799	-	-
.625 (15.9)	4803	4817	4831
.750 (19.1)	4804	4818	4832
.875 (22.2)	4805	4819	4833
1.000 (25.4)	4806	4820	4834
1.125 (28.6)	4807	4821	4835
1.250 (31.8)	4808	4822	4836
1.375 (34.9)	4809	4823	4837
1.500 (38.1)	4810	4824	4838
1.625 (41.3)	4811	4825	4839
1.750 (44.5)	4812	4826	4840
2.000 (50.8)	4813	4827	4841

* PC/104 Standard Length
** Internal Thread .250 (6.4) Deep
*** Internal Thread .130 (3.3)/.150 (3.8) Deep

Application Note:
For PC/104 applications
use **CAT. NO. 4799**

THREAD SIZE	A
4-40	.187 (4.7)
6-32	.250 (6.4)
8-32	.375 (9.5)

FEMALE THREADED STANDOFFS



CHOICE OF:								
Stainless: ASTM A581/A582		Brass: per ASTM-B16 Plating: Zinc ASTM B633		Aluminum: ASTM B211 Plating: Clear Iridite Finish (Mil-C-5541)		Phenolic: PBE Grade Natural Color Phenolic		
HEX	HEX			LENGTH	ROUND			O.D.
	STAINLESS CAT. NO.	BRASS CAT. NO.	ALUMINUM CAT. NO.		BRASS CAT. NO.	ALUMINUM CAT. NO.	PHENOLIC CAT. NO.	
2-56 THREAD								
.156 (3.9)	—	1798A	1797A	.187 (4.7)	1802A	1801A	—	.156 (3.9)
	—	1798B	1797B	.250 (6.4)	1802B	1801B	—	
	—	1798C	1797C	.312 (7.9)	1802C	1801C	—	
	—	1798D	1797D	.375 (9.5)	1802D	1801D	—	
4-40 THREAD								
.187 (4.7)	—	1450	1891	.250 (6.4)	1547	2025	—	.187 (4.7)
	—	1803	1892	.375 (9.5)	1864	2026	—	
	—	1656	1893	.500 (12.7)	1657	2027	—	
	—	1804	1894	.625 (15.9)	1865	2028	—	
	—	1656A	1895	.750 (19.1)	1657A	2029	—	
	—	1805	1896	.875 (22.2)	1866	2030	—	
	—	1656B	1897	1.000 (25.4)	1657B	2031	—	
.250 (6.4)	1921	1450A	2201	.250 (6.4)	1547A	3478	376	.250 (6.4)
	1921A	1450B	2202	.375 (9.5)	1547B	3479	377	
	1921B	1450C	2203	.500 (12.7)	1547C	3480	378	
	—	1829	1808	.625 (15.9)	1867	1839	—	
	1921C	1450D	2204	.750 (19.1)	1547D	3481	379	
	—	1830	1809	.875 (22.2)	1876	1846	—	
	1921D	1450E	2205	1.000 (25.4)	1547E	3482	380	
	1921E	1831	2206	1.500 (38.1)	1877	3483	381	
1921F	1832	2207	2.000 (50.8)	1878	3484	382		
6-32 THREAD								
.250 (6.4)	1922	1451A	2208	.250 (6.4)	1548A	3485	383	.250 (6.4)
	1922A	1451B	2209	.375 (9.5)	1548B	3486	384	
	1922B	1451C	2210	.500 (12.7)	1548C	3487	385	
	—	1451D	1813	.625 (15.9)	1548D	1847	—	
	1922C	1451E	2211	.750 (19.1)	1548E	3488	386	
	—	1833	1816	.875 (22.2)	1879	1848	—	
	1922D	1635	2212	1.000 (25.4)	1548F	3489	387	
	—	1636	1818	1.250 (31.8)	1881	1853	—	
	1922E	1637	2213	1.500 (38.1)	1882	3490	388	
	—	1638	1819	1.750 (44.5)	1883	1855	—	
	1922F	1639	2214	2.000 (50.8)	1884	3491	389	
	—	1642	1820	2.250 (57.2)	1885	1856	—	
—	1643	1825	2.500 (63.5)	1886	1857	—		
8-32 THREAD								
.250 (6.4)	1923	1474A	2215	.250 (6.4)	1692A	3492	390	.250 (6.4)
	1923A	1474B	2216	.375 (9.5)	1692B	3493	391	
	1923B	1474C	2217	.500 (12.7)	1692C	3494	392	
	—	1834	1827	.625 (15.9)	1887	1858	—	
	1923C	1474D	2218	.750 (19.1)	1692D	3495	393	
	—	1836	1828	.875 (22.2)	1888	1859	—	
	1923D	1474E	2219	1.000 (25.4)	1692E	3496	394	
	1923E	1837	2220	1.500 (38.1)	1889	3497	395	
	1923F	1838	2221	2.000 (50.8)	1899	3498	396	
10-32 THREAD								
.312 (7.9)	1475A	1822A	1821A	.375 (9.5)	3499A	3500A	468	.312 (7.9)
	1475B	1822B	1821B	.500 (12.7)	3499B	3500B	469	
	1475C	1822C	1821C	.625 (15.9)	3499C	3500C	—	
	1475D	1822D	1821D	.750 (19.1)	3499D	3500D	470	
	1475F	1822F	1821F	1.000 (25.4)	3499F	3500F	471	

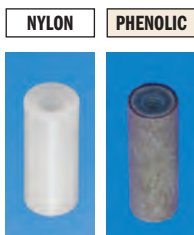
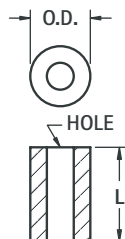
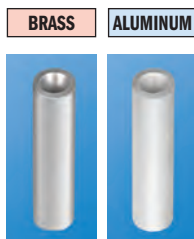
NOTE: All standoffs over 1.000 (25.4) are tapped .375 (9.5) min. both ends, except 4-40 standoffs which are tapped .250 (6.4) min.

ROUND CLEAR HOLE SPACERS

CLEAR HOLE	O.D.	L LENGTH	BRASS CAT. NO.	ALUMINUM CAT. NO.
.120 (3.0) For #4	.250 (6.4)	.125 (3.2)	1909	2036
		.250 (6.4)	1454A	3457
		.375 (9.5)	1454B	3458
		.500 (12.7)	1454C	3459
		.625 (15.9)	1919	2314
		.750 (19.1)	1454D	3460
		.875 (22.2)	1920	3402
		1.000 (25.4)	1454E	3461
		1.500 (38.1)	1924	3462
		2.000 (50.8)	1925	3463
.140 (3.5) For #6	.250 (6.4)	.125 (3.2)	1934	3403
		.250 (6.4)	1457A	3464
		.375 (9.5)	1457B	3465
		.500 (12.7)	1457C	3466
		.625 (15.9)	1935	3429
		.750 (19.1)	1457D	3467
		.875 (22.2)	1936	3438
		1.000 (25.4)	1457E	3468
		1.500 (38.1)	1937	3469
		2.000 (50.8)	1938	3470
.171 (4.3) For #8	.250 (6.4)	.125 (3.2)	1942	4258
		.250 (6.4)	1480	3471
		.375 (9.5)	1481	3472
		.500 (12.7)	1482	3473
		.625 (15.9)	2032	4259
		.750 (19.1)	1483	3474
		.875 (22.2)	2033	4260
		1.000 (25.4)	1484	3475
		1.500 (38.1)	2034	3476
		2.000 (50.8)	2035	3477
.196 (5.0) For #10	.312 (7.9)	.250 (6.4)	1662	4261
		.375 (9.5)	1663	4262
		.500 (12.7)	1664	4263
		.625 (15.9)	1665	4264
		.750 (19.1)	1666	4265
		.875 (22.2)	1667	4266
		1.000 (25.4)	1668	4267
		1.500 (38.1)	1669	4268
		2.000 (50.8)	1672	4269

MATERIAL:

Brass: ASTM-B16, Nickel Plate (QQ-N-290)
Aluminum: ASTM B211, Clear Iridite (MIL-C-5541)
Nylon: Nylon 6/6, UL Rated 94V-2
Phenolic: PBE Grade Natural Color Phenolic



NYLON CAT. NO.	PHENOLIC CAT. NO.	L LENGTH	O.D.	CLEAR HOLE
875	—	.125 (3.2)	.250 (6.4)	.120 (3.0) For #4
876	360	.250 (6.4)		
877	361	.375 (9.5)		
878	362	.500 (12.7)		
879	—	.625 (15.9)		
880	363	.750 (19.1)		
881	—	.875 (22.2)		
882	364	1.000 (25.4)		
779	365	1.500 (38.1)		
—	366	2.000 (50.8)		
883	—	.125 (3.2)	.250 (6.4)	.140 (3.5) For #6
884	367	.250 (6.4)		
885	368	.375 (9.5)		
886	369	.500 (12.7)		
887	—	.625 (15.9)		
888	370	.750 (19.1)		
889	—	.875 (22.2)		
890	371	1.000 (25.4)		
789	372	1.500 (38.1)		
—	373	2.000 (50.8)		
891	—	.125 (3.2)	.250 (6.4)	.171 (4.3) For #8
892	1490	.250 (6.4)		
893	1491	.375 (9.5)		
894	1492	.500 (12.7)		
895	—	.625 (15.9)		
896	1493	.750 (19.1)		
897	—	.875 (22.2)		
898	1494	1.000 (25.4)		
799	374	1.500 (38.1)		
—	375	2.000 (50.8)		
790	453	.250 (6.4)	.312 (7.9)	.196 (5.0) For #10
791	454	.375 (9.5)		
792	455	.500 (12.7)		
793	—	.625 (15.9)		
794	456	.750 (19.1)		
795	—	.875 (22.2)		
796	457	1.000 (25.4)		
797	458	1.500 (38.1)		
—	459	2.000 (50.8)		

ALUMINUM ECONOMY SPACERS

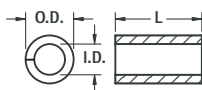
- Made of flat strip aluminum and rolled on precision equipment.
- Assures maximum bearing surface, square ends.

Aluminum:

5052-H34 per QQ-A-250/8b



- Tight Joint on Outside Diameter



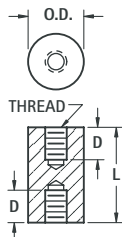
SPACER FOR	I.D.	O.D. REF.
# 4	.120 (3.0)	.167 (4.3)
# 6	.148 (3.8)	.193 (4.9)
# 8	.176 (4.5)	.232 (5.9)

L LENGTH	SCREW CLEARANCE		
	# 4 CAT. NO.	# 6 CAT. NO.	# 8 CAT. NO.
.187 (4.7)	397	—	—
.250 (6.4)	398	405	412
.312 (7.9)	399	406	413
.375 (9.5)	400	407	414
.437 (11.1)	401	408	415
.500 (12.7)	402	409	416
.625 (15.9)	403	410	417

L LENGTH	SCREW CLEARANCE		
	# 4 CAT. NO.	# 6 CAT. NO.	# 8 CAT. NO.
.750 (19.1)	418	425	432
.875 (22.2)	419	426	433
1.000 (25.4)	420	427	434
1.250 (31.8)	421	428	435
1.500 (38.1)	422	429	436
1.750 (44.5)	—	430	437
2.000 (50.8)	—	—	438

CERAMIC STANDOFFS

- Ideal for very high temperature conditions
- Commercial and military types available
- Military types meet MIL-1-010, NL # clearly marked
- Exceptional strength in compression and tension
- Withstands very high voltage without flashover
- Special sizes available upon request



MATERIAL: Grade L5 Ceramic

COMMERCIAL				
CAT. NO.	L LENGTH	O.D.	T THREAD	D DEPTH
7710	.250 (6.4)	.250 (6.4)	6-32	THRU
7711	.500 (12.7)	.250 (6.4)	6-32	.156 (4.0)
7712	.375 (9.5)	.375 (9.5)	6-32	.156 (4.0)
7713	.500 (12.7)	.375 (9.5)	6-32	.156 (4.0)
7714	.500 (12.7)	.500 (12.7)	6-32	.140 (3.6)
7715	.750 (19.1)	.500 (12.7)	6-32	.250 (6.4)
7716	1.000 (25.4)	.500 (12.7)	6-32	.375 (9.5)
7717	1.500 (38.1)	.500 (12.7)	6-32	.562 (14.3)
7718	2.500 (63.5)	.500 (12.7)	6-32	.500 (12.7)
7719	2.500 (63.5)	.750 (19.1)	1/4 - 20	.750 (19.1)
7720	4.000 (101.6)	.750 (19.1)	1/4 - 20	.750 (19.1)

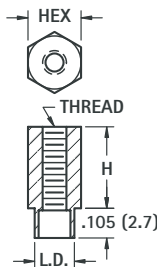
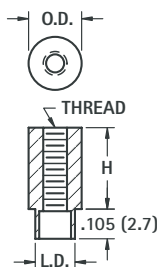
MILITARY

CAT. NO.	L LENGTH	O.D.	T THREAD	D DEPTH	NL #
7661	.500 (12.7)	.375 (9.5)	6-32	.156 (4.0)	NL523W01-004
7662	.625 (15.9)	.375 (9.5)	6-32	.250 (6.4)	NL523W01-005
7663	.625 (15.9)	.500 (12.7)	8-32	.187 (4.7)	NL523W02-005
7664	.750 (19.1)	.375 (9.5)	6-32	.250 (6.4)	NL523W01-006
7665	.750 (19.1)	.500 (12.7)	8-32	.250 (6.4)	NL523W02-006
7666	1.000 (25.4)	.375 (9.5)	6-32	.375 (9.5)	NL523W01-008
7667	1.000 (25.4)	.500 (12.7)	8-32	.375 (9.5)	NL523W02-008
7668	1.000 (25.4)	.750 (19.1)	10-32	.375 (9.5)	NL523W03-008
7669	1.250 (31.8)	.375 (9.5)	6-32	.375 (9.5)	NL523W01-010
7670	1.250 (31.8)	.500 (12.7)	8-32	.375 (9.5)	NL523W02-010
7671	1.250 (31.8)	1.000 (25.4)	1/4 - 20	.375 (11.1)	NL523W04-010
7672	1.500 (38.1)	.375 (9.5)	6-32	.375 (9.5)	NL523W01-012
7673	1.500 (38.1)	.500 (12.7)	8-32	.375 (9.5)	NL523W02-012
7674	1.500 (38.1)	.750 (19.1)	10-32	.375 (9.5)	NL523W03-012
7675	1.500 (38.1)	1.000 (25.4)	1/4 - 20	.500 (12.7)	NL523W04-012
7676	2.000 (50.8)	.375 (9.5)	6-32	.375 (9.5)	NL523W01-016
7677	2.000 (50.8)	.500 (12.7)	8-32	.375 (9.5)	NL523W02-016
7678	2.000 (50.8)	.750 (19.1)	10-32	.375 (9.5)	NL523W03-016

SWAGE THREADED STANDOFFS

ROUND

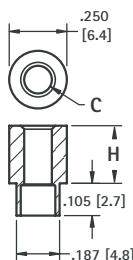
HEX



MATERIAL: Brass, ASTM-B16, Nickel Plate (QQ-N-290)
For .062 (1.52) thick boards

ROUND CAT. NO.	H HEIGHT ABOVE PANEL	L.D. SHANK DIAMETER	HEX CAT. NO.
2-56 THREAD × .156 (4.0) O.D.			
1589-2	.125 (3.2)	.125 (3.2)	1731-2
1590-2	.187 (4.7)	.125 (3.2)	1734-2
1591-2	.250 (6.4)	.125 (3.2)	1740-2
1596-2	.375 (9.5)	.125 (3.2)	1743-2
4-40 THREAD × .187 (4.7) O.D.			
2260-2	.125 (3.2)	.139 (3.5)	2270-2
2261-2	.187 (4.7)	.139 (3.5)	2271-2
2262-2	.250 (6.4)	.139 (3.5)	2272-2
2263-2	.375 (9.5)	.139 (3.5)	2273-2
2264-2	.500 (12.7)	.139 (3.5)	2274-2
4-40 THREAD × .250 (6.4) O.D.			
1560A	.125 (3.2)	.187 (4.7)	1653-2
1790-2	.187 (4.7)	.187 (4.7)	1746-2
1650-2	.250 (6.4)	.187 (4.7)	1627-2
1651-2	.375 (9.5)	.187 (4.7)	1628-2
1623-2	.500 (12.7)	.187 (4.7)	1629-2
1624-2	.625 (15.9)	.187 (4.7)	1654-2
1625-2	.750 (19.1)	.187 (4.7)	1655-2
1792-2	.875 (22.2)	.187 (4.7)	1749-2
1652-2	1.000 (25.4)	.187 (4.7)	1630-2
6-32 THREAD × .250 (6.4) O.D.			
1560B	.125 (3.2)	.187 (4.7)	1620-2
1612-2	.187 (4.7)	.187 (4.7)	1752-2
1546	.250 (6.4)	.187 (4.7)	1621-2
1561B	.375 (9.5)	.187 (4.7)	1622-2
1604-2	.500 (12.7)	.187 (4.7)	1758-2
1605-2	.625 (15.9)	.187 (4.7)	1759-2
1608-2	.750 (19.1)	.187 (4.7)	1761-2
1796-2	.875 (22.2)	.187 (4.7)	1775-2
1609-2	1.000 (25.4)	.187 (4.7)	1784-2

SWAGE CLEAR HOLE SPACERS



MATERIAL: Brass, ASTM-B16,
Nickel Plate (QQ-N-290)
For .062 (1.52) thick boards

CAT. NO.	H HEIGHT ABOVE PANEL	C HOLE
5058-2	.125 (3.2)	.120 (3.0) For # 4
5060-2	.250 (6.4)	
5061-2	.375 (9.5)	
5062-2	.500 (12.7)	
5059-2	.125 (3.2)	.140 (3.5) For # 6
5063-2	.250 (6.4)	
5064-2	.375 (9.5)	
5065-2	.500 (12.7)	

FORCE-FIT STANDOFFS

ROUND

A broaching-type fastener/standoff for installation in panels and circuit boards .060 (1.52) and thicker made of plastic and other non-ductile materials. Available threaded or with clearance holes. Easy to install, presses into punched or drilled holes.

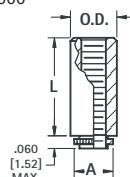
MATERIAL: Stainless Steel per ASTM-A581/A582

MOUNTING HOLES:

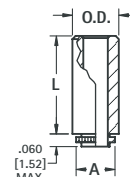
- .147 (3.7) hole for 2-56
- .166 (4.2) hole for 4-40
- .213 (5.4) hole for 6-32

TOLERANCE ON MOUNTING HOLES:

+.003/-0.000



Threaded



Clear Hole

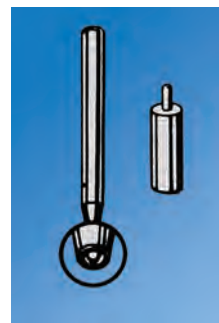
THREADED				
CAT. NO.	L LENGTH	O.D.	A	THREAD
4860	.065 (1.7)	.219 (5.6)	.165 (4.2)	2-56
4861	.065 (1.7)	.219 (5.6)	.184 (4.7)	4-40
4862	.125 (3.2)	.219 (5.6)	.184 (4.7)	
4863	.250 (6.4)	.219 (5.6)	.184 (4.7)	
4864	.375 (9.5)	.219 (5.6)	.184 (4.7)	
4865 *	.500 (12.7)	.219 (5.6)	.184 (4.7)	
4866	.065 (1.7)	.281 (7.1)	.231 (5.9)	6-32
4867	.125 (3.2)	.281 (7.1)	.231 (5.9)	
4868	.250 (6.4)	.281 (7.1)	.231 (5.9)	
4869	.375 (9.5)	.281 (7.1)	.231 (5.9)	
4870 *	.500 (12.7)	.281 (7.1)	.231 (5.9)	

*Thread depth .375 (9.5)

CLEAR HOLE				
CAT. NO.	L LENGTH	O.D.	A	HOLE
4850	.065 (1.7)	.219 (5.6)	.184 (4.7)	.116 (2.9) For # 4
4851	.125 (3.2)	.219 (5.6)	.184 (4.7)	
4852	.250 (6.4)	.219 (5.6)	.184 (4.7)	
4853	.375 (9.5)	.219 (5.6)	.184 (4.7)	
4854	.500 (12.7)	.219 (5.6)	.184 (4.7)	
4855	.065 (1.7)	.281 (7.1)	.213 (5.9)	.143 (3.6) For # 6
4856	.125 (3.2)	.281 (7.1)	.213 (5.9)	
4857	.250 (6.4)	.281 (7.1)	.213 (5.9)	
4858	.375 (9.5)	.281 (7.1)	.213 (5.9)	
4859	.500 (12.7)	.281 (7.1)	.213 (5.9)	

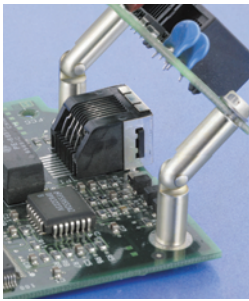
SWAGE STAKING TOOLS

Precision made staking tool kits are made from .250 (6.4) diameter heat treated steel, zinc plated. Each kit includes the correct swage top staking tool anvil to create a professional appearance. These tools may be used with an arbor press or hand tapped.



CAT. NO.	STANDOFF DIA.	THREAD	HOLE SIZE
TL-19	.156 (4.0)	2-56	--
TL-22	.187 (4.7)	4-40	--
TL-20	.250 (6.4)	4-40	.120 (3.0)
TL-21	.250 (6.4)	6-32	.140 (3.5)

HINGED STANDOFFS

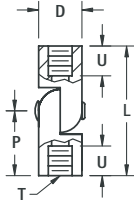


- Applications unlimited
- Time saving
- Space saving
- Interconnect circuits or services without danger of shorting

MATERIAL:

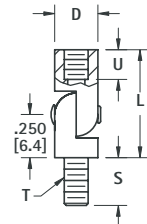
Brass, ASTM-B16. Zinc Plate and Yellow Dye

FEMALE/FEMALE HINGE



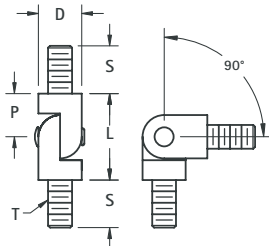
CAT. NO.	L LENGTH	U	P	D DIAMETER	T THREAD
351	.750 (19.1)	.172 (4.4)	.375 (9.5)	.187 (4.7)	4-40
352	1.000 (25.4)	.250 (6.4)	.625 (15.9)		
330	1.250 (31.8)	.250 (6.4)	.625 (15.9)		
353	.750 (19.1)	.172 (4.4)	.375 (9.5)	.250 (6.4)	6-32
354	1.000 (25.4)	.250 (6.4)	.625 (15.9)		
331	1.250 (31.8)	.250 (6.4)	.625 (15.9)		
355	.750 (19.1)	.172 (4.4)	.375 (9.5)	.250 (6.4)	8-32
356	1.000 (25.4)	.250 (6.4)	.625 (15.9)		
332	1.250 (31.8)	.250 (6.4)	.625 (15.9)		

MALE/FEMALE HINGE



CAT. NO.	L LENGTH	S	U	D DIAMETER	T THREAD
333	.625 (15.9)	.250 (6.4)	.172 (4.4)	.187 (4.7)	4-40
334	.875 (22.2)	.250 (6.4)	.250 (6.4)		
335	.625 (15.9)	.312 (7.9)	.172 (4.4)	.250 (6.4)	6-32
336	.875 (22.2)	.312 (7.9)	.250 (6.4)		
337	.625 (15.9)	.312 (7.9)	.172 (4.4)	.250 (6.4)	8-32
338	.875 (22.2)	.312 (7.9)	.250 (6.4)		

MALE/MALE HINGE



CAT. NO.	L LENGTH	S	P	D DIAMETER	T THREAD
357	.500 (12.2)	.250 (6.4)	.250 (6.4)	.187 (4.7)	4-40
358	.500 (12.2)	.312 (7.9)	.250 (6.4)	.250 (6.4)	6-32
359	.500 (12.2)	.312 (7.9)	.250 (6.4)	.250 (6.4)	8-32

SPACERS/STANDOFF ORGANIZER KITS



Maintain a neat complete inventory of the most frequently used spacers and standoffs in day-to-day operations. Choice of 14 different kits of the most popular spacers and standoffs. An assortment of various sizes and styles in Brass, Aluminum and Nylon with tapped or thru hole. Supplied with clear draw cabinet labeled for easy identification.

Kits combine the most frequently used spacers or standoffs for stacking and multi-stacking prototyping.

400 PIECE THREADED STANDOFFS KITS

Assortment of 400 total standoffs: Female-Female standoffs and Male-Female standoffs both Aluminum and Nylon, with lengths of .250, .500, .750 and 1.000.

25 pieces of each size. Complete with cabinet and 25 machine screws with matching thread.

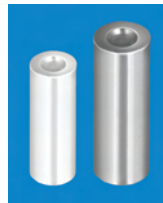


CAT. NO.	KIT SUPPLIED WITH
STR-440	4-40 Threaded Standoffs
STR-632	6-32 Threaded Standoffs
STR-832	8-32 Threaded Standoffs

400 PIECE CLEAR HOLE SPACER KITS

Assortment of 400 total spacers: Brass, Aluminum, Nylon, Rolled Aluminum, with lengths of .250, .500, .750 and 1.000.

25 pieces of each size. Complete with cabinet.



CAT. NO.	KIT SUPPLIED WITH
SCR-4	#4 Clear Hole Spacers
SCR-6	#6 Clear Hole Spacers
SCR-8	#8 Clear Hole Spacers

1500 PIECE THREADED STANDOFF KITS

Assortment of 1500 pieces in .250, .375, .500, .750 and 1.000 lengths, with thread sizes of 4-40, 6-32 and 8-32.

100 pieces of each size. Complete with cabinet.

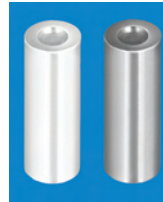


CAT. NO.	KIT SUPPLIED WITH
STR-15	Round Brass Zinc Plated Standoffs
STR-35	Round Aluminum Standoffs with Iridite Finish
STH-14	Hex Brass Zinc Plated Standoffs
STH-22	Hex Aluminum Standoff with Iridite Finish

1500 PIECE THRU HOLE SPACER KITS

Assortment of 1500 pieces in .250, .375, .500, .750 and 1.000 lengths, with clearance holes for #4, #6 and #8.

100 pieces of each size. Complete with cabinet.



CAT. NO.	KIT SUPPLIED WITH
SPR-13	Brass Nickel Plated Spacers
SPR-34	Aluminum Spacers with Iridite Finish
SPR-8	Nylon 6/6 Spacers

750 PIECE MALE/FEMALE THREADED STANDOFF KIT

Assortment of 750 pieces in .500, .750, 1.000, 1.25 and 1.5 lengths, with thread sizes of 4-40, 6-32 and 8-32.

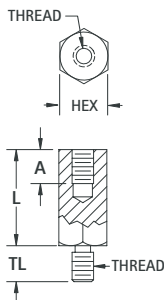
50 pieces of each size. Complete with cabinet.



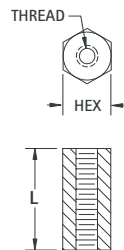
CAT. NO.	STH-19 (Hex Brass Zinc Plated)
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METRIC STANDOFFS

MALE/FEMALE



FEMALE



THREAD SIZE	TL	A
M2.5	4.0	5.0
M3	8.0	8.0
M4	10.0	11.0

CHOICE OF:		
Stainless: ASTM A581/A582	Brass: ASTM-B16 Plating: Nickel (QQ-N-290)	Aluminum: ASTM B211 Plating: Clear Iridite (Mil-C-5541)

MALE/FEMALE				FEMALE		
STAINLESS CAT. NO.	BRASS CAT. NO.	ALUMINUM CAT. NO.	L	STAINLESS CAT. NO.	BRASS CAT. NO.	ALUMINUM CAT. NO.
4.5 HEX DIA. (M2.5 THREAD)						
—	—	—	5.0	24460	24380	24420
—	—	—	6.0	24461	24381	24421
—	—	—	8.0	24462	24382	24422
24283	24307	24331	10.0	24463	24383	24423
24284	24308	24332	12.0	24464	24384	24424
24285	24309	24333	15.0	24465	24385	24425
24286	24310	24334	18.0	24466	24386	24426
24287	24311	24335	20.0	24467	24387	24427
24288	24312	24336	25.0	24468	24388	24428
5.0 HEX DIA. (M3 THREAD)						
—	—	—	5.0	24470	24390	24430
—	—	—	6.0	24471	24391	24431
—	—	—	8.0	24472	24392	24432
24289	24313	24337	10.0	24473	24393	24433
24290	24314	24338	12.0	24474	24394	24434
24291	24315	24339	15.0	24475	24395	24435
24292	24316	24340	18.0	24476	24396	24436
24293	24317	24341	20.0	24477	24397	24437
24294	24318	24342	25.0	24478	24398	24438
5.5 HEX DIA. (M3 THREAD)						
—	—	—	5.0	24480	24400	24440
—	—	—	6.0	24481	24401	24441
—	—	—	8.0	24482	24402	24442
24295	24319	24343	10.0	24483	24403	24443
24296	24320	24344	12.0	24484	24404	24444
24297	24321	24345	15.0	24485	24405	24445
24298	24322	24346	18.0	24486	24406	24446
24299	24323	24347	20.0	24487	24407	24447
24300	24324	24348	25.0	24488	24408	24448
6.0 HEX DIA. (M4 THREAD)						
—	—	—	5.0	24490	24410	24450
—	—	—	6.0	24491	24411	24451
—	—	—	8.0	24492	24412	24452
24301**	24325**	24349**	10.0	24493	24413	24453
24302*	24326*	24350*	12.0	24494	24414	24454
24303	24327	24351	15.0	24495	24415	24455
24304	24328	24352	18.0	24496	24416	24456
24305	24329	24353	20.0	24497	24417	24457
24306	24330	24354	25.0	24498	24418	24458

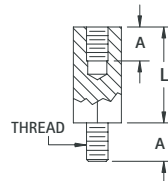
* Internal Thread: 8.0mm deep ** Internal Thread: 6.0mm deep

Note: Female standoffs longer than 19mm are tapped from both ends

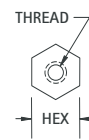
METRIC NYLON STANDOFFS

Material: Nylon: 6/6, UL Rated 94V-2

MALE/FEMALE



FEMALE



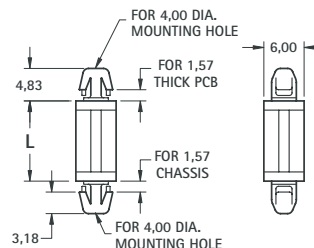
THREAD SIZE	A
M3	8.0
M4	9.5

MALE/FEMALE CAT. NO.	L	FEMALE CAT. NO.
5.0 HEX (M3 THREAD)		
—	6.0	25508
—	8.0	25509
25501	10.0	25510
25502	12.0	25511
25503	15.0	25512
25504	18.0	25513
25505	20.0	25514
25506	25.0	25515
6.0 HEX (M4 THREAD)		
—	6.0	25528
—	8.0	25529
25521	10.0	25530
25522	12.0	25531
25523	15.0	25532
25524	18.0	25533
25525	20.0	25534
25526	25.0	25535

Note: Female standoffs longer than 19mm are tapped from both ends

METRIC NYLON LOCK-IN SUPPORT

- One end locks into chassis, the other end locks into the PC Board.

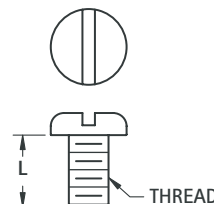


CAT. NO.	L DIM
8843	3.0
8844	4.0
8845	6.0
8846	8.0
8847	10.0
8848	12.0
8849	14.0
8850	16.0
8851	18.0

MATERIAL: Nylon 6/6, UL Rated 94V-0

METRIC SCREWS

Choice of: Steel, Zinc Plate • Nylon: 6/6, UL Rated 94V-2



STEEL CAT. NO.	L	NYLON 6/6 CAT. NO.
M2.5 THREAD		
29301	6.00	29331
29304	12.00	29334
29306	16.00	29336
M3 THREAD		
29311	6.00	29341
29314	12.00	29344
29316	16.00	29346
29318	25.00	29348
M4 THREAD		
29321	6.00	29351
29324	12.00	29354
29326	16.00	29356
29328	25.00	29358

INSULATED PC SPACERS/SUPPORTS

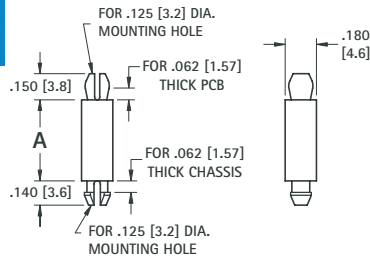
- Board will be electrically insulated, eliminates need for insulating washers
- Easy snap-in assembly
- No tool required for installation
- Designed for .062 (1.57) thick boards

- One piece design eliminates the need for additional screws and nuts
- Slim design frees up board space

TENSION-FIT



- One end permanently attaches to chassis
- Other end secures board with tension fit.
- Board easily releasable for repairs or upgrades



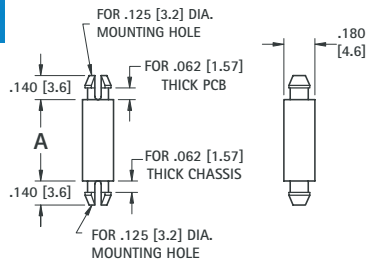
CAT. NO.	A LENGTH
8879	.125 (3.2)
8880	.187 (4.7)
8881	.250 (6.4)
8882	.375 (9.5)
8883	.500 (12.7)
8884	.625 (15.9)
8885	.750 (19.1)
8886	.875 (22.2)
8887	1.000 (25.4)

MATERIAL: Nylon 6/6, UL Rated 94V-0

LOCK-IN



- Both ends permanently attach to chassis and board
- Secure mounting end design allows for taller spacing



CAT. NO.	A LENGTH
9018	.125 (3.2)
9019	.187 (4.7)
9020	.250 (6.4)
9021	.375 (9.5)
9022	.500 (12.7)
9023	.625 (15.9)
9024	.750 (19.1)
9025	.875 (22.2)
9026	1.000 (25.4)

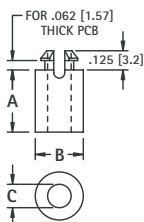
MATERIAL: Nylon 6/6, UL Rated 94V-0

THRU HOLE SPACERS

One end locks into panel. Clear hole designs for #4, #6 or #8 screw.



- Base has larger surface area. Will not deform under heavy pre-load.



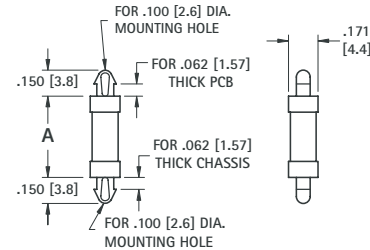
CAT. NO.	A LENGTH	Outside Diameter	Inside Diameter	Mounting Hole	Screw Size
9027	.125 (3.2)				
9028	.187 (4.7)				
9029	.250 (6.4)	.260 (6.6)	.125 (3.2)	.187 (4.7)	#4
9030	.375 (9.5)				
9031	.500 (12.7)				
9032	.625 (15.9)				
9033	.250 (6.4)	.312 (7.9)	.153 (3.9)	.234 (5.9)	#6
9034	.375 (9.5)				
9035	.500 (12.7)				
9036	.625 (15.9)				
9037	.250 (6.4)	.312 (7.9)	.169 (4.3)	.234 (5.9)	#8
9038	.375 (9.5)				
9039	.500 (12.7)				
9040	.625 (15.9)				

MATERIAL: Nylon 6/6, UL Rated 94V-0

EASY LOCK-IN



- Both ends permanently attach to chassis and board
- Teardrop style mounting end eases assembly
- Low protrusion above board and under chassis



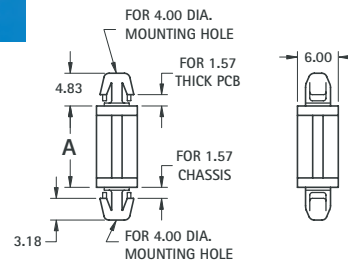
CAT. NO.	A LENGTH
8888	.125 (3.2)
8889	.187 (4.7)
8890	.250 (6.4)
8891	.375 (9.5)
8892	.500 (12.7)
8893	.625 (15.9)

MATERIAL: Nylon 6/6, UL Rated 94V-0

METRIC LOCK-IN



- Both ends permanently attach to chassis and board
- Designed specifically for metric mounting holes and spacing



CAT. NO.	A LENGTH
8843	3.0
8844	4.0
8845	6.0
8846	8.0
8847	10.0
8848	12.0
8849	14.0
8850	16.0
8851	18.0

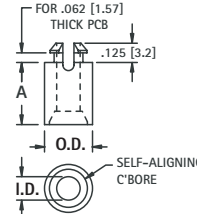
MATERIAL: Nylon 6/6, UL Rated 94V-0

STACKING SPACERS

One end locks into panel. Clear hole designs for #4, #6 or #8 screw.



- Spacers can be stacked for multiple level PC board applications
- Self-aligning



CAT. NO.	A LENGTH	Outside Diameter	Inside Diameter	Mounting Hole	Screw Size
8829	.125 (3.2)				
8830	.187 (4.7)				
8831	.250 (6.4)	.260 (6.6)	.125 (3.2)	.187 (4.7)	#4
8832	.375 (9.5)				
8833	.500 (12.7)				
8834	.625 (15.9)				
8835	.250 (6.4)	.312 (7.9)	.153 (3.9)	.234 (5.9)	#6
8836	.375 (9.5)				
8837	.500 (12.7)				
8838	.625 (15.9)				
8839	.250 (6.4)	.312 (7.9)	.169 (4.3)	.234 (5.9)	#8
8840	.375 (9.5)				
8841	.500 (12.7)				
8842	.625 (15.9)				

MATERIAL: Nylon 6/6, UL Rated 94V-0

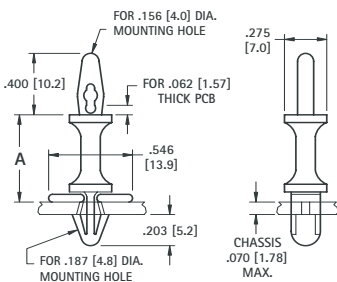
INSULATED PC SPACER/SUPPORTS

- Board will be electrically insulated, eliminates need for insulating washers
- No tool required for installation
- Easy snap-in assembly
- One pieces design eliminates the need for additional screws and nuts
- Fits snug onto board
- Accommodates varying board thicknesses
- Flame retardant

SLIMLINE TENSION-FIT



- One end permanently attaches to .070 (1.78) max. thick chassis
- Other end tension fits to .062 (1.57) max. thick PC board
- Board is easily releasable for repairs or upgrades
- Low insertion force



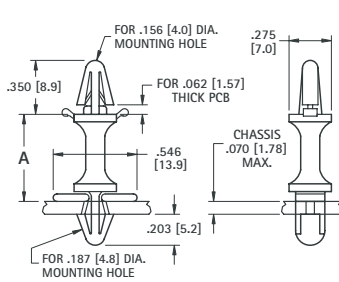
CAT. NO.	A LENGTH
1927A	.250 (6.4)
1928A	.375 (9.5)
1929A	.500 (12.7)
1930A	.625 (15.9)
1931A	.750 (19.1)
1932A	.875 (22.2)
1933A	1.000 (25.4)

MATERIAL: Nylon 6/6, UL Rated 94V-0

SLIMLINE LOCK-IN



- One end permanently attaches to .070 (1.78) max. thick chassis
- Other end permanently attaches to .062 (1.57) max. thick PC board
- Low insertion force
- Small footprint frees up board space.



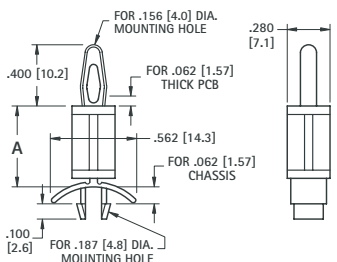
CAT. NO.	A LENGTH
1927B	.250 (6.4)
1928B	.375 (9.5)
1929B	.500 (12.7)
1930B	.625 (15.9)
1931B	.750 (19.1)
1932B	.875 (22.2)
1933B	1.000 (25.4)

MATERIAL: Nylon 6/6, UL Rated 94V-0

STURDY TENSION-FIT



- One end permanently attaches to .031(.79) - .078 (2.0) thick chassis
- Other end tension fits to .062 (1.57) max thick PC board
- Board is easily releasable for repairs or upgrades
- Sturdy support due to high contact area



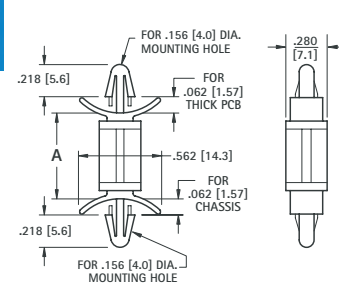
CAT. NO.	A LENGTH
8800	.187 (4.7)
8801	.250 (6.4)
8802	.375 (9.5)
8803	.500 (12.7)
8804	.625 (15.9)
8805	.750 (19.1)
8806	.875 (22.2)

MATERIAL: Nylon 6/6, UL Rated 94V-0

STURDY LOCK-IN



- Both ends permanently attaches to .031 (.79) - .078 (2.0) thick chassis or board
- Sturdy support due to high contact area



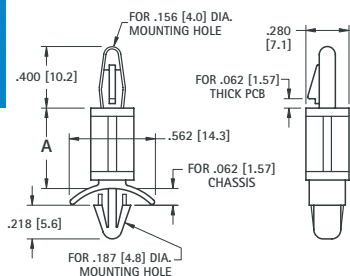
CAT. NO.	A LENGTH
8815	.187 (4.7)
8816	.250 (6.4)
8817	.375 (9.5)
8818	.500 (12.7)
8819	.625 (15.9)
8820	.750 (19.1)
8821	.875 (22.2)

MATERIAL: Nylon 6/6, UL Rated 94V-0

STURDY LOCK-IN RELEASE



- Locks onto .062 (1.57) thick PC board
- Board is positively locked until manually released
- Board is easily releasable for repairs or upgrades
- Sturdy support due to high contact area with chassis



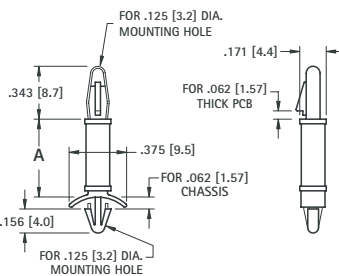
CAT. NO.	A LENGTH
8807	.187 (4.7)
8808	.250 (6.4)
8809	.375 (9.5)
8810	.500 (12.7)
8811	.625 (15.9)
8812	.750 (19.1)
8813	.875 (22.2)
8814	1.000 (25.4)

MATERIAL: Nylon 6/6, UL Rated 94V-0

SLIMLINE LOCK-IN RELEASE



- Locks onto .062 (1.57) thick PC board
- Board is positively locked until manually unlocked
- Board is easily releasable for repairs or upgrades
- Compact design uses smaller mounting holes



CAT. NO.	A LENGTH
8871	.187 (4.7)
8872	.250 (6.4)
8873	.375 (9.5)
8874	.500 (12.7)
8875	.625 (15.9)

MATERIAL: Nylon 6/6, UL Rated 94V-0

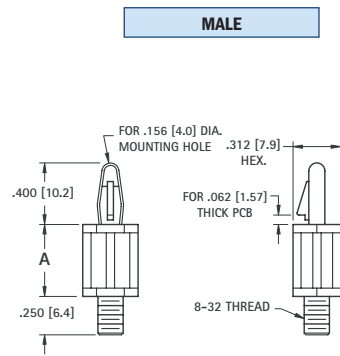
INSULATED PC SPACERS/SUPPORTS

- Board will be electrically insulated, eliminates need for insulating washers
- No tool required for installation • Easy snap-in assembly

LOCK-IN RELEASE THREADED SUPPORTS

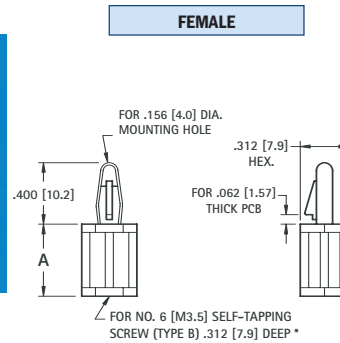
- One end attaches to chassis with self tapping screw or nut
- Other end snap locks onto .062 (1.57) thick PC board

- Board is easily releasable, for repairs or upgrades
- Threaded mount provides an extremely strong hold to the chassis



CAT. NO.	A LENGTH
9048	.250 (6.4)
9049	.375 (9.5)
9050	.500 (12.7)
9051	.625 (15.9)
9052	.750 (19.1)
9053	.875 (22.2)
9054	1.000 (25.4)

MATERIAL: Nylon 6/6, UL Rated 94V-0

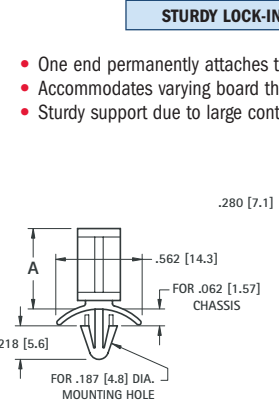


CAT. NO.	A LENGTH
9041	.250 (6.4)
9042	.375 (9.5)
9043	.500 (12.7)
9044	.625 (15.9)
9045	.750 (19.1)
9046	.875 (22.2)
9047	1.000 (25.4)

MATERIAL: Nylon 6/6, UL Rated 94V-0

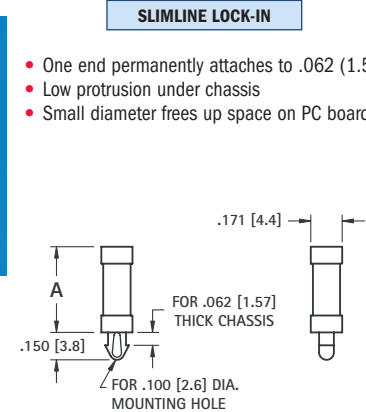
PC SPACER SUPPORTS

- One attaches end locks into chassis • Other end supports the PC Board • Ideal for mid supports of large boards
- Simplifies assembly for multiple support applications • Reduces the amount of holes required in PC board



CAT. NO.	A LENGTH
8822	.187 (4.7)
8823	.250 (6.4)
8824	.375 (9.5)
8825	.500 (12.7)
8826	.625 (15.9)
8827	.750 (19.1)
8828	.875 (22.2)

MATERIAL: Nylon 6/6, UL Rated 94V-0

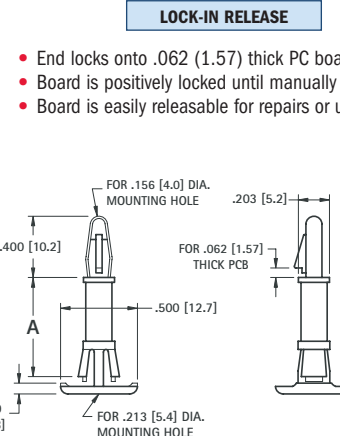


CAT. NO.	A LENGTH
9055	.125 (3.2)
9056	.187 (4.7)
9057	.250 (6.4)
9058	.375 (9.5)
9059	.500 (12.7)
9060	.625 (15.9)

MATERIAL: Nylon 6/6, UL Rated 94V-0

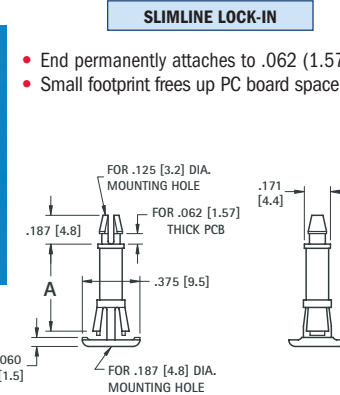
REVERSE CHASSIS MOUNT SUPPORTS

- Permanently attaches to .059 (1.51) - .065 (1.65) thick case from outside
- Provides flat clean cosmetic appearance • Ideal for low clearance applications or for mounting directly to case walls



CAT. NO.	A LENGTH
9061	.250 (6.4)
9062	.375 (9.5)
9063	.500 (12.7)
9064	.625 (15.9)

MATERIAL: Nylon 6/6, UL Rated 94V-0

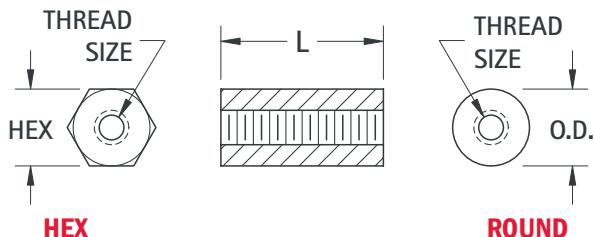


CAT. NO.	A LENGTH
9065	.250 (6.4)
9066	.375 (9.5)
9067	.500 (12.7)
9068	.625 (15.9)

MATERIAL: Nylon 6/6, UL Rated 94V-0

are readily available from stock. Fill out this form and we will make your standoff to your exact specifications with a minimum lot of 1,000 pieces.

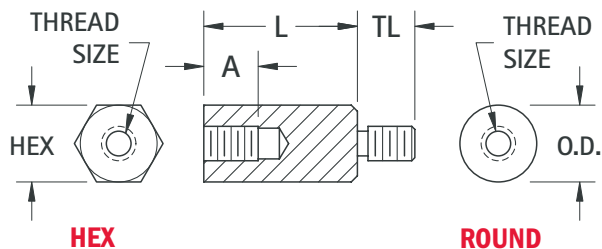
THREADED STANDOFFS



HEX	L	HOLE	O.D.
MATERIAL:			
FINISH:			
QUANTITIES TO QUOTE:			

HEX	L	THREAD	O.D.
MATERIAL:			
FINISH:			
QUANTITIES TO QUOTE:			

ENGINEERING DATA



HEX	L	A	TL	THREAD	O.D.
MATERIAL:					
FINISH:					
QUANTITIES TO QUOTE:					

Clearance Hole	
For Screw Sizes	Hole Sizes
#2	.093 (2.4)
#4	.119 (3.0)
M3	.125 (3.2)
#6/M3.5	.145 (3.7)
#8/M4	.171 (4.4)
#10	.197 (5.0)

Material Code	MATERIALS
AL	Aluminum - QQ-Q-225/3
BR	Brass - ASTM-B16
NV0	Nylon 6/6 - UL Rated 94V-0
NV2	Nylon 6/6 - UL Rated 94V-2
PH	Phenolic - PBE Natural Color
SS	Stainless Steel - ASTM-A581/A582
S	Steel - ASTM-108
O	Other - Specify

Thread Depth Reference		
Thread	A	TL
2-56	.187 (4.8)	.156 (4.0)
4-40/M3	.250 (6.3)	.187 (4.8)
6-32/M3.5	.375 (9.5)	.250 (6.3)
8-32/M4	.437 (11.1)	.375 (9.5)
10-32	.500 (12.7)	.375 (9.5)

**If you have any questions,
please contact
our application engineers**

Finish Code	FINISHES
AB	Anodize (Black) - MIL-A-8625
AC	Anodize (Clear) - MIL-A-8625
IC	Iridite (Clear) - MIL-C-5541
IG	Iridite (Gold) - MIL-C-5541
N	Nickel - QQ-N-290
P	Passivate - MIL-S-5002
T	Tin - MIL-T-10728
TLD	Tin-Lead - MIL-S-5002
ZC	Zinc (Clear) - ASTM-B633
ZG	Zinc (Gold) - ASTM-B633
O	Other - Specify

FOR PROMPT QUOTATIONS
FAX, MAIL OR E-MAIL A COPY OF THIS WORKSHEET.

NAME: _____

COMPANY: _____

ADDRESS: _____

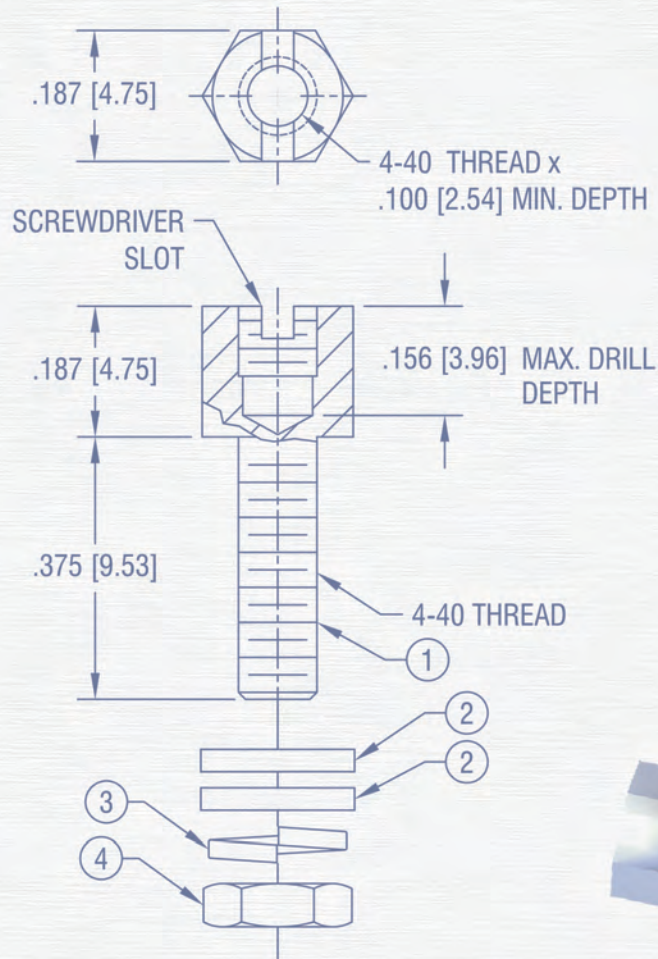
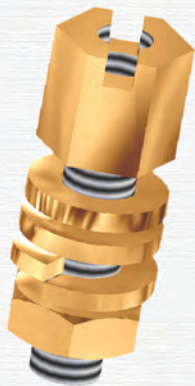
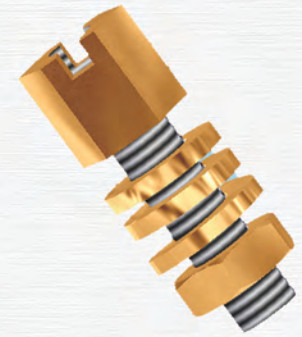
PHONE: _____ FAX: _____

E-MAIL: _____

CREATE YOUR OWN CONFIGURATION

MATERIAL: **FINISH:**

QUANTITIES TO QUOTE:



PANEL HARDWARE

Our diverse selection of panel hardware is second to none in the marketplace. Our Handles, Screws, Knobs, Fan Guards and LED lens and mounting spacers provides the right solution for a variety of applications, including:

- Rack Mounted Equipment
- Carrying Cases
- Low Friction Assemblies
- "D" Subminiature connector Hardware
- Instrumentation Panels and Gauges
- Environments where mounting hardware is subject to loss
- For protection from damage or debris
- To dress up chassis access panels, racks or controls

Our quality system is ISO 9001:2000 certified. Our products are in compliance with the RoHS directive. We provide 3D modeling, CAD and other application-engineering support for modifications, special designs or assembly requirements to assist you in choosing the right Keystone product for your application.

DATE	DESCRIPTION	REV.

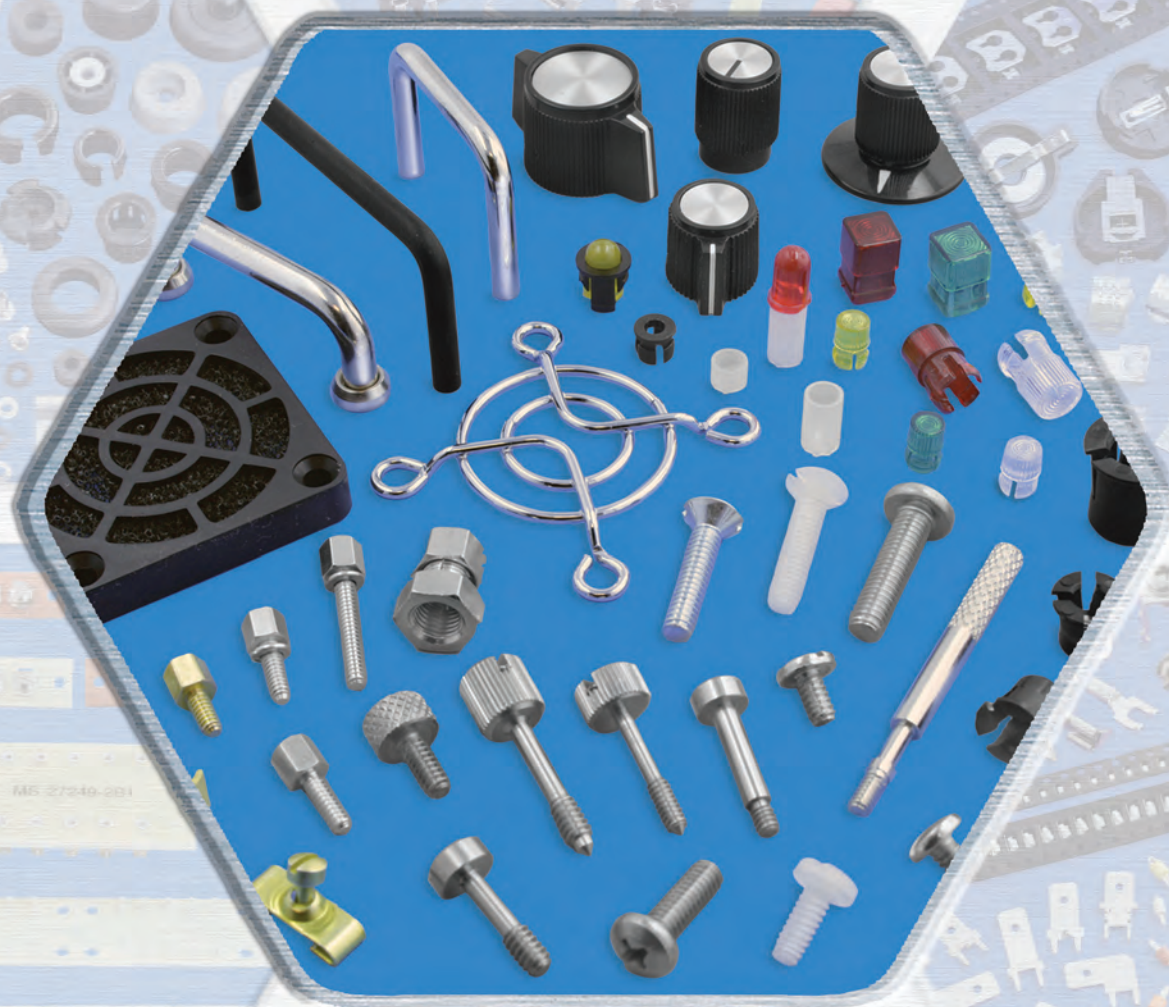
Polarity
Marking

A
F

O.D.

O.D.

PANEL HARDWARE



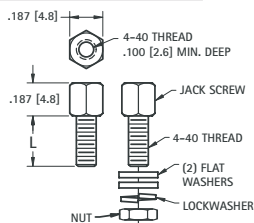
SECTION CONTENTS

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JACK SCREWS

- Equivalent to AMP, CANNON & TRW Jack Screws
 - "D" subminiature connector mounting screw
 - Custom lengths available
 - Hardware supplied unassembled and in bulk
- SPECIFICATIONS:** **GOLD:** Steel, Zinc Plate and Yellow Dye; **CLEAR:** Steel, Zinc Plate and Clear Chromate; **STAINLESS:** Stainless Steel

STANDARD JACK SCREWS

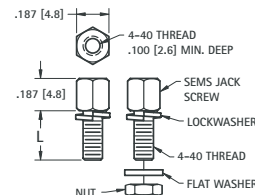


JACK ONLY				JACK WITH HARDWARE*			
GOLD	CLEAR	STAINLESS	L	GOLD	CLEAR	STAINLESS	
CAT. NO.	CAT. NO.	CAT. NO.	LENGTH	CAT. NO.	CAT. NO.	CAT. NO.	
7228	7228-5	7248	.250 (6.4)	7229	7229-5	7249	
7230	7230-5	7250	.312 (7.9)	7231	7231-5	7251	
7241	7241-5	7252	.375 (9.5)	7242	7242-5	7253	
7243	7243-5	7254	.500 (12.7)	7244	7244-5	7255	
7232	7232-5	7256	.625 (15.8)	7233	7233-5	7257	

*Hardware supplied unassembled in bulk

SEMS JACK SCREWS

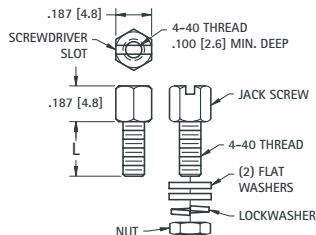
- Captivated helical spring lockwasher, simplifies use



SEMS JACK ONLY		SEMS JACK WITH HARDWARE*	
CLEAR	L	CLEAR	
CAT. NO.	LENGTH	CAT. NO.	
7235	.285 (7.3)	7236	
7237	.347 (8.8)	7238	
7239	.660 (16.8)	7240	

*Hardware supplied unassembled in bulk

SLOTTED JACK SCREWS

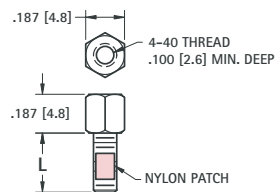


- Slot provides ability to install jack with a screwdriver.

JACK ONLY			JACK WITH HARDWARE*	
GOLD	CLEAR	L	GOLD	CLEAR
CAT. NO.	CAT. NO.	LENGTH	CAT. NO.	CAT. NO.
7270	7275	.250 (6.3)	7290	7295
7271	7276	.312 (7.9)	7291	7296
7272	7277	.375 (9.5)	7292	7297
7273	7278	.500 (12.7)	7293	7298
7274	7279	.625 (15.8)	7294	7299

*Hardware supplied unassembled in bulk

JACK SCREWS WITH NYLON PATCH

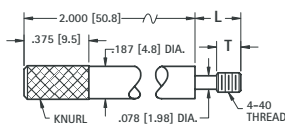


- Nylon patch holds jack firmly in vibration applications.

JACK WITH NYLON PATCH			
GOLD	CLEAR	STAINLESS	L
CAT. NO.	CAT. NO.	CAT. NO.	LENGTH
7260	7261	7262	.250 (6.4)
7263	7264	7265	.312 (7.9)
7266	7267	7268	.375 (9.5)

TURNABLE JACK SCREWS

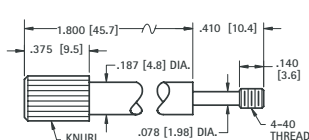
DIRECT ACCESS



MATERIAL: Steel, Black Oxide

WITHOUT SLOT	WITH SLOT	T	L
CAT. NO.	CAT. NO.	DIM.	DIM.
2064	2065	.125 (3.2)	.250 (6.4)
2066	2067	.250 (6.4)	.437 (11.1)

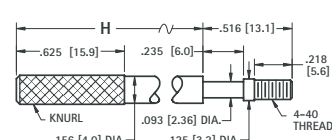
STRAIGHT KNURL



MATERIAL: Steel, Zinc Plate & Clear Chromate

WITHOUT SLOT	WITH SLOT
CAT. NO.	CAT. NO.
2072	2073

SLIM LINE



MATERIAL: Steel, Nickel Plate

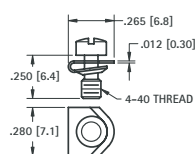
WITHOUT SLOT	WITH SLOT	H
CAT. NO.	CAT. NO.	DIM.
2068	2069	1.250 (31.8)
2070	2071	1.750 (44.5)

PANEL MOUNTING HARDWARE

"U" CLIP



Supplied Unassembled



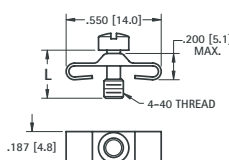
MATERIAL:
Clip & Screw: Steel, Zinc Plate & Yellow Dye

CAT. NO. 2062

"BOW TIE" RETAINING CLIP



Supplied Unassembled



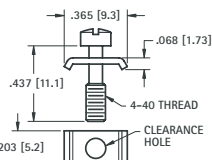
MATERIAL:
Clip & Screw: Steel, Zinc Plate & Yellow Dye

CAT. NO.	L
2060	.250 (6.4)
2061	.281 (7.1)

SADDLE WASHER



Supplied Unassembled



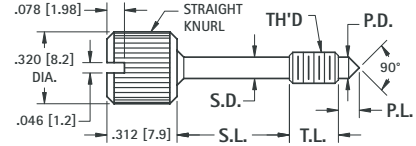
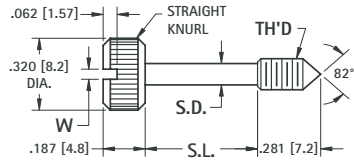
MATERIAL:
Clip & Screw: Steel, Zinc Plate & Yellow Dye

CAT. NO. 2063

STAINLESS STEEL PANEL HARDWARE

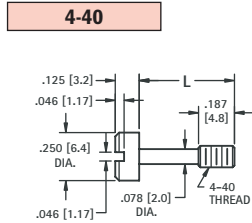
MATERIAL: Stainless Steel per ASTM-A581/A582

CAPTIVE PANEL SCREWS

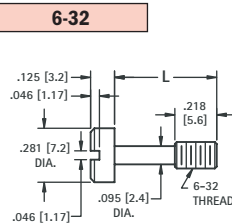


CAT. NO.	THREAD	S.D. ± .005 (.13)	S.L. ± .010 (.25)	W + .015 (+.38) - .000
8700	4-40	.078 (2.0)	.375 (9.5)	.036 (.091)
8701	4-40	.078 (2.0)	.500 (12.7)	.036 (.091)
8702	4-40	.078 (2.0)	.625 (15.9)	.036 (.091)
8703	6-32	.095 (2.41)	.375 (9.5)	.045 (1.14)
8704	6-32	.095 (2.41)	.500 (12.7)	.045 (1.14)
8705	6-32	.095 (2.41)	.625 (15.9)	.045 (1.14)

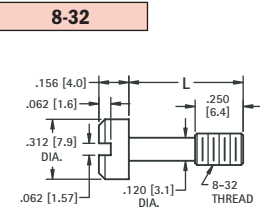
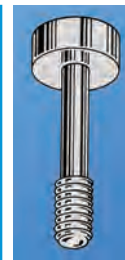
CAT. NO.	THREAD	T.L. ± .015 (.38)	S.D. ± .005 (.13)	S.L. ± .010	P.D. + .000, -.016 (-.40)	P.L. ± .015 (.38)
8706	4-40	.125 (3.2)	.078 (2.0)	.171 (4.3)	.078 (2.0)	.078 (2.0)
8707	4-40	.125 (3.2)	.078 (2.0)	.296 (7.5)	.078 (2.0)	.078 (2.0)
8708	4-40	.125 (3.2)	.078 (2.0)	.421 (10.7)	.078 (2.0)	.078 (2.0)
8709	6-32	.218 (5.5)	.095 (2.41)	.187 (4.7)	.095 (2.41)	.093 (2.36)
8710	6-32	.218 (5.5)	.095 (2.41)	.312 (7.9)	.095 (2.41)	.093 (2.36)
8711	6-32	.218 (5.5)	.095 (2.41)	.437 (11.1)	.095 (2.41)	.093 (2.36)



CAT. NO.	LENGTH
2413	.469 (11.9)
2414	.531 (13.4)

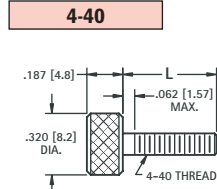


CAT. NO.	LENGTH
2415	.531 (13.5)
2416	.593 (15.1)
2417	.656 (16.7)

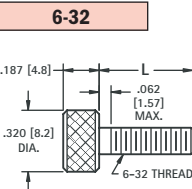


CAT. NO.	LENGTH
2418	.656 (16.7)
2419	.718 (18.2)
2420	.781 (19.8)

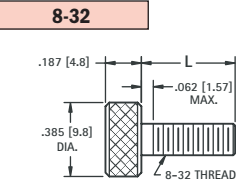
THUMB SCREWS



CAT. NO.	LENGTH
2400	.312 (7.9)
2401	.375 (9.5)
2402	.437 (11.1)
2403	.500 (12.7)

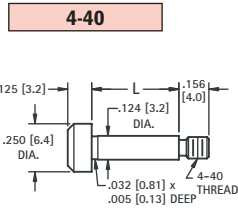


CAT. NO.	LENGTH
2404	.312 (7.9)
2405	.375 (9.5)
2406	.437 (11.1)
2407	.500 (12.7)



CAT. NO.	LENGTH
2408	.375 (9.5)
2409	.437 (11.1)
2410	.500 (12.7)
2411	.562 (14.3)
2412	.625 (15.9)

SHOULDER SCREWS

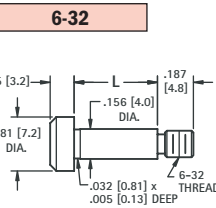


SLOTTED



SOCKET

CAT. NO.	LENGTH	CAT. NO.
2421	.125 (3.2)	2441
2422	.250 (6.4)	2442
2423	.375 (9.5)	2443
2424	.500 (12.7)	2444

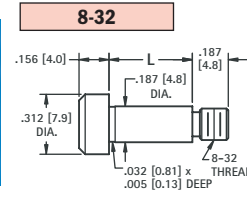


SLOTTED



SOCKET

CAT. NO.	LENGTH	CAT. NO.
2425	.125 (3.2)	2445
2426	.250 (6.4)	2446
2427	.375 (9.5)	2447
2428	.500 (12.7)	2448
2429	.625 (15.9)	2449
2430	.750 (19.1)	2450



SLOTTED

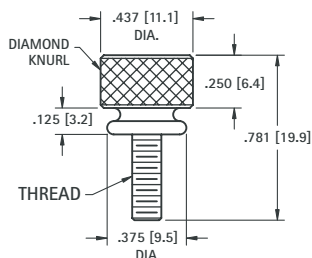


SOCKET

CAT. NO.	LENGTH	CAT. NO.
2431	.125 (3.2)	2451
2432	.250 (6.4)	2452
2433	.375 (9.5)	2453
2434	.500 (12.7)	2454
2435	.625 (15.9)	2455
2436	.750 (19.1)	2456
2437	1.000 (25.4)	2457

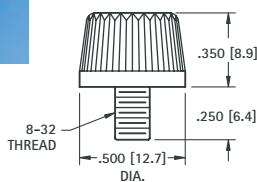
THUMB SCREWS

For quick removal of panel from chassis. Other variations available



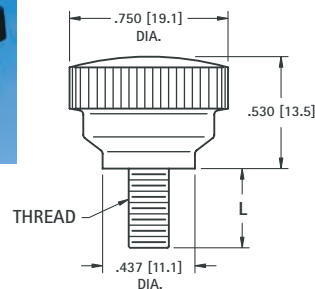
CAT. NO.	THREAD
1708	6-32
1709	8-32
1710	10-32

MATERIAL: Brass,
Nickel Plate



CAT. NO. 1711

MATERIAL:
Knob: Phenolic
Stud: Steel, Zinc Plate



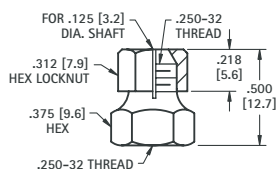
CAT. NO.	L	THREAD
1712	.375 (9.5)	10-24
1720	.500 (12.7)	.250-20

MATERIAL:
Knob: Phenolic
Stud: Steel, Zinc Plate

SHAFT LOCKS

MATERIAL: Brass, Nickel Plate

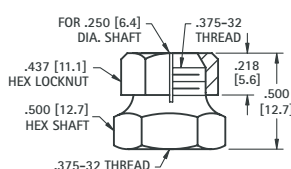
For .125 (3.2) SHAFT



CAT. NO. 1700



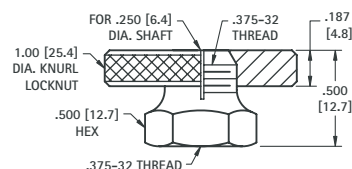
For .250 (6.4) SHAFT



CAT. NO. 1701



For .250 (6.4) SHAFT



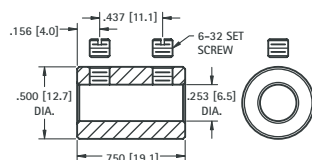
CAT. NO. 1702

.250 (6.4) SHAFT COUPLING



- Two set screws hold shaft securely

MATERIAL: Brass, Nickel Plate
Supplied unassembled

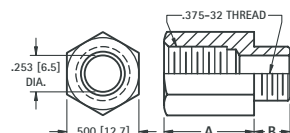


CAT. NO. 1453

VOLUME CONTROL EXTENDERS



For .250 (6.4) volume control shafts having .375-32 threaded bushings.

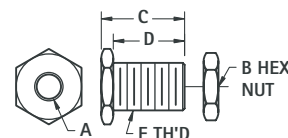


CAT. NO.	A	B
1464	.625 (15.9)	.250 (6.4)
1465	.625 (15.9)	.375 (9.5)
1466	.687 (17.4)	.500 (12.7)
1467	.750 (19.1)	.250 (6.4)

MATERIAL: Brass, Nickel Plate

PANEL BEARINGS

STANDARD and MINIATURE



MATERIAL: Brass, Nickel Plate
Supplied unassembled

CAT. NO.	A	B (HEX)	C	D	E THREAD
1705	.253 (6.5)	.437 (11.1)	.500 (12.7)	.437 (11.1)	.375-32 Standard
1706	.128 (3.3)	.343 (8.7)	.437 (11.1)	.375 (9.5)	.250-32 Miniature

PRECISION PANEL NUTS



For Volume Controls, Switches, Capacitors, Tip Jacks, etc.

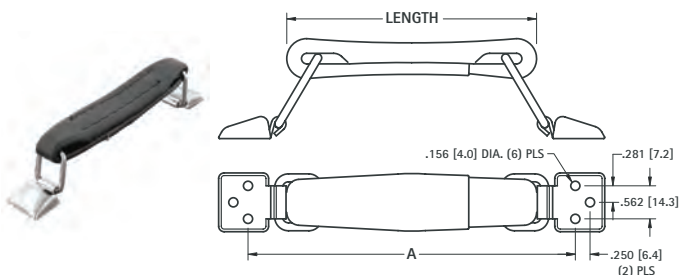
CAT. NO.	FOR	THREAD	DIAMETER	THICKNESS
1448	Mounting	.250-32	.375 Hex	.093 (2.38)
1449	Mini. Control	.250-32	.312 Hex	.078 (1.98)
1456	Vol. Control	.375-32	.500 Hex	.093 (2.38)
1458	Switch	.468-32	.562 Hex	.078 (1.98)
1459	Switch Ring	.468-32	.625 Knurled	.062 (1.57)
1472	Filter	.312-32	.375 Hex	.093 (2.38)

MATERIAL: Brass,
Nickel Plate

HANDLES



This retractable handle is manufactured with black leather-like material and Nickel Plated steel hardware. Handle folds flat when not in use. Mounts with #6 screws (not supplied).



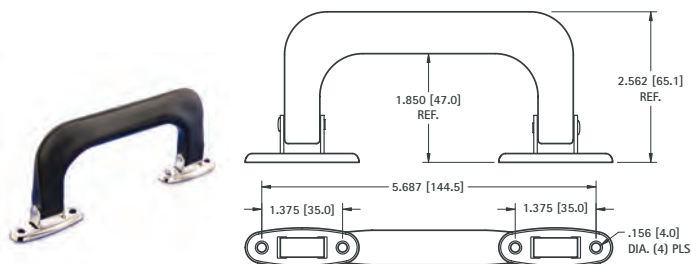
CAT. NO.	LENGTH	A
8351	4.500 (114.3)	6.000 (152.4)
8352	5.500 (139.7)	7.000 (177.8)
8353	6.000 (152.4)	7.500 (190.5)

MATERIAL:

Grip: Leather like, Black

Hardware: Steel, Nickel Plate

Folds flat on case when not in use. Mounts with rivets or #6 screws (not supplied).



MATERIAL:

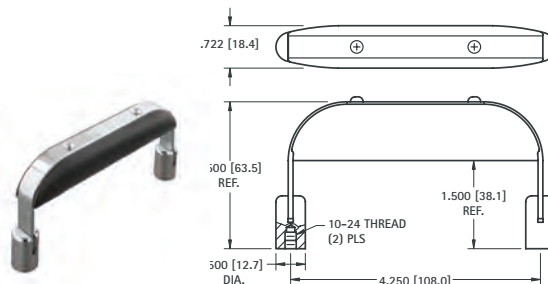
Grip: Polypropylene, Black

Post: Steel, Nickel Plate

Pin: Steel, Nickel Plate

CAT. NO.	COLOR
8356	BLACK

Folds flat on case when not in use. Mounts with #10-24 hardware supplied.



MATERIAL:

Grip: High Impact Styrene, Black

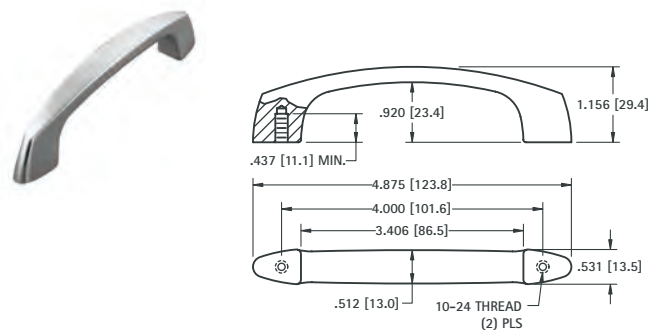
Rim: Steel, Nickel Plate

Post: Brass, Nickel Plate

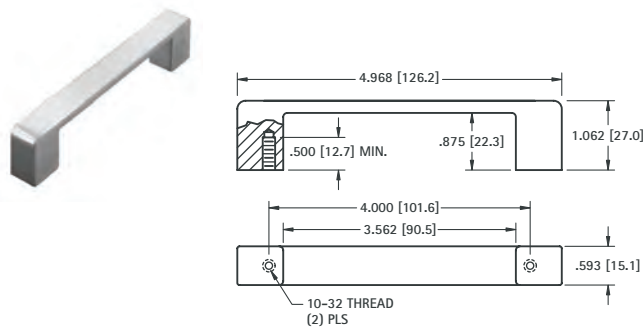
CAT. NO.	COLOR
8354	BLACK

CONTEMPORARY HANDLES

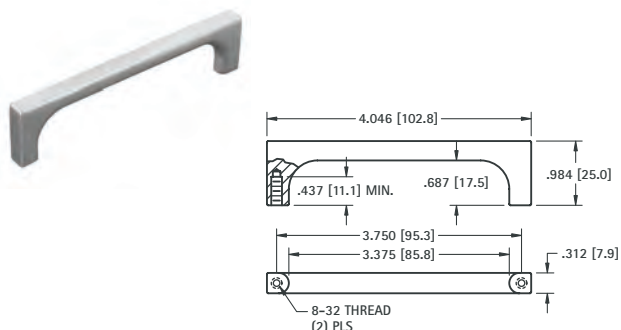
MATERIAL: Zinc, Satin Brushed, Nickel Plate



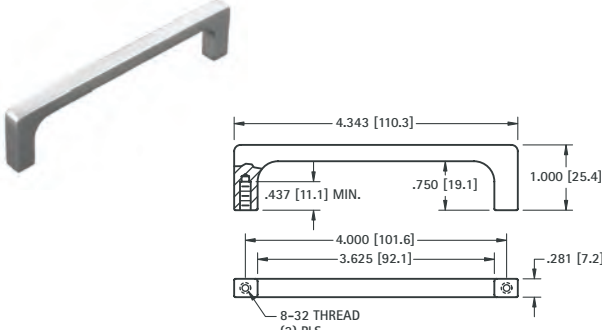
CAT. NO. 7197



CAT. NO. 7196



CAT. NO. 7199



CAT. NO. 7198



CHOICE of BRASS or ALUMINUM - ROUND or OVAL

These instrumentation handles are manufactured in a wide variety of diameters, lengths, platings and internal thread sizes. They will enhance the look of quality products and equipment and provide the sturdiness needed for contemporary equipment.

ROUND

- Available in: .156 (4.0), .187 (4.8), .250 (6.4), .312 (7.9), and .375 (9.5) diameters
- Mounting centers from 1.250 (31.8) to 6.437 (163.5)
- Internal threads 4-40, 6-32, 8-32 and 10-32
- Heights from .625 (15.9) to 1.750 (44.5)

MATERIAL:

Brass: ASTM-B16, Nickel Plate

Aluminum: QQ-A-200, Alloy 6061-T6, Black Anodized per MIL-A-8625

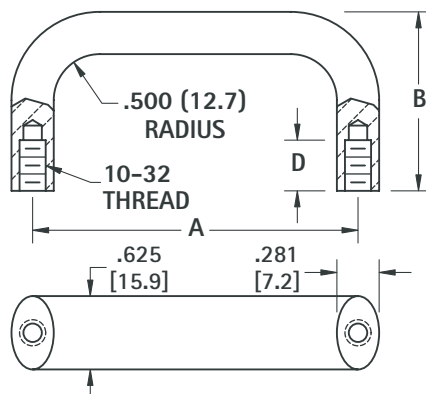
OVAL

- Available in: .625 (15.9) × .281 (7.1) Oval
- Mounting centers from 4.000 (101.6) to 6.437 (163.5)
- Internal threads 10-32
- Heights from 1.375 (34.9) to 2.000 (50.8)

MATERIAL:

Aluminum: QQ-A-200, Alloy 6061-T6, Black Anodized per MIL-A-8625

OVAL INSTRUMENTATION HANDLES



ALUMINUM CAT. NO.	A MTG. CTRS.	B HEIGHT	D DEPTH
7186	4.000 (101.6)	1.750 (44.5)	.500 (12.7)
544	4.000 (101.6)	2.000 (50.8)	
540	4.500 (114.3)	1.750 (44.5)	
545	4.500 (114.3)	2.000 (50.8)	
541	5.000 (127.0)	1.750 (44.5)	
546	5.000 (127.0)	2.000 (50.8)	
542	5.500 (139.7)	1.750 (44.5)	
547	5.500 (139.7)	2.000 (50.8)	
7187	6.000 (152.4)	1.375 (34.9)	.375 (9.5)
543	6.000 (152.4)	1.750 (44.5)	
548	6.000 (152.4)	2.000 (50.8)	.500 (12.7)
7188	6.437 (163.5)	1.750 (44.5)	

ROUND INSTRUMENTATION HANDLES



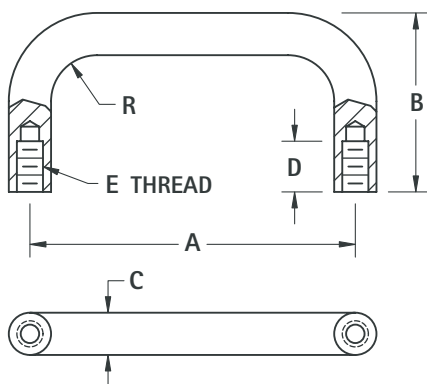
MATERIAL:

Brass: ASTM-B16, Nickel Plate

Aluminum: QQ-A-200, Alloy

6061-T6, Black Anodized per

MIL-A-8625



BRASS CAT. NO.	ALUMINUM CAT. NO.	A MTG. CTRS.	B HEIGHT	D DEPTH	E THREAD	R RADIUS	C DIAMETER
7140	7170	1.250 (31.8)	1.000 (25.4)	.375 (9.5)	4-40	.156 (4.0)	.156 (4.0)
7141	7171	2.000 (50.8)	1.000 (25.4)				
7142	7172	3.000 (76.2)	1.000 (25.4)				
9100	9110	1.250 (31.8)	.625 (15.9)	.156 (4.0)	4-40	.187 (4.7)	.187 (4.7)
9101	9111	1.500 (38.1)	.625 (15.9)				
9104	9114	1.500 (38.1)	.750 (19.1)				
9102	9112	1.750 (44.5)	.625 (15.9)				
9105	9115	1.750 (44.5)	.750 (19.1)				
9103	9113	2.000 (50.8)	.625 (15.9)	.250 (6.4)	6-32	.187 (4.7)	.187 (4.7)
9106	9116	1.250 (31.8)	1.000 (25.4)				
9107	9117	1.500 (38.1)	1.000 (25.4)				
9108	9118	2.000 (50.8)	1.000 (25.4)				
9109	9119	3.000 (76.2)	1.000 (25.4)				
7143	7173	3.000 (76.2)	1.500 (38.1)	.562 (14.3)	8-32	.250 (6.4)	.250 (6.4)
485	515	3.000 (76.2)	1.750 (44.5)				
480	510	3.500 (88.9)	1.500 (38.1)				
7144	7174	4.000 (101.6)	1.500 (38.1)				
486	516	4.000 (101.6)	1.750 (44.5)				
481	511	4.500 (114.3)	1.500 (38.1)				
487	517	4.500 (114.3)	1.750 (44.5)				
482	512	5.000 (127.0)	1.500 (38.1)				
488	518	5.000 (127.0)	1.750 (44.5)				
483	513	5.500 (139.7)	1.500 (38.1)				
484	514	6.000 (152.4)	1.500 (38.1)	.562 (14.3)	10-32	.312 (7.9)	.312 (7.9)
489	519	6.000 (152.4)	1.750 (44.5)				
7145	7175	3.000 (76.2)	1.500 (38.1)				
7146	7176	4.000 (101.6)	1.500 (38.1)				
493	523	4.000 (101.6)	1.750 (44.5)				
490	520	4.500 (114.3)	1.500 (38.1)				
494	524	4.500 (114.3)	1.750 (44.5)				
7147	7177	4.562 (115.9)	1.500 (38.1)				
491	521	5.000 (127.0)	1.500 (38.1)				
495	525	5.000 (127.0)	1.750 (44.5)				
492	522	5.500 (139.7)	1.500 (38.1)	.375 (9.5)	10-32	.375 (9.5)	.375 (9.5)
7148	7178	6.000 (152.4)	1.500 (38.1)				
496	526	6.000 (152.4)	1.750 (44.5)				
7149	7179	6.437 (163.5)	1.750 (44.5)	.375 (9.5)	10-32	.375 (9.5)	.375 (9.5)
7150	7180	4.000 (101.6)	1.375 (34.9)				
7151	7181	6.000 (152.4)	1.375 (34.9)				

FERRULES

FERRULES FOR ROUND HANDLES

- To protect and support panel surface



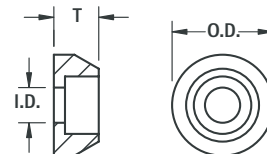
MATERIAL:

Brass: ASTM-B16, Nickel Plate

Aluminum: QQ-A-200, Alloy

6061-T6, Black Anodized per

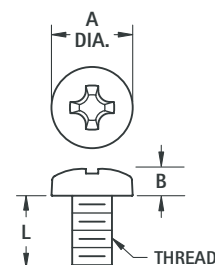
MIL-A-8625



BRASS CAT. NO.	ALUMINUM CAT. NO.	FOR THREAD	FOR DIAMETER	O.D.	I.D.	T
7162	7192	4-40	.156 (4.0)	.250 (6.4)	.120 (3.0)	.125 (3.2)
9120	9122	4-40	.187 (4.7)	.312 (7.9)	.120 (3.0)	.125 (3.2)
9121	9123	6-32	.187 (4.7)	.312 (7.9)	.144 (3.7)	.125 (3.2)
7163	7193	8-32	.250 (6.4)	.375 (9.5)	.170 (4.3)	.187 (4.7)
7164	7194	10-32	.312 (7.9)	.562 (14.3)	.196 (5.0)	.250 (6.4)

HANDLE MOUNTING SCREWS

- Phillips drive pan head machine screws



MATERIAL: Stainless Steel

CAT. NO.	L LENGTH	THREAD	A	B	DRIVER SIZE
9900	.250 (6.4)	4-40	.212 (5.4)	.065 (1.65)	1
9901	.375 (9.5)				
9902	.500 (12.7)				
9903	.250 (6.4)	6-32	.263 (6.7)	.092 (2.33)	2
9904	.375 (9.5)				
9905	.500 (12.7)				
9906	.375 (9.5)	8-32	.314 (8.0)	.110 (2.8)	2
9907	.500 (12.7)				
9908	.750 (19.1)				
9909	.375 (9.5)	10-32	.365 (9.3)	.128 (3.3)	2
9910	.500 (12.7)				
9911	.750 (19.1)				

CUSTOM HANDLES

Keystone is fully integrated to meet your total design and production needs. Our specialty is manufacturing custom designs and modifications of standard items. Forward your CAD drawing or print to our Engineering Department for a quote on your specific production requirements.

PLASTIC FAN FILTER ASSEMBLY

MEETS UL .250 (6.4) PLUG GAUGE TEST

A unique package consisting of guard, filter media and retainer. The guard and retainer are manufactured with UL Rated 94V-0 material. The filter media is made of polyurethane foam (30PPI) and allows free passage of air with minimum air resistance and pressure drop. A major feature of this assembly is that when the filter media requires maintenance you simply remove the snap-fit retainer to clean or replace the filter, leaving the guard attached to the fan. This assures protection to the fan blade and eliminates damage to the fan during cleaning.

RETAINER

MATERIAL: ABS, UL Rated 94V-0

- Snap-fit construction
- Designed for minimum air restriction

MEDIA

MATERIAL: Polyurethane foam

- Constructed to allow free passage of air with minimum resistance and pressure drop
- Has a high surface-area contact for impingement of dust particles
- 30PPI material gives a wide range of particle filtration (PPI denotes pores per inch)
- Helps reduce external fan noise
- Easily cleaned by vacuuming or washing with mild soap, detergent or cleaning solvent

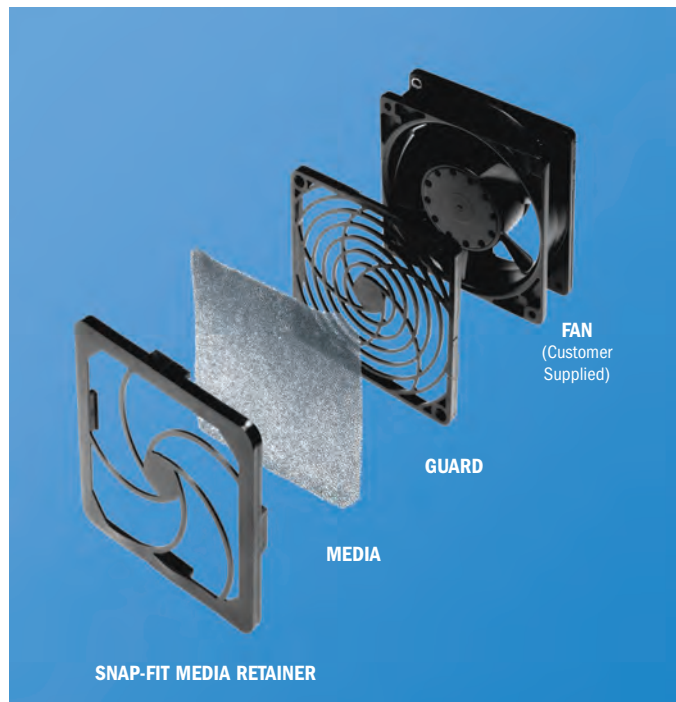
GUARD

MATERIAL: ABS, UL Rated 94V-0

- .250 (6.4) maximum ring spacing
- Decreased noise level due to design
- Countersunk mounting holes (4)
- Withstands high impact

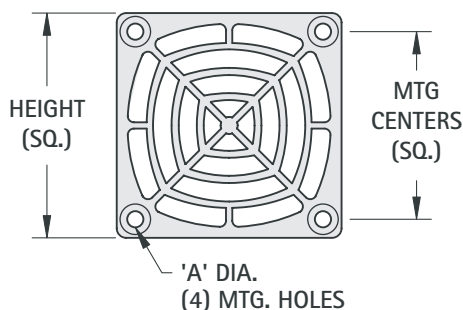
FAN

- Customer supplied



FAN GUARD ASSEMBLIES

MINI-FAN GUARD ASSEMBLIES



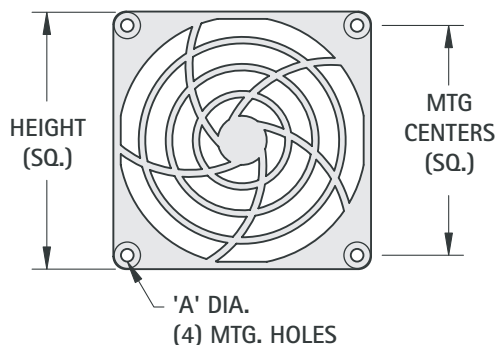
FILTER ASSEMBLIES INCLUDE GUARD, MEDIA and RETAINER

CAT. NO.	FOR FAN SIZE	HEIGHT	THICKNESS	MTG. CENTERS	A MTG. HOLES
8464	1.50" (40mm)	1.570 (39.9)	.240 (6.1)	1.260 (32.0)	.144 (3.7)
8465	2.50" (60mm)	2.360 (59.9)	.260 (6.6)	1.970 (50.0)	.170 (4.3)

FAN GUARDS

CAT. NO.	FOR FAN SIZE	HEIGHT	THICKNESS	MTG. CENTERS	A MTG. HOLES
8466	1.50" (40mm)	1.570 (39.9)	.240 (6.1)	1.260 (32.0)	.144 (3.7)
8467	2.50" (60mm)	2.360 (59.9)	.260 (6.6)	1.970 (50.0)	.170 (4.3)

STANDARD GUARD ASSEMBLIES



FILTER ASSEMBLIES INCLUDE GUARD, MEDIA and RETAINER

CAT. NO.	FOR FAN SIZE	HEIGHT	THICKNESS	MTG. CENTERS	A MTG. HOLES
8458	3.125" (80mm)	3.290 (83.6)	.393 (10.0)	2.810 (71.4)	.155 (3.9)
8459	3.625" (92mm)	3.800 (96.5)	.393 (10.0)	3.245 (82.4)	.175 (4.4)
8460	4.500" (120mm)	4.870 (123.7)	.420 (10.7)	4.125 (104.8)	.180 (4.6)

FAN GUARDS

CAT. NO.	FOR FAN SIZE	HEIGHT	THICKNESS	MTG. CENTERS	A MTG. HOLES
8461	3.125" (80mm)	3.150 (80.0)	.257 (6.5)	2.810 (71.4)	.155 (3.9)
8462	3.625" (92mm)	3.620 (91.9)	.250 (6.4)	3.245 (82.4)	.175 (4.4)
8463	4.500" (120mm)	4.650 (118.1)	.279 (7.1)	4.125 (104.8)	.180 (4.6)

METAL GUARDS

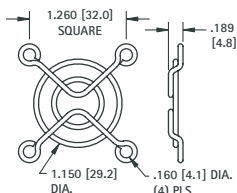
Made of high quality steel wire which combines strength with superior forming. The units offer clean, strong butt welds with minimum flash and have consistent guard diameters to enhance maximum air-flow and venting.

- Available for most popular size fans
- Protects fingers as well as fan blades
- Same mounting hole pattern as standard fans
- Chrome Plate offers a high luster finish



MATERIAL: Steel, Nickel Chrome Plate

FITS 1.50" (40mm) FANS

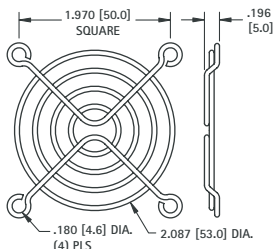


CONSTRUCTION

Rings: .063 (1.60) wire diameter
Ribs: .063 (1.60) wire diameter

CAT. NO. 8447

FITS 2.50" (60mm) FANS

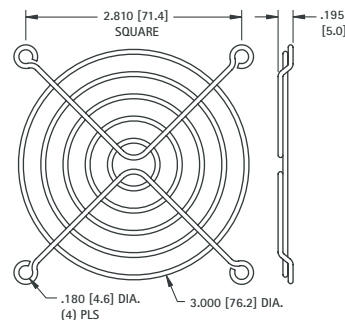


CONSTRUCTION

Rings: .063 (1.60) wire diameter
Ribs: .063 (1.60) wire diameter

CAT. NO. 8449

FITS 3.12" (80mm) FANS

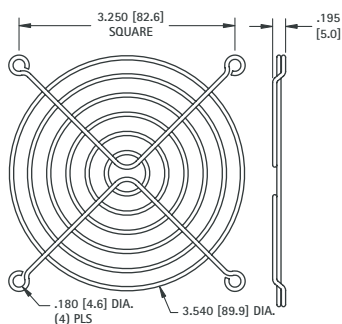


CONSTRUCTION

Rings: .063 (1.60) wire diameter
Ribs: .063 (1.60) wire diameter

CAT. NO. 8450

FITS 3.62" (92mm) FANS

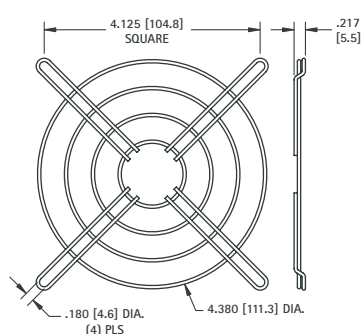


CONSTRUCTION

Rings: .063 (1.60) wire diameter
Ribs: .063 (1.60) wire diameter

CAT. NO. 8451

FITS 4.50" (120mm) FANS

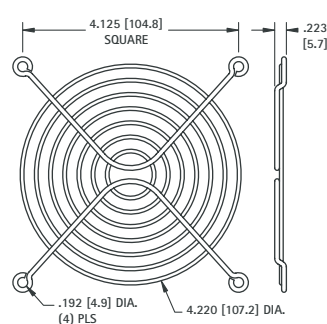


CONSTRUCTION

Rings: .063 (1.60) wire diameter
Ribs: .063 (1.60) wire diameter

CAT. NO. 8448

FITS 4.50" (120mm) FANS

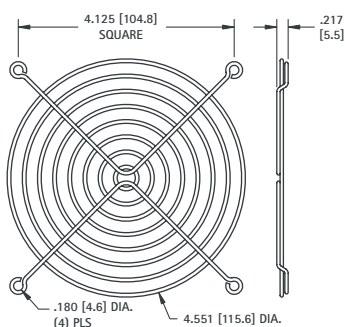


CONSTRUCTION

Rings: .071 (1.80) wire diameter
Ribs: .091 (2.31) wire diameter

CAT. NO. 8452

FITS 4.50" (120mm) FANS

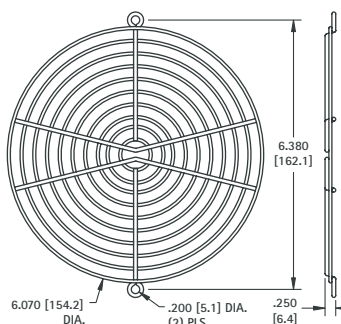


CONSTRUCTION

Rings: .071 (1.80) wire diameter
Ribs: .071 (1.80) wire diameter

CAT. NO. 8453

FITS 6.00" (150mm) FANS

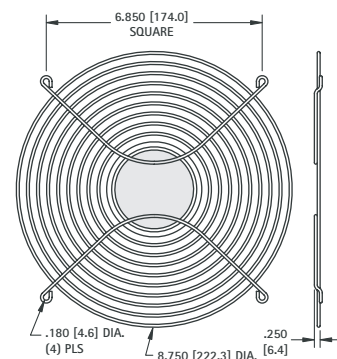


CONSTRUCTION

Rings: .071 (1.80) wire diameter
Ribs: .091 (2.31) wire diameter

CAT. NO. 8455

FITS 10.00" (250mm) FANS



CONSTRUCTION

Rings: .091 (2.31) wire diameter
Ribs: .091 (2.31) wire diameter

CAT. NO. 8457

LED LENS CAPS

Designed for use with T-1 or T-1 3/4 LEDs, these Lens Caps are available in round or square configurations. They snap-mount through the front panel for easy, light-finger pressure, installation. The LED is inserted into the cap from behind the panel and held securely in place.



MATERIAL: Polycarbonate
Available in Red, Green, Yellow and Clear

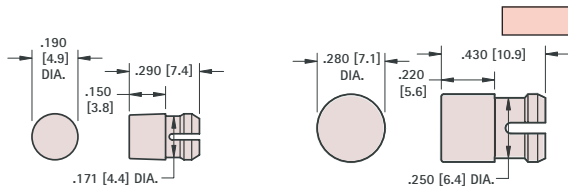
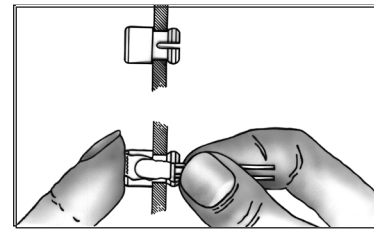


FIG. 1 T-1

FIG. 2 T-1 3/4

STANDARD HEIGHT

CAT. NO.	COLOR	FIG. NO.	LED SIZE	MTG. HOLE SIZE	MIN. MTG. CENTERS	PANEL THICKNESS
8650	RED	1	T-1	.171 (4.3)	.250 (6.4)	.031 - .062 (.79/1.57)
8651	GREEN					
8652	YELLOW					
8653	CLEAR					
8662	RED	2	T-1 3/4	.250 (6.4)	.375 (9.5)	.062 - .125 (1.57/3.18)
8663	GREEN					
8664	YELLOW					
8665	CLEAR					

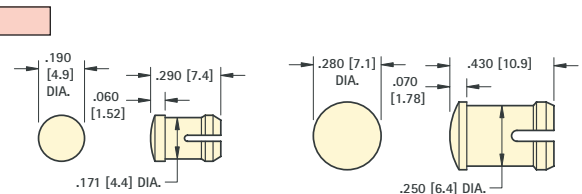


FIG. 3 T-1

FIG. 4 T-1 3/4

LOW PROFILE

CAT. NO.	COLOR	FIG. NO.	LED SIZE	MTG. HOLE SIZE	MIN. MTG. CENTERS	PANEL THICKNESS
8656	RED	3	T-1	.171 (4.3)	.250 (6.4)	.062 - .125 (1.57/3.18)
8657	GREEN					
8658	YELLOW					
8659	CLEAR					
8668	RED	4	T-1 3/4	.250 (6.4)	.375 (9.5)	.031 - .250 (.79/6.4) (See Note)
8669	GREEN					
8670	YELLOW					
8671	CLEAR					

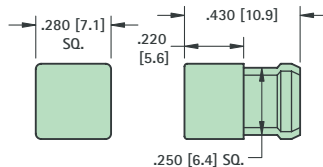


FIG. 5 T-1 3/4

STANDARD HEIGHT

CAT. NO.	COLOR	FIG. NO.	LED SIZE	MTG. HOLE SIZE	MIN. MTG. CENTERS	PANEL THICKNESS
8680	RED	5	T-1 3/4	.250 (6.4) SQUARE	.375 (9.5)	.062 - .125 (1.57/3.18)
8681	GREEN					
8682	YELLOW					
8683	CLEAR					

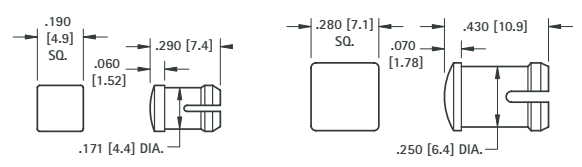


FIG. 6 T-1

FIG. 7 T-1 3/4

LOW PROFILE

CAT. NO.	COLOR	FIG. NO.	LED SIZE	MTG. HOLE SIZE	MIN. MTG. CENTERS	PANEL THICKNESS
8674	RED	6	T-1	.171 (4.3)	.250 (6.4)	.062 - .125 (1.57/3.18)
8675	GREEN					
8676	YELLOW					
8677	CLEAR					
8686	RED	7	T-1 3/4	.250 (6.4)	.375 (9.5)	.031 - .250 (.79/6.4) (See Note)
8687	GREEN					
8688	YELLOW					
8689	CLEAR					

Note: When mounting T-1 3/4 Low Profile Caps (Fig. 4 or Fig. 7) in panels .125 (3.2) thick or less a spacer must be used. **Spacer CAT. NO. 8692 MATERIAL:** White Nylon .375 (9.5) O.D. x 1/4 I.D. x 1/8 Lg.

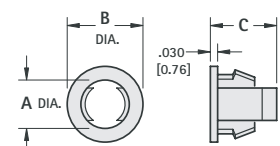
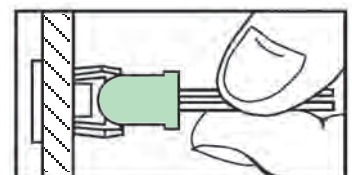
"SNAP-IN" T-1 & T-1 3/4 LED HOLDERS

Designed for use with T-1 or T-1 3/4 LED's in .060 (1.52) - .070 (1.78) thick panels. The holder snaps into the front panel with easy, light-finger pressure. The LED snaps into the holder from behind the panel and is held securely in place.



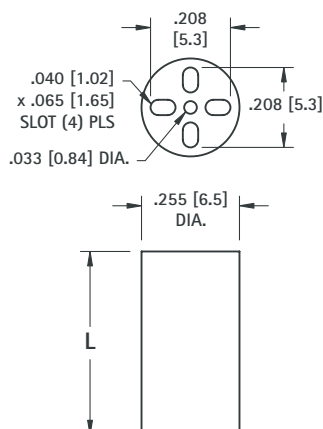
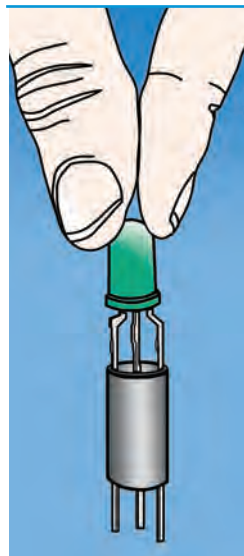
MATERIAL: Nylon 6/6, Black

CAT. NO.	LED SIZE	A	B	C	MTG. HOLE SIZE
8309	T-1	.114 (2.9)	.232 (5.9)	.188 (4.8)	.171 (4.3)
8310	T-1 3/4	.200 (5.0)	.315 (8.0)	.274 (6.9)	.250 (6.4)



"UNIVERSAL" FOR T-1 & T-1 3/4

- Unique design separates leads and retains Tri-Lead and Bi-Lead components.
- Designed for PC board mounting of Tri-Lead and Bi-Lead T-1 and T-1 3/4 LEDs
- Provides height control, lead retention and stability.
- Also suitable for mounting lamps, resistors, transistors, diodes, capacitors, etc.



MATERIAL: Black PVC, UL Rated 94V-0

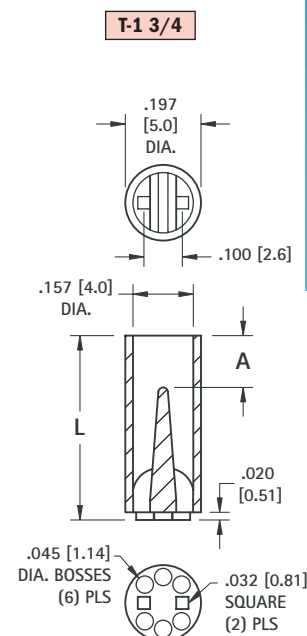
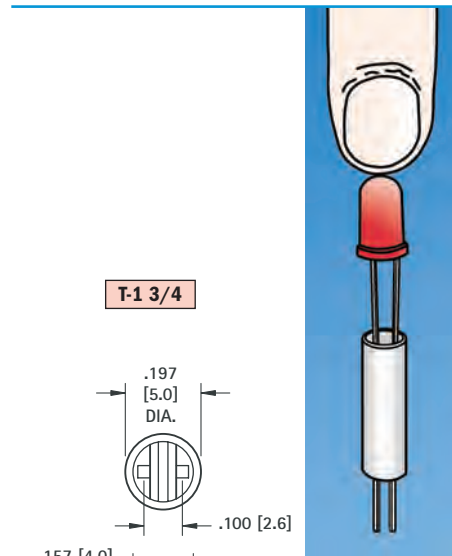
FOR T-1 3/4 and T-1			
CAT. NO.	L LENGTH	CAT. NO.	L LENGTH
8900	.120 (3.0)	8916	.400 (10.2)
8901	.140 (3.6)	8917	.420 (10.7)
8902	.160 (4.1)	8918	.440 (11.2)
8903	.180 (4.6)	8919	.450 (11.4)
8904	.200 (5.1)	8920	.460 (11.7)
8905	.220 (5.6)	8921	.480 (12.2)
8906	.240 (6.1)	8922	.500 (12.7)
8907	.250 (6.4)	8923	.550 (14.0)
8908	.260 (6.6)	8924	.600 (15.2)
8909	.280 (7.1)	8925	.650 (16.5)
8910	.300 (7.6)	8926	.700 (17.8)
8911	.320 (8.1)	8927	.750 (19.1)
8912	.340 (8.6)	8928	.800 (20.3)
8913	.350 (8.9)	8929	.850 (21.6)
8914	.360 (9.1)	8930	.900 (22.9)
8915	.380 (9.7)	8931	.925 (23.5)

"SELF-ALIGNING" FOR BI-LEAD T-1 & T-1 3/4

- These unique, new self-aligning Bi-Lead LED mounting spacers, for T-1 and T-1 3/4 LEDs, reduce labor costs by simplifying preassembly to the printed circuit board.
- The spacer features an internally tapered barrier which guides the leads and eliminates the possibility of crimping or shorting. The internal configuration also assures positive self-alignment on .100 (2.6) centers.
- The bosses serve the dual purpose of heat dissipation and easy post soldering cleanup.
- Available in a range of lengths from .120 (3.1) to .925 (23.5) long.

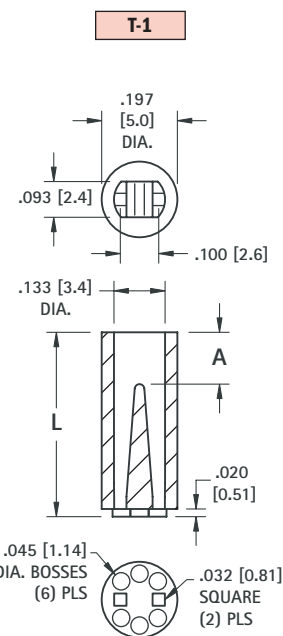
KEY FEATURES

- Internal design eliminates crimping or shorting of leads.
- Positive self-alignment of leads on .100 (.25) centers.
- Cost and labor saving.
- No special tools required




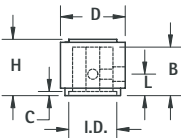

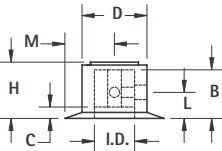

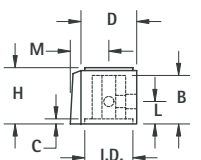

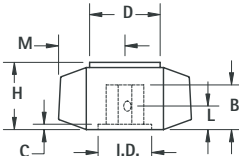
MATERIAL: Natural Nylon, UL Rated 94V-2

T-1 3/4	T-1		
CAT. NO.	CAT. NO.	L LENGTH	A REF.
8311	7351	.120 (3.0)	.045 (1.14)
8312	7352	.140 (3.6)	.065 (1.65)
8313	7353	.160 (4.1)	.085 (2.16)
8314	7354	.180 (4.6)	.105 (2.7)
8315	7355	.200 (5.1)	.125 (3.2)
8316	7356	.220 (5.6)	.145 (3.7)
8317	7357	.240 (6.1)	.045 (1.14)
8318	7358	.250 (6.4)	.060 (1.52)
8319	7359	.260 (6.6)	.065 (1.65)
8320	7360	.280 (7.1)	.090 (2.3)
8321	7361	.300 (7.6)	.110 (2.8)
8322	7362	.320 (8.1)	.120 (3.1)
8323	7363	.340 (8.6)	.140 (3.6)
8324	7364	.350 (8.9)	.150 (3.8)
8325	7365	.360 (9.1)	.160 (4.1)
8326	7366	.380 (9.7)	.060 (1.52)


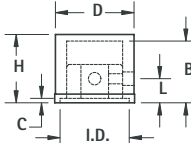


T-1 3/4	T-1		
CAT. NO.	CAT. NO.	L LENGTH	A REF.
8327	7367	.400 (10.2)	.075 (1.91)
8328	7368	.420 (10.7)	.095 (2.41)
8329	7369	.440 (11.2)	.115 (2.9)
8330	7370	.450 (11.4)	.120 (3.1)
8331	7371	.460 (11.7)	.135 (3.4)
8332	7372	.480 (12.2)	.145 (3.7)
8333	7373	.500 (12.7)	.055 (1.40)
8334	7374	.550 (14.0)	.095 (2.41)
8335	7375	.600 (15.2)	.150 (3.8)
8336	7376	.650 (16.5)	.075 (1.91)
8337	7377	.700 (17.8)	.120 (3.1)
8338	7378	.750 (19.1)	.055 (1.40)
8339	7379	.800 (20.3)	.110 (2.8)
8340	7380	.850 (21.6)	.160 (4.1)
8341	7381	.900 (22.9)	.200 (5.1)
8342	7382	.925 (23.5)	.230 (5.8)

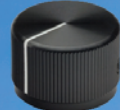
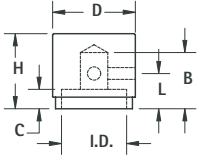

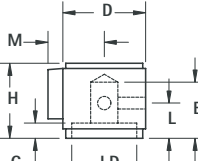
• All knobs supplied with two set screws installed

SPECIFICATIONS		CAT. NO.	SHAFT (DIA.)	KNOB DIMENSIONS			SHAFT ATTACHMENT DETAILS		NUT CLEARANCE		FIG NO.
Knob: ABS Inlay: Spun Aluminum Insert: Brass, Nickel Plate				D (DIA.)	H (HEIGHT)	M (MAX.)	L (LOCATION)	B (DEPTH)	I.D. INSIDE (DIA.)	C (COUNTER BORE)	
		8554	.125 (3.2)	.505 (12.8)	.660 (16.8)	—	.408 (10.4)	0.555 (14.1)	.360 (9.1)	.177 (4.5)	1
		8555	.250 (6.4)	.700 (17.8)	.780 (19.8)	—	0.357 (9.1)	0.555 (14.1)	.485 (12.3)	.188 (4.8)	
		8556	.250 (6.4)	.905 (23.0)	1.010 (25.7)	—	0.48 (12.2)	0.74 (18.8)	.640 (16.3)	.320 (8.1)	
		8557	.250 (6.4)	1.250 (31.8)	.850 (21.6)	—	0.4 (10.2)	0.605 (15.4)	.750 (19.1)	.250 (6.4)	
		8558	.125 (3.2)	.505 (12.8)	.660 (16.8)	.450 (11.4)	0.308 (7.8)	0.555 (14.1)	.360 (9.1)	.177 (4.5)	2
		8559	.250 (6.4)	.700 (17.8)	.780 (19.8)	.575 (14.6)	0.357 (9.1)	0.555 (14.1)	.485 (12.3)	.188 (4.8)	
		8560	.250 (6.4)	.905 (23.0)	1.010 (25.7)	.763 (19.4)	0.48 (12.2)	0.74 (18.8)	.640 (16.3)	.320 (8.1)	
		8561	.250 (6.4)	1.250 (31.8)	.850 (21.6)	.919 (23.3)	.400 (10.2)	0.605 (15.4)	.750 (19.1)	.250 (6.4)	
		8565	.250 (6.4)	.700 (17.8)	.610 (15.5)	.575 (14.6)	.187 (4.7)	.405 (10.3)	.485 (12.3)	.026 (.66)	3
		8566	.250 (6.4)	.905 (23.0)	.790 (20.1)	.763 (19.4)	.260 (6.6)	.520 (13.2)	.640 (16.3)	.114 (2.9)	
		8567	.125 (3.2)	.505 (12.8)	.510 (13.0)	.350 (8.9)	.158 (4.0)	.405 (10.3)	.435 (11.0)	.026 (.66)	
		8568	.250 (6.4)	.700 (17.8)	.610 (15.5)	.460 (11.7)	.187 (4.7)	.405 (10.3)	.485 (12.3)	.026 (.66)	4
		8569	.250 (6.4)	.905 (23.0)	.790 (20.1)	.590 (15.0)	.260 (6.6)	.520 (13.2)	.640 (16.3)	.114 (2.9)	

• All knobs supplied with two set screws installed

MATERIAL: ABS Insert: Brass, Nickel Plate			CAT. NO.	SHAFT (DIA.)	D (DIA.)	H (HEIGHT)	SHAFT ATTACHMENT DETAILS		NUT CLEARANCE	
							L (LOCATION)	B (DEPTH)	I.D. (INSIDE DIA.)	C (COUNTER BORE)
		8528	.125 (3.2)	.520 (13.2)	.620 (15.7)	.250 (6.4)	.520 (13.2)	.430 (10.9)	.070 (1.8)	
		8529	.250 (6.4)	.520 (13.2)	.620 (15.7)	.250 (6.4)	.520 (13.2)	.430 (10.9)	.070 (1.8)	
		8530	.125 (3.2)	.720 (18.3)	.620 (15.7)	.187 (4.7)	.560 (14.2)	.625 (15.9)	.030 (0.8)	
		8531	.250 (6.4)	.720 (18.3)	.620 (15.7)	.187 (4.7)	.560 (14.2)	.625 (15.9)	.030 (0.8)	

• All knobs supplied with two set screws installed

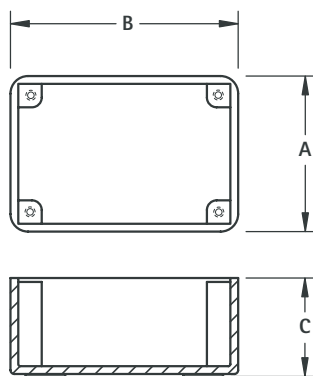
MATERIAL: Aluminum, 6061 Finish: Black - Black Anodize Clear - Clear Anodize			CLEAR CAT. NO.	BLACK CAT. NO.	SHAFT (DIA.)	D (DIA.)	H (HEIGHT)	M (MAX.)	SHAFT ATTACHMENT DETAILS		NUT CLEARANCE	
									L (LOCATION)	B (DEPTH)	I.D. INSIDE (DIA.)	C (COUNTER BORE)
		8512	8513	.125 (3.2)	.500 (12.7)	.630 (16.0)	—	.295 (7.5)	.510 (13.0)	.375 (9.5)	.168 (4.3)	
		8514	8515	.250 (6.4)	.500 (12.7)	.630 (16.0)	—	.295 (7.5)	.510 (13.0)	.375 (9.5)	.168 (4.3)	
		8516	8517	.125 (3.2)	.750 (19.1)	.630 (16.0)	—	.295 (7.5)	.510 (13.0)	.590 (15.0)	.168 (4.3)	
		8518	8519	.250 (6.4)	.750 (19.1)	.630 (16.0)	—	.295 (7.5)	.510 (13.0)	.590 (15.0)	.168 (4.3)	
		8540	8541	.125 (3.2)	.500 (12.7)	.630 (16.0)	.375 (9.5)	.320 (8.1)	.510 (13.0)	.375 (9.5)	.120 (3.0)	
		8542	8543	.250 (6.4)	.500 (12.7)	.630 (16.0)	.375 (9.5)	.320 (8.1)	.510 (13.0)	.375 (9.5)	.120 (3.0)	
		8544	8545	.125 (3.2)	.750 (19.1)	.630 (16.0)	.510 (13.0)	.320 (8.1)	.510 (13.0)	.590 (15.0)	.120 (3.0)	
		8546	8547	.250 (6.4)	.750 (19.1)	.630 (16.0)	.510 (13.0)	.320 (8.1)	.510 (13.0)	.590 (15.0)	.120 (3.0)	

INSTRUMENTATION CASES

-

- MATERIALS:**

Aluminum Panels: .062 (1.57) thick, 5052-H34 per QQ 318 C; Bright finished surface with pressure sensitive protective covering tape



MATERIALS:

Phenolic Cases: .125 (3.2) Wall thickness,
Molded Glossy Black Phenolic, MIL-M-14, CFG

COVER PANEL	
PHENOLIC PANEL	ALUMINUM PANEL
CAT. NO. 2050	CAT. NO. 2051
2042	2044
2042	2044
2043	2045
2037*	2046
2052*	2053
2038*	2047
2039*	2048

*.093 (2.36) thick

PHENOLIC CASE				
CAT. NO.	A	B	C	THREAD SIZE AND TYPE
715	2.500 (63.5)	3.500 (88.9)	1.250 (31.8)	4-40 TAPPED
703	2.875 (73.0)	4.000 (101.6)	1.562 (39.7)	4-40 TAPPED
705	2.875 (73.0)	4.000 (101.6)	1.562 (39.7)	USE #4 SELF TAPPING SCREW
704	3.125 (73.0)	5.875 (101.6)	2.250 (39.7)	4-40 TAPPED
700	3.750 (79.4)	6.250 (149.2)	2.000 (57.2)	6-32 BRASS INSERT
716	4.250 (95.3)	5.000 (158.8)	1.750 (50.8)	6-32 BRASS INSERT
701	5.250 (108.0)	6.812 (127.0)	2.312 (44.5)	6-32 BRASS INSERT
702	7.375 (133.4)	8.375 (173.0)	3.000 (58.7)	6-32 BRASS INSERT

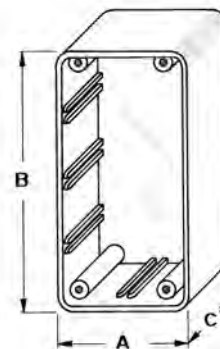
- Cases and panels are sold separately
- Covers available in Phenolic or Aluminium
- Covers can be machined to accept dials, switches, displays
- Panel mounting screws available - Refer to page 123
- Sturdy case can be machined for wiring access
- Ideal for prototype or lab use

- Cases Supplied with Cover and Mounting Screws

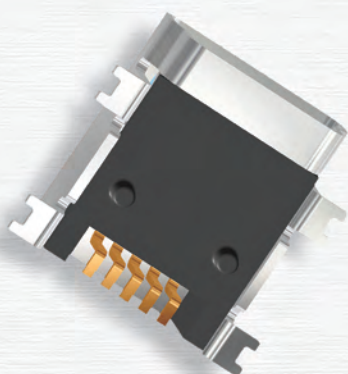
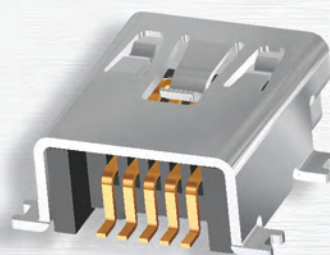
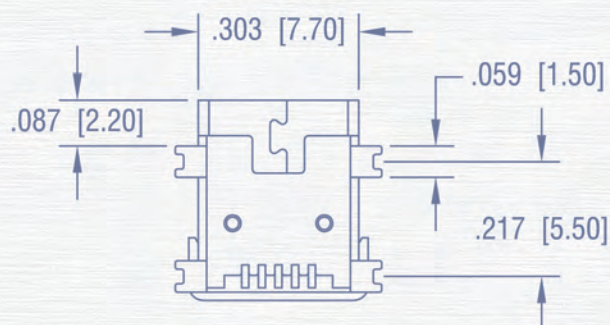
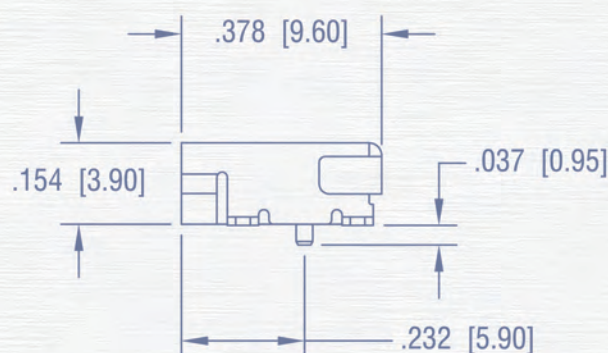
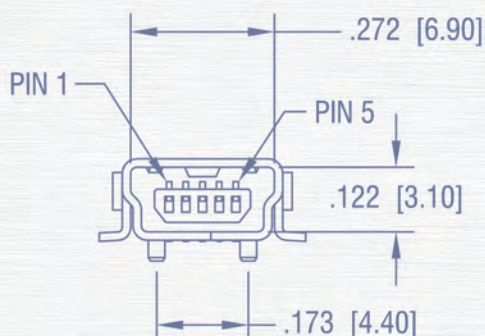
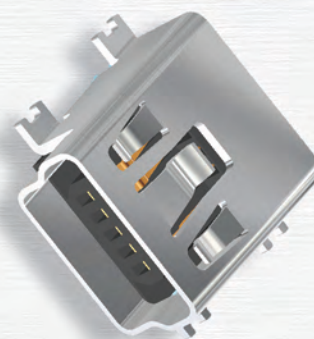
- Low Cost
- Sturdy Construction

Economical cases molded of high impact material. Mating cover has interlocking flange on lid, countersunk holes for flush mounting. Internal grooved guides to hold PC boards and circuit cards from .062 (1.57) to .093 (2.36) thick.

CASE & COVER				
CAT. NO.	A	B	C	MATERIAL
762	2.500 (63.5)	4.750 (120.7)	1.400 (35.6)	Blue Styrene
706	2.875 (73.0)	4.000 (101.6)	1.562 (39.7)	Black ABS
707	3.750 (79.4)	6.250 (149.2)	2.000 (50.8)	Black ABS



NOTES



PINS, PLUGS, JACKS & HARDWARE

Our PCB pins & receptacles, solder terminals, tip, test, banana & binding post receptacles & terminals, and USB connectors and sockets offer the most versatility for virtually any device requirements such as:

- Audio Circuitry
- Home theaters
- Electronic test equipment
- Telephone switchboards
- High Speed computer connections
- Telecommunication hook ups
- CATV equipment hook ups

Our quality system is ISO 9001:2000 certified. Our products are in compliance with the RoHS directive. We provide 3D modeling, CAD and other application-engineering support for modifications, special designs or assembly requirements to assist you in choosing the right Keystone product for your application.

DATE	DESCRIPTION	REV.

PINS, PLUGS, JACKS & SOCKETS

SECTION CONTENTS

JACKS

Audio Jacks	91-93
Banana Jacks	94-95
Test Jacks	97
Tip Jacks	96
Micro Jacks	99

PINS

Micro Pins	98
Push-in Terminals & Pins ...	100

PLUGS

Audio Plugs	91-93
Banana Plugs	94-95
Firewire Plugs	90
USB Plugs	88-89

SOCKETS

Firewire Sockets	90
Transistor Sockets & Hardware	101-103
USB Plugs	88-89

UNIVERSAL SERIAL BUS PLUGS & SOCKETS

- Snap-In PC tails hold connector in position for wave soldering
- Tin Plated solder tails for excellent solderability
- Gold Plated contacts for low contact resistance and excellent reliability

SOCKET SPECIFICATIONS:

Shell: Phosphor Bronze
Insulator: Thermoplastic, UL Rated 94V-0
Contacts: Phosphor Bronze
Contact Area: Gold Flash over Nickel
Solder Trails: Tin over Nickel

PLUG SPECIFICATIONS:

Shell: Steel, Nickel Plate
Insulator: Thermoplastic, Rated UL 94V-0
Contact: Bronze, Gold Flash over Nickel

ELECTRICAL CHARACTERISTICS

Rated Voltage: 30V (RMS)
Contact Current Rating: 1 Amp DC max.
Contact Resistance: 15 mΩ max.
Insulation Resistance: 1000 mΩ min.
Dielectric Withstanding Voltage: 750V AC for 1 minute

MECHANICAL CHARACTERISTICS

Operating Temperature: -13°F (-25°C) to 176°F (+80°C)
Durability: 1500 Cycles min.

DESIGN ADVANTAGES

Port Expansion: Alleviates restriction of limited COM Ports and available IRQ's

Fast Data Transfer: Up to 480 Mbps; 3-5 times faster than parallel devices and 20-40 times faster than serial ports.

Daisy Chaining: Up to a max. of 127 devices to the root hub

Hot-Swapping: Allows peripherals to be connected or disconnected without turning off computer

Simple Connections: True Plug and Play; No jumper, DIP Switches or IRQ's to set

True Digital Audio: Allows USB Speakers to BYPASS the sound card and receive true digital audio sound quality

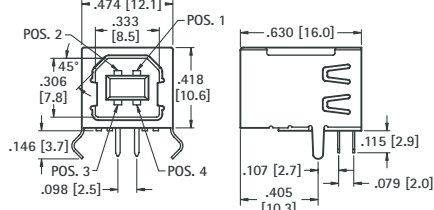
DEVICE APPLICATIONS

Ability to daisy chain more than one input device

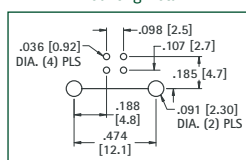
- Mouse/Keyboards
- MP3 Players
- Printers/Scanners
- Digital Cameras/Video
- Memory Sticks
- PDAs and Cell Phones

USB B-SERIES SOCKETS/PLUGS

THRU HOLE SOCKET

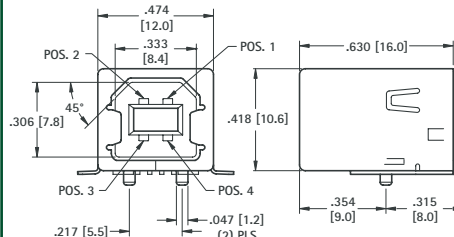


Mounting Detail

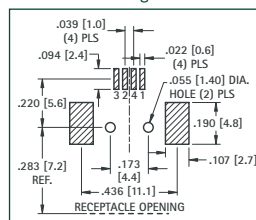


CAT. NO. 924

SURFACE MOUNT SOCKET

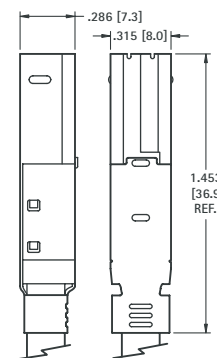


Mounting Detail



CAT. NO. 933

CABLE PLUG



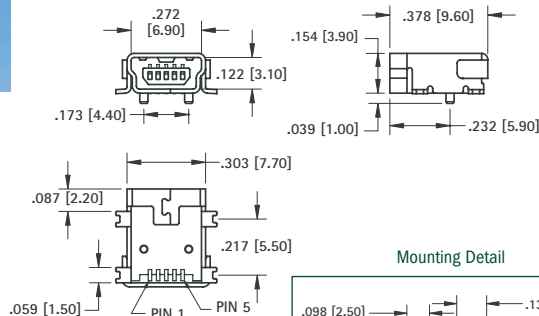
CAT. NO. 926

MINI-USB SOCKETS/PLUGS

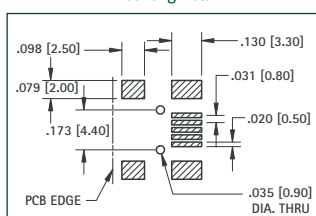
- Ideal for Miniature applications

SURFACE MOUNT SOCKET

SUPPLIED ON TAPE AND REEL

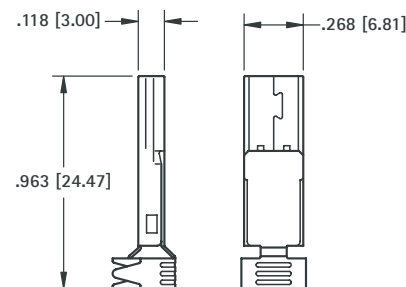


Mounting Detail



CAT. NO. 934TR

Tape & Reel Spec's: 24mm wide; 16mm pitch;
 13 inch reel (800 pieces per reel)



CAT. NO. 935

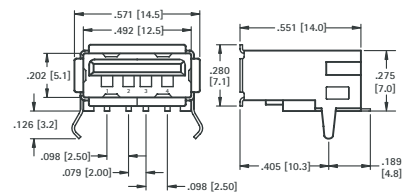
A-TYPE SOCKETS

HORIZONTAL

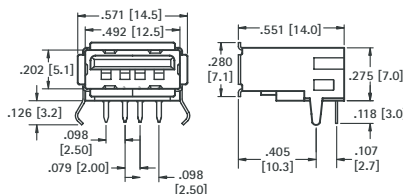
SURFACE MOUNT



920

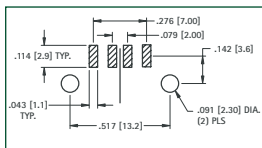


920



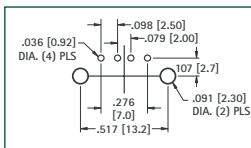
921

Mounting Detail Cat. No. 920



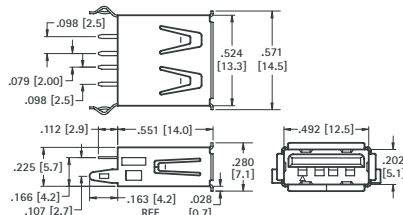
CAT. NO. 920

Mounting Detail Cat. No. 921

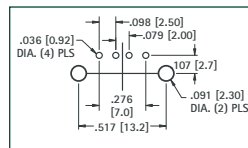


CAT. NO. 921

VERTICAL

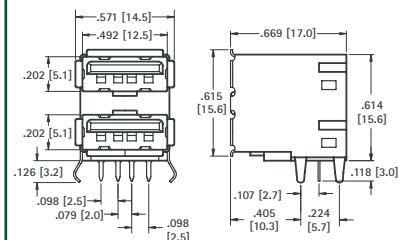
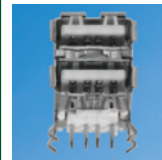


Mounting Detail

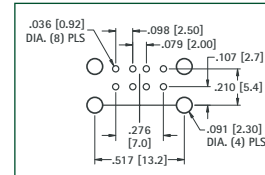


CAT. NO. 923

DUAL STACKING



Mounting Detail



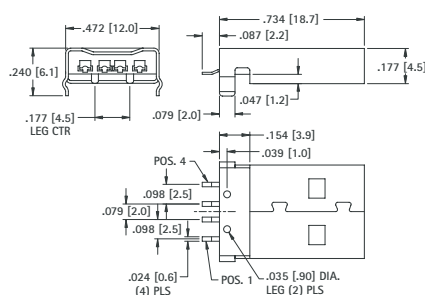
CAT. NO. 922

A-SERIES PLUGS

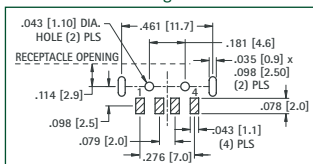
FEATURES

- Available for on-board applications such as memory sticks
- Cable clamp style for creating custom cables
- Gold plated contacts for low contact resistance and excellent reliability

SURFACE MOUNT

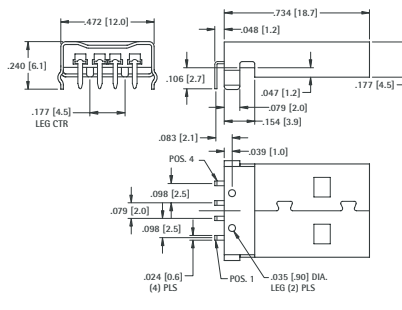


Mounting Detail

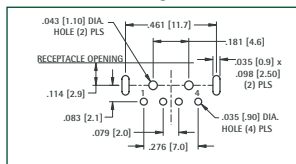


CAT. NO. 931

THRU HOLE MOUNT

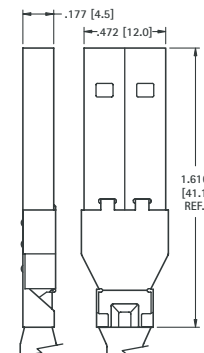


Mounting Detail



CAT. NO. 932

CABLE PLUG



CAT. NO. 925

- Snap-In PC tails hold connector in position for soldering
- Gold Plated contacts for low contact resistance and excellent reliability

IEEE 1394



SPECIFICATIONS

Shell: Phosphor Bronze
Insulator: Thermoplastic, Rated UL 94V-0
Contacts: Phosphor Bronze
Plating:
Contact Area: Gold Flash over Nickel
Solder Tails: Tin over Nickel Plate

DESIGN ADVANTAGES

Superfast Data Transfer:

Current speeds of 100Mbps, 200Mbps and 400Mbps, and roadmapped to 1GB to 3.2 GBps per second

Daisy Chaining:

Up to 63 devices, each one acts as an active repeater on the bus, with a maximum of 16 repeats

Port Expansion:

Alleviates restriction of limited COM Ports and available IRQ's

Wide Bandwidth:

Operates in asynchronous or isochronous data streams. Digital interface designed for high speed applications for PC peripherals, consumer electronics and communications.

Simple Connections:

True Plug and Play, no jumpers, DIP Switches or IRQ's to set

Hot Swapping:

Allows peripherals to be connected or disconnected without turning off computer

Highly Versatile Bus:

One bus can handle a variety of devices operating at different speed classes for true backwards compatibility

Standard Digital Interface:

Allows consumer electronics and computer devices to communicate together on one interface

ELECTRICAL CHARACTERISTICS

Rated Voltage: 30VAC (RMS)

Contact Current Rating: 1 Amp DC max.

Contact Resistance: 15 mΩ

Insulation Resistance: 1000 mΩ min.

Dielectric Withstanding Voltage: 750V AC for 1 minute

Operating Temperature: 32°F (0°C) to 104°F (40°C)

Capacitance: 2pF max.

MECHANICAL CHARACTERISTICS

Durability: >1500 cycles

Mating Force: 35 Newtons min.

Withdrawal Force: 10 Newtons min.

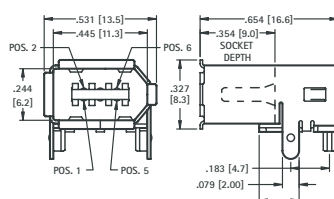
DEVICE APPLICATIONS

- Broadcast TV
- Cable TV
- Digital Camcorders
- Digital Cameras & VCRs
- Computers & Hard Disks
- DVD Players
- Printers & Monitors
- Stereos

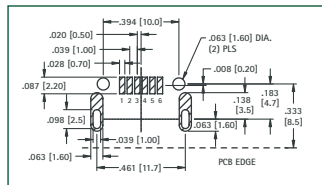
SURFACE MOUNT

HORIZONTAL

SUPPLIED ON TAPE AND REEL



Mounting Detail

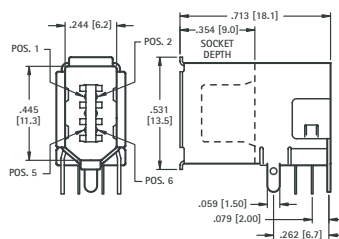


CAT. NO. 927TR

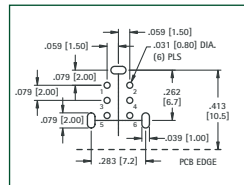
Tape & Reel Spec's: 32mm wide; 24mm pitch;
13 inch reel (200 pieces per reel)

THRU HOLE MOUNT

UP-RIGHT



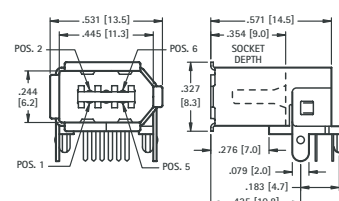
Mounting Detail



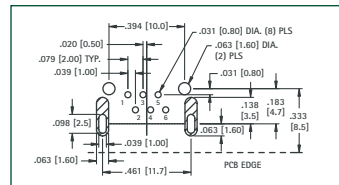
CAT. NO. 930

THRU HOLE MOUNT

HORIZONTAL



Mounting Detail



CAT. NO. 929

FIREWIRE PLUG

FEATURES

- Modular design allows easy and fast assembly of components
- Integrated strain relief - crimps to wire insulation
- Gold Plated contacts for low contact resistance and excellent reliability

IEEE 1394



CAT. NO. 928 (Supplied Unassembled)

SPECIFICATIONS

Shell: Phosphor Bronze

Insulator: Thermoplastic, Rated UL 94V-0

Contacts: Phosphor Bronze

Plating:

Contact Area: Gold Flash over Nickel

Solder Tails: Tin over Nickel Plate

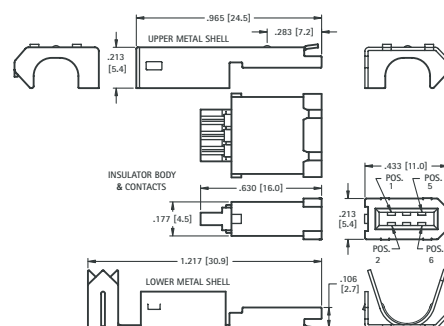
ELECTRICAL CHARACTERISTICS

Contact Resistance: 30mΩ max.

Insulation Resistance: 1000 mΩ min.

Withstanding Voltage: 500V ± 50V DC

Operating Temperature: 32°F (0°C) to 104°F (40°C)



SURFACE MOUNT AUDIO JACKS

- Mates with 2.5mm and 3.5mm plugs
- Designed for reliable interface with audio equipment including computer speakers, headphones, sound cards, cell phones, etc.
- Models available for mono and stereo applications
- Low profile, surface mount design



SPECIFICATIONS

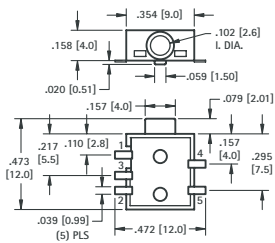
Housing: Polyamide, UL Rated 94V-0

Ground Terminal: .012 (.30) thick Brass, Gold Flash ①

Spring Contacts: .008 (.20) thick Phosphor Bronze, Gold Flash ② ⑤

Shunt Terminals: .012 (.30) thick Brass, Gold flash ③ ④

FOR 2.5 mm PLUGS

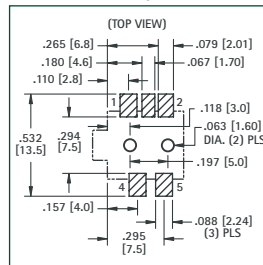


CAT. NO. 980TR (Stereo)

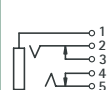
CAT. NO. 982TR (Mono)

Tape Spec's: 24mm wide; 16mm pitch
Reel Spec's: 15 inch reel (1,000 pieces per reel)

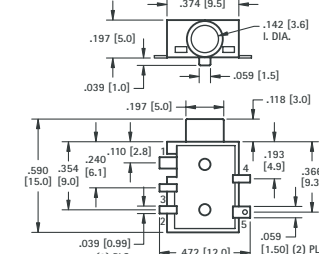
Pad Layout



STEREO SCHEMATIC



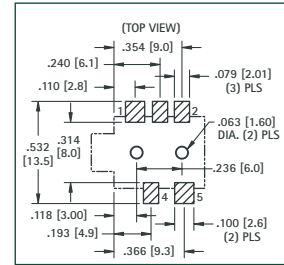
MONO SCHEMATIC



CAT. NO. 981TR (Stereo)

CAT. NO. 983TR (Mono)

Pad Layout

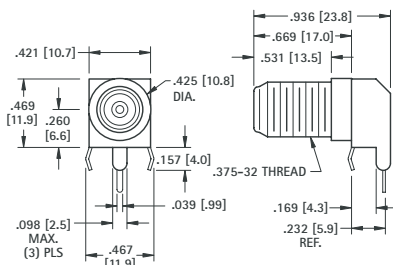


Tape Spec's: 24mm wide; 16mm pitch
Reel Spec's: 15 inch reel (800 pieces per reel)

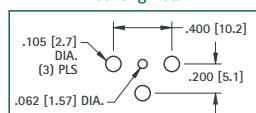
"F" FEMALE CONNECTOR

SNAP-FIT PC MOUNT

- Low profile
- Snap-fit mounting for positive retention during wave soldering
- Rugged, stable construction facilitates reliable mating
- High reliability, manufactured using Nickel Plated Brass bodies and Tin Plated Phosphor Bronze contacts
- Supplied with washer and nut



Mounting Detail



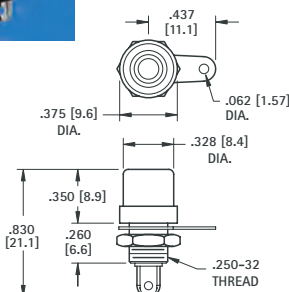
CAT. NO. 911

PANEL MOUNT PHONO JACKS

- Mates with .125 (3.12) dia. pin
- Mounts to panel in .296 (7.6) dia. hole

- Color coded for ease of identification
- Complete with nut and solder lug

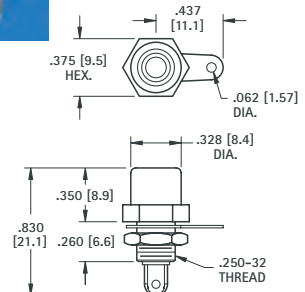
ROUND BASE



CAT. NO.	INSULATOR COLOR
580	RED
574	BLACK

MATERIAL:
Brass, Nickel Plate

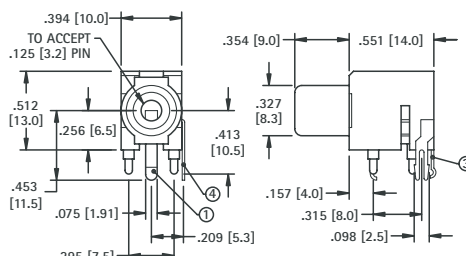
HEX BASE



CAT. NO.	INSULATOR COLOR
581	WHITE
582	RED
576	BLACK
583	YELLOW

COLOR KEYED - PC PHONO JACKS

- Mates with .125 (3.2) diameter pins
- Features a normally closed circuit
- Various colors for circuit identification
- Snap-fit mounting for positive retention during wave soldering



CAT. NO.	INSULATOR COLOR
970	WHITE
971	RED
972	BLACK
973	YELLOW

SPECIFICATIONS

Housing: PBT

Ground Terminal: .020 (.51) thick Brass, Nickel Plate ①

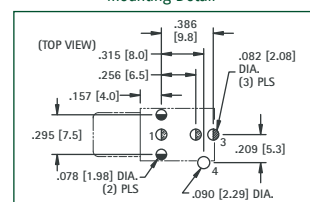
Spring Contact: .012 (.30) thick Phosphor Bronze, Silver Plate ③

Shunt Terminal: .016 (.41) thick Brass, Silver Plate ④

SCHEMATIC



Mounting Detail

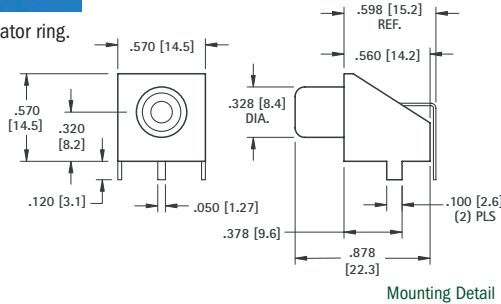


90° PC PHONO JACK



Complete one piece jack for insertion into PC board.
Time Saving. No Wiring Required.

- Black insulator ring.



Mounting Detail

MATERIAL:

Base: Steel, Tin Plate
Shell: Steel, Nickel Plate
Contact: Brass, Tin Plate

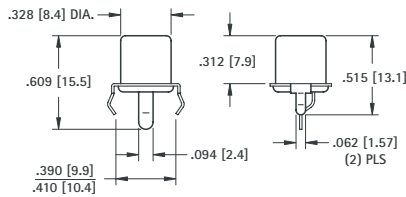
CAT. NO. 902

SNAP-FIT VERTICAL PC JACK

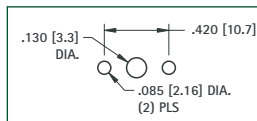
- Snaps into holes on PC board and firmly held for soldering
- No staking required



- Red insulator ring



Mounting Detail



MATERIAL:

Shell: Steel, Tin Plate
Contact: Brass, Tin Plate

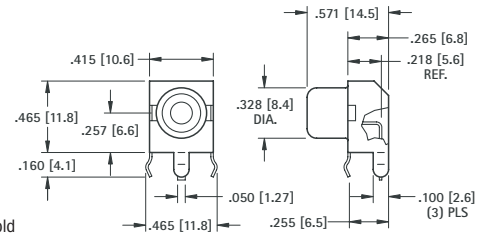
CAT. NO. 572

SNAP-FIT 90° PC PHONO JACKS

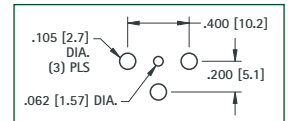
CHOICE OF TIN OR GOLD PLATE



Complete one piece jack for insertion into PC board.
Time Saving. No Wiring Required.
Snap-fits into PC board.



Mounting Detail



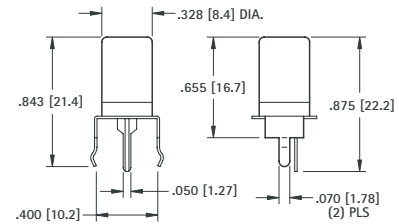
MATERIAL:

Shell: Steel
Contact: Brass
Plating: Tin or Gold

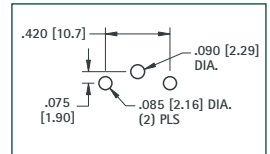
TIN PLATE CAT. NO.	INSULATOR COLOR	GOLD PLATE CAT. NO.
587	WHITE	936
588	RED	937
901	BLACK	900
589	YELLOW	938

SNAP-FIT VERTICAL PC PHONO JACKS

- Extra long, one piece shell to accept plugs with longer pins for greater contact
- Snaps into holes on PC board and firmly held for soldering
- No staking required



Mounting Detail



CAT. NO.	INSULATOR COLOR
584	WHITE
577	RED
585	BLACK
586	YELLOW

MATERIAL:

Shell: Steel, Nickel Plate
Contact: Brass, Tin Plate

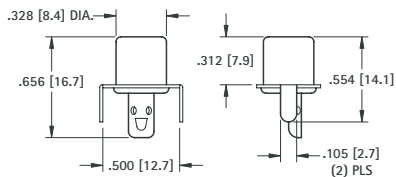
PC PHONO JACKS

VERTICAL

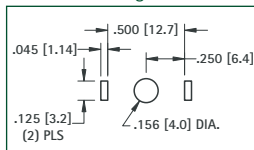
- For applications requiring staking to product



- White insulator ring



Mounting Detail



MATERIAL:

Shell: Steel, Tin Plate
Contact: Brass, Tin Plate

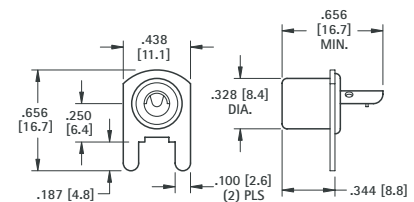
CAT. NO. 573

HORIZONTAL

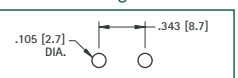
- Mounted on bracket ready for insertion into pre-drilled holes
- Solder lug allows remote attachment of signal to PC board



- Red insulator ring



Mounting Detail



MATERIAL:

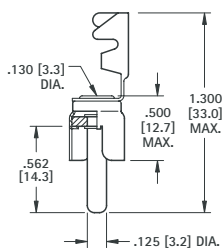
Shell: Steel, Tin Plate
Contact: Brass, Tin Plate

CAT. NO. 571

PHONO PLUGS

- Mates with .125 (3.2) diameter jacks

STRAIN RELIEF LUG CRIMPS TO WIRE INSULATION

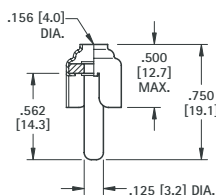


CAT. NO. 565

MATERIAL:

Shell: Steel, Tin Plate
Pin: Brass, Nickel Plate

CONVENTIONAL TYPE

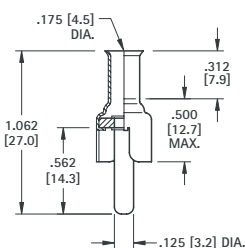


CAT. NO. 561

MATERIAL:

Shell: Brass, Nickel Plate
Pin: Brass, Nickel Plate

CRIMP OR SOLDER TYPE EXTRA LONG HANDLE



CAT. NO. 567

MATERIAL:

Shell: Steel, Tin Plate
Pin: Brass, Nickel Plate

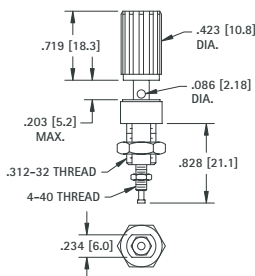
BINDING POSTS

All Keystone binding posts are designed to prevent accidental contact with current carrying parts. They feature a "limited opening" captivated head to insure safety. Ideal for audio circuitry, R.F. circuitry, oscilloscopes, power supplies and various other applications.

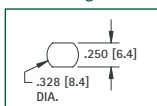
These multi-purpose binding posts feature high current rating, captivated heads and anti-rotation stud mounting.

Note: Binding Posts accept .175" (4.5) Banana Plugs, .080" (2.08) Tip Plugs, Spade Lugs, Alligator Clips, Wires and EZ hooks.

STANDARD BINDING POST



Mounting Detail



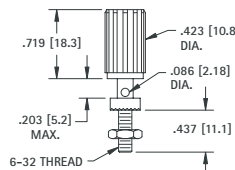
MATERIAL:

Stud: Brass per QQ-B-626
Plating: Silver Plate
Insulation: Nylon
Current Rating: 15 Amps
Stud to Panel Capacitance: 3.3 pF Nominal

For panels up to .281 (7.1) thick

CAT. NO.	COLOR
7004	RED
7005	BLACK

UNINSULATED BINDING POST



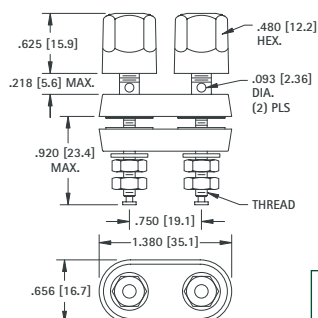
MATERIAL:

Stud: Brass per QQ-B-626
Plating: Nickel Plate
Insulation: Nylon
Current Rating: 15 Amps, 1000V AC Working

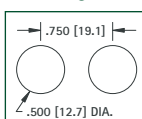
For panels up to .313 (8.0) thick

CAT. NO.	COLOR
7006	RED
7007	BLACK

STANDARD DUAL HEX HEAD



Mounting Detail

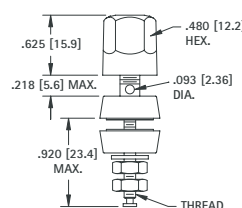


MATERIAL:

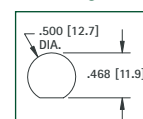
Stud: Brass per ASTM B-16.
Insulation: Nylon
Current Rating: 30 Amps, 1000V AC Working

GOLD PLATE		NICKEL PLATE	
CAT. NO.	THREAD	CAT. NO.	THREAD
4108	8-32	7018	8-32
4109	10-32	7019	10-32

STANDARD HEX HEAD



Mounting Detail



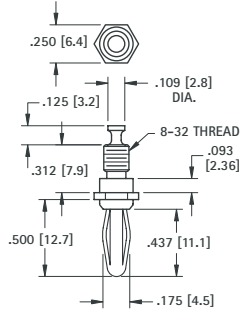
MATERIAL:
Stud: Brass per ASTM B-16.
Insulation: Nylon
Current Rating: 30 Amps, 1000V AC Working

GOLD PLATE			NICKEL PLATE		
CAT. NO.	THREAD	COLOR	CAT. NO.	THREAD	COLOR
4096	8-32	RED	4091	8-32	RED
4097	8-32	BLACK	4092	8-32	BLACK
7016	10-32	RED	4093	10-32	RED
7017	10-32	BLACK	4094	10-32	BLACK
7023	10-32	WHITE	4198	10-32	WHITE
7024	10-32	YELLOW	4199	10-32	YELLOW

EXTERNAL THREAD



.175 (4.5)
Plug



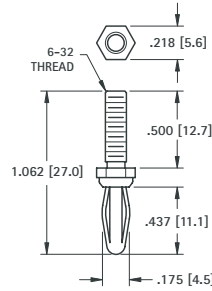
MATERIAL:

Spring: Beryllium Copper
Body: Brass, Nickel Plate

CAT. NO. 652



.175 (4.5)
Plug



MATERIAL:

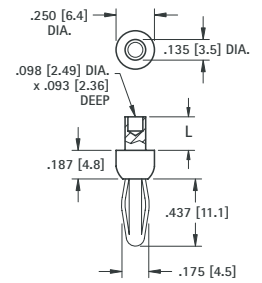
Spring: Beryllium Copper
Body: Brass, Nickel Plate

CAT. NO. 653

STANDARD RIVET



.175 (4.5)
Plug



MATERIAL:

Spring: Beryllium Copper
Body: Brass, Nickel Plate

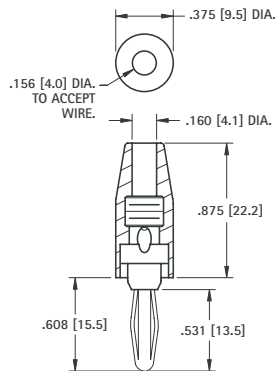
CAT. NO.	L
552-3	.187 (4.7)
552-4	.218 (5.5)

STANDARD SOLDERLESS

SOLDERLESS CONNECTION



.175 (4.5)
Plug



MATERIAL:

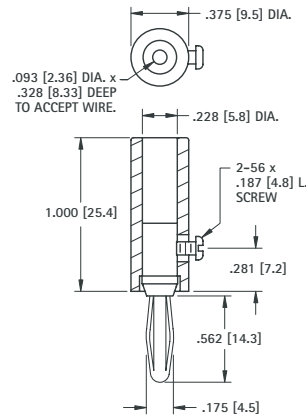
Spring: Nickel Silver
Body: Brass, Nickel Plate
Handle: Nylon

CAT. NO.	COLOR
6078	RED
6079	BLACK

SOLDERLESS WITH SET SCREW



.175 (4.5)
Plug

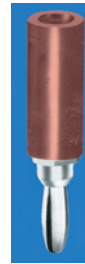


MATERIAL:

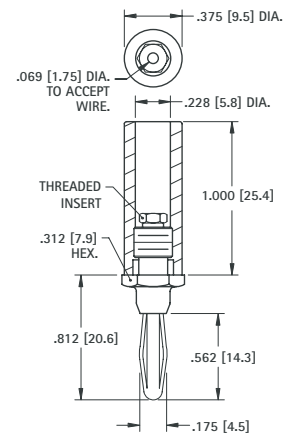
Spring: Nickel Silver
Body: Brass, Nickel Plate
Handle: Nylon

CAT. NO.	COLOR
6084	RED
6085	BLACK

SOLDERLESS CONNECTION



.175 (4.5)
Plug



MATERIAL:

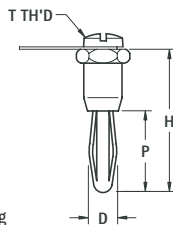
Spring: Nickel Silver
Body: Brass, Nickel Plate
Handle: Nylon

CAT. NO.	COLOR
6082	RED
6083	BLACK

INTERNAL THREAD



Supplied with screw and lug
Unassembled



MATERIAL:

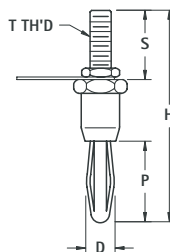
Spring: Phosphor Bronze
Body: Brass, Nickel Plate

CAT. NO.	D	P	H	T
6072	.175 (4.5)	.531 (13.5)	.937 (23.8)	6-32
6073	.300 (7.5)	.750 (19.1)	1.12 (28.4)	10-32

EXTERNAL THREAD



Supplied with nut and lug
Unassembled

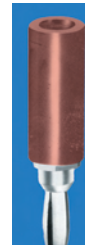


MATERIAL:

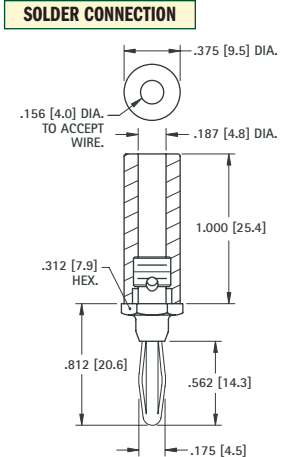
Spring: Phosphor Bronze
Body: Brass, Nickel Plate

CAT. NO.	D	P	H	S	T
6074-1	.175 (4.5)	.531 (13.5)	1.125 (28.6)	.375 (9.5)	6-32
6074-2	.175 (4.5)	.531 (13.5)	1.500 (38.1)	.750 (19.1)	6-32
6075	.300 (7.5)	.750 (19.1)	1.750 (44.5)	.625 (15.9)	.250-28

STANDARD INSULATED



.175 (4.5)
Plug



MATERIAL:

Spring: Nickel Silver
Body: Brass, Nickel Plate
Handle: Nylon

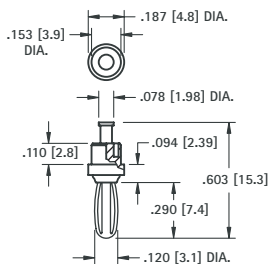
CAT. NO.	COLOR
6080	RED
6081	BLACK

MINIATURE PLUGS

SWAGE MOUNT



.120 (3.0)
Plug



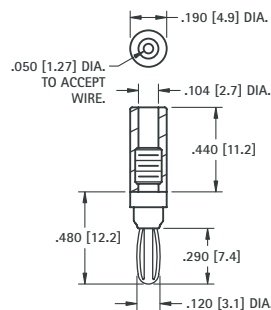
CAT. NO. 452

MATERIAL:
Spring: Beryllium Copper
Body: Brass, Silver Plate



.120 (3.0)
Plug

SOLDER CONNECTION



MATERIAL:
Spring: Beryllium Copper, Nickel Plate
Body: Brass, Nickel Plate
Handle: Nylon

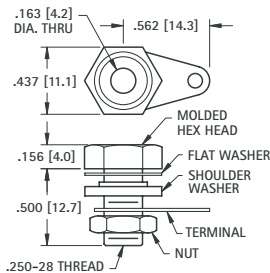
CAT. NO.	COLOR
6076	RED
6077	BLACK

BANANA JACKS

INSULATED SOLDER CONNECTION



Accepts
.175 (4.5)
Plug



Supplied with hardware
Unassembled

CAT. NO.	HEAD COLOR
6093	RED
6094	BLACK

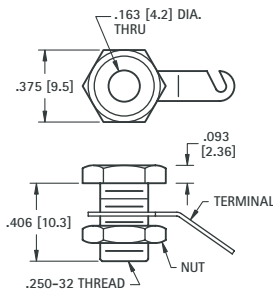
MATERIAL:
Body: Brass, Nickel Plate
Terminal: Copper, Tinned
Hex Head: Phenolic

NON-INSULATED RECESSED HEAD

Fits panel up to .312 (7.9) thick



Accepts
.175 (4.5)
Plug



Supplied with nut and lug.
Unassembled

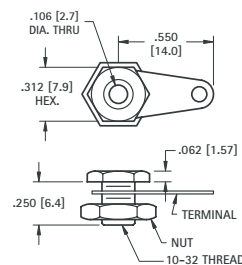
CAT. NO. 6095

MATERIAL:
Current Rating: 15 Amps
Body: Brass, Nickel Plate
Terminal: Brass, Tin Plate

NON-INSULATED MINIATURE JACK



Accepts
.120 (3.0)
Plug



Supplied with lug and nut.
Unassembled

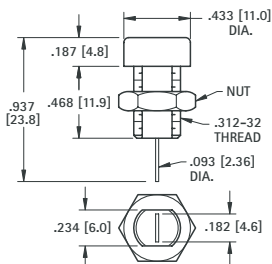
CAT. NO. 6090

MATERIAL:
Body: Brass, Nickel Plate
Terminal: Copper, Tinned

FULLY INSULATED



Accepts
.175 (4.5)
Plug



CAT. NO.	COLOR
6091	RED
6092	BLACK

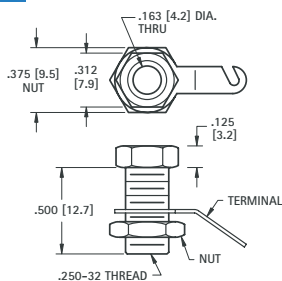
MATERIAL:
Body: Nylon
Contact: Brass, Tin Plate

NON-INSULATED STANDARD HEAD

Fits panel up to .375 (9.6) thick



Accepts
.175 (4.5)
Plug



Supplied with nut and lug.
Unassembled

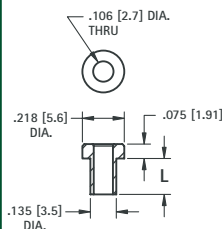
CAT. NO. 6096

MATERIAL:
Current Rating: 15 Amps
Body: Brass, Nickel Plate
Terminal: Brass, Tin Plate

NON-INSULATED

MINIATURE

Accepts
.120 (3.0)
Plug

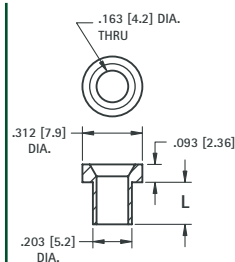


MATERIAL:
Brass, Tin Plate

CAT. NO.	L
476-2	.125 (3.2)
476-3	.165 (4.2)
476-4	.187 (4.7)

STANDARD

Accepts
.175 (4.5)
Plug



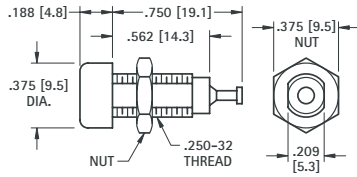
MATERIAL:
Brass, Nickel Plate

CAT. NO.	L
575-4	.218 (5.5)
575-6	.265 (6.7)
575-8	.350 (8.9)

FULLY INSULATED DELUXE TIP JACK

ACCEPTS .080 (2.0) TIP WITH CLOSED ENTRY CONTACT

Fully molded body with recessed closed entry design. Assures maximum retention with .010Ω maximum contact resistance. Prevents accidental insertion of larger diameter probes. Current rating: 10 Amps. Breakdown voltage 5700V RMS. Capacitance to metal panel 2.0 pF nominal. Supplied with nut.



CAT. NO.	COLOR
6030	WHITE
6031	RED
6032	BLACK
6033	GREEN
6034	YELLOW
6035	BLUE

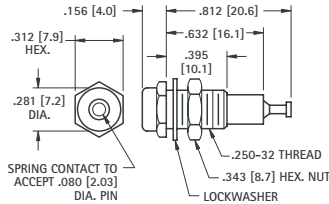
MATERIAL:

Body: Molded Nylon ASTM D4066
Contact: Beryllium Copper, Silver Plate
Terminal: Brass, Tin Plate

METAL-CLAD TIP JACK (MIL)

ACCEPTS .080 (2.0) TIP WITH CLOSED ENTRY CONTACT

High quality tip jack for high reliability industrial applications. Ideal for use where required to withstand severe environmental conditions, temperature, vibration and salt spray. Recessed closed entry contact. Current rating 10 amps. Breakdown voltage: 5700V RMS. Made to MIL-C39024/10. Capacitance to metal panel 2.0 pF. Supplied complete with hardware.

**MATERIAL:**

Body: Molded Nylon ASTM D4066
Shell & Nut: Brass QQ-B-626, Nickel Plate QQ-N-290
Contact: Beryllium Copper for QQ-C-533. Gold Plate MIL-G-45204

CAT. NO.	COLOR
6012	WHITE
6013	RED
6014	BLACK
6015	GREEN
6016	YELLOW
6017	BLUE

SOLDER TIP PLUGS

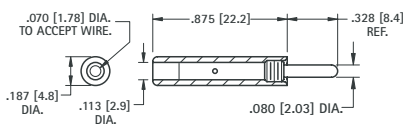
.080 (2.0) DIAMETER TIP



Designed for miniaturization where space is critical. Solder lead connection. Maximum reliability with minimum contact resistance. Base of tip is recessed to eliminate shock or grounding. Fits all standard jacks.

MATERIAL:

Tip: Brass, Nickel Plate
Handle: Nylon 6/6
Current Rating: 10 Amps.

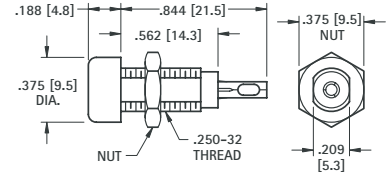


CAT. NO.	COLOR	CAT. NO.	COLOR
6006	WHITE	6009	GREEN
6007	RED	6010	YELLOW
6008	BLACK	6011	BLUE

FULLY INSULATED STANDARD TIP JACK

ACCEPTS .080 (2.0) TIP

Economical tip jacks with molded Nylon body. Low contact resistance. Formed Phosphor Bronze contact with solder hole for ease in attaching wire. Current rating 10 Amps. Breakdown voltage 5700 VRMS. Capacitance to metal panel 3.8 pF. Supplied with nut.



CAT. NO.	COLOR
6018	WHITE
6019	RED
6020	BLACK
6021	GREEN
6022	YELLOW
6023	BLUE

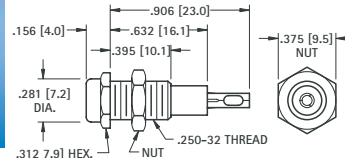
MATERIAL:

Body: Molded Nylon ASTM D4066
Contact: Phosphor Bronze, Tin Plate

METAL-CLAD TIP JACK (STD)

ACCEPTS .080 (2.0) TIP

Molded Nylon body with metal jacket. Contact is formed from phosphor bronze contact with solder hole for ease in attaching wire. Designed for positive contact, easy insertion and withdrawal. Current rating: 10 Amps. Breakdown voltage 5700V RMS. Capacitance to metal panel 3.8 pF. Supplied with nut.

**MATERIAL:**

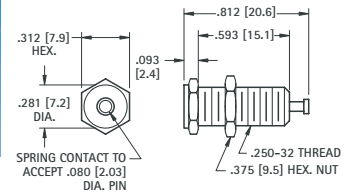
Body: Molded Nylon ASTM D4066
Shell: Brass, Nickel Plate
Contact: Phosphor Bronze, Silver Plate

CAT. NO.	COLOR
6024	WHITE
6025	RED
6026	BLACK
6027	GREEN
6028	YELLOW
6029	BLUE

UNINSULATED TIP JACK

ACCEPTS .080 (2.0) TIP

Quality, precision machined tip jack made of brass. Ideal for use on metal panels where grounding is required. Fits panels up to .375 (9.5) thick. Supplied with nut.

**MATERIAL:**

Body: Brass, Nickel Plate
Contact: Beryllium Copper
Current Rating: 15 Amps

CAT. NO. 6097

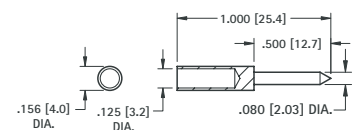
STANDARD PHONE TIP

.080 (2.0) DIAMETER TIP



Accepts up to 12 gauge wire. Fits all standard tip jacks.

MATERIAL: Brass, Nickel Plate



CAT. NO. 1601

SOLDERLESS TIP PLUGS

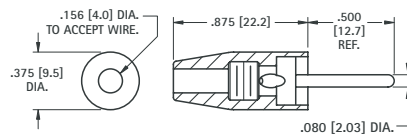
.080 (2.0) DIAMETER TIP



Fully insulated molded nylon sleeve. Maximum reliability with minimum contact resistance. Recessed metal head eliminates possibility of shock or grounding. Designed for solderless connection of up to 16 gauge stranded wire which fits through handle and tip and is secured by screwing handle tight. Fits all standard tip jacks.

MATERIAL:

Tip: Brass, Nickel Plate
Handle: Nylon 6/6
Current Rating: 10 Amps.

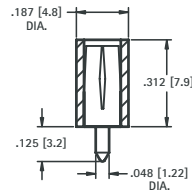


CAT. NO.	COLOR	CAT. NO.	COLOR
6000	WHITE	6003	GREEN
6001	RED	6004	YELLOW
6002	BLACK	6005	BLUE

VERTICAL PC TEST JACK

ACCEPTS .080 (2.0) TIP

This low profile vertical jack allows dense packaging where space is limited. Mount into a .052 (1.32) diameter hole. Provides easy access and positive electrical contact. The contact is recessed to prevent accidental shorting. Capacitance between two adjacent jacks less than 1.0 pF at 1 MHz. Operating voltage is 1500V RMS. Current rating 5 Amps max.



CAT. NO.	COLOR
6036	WHITE
6037	RED
6038	BLACK
6039	YELLOW
6040	GREEN
6041	BLUE

MATERIAL:

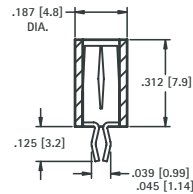
Body: Nylon per ASTM D4066

Contact: Brass, Silver Plate

SNAP-FIT VERTICAL PC TEST JACK

ACCEPTS .080 (2.0) TIP

Low cost, compact and dependable snap-in vertical test jack features a unique spring shank which retains the jack throughout wave soldering procedure. Ideal for use on circuit boards of audio, digital and R.F. circuitry. Contact recessed to prevent accidental shorting. Current rating: 5 Amps. Operating voltage 1500V RMS. Capacitance between two adjacent jacks less than 1.0 pF at 1 MHz.



CAT. NO.	COLOR
6042	WHITE
6043	RED
6044	BLACK
6045	YELLOW
6046	GREEN
6047	BLUE

MATERIAL:

Body: Nylon per ASTM D4066

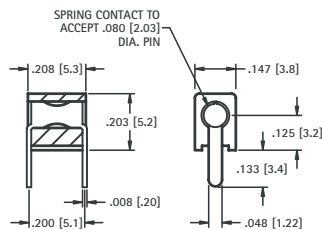
Contact: Beryllium Copper, Silver Plate

Mounting: Snap-fits into .052 (1.32) hole

MINIATURE HORIZONTAL PC TEST JACK

ACCEPTS .080 (2.0) TIP

Space saver test jack designed for use where space is a limiting factor. Half the size of standard jacks. Accepts .080 (2.03) tip plug in either end. Mounts on .200 (5.1) centers in .052 (1.32) holes. Can be spaced side by side on .160 (4.1) centers minimum. Two common terminals. Current rating: 5 Amps. Breakdown voltage: 2100V RMS, Capacitance 1.0pF maximum.



CAT. NO.	COLOR
6048	WHITE
6049	RED
6050	BLACK
6051	YELLOW
6052	GREEN
6053	BLUE

MATERIAL:

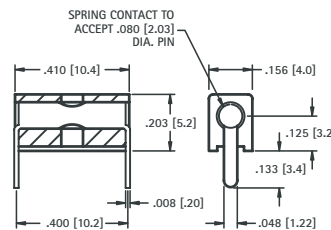
Body: Nylon per ASTM D4066

Contact: Beryllium Copper, Silver Plate

UNIVERSAL HORIZONTAL PC TEST JACK

ACCEPTS .080 (2.0) TIP

This universal design accepts .080 (2.03) tip plug in either end, or from top or bottom. Top contact will also accept hook-type oscilloscope probe. Two common terminals. Current rating: 5 Amps. Breakdown voltage: 2100V RMS, Capacitance 1.0 pF maximum. Mounts on .400 (10.2) centers in .052 (1.32) holes. Side by side mounting on .160 (4.1) centers.



CAT. NO.	COLOR
6054	WHITE
6055	RED
6056	BLACK
6057	YELLOW
6058	GREEN
6059	BLUE

MATERIAL:

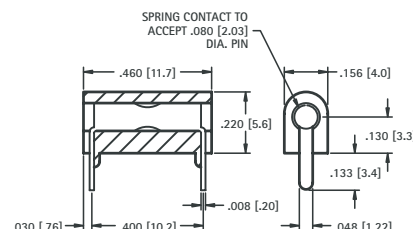
Body: Nylon per ASTM D4066

Contact: Beryllium Copper, Silver Plate

LOW PROFILE HORIZONTAL PC TEST JACK

ACCEPTS .080 (2.0) TIP

This low profile double-entry design is recognized for its dependability, and allows dense packaging on .160 (4.1) centers. Side by side mounting. Closed entry design for use with .074 (1.88) to .084 (2.13) dia. tips. Reliability is designed into this rugged low cost jack. Mounts on .400 (10.2) centers in .052 (1.32) holes. Current rating: 5 Amps. Breakdown voltage: 2100V RMS. Contact resistance .010Ω maximum.



GOLD PLATE CAT. NO.	COLOR	SILVER PLATE CAT. NO.
6060	WHITE	6066
6061	RED	6067
6062	BLACK	6068
6063	YELLOW	6069
6064	GREEN	6070
6065	BLUE	6071

MATERIAL:

Body: Nylon per ASTM D4066

Contact: Beryllium Copper, Gold or Silver Plate



- Precision engineered and manufactured
- Space saving design for high density packaging
- Micro pins are available in .017 (.43) to .080 (2.03) diameters
- Ideal for mating with our standard line of micro jacks
- Available for press-fit, swage or solder mounting
- Custom micro pins manufactured to your specifications
- Other platings available upon request

SPECIFICATIONS

Material: Brass, ASTM-B16

Plating:

Gold: .000010 per MIL-G-45204, Type II

Tin: .000200 to .000300 per

MIL-T-10727, Type 1

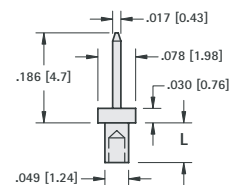
RoHS (RoHS Compliant)

DASH NUMBERS (L Dimension)

- 1 for .032 (.81) thick Board
- 2 for .062 (1.57) thick Board
- 3 for .093 (2.36) thick Board
- 4 for .125 (3.2) thick Board

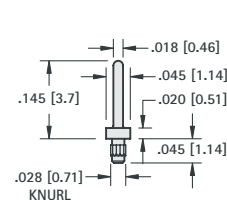
Example: 1967-1 for .032 (.81) thick Board
1967-2 for .062 (1.57) thick Board

.017 (.43) PIN - SWAGE MOUNT



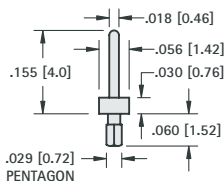
GOLD	TIN	L	Mtg. Hole
CAT. NO.	CAT. NO.	Length	Dia.
1967-1	1968-1	.051 (1.3)	.052
1967-2	1968-2	.082 (2.0)	(1.32)

.018 (.46) PIN - PRESS-FIT



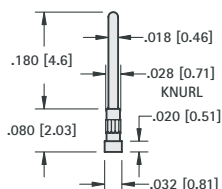
GOLD	TIN	Mtg. Hole
CAT. NO.	CAT. NO.	Dia.
1986-1	1987-1	.026 (.66)

.018 (.46) PIN - PRESS-FIT



GOLD	TIN	Mtg. Hole
CAT. NO.	CAT. NO.	Dia.
1988-2	1989-2	.026 (.66)

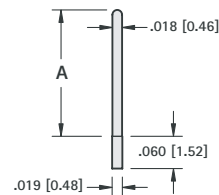
.018 (.46) PIN - PRESS-FIT



GOLD	TIN	Mtg. Hole
CAT. NO.	CAT. NO.	Dia.
1990-2	1991-2	.026 (.66)

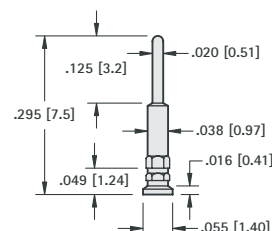
MATERIAL:
Phosphor
Bronze

.018 (.46) PIN - PRESS-FIT



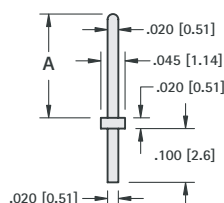
GOLD	TIN	A	Mtg. Hole
CAT. NO.	CAT. NO.	Dim.	Dia.
1992-2	1994-2	.243 (6.2)	.022
1993-2	1995-2	.140 (3.6)	(.56)

.020 (.51) PIN - PRESS-FIT



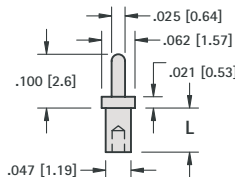
GOLD	TIN	Mtg. Hole
CAT. NO.	CAT. NO.	Dia.
1996-2	1997-2	.040 (1.0)

.020 (.51) PIN - PRESS-FIT



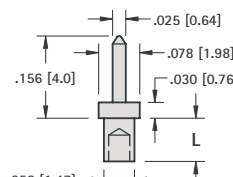
GOLD	TIN	A	Mtg. Hole
CAT. NO.	CAT. NO.	Dim.	Dia.
1998-3	2000-3	.250 (6.4)	.024
1999-3	2001-3	.425 (3.6)	(.61)

.025 (.51) PIN - SWAGE MOUNT



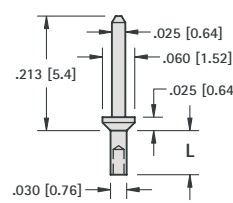
GOLD	TIN	L	Mtg. Hole
CAT. NO.	CAT. NO.	Length	Dia.
1404-1	1424-1	.051 (1.3)	.052
1404-2	1424-2	.082 (2.1)	(1.32)

.025 (.51) PIN - SWAGE MOUNT



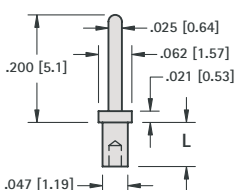
GOLD	TIN	L	Mtg. Hole
CAT. NO.	CAT. NO.	Length	Dia.
1408-1	1428-1	.062 (1.6)	.062
1408-2	1428-2	.094 (2.4)	(1.57)

.025 (.51) PIN - SWAGE MOUNT



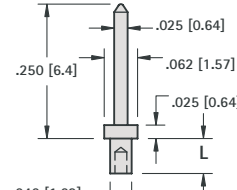
GOLD	TIN	L	Mtg. Hole
CAT. NO.	CAT. NO.	Length	Dia.
1406-1	1426-1	.047 (1.2)	.035
1406-2	1426-2	.078 (1.9)	(.89)

.025 (.51) PIN - SWAGE MOUNT



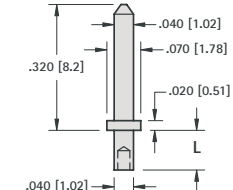
GOLD	TIN	L	Mtg. Hole
CAT. NO.	CAT. NO.	Length	Dia.
1407-1	1427-1	.051 (1.3)	.052
1407-2	1427-2	.082 (2.1)	(1.32)

.025 (.51) PIN - SWAGE MOUNT



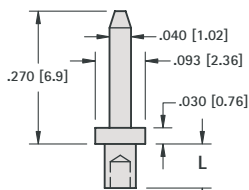
GOLD	TIN	L	Mtg. Hole
CAT. NO.	CAT. NO.	Length	Dia.
1401-1	1421-1	.065 (1.6)	.043 (1.09)

.040 (1.0) PIN - SWAGE MOUNT



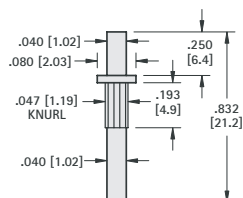
GOLD	TIN	L	Mtg. Hole
CAT. NO.	CAT. NO.	Length	Dia.
1405-1	1425-1	.051 (1.3)	.043
1405-2	1425-2	.082 (2.1)	(1.09)
1405-3	1425-3	.113 (2.9)	

.040 (1.0) PIN - SWAGE MOUNT



GOLD	TIN	L	Mtg. Hole
CAT. NO.	CAT. NO.	Length	Dia.
1402-3	1422-3	.125 (3.2)	.062 (1.57)

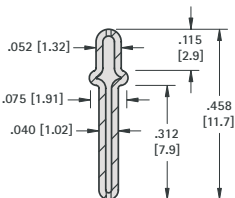
.040 (1.0) KAY PIN - PRESS-FIT



MATERIAL:
Solid Nickel Silver
CAT. NO. 1218

Mtg. Hole
.043 (1.09) Dia.

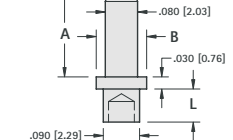
.040 (1.0) HOLLOW PIN - SWAGE MOUNT



MATERIAL:
Brass, Tin Plate
CAT. NO. 1219

Mtg. Hole
.059 (1.50) Dia.

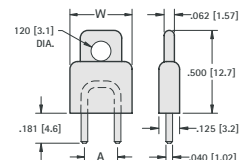
.080 (2.0) PIN - SWAGE MOUNT



Mtg. Hole .094 (2.4) Dia.

GOLD	TIN	A	B	L
CAT. NO.	CAT. NO.	Dim.	Dim.	Dim.
1447-1	1455-1	.335 (8.5)	.156 (4.0)	.051 (1.3)
1405-1	1425-1	.400 (10.2)	.125 (3.2)	.094 (2.4)
1447-2	1455-2	.400 (10.2)	.125 (3.2)	.125 (3.2)
1447-3	1455-3	.400 (10.2)	.125 (3.2)	.125 (3.2)
1447-4	1455-4	.400 (10.2)	.125 (3.2)	.156 (4.0)

.040 (1.0) PINS - INSULATED SHORTING PLUG

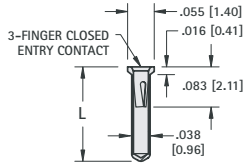


MATERIAL: Insulator: Plastic, Red or Black
Pins: Brass, Gold Plate

RED	BLACK	A	W
CAT. NO.	CAT. NO.	Dim.	Dim.
1460R	1460B	.200 (5.1)	.375 (9.5)
1461R	1461B	.250 (6.4)	.375 (9.5)
1462R	1462B	.400 (10.2)	.620 (15.7)
1463R	1463B	.500 (12.7)	.620 (15.7)

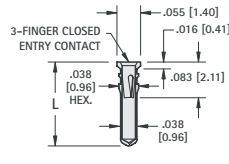
MICRO JACKS

.015 (.38) - .021 (.53) PIN - PRESS-FIT



RoHS	RoHS	L	Mtg. Hole Dia.
GOLD	TIN/LEAD	Length	
CAT. NO.	CAT. NO.		
1411-1	1431-1	.140 (7.1)	.040
1411-2	1431-2	.170 (4.3)	(1.02)

.015 (.38) - .021 (.53) PIN - SOLDER MOUNT



RoHS	RoHS	L	Mtg. Hole Dia.
GOLD	TIN/LEAD	Length	
CAT. NO.	CAT. NO.		
1412-1	1432-1	.140 (7.1)	.040
1412-2	1432-2	.170 (4.3)	(1.02)
1412-3	1432-3	.282 (7.1)	

- Space saving design for high density packaging
- Beryllium Copper multi-spring contact maintains retention after multiple insertions
- Ideal for mounting transistors, resistors, diodes, IC's and similar miniature components
- Custom micro jacks manufactured to your specifications
- Other platings available upon request



SPECIFICATIONS

Body: Brass, ASTM-B16

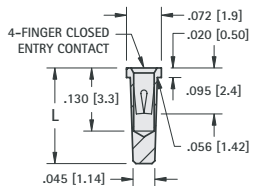
Spring: Beryllium Copper (QQ-C-533)

Plating:

Gold: .000010 per MIL-G-45204, Type II **RoHS** (RoHS Compliant)

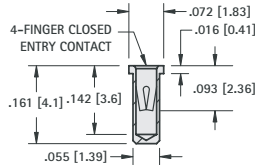
Tin/Lead: .000200 to .000300 per MIL-T-10727, Type 1. **RoHS** (Non-RoHS Compliant)

.015 (.38) - .025 (.64) PIN - TAPER-FIT



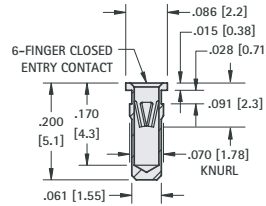
RoHS	RoHS	L	Mtg. Hole Dia.
GOLD	TIN/LEAD	Length	
CAT. NO.	CAT. NO.		
1415-1	1435-1	.160 (6.2)	.055
1415-2	1435-2	.190 (3.6)	(1.40)

.015 (.38) - .025 (.64) PIN - SOLDER MOUNT



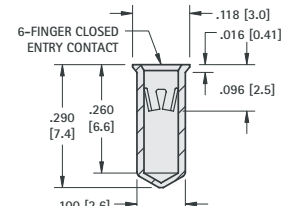
RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
1413	1433	.057 (1.45)

.022 (.56) - .034 (.86) PIN - PRESS-FIT



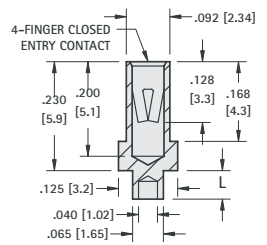
RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
1416	1436	.067 (1.70)

.040 (1.02) - .050 (1.27) PIN - SOLDER MOUNT



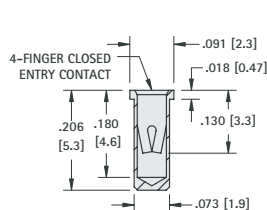
RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
1418	1438	.102 (2.6)

.032 (.81) - .025 (.64) PIN - SWAGE MOUNT



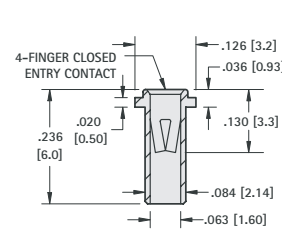
RoHS	RoHS	L	Mtg. Hole Dia.
GOLD	TIN/LEAD	Length	
CAT. NO.	CAT. NO.		
1419-1	1439-1	.062 (1.6)	.067
1419-2	1439-2	.094 (2.4)	(1.70)

.032 (.81) - .046 (1.17) PIN - SOLDER MOUNT



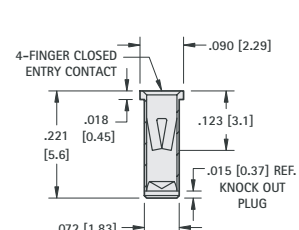
RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
1417	1437	.076 (1.93)

.032 (.81) - .046 (1.17) PIN - SOLDER MOUNT



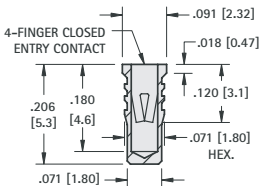
RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
1414	1434	.089 (2.26)

.032 (.81) - .046 (1.17) PIN - SOLDER MOUNT



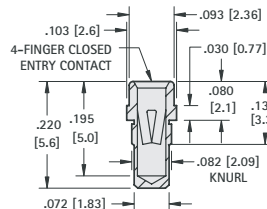
RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
1441	1444	.076 (1.93)

.032 (.81) - .046 (1.17) PIN - PRESS-FIT



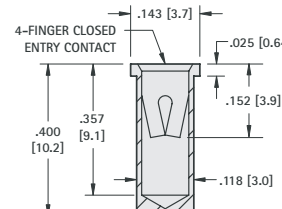
RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
1442	1445	.076 (1.93)

.032 (.81) - .046 (1.17) PIN - PRESS-FIT



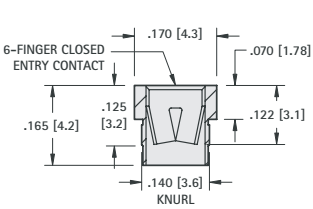
RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
1443	1446	.078 (1.98)

.065 (1.65) - .082 (2.08) PIN - SOLDER MOUNT



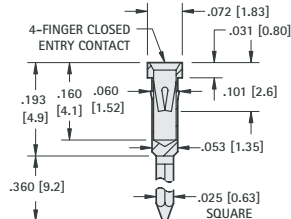
RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
1641A	1641B	.120 (3.1)

.084 (2.13) - .102 (2.6) PIN - PRESS-FIT

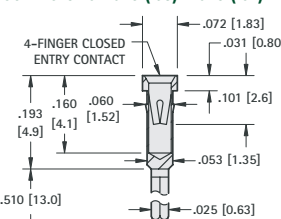


RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
1640A	1640B	.138 (3.5)

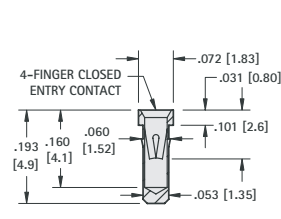
IC SOCKET CONTACTS For .015 (.38) - .025 (.64) LEADS - PRESS-FIT



RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
3501	3505	.055 (1.40)



RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
3502	3506	.055 (1.40)



RoHS	RoHS	Mtg. Hole Dia.
GOLD	TIN/LEAD	
CAT. NO.	CAT. NO.	
3503	3507	.055 (1.40)



.062 (1.57) — .067 (1.70)
Mounting Holes

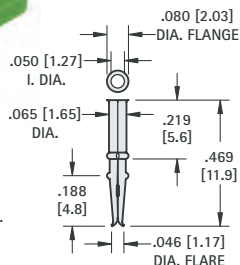
- Quick and Easy to Install • For Production or Prototype
- Postive Locking In-Hole • No Staking Required • Holds .010 (.25) to .050 (1.27) Diameter Wire

These terminals are often used for transistor and Bi-Pin lamp sockets. Terminals snap into place and are firmly held without the need of staking. Wire leads can be inserted from either end.

Terminals **1236** and **1237** have tapered socket spring forming that will hold multiple leads in place. Terminals are pre-tinned for easy soldering.

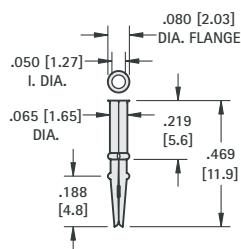
INSERTION TOOL

For Arbor Press: **CAT. NO. TL-11**; For Hand Tool: **CAT. NO. 1214**



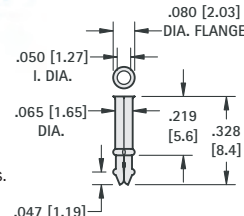
MATERIAL:
.006 (.15) thick Brass.
Pre-Tinned

CAT. NO. 1236



MATERIAL:
.006 (.15) thick Brass.
Pre-Tinned

CAT. NO. 1237



MATERIAL:
.006 (.15) thick Brass.
Pre-Tinned

CAT. NO. 1238

"FLEA" CLIP



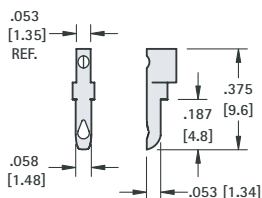
For subminiature applications where conventional terminals are too large or too costly. Ideal for quick repairs of printed circuitry. Simply insert wire through hole and it is held firmly by spring action assuring continued positive contact.

Mtg. Hole .062 (1.57)

Insertion Tool: **CAT. NO. 1322**

MATERIAL:
.008 (.20) thick Beryllium
Copper, Tin Plate

CAT. NO. 1500



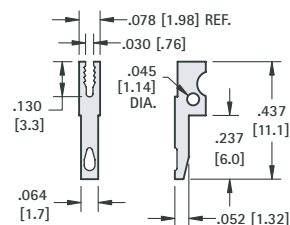
Excellent for point to point or feed thru wiring. Slot is serrated to grip component leads. Multiple connections are made quick and easy.

Mtg. Hole .062 (1.57)

Insertion Tool: **CAT. NO. 1322**

MATERIAL:
.008 (.20) thick Beryllium
Copper, Tin Plate

CAT. NO. 1499FT



CLAMP TERMINAL



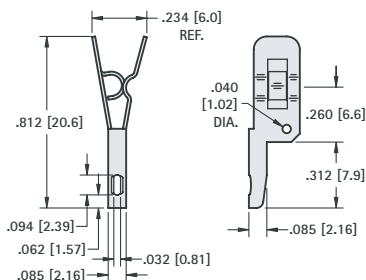
Terminal for production or prototype use. Holds as many as 7 leads without soldering, by spring action.

Mtg. Hole .093 (2.36)

Insertion Tool: **CAT. NO. 1323**

MATERIAL:
.015 (.38) thick Spring Steel,
Tin Plate

CAT. NO. 1498CP

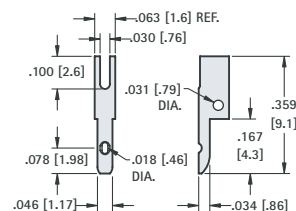


Easily press-fit into a .042 (1.07) diameter hole may be flared for permanent installation. Ideally designed for use in circuitry to support components when space is at a premium.

Insertion Tool: **CAT. NO. 1322**

MATERIAL: .008 (.20)
thick Beryllium Copper,
Tin Plate

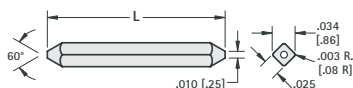
CAT. NO. 1495



.025 SQUARE WIRE WRAP PINS

Completely burr free straight to within .003 (.08) per inch. Conical ends of square-wire with smooth blend-in radius on corners assures ease of insertion with minimum damage to pre-plated PCB holes.

CAT. NO.	L Length	CAT. NO.	L Length
5070	.400 (10.2)	5077	.642 (16.3)
5071	.440 (11.2)	5078	.675 (17.1)
5072	.515 (13.1)	5079	.720 (18.3)
5073	.535 (13.6)	5080	.850 (21.6)
5074	.600 (15.2)	5081	.916 (23.3)
5075	.615 (15.6)	5082	.995 (25.3)
5076	.625 (15.9)	5083	1.13 (28.7)

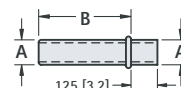


MATERIAL: Phosphor Bronze, Tin Plate

CONTACT PINS (SEAMLESS)

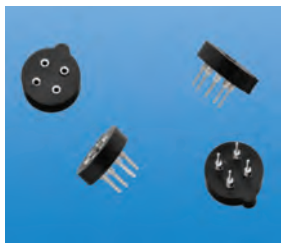
Pins can be staked to .062 (1.57) and .093 (2.36) thick boards.

CAT. NO.	A	B
1223	.093 (2.36)	.293 (7.4)
1224	.093 (2.36)	.357 (9.1)
1226	.093 (2.36)	.437 (11.1)
1200	.125 (3.18)	.379 (9.6)
1210	.125 (3.18)	.566 (14.4)
1230	.156 (3.96)	.379 (9.6)
1231	.156 (3.96)	.566 (14.4)



MATERIAL: Brass, Nickel Plate

SOCKETS FOR TO-5 & TO-100



Fully molded compact construction. Speeds transistor assembly. Incorporates ultra high quality, closed entry, sleeve type contacts. Accepts .016 (.41) to .020 (.51) diameter leads or .010 (.25) x .018 (.46) rectangular transistor leads.

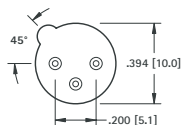
MATERIAL:

Insulator: Glass Filled Polyester,
UL Rated 94V-0

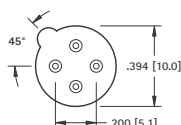
Contact Pin: Brass, Tin Plate

Contact Spring: Beryllium
Copper, .000030 min. Gold Plate

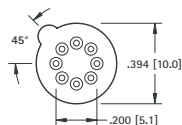
CAT. NO.	FOR	PINS
4590	TO-5	3
4591	TO-5	4
4592	TO-5	8
4593	TO-100	8
4594	TO-100	10



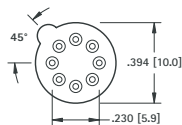
Cat. No. 4590



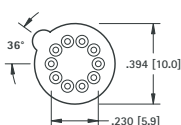
Cat. No. 4591



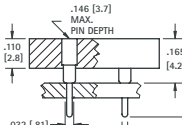
Cat. No. 4592



Cat. No. 4593



Cat. No. 4594

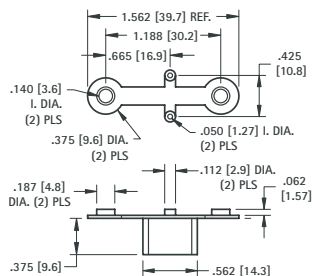


POWER TRANSISTOR MOUNTS

Molded barrier insulators functionally replaces up to six pieces of conventional insulation required with previous methods of mounting power transistors. Built-in barrier eliminates need for sleeving of connections.

NOTE: #6-20 mounting screw available **CAT. NO. 4706**

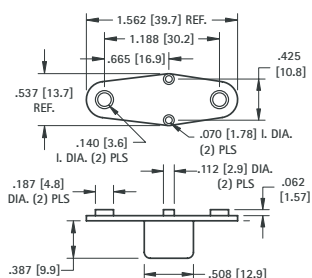
For TO-3 CASES



MATERIAL: Nylon 6/6, UL Rated 94V-2

CAT. NO. 4616

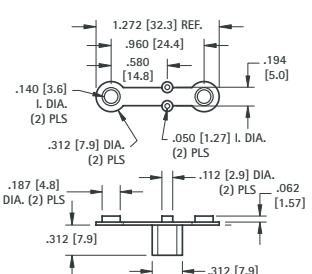
HEAVY DUTY TO-3



MATERIAL: Glass filled Polyester,
UL Rated 94V-0

CAT. NO. 4626

For TO-66 CASES



MATERIAL: Nylon 6/6, UL Rated 94V-2

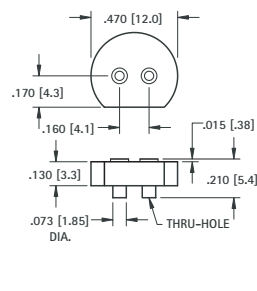
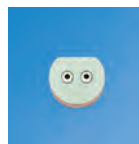
CAT. NO. 4617

"MINI" HALOGEN LAMP SOCKETS

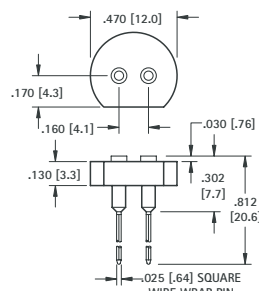
- Accepts .022 (.032) to .032 (.81) diameter Pins or Leads
- The Wire Wrap Pins can be easily bent to achieve a variety of positions

SPECIFICATIONS

Base: Glass Filled LCP; **Contact:** Beryllium Copper, Gold Plate; **Shell:** Brass, Nickel Plate



CAT. NO. 4595

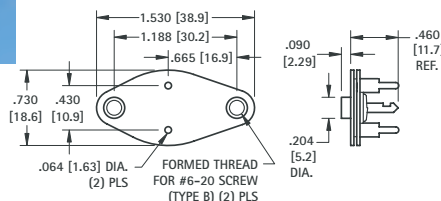


CAT. NO. 4596

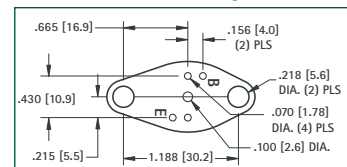
TO-3 SOCKET FOR PC BOARDS



Easily assembles onto printed circuit board. Eliminates wiring. Stops on PC terminals provide sufficient spacing between socket and PC board to permit proper assembly of transistor to socket. Can be screwed down tightly to heat sink.



Bottom View Mounting Detail



MATERIAL:

Top Plate: Molded Nylon

Base: Phenolic

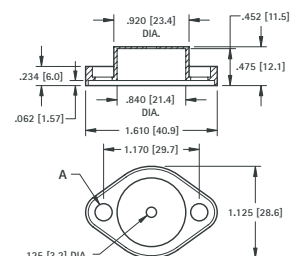
Contacts: Brass, Tin Plate

Collector Plate: Steel, Tin Plate

CAT. NO. 4600

NYLON TO-3 CASE COVERS

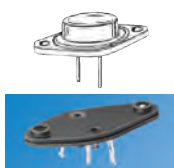
Molded nylon covers easily mount over and insulate the power transistor. Will withstand temperatures to approximately 250°F (107°C).



MATERIAL: Nylon 6/6, UL Rated 94V-2

CAT. NO.	FOR	EYELETS INSTALLED	A
4632	TO-3	NONE	.210 (5.4)
4634	TO-3	TWO	.140 (3.6)

SOCKETS FOR TO-3 CASE



VARIOUS MOLDED BOSS HEIGHTS

MATERIAL:

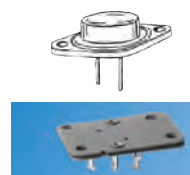
Base: Phenolic, Grade PBE, Type XP

Contacts: Brass, Tin Plate

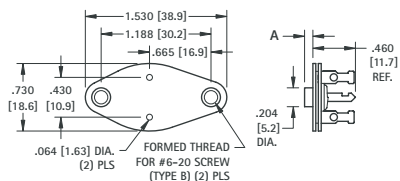
Top Plate: Nylon, ASTM-D4066

Phenolic, Grade PBE, Type
XP (Cat. No. 4606 only)

Collector Plate: Steel, Tin Plate

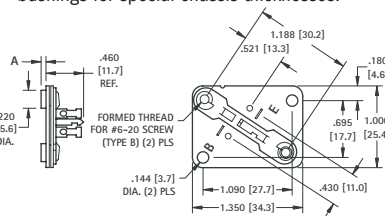


Socket and transistor are assembled to chassis at same time, using the minimum amount of hardware. Top molded boss ensure the transistor leads will be isolated from the chassis. Various boss heights available to accommodate different chassis thicknesses.



CAT. NO.	A DIM.
4603	.030 (.76)
4602	.045 (1.14)
4601	.090 (2.29)

Socket is installed onto chassis using eyelets or screws. Transistor is installed afterwards. Assembly and repairs are simplified since socket will stay in place without transistor mounted. Top molded boss or added bushing ensure the transistor leads will be isolated from the chassis. Various boss heights available to accommodate standard chassis thicknesses. Use Cat. No. 4606 and nylon bushings for special chassis thicknesses.



CAT. NO.	A DIM.
4606	NONE
4607	.030 (.76)
4608	.045 (1.14)
4609	.060 (1.52)
4618	.125 (3.2)

FULLY MOLDED TO-3 SOCKET



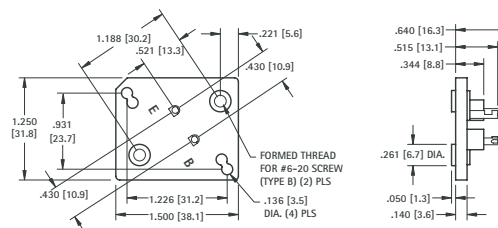
Pre-assembling the socket to the chassis by eyelets or rivets permits the installation of the semiconductor at a later stage in the assembly. The molded top boss eliminates hardware.

MATERIAL:

Base: Molded Nylon 6/6

Contacts: Brass, Tin Plate

Collector Plate: Steel, Tin Plate



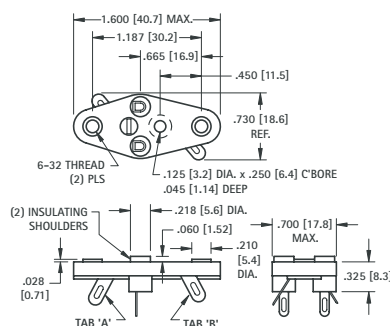
CAT. NO. 4620

HEAVY DUTY SOCKET FOR TO-3 CASE

CHOICE OF SINGLE OR DUAL COLLECTOR SOLDER TABS

Features an all-in-one mounting plate and solder tabs, providing complete electrical isolation of the solder tab connections.

Rated 5 Amps DC continuous and 15 Amps DC Intermittent



MATERIAL:

Base: Glass Filled Polyester, UL Rated 94V-0

Contacts: Brass, Tin Plate

Collector Plate: Brass, Tin Plate



With transistor lead-in insulating shoulders

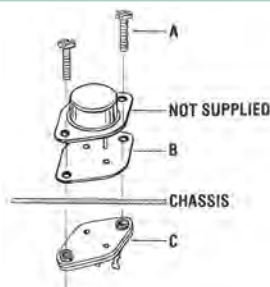
CAT. NO.	WITH TAB
4513	"A" ONLY
4514	"A" & "B"

Less transistor lead-in insulating shoulders

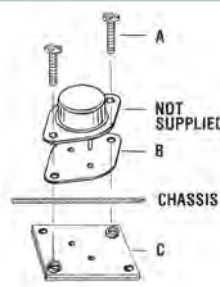
CAT. NO.	WITH TAB
4515	"A" ONLY
4516	"A" & "B"

TO-3 CASE MOUNTING KITS

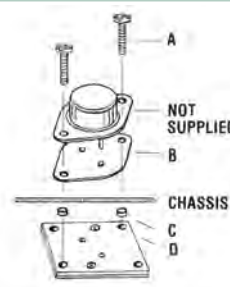
These socket kits provide everything needed to mount a transistor onto a chassis in one kit. Nylon bushings or boss will insulate transistor leads from chassis. Mica insulator isolates transistor from chassis. Two 6-20 screws included to mount transistor. (Transistor not included)



CAT. NO. 4732 Complete Mounting Kit			
ITEM	CAT. NO.	DESCRIPTION	QUANTITY
A	4706	6-20 screws	2
B	4651	Mica Insulator	1
C	4602	Socket	1



CAT. NO. 4733 Complete Mounting Kit			
ITEM	CAT. NO.	DESCRIPTION	QUANTITY
A	4706	6-20 screws	2
B	4651	Mica Insulator	1
C	4608	Square Socket	1



CAT. NO. 4734 Complete Mounting Kit			
ITEM	CAT. NO.	DESCRIPTION	QUANTITY
A	4706	6-20 screws	2
B	4651	Mica Insulator	1
C	4684	Nylon Bushing	4
D	4606	Square Socket	1

TRANSISTOR MICA INSULATORS • MOUNTING KITS

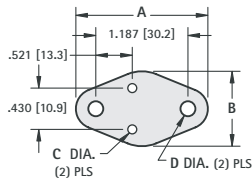
- Rapid Heat Dissipation • High Dielectric Strength • Low Cost

These precision stamped mica insulators provide good thermal conductivity: .009 watts per square inch per degree celsius per

inch in thickness. Excellent thermal resistance 1100°F. (593°C) Dielectric constant of 7 at 1000 KHz.

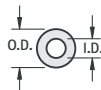
MATERIAL: .003 (.08) ± .001 (.02) thick Mica

FOR TO-3 CASES



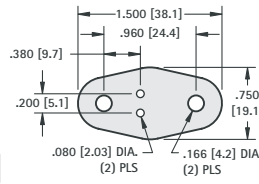
CAT. NO.	A	B	C	D
4651	1.625 (41.3)	1.093 (27.8)	.093 (2.36)	.166 (4.2)
4652	1.560 (39.6)	1.050 (26.7)	.203 (5.15)	.171 (4.4)
4653	1.655 (42.1)	1.063 (27.0)	.166 (4.2)	.166 (4.2)
4636	1.655 (42.1)	1.063 (27.0)	.052 (1.32)	.166 (4.2)
4644	1.655 (42.1)	1.063 (27.0)	.270 (6.9)	.166 (4.2)

FOR THREADED STUD TRANSISTORS



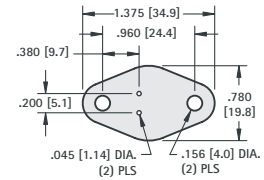
CAT. NO.	ID Inside Dia.	OD Outside Dia.	For Screw Size
4678	.120 (3.1)	.375 (9.5)	4
4679	.144 (3.7)	.375 (9.5)	6
4680	.171 (4.3)	.500 (12.7)	8
4681	.196 (5.0)	.625 (15.9)	10
4682	.260 (6.6)	.750 (19.0)	1/4
4683	.328 (8.3)	.875 (22.2)	5/16

FOR TO-66 CASES

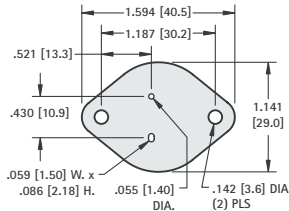


CAT. NO. 4664

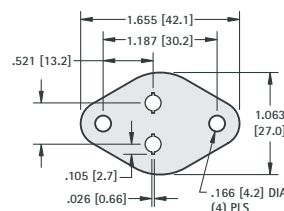
CAT. NO. 4666



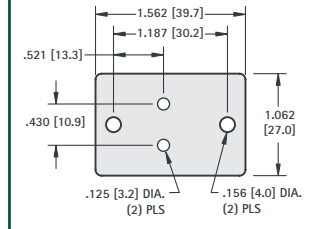
FOR TO-3 CASES



CAT. NO. 4662

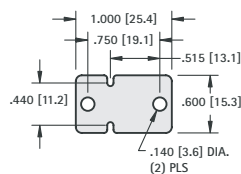


CAT. NO. 4667

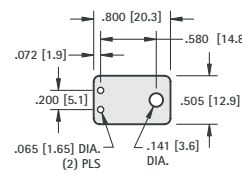


CAT. NO. 4661

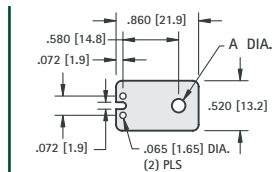
FOR PLASTIC CASE



CAT. NO. 4663



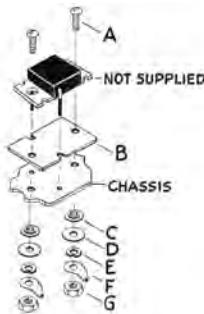
CAT. NO. 4671



CAT. NO.	A
4672	.141 (3.6)
4673	.115 (2.9)

TRANSISTOR MOUNTING KITS

- Complete Kits or Individual Hardware • Pre-Packaged • Uniform Hardware at Low Cost



FOR TO-220 CASE

ITEM	CAT. NO.	DESCRIPTION	QTY.
A	4690	4-40 Screw	1
B	4672	Mica Insulator	1
C	3049	Shoulder Washer	1
E	4693	Lockwasher	1
G	4694	4-40 Nut	1

These pre-packaged universal mounting kits provide all the necessary hardware and insulators required to securely mount the semiconductor to the chassis. Purchase the complete kit consisting of all hardware included in one package. Your choice of individual items available in 100 piece packages. Semiconductors customer supplied.

FOR TO-3 CASE

ITEM	CAT. NO.	DESCRIPTION	QTY.
A	4696	6-32 Screw	2
B	4651	Mica Insulator	1
C	4698	Shoulder Washer	2
D	4699	Metal Washer	2
E	4004	Solder Terminal	1
F	4700	Lockwasher	2
G	4701	6-32 Nut	2

FOR TO-66 CASE

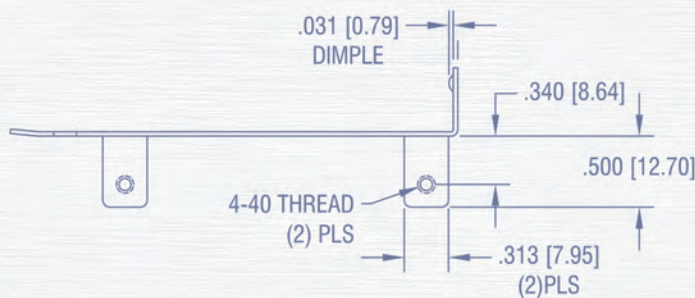
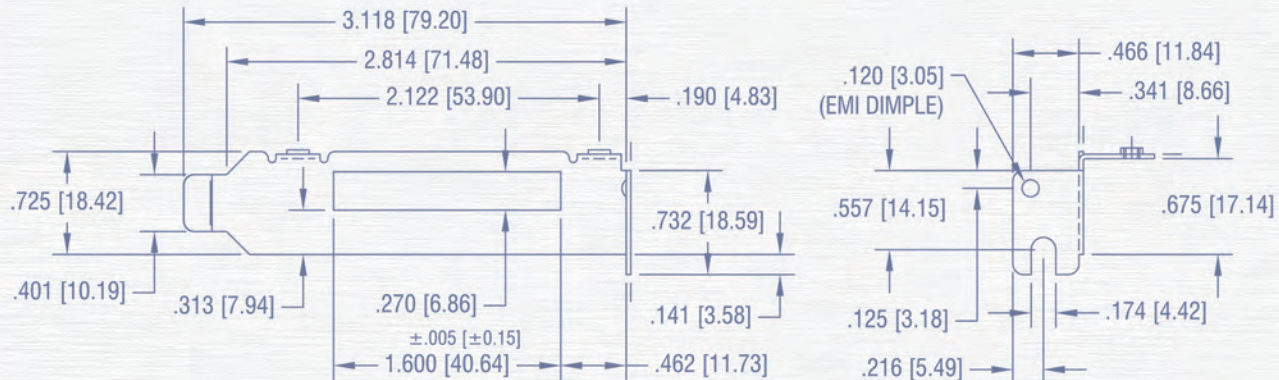
ITEM	CAT. NO.	DESCRIPTION	QTY.
A	4696	6-32 Screw	2
B	4666	Mica Insulator	1
C	4698	Shoulder Washer	2
D	4699	Metal Washer	2
E	4004	Solder Terminal	1
F	4700	Lockwasher	2
G	4701	6-32 Nut	2

FOR DO-4, TO-59, TO-60, TO-62 CASES

ITEM	CAT. NO.	DESCRIPTION	QTY.
A	4681	Mica Insulator	1
B	4702	Shoulder Washer	1
C	4704	Solder Terminal	1
D	1477	Lockwasher	1
E	4705	10-32 Nut	1

FOR DO-5, TO-48, TO-61 CASES

ITEM	CAT. NO.	DESCRIPTION	QTY.
A	4682	Mica Insulator	1
B	4711	Shoulder Washer	1
C	4712	Solder Terminal	1
D	1476	Lockwasher	1
E	4713	1/4-28 Nut	1



PC BOARD HARDWARE

We offer an assortment of standard blank and cutout computer brackets, PCB support brackets, card edge ejectors and guides to provide the right solution for applications such as:

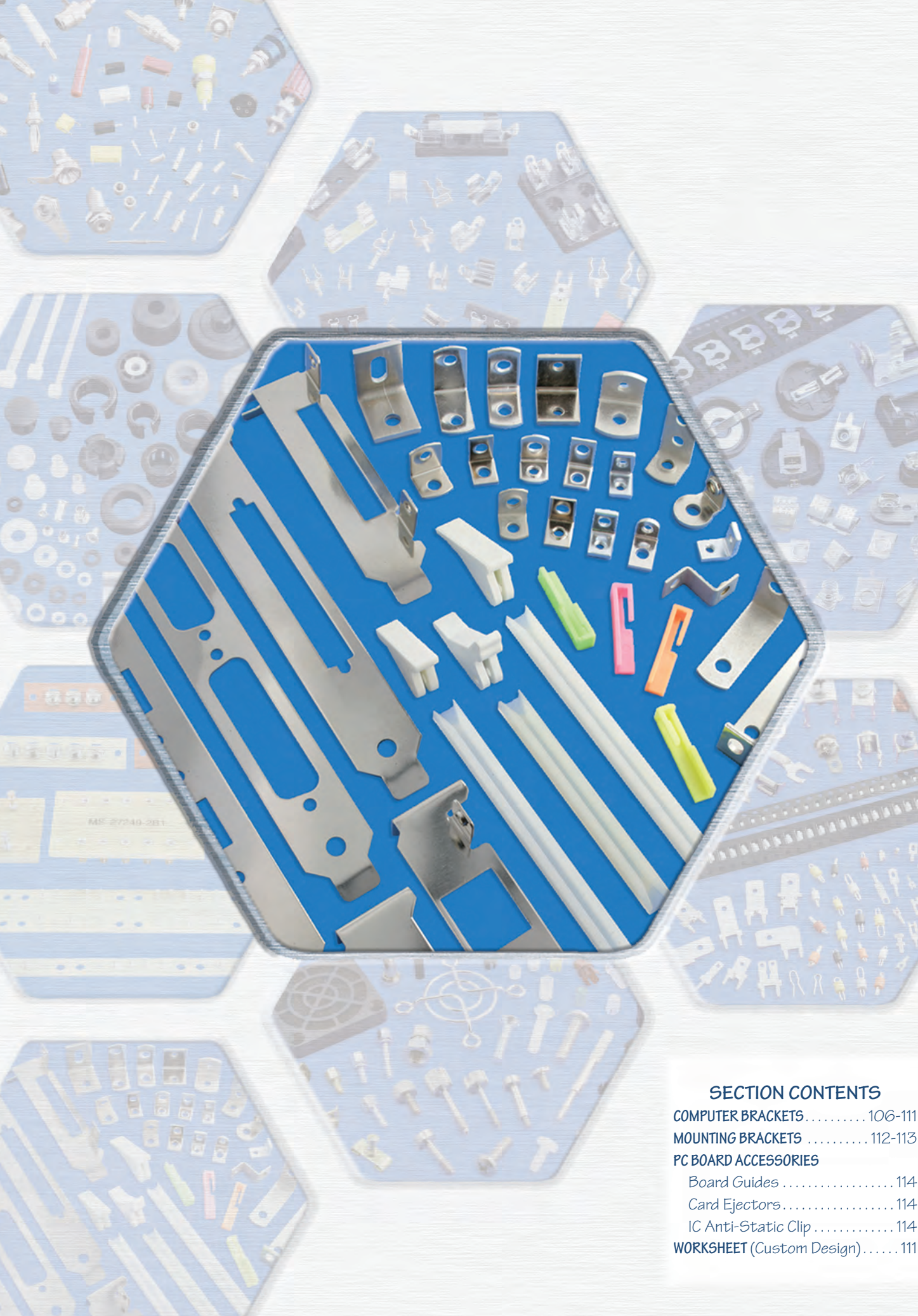
- Computer Chassis Assembly
- Electronic Peripheral Equipment
- Rack Mounted Equipment
- Printed Circuit Board Mounting
- Printed Circuit Board Supports
- Printed Circuit Board insertion and removal
- To dress up chassis access panels

Our quality system is ISO 9001:2000 certified. Our products are in compliance with the RoHS directive. We provide 3D modeling, CAD and other application-engineering support for modifications, special designs or assembly requirements to assist you in choosing the right Keystone product for your application.

DATE

DESCRIPTION

REV.



SECTION CONTENTS

COMPUTER BRACKETS	106-111
MOUNTING BRACKETS	112-113
PC BOARD ACCESSORIES	
Board Guides	114
Card Ejectors	114
IC Anti-Static Clip	114
WORKSHEET (Custom Design)	111

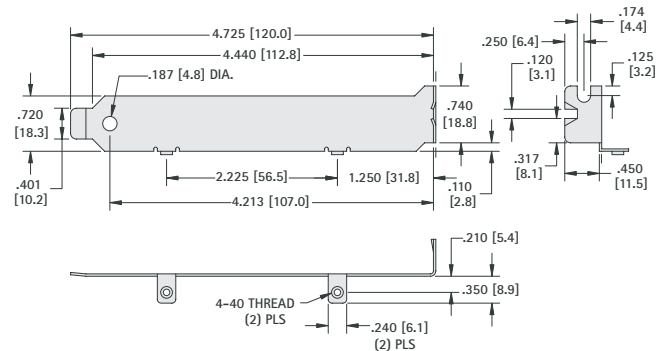


These computer brackets have been designed to accommodate a large variety of board sizes and heights. Available with tabs located properly for ESA/EISA or PCI formats. Blanks can be machined or stamped for prototype or low volume production. All brackets are nickel plated for a clean look and a protective finish. Standard cut-outs can be added to these blanks to suit your specific production needs. See page 110-111 for standard cut-outs and design worksheet.

- Premium quality
- Designed to fit all PC computers height brackets available
- Blanks available for "fillers"
- Fast delivery and cost effective tooling for special designs

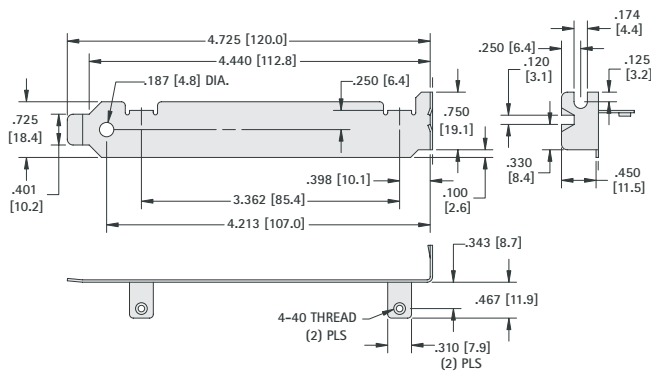
MATERIAL: .032 (.81) thick Steel, Nickel Plate

EISA/ISA

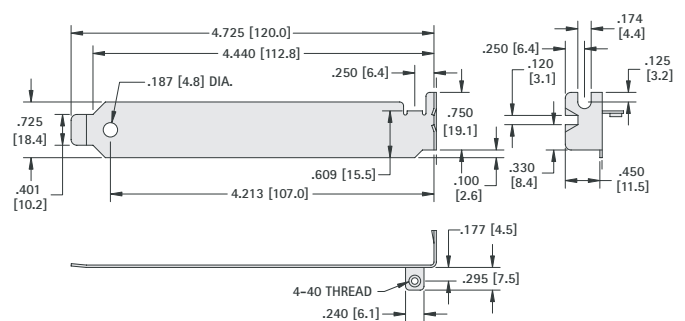


CAT. NO. 9202

PCI



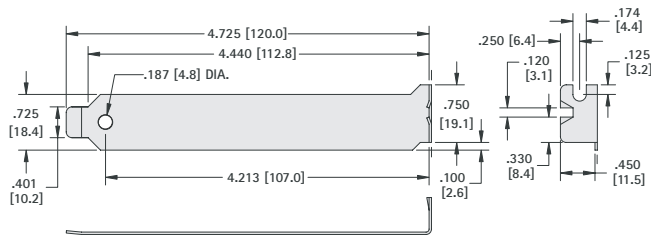
CAT. NO. 9203



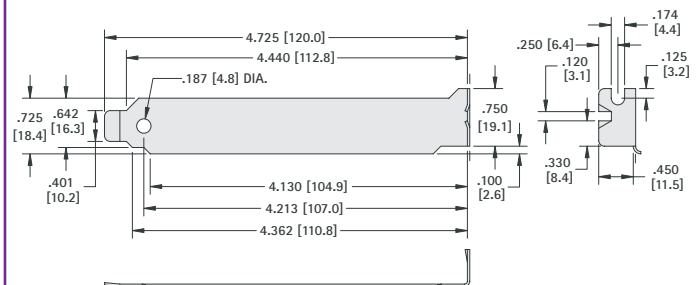
CAT. NO. 9204

EISA/ISA or PCI

- Reinforced with rib for extra strength

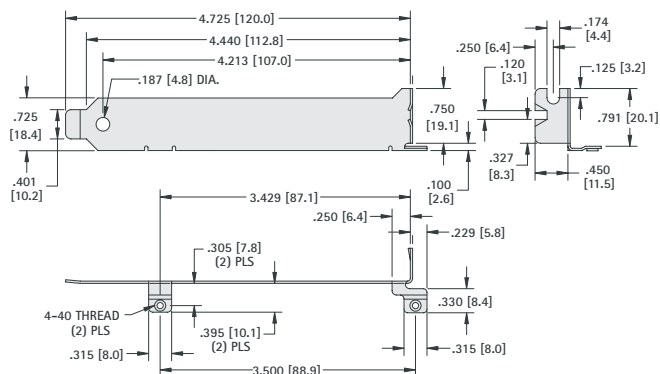


CAT. NO. 9200

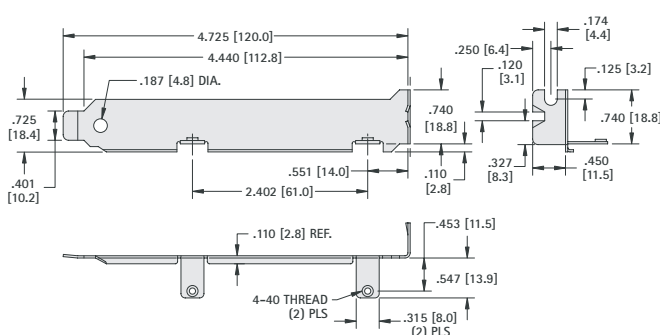


CAT. NO. 9201

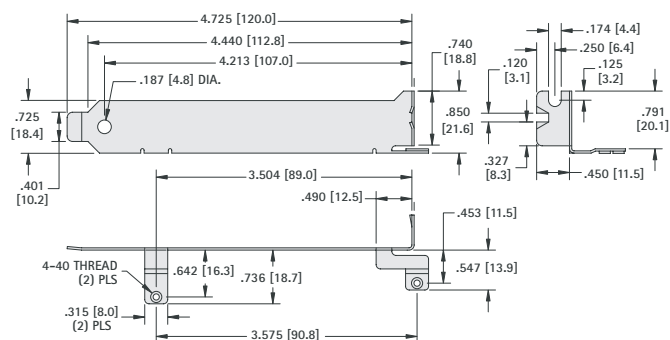
EISA/ISA



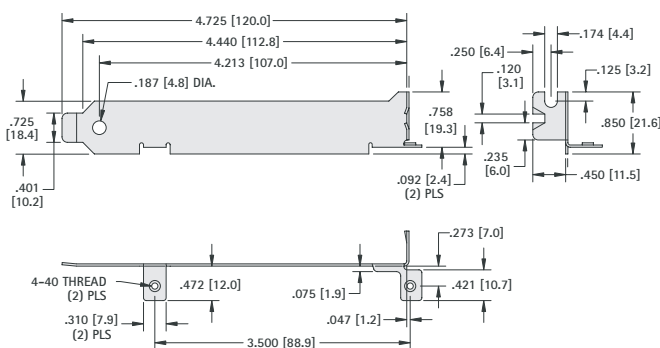
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CAT. NO. 9206

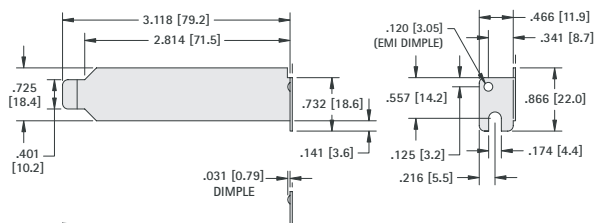


CAT. NO. 9207

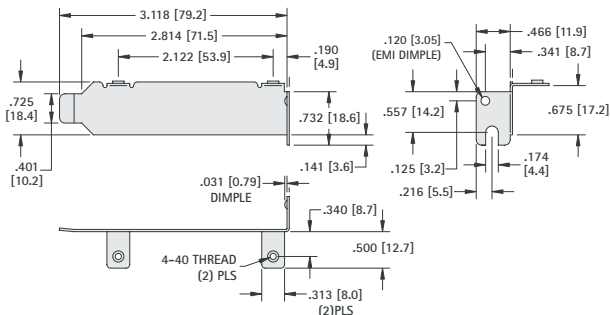


CAT. NO. 9208

LOW PROFILE BLANK BRACKETS



CAT. NO. 9230



CAT. NO. 9231

STANDARD COMPUTER BRACKETS

D-SUB

These computer brackets have been designed with a variety of holes and cutouts to connect most peripherals. The brackets shown reflect the most common configurations for most applications. If our standard brackets do not fit your

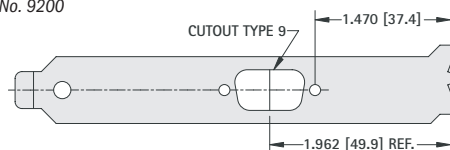
production requirements, we can fabricate a bracket to your exact specifications. Refer to pages 106 - 107 for blank dimensions and page 110 for standard cutout dimensions.

- Peripherals
- Video Cards
- Parallel/Serial Ports
- External Hard Drives
- External CD Drives

9 PIN

For Bracket Dimensions
Refer to Cat. No. 9200

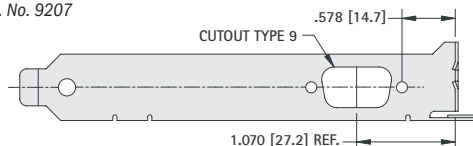
EISA/ISA



CAT. NO. 9200-1

For Bracket Dimensions
Refer to Cat. No. 9207

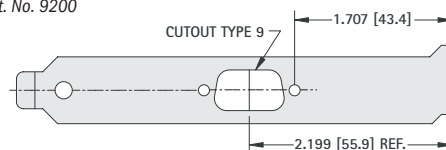
EISA/ISA



CAT. NO. 9207-1

For Bracket Dimensions
Refer to Cat. No. 9200

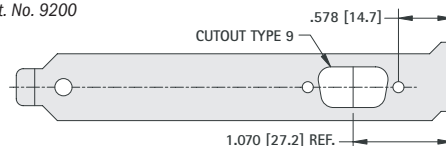
PCI



CAT. NO. 9200-2

For Bracket Dimensions
Refer to Cat. No. 9200

EISA/ISA

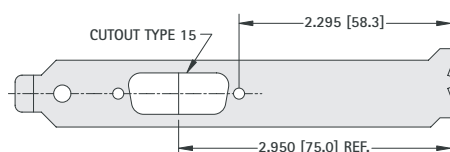


CAT. NO. 9200-16

15 PIN

For Bracket Dimensions
Refer to Cat. No. 9200

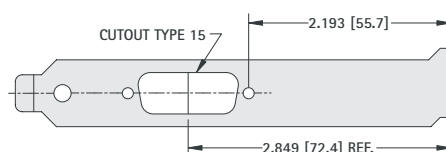
EISA/ISA



CAT. NO. 9200-3

For Bracket Dimensions
Refer to Cat. No. 9200

EISA/ISA

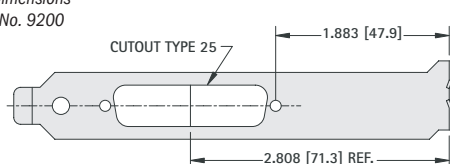


CAT. NO. 9200-11

25 - 37 - 50 PIN

For Bracket Dimensions
Refer to Cat. No. 9200

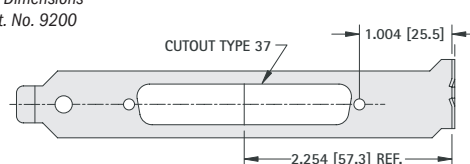
EISA/ISA - 25 PIN



CAT. NO. 9200-4

For Bracket Dimensions
Refer to Cat. No. 9200

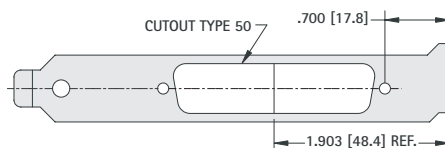
EISA/ISA - 37 PIN



CAT. NO. 9200-5

For Bracket Dimensions
Refer to Cat. No. 9200

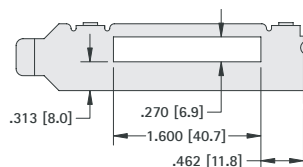
EISA/ISA - 50 PIN



CAT. NO. 9200-14

LOW PROFILE ACCESS PORT

For Bracket Dimensions
Refer to Cat. No. 9231

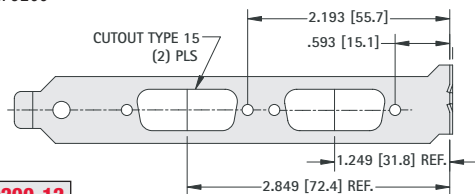


CAT. NO. 9231-1

MULTIPLE D-SUB

For Bracket Dimensions
Refer to Cat. No. 9200

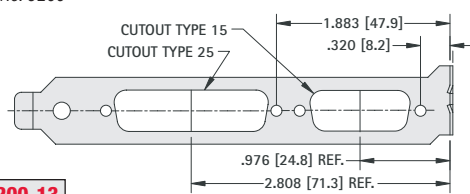
EISA/ISA



CAT. NO. 9200-12

For Bracket Dimensions
Refer to Cat. No. 9200

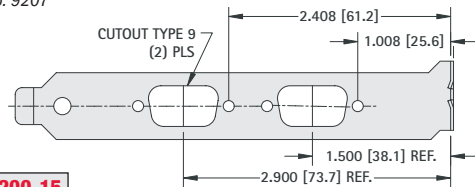
EISA/ISA



CAT. NO. 9200-13

For Bracket Dimensions
Refer to Cat. No. 9207

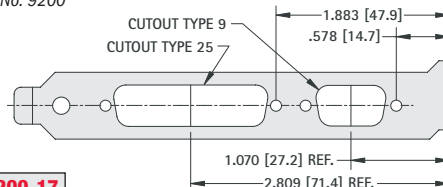
EISA/ISA



CAT. NO. 9200-15

For Bracket Dimensions
Refer to Cat. No. 9200

EISA/ISA

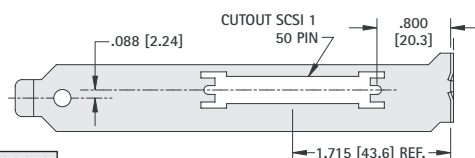


CAT. NO. 9200-17

SCSI

For Bracket Dimensions
Refer to Cat. No. 9200

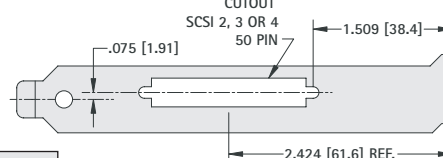
SCSI 1 - 50 PIN



CAT. NO. 9200-6

For Bracket Dimensions
Refer to Cat. No. 9200

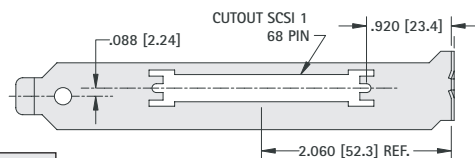
SCSI 2, 3 & 4 - 50 PIN



CAT. NO. 9200-8

For Bracket Dimensions
Refer to Cat. No. 9200

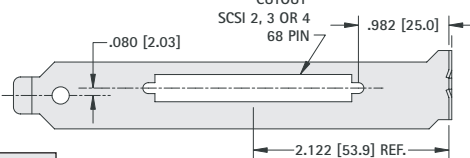
SCSI 1 - 68 PIN



CAT. NO. 9200-7

For Bracket Dimensions
Refer to Cat. No. 9200

SCSI 2, 3 & 4 - 68 PIN



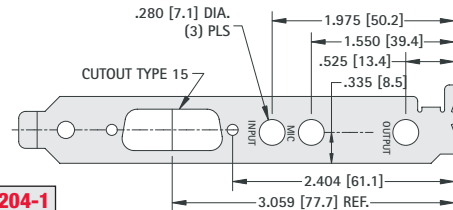
CAT. NO. 9200-9

PERIPHERAL

For Bracket Dimensions
Refer to Cat. No. 9204

EISA/ISA

SOUND CARDS

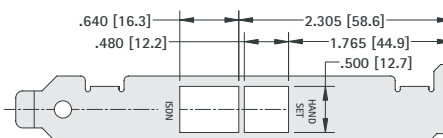


CAT. NO. 9204-1

For Bracket Dimensions
Refer to Cat. No. 9203

PCI

ISDN/PC FAX

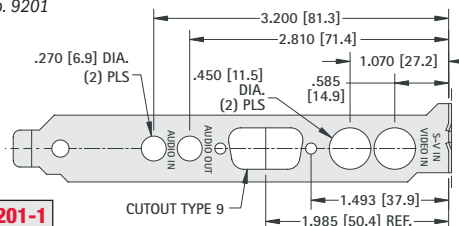


CAT. NO. 9203-1

For Bracket Dimensions
Refer to Cat. No. 9201

PCI

VIDEO CARDS

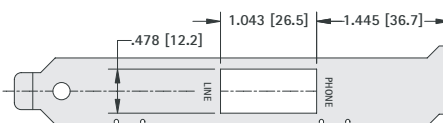


CAT. NO. 9201-1

For Bracket Dimensions
Refer to Cat. No. 9202

EISA/ISA

FAX - MODEM

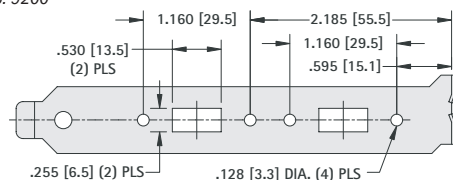


CAT. NO. 9202-1

For Bracket Dimensions
Refer to Cat. No. 9200

EISA/ISA OR PCI

USB

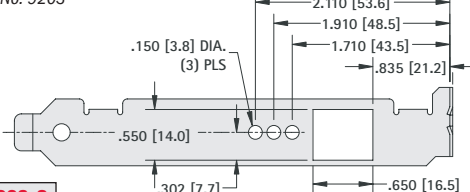


CAT. NO. 9200-10

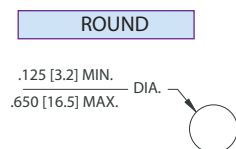
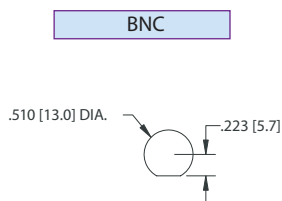
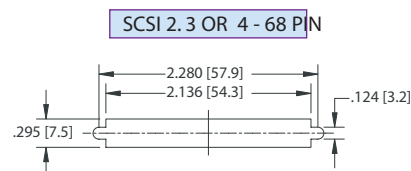
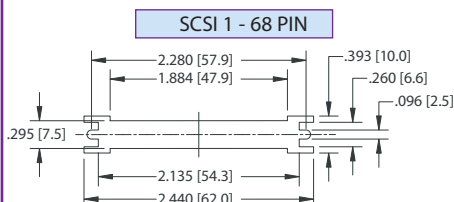
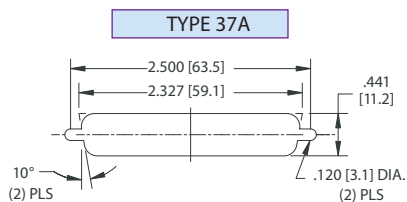
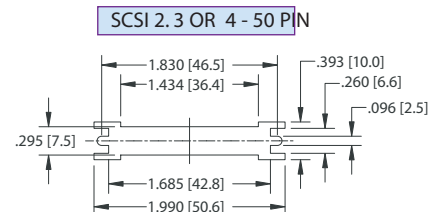
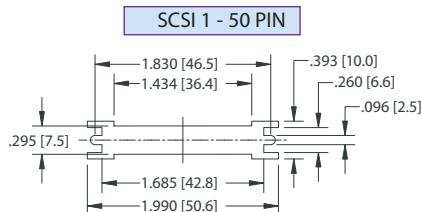
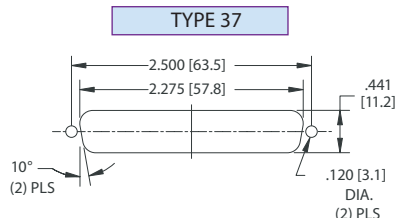
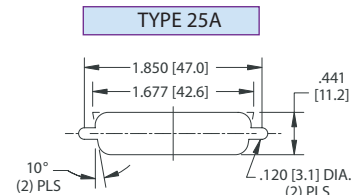
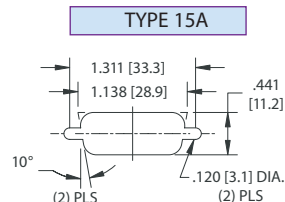
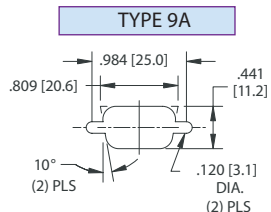
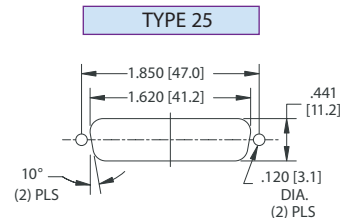
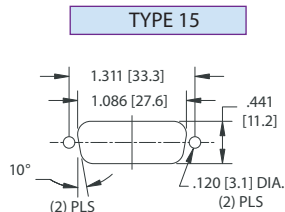
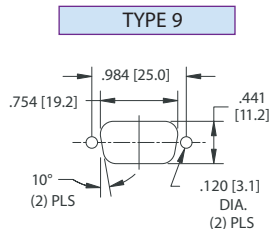
For Bracket Dimensions
Refer to Cat. No. 9203

PCI

NETWORK

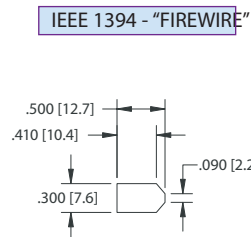
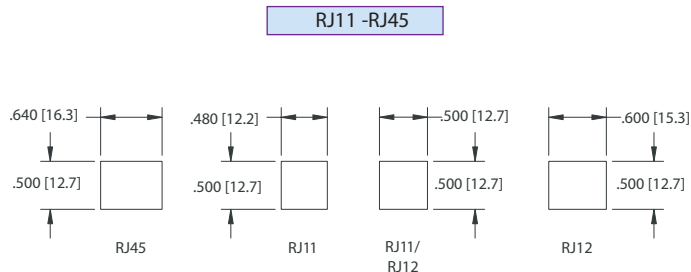
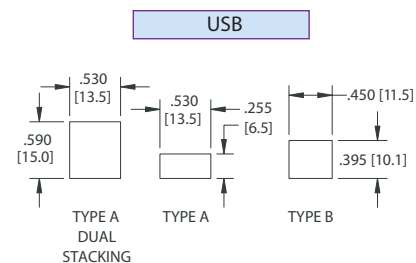


CAT. NO. 9203-2



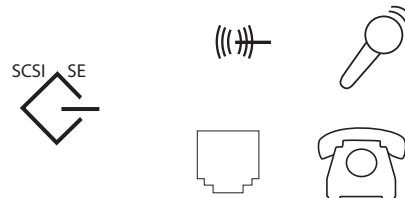
RECOMMENDED DIAMETERS

PS/2 = .650 (16.5)
Mini-Din= .400 (10.2) to .650 (16.5)
Stereo Jacks= .280 (7.1)
Phono Jacks= .400 (10.2)

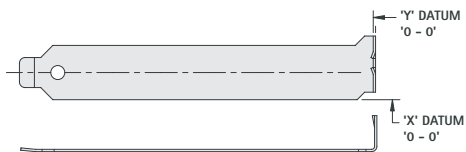


STAMPED IDENTIFICATION MARKINGS

- | | | | | |
|-------------|--------------|-------------|-----------|-----------|
| ■ AUDIO IN | ■ VGA IN | ■ VIDEO IN | ■ INPUT | ■ PHONE |
| ■ AUDIO OUT | ■ VGA OUT | ■ VIDEO OUT | ■ OUTPUT | ■ LINE |
| ■ LINE IN | ■ SVIDEO IN | ■ CAMERA IN | ■ MIC | ■ HANDSET |
| ■ LINE OUT | ■ SVIDEO OUT | ■ TUNER OUT | ■ S/P DIF | ■ ISDN |

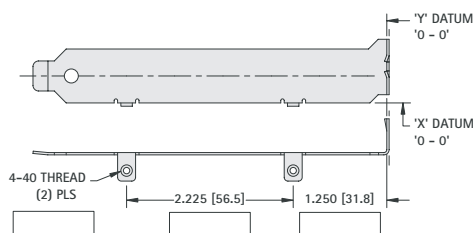


EISA/ISA or PCI



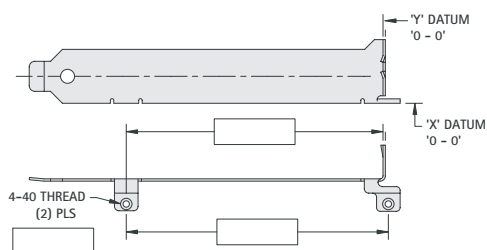
- ☐ CAT. NO. 9200
- ☐ CAT. NO. 9201 (Ribbed)
- ☐ CAT. NO. 9230

EISA/ISA with TABS



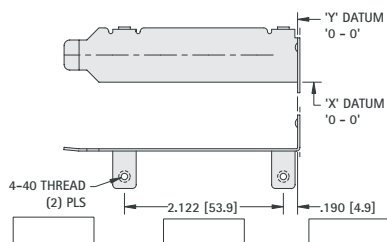
- ☐ CAT. NO. 9202

EISA/ISA with TABS



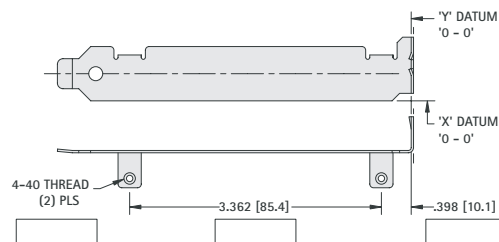
- ☐ CAT. NO. 9205
- ☐ CAT. NO. 9207

LOW PROFILE with TABS



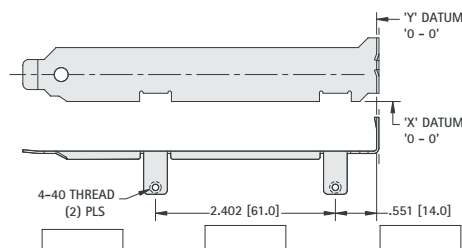
- ☐ CAT. NO. 9231

PCI with TABS



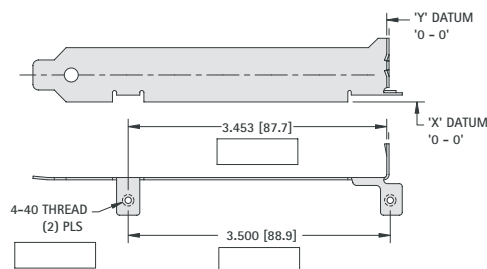
- ☐ CAT. NO. 9203

EISA/ISA with TABS



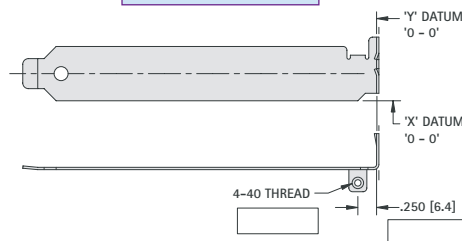
- ☐ CAT. NO. 9206

EISA/ISA with TABS



- ☐ CAT. NO. 9208

PCI with TAB



- ☐ CAT. NO. 9204

NOTE: Refer to pages 106 and 107 for overall blank dimensions

If you do not have your own drawing, please use the worksheet provided.

- STEP 1:** Select a standard blank configuration PCI or EISA/ISA, with or without tabs.
- STEP 2:** If you've selected a standard blank with tabs and the tab locations do not meet your requirements, indicate the dimensions in the boxes.
- STEP 3:** Select your standard panel cutouts (page 110) and place them on your selected drawing.
- STEP 4:** Use Datum's X and Y on drawing, to indicate the precise location of the center lines of the cutout(s).
- STEP 5:** For stamped identification markings (page 110) indicate the approximate location(s).
- STEP 6:** Quantities Required: _____
- If you have any questions, please contact our application engineers.

Name: _____ Title: _____

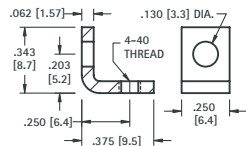
Company: _____

Address: _____

Phone: _____ Fax: _____

For prompt quotations fax, mail or e-mail this worksheet.

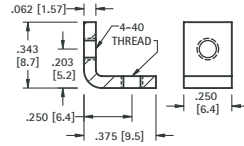
4-40 THREAD



MATERIAL:
.062 (1.57) thick Steel,
Zinc Plate

CAT. NO. 612

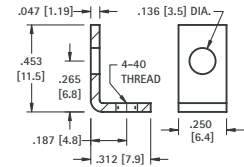
4-40 THREAD



MATERIAL:
.062 (1.57) thick Steel,
Zinc Plate

CAT. NO. 621

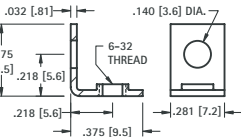
4-40 THREAD



MATERIAL:
.047 (1.19) thick Brass,
Tin Plate

CAT. NO. 616

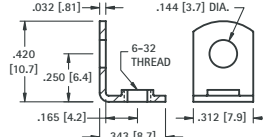
6-32 THREAD



MATERIAL:
.032 (.81) thick Brass,
Nickel Plate

CAT. NO. 634

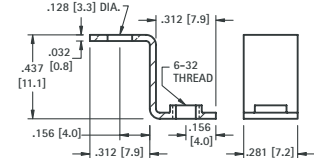
6-32 THREAD



MATERIAL:
.032 (.81) thick Brass,
Tin Plate

CAT. NO. 614

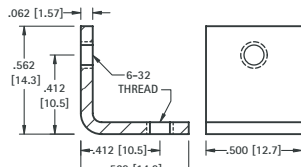
6-32 THREAD



MATERIAL:
.032 (.81) thick Brass,
Tin Plate

CAT. NO. 630

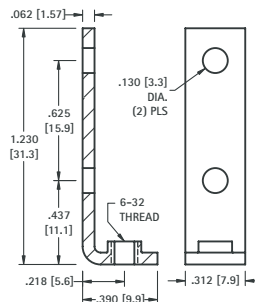
6-32 THREAD



MATERIAL:
.062 (1.57) thick Steel,
Nickel Plate

CAT. NO. 4334

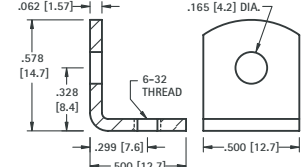
6-32 THREAD



MATERIAL:
.062 (1.57) thick Steel,
Nickel Plate

CAT. NO. 708

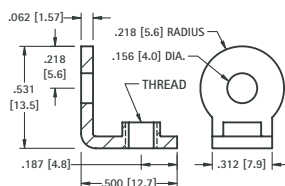
6-32 THREAD



MATERIAL:
.062 (1.57) thick Steel,
Tin Plate

CAT. NO. 617

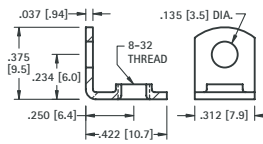
6-32 or 8-32 THREAD



MATERIAL:
.062 (1.57) thick Brass,
Nickel Plate

CAT. NO.	THREAD
4332	6-32
4333	8-32

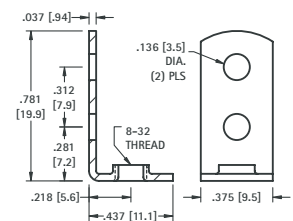
8-32 THREAD



MATERIAL:
.037 (.94) thick Brass,
Tin Plate

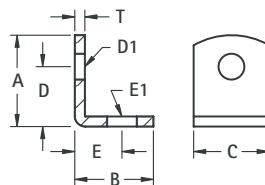
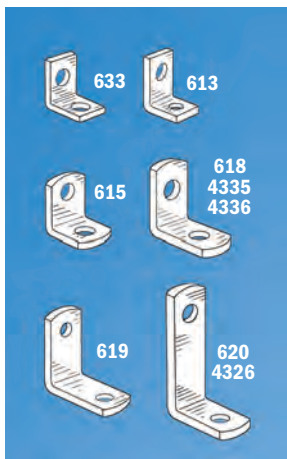
CAT. NO. 611

8-32 THREAD



MATERIAL:
.037 (.94) thick Steel,
Tin Plate

CAT. NO. 631



CAT. NO.	A	B	C	D	D HOLE DIAMETER	E	E HOLE DIAMETER	T MATERIAL	FINISH
633	.375 (9.5)	.375 (9.5)	.281 (7.1)	.218 (5.5)	.140 (3.6)	.218 (5.5)	.140 (3.6)	.032 (.81) Brass	Nickel
613	.390 (9.9)	.453 (11.5)	.375 (9.5)	.234 (5.9)	.147 (3.7)	.299 (7.6)	.128 (3.3)	.032 (.81) Brass	Nickel
615	.420 (10.7)	.343 (8.7)	.281 (7.1)	.281 (7.1)	.144 (3.7)	.203 (5.2)	.128 (3.3)	.032 (.81) Brass	Tin
4335	.562 (14.3)	.562 (14.3)	.500 (12.7)	.412 (10.5)	.120 (3.0)	.411 (10.4)	.120 (3.0)	.062 (1.57) Steel	Nickel
4336	.562 (14.3)	.562 (14.3)	.500 (12.7)	.412 (10.5)	.144 (3.7)	.412 (10.5)	.144 (3.7)	.062 (1.57) Steel	Nickel
618	.628 (16.0)	.628 (16.0)	.375 (9.5)	.378 (9.6)	.169 (4.3)	.378 (9.6)	.169 (4.3)	.050 (1.27) Brass	Tin
619	.687 (17.4)	.687 (17.4)	.375 (9.5)	.500 (12.7)	.144 (3.7)	.500 (12.7)	.144 (3.7)	.032 (.81) Steel	Tin
4326	1.013 (25.7)	.487 (12.4)	.312 (7.9)	.816 (20.7)	.140 (3.6)	.332 (8.4)	.140 (3.6)	.050 (1.27) Steel	Nickel
620	1.156 (29.4)	.656 (16.7)	.375 (9.5)	.906 (23.0)	.169 (4.3)	.420 (10.7)	.169 (4.3)	.032 (.81) Steel	Tin

BOARD BRACKETS

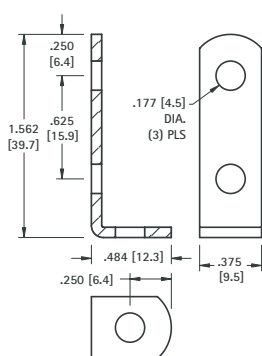
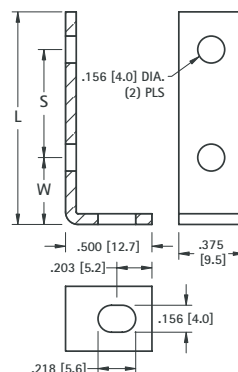
Originally designed for our line of standardized terminal boards; these brackets can also be used in other applications.

Choice of Steel or Aluminum

MATERIALS:

.062 (1.57) thick Steel, Nickel Plate
.062 (1.57) thick Aluminum

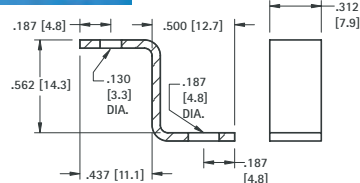
STEEL CAT. NO.	ALUMINUM CAT. NO.	W	L	S	For Use With Board No.'s (Refer to page 130)
1556	622	.375 (9.5)	1.625 (41.3)	1.000 (25.4)	15032 15072 15092
1567	623	.375 (9.5)	2.125 (54.0)	1.500 (38.1)	15033 15073 15093
1568	624	.375 (9.5)	2.625 (66.7)	2.000 (50.8)	15034 15074 15094
1569	625	.375 (9.5)	3.125 (79.4)	2.500 (63.5)	15035 15075 15095
1570	626	.281 (7.1)	1.187 (30.1)	.750 (19.1)	15022 15024 15030
1571	627	.281 (7.1)	1.625 (41.3)	1.187 (30.1)	15036 15076 15096



CAT. NO. 1564

MATERIAL:

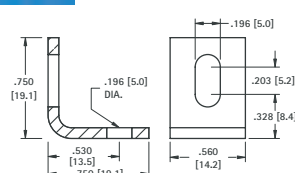
.062 (1.57) thick Steel, Nickel Plate



CAT. NO. 4325

MATERIAL:

.050 (1.27) thick Steel, Nickel Plate



CAT. NO. 4337

MATERIAL:

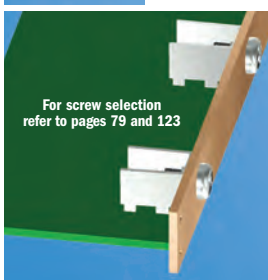
.080 (2.03) thick Aluminum

THREADED PC MOUNT BRACKETS

- Snaps in for wave soldering • Reduces assembly time • Easily mount into predrilled or punched holes • Stable no rock design

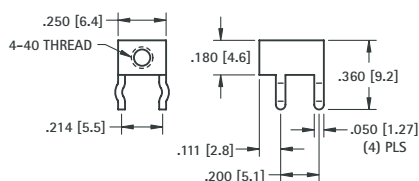


SNAP-IN PC MOUNT

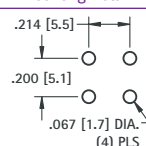


For screw selection refer to pages 79 and 123

4-40 THREAD



Mounting Detail

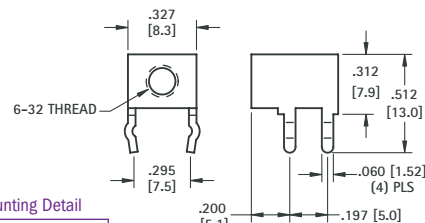


MATERIAL:

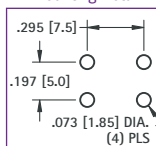
.032 (.81) thick Brass, Tin Plate

CAT. NO. 7774

6-32 THREAD



Mounting Detail



MATERIAL:

.032 (.81) thick Brass, Tin Plate

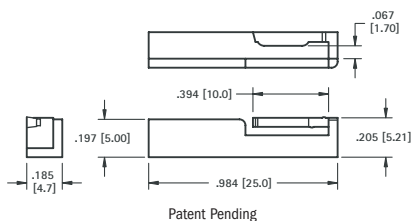
CAT. NO. 7779



- The Anti-Static IC tray clip is designed to perfectly fit into a JEDEC tray. It is flexible and may be clipped securely into IC tray tab.

SPECIFICATIONS

Material: PBT and Polyether
Surface Resistance: $\leq 1 \times 10^{12} \Omega$
Operating Temperature: 300°F (150°C) Max.



Patent Pending

CAT. NO.	COLOR
8896	YELLOW
8897	ORANGE
8898	PINK
8899	GREEN

The unique color coded Anti-Static IC Tray Clip, is a patent pending design and can be used for the following applications:

MSD (Moisture Sensitive Device) re-baking process

The current method of identification of unpacked moisture sensitive devices (MSDs) during the re-baking process, is typically done manually by pasting papers on IC trays with written information such as date and time of unpacking. Since this information is important for maintaining MSDs performance, once manually noted baking trays are put into an oven for re-baking, it is hard to identify individual trays to determine which one should be removed first. With the Anti-Static Clip, this process is made easy, thanks to unique color coding.

Identification for IC production line

There are several ways to identify ICs at the manufacturing level. For example, drawing a line on an IC tray with a marker is common. However, with this done an IC tray with a drawn line cannot be re-used for other purposes. Now with the color coded Anti-Static IC Tray Clip, operators can sort and reuse IC trays for various purposes with ease.

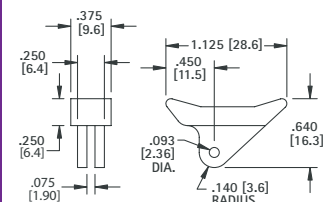
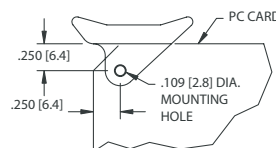
LEVER ACTION PC CARD EJECTORS



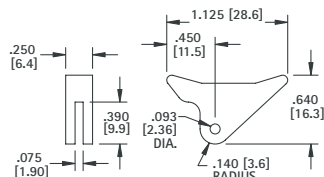
Designed for .062 (1.57) thick PC cards. Level action ejectors aids card insertion and extraction. Supplied complete with stainless steel spring pin.

MATERIAL:
 White Nylon 6/6, UL Rated 94V-2

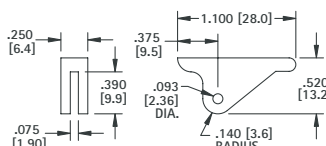
CARD MOUNTING DIMENSIONS



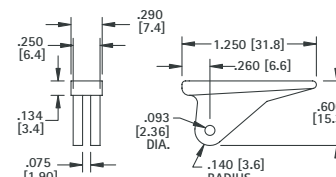
CAT. NO. 8640



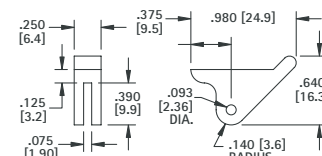
CAT. NO. 8641



CAT. NO. 8642



CAT. NO. 8643

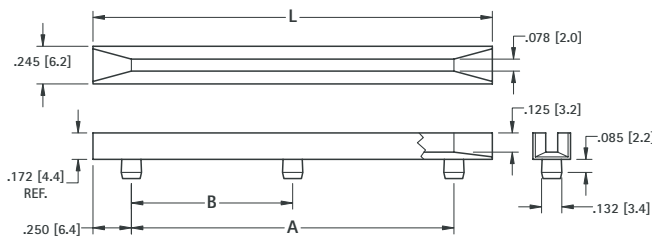


CAT. NO. 8644

PC BOARD GUIDES



Guides may be used horizontally or vertically and snap into .125 (3.2) diameter holes. Narrow width allows maximum density and optimum airflow. Simple press-fit, secure installation.



Mounting Detail



MATERIAL:
 Natural Nylon 6/6, UL Rated 94V-2

CAT. NO.	L	A	B
8620	2.5 (63.5)	2.0 (50.8)	—
8621	3.0 (76.2)	2.5 (63.5)	—
8622	3.5 (88.9)	3.0 (76.2)	—
8623	4.0 (101.6)	3.5 (88.9)	—
8624	4.5 (114.3)	4.0 (101.6)	—
8625	5.5 (139.7)	4.5 (114.3)	—
8626	5.5 (139.7)	5.0 (127.0)	—
8627	6.0 (152.4)	5.5 (139.7)	—
8628	6.5 (165.1)	6.0 (152.4)	—
8629	7.0 (177.8)	6.5 (165.1)	—
8630	7.0 (177.8)	6.5 (165.1)	3.25 (82.6)
8631	7.5 (190.5)	7.0 (177.8)	—
8632	7.5 (190.5)	7.0 (177.8)	3.50 (88.9)
8633	8.0 (203.2)	7.5 (190.5)	—
8634	8.0 (203.2)	7.5 (190.5)	3.75 (95.3)
8635	8.5 (215.9)	8.0 (203.2)	—
8636	8.5 (215.9)	8.0 (203.2)	4.00 (101.6)



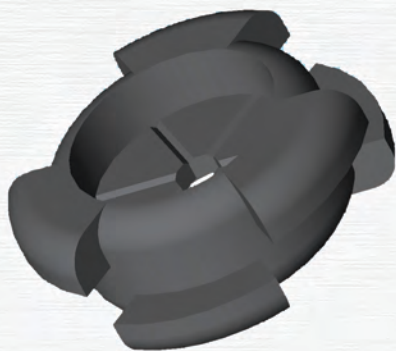
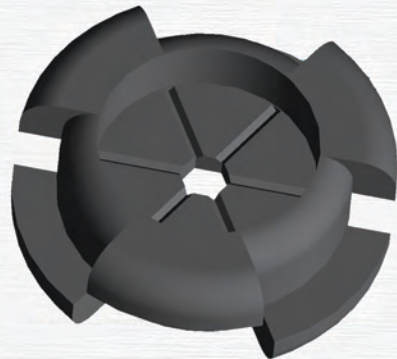
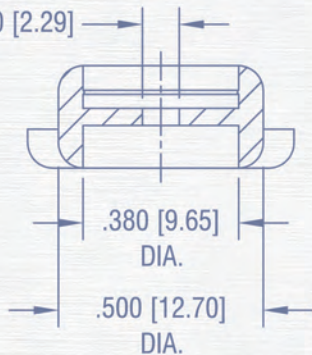
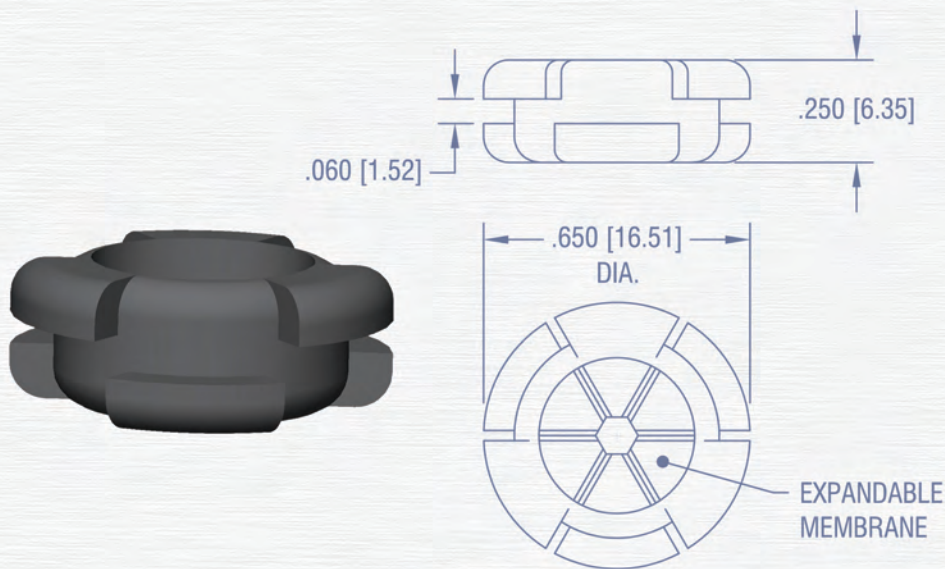
NOTES

CUSTOM STAMPING AND ASSEMBLY

Keystone is fully integrated to meet
your total design and production needs.

Manufacturing custom designs and modifications
of standard items is our specialty.

Quotations on special **stamping and assembly** furnished promptly
upon receipt of sample, sketch, print or CAD drawings.



MULTI-PURPOSE HARDWARE

Products such as washers, hole plugs, grommets, bumpers, bushings, clamps, rivets, brackets and ties have can be used in a multitude of environments and applications such as:

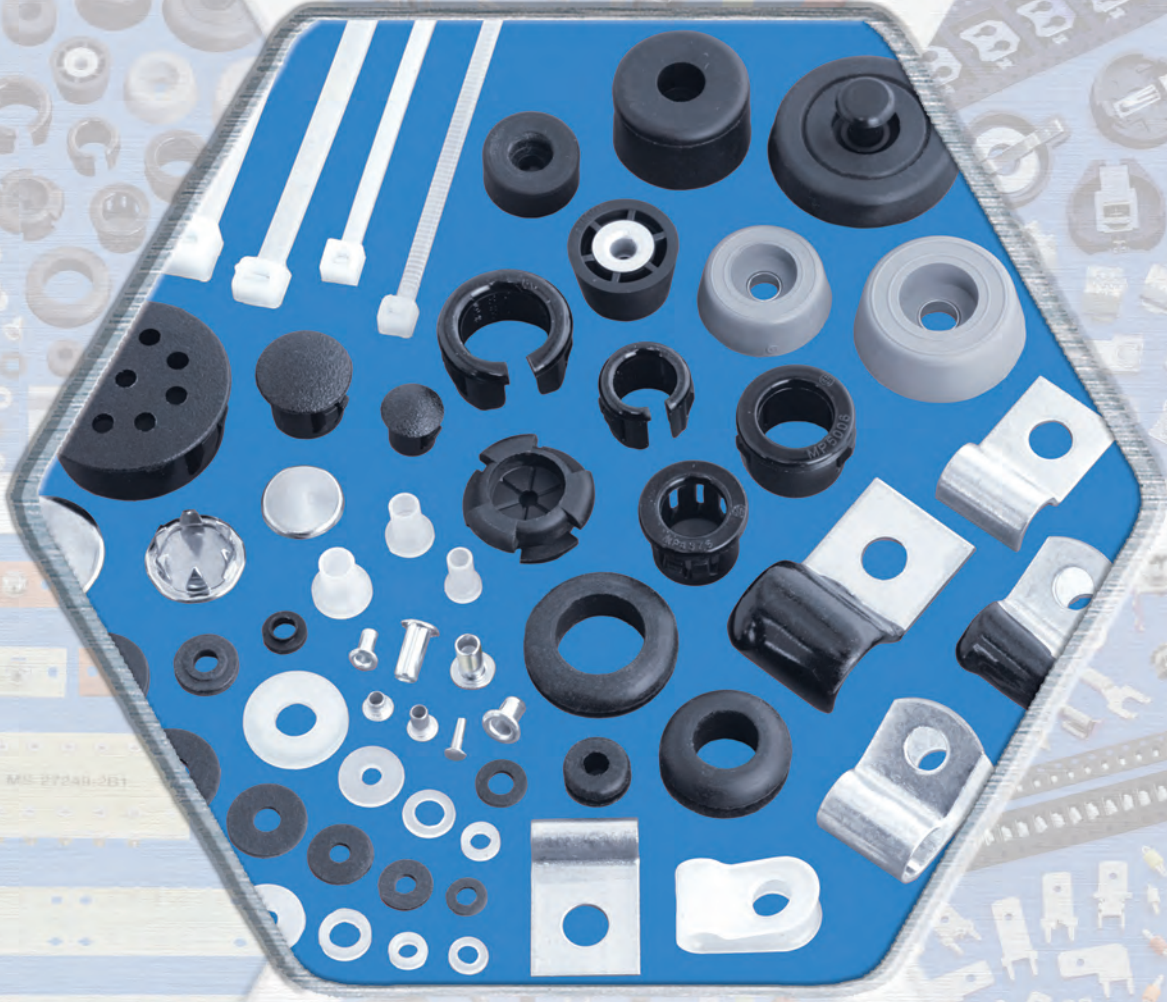
- Chassis mounts and holes
- Access panels
- Wiring Outlets
- Electrical insulation
- Mechanical damping
- Cable/Fiber optic routing & securing
- PC board and electronic assemblies

Our quality system is ISO 9001:2000 certified. Our products are in compliance with the RoHS directive. We provide 3D modeling, CAD and other application-engineering support for modifications, special designs or assembly requirements to assist you in choosing the right Keystone product for your application.

DATE

DESCRIPTION

REV.

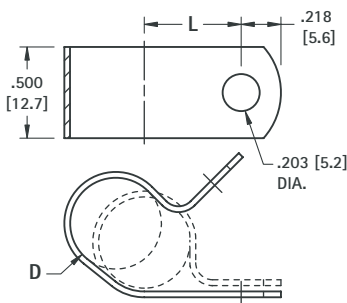


SECTION CONTENTS

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GROMMETS & BUSHINGS	120
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SCREWS & NUTS	123
STAKING TOOLS	124-125
SOLDER (TURRET) TERMINALS	126-127
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STEEL CABLE CLAMPS

Ideal for securing, grounding and routing cable, wiring, piping, tubing, components and fibre optics.

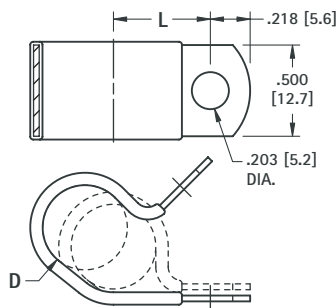


MATERIAL: .032 (.81) thick Steel, Zinc Plate

CAT. NO.	D FOR DIA.	L CTR TO CTR
8100	.187 (4.7)	.375 (9.5)
8101	.250 (6.4)	.406 (10.3)
8102	.312 (7.9)	.437 (11.1)
8103	.375 (9.5)	.468 (11.9)
8104	.437 (11.1)	.500 (12.7)
8105	.500 (12.7)	.531 (13.5)
8106	.562 (14.3)	.562 (14.3)
8107	.625 (15.9)	.594 (15.1)
8108	.687 (17.4)	.625 (15.9)
8109	.750 (19.0)	.656 (16.7)
8110	.812 (20.6)	.687 (17.4)
8111	.875 (22.2)	.718 (18.2)
8112	.937 (23.8)	.750 (19.1)
8113	1.00 (25.4)	.781 (19.8)

INSULATED STEEL CABLE CLAMPS

Ideal for securing, insulating and routing cable, wiring, piping, tubing, components and fibre optics.

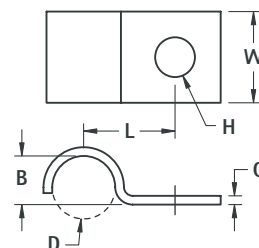
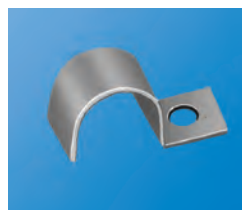


MATERIAL: .032 (.81) thick Steel, Zinc Plate
Cushion: .032 (.81) thick Vinyl, Black

CAT. NO.	D FOR DIA.	L CTR TO CTR
8121	.187 (4.7)	.406 (10.3)
8122	.250 (6.4)	.437 (11.1)
8123	.312 (7.9)	.468 (11.9)
8124	.375 (9.5)	.500 (12.7)
8125	.437 (11.1)	.531 (13.5)
8126	.500 (12.7)	.562 (14.3)
8127	.562 (14.3)	.594 (15.1)
8128	.625 (15.9)	.625 (15.9)
8129	.687 (17.4)	.656 (16.7)
8130	.750 (19.1)	.687 (17.4)
8131	.812 (20.6)	.718 (18.2)
8132	.875 (22.2)	.750 (19.1)
8133	.937 (23.8)	.781 (19.8)
8134	1.000 (25.4)	.812 (20.6)

STEEL HALF CLAMPS

Ideal for securing, grounding and routing cable, wiring, piping, tubing, components and fibre optics.

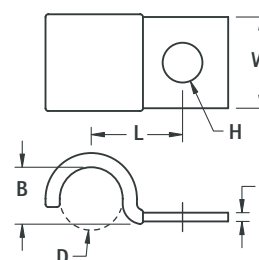


MATERIAL: Steel, Zinc Plate

CAT. NO.	D FOR DIA.	H HOLE DIA.	L CTR TO CTR	B	G THICK	W WIDTH
8140	.125 (3.2)	.218 (5.5)	.437 (11.1)	.125 (3.2)	.032 (.81)	.500 (12.7)
8141	.187 (4.7)	.218 (5.5)	.437 (11.1)	.156 (4.0)		
8142	.250 (6.4)	.218 (5.5)	.437 (11.1)	.187 (4.7)		
8143	.312 (7.9)	.218 (5.5)	.500 (12.7)	.250 (6.4)	.048 (1.22)	.500 (12.7)
8144	.375 (9.5)	.218 (5.5)	.531 (13.5)	.312 (7.9)		
8145	.437 (11.1)	.218 (5.5)	.562 (14.3)	.375 (9.5)	.060 (1.52)	.625 (15.9)
8146	.500 (12.7)	.218 (5.5)	.625 (15.9)	.437 (11.1)		
8147	.562 (14.3)	.218 (5.5)	.687 (17.4)	.500 (12.7)		
8148	.625 (15.9)	.218 (5.5)	.750 (19.1)	.562 (14.3)	.060 (1.52)	.625 (15.9)
8149	.687 (17.4)	.218 (5.5)	.812 (20.6)	.625 (15.9)		
8150	.750 (19.1)	.218 (5.5)	.812 (20.6)	.687 (17.4)		
8151	.812 (20.6)	.218 (5.5)	.875 (22.2)	.750 (19.1)	.060 (1.52)	.750 (19.1)
8152	.875 (22.2)	.281 (7.1)	.937 (23.8)	.812 (20.6)		
8153	.937 (23.8)	.281 (7.1)	.968 (24.6)	.812 (20.6)		
8154	1.000 (25.4)	.281 (7.1)	1.000 (25.4)	.937 (23.8)		

INSULATED STEEL HALF CLAMPS

Ideal for securing, insulating and routing cable, wiring, piping, tubing, components and fibre optics.



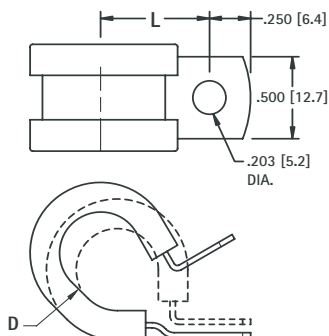
MATERIAL: Steel, Zinc Plate
Cushion: .032 (.81) thick Vinyl, Black

CAT. NO.	D FOR DIA.	H HOLE DIA.	L CTR TO CTR	B	G THICK	W WIDTH
8160	.187 (4.7)	.218 (5.5)	.437 (11.1)	.187 (4.7)	.032 (.81)	.500 (12.7)
8161	.250 (6.4)	.218 (5.5)	.500 (12.7)	.250 (6.4)		
8162	.312 (7.9)	.218 (5.5)	.531 (13.5)	.312 (7.9)		
8163	.375 (9.5)	.218 (5.5)	.562 (14.3)	.375 (9.5)	.048 (1.22)	.625 (15.9)
8164	.437 (11.1)	.218 (5.5)	.625 (15.9)	.437 (11.1)		
8165	.500 (12.7)	.218 (5.5)	.687 (17.4)	.500 (12.7)	.060 (1.52)	.625 (15.9)
8166	.562 (14.3)	.218 (5.5)	.750 (19.1)	.562 (14.3)		
8167	.625 (15.9)	.218 (5.5)	.812 (20.6)	.625 (15.9)		
8168	.687 (17.4)	.218 (5.5)	.812 (20.6)	.687 (17.4)	.060 (1.52)	.750 (19.1)
8169	.750 (19.1)	.218 (5.5)	.875 (22.2)	.750 (19.1)		
8170	.812 (20.6)	.281 (7.1)	.937 (23.8)	.812 (20.6)		
8171	.875 (22.2)	.281 (7.1)	.968 (24.6)	.812 (20.6)	.060 (1.52)	.750 (19.1)
8172	.937 (23.8)	.281 (7.1)	1.000 (25.4)	.937 (23.8)		
8173	1.000 (25.4)	.281 (7.1)	1.062 (27.0)	1.000 (25.4)		

CUSHIONED CABLE CLAMPS



- Ideal for securing in rugged applications
- These cushioned cable clamps secure tightly and protect against shock and vibration



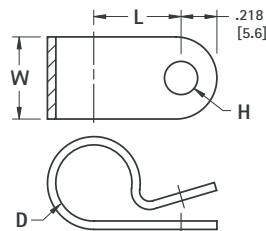
MATERIAL: .032 (0.81) Stainless Steel
Cushion: EPDM Rubber

CAT. NO.	D FOR DIA.	L CTR TO CTR
8090	.250 (6.4)	.711 (18.1)
8091	.375 (9.5)	.500 (12.7)
8092	.500 (12.7)	.562 (14.3)
8093	.625 (15.9)	.718 (18.2)
8094	.750 (19.1)	.781 (19.8)
8095	.875 (22.2)	.843 (21.4)
8096	1.000 (25.4)	.906 (23.0)

NYLON CABLE CLAMPS

Ideal for securing, insulating and routing cable wiring, piping, tubing, components and fibre optics.

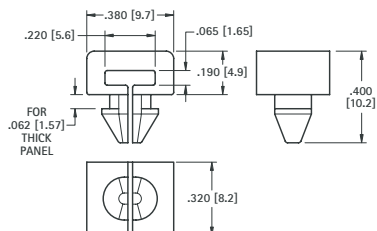
MATERIAL: .050 (1.27) thick Nylon 6/6, White



CAT. NO.	D FOR DIA.	L CTR TO CTR	W WIDTH	H HOLE
7620	.125 (3.2)	.325 (8.3)	.375 (9.5)	.140 (3.6)
7621	.125 (3.2)	.325 (8.3)	.375 (9.5)	.203 (5.2)
7622	.187 (4.7)	.380 (9.7)	.375 (9.5)	.140 (3.6)
7623	.187 (4.7)	.380 (9.7)	.375 (9.5)	.203 (5.2)
7624	.250 (6.4)	.410 (10.4)	.375 (9.5)	.140 (3.6)
7625	.250 (6.4)	.410 (10.4)	.375 (9.5)	.203 (5.2)
7626	.312 (7.9)	.445 (11.3)	.375 (9.5)	.140 (3.6)
7627	.312 (7.9)	.445 (11.3)	.375 (9.5)	.203 (5.2)
7628	.375 (9.5)	.475 (12.1)	.375 (9.5)	.140 (3.6)
7629	.375 (9.5)	.475 (12.1)	.375 (9.5)	.203 (5.2)
7630	.437 (11.1)	.525 (13.3)	.375 (9.5)	.140 (3.6)
7631	.437 (11.1)	.525 (13.3)	.375 (9.5)	.203 (5.2)
7632	.500 (12.7)	.550 (14.0)	.375 (9.5)	.140 (3.6)
7633	.500 (12.7)	.550 (14.0)	.375 (9.5)	.203 (5.2)
7634	.562 (14.3)	.625 (15.9)	.500 (12.7)	.203 (5.2)
7635	.625 (15.9)	.660 (16.8)	.500 (12.7)	.203 (5.2)
7636	.750 (19.1)	.785 (19.9)	.500 (12.7)	.203 (5.2)
7637	.875 (22.2)	.845 (21.5)	.500 (12.7)	.203 (5.2)
7638	1.000 (25.4)	.910 (23.1)	.500 (12.7)	.203 (5.2)
7639	1.125 (28.6)	.970 (24.6)	.500 (12.7)	.203 (5.2)
7640	1.250 (31.8)	1.060 (26.9)	.500 (12.7)	.203 (5.2)

CABLE TIE ROUTING CLIP

These clips snap into PC Boards or Panel chassis and are ideal for securing cable wiring, piping, tubing, components and fibre optics when used with cable ties.



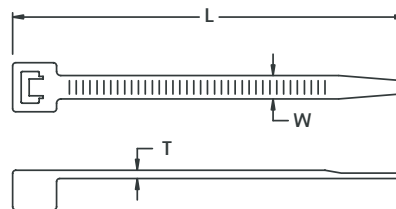
Recommended Mtg. Hole .187 (4.8) diameter.

MATERIAL: Nylon 6/6, UL Rated 94V-2

CAT. NO. 8860

NYLON CABLE TIES

Popular sizes and strengths to meet common cable tie requirements. Injection molded with one piece construction for strength and reliability. Easily installed by hand. Optional installation tool available, tightens and flush cuts cable tie.

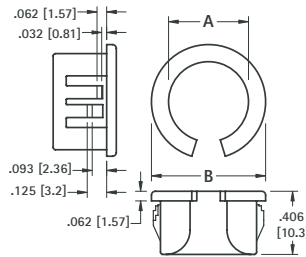


MATERIAL: Natural Nylon 6/6, UL Rated 94V-2

CAT. NO.	TENSILE STRENGTH (Min. Bundle)	FOR BUNDLE DIA. (Max.)	L LENGTH (Approx.)	W WIDTH (Approx.)	T THICKNESS (Approx.)
8865	18 lbs	1.000 (25.4)	4.250 (108.0)	.100 (2.54)	.045 (1.14)
8866	18 lbs	2.000 (50.8)	8.000 (203.2)	.100 (2.54)	.045 (1.14)
8867	40 lbs	1.250 (31.8)	6.000 (152.4)	.140 (3.56)	.050 (1.27)
8868	50 lbs	1.750 (44.5)	7.500 (190.5)	.190 (4.83)	.055 (1.40)
8869	120 lbs	4.000 (101.6)	14.500 (368.3)	.190 (4.83)	.055 (1.40)
8870	Hand Operated Cable Tie Installation Tool for 18lb to 50lb Ties				

NYLON SPLIT BUSHINGS

Designed to be assembled into holes that already contain wire or cable. Versatile bushing can be used on all chassis from .032 (.81) to .125 (3.2) thick.

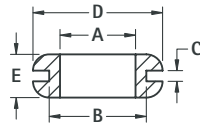
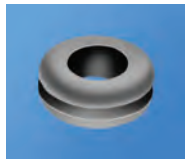


CAT. NO.	HOLE SIZE REQUIRED	A INSIDE DIAMETER	B HEAD DIAMETER
8490	.375 (9.5)	.265 (6.7)	.421 (10.7)
8491	.500 (12.7)	.312 (7.9)	.562 (14.3)
8492	.562 (14.3)	.390 (9.9)	.640 (16.3)
8493	.625 (15.9)	.453 (11.5)	.687 (17.4)
8494	.750 (19.1)	.546 (13.9)	.796 (20.2)
8495	.875 (22.2)	.671 (17.0)	.921 (23.4)
8496	1.000 (25.4)	.796 (20.2)	1.062 (27.0)

MATERIAL: Nylon 6/6, Black

RUBBER GROMMETS

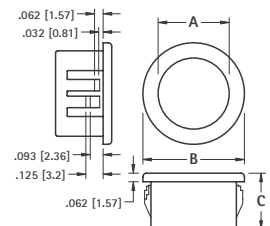
Ideal for electrical insulation and mechanical damping.



MATERIAL: Rubber, BUNA S

CAT. NO.	A INSIDE DIAMETER	B MTG. HOLE	C PANEL THICKNESS	D	E
730	.125 (3.2)	.187 (4.7)	.062 (1.57)	.312 (7.9)	.187 (4.7)
733	.125 (3.2)	.250 (6.4)	.062 (1.57)	.343 (8.7)	.187 (4.7)
734	.125 (3.2)	.437 (11.1)	.062 (1.57)	.625 (15.9)	.187 (4.7)
735	.125 (3.2)	.375 (9.5)	.093 (2.36)	.500 (12.7)	.312 (7.9)
736	.187 (4.7)	.312 (7.9)	.062 (1.57)	.437 (11.1)	.218 (5.5)
737	.187 (4.7)	.281 (7.2)	.093 (2.36)	.437 (11.1)	.218 (5.5)
738	.250 (6.4)	.437 (11.1)	.062 (1.57)	.625 (15.9)	.187 (4.7)
739	.250 (6.4)	.375 (9.5)	.062 (1.57)	.562 (14.3)	.250 (6.4)
740	.250 (6.4)	.375 (9.5)	.093 (2.36)	.500 (12.7)	.250 (6.4)
741	.312 (7.9)	.562 (14.3)	.062 (1.57)	.812 (20.6)	.312 (7.9)
742	.312 (7.9)	.437 (11.1)	.062 (1.57)	.625 (15.9)	.281 (7.1)
743	.312 (7.9)	.437 (11.1)	.093 (2.36)	.625 (15.9)	.312 (7.9)
744	.375 (9.5)	.625 (15.9)	.062 (1.57)	.875 (22.2)	.312 (7.9)
745	.375 (9.5)	.500 (12.7)	.062 (1.57)	.625 (15.9)	.250 (6.4)
732	.437 (11.1)	.562 (14.3)	.062 (1.57)	.750 (19.1)	.250 (6.4)
746	.437 (11.1)	.687 (17.4)	.062 (1.57)	.937 (23.8)	.312 (7.9)
747	.500 (12.7)	.812 (20.6)	.062 (1.57)	1.062 (27.0)	.312 (7.9)
748	.500 (12.7)	1.250 (31.8)	.062 (1.57)	1.500 (38.1)	.250 (6.4)
749	.500 (12.7)	.750 (19.1)	.093 (2.36)	.968 (24.6)	.281 (7.1)
750	.562 (14.3)	.812 (20.6)	.062 (1.57)	1.062 (27.0)	.312 (7.9)
752	.625 (15.9)	.875 (22.2)	.062 (1.57)	1.125 (28.6)	.312 (7.9)
753	.625 (15.9)	1.250 (31.8)	.062 (1.57)	1.500 (38.1)	.250 (6.4)
755	.750 (19.1)	1.062 (27.0)	.062 (1.57)	1.375 (34.9)	.375 (9.5)
756	.750 (19.1)	1.437 (36.5)	.062 (1.57)	1.812 (46.0)	.375 (9.5)
757	.875 (22.2)	1.250 (31.8)	.062 (1.57)	1.625 (41.3)	.437 (11.1)

Snaps into panel hole to provide protection for wire, cable and tubing from sharp uneven edges.

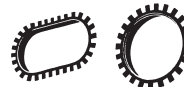
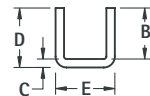
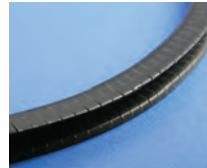


MATERIAL: Nylon 6/6, Black

CAT. NO.	HOLE SIZE REQUIRED	MAXIMUM CHASSIS THICKNESS	A INSIDE DIAMETER	B HEAD DIAMETER	C OVERALL HEIGHT
8470	.250 (6.4)	.062 (1.57)	.125 (3.2)	.312 (7.9)	.312 (7.9)
8471	.312 (7.9)	.062 (1.57)	.187 (4.7)	.375 (9.5)	.312 (7.9)
8472	.375 (9.5)	.125 (3.2)	.250 (6.4)	.468 (11.9)	.406 (10.3)
8473	.437 (11.1)	.125 (3.2)	.312 (7.9)	.531 (13.5)	.406 (10.3)
8474	.500 (12.7)	.125 (3.2)	.375 (9.5)	.578 (14.7)	.406 (10.3)
8475	.562 (14.3)	.125 (3.2)	.437 (11.1)	.656 (16.7)	.406 (10.3)
8476	.625 (15.9)	.125 (3.2)	.500 (12.7)	.718 (18.2)	.406 (10.3)
8477	.750 (19.1)	.125 (3.2)	.562 (14.3)	.843 (21.4)	.406 (10.3)
8478	.875 (22.2)	.125 (3.2)	.625 (15.9)	.953 (24.2)	.453 (11.5)
8479	1.000 (25.4)	.125 (3.2)	.750 (19.1)	1.125 (28.6)	.453 (11.5)
8480	1.187 (30.1)	.125 (3.2)	.937 (23.8)	1.312 (33.3)	.453 (11.5)
8481	1.250 (31.8)	.125 (3.2)	.937 (23.8)	1.359 (34.5)	.453 (11.5)
8482	1.375 (34.9)	.125 (3.2)	1.000 (25.4)	1.468 (37.3)	.453 (11.5)
8483	1.500 (38.1)	.125 (3.2)	1.062 (27.0)	1.609 (40.9)	.453 (11.5)
8484	1.750 (44.5)	.125 (3.2)	1.375 (34.9)	1.875 (47.6)	.453 (11.5)
8485	2.000 (50.8)	.125 (3.2)	1.625 (41.3)	2.125 (54.0)	.453 (11.5)
8486	2.500 (63.5)	.250 (6.4)	1.968 (50.0)	2.656 (67.5)	.718 (18.2)

FLEXIBLE GROMMETING

Ideal for maintenance, short-run production, R&D or prototyping. Supplied in 25 ft. rolls. Make your own grommets to fit any size or shape required.



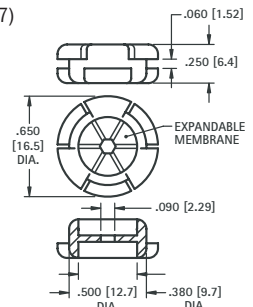
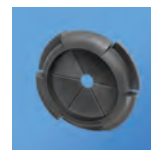
MATERIAL: Nylon 6/6, Black

CAT. NO.	MAX PANEL	B	C	D	E
8615	.052 (1.32)	.135 (3.4)	0.55 (1.4)	.190 (4.8)	.139 (3.5)
8616	.085 (2.16)	.145 (3.7)	0.55 (1.4)	.200 (5.1)	.182 (4.6)
8617	.125 (3.18)	.165 (4.2)	0.55 (1.4)	.220 (5.6)	.232 (5.9)

"UNIVERSAL" RUBBER GROMMET

Designed to adjust to different wire, cable or tubing diameters from .125 (3.2) to .312 (7.9)

- Self-adjusting membrane forms a dust resistant seal
- Installs in .500 (12.7) diameter hole in .062 (1.57) thick panels or boards
- Molded outer ring retains grommet in place

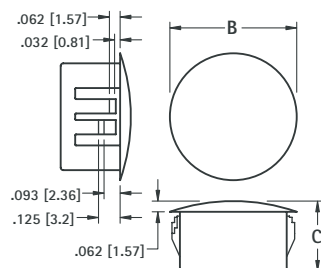
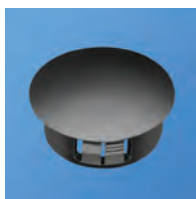


CAT. NO. 777

MATERIAL: Thermoplastic Rubber, Black

NYLON HOLE PLUGS

Closes unused chassis holes quickly and economically. Plugs are abrasion and vibration resistant.

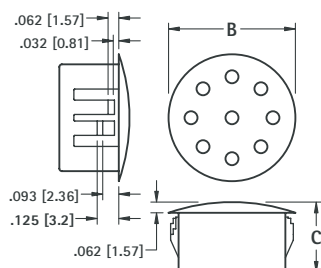
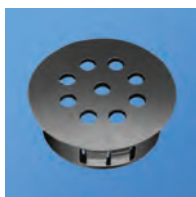


MATERIAL: Nylon 6/6, Matte Finish, Black

CAT. NO.	HOLE DIAMETER	PANEL THICKNESS	B	C
8600	.250 (6.4)	.062 (1.57)	.312 (7.9)	.312 (7.9)
8601	.312 (7.9)	.062 (1.57)	.375 (9.5)	.312 (7.9)
8602	.375 (9.5)	.125 (3.2)	.468 (11.9)	.406 (10.3)
8603	.500 (12.7)	.125 (3.2)	.578 (14.7)	.406 (10.3)
8604	.625 (15.9)	.125 (3.2)	.734 (18.6)	.406 (10.3)
8605	.750 (19.1)	.125 (3.2)	.921 (23.4)	.406 (10.3)
8606	.875 (22.2)	.125 (3.2)	1.015 (25.8)	.453 (11.5)
8607	1.000 (25.4)	.125 (3.2)	1.203 (30.6)	.453 (11.5)
8608	1.125 (28.6)	.125 (3.2)	1.218 (30.9)	.453 (11.5)
8609	1.250 (31.8)	.125 (3.2)	1.375 (34.9)	.453 (11.5)
8610	1.375 (34.9)	.125 (3.2)	1.500 (38.1)	.453 (11.5)
8611	1.500 (38.1)	.125 (3.2)	1.671 (42.4)	.453 (11.5)

NYLON VENT PLUGS

Used to cover chassis holes while allowing air flow for ventilation.

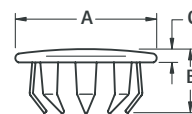


MATERIAL: Nylon 6/6, Matte Finish, Black

CAT. NO.	HOLE DIAMETER	PANEL THICKNESS	B	C
8612	.875 (22.2)	.125 (3.2)	1.015 (25.8)	.453 (11.5)
8613	1.000 (25.4)	.125 (3.2)	1.218 (30.9)	.453 (11.5)

STEEL HOLE PLUGS

Excellent spring retention. Plugs will cover chassis holes, wiring outlets, access holes or unused openings.



MATERIAL: Steel, Nickel Plate

CAT. NO.	HOLE DIAMETER	PANEL THICKNESS	A	B	C	PRONGS
7600	.250 (6.4)	.031-.062 (.81-1.57)	.406 (10.3)	.234 (5.9)	.062 (1.57)	6
7601	.312 (7.9)	.047-.078 (1.19-1.98)	.437 (11.1)	.250 (6.4)	.062 (1.57)	6
7602	.375 (9.5)	.047-.062 (1.19-1.57)	.500 (12.7)	.234 (5.9)	.062 (1.57)	6
7603	.500 (12.7)	.031-.062 (.81-1.57)	.656 (16.7)	.281 (7.1)	.078 (1.98)	8
7604	.625 (15.9)	.062-.093 (1.57-2.36)	.812 (20.6)	.296 (7.5)	.078 (1.98)	8
7605	.750 (19.1)	.062-.093 (1.5-2.36)	.921 (23.4)	.296 (7.5)	.078 (1.98)	12
7606	.875 (22.2)	.062-.093 (1.57-2.36)	1.062 (27.0)	.296 (7.5)	.062 (1.57)	12
7607	1.000 (25.4)	.062-.156 (1.57-3.9)	1.140 (29.0)	.328 (8.3)	.093 (2.36)	12
7608	1.125 (28.6)	.031-.125 (.79-3.2)	1.312 (33.3)	.343 (8.7)	.093 (2.36)	12
7609	1.250 (31.8)	.062-.093 (1.57-2.36)	1.437 (36.5)	.343 (8.7)	.093 (2.36)	12
7610	1.375 (34.9)	.031-.125 (.79-3.2)	1.562 (39.7)	.406 (10.3)	.078 (1.98)	12
7611	1.500 (38.1)	.031-.062 (.79-1.57)	1.640 (41.7)	.406 (10.3)	.093 (2.36)	12

RECESSED BUMPERS

Provides excellent traction and shock absorbing qualities. available with or without Mold-In Washers.



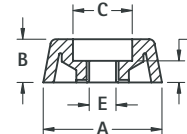
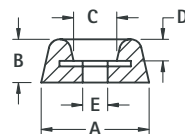
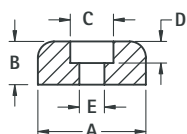
FIG. 1



FIG. 2 Mold-In Washer



FIG. 3 Mold-In Washer



MATERIAL: Rubber, BUNA S (Figs. 1 & 2), Thermoplastic (Fig. 3)

CAT. NO.	FIG.	A	B	C	D	E	SCREW SIZE
720	1	.500 (12.7)	.250 (6.4)	.250 (6.4)	.187 (4.7)	.125 (3.2)	# 4
721	1	.625 (15.9)	.312 (7.9)	.250 (6.4)	.187 (4.7)	.125 (3.2)	# 4
722	1	.718 (18.2)	.437 (11.1)	.250 (6.4)	.218 (5.5)	.125 (3.2)	# 4
723	2	.937 (23.8)	.375 (9.5)	.375 (9.5)	.187 (4.7)	.187 (4.7)	# 8
724*	3	.687 (17.4)	.250 (6.4)	.343 (8.7)	.125 (3.2)	.155 (3.9)	# 6
725*	3	.875 (22.2)	.312 (7.9)	.406 (10.3)	.125 (3.2)	.187 (4.7)	# 8
726*	3	1.062 (27.0)	.437 (11.1)	.468 (11.9)	.234 (5.9)	.200 (5.1)	# 10
727	3	.562 (14.3)	.375 (9.5)	.218 (5.5)	.187 (4.7)	.115 (2.9)	# 4
728	3	.750 (19.1)	.437 (11.1)	.265 (6.7)	.250 (6.4)	.148 (3.8)	# 6
729	3	.937 (23.8)	.625 (15.9)	.359 (9.1)	.297 (7.5)	.174 (4.4)	# 8

* Gray, All Others Black

SELF-LOCKING BUMPER FOOT

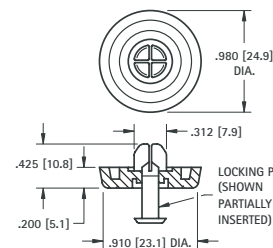


- A unique easy-to-install self-locking bumper foot
- Two piece assembly, furnished pre-assembled
- Vibration absorbing and skid resistant
- Mounts without screws or tools

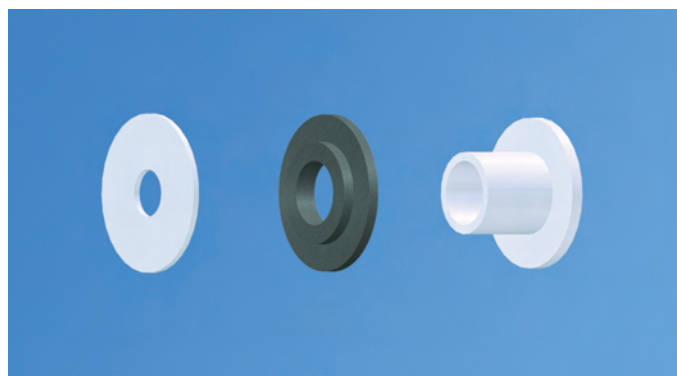
Recommended Mounting Hole: .305 (7.8) diameter

MATERIAL:

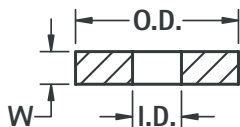
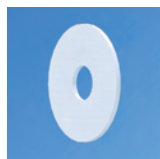
Foot: Santoprene, Black **Pin:** Polypropylene, Black



CAT. NO. 717



FLAT WASHERS - NYLON & FIBRE



MATERIAL:

Fibre: Commercial Grade per ASTM D710

Nylon: Grade 6/6 per ASTM D4066

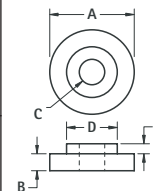
MATERIAL	I.D.	O.D.	W THICKNESS		
			.032 (8.1)	.047 (1.19)	.062 (1.57)
FIBRE	.098 (2.49) #2	.187 (4.8)	3111	3148	3366
		.250 (6.4)	3112	3149	3367
		.312 (7.9)	3113	3150	3194
NYLON	.098 (2.49) #2	.187 (4.8)	3114	3151	3356
		.250 (6.4)	3347*	3152	3357*
		.312 (7.9)	3115	3153	3195
FIBRE	.120 (3.05) #4	.250 (6.4)	3116	3154	3368
		.312 (7.9)	348	3155	3196
		.375 (9.5)	3117	3156	3197
NYLON	.120 (3.05) #4	.250 (6.4)	3348	345	3358
		.312 (7.9)	3359	3157	3198
		.375 (9.5)	3118	3158	3200
FIBRE	.140 (3.56) #6	.250 (6.4)	3119	3159	3369
		.312 (7.9)	3120	3160	3370
		.375 (9.5)	3121	3161	3201
NYLON	.140 (3.56) #6	.250 (6.4)	3122	3162	3360
		.312 (7.9)	3349	346	3361
		.375 (9.5)	3123	3163	3202
FIBRE	.171 (4.34) #8	.312 (7.9)	3124	3164	3203
		.375 (9.5)	3125	3165	3372
		.437 (11.1)	3126	3166	3204
NYLON	.171 (4.34) #8	.312 (7.9)	3127	3167	3205
		.375 (9.5)	3350	3168	3363
		.437 (11.1)	3128	3169	3206
FIBRE	.196 (4.98) #10	.312 (7.9)	349	3170	3207
		.375 (9.5)	3129	3171	3208
		.437 (11.1)	3130	3172	3209
NYLON	.196 (4.98) #10	.500 (12.7)	3131	3173	3210
		.312 (7.9)	3364	3174	3211
		.375 (9.5)	3352	3175	3212
FIBRE	.260 (6.60) .250-20	.437 (11.1)	3132	3176	3213
		.500 (12.7)	3133	3177	3214
		.437 (11.1)	3134	3178	3215
NYLON	.260 (6.60) .250-20	.500 (12.7)	3135	3179	3373
		.625 (15.9)	3136	3180	3216
		.750 (19.1)	3137	3181	3217
FIBRE	.385 (9.65) .375-24	.437 (11.1)	3138	3182	3218
		.500 (12.7)	3353	3183	3365
		.625 (15.9)	3139	3184	3219
NYLON	.385 (9.65) .375-24	.750 (19.1)	3140	3185	3220
		.500 (12.7)	3141	3186	3221
		.625 (15.9)	3142	3187	3222
FIBRE	.385 (9.65) .375-24	.750 (19.1)	3143	3188	3223
		1.000 (25.4)	3144	3189	3224
NYLON	.385 (9.65) .375-24	.500 (12.7)	3145	3190	3225
		.625 (15.9)	3354	3191	3226
		.750 (19.1)	3146	3192	3227
FIBRE	.385 (9.65) .375-24	.750 (19.1)	3147	3193	3228

* .090 (2.3) I.D.

FIBRE SHOULDER WASHERS

MATERIAL: Fibre, Commercial Grade per ASTM D710

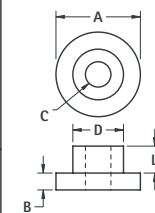
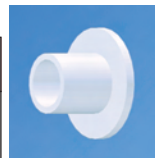
CAT. NO.	L	A	B	C	D	SCREW SIZE
3229	.025 (.64)	.250 (6.4)	.047 (1.2)	.093 (2.4)	.123 (3.1)	#2
3061	.025 (.64)	.250 (6.4)	.047 (1.2)	.093 (2.4)	.156 (4.0)	
344	.015 (.38)	.312 (7.9)	.062 (1.57)	.125 (3.2)	.203 (5.2)	#4
343	.025 (.64)	.312 (7.9)	.062 (1.57)	.125 (3.2)	.203 (5.2)	
3062	.031 (.79)	.250 (6.4)	.031 (.79)	.115 (2.9)	.187 (4.7)	
3230	.031 (.79)	.281 (7.1)	.062 (1.57)	.115 (2.9)	.175 (4.4)	
3231	.031 (.79)	.312 (7.9)	.062 (1.57)	.120 (3.1)	.180 (4.6)	#6
4698	.031 (.79)	.250 (6.4)	.062 (1.57)	.140 (3.6)	.187 (4.7)	
3064	.031 (.79)	.312 (7.9)	.062 (1.57)	.140 (3.6)	.187 (4.7)	
3232	.031 (.79)	.375 (9.5)	.062 (1.57)	.140 (3.6)	.210 (5.3)	
3233	.031 (.79)	.375 (9.5)	.062 (1.57)	.140 (3.6)	.240 (6.1)	
3234	.031 (.79)	.500 (12.7)	.062 (1.57)	.140 (3.6)	.240 (6.1)	
3065	.031 (.79)	.375 (9.5)	.062 (1.57)	.170 (4.3)	.246 (6.2)	#8
3066	.031 (.79)	.417 (10.6)	.062 (1.57)	.170 (4.3)	.210 (5.3)	
3235	.031 (.79)	.312 (7.9)	.062 (1.57)	.170 (4.3)	.218 (5.5)	
3236	.031 (.79)	.375 (9.5)	.062 (1.57)	.170 (4.3)	.215 (5.5)	
3237	.031 (.79)	.500 (12.7)	.062 (1.57)	.170 (4.3)	.240 (6.1)	
4702	.031 (.79)	.375 (9.5)	.062 (1.57)	.194 (4.9)	.308 (7.8)	#10
3238	.031 (.79)	.375 (9.5)	.062 (1.57)	.194 (4.9)	.240 (6.1)	
3239	.031 (.79)	.500 (12.7)	.062 (1.57)	.196 (5.0)	.240 (6.1)	
4711	.031 (.79)	.500 (12.7)	.062 (1.57)	.253 (6.4)	.308 (7.8)	
3240	.031 (.79)	.625 (15.9)	.062 (1.57)	.265 (6.7)	.359 (9.1)	.250-20
3069	.031 (.79)	.625 (15.9)	.062 (1.57)	.385 (9.8)	.498 (12.6)	.375-24
3241	.031 (.79)	.750 (19.1)	.062 (1.57)	.385 (9.8)	.498 (12.6)	



NYLON SHOULDER WASHER/BUSHINGS

MATERIAL: Nylon 6/6 per ASTM D4066

CAT. NO.	L	A	B	C	D	SCREW SIZE
7680	.025 (.64)	.260 (6.6)	.030 (.76)	.095 (2.4)	.154 (3.9)	#2
3051	.125 (3.2)	.181 (4.6)	.047 (1.2)	.090 (2.3)	.120 (3.1)	
3101	.187 (4.8)	.181 (4.6)	.047 (1.2)	.090 (2.3)	.120 (3.1)	
3052	.250 (6.4)	.181 (4.6)	.047 (1.2)	.090 (2.3)	.120 (3.1)	
3049	.031 (.79)	.218 (5.5)	.040 (1.0)	.115 (2.9)	.135 (3.4)	#4
7681	.047 (1.2)	.250 (6.4)	.032 (.81)	.115 (2.9)	.185 (4.7)	
3053	.093 (2.4)	.235 (6.0)	.047 (1.2)	.115 (2.9)	.145 (3.7)	
3102	.125 (3.2)	.235 (6.0)	.047 (1.2)	.115 (2.9)	.145 (3.7)	
3103	.187 (4.7)	.235 (6.0)	.047 (1.2)	.115 (2.9)	.145 (3.7)	
340	.250 (6.4)	.235 (6.0)	.047 (1.2)	.115 (2.9)	.145 (3.7)	
7682	.032 (.81)	.385 (9.8)	.062 (1.57)	.145 (3.7)	.240 (6.1)	#6
7683	.032 (.81)	.250 (6.4)	.062 (1.57)	.140 (3.6)	.187 (4.7)	
7684	.032 (.81)	.312 (7.9)	.062 (1.57)	.140 (3.6)	.187 (4.7)	
3054	.125 (3.2)	.290 (7.4)	.047 (1.19)	.140 (3.6)	.170 (4.3)	
3104	.187 (4.7)	.290 (7.4)	.047 (1.19)	.140 (3.6)	.170 (4.3)	
341	.250 (6.4)	.290 (7.4)	.047 (1.19)	.140 (3.6)	.170 (4.3)	
3055	.500 (12.7)	.290 (7.4)	.047 (1.19)	.140 (3.6)	.170 (4.3)	#8
7685	.032 (.81)	.375 (9.5)	.032 (.81)	.171 (4.3)	.250 (6.4)	
3056	.140 (3.6)	.344 (8.7)	.062 (1.57)	.171 (4.3)	.205 (5.2)	
3105	.250 (6.4)	.344 (8.7)	.062 (1.57)	.171 (4.3)	.205 (5.2)	
342	.375 (9.5)	.344 (8.7)	.062 (1.57)	.171 (4.3)	.205 (5.2)	
3106	.500 (12.7)	.344 (8.7)	.062 (1.57)	.171 (4.3)	.205 (5.2)	
7686	.032 (.81)	.375 (9.5)	.062 (1.57)	.196 (5.0)	.308 (7.8)	#10
3107	.093 (2.36)	.438 (11.1)	.062 (1.57)	.200 (5.1)	.260 (6.6)	
3108	.250 (6.4)	.399 (10.1)	.062 (1.57)	.200 (5.1)	.260 (6.6)	
3057	.500 (12.7)	.399 (10.1)	.062 (1.57)	.200 (5.1)	.260 (6.6)	
3058	.750 (19.1)	.399 (10.1)	.062 (1.57)	.200 (5.1)	.260 (6.6)	.250-20
7687	.032 (.81)	.437 (11.1)	.032 (.81)	.253 (6.4)	.310 (7.9)	
7688	.078 (1.98)	.492 (12.7)	.032 (.81)	.260 (6.7)	.312 (7.9)	
3059	.187 (4.7)	.513 (13.0)	.062 (1.57)	.260 (6.7)	.312 (7.9)	
3109	.250 (6.4)	.513 (13.0)	.062 (1.57)	.260 (6.7)	.312 (7.9)	
3110	.375 (9.5)	.513 (13.0)	.062 (1.57)	.260 (6.7)	.312 (7.9)	
3060	.500 (12.7)	.513 (13.0)	.062 (1.57)	.260 (6.7)	.312 (7.9)	



SLOTTED MACHINE SCREWS

Suited for a variety of fastening applications to assure firm, electrical and mechanical connections. Flat Head styles for use where fasteners cannot protrude above mating surfaces. Pan Head style to replace round head type for cosmetic enhancement and smooth surface area uses.

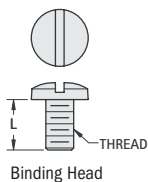
For Metric Hardware Refer to page 55.

MATERIAL:

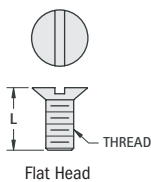
Nylon 6/6 (RoHS Compliant)

Steel, Zinc Plate (Non-RoHS Compliant)

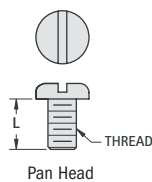
Note: RoHS Compliant finishes available on special order



Binding Head



Flat Head



Pan Head

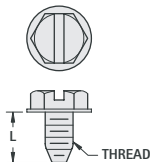
THREAD	LENGTH	BINDING HEAD		FLAT HEAD		PAN HEAD	
		STEEL CAT. NO.	NYLON CAT. NO.	STEEL CAT. NO.	NYLON CAT. NO.	STEEL CAT. NO.	NYLON CAT. NO.
2-56	.250 (6.4)	9455	—	9555	—	9355	—
	.500 (12.7)	9456	—	9556	—	9356	—
	.750 (19.1)	9457	—	9557	—	9357	—
4-40	.250 (6.4)	9400	9427	9500	9527	9300	9327
	.375 (9.5)	9401	9428	9501	9528	9301	9328
	.500 (12.7)	9402	9429	9502	9529	9302	9329
	.625 (15.9)	9403	9430	9503	9530	9303	9330
	.750 (19.1)	9404	9431	9504	9531	9304	9331
	1.000 (25.4)	9405	9432	9505	9532	9305	9332
6-32	.187 (4.7)	9406	9433	9506	9533	9306	9333
	.250 (6.4)	9407	9434	9507	9534	9307	9334
	.375 (9.5)	9408	9435	9508	9535	9308	9335
	.500 (12.7)	9409	9436	9509	9536	9309	9336
	.625 (15.9)	9410	9437	9510	9537	9310	9337
	.750 (19.1)	9411	9438	9511	9538	9311	9338
	1.000 (25.4)	9412	9439	9512	9539	9312	9339
	1.250 (31.8)	9413	9440	9513	9540	9313	9340
	2.000 (50.8)	9414	9441	9514	9541	9314	9341
8-32	.250 (6.4)	9416	9443	9516	9543	9316	9343
	.375 (9.5)	9417	9444	9517	9544	9317	9344
	.500 (12.7)	9418	9445	9518	9545	9318	9345
	.625 (15.9)	9419	9446	9519	9546	9319	9346
	.750 (19.1)	9420	9447	9520	9547	9320	9347
	1.000 (25.4)	9421	9448	9521	9548	9321	9348
	1.250 (31.8)	9422	9449	9522	9549	9322	9349
10-32	.500 (12.7)	9423	9450	9523	9550	9323	9350
	.750 (19.1)	9424	9451	9524	9551	9324	9351
	1.000 (25.4)	9425	9452	9525	9552	9325	9352
	1.500 (38.1)	9426	9453	9526	9553	9326	9353

SELF TAPPING SCREWS



- Slotted drive, hex head

Highly versatile screw, used in wood, fiberglass and metal where machine thread inserts are not furnished.



THREAD	LENGTH	CAT. NO.
No. 4	.375 (9.5)	9575
No. 6	.375 (9.5)	9576
	.500 (12.7)	9577
No. 8	.375 (9.5)	9578
	.500 (12.7)	9579
No. 10	.375 (9.5)	9580
	.500 (12.7)	9581

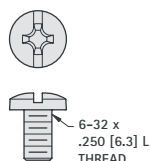
MATERIAL: Steel, Zinc Plate (Non-RoHS Compliant)

Note: RoHS Compliant finishes available on special order

BINDING HEAD SCREWS - COLORED HEAD



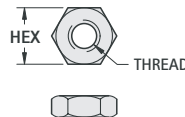
- Ideal for applications where visual identification is critical
- Combination drive makes repairs easier
- Screws available preinstalled into terminals (Refer to pages 54 and 55)



HEAD COLOR	CAT. NO.
RED	9190-2
BLACK	9190-3
WHITE	9190-4
BLUE	9190-5
GREEN	9190-6
YELLOW	9190-7
NICKEL	8190-1

MATERIAL: Brass, Nickel Plate with Painted Color Head

HEX MACHINE SCREW NUTS



MATERIAL:

Nylon 6/6 (RoHS Compliant)

Steel, Zinc Plate (Non-RoHS Compliant)

Note: RoHS Compliant finishes available on special order

STEEL CAT. NO.	NYLON CAT. NO.	HEX	THREAD
4694	—	.187 (4.7)	4-40
9600	9605	.250 (6.4)	6-32
4701	—	.250 (6.4)	
9602	9606	.312 (7.9)	8-32
9603	—	.250 (6.4)	
9604	9607	.312 (7.9)	10-32
4705	9608	.375 (9.5)	
4713	—	.430 (10.9)	.250-28
4716	—	.500 (12.7)	.312-24

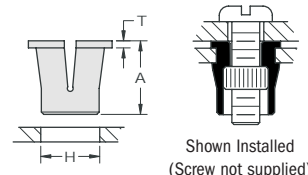
BLIND CAPTIVE NUTS - PRESS FIT

MOUNT CHASSIS, PANELS, HEAT SINKS, SOCKETS

- Easy Assembly • Dampens Vibration
- Eliminates Insulating Washer • Hi-Dielectric Strength



A unique reusable fastener made of NYLON which contains a threaded brass nut. Finger pressure or light tap seals it in a pre-drilled hole. The nut is drawn up causing a Nylon bulge behind the workpiece. Screw may be removed or replaced.



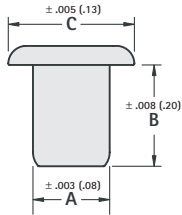
Shown Installed
(Screw not supplied)

MATERIAL: Molded Nylon with Brass threaded insert

CAT. NO.	THREAD	H HOLE SIZE REQ'D.	IDEAL SHEET THICKNESS	A	T
4341	4-40	.250 (6.4)	.047 (1.2)	.312 (7.9)	.030 (.76)
4342	6-32	.312 (7.9)	.078 (1.9)	.375 (9.5)	.030 (.76)
4343	8-32	.406 (10.3)	.093 (2.4)	.500 (12.7)	.030 (.76)



A choice of the most popular sizes in use for PC board and electronic assembly applications.

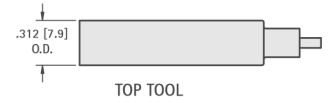


MATERIAL: Brass, Bright Electro Tin, MIL-T-10727. Other platings can be furnished.

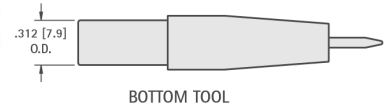
CAT. NO.	A OUTSIDE DIAMETER BARREL	B LENGTH UNDER FLANGE	C FLANGE DIAMETER	MTG. HOLE SIZE	STAKING TOOL CAT. NO.
22		.062 (1.57)			
23		.093 (2.36)			
24	.059 (1.49) O.D.	.125 (3.18)	.105 (2.7)	.062 (1.57) USE DRILL #51	3075
25	.045 (1.14) I.D.	.156 (3.96)			
26		.187 (4.75)			
27		.219 (5.56)			
33		.093 (2.36)			
34	.089 (2.26) O.D.	.125 (3.18)	.150 (3.8)	.093 (2.36) USE DRILL #42	3076
35	.070 (1.78) I.D.	.156 (3.96)			
36		.187 (4.75)			
37		.219 (5.56)			
43		.093 (2.36)			
44	.121 (3.07) O.D.	.125 (3.18)	.200 (5.1)	.125 (3.18) USE DRILL #30	3077
45	.102 (2.59) I.D.	.156 (3.96)			
46		.187 (4.75)			
47		.219 (5.56)			
48		.250 (6.35)			

STAKING TOOLS

Set consisting of top and bottom tool. Made from Tool Steel and highly polished.



TOP TOOL

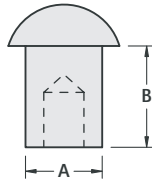


BOTTOM TOOL

SEMI-TUBULAR RIVETS



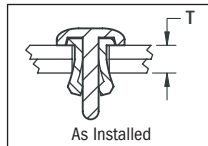
These standardized brass rivets typify the scope and variety of popular rivets that will provide faster and stronger assemblies at lower cost. We suggest you rivet and test a sample before purchasing large quantities for your application.



MATERIAL: Brass, Nickel Plate

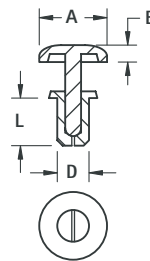
CAT. NO.	A SHANK DIAMETER	B LENGTH UNDER HEAD	HEAD DIAMETER TOL ± .005 (.13)	MTG. HOLE SIZE
3381	.058 (1.47) to	.125 (3.2)		
3382	.060 (1.55)	.156 (3.9)	.109 (2.8)	.067(1.70) Dia. USE DRILL #51
3383		.187 (4.8)		
3384		.156 (3.9)		
3385	.085 (2.16) to	.187 (4.8)	.147 (3.7)	.093 (2.36) Dia. USE DRILL #42
3386	.089 (2.26)	.218 (5.5)		
3387		.250 (6.4)		
3388		.156 (3.9)		
3389	.118 (2.99) to	.187 (4.8)	.218 (5.5)	.128 (3.25) Dia. USE DRILL #30
3390	.123 (3.12)	.218 (5.5)		
3391		.250 (6.4)		

SNAP RIVETS

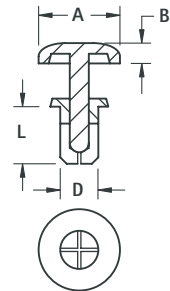


As Installed

DWG. 1



DWG. 2



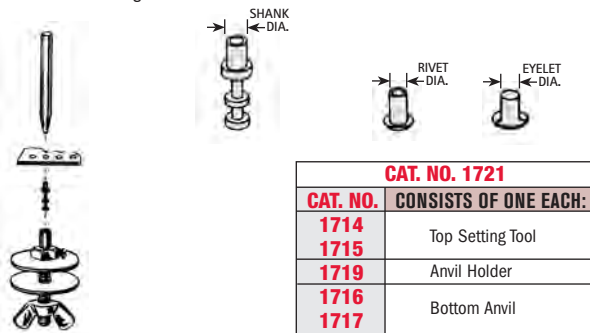
Attach panels and mounting hardware without any tooling. Leaves a clean cosmetic look once installed. Can be installed without access to underside. Removable so assembly can be easily repaired or upgraded.

CAT. NO.	DWG.	T PANEL THICKNESS	L RIVET LENGTH	D RIVET DIAMETER	A HEAD DIAMETER	B HEAD HEIGHT	MTG. HOLE SIZE
3440	1	.051/.079 (1.3/2.0)	.130 (3.3)	.076 (1.9)	.165 (4.2)	.047 (1.2)	.083/.087 (2.1/2.2)
3441	1	.083/.110 (2.1/2.8)	.160 (4.0)				
3442	1	.114/.142 (2.9/3.6)	.190 (4.8)				
3443	2	.118/.157 (3.0/4.0)	.220 (5.6)	.138 (3.5)	.252 (6.4)	.063 (1.6)	.142/.146 (3.6/3.7)
3444	2	.146/.181 (3.7/4.6)	.240 (6.1)				
3445	2	.177/.217 (4.5/5.5)	.280 (7.1)				
3446	2	.217/.256 (5.5/6.5)	.310 (7.9)				
3447	2	.177/.217 (4.5/5.5)	.280 (7.1)	.158 (4.0)	.315 (8.0)	.071 (1.8)	.161/.165 (4.1/4.2)
3448	2	.217/.256 (5.5/6.5)	.310 (7.9)				
3449	2	.256/.295 (6.5/7.5)	.350 (9.0)				
3450	2	.295/.335 (7.5/8.5)	.390 (10.0)				

MATERIAL: Nylon 6/6, UL Rated 94V-2, Black

"BASIC" STAKING KIT

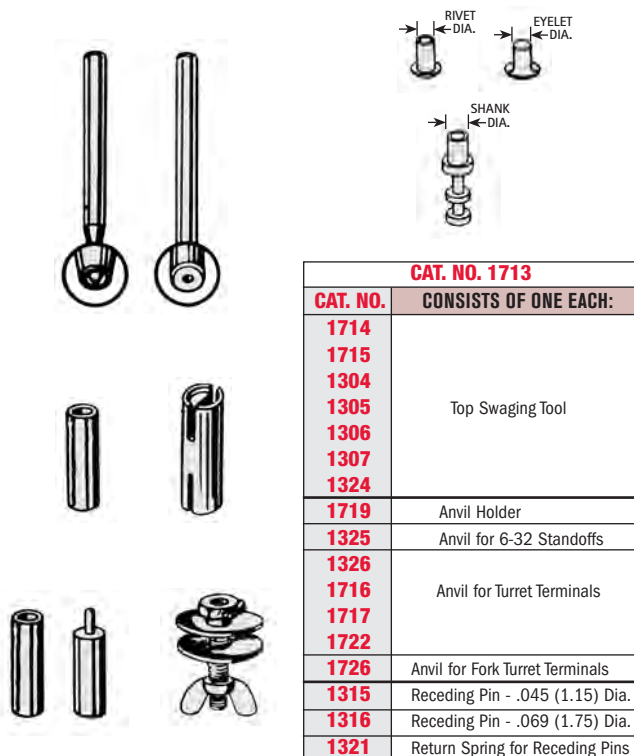
This kit provides the basic components needed to stake a majority of our most popular sizes of eyelets, rivets and terminals. The unskilled operator can produce professional looking assemblies quickly and with minimal training.



CAT. NO. 1721	
CAT. NO.	CONSISTS OF ONE EACH:
1714	Top Setting Tool
1715	Anvil Holder
1716	Bottom Anvil
1717	

"MASTER" STAKING KIT

This kit provides all of the components needed to stake most terminals, standoffs, eyelets or rivets. This kit also includes sprung receding pins so that eyelets can be prealigned for easy assembly of components.



CAT. NO. 1713	
CAT. NO.	CONSISTS OF ONE EACH:
1714	Top Swaging Tool
1715	
1304	
1305	
1306	
1307	
1324	
1719	Anvil Holder
1325	Anvil for 6-32 Standoffs
1326	Anvil for Turret Terminals
1716	
1717	
1722	Anvil for Fork Turret Terminals
1726	
1315	Receding Pin - .045 (1.15) Dia.
1316	Receding Pin - .069 (1.75) Dia.
1321	Return Spring for Receding Pins

INDIVIDUAL TOOLS

TOP SETTING TOOLS (Swager)

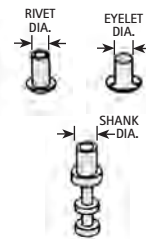
For Single End Terminals, Eyelets or Rivets

CAT. NO.	FOR SHANK DIA.
1714	.062 (1.57) to .098 (2.49)
1715	.110 (2.8) to .125 (3.2)

For Double End (Feed-Thru)

Hole in tool fits over Pin head and securely stakes the rivet part of terminal.

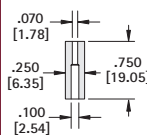
CAT. NO.	FOR PIN ON RIVET END
1304	.051 (1.30) Hole Dia.
1305	.063 (1.60) Hole Dia.
1306	.073 (1.85) Hole Dia.
1307	.086 (1.49) Hole Dia.
1324	.098 (2.49) Hole Dia.



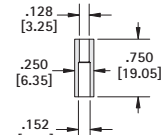
BOTTOM ANVILS

For Single End Terminals or Double End Terminals

Anvils have different size holes in each end therefore will accept 2 sizes of Pins of either Single or Double end Turret type Terminals.



CAT. NO.	HOLE ONE END	HOLE OTHER END
1722	.053 (1.35)	.065 (1.65)
1716	.070 (1.78)	.100 (2.54)
1717	.128 (3.25)	.152 (3.86)

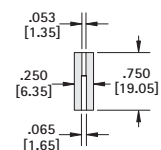


ANVILS FOR FORK TYPE TERMINALS

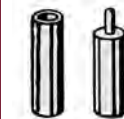
Accepts Diameter of 3/32 to 5/32 at one end and diameter of 3/16 other end .040 (1.0) slot one end and .060 (1.52) slot at other end.



CAT. NO. 1726



ANVILS FOR STANDOFF BUSHINGS



CAT. NO.	BUSHING SIZE
1326	Holds Bushing with 5/32" O.D.
1325	For Bushing with 6-32 Thread
1309	For Bushing with 4-40 Thread

TOOL HOLDERS



CAT. NO. 1719

Tool holders will hold all .250 (6.4) diameter anvils. May be used with receding pin and return spring to hold eyelets in place during the staking process.

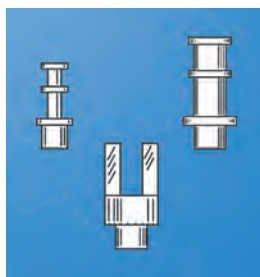
"IMPACT" STAKING KIT

All that is required to stake almost all swage components. Just press down and it stakes. Tools provided allow bench top staking without setting up arbor or drill press. Staking tool can be adjusted to provide heavy to light blows. Receding sprung pins can be assembled into anvil to locate eyelets for easy assembly of components.



CAT. NO. 1707	
CAT. NO.	CONSISTS OF ONE EACH:
TOOLS	
1302	Impact Handle
1301	Anvil Tool Holder
SWAGING TOOLS FOR SHANK DIAMETERS	
1312	.040 (1.02) to .072 (1.83)
1313	.078 (1.98) to .093 (2.36)
SWAGING TOOLS FOR DOUBLE ENDED TURRET	
1310	.053 (1.35) Diameter Hole
1311	.062 (1.57) Diameter Hole
ANVIL COMPONENTS	
1716	Anvil for Turret Terminals
1717	
1722	
1726	Anvil for Fork Turret Terminals
1315	Receding Pin - .045 (1.15) Dia.
1316	Receding Pin - .069 (1.75) Dia.
1321	Return Spring for Receding Pins

STYLES



- **Single, double and triple turrets**
- **Double-ended** (feed-thru)
- **Split-type** (fork)
- **Tubular** (hollow)
- Swage and thread mounting types available
- Bright Tin plated for extended shelf life and excellent solderability
- Wide variety of sizes to suit space and wire size requirements

SPECIFICATIONS

MATERIAL: Brass - Per ASTM-B16, Bright Electro-Tin per MIL-T-10727 Type 1. Other platings available upon request.

SPECIAL TERMINALS

Custom terminals can be manufactured to your specifications. Complete facilities available to meet your production requirements. Quotations on special terminals furnished promptly upon receipt of sample, sketch or print.

CUSTOM BUILT TERMINAL BOARDS

We are specialists in the assembly of terminals, eyelets, clips and special hardware. Quotations on special terminal boards furnished promptly upon receipt of sample, sketch or print. Assembly service using customer supplied materials also available. (Refer to pages 130-132 for standard terminal boards.)

ORDERING INFORMATION

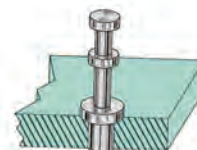
Keystone standardized terminals are available for various board thicknesses.

To specify a terminal, select the "CAT. NO." and "DASHED NUMBER" that corresponds with the board thickness to be used.

DASH NUMBERS (Board Thicknesses)

- 1 for .032 (.81) thick Board
- 2 for .062 (1.57) thick Board
- 3 for .093 (2.36) thick Board
- 4 for .125 (3.2) thick Board

Example: 1503-1 for .032 (.81) thick Board
1503-2 for .062 (1.57) thick Board



STAKING TOOLS

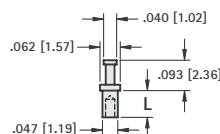
For easy mounting of terminals to insulators and PC boards. Standard and "special order" staking tools are available. Cat. No. "TL" designates a tool consisting of a TOP STAKING PUNCH and a BOTTOM ANVIL. Manufactured from steel with zinc plate. Punch and anvil are precision machined and hardened to insure long life. Refer to page 125.

CUSTOM BUILT STAKING TOOLS

Custom prototype and production staking tools can be furnished for Single-End, Double-End, Fork Terminals, Extruded Lugs, Eyelets, Rivets, etc. Contact our Engineering Department for details.

SINGLE, DOUBLE & TRIPLE TURRET

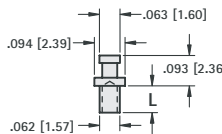
1528



Staking Tool Special Order

CAT. NO.	L
1528-1	.051 (1.30)
1528-2	.082 (2.08)
1528-3	.113 (2.8)
1528-4	.145 (3.6)

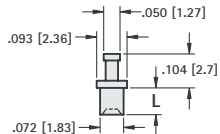
1508



Staking Tool No. TL-1

CAT. NO.	L
1508-1	.053 (1.35)
1508-2	.084 (2.13)
1508-3	.115 (2.9)
1508-4	.147 (3.7)

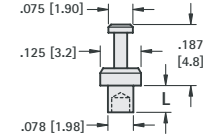
1572



Staking Tool No. TL-1

CAT. NO.	L
1572-1	.051 (1.30)
1572-2	.082 (2.08)
1572-3	.113 (2.8)
1572-4	.145 (3.6)

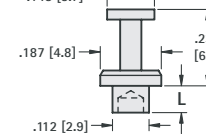
1520



Staking Tool No. TL-2

CAT. NO.	L
1520-1	.078 (1.98)
1520-2	.109 (2.8)
1520-3	.141 (3.5)
1520-4	.172 (4.4)

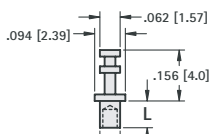
1532



Staking Tool No. TL-8

CAT. NO.	L
1532-1	.078 (1.98)
1532-2	.109 (2.8)
1532-3	.141 (3.5)
1532-4	.172 (4.4)

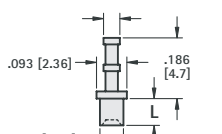
1593



Staking Tool No. TL-1

CAT. NO.	L
1593-1	.054 (1.37)
1593-2	.084 (2.13)
1593-3	.115 (2.9)
1593-4	.147 (3.7)

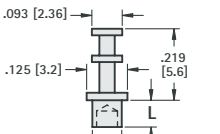
1573



Staking Tool No. TL-1

CAT. NO.	L
1573-1	.051 (1.30)
1573-2	.082 (2.08)
1573-3	.113 (2.8)
1573-4	.145 (3.6)

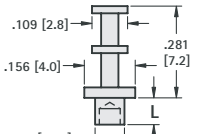
1502



Staking Tool No. TL-2

CAT. NO.	L
1502-1	.078 (1.98)
1502-2	.109 (2.8)
1502-3	.141 (3.5)
1502-4	.172 (4.4)

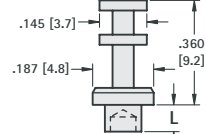
1514



Staking Tool No. TL-5

CAT. NO.	L
1514-1	.078 (1.98)
1514-2	.109 (2.8)
1514-3	.141 (3.5)
1514-4	.172 (4.4)

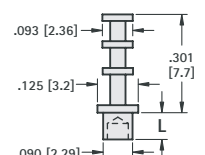
1503



Staking Tool No. TL-8

CAT. NO.	L
1503-1	.078 (1.98)
1503-2	.109 (2.8)
1503-3	.141 (3.5)
1503-4	.172 (4.4)

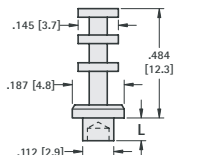
1598



Staking Tool No. TL-2

CAT. NO.	L
1598-1	.062 (1.57)
1598-2	.094 (2.39)
1598-3	.125 (3.2)
1598-4	.156 (3.9)

1527

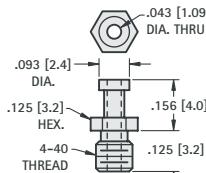


Staking Tool No. TL-8

CAT. NO.	L
1527-1	.078 (1.98)
1527-2	.109 (2.8)
1527-3	.141 (3.5)
1527-4	.172 (4.4)

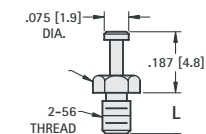
THREADED TURRETS

1563



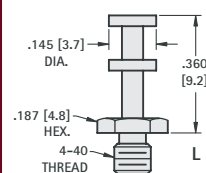
CAT. NO. 1563

1595

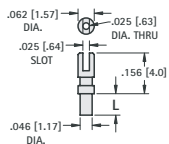


CAT. NO.	L
1595-1	.093 (2.36)
1595-2	.125 (3.2)
1595-3	.188 (4.8)

1587

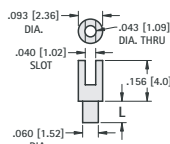


CAT. NO.	L
1587-1	.125 (3.2)
1587-2	.188 (4.8)

1515


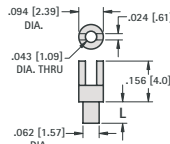
Staking Tool Special Order

CAT. NO.	L
1515-1	.051 (1.30)
1515-2	.082 (2.08)
1515-3	.113 (2.8)
1515-4	.145 (3.6)

1533


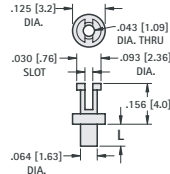
Staking Tool Special Order

CAT. NO.	L
1533-2	.084 (2.13)
1533-3	.115 (2.9)
1533-4	.147 (3.7)

1526


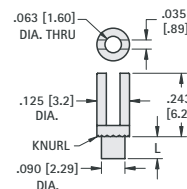
Staking Tool No. TL-3

CAT. NO.	L
1526-1	.054 (1.37)
1526-2	.084 (2.13)
1526-3	.115 (2.9)
1526-4	.147 (3.7)

1592


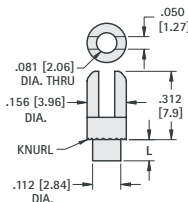
Staking Tool No. TL-2

CAT. NO.	L
1592-1	.051 (1.30)
1592-2	.082 (2.08)
1592-3	.113 (2.8)
1592-4	.145 (3.6)

1511


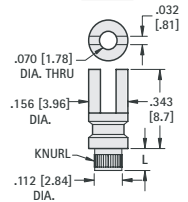
Staking Tool No. TL-3

CAT. NO.	L
1511-2	.109 (2.8)
1511-3	.141 (3.5)
1511-4	.172 (4.4)

1510


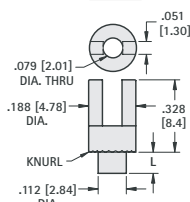
Staking Tool No. TL-9

CAT. NO.	L
1510-2	.109 (2.8)
1510-3	.141 (3.5)
1510-4	.172 (4.4)

1525


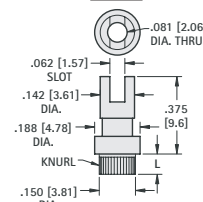
Staking Tool No. TL-9

CAT. NO.	L
1525-2	.109 (2.8)
1525-3	.141 (3.5)
1525-4	.172 (4.4)

1507


Staking Tool Special Order

CAT. NO.	L
1507-2	.109 (2.8)
1507-3	.141 (3.5)
1507-4	.172 (4.4)

1557


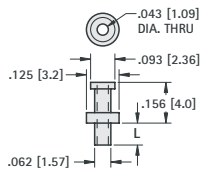
Staking Tool No. TL-9

CAT. NO.	L
1557-2	.109 (2.8)
1557-3	.141 (3.5)
1557-4	.172 (4.4)

SPECIAL TURRET TERMINALS

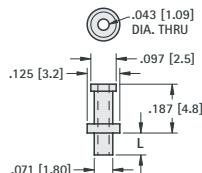
Custom turret terminals can be machined to your exact specifications. Standard and special terminals can be staked onto special boards. Please email/fax your design to our Engineering Department.

TUBULAR TURRETS

1562


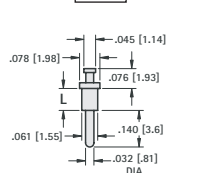
Staking Tool No. TL-2

CAT. NO.	L
1562-1	.054 (1.37)
1562-2	.084 (2.13)
1562-3	.115 (2.9)
1562-4	.147 (3.7)

1559


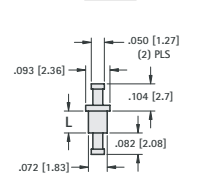
Staking Tool No. TL-2

CAT. NO.	L
1559-1	.062 (1.57)
1559-2	.094 (2.39)
1559-3	.125 (3.2)
1559-4	.156 (3.9)

1633


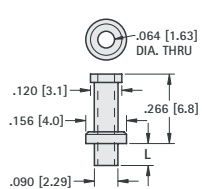
Staking Tool Special Order

CAT. NO.	L
1633-1	.051 (1.30)
1633-2	.082 (2.08)
1633-3	.113 (2.8)
1633-4	.145 (3.6)

1574


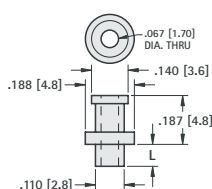
Staking Tool No. TL-4

CAT. NO.	L
1574-1	.051 (1.30)
1574-2	.082 (2.08)
1574-3	.113 (2.8)
1574-4	.145 (3.6)

1540


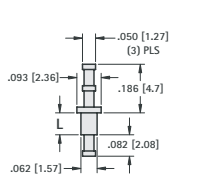
Staking Tool No. TL-5

CAT. NO.	L
1540-2	.109 (2.8)
1540-3	.141 (3.5)
1540-4	.172 (4.4)

1519


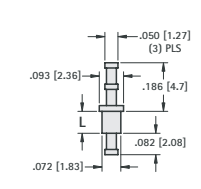
Staking Tool No. TL-8

CAT. NO.	L
1519-1	.078 (1.98)
1519-2	.109 (2.8)
1519-3	.141 (3.5)
1519-4	.172 (4.4)

1613


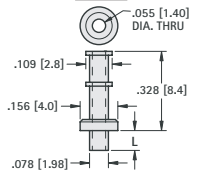
Staking Tool No. TL-4

CAT. NO.	L
1613-1	.051 (1.30)
1613-2	.082 (2.08)
1613-3	.113 (2.8)
1613-4	.145 (3.6)

1575


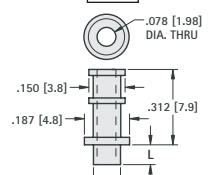
Staking Tool No. TL-4

CAT. NO.	L
1575-1	.051 (1.30)
1575-2	.082 (2.08)
1575-3	.113 (2.8)
1575-4	.145 (3.6)

1582


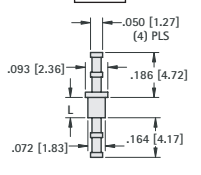
Staking Tool No. TL-5

CAT. NO.	L
1582-1	.075 (1.91)
1582-2	.105 (2.7)
1582-3	.135 (3.4)
1582-4	.165 (4.2)

1509


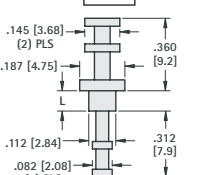
Staking Tool No. TL-8

CAT. NO.	L
1509-1	.078 (1.98)
1509-2	.109 (2.8)
1509-3	.141 (3.5)
1509-4	.172 (4.4)

1583


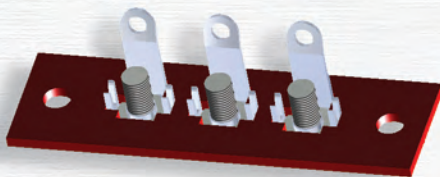
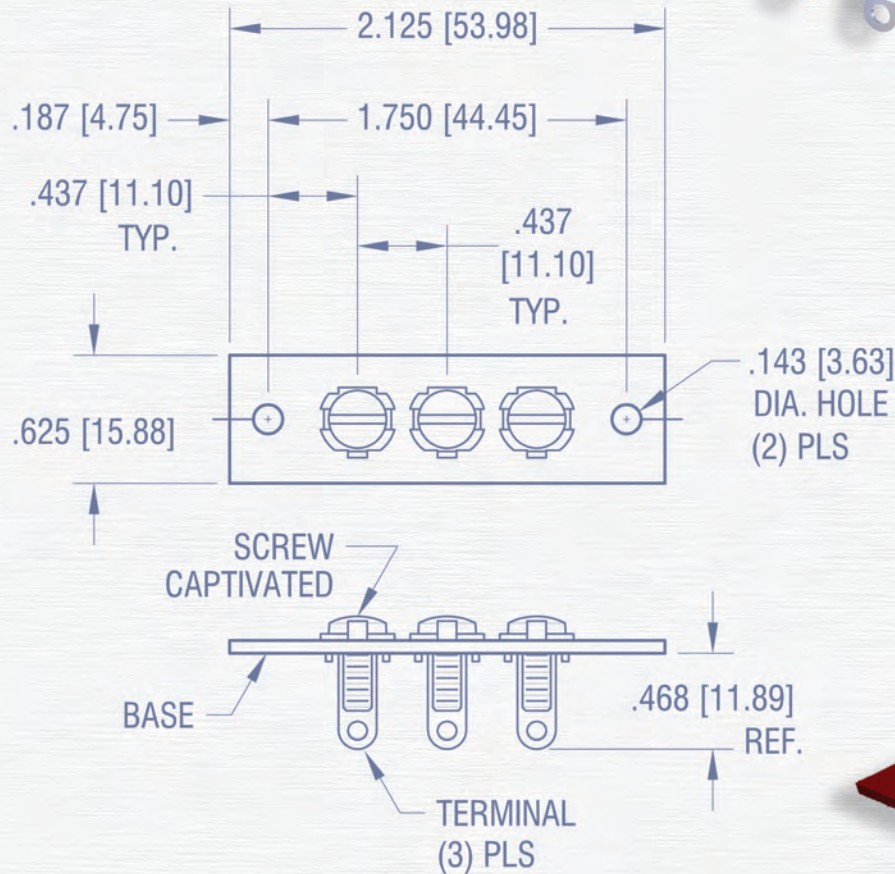
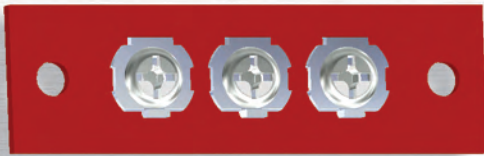
Staking Tool No. TL-4

CAT. NO.	L
1583-1	.051 (1.30)
1583-2	.082 (2.08)
1583-3	.113 (2.8)
1583-4	.145 (3.6)

1545


Staking Tool No. TL-12

CAT. NO.	L
1545-2	.105 (2.7)
1545-3	.135 (3.4)
1545-4	.165 (4.2)



TERMINAL BOARDS & STRIPS

We have a complete selection of terminal boards in standard and miniature styles. Scored turret terminal and bread board style boards, heavy duty, standard and military style binding post strips and boards fabricated from materials such as phenolic, fiberglass and fibre board for applications including:

- Point-to-point wiring inside of tube equipment
- Connection support for transistors, resistors and small components
- For Module stacks
- High Density component patterns
- Commercial and Military specifications
- Cost savings vs custom boards

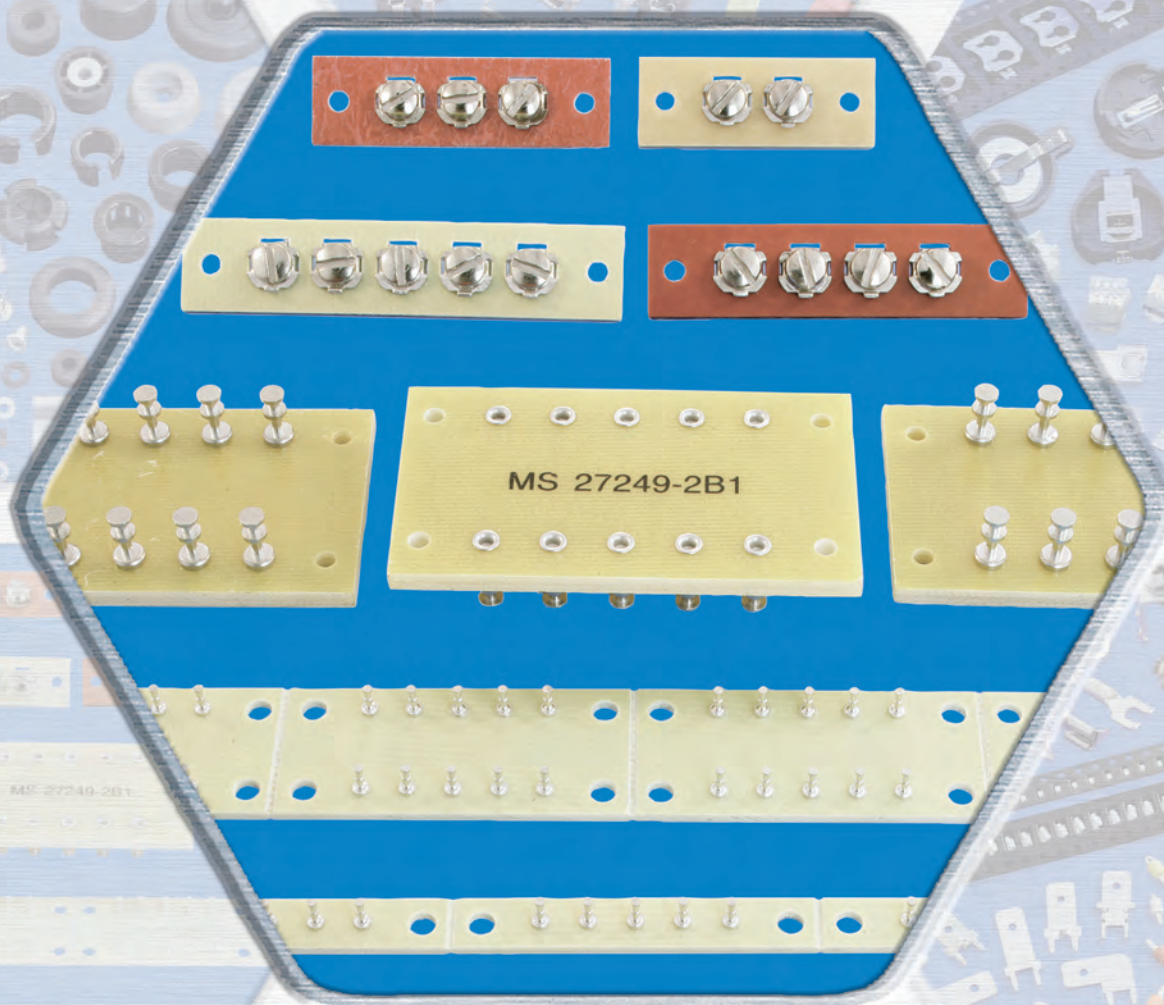
Our quality system is ISO 9001:2000 certified. Our products are in compliance with the RoHS directive. We provide 3D modeling, CAD and other application-engineering support for modifications, special designs or assembly requirements to assist you in choosing the right Keystone product for your application.

DATE

DESCRIPTION

REV.

TERMINAL BOARDS & STRIPS



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STRIPS

Binding Post Strips	133
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Terminal Strips	133

TERMINAL BOARDS

Military Terminal Boards	131
Turret Terminal Boards ...	130-132

SCORED TURRET TERMINAL BOARDS

Cut your production cost by eliminating the tooling and setup charge usually applied to non-standardized boards. Terminals are securely staked and tinned for easy soldering.

MATERIAL: Choice of either PBE or GEE.

PBE: Paper base electrical, MIL-1-24768/20, Type XP natural, Temp. 250°F (121°C) max.

GEE: Glass epoxy, MIL-1-24768/27, Type G-10, Temp. 300°F (121°C) max.

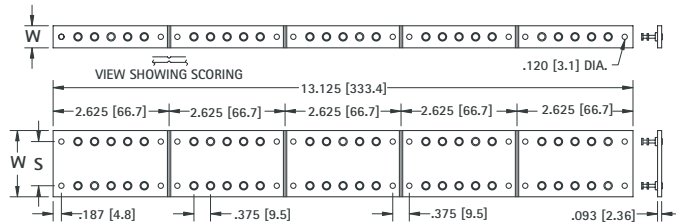
Terminals: Brass, ASTM-B16, Tin Plate, MIL-T-10727. Other platings can be furnished.

MODIFICATIONS

Boards can be modified with other materials or terminals of your choice. Marking can also be added. Quotations upon request.



STANDARD TURRET TERMINAL BOARDS

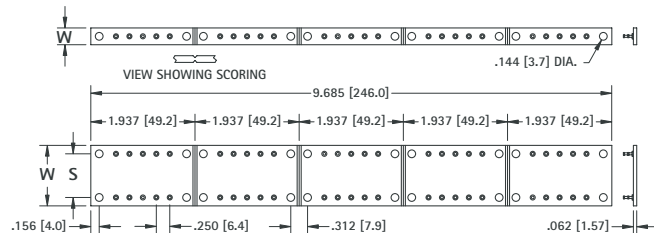


Choice of 4 Types of Terminals

- Five sections **SCORED** for easy separation.
- Mounting holes in each section.

W	S	NO. OF TERMS	MATERIAL	CAT. NO.	CAT. NO.	CAT. NO.	CAT. NO.
.500 (12.7)	Single Row	25	PBE	15031	15091	15071	15041
			GEE	15231	15291	15271	15241
1.500 (38.1)	1.000 (25.4)	50	PBE	15032	15092	15072	15042
			GEE	15232	15292	15272	15242
1.500 (38.1)	1.187 (30.1)	50	PBE	15036	15096	15076	15046
			GEE	15236	15296	15276	15246
2.000 (50.8)	1.500 (38.1)	50	PBE	15033	15093	15073	15043
			GEE	15233	15293	15273	15243
2.500 (63.5)	2.000 (50.8)	50	PBE	15034	15094	15074	15044
			GEE	15234	15294	15274	15244
3.000 (76.2)	2.500 (63.5)	50	PBE	15035	15095	15075	15045
			GEE	15235	15295	15275	15245

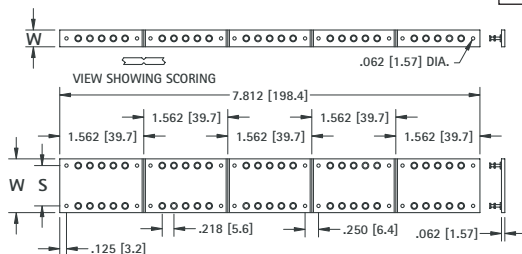
MINIATURE TURRET TERMINAL BOARDS



Choice of 6 Types of Terminals

- Five sections **SCORED** for easy separation.
- Mounting holes in each section.

W	S	NO. OF TERMS	MATERIAL	CAT. NO.	CAT. NO.	CAT. NO.	CAT. NO.	CAT. NO.	CAT. NO.
.312 (7.9)	Single Row	25	PBE	15047	15057	15067	15077	15087	15097
			GEE	15247	15257	15267	15277	15287	15297
.875 (22.2)	.562 (14.3)	50	PBE	15048	15058	15068	15078	15088	15098
			GEE	15248	15258	15268	15278	15288	15298
1.125 (28.6)	.812 (20.6)	50	PBE	15049	15059	15069	15079	15089	15099
			GEE	15249	15259	15269	15279	15289	15299



Choice of 5 Types of Terminals

- Five sections **SCORED** for easy separation.
- Mounting holes in each section.

W	S	NO. OF TERMS	MATERIAL	CAT. NO.	CAT. NO.	CAT. NO.	CAT. NO.	CAT. NO.
.312 (7.9)	Single Row	25	PBE	15021	15023	15025	15063	15053
			GEE	15221	15223	15225	15263	15253
.875 (22.2)	.500 (12.7)	50	PBE	15028	15029	15026	15064	15054
			GEE	15228	15229	15226	15264	15254
1.000 (25.4)	.750 (19.1)	50	PBE	15022	15024	15030	15065	15056
			GEE	15222	15224	15230	15265	15256

MINIATURE TURRET TERMINAL BOARDS

MATERIAL: Choice of either PBE or GEE.

PBE: Paper base electrical, MIL-1-24768/20, Type XP natural, Temp. 250°F (121°C) max.

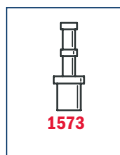
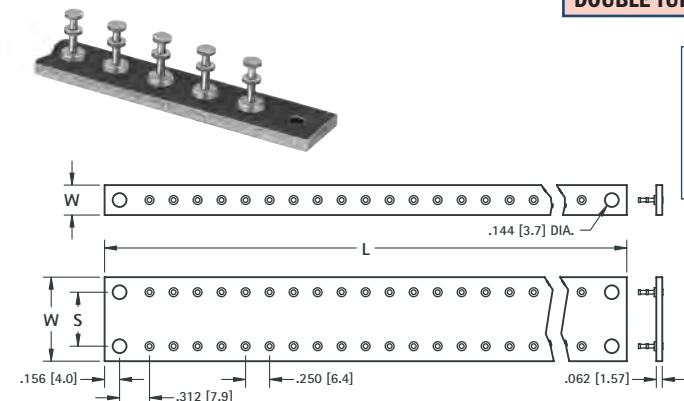
GEE: Glass Epoxy, MIL-1-24768/27, Type G-10, Temp. 300°F (155°C) max.

Terminals: Brass, ASTM-B16, Tin Plate, MIL-T-10727. Other platings can be furnished.

MODIFICATIONS

Boards can be modified with other materials or terminals of your choice. Marking can also be added. Quotations upon request.

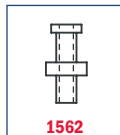
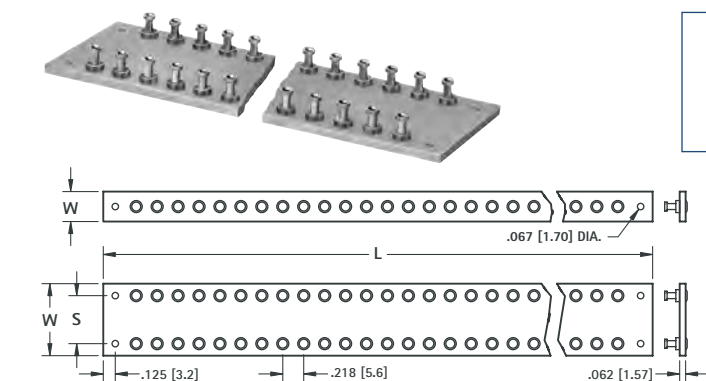
DOUBLE TURRET TERMINAL



Terminals are staked in all except end mounting holes.

W	S	L	NO. OF TERMS EACH SIDE	MATERIAL PBE CAT. NO.	MATERIAL GEE CAT. NO.
.312 (7.9)	Single Row	1.937 (49.2)	5	15431	15531
		3.687 (93.6)	12	15432	15532
		5.437 (138.1)	19	15433	15533
		7.187 (182.5)	26	15434	15534
		8.937 (227.0)	33	15435	15535
.875 (22.2)	.562 (14.3)	1.937 (49.2)	5	15436	15536
		3.687 (93.6)	12	15437	15537
		5.437 (138.1)	19	15438	15538
		7.187 (182.5)	26	15439	15539
		8.937 (227.0)	33	15440	15540
1.125 (28.6)	.812 (20.6)	1.937 (49.2)	5	15441	15541
		3.687 (93.6)	12	15442	15542
		5.437 (138.1)	19	15443	15543
		7.187 (182.5)	26	15444	15544
		8.937 (227.0)	33	15445	15545

THRU HOLE TERMINAL



Terminals are staked in all except end mounting holes.

W	S	L	NO. OF TERMS EACH SIDE	MATERIAL PBE CAT. NO.	MATERIAL GEE CAT. NO.
.312 (7.9)	Single Row	1.562 (39.7)	5	15401	15501
		3.093 (78.6)	12	15402	15502
		4.625 (117.5)	19	15403	15503
		6.156 (156.4)	26	15404	15504
		7.687 (195.2)	33	15405	15505
.750 (19.1)	.500 (12.7)	1.562 (39.7)	5	15406	15506
		3.093 (78.6)	12	15407	15507
		4.625 (117.5)	19	15408	15508
		6.156 (156.4)	26	15409	15509
		7.687 (195.2)	33	15410	15510
1.000 (25.4)	.750 (19.1)	1.562 (39.7)	5	15411	15511
		3.093 (78.6)	12	15412	15512
		4.625 (117.5)	19	15413	15513
		6.156 (156.4)	26	15414	15514
		7.687 (195.2)	33	15415	15515

MILITARY TERMINAL BOARDS

Terminal boards are manufactured as per Military specifications MS27249.

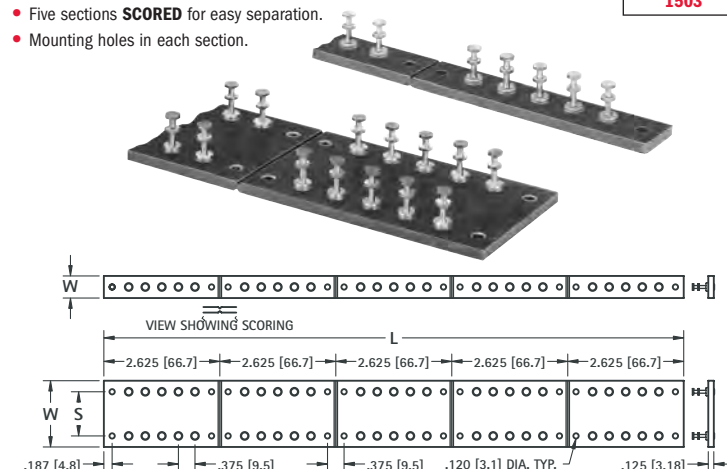
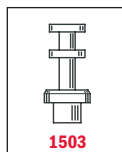
SPECIFICATIONS

Board Material: MIL-1-24768/27 TYPE GEE or TYPE GEB. MIL-1-24768/3

.125 (3.2) thick

Terminal: SE12XC09 PER MIL-T-55155 Tin/Lead Plated (Non-RoHS Compliant)

- Five sections **SCORED** for easy separation.
- Mounting holes in each section.



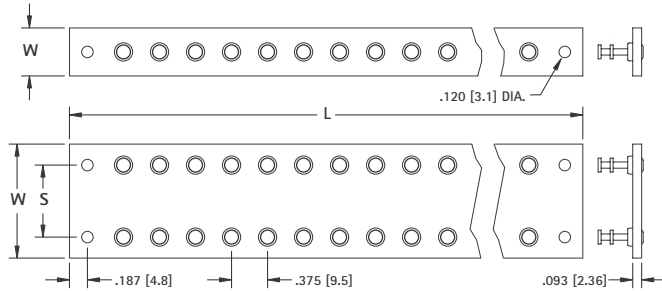
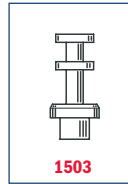
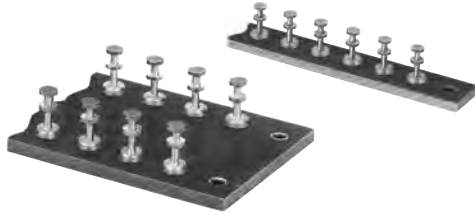
W	S	L	NO. OF TERMS EACH SIDE	MATERIAL GEB CAT. NO.	MATERIAL GEE CAT. NO.
.500 (12.7)	Single Row	2.625 (66.7)	5	MS27249-1B1	MS27249-1E1
		5.250 (133.4)	10	MS27249-1B2	MS27249-1E2
		7.875 (200.0)	15	MS27249-1B3	MS27249-1E3
		10.500 (266.7)	20	MS27249-1B4	MS27249-1E4
		13.125 (333.4)	25	MS27249-1B5	MS27249-1E5
1.500 (38.1)	1.000 (25.4)	2.625 (66.7)	5	MS27249-2B1	MS27249-2E1
		5.250 (133.4)	10	MS27249-2B2	MS27249-2E2
		7.875 (200.0)	15	MS27249-2B3	MS27249-2E3
		10.500 (266.7)	20	MS27249-2B4	MS27249-2E4
		13.125 (333.4)	25	MS27249-2B5	MS27249-2E5
2.000 (50.8)	1.500 (38.1)	2.625 (66.7)	5	MS27249-3B1	MS27249-3E1
		5.250 (133.4)	10	MS27249-3B2	MS27249-3E2
		7.875 (200.0)	15	MS27249-3B3	MS27249-3E3
		10.500 (266.7)	20	MS27249-3B4	MS27249-3E4
		13.125 (333.4)	25	MS27249-3B5	MS27249-3E5
2.500 (63.5)	2.000 (50.8)	2.625 (66.7)	5	MS27249-4B1	MS27249-4E1
		5.250 (133.4)	10	MS27249-4B2	MS27249-4E2
		7.875 (200.0)	15	MS27249-4B3	MS27249-4E3
		10.500 (266.7)	20	MS27249-4B4	MS27249-4E4
		13.125 (333.4)	25	MS27249-4B5	MS27249-4E5
3.000 (76.2)	2.500 (63.5)	2.625 (66.7)	5	MS27249-5B1	MS27249-5E1
		5.250 (133.4)	10	MS27249-5B2	MS27249-5E2
		7.875 (200.0)	15	MS27249-5B3	MS27249-5E3
		10.500 (266.7)	20	MS27249-5B4	MS27249-5E4
		13.125 (333.4)	25	MS27249-5B5	MS27249-5E5

TURRET TERMINAL BOARDS

- Save Tooling • Economical • Complete Range of Sizes

Readi-Made Terminal Boards: Low cost, meets commercial and military specifications.
Produced in large quantities, making it possible to eliminate tooling and setup charges
usually applied to non-standard boards.

BOARDS ON THIS PAGE ARE NOT SCORED



Terminals are staked in all holes except end mounting holes.

MATERIAL: Choice of either PBE or GEE.

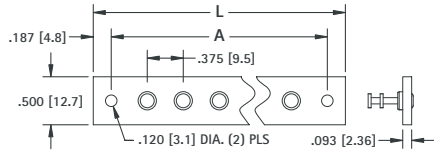
PBE: Paper base electrical, MIL-1-24768/20, Type XP natural, Temp. 250°F (121°C) max.

GEE: Glass epoxy, MIL-I-24768/27, Type G-10, Temp. 300°F (155°C) max.

Terminals: Brass, ASTM-B16. Tin Plate, MIL-T-10727. Other plating can be furnished.

MODIFICATIONS

Boards can be modified with other materials or terminals of your choice. Marking can also be added. Quotations upon request.



Terminals are staked in all holes except end mounting holes.





MATERIAL: PBE

PBE: Paper base electrical, FED. LP-513, Type XP natural, Temp. 250°F (121°C) max.

Terminals: Brass, ASTM-B16. Tin Plate, MIL-T-10727.

Other plating can be furnished.

W	S	L	NO. OF TERMS EACH SIDE	MATERIAL PBE CAT. NO.	MATERIAL GEE CAT. NO.
.500 [12.7]	Single Row	2.625 (66.7)	5	15101	15301
		5.250 (133.4)	12	15102	15302
		7.875 (200.0)	19	15103	15303
		10.500 (266.7)	26	15104	15304
		13.125 (333.4)	33	15105	15305
1.188 (30.2)	.750 (19.1)	2.625 (66.7)	5	15106	15306
		5.250 (133.4)	12	15107	15307
		7.875 (200.0)	19	15108	15308
		10.50 (266.7)	26	15109	15309
		13.125 (333.4)	33	15110	15310
1.500 (38.1)	1.000 (25.4)	2.625 (66.7)	5	15111	15311
		5.250 (133.4)	12	15112	15312
		7.875 (200.0)	19	15113	15313
		10.500 (266.7)	26	15114	15314
		13.125 (333.4)	33	15115	15315
2.000 (50.8)	1.500 (38.1)	2.625 (66.7)	5	15116	15316
		5.250 (133.4)	12	15117	15317
		7.875 (200.0)	19	15118	15318
		10.500 (266.7)	26	15119	15319
		13.125 (333.4)	33	15120	15320
2.500 (63.5)	2.000 (50.8)	2.625 (66.7)	5	15121	15321
		5.250 (133.4)	12	15122	15322
		7.875 (200.0)	19	15123	15323
		10.500 (266.7)	26	15124	15324
		13.125 (333.4)	33	15125	15325
3.000 (76.2)	2.500 (63.5)	2.625 (66.7)	5	15126	15326
		5.250 (133.4)	12	15127	15327
		7.875 (200.0)	19	15128	15328
		10.500 (266.7)	26	15129	15329
		13.125 (333.4)	33	15130	15330

			
1503	Hole thru 1509	1545	Hole thru 1507
CAT. NO.	CAT. NO.	CAT. NO.	CAT. NO.
603-1	609-1	604-1	607-1
603-2	609-2	604-2	607-2
603-3	609-3	604-3	607-3
603-4	609-4	604-4	607-4
603-5	609-5	604-5	607-5
603-6	609-6	604-6	607-6
603-7	609-7	604-7	607-7
603-8	609-8	604-8	607-8
603-9	609-9	604-9	607-9
603-10	609-10	604-10	607-10

QUICK-FIT TERMINAL STRIPS

MATERIAL: Fiberglass - NEMA GRADE GPO-3.

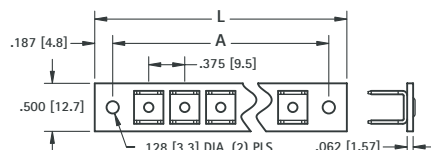
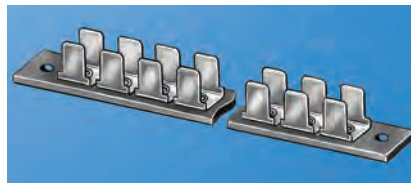
A glass polyester rated for continuous operation at 300°F (155°C) .062 (1.57) thick





Backing Strips: .031 (.79) thick fibre with mounting holes drilled only

Terminals: Brass

CAT. NO. 1254 .018 (.46) thick Bright Electro Tin MIL-F-14072

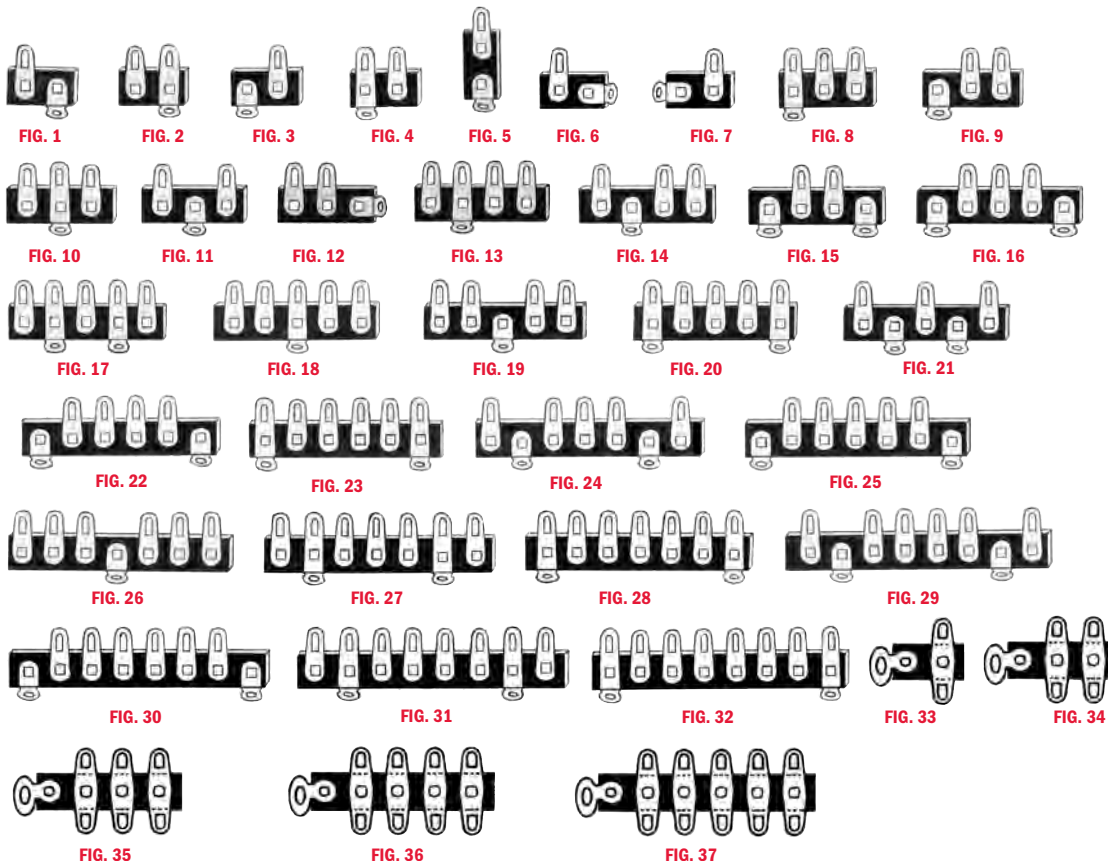
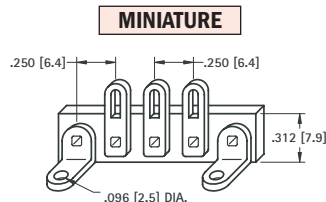
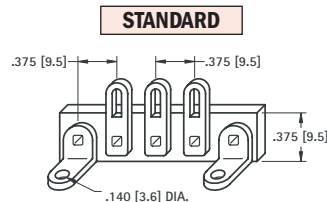
CAT. NO. 1257 .032 (.81) thick Bright Brass
Other platings available on special order



.205 (5.2) TABS		.250 (6.4) TABS		.205 TAB		.250 TAB	
							
				1254		1257	
				BACKING INSULATOR .031 (.79) THICK FIBER			
L LENGTH	A MTG. CENTERS	NO. TERM. EACH SIDE	CAT. NO.		BACKING STRIP CAT. NO.		CAT. NO.
1.500 (38.1)	1.125 (28.6)	2	4056		4401		4116
2.250 (57.2)	1.875 (47.6)	4	4057		4402		4117
3.000 (76.2)	2.625 (66.7)	6	4058		4403		4118
3.750 (95.3)	3.375 (85.7)	8	4059		4404		4119
4.500 (114.3)	4.125 (104.8)	10	4060		4405		4120

TERMINAL STRIPS (STANDARD & MINIATURE)

Tin plated lugs and brackets. Bakelite XP .062 (1.57) thick. In addition to the strips shown, we manufacture many other varieties in any configuration and materials required. Send samples or sketch for prompt quotation.



STANDARD CAT. NO.	FIG NO.	MINIATURE CAT. NO.
800	1	837
801	2	838
802	3	839
803	4	840
804	5	841
805	6	842
806	7	843
807	8	844
808	9	845
809	10	846
810	11	847
811	12	848
812	13	849
813	14	850
814	15	851
815	16	852
816	17	853
817	18	854
818	19	855
819	20	856
820	21	857
821	22	858
822	23	859
823	24	860
824	25	861
825	26	862
826	27	863
827	28	864
828	29	865
829	30	866
830	31	867
831	32	868
832	33	—
833	34	—
834	35	—
835	36	—
836	37	—

BINDING POST STRIPS

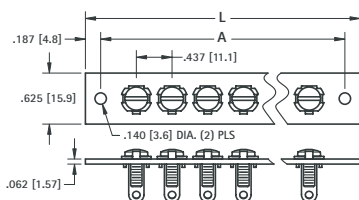
FIBERGLASS: Reinforced Polyester NEMA Grade GPO-3 rated for 300°F (155°C).

GEE: Glass Epoxy, MIL-I-24768/27 Type G-10. Temp. 300°F (155°C).

PBE: Paper base electrical, MIL-1-24768/20 Type XP natural, Temp 250°F (121°C) max..

SPECIFICATIONS

STANDARD



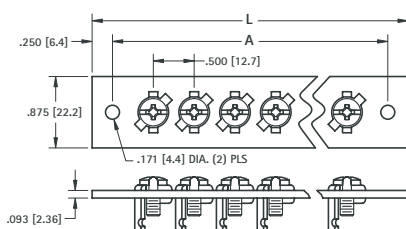
PBE CAT. NO.	GEE CAT. NO.	FIBER-GLASS CAT. NO.	L LENGTH	A MTG. CENTERS	NO. OF TERM
4187	4177	4167	1.250 (31.8)	.875 (22.2)	1
4188	4178	4168	1.687 (42.8)	1.312 (33.3)	2
4189	4179	4169	2.125 (54.0)	1.750 (44.5)	3
4190	4180	4170	2.562 (65.1)	2.187 (55.5)	4
4191	4181	4171	3.000 (76.2)	2.625 (66.7)	5
4192	4182	4172	3.437 (87.3)	3.062 (77.8)	6
4193	4183	4173	3.875 (98.4)	3.500 (88.9)	7
4194	4184	4174	4.312 (109.5)	3.937 (100.0)	8
4195	4185	4175	4.750 (120.7)	4.375 (111.1)	9
4196	4186	4176	5.187 (131.7)	4.812 (122.2)	10

Terminals supplied on these strips



Refer to page 57 for Part details on Cat. No.1248

HEAVY DUTY



GEE CAT. NO.	FIBER-GLASS CAT. NO.	L LENGTH	A MTG. CENTERS	NO. OF TERM
4147	4157	1.50 (38.1)	1.00 (25.4)	1
4148	4158	2.00 (50.8)	1.50 (38.1)	2
4149	4159	2.50 (63.5)	2.00 (50.8)	3
4150	4160	3.00 (76.2)	2.50 (63.5)	4
4151	4161	3.50 (88.9)	3.00 (76.2)	5
4152	4162	4.00 (101.6)	3.50 (88.9)	6
4153	4163	4.50 (114.3)	4.00 (101.6)	7
4154	4164	5.00 (127.0)	4.50 (114.3)	8
4155	4165	5.50 (139.7)	5.00 (127.0)	9
4156	4166	6.00 (152.4)	5.50 (139.7)	10

Terminals supplied on these strips



Refer to page 56 for Part details on Cat. No.1209



CONVERSION CHART

MILLIMETERS • DECIMALS • FRACTIONS

MM	Decimals	Fractions	MM	Decimals	Fractions	MM	Decimals	Fractions	MM	Decimals	Fractions	MM	Decimals	Fractions
0.1	.0039		5.2	.2047		10.319	.4063	13/32	15.5	.6102		20.638	.8125	13/16
0.2	.0079		5.3	.2087		10.4	.4094		15.6	.6142		20.7	.8150	
0.3	.0118		5.4	.2126		10.5	.4134		15.7	.6181		20.8	.8189	
0.397	.0156	1/64	5.5	.2165		10.6	.4173		15.8	.6220		20.9	.8228	
0.4	.0157		5.556	.2188	7/32	10.7	.4213		15.875	.6250	5/8	21.0	.8268	
0.5	.0197		5.6	.2205		10.716	.4219	27/64	15.9	.6260		21.034	.8281	53/64
0.6	.0236		5.7	.2244		10.8	.4252		16.0	.6299		21.1	.8307	
0.7	.0276		5.8	.2283		10.9	.4291		16.1	.6339		21.2	.8346	
0.794	.0313	1/32	5.9	.2323		11.0	.4331		16.2	.6378		21.3	.8386	
0.8	.0315		5.953	.2344	15/64	11.1	.4370		16.272	.6406	41/64	21.4	.8425	
0.9	.0354		6.0	.2362		11.113	.4375	7/16	16.3	.6417		21.431	.8438	27/32
1.0	.0394		6.1	.2402		11.2	.4409		16.4	.6457		21.5	.8465	
1.1	.0433		6.2	.2441		11.3	.4449		16.5	.6496		21.6	.8504	
1.191	.0469	3/64	6.3	.2480		11.4	.4488		16.6	.6535		21.7	.8543	
1.2	.0472		6.350	.2500	1/4	11.5	.4528		16.669	.6563	21/32	21.8	.8583	
1.3	.0512		6.4	.2520		11.509	.4531	29/64	16.7	.6575		21.828	.8594	55/64
1.4	.0551		6.5	.2559		11.6	.4567		16.8	.6614		21.9	.8622	
1.5	.0591		6.6	.2598		11.7	.4606		16.9	.6654		22.0	.8661	
1.588	.0625	1/16	6.7	.2638		11.8	.4646		17.0	.6693		22.1	.8701	
1.6	.0630		6.747	.2656	17/64	11.9	.4685		17.066	.6719	43/64	22.2	.8740	
1.7	.0669		6.8	.2677		11.906	.4688	15/32	17.1	.6732		22.225	.8750	7/8
1.8	.0709		6.9	.2717		12.0	.4724		17.2	.6772		22.3	.8780	
1.9	.0748		7.0	.2756		12.1	.4764		17.3	.6811		22.4	.8819	
1.984	.0781	5/64	7.1	.2795		12.2	.4803		17.4	.6850		22.5	.8858	
2.0	.0787		7.144	.2813	9/32	12.3	.4843		17.463	.6875	11/16	22.6	.8898	
2.1	.0827		7.2	.2835		12.303	.4844	31/64	17.5	.6890		22.622	.8906	57/64
2.2	.0866		7.3	.2874		12.4	.4882		17.6	.6929		22.7	.8937	
2.3	.0906		7.4	.2913		12.5	.4921		17.7	.6968		22.8	.8976	
2.381	.0938	3/32	7.5	.2953		12.6	.4961		17.8	.7008		22.9	.9016	
2.4	.0945		7.541	.2969	19/64	12.700	.5000	1/2	17.859	.7031	45/64	23.0	.9055	
2.5	.0984		7.6	.2992		12.8	.5039		17.9	.7047		23.019	.9063	29/32
2.6	.1024		7.7	.3031		12.9	.5079		18.0	.7087		23.1	.9094	
2.7	.1063		7.8	.3071		13.0	.5118		18.1	.7126		23.2	.9134	
2.778	.1094	7/64	7.9	.3110		13.097	.5156	33/64	18.2	.7165		23.3	.9173	
2.8	.1102		7.938	.3125	5/16	13.1	.5157		18.256	.7188	23/32	23.4	.9213	
2.9	.1142		8.0	.3150		13.2	.5197		18.3	.7205		23.416	.9219	59/64
3.0	.1181		8.1	.3189		13.3	.5236		18.4	.7244		23.5	.9252	
3.1	.1220		8.2	.3228		13.4	.5276		18.5	.7283		23.6	.9291	
3.175	.1250	1/8	8.3	.3268		13.494	.5313	17/32	18.6	.7323		23.7	.9331	
3.2	.1260		8.334	.3281	21/64	13.5	.5315		18.653	.7344	47/64	23.8	.9370	
3.3	.1299		8.4	.3307		13.6	.5354		18.7	.7362		23.813	.9375	15/16
3.4	.1339		8.5	.3346		13.7	.5394		18.8	.7402		23.9	.9409	
3.5	.1378		8.6	.3386		13.8	.5433		18.9	.7441		24.0	.9449	
3.572	.1406	9/64	8.7	.3425		13.891	.5469	35/64	19.0	.7480		24.1	.9488	
3.6	.1417		8.731	.3438	11/32	13.9	.5472		19.050	.7500	3/4	24.2	.9528	
3.7	.1457		8.8	.3465		14.0	.5512		19.1	.7520		24.209	.9531	61/64
3.8	.1496		8.9	.3504		14.1	.5551		19.2	.7559		24.3	.9567	
3.9	.1535		9.0	.3543		14.2	.5591		19.3	.7598		24.4	.9606	
3.969	.1563	5/32	9.1	.3583		14.288	.5625	9/16	19.4	.7638		24.5	.9646	
4.0	.1575		9.128	.3594	23/64	14.3	.5630		19.447	.7656	49/64	24.6	.9685	
4.1	.1614		9.2	.3622		14.4	.5669		19.5	.7677		24.606	.9688	31/32
4.2	.1654		9.3	.3661		14.5	.5709		19.6	.7717		24.7	.9724	
4.3	.1693		9.4	.3701		14.6	.5748		19.7	.7756		24.8	.9764	
4.366	.1719	11/64	9.5	.3740		14.684	.5781	37/64	19.8	.7795		24.9	.9803	
4.4	.1732		9.525	.3750	3/8	14.7	.5787		19.844	.7813	25/32	25.0	.9843	
4.5	.1772		9.6	.3780		14.8	.5827		19.9	.7835		25.003	.9844	63/64
4.6	.1811		9.7	.3819		14.9	.5866		20.0	.7874		25.1	.9882	
4.7	.1850		9.8	.3858		15.0	.5906		20.1	.7913		25.2	.9921	
4.763	.1875	3/16	9.9	.3898		15.081	.5938	19/32	20.2	.7953		25.3	.9961	
4.8	.1890		9.922	.3906	25/64	15.1	.5945		20.241	.7969	51/64	25.400	1.0000	1
4.9	.1929		10.0	.3937		15.2	.5984		20.3	.7992				
5.0	.1969		10.1	.3976		15.3	.6024		20.4	.8031				
5.1	.2008		10.2	.4016		15.4	.6063		20.5	.8071				
5.159	.2031	13/64	10.3	.4055		15.478	.6094	39/64	20.6	.8110				

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DRILL SIZE DIAMETER TABLE

Diameter	Drill Size	Diameter	Drill Size	Diameter	Drill Size	Diameter	Drill Size
.0135	80	.0935	42	.2031	13/64	.4040	Y
.0145	79	.0938	3/32	.2040	6	.4062	13/32
.0156	1/64	.0960	41	.2055	5	.4130	Z
.0160	78	.0980	40	.2090	4	.4219	27/64
.0180	77	.0995	39	.2130	3	.4375	7/16
.0200	76	.1015	38	.2188	7/32	.4531	29/64
.0210	75	.1040	37	.2210	2	.4688	15/32
.0225	74	.1065	36	.2280	1	.4844	31/64
.0240	73	.1094	7/64	.2340	A	.5000	1/2
.0250	72	.1100	35	.2344	15/64	.5156	33/64
.0260	71	.1110	34	.2380	B	.5312	17/32
.0280	70	.1130	33	.2420	C	.5469	35/64
.0292	69	.1160	32	.2460	D	.5625	9/16
.0310	68	.1200	31	.2500	1/4	.5781	37/64
.0312	1/32	.1250	1/8	.2500	E	.5938	19/32
.0320	67	.1285	30	.2570	F	.6094	39/64
.0330	66	.1360	29	.2610	G	.6250	5/8
.0350	65	.1405	28	.2656	17/64	.6406	41/64
.0360	64	.1406	9/64	.2660	H	.6562	21/32
.0370	63	.1440	27	.2720	I	.6719	43/64
.0380	62	.1470	26	.2770	J	.6875	11/16
.0390	61	.1495	25	.2810	K	.7031	45/64
.0400	60	.1520	24	.2812	9/32	.7188	23/32
.0410	59	.1540	23	.2900	L	.7344	47/64
.0420	58	.1562	5/32	.2950	M	.7500	3/4
.0430	57	.1570	22	.2969	19/64	.7656	49/64
.0465	56	.1590	21	.3020	N	.7812	25/32
.0469	3/64	.1610	20	.3125	5/16	.7969	51/64
.0520	55	.1660	19	.3160	O	.8120	13/16
.0550	54	.1695	18	.3230	P	.8281	53/64
.0595	53	.1719	11/64	.3281	21/64	.8438	27/32
.0625	1/16	.1730	17	.3320	Q	.8594	55/64
.0635	52	.1770	16	.3390	R	.8750	7/8
.0670	51	.1800	15	.3438	11/32	.8906	57/64
.0700	50	.1820	14	.3480	S	.9062	29/32
.0730	49	.1850	13	.3580	T	.9219	59/64
.0760	48	.1875	3/16	.3594	23/64	.9375	15/16
.0781	5/64	.1890	12	.3680	U	.9531	61/64
.0785	47	.1910	11	.3750	3/8	.9688	31/32
.0810	46	.1935	10	.3770	V	.9844	63/64
.0820	45	.1960	9	.3860	W	1.0000	1/1
.0860	44	.1990	8	.3906	25/64		
.0890	43	.2010	7	.3970	X		

SCREW/STUD CLEARANCE HOLE TABLE

Screw/Stud Size	Screw/Stud Dia. Max.	Recommended Clearance Hole Dia.
0	.060	.067
1	.073	.078
2	.086	.093
3	.099	.105
4	.112	.120
5	.125	.130
6	.138	.144
8	.164	.169
10	.190	.196
12	.216	.220
14	.242	.250
1/4	.250	.257

MILLIMETER CONVERSION TABLE

MM	Decimal Inches	Fraction Inches	MM	Decimal Inches	Fraction Inches	MM	Decimal Inches	Fraction Inches	MM	Decimal Inches	Fraction Inches
0.1	.0039		6.5	.2559		12.8	.5039		19.2	.7559	
0.2	.0079		6.6	.2598		12.9	.5079		19.3	.7598	
0.3	.0118		6.7	.2638		13.0	.5118		19.4	.7638	
0.397	.0156	1/64	6.747	.2656	17/64	13.097	.5156	33/64	19.447	.7656	49/64
0.4	.0157		6.8	.2677		13.1	.5157		19.5	.7677	
0.5	.0197		6.9	.2717		13.2	.5197		19.6	.7717	
0.6	.0236		7.0	.2756		13.3	.5236		19.7	.7756	
0.7	.0276		7.1	.2795		13.4	.5276		19.8	.7795	
0.794	.0313	1/32	7.144	.2813	9/32	13.494	.5313	17/32	19.844	.7813	25/32
0.8	.0315		7.2	.2835		13.5	.5315		19.9	.7835	
0.9	.0354		7.3	.2874		13.6	.5354		20.0	.7874	
1.0	.0394		7.4	.2913		13.7	.5394		20.1	.7913	
1.1	.0433		7.5	.2953		13.8	.5433		20.2	.7953	
1.191	.0469	3/64	7.541	.2969	19/64	13.891	.5469	35/64	20.241	.7969	51/64
1.2	.0472		7.6	.2992		13.9	.5472		20.3	.7992	
1.3	.0512		7.7	.3031		14.0	.5512		20.4	.8031	
1.4	.0551		7.8	.3071		14.1	.5551		20.5	.8071	
1.5	.0591		7.9	.3110		14.2	.5591		20.6	.8110	
1.588	.0625	1/16	7.938	.3125	5/16	14.288	.5625	9/16	20.638	.8125	13/16
1.6	.0630		8.0	.3150		14.3	.5630		20.7	.8150	
1.7	.0669		8.1	.3189		14.4	.5669		20.8	.8189	
1.8	.0709		8.2	.3228		14.5	.5709		20.9	.8228	
1.9	.0748		8.3	.3268		14.6	.5748		21.0	.8268	
1.984	.0781	5/64	8.334	.3281	21/64	14.684	.5781	37/64	21.034	.8281	53/64
2.0	.0787		8.4	.3307		14.7	.5787		21.1	.8307	
2.1	.0827		8.5	.3346		14.8	.5827		21.2	.8346	
2.2	.0866		8.6	.3386		14.9	.5866		21.3	.8386	
2.3	.0906		8.7	.3425		15.0	.5906		21.4	.8425	
2.381	.0938	3/32	8.731	.3438	11/32	15.081	.5938	19/32	21.431	.8438	27/32
2.4	.0945		8.8	.3465		15.1	.5945		21.5	.8465	
2.5	.0984		8.9	.3504		15.2	.5984		21.6	.8504	
2.6	.1024		9.0	.3543		15.3	.6024		21.7	.8543	
2.7	.1063		9.1	.3583		15.4	.6063		21.8	.8583	
2.778	.1094	7/64	9.128	.3594	23/64	15.478	.6094	39/64	21.828	.8594	55/64
2.8	.1102		9.2	.3622		15.5	.6102		21.9	.8622	
2.9	.1142		9.3	.3661		15.6	.6142		22.0	.8661	
3.0	.1181		9.4	.3701		15.7	.6181		22.1	.8701	
3.1	.1220		9.5	.3740		15.8	.6220		22.2	.8740	
3.175	.1250	1/8	9.525	.3750	3/8	15.875	.6250	5/8	22.225	.8750	7/8
3.2	.1260		9.6	.3780		15.9	.6260		22.3	.8780	
3.3	.1299		9.7	.3819		16.0	.6299		22.4	.8819	
3.4	.1339		9.8	.3858		16.1	.6339		22.5	.8858	
3.5	.1378		9.9	.3898		16.2	.6378		22.6	.8898	
3.572	.1406	9/64	9.922	.3906	25/64	16.272	.6406	41/64	22.622	.8906	57/64
3.6	.1417		10.0	.3937		16.3	.6417		22.7	.8937	
3.7	.1457		10.1	.3976		16.4	.6457		22.8	.8976	
3.8	.1496		10.2	.4016		16.5	.6496		22.9	.9016	
3.9	.1535		10.3	.4055		16.6	.6535		23.0	.9055	
3.969	.1563	5/32	10.319	.4063	13/32	16.669	.6563	21/32	23.019	.9063	29/32
4.0	.1575		10.4	.4094		16.7	.6575		23.1	.9094	
4.1	.1614		10.5	.4134		16.8	.6614		23.2	.9134	
4.2	.1654		10.6	.4173		16.9	.6654		23.3	.9173	
4.3	.1693		10.7	.4213		17.0	.6693		23.4	.9213	
4.366	.1719	11/64	10.716	.4219	27/64	17.066	.6719	43/64	23.416	.9219	59/64
4.4	.1732		10.8	.4252		17.1	.6732		23.5	.9252	
4.5	.1772		10.9	.4291		17.2	.6772		23.6	.9291	
4.6	.1811		11.0	.4331		17.3	.6811		23.7	.9331	
4.7	.1850		11.1	.4370		17.4	.6850		23.8	.9370	
4.763	.1875	3/16	11.113	.4375	7/16	17.463	.6875	11/16	23.813	.9375	15/16
4.8	.1890		11.2	.4409		17.5	.6890		23.9	.9409	
4.9	.1929		11.3	.4449		17.6	.6929		24.0	.9449	
5.0	.1969		11.4	.4488		17.7	.6968		24.1	.9488	
5.1	.2008		11.5	.4528		17.8	.7008		24.2	.9528	
5.159	.2031	13/64	11.509	.4531	29/64	17.859	.7031	45/64	24.209	.9531	61/64
5.2	.2047		11.6	.4567		17.9	.7047		24.3	.9567	
5.3	.2087		11.7	.4606		18.0	.7087		24.4	.9606	
5.4	.2126		11.8	.4646		18.1	.7126		24.5	.9646	
5.5	.2165		11.9	.4685		18.2	.7165		24.6	.9685	
5.556	.2188	7/32	11.906	.4688	15/32	18.256	.7188	23/32	24.606	.9688	31/32
5.6	.2205		12.0	.4724		18.3	.7205		24.7	.9724	
5.7	.2244		12.1	.4764		18.4	.7244		24.8	.9764	
5.8	.2283		12.2	.4803		18.5	.7283		24.9	.9803	
5.9	.2323		12.3	.4843		18.6	.7323		25.0	.9843	
5.953	.2344	15/64	12.303	.4844	31/64	18.653	.7344	47/64	25.003	.9844	63/64
6.0	.2362		12.4	.4882		18.7	.7362		25.1	.9882	
6.1	.2402		12.5	.4921		18.8	.7402		25.2	.9921	
6.2	.2441		12.6	.4961		18.9	.7441		25.3	.9961	
6.3	.2480		12.7	.5000		19.0	.7480		25.400	1.0000	1
6.350	.2500	1/4	12.700	.5000	1/2	19.050	.7500	3/4			
6.4	.2520					19.1	.7520				

NOTES

FACILITIES & CAPABILITIES

STAMPING

Power Presses/Fourslides

- Bliss Presses
- Johnson Presses
- V & O Presses
- Federal Presses
- Niagra Presses
- Nilson Fourslides
- Stamtec Presses

Support Equipment

- Delta Table Saws
- Wysong Shears
- Belke Tumblers
- Tapping Machines
- Drill Presses
- Burgmaster Multi-Spindle Drill Presses
- Warner and Swasey Lathes

MACHINING

Screw Machines

- Brown and Sharpe Automatics
- Davenport Multi-Spindles
- Tornos Automatics
- Bechler Automatics
- Escomatics

Support Equipment

- Rotary Tapping Machines
- Special Secondary Machines
- Drill Presses
- Bridgeport Milling Machines
- Belke Tumblers

ASSEMBLY

Assembly Machines

- Segal Eyeleters
- Chicago Riveters
- Black and Webster Stakers
- Famco Arbor Presses
- Perkins Dial Presses
- Multi-Press Hydraulic Presses
- Special Design Assembly Machines

Support Equipment

- Artos Wire Cutter and Strippers
- Drill Presses
- High Voltage Testers
- Continuity Testers

TOOL ROOM

All Purpose Machines

- Bridgeport Milling Machines
- Boyer Schultz Grinders
- Harig Grinders
- South Bend Lathes
- Warner and Swasey Lathes
- DoAll Vertical Saws
- Johnson Horizontal Cut-off Saws
- J & S Radii Angle Dresser
- Wilson Rockwell Tester
- Nikon Optical Comparator
- Fanuc Wire EDM
- Acer CNC Milling Machine
- Chevalier 6-18 Surface Grinders
- Bridgeport CNC Milling Machines
- Chevalier ED203 Conventional EDM
- Heat treating Furnaces
- EDM Hole Popper

QUALITY ASSURANCE

Keystone's quality system is certified to ISO 9001:2000 by DNV Certification, Inc. under the RAB and RvA accreditations. Our Quality Assurance Program is in accordance with these requirements and applies to all standard and custom interconnect components and electronic hardware.

It is Keystone's Quality Policy to continuously improve its products to better satisfy the needs of its customers and to deliver quality products, every time and on time.

QUALITY ASSURANCE

- Baty Gage Master Comparator
- Thread, Plug and Ring Gauges
- Granite Surface Plates
- Dial Indicators
- Plating Thickness Tester
- Ames Precision Hardness Tester
- Gauge Blocks and Pin Gauges
- Micrometers and Verniers
- Depth and Height Gauges
- **ISO 9001:2000 Certified**





DET NORSKE VERITAS MANAGEMENT SYSTEM CERTIFICATE

Certificate No. CERT-8053-2004-AQ-HOU-RvA/RAB

This is to certify that the Quality System
of

KEYSTONE ELECTRONICS CORPORATION

at

31-07 20th Road, Astoria, NY 11105 USA

Has been found to conform to Quality Management System Standard:

ISO 9001:2000

This Certificate is valid for the following products/service ranges:

**THE MANUFACTURE OF INTERCONNECT COMPONENTS AND HARDWARE
(EXCLUDING CLAUSE: 7.3 DESIGN)**

Place and date:

Houston, Texas; 15 April 2004

for the Accredited Unit:

Det Norske Veritas Certification, Inc.
Houston, Texas, USA
DNV Management System Certification
The Netherlands

Rudy Frueboes
Rudy Frueboes
Management Representative
Det Norske Veritas Certification, Inc.



This certificate is valid until:

15 April 2007

Initial Certification Date:

18 February 1996

Anthony V Como
Anthony V Como
Lead Auditor

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by consulting the organization.

Lack of fulfillment of conditions as set out in the Appendix may render this certificate invalid.

DET NORSKE VERITAS CERTIFICATION, INC., 16340 Park Ten Place, Suite 100, Houston, TX 77084 USA TEL: (281) 721-6600 FAX: (281) 721-6903

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108		19	351 thru 359		66	634		112
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163		14	480 thru 496		79	752 thru 753		120
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911		91	1205 thru 1209		56	1411 thru 1419		99
914 thru 918		50	1210		100	1421 thru 1422		98
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924		88	1214		100	1431 thru 1439		99
925		89	1215		57	1441 thru 1446		99
926		88	1218 thru 1219		98	1447		98
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931 thru 932		89	1226		100	1450 thru 1451		63
933 thru 935		88	1230 thru 1231		100	1453		76
936 thru 938		92	1232		57	1454		64
968		20	1236 thru 1238		100	1455		98
970 thru 973		91	1248		57	1456		76
980 thru 983		91	1249 thru 1250		53	1457		64
1005 thru 1008		46	1252		48	1458 thru 1459		76
1025 thru 1027		2	1254		132	1460 thru 1463		98
1028		19	1256 thru 1258		46	1464 thru 1467		76
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1029		19	1264		48	1474 thru 1475		63
1029C		19	1265 thru 1266		45	1476 thru 1477		103
1029LC		19	1267		44	1480 thru 1484		64
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1033		53	1272 thru 1273		57	1495		100
1034 thru 1037		52	1280		46	1498 thru 1500		100
1038		53	1281 thru 1282		45	1502 thru 1503		126
1039 thru 1040		52	1283 thru 1284		56	1507		127
1041		53	1285 thru 1286		44	1508		126
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1056		3	1288		46	1512		130
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1066		2	1290		14	1515		127
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1175		12	1309 thru 1313		125	1545		127
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7351 thru 7382		83	8189		54	8712 thru 8717		62
7600 thru 7611		121	8189-2 thru 8189-7		54	8718 thru 8721		58
7620 thru 7640		119	8190		54	8722 thru 8727		59
7661 thru 7678		64	8190-1		123	8728 thru 8729		58
7680 thru 7688		122	8190-2 thru 8190-7		54	8730		57
7689		56	8191		54	8731 thru 8733		62
7690		54	8191-2 thru 8191-7		54	8738 thru 8739		58
7690-2 thru 7690-7		54	8195		55	8799		62
7691		54	8195-2 thru 8195-7		55	8800 thru 8821		69
7691-2 thru 7691-7		54	8196 thru 8197		55	8822 thru 8828		70
7692		54	8197-2 thru 8197-7		55	8829 thru 8842		68
7692-2 thru 7692-7		54	8198		55	8843 thru 8851		67
7693		54	8198-2 thru 8198-7		55	8860		119
7693-2 thru 7693-7		54	8199		55	8865 thru 8870		119
7695 thru 7696		56	8199-2 thru 8199-7		55	8871 thru 8875		69
7697		54	8200 thru 8271		49	8879 thru 8893		68
7697-2 thru 7697-7		54	8272 thru 8300		48	8896 thru 8899		114
7698		56	8309 thru 8310		82	8900 thru 8931		83
7699		54	8311 thru 8342		83	9018 thru 9040		68
7699-2 thru 7699-7		54	8351 thru 8354		77	9041 thru 9068		70
7700		54	8356		77	9100 thru 9123		79
7700-2 thru 7700-7		54	8400 thru 8442		62	9190		123
7701		54	8447 thru 8453		81	9200		106
7701-2 thru 7701-7		54	8455		81	9200-1 thru 9200-5		108
7702		54	8457		81	9200-6 thru 9200-10		109
7702-2 thru 7702-7		54	8458 thru 8467		80	9200-11		108
7710 thru 7720		64	8470 thru 8486		120	9200-12 thru 9200-13		109
7774		113	8490 thru 8496		120	9200-14		108

CAT. NO.	9200 – 15254	PAGE NO.	CAT. NO.	15256 – 29351	PAGE NO.	CAT. NO.	29354 – TL	PAGE NO.
9200-15.....		109	15256 thru 15259		130	29354		67
9200-16.....		108	15263 thru 15269		130	29356		67
9200-17.....		109	15271 thru 15279		130	29358		67
9201		106	15287 thru 15289		130	MS27249-1B1 thru 1B5		131
9201-1.....		109	15291 thru 15299		130	MS27249-1E1 thru 1E5.....		131
9202		106	15301 thru 15330		132	MS27249-2B1 thru 2B5		131
9202-1.....		109	15401 thru 15415		131	MS27249-2E1 thru 2E5.....		131
9203		106	15431 thru 15445		131	MS27249-3B1 thru 3B5		131
9203-1 thru 9203-2		109	15501 thru 15515		131	MS27249-3E1 thru 3E5.....		131
9204		106	15531 thru 15545		131	MS27249-4B1 thru 4B5		131
9204-1.....		109	24283 thru 24354		67	MS27249-4E1 thru 4E5.....		131
9205 thru 9207		107	24380 thru 24388		67	MS27249-5B1 thru 5B5		131
9207-1.....		108	24390 thru 24398		67	MS27249-5E1 thru 5E5.....		131
9208		107	24400 thru 24408		67	SPR-8.....		66
9230 thru 9231		107	24410 thru 24418		67	SPR-13.....		66
9231-1.....		108	24420 thru 24428		67	SPR-34.....		66
9300 thru 9314		123	24430 thru 24438		67	STH-14.....		66
9316 thru 9341		123	24440 thru 24448		67	STH-19.....		66
9343 thru 9353		123	24450 thru 24458		67	STH-22.....		66
9355 thru 9357		123	24460 thru 24468		67	STR-15.....		66
9400 thru 9414		123	24470 thru 24478		67	STR-35.....		66
9416 thru 9441		123	24480 thru 24488		67	STR-440.....		66
9443 thru 9453		123	24490 thru 24498		67	STR-632.....		66
9455 thru 9457		123	25501 thru 25506		67	STR-832.....		66
9500 thru 9514		123	25508 thru 25515		67	TL-1 thru TL-2		126
9516 thru 9541		123	25521 thru 25526		67	TL-3 thru TL-4		127
9543 thru 9553		123	25528 thru 25535		67	TL-5		126
9555 thru 9557		123	29301		67	TL-8		126
9575 thru 9581		123	29304		67	TL-9		127
9600		123	29306		67	TL-11		100
9602 thru 9608		123	29311		67	TL-12		127
9900 thru 9911		79	29314		67	TL-19 thru TL-22		65
15021 thru 15026		130	29316		67			
15028 thru 15036		130	29318		67			
15041 thru 15049		130	29321		67			
15053 thru 15059		130	29324		67			
15063 thru 15065		130	29326		67			
15067 thru 15069		130	29328		67			
15071 thru 15079		130	29331		67			
15087 thru 15089		130	29334		67			
15091 thru 15099		130	29336		67			
15101 thru 15130		132	29341		67			
15221 thru 15226		130	29344		67			
15228 thru 15236		130	29346		67			
15241 thru 15249		130	29348		67			
15253 thru 15254		130	29351		67			

Cover photography by Steven Trachtman

