

Standard  
Density  
Rectangular

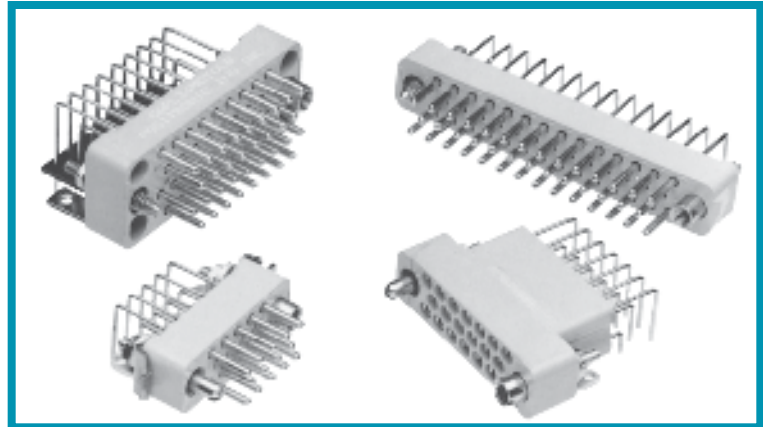
# HEAVY-DUTY RECTANGULAR RIGHT ANGLE PRINTED BOARD CONNECTORS



Positronic Industries  
connectpositronic.com

**Size 16 Contacts  
Conforms to  
MIL-DTL-28748  
IEC Publication 807-1**

U.L. Recognized,  
File #E49351  
Telecommunication  
U.L. File #E140980



GAPL Series connectors are heavy-duty, multi-pole, high reliability connectors conforming to MIL-DTL-28748 specifications. Termination style is right angle printed board mount. GAPL Series connectors are intermateable with Positronic GMCT Series connectors. GAPL Series connectors are offered with a variety of mounting, locking and polarizing accessories. For details, see the

Heavy-Duty Rectangular Connector Accessories section. GAPL Series connectors are ideal for high reliability, heavy-duty applications which require a printed board mounted connector. They are widely utilized in navigational systems, robotics, mainframe and peripheral computers, medical equipment, telecommunications, instrumentation and process control applications.

## GAPL SERIES TECHNICAL CHARACTERISTICS

### MILITARY SPECIFICATIONS:

Conforms to MIL-DTL-28748.

### INTERNATIONAL STANDARDS:

IEC 807-1.  
U.L. Recognized.

### MATERIALS AND FINISHES:

<b>Insulator:</b>	Glass filled DAP per ASTM-D-5948 type SDG-F. Grey color is standard, black available.
<b>Fixed Contacts:</b>	Copper alloy with gold over nickel. Other finishes available upon request.
<b>Jackscrew System:</b>	Passivated stainless steel.
<b>Polarizing Guides:</b>	Copper alloy with nickel plate or passivated stainless steel.
<b>Vibration Locks:</b>	Copper alloy with zinc plate and chromate seal.

### MECHANICAL CHARACTERISTICS:

<b>Fixed Contacts:</b>	<b>Male</b> – Size 16: 0.062 inch [1.57 mm] diameter. <b>Female</b> – “Closed entry” design for highest reliability.
<b>Contact Retention in Insulator:</b>	10 lbs. [44.5N] minimum.
<b>Contact Termination:</b>	Right angle printed board mounted.
<b>Locking Systems:</b>	Friction, vibration locks and jackscrews.
<b>Polarization:</b>	Guide pins and guide sockets, and jackscrew system.
<b>Mechanical Operations:</b>	1000 operations per IEC 512-5.
<b>Jackscrews:</b>	Standard threads, 6-32 UNC. Metric threads, M3X0.5 available.

### ELECTRICAL CHARACTERISTICS:

<b>Contact Current Rating (maximum):</b>	7.5 amperes limited at contact termination diameter.
<b>Initial Contact Resistance:</b>	0.003 ohms.
<b>Flash over Voltage:</b>	2500 V.AC [rms].
<b>Test Voltage:</b>	1200 V.AC [rms].
<b>Insulation Resistance (minimum):</b>	5 G ohms.
<b>Clearance and Creepage Distance (minimum):</b>	0.047 inch [1.19 mm].
<b>Working Temperature:</b>	-55°C to 125°C.
<b>Working Voltage:</b>	250 V.AC [rms].



For RoHS options  
see page 31.



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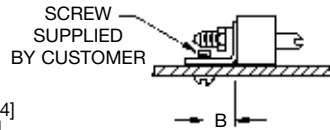
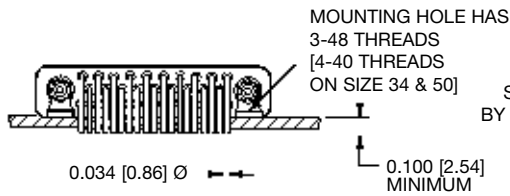
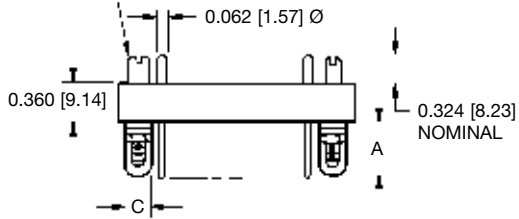
# HEAVY-DUTY RECTANGULAR RIGHT ANGLE PRINTED BOARD CONNECTORS

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## RIGHT ANGLE PRINTED BOARD MOUNT CONNECTORS

### MALE CONNECTOR

ON MALE CONNECTOR THE FEMALE GUIDE OR FEMALE JACKSCREW IS LOCATED AT CONTACT POSITION A



SIZE	A	B	C
9	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
14	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
18	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
20	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
26	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
34	0.417 [10.59]	0.303 [7.70]	0.220 [5.59]
41	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]
50	0.417 [10.59]	0.303 [7.70]	0.220 [5.59]

ADD 0.030 [0.76] TO "B" DIMENSION WHEN MOUNTING BRACKET (LB) AND VIBRATION LOCK TAB (V) ARE USED IN COMBINATION ON CONNECTOR

(V) TAB NOT AVAILABLE ON SIZE 50

CONTACTS NOW SHOWN FOR CLARITY

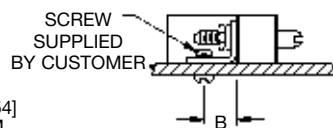
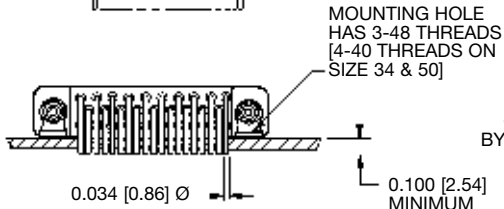
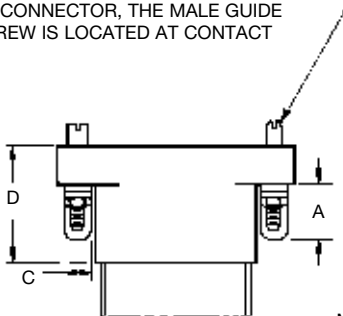
STANDARD POSITION OF INSULATOR REQUIRES CONTACT "A" TO BE ADJACENT TO THE PRINTED BOARD

FOR FACE DIMENSIONS OF INSULATOR VARIANT DESIRED, SEE GM SERIES INSULATOR DIMENSION PAGE

## RIGHT ANGLE PRINTED BOARD MOUNT CONNECTORS

### FEMALE CONNECTOR

ON FEMALE CONNECTOR, THE MALE GUIDE OR JACKSCREW IS LOCATED AT CONTACT POSITION A



SIZE	A	B	C	D
9	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.856 [21.74]
14	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.877 [22.28]
18	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.877 [22.28]
20	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.856 [21.74]
26	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.877 [22.28]
34	0.417 [10.59]	0.303 [7.70]	0.220 [5.59]	0.856 [21.74]
41	0.290 [7.37]	0.212 [5.38]	0.156 [3.96]	0.877 [22.28]
50	0.417 [10.59]	0.303 [7.70]	0.220 [5.59]	0.856 [21.74]

ADD 0.030 [0.76] TO "B" DIMENSION WHEN MOUNTING BRACKET (LB) AND VIBRATION LOCK TAB (V) ARE USED IN COMBINATION ON CONNECTOR

(V) TAB NOT AVAILABLE ON SIZE 50

CONTACTS NOW SHOWN FOR CLARITY

STANDARD POSITION OF INSULATOR REQUIRES CONTACT "A" TO BE ADJACENT TO THE PRINTED BOARD

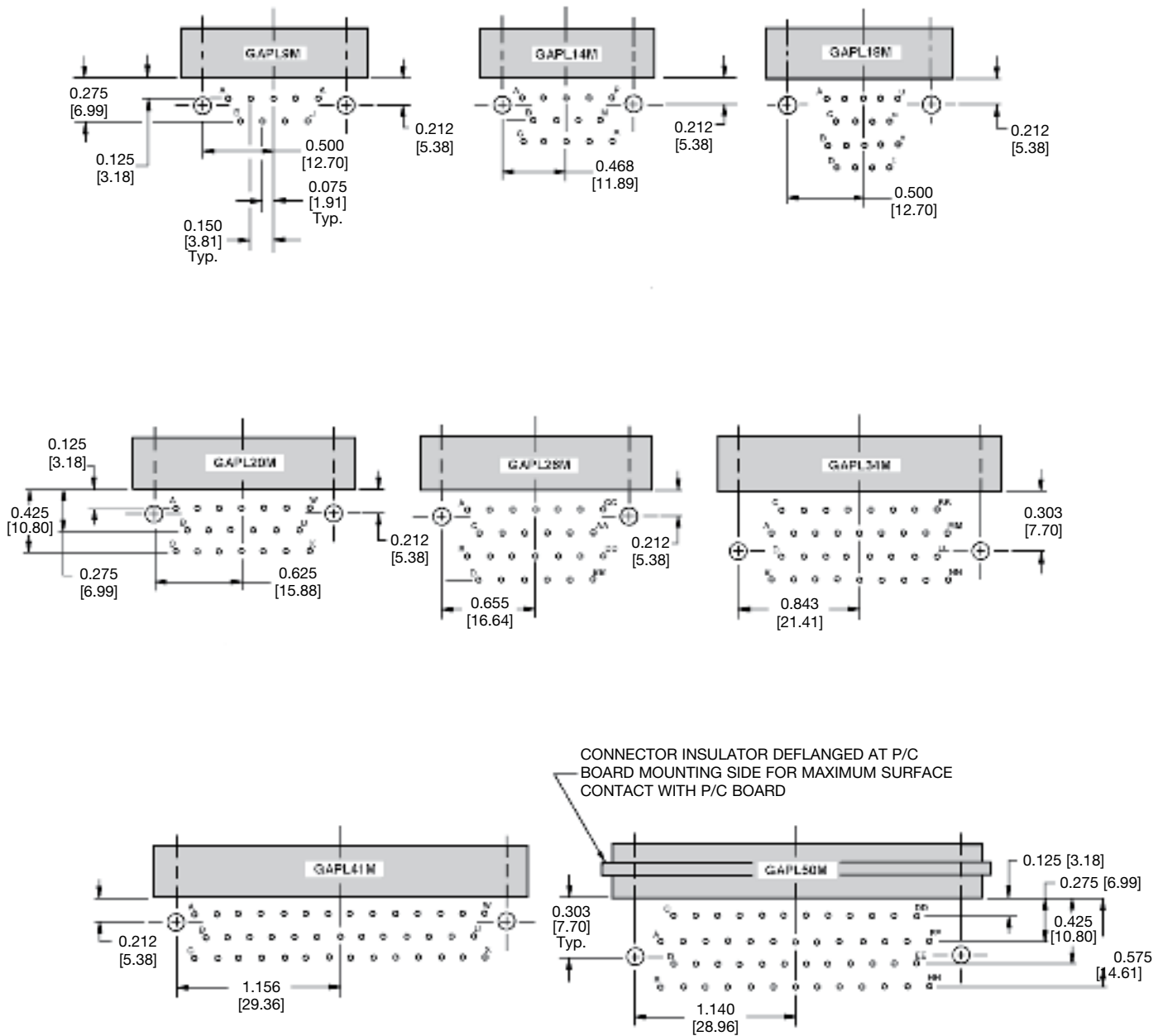
FOR FACE DIMENSIONS OF INSULATOR VARIANT DESIRED, SEE GMCT SERIES INSULATOR DIMENSION PAGE

CONTACT MATERIAL: COPPER ALLOY

CONTACT FINISH: GOLD FLASH OVER NICKEL



## MALE RIGHT ANGLE PRINTED BOARD HOLE PATTERN



SUGGEST 0.109 [2.77] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR VARIANTS 9, 14, 18, 20, 26 AND 41

SUGGEST 0.125 [3.18] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR VARIANTS 34 AND 50

SUGGEST 0.052 [1.32] Ø HOLES IN PRINTED BOARD FOR CONTACT TERMINATIONS

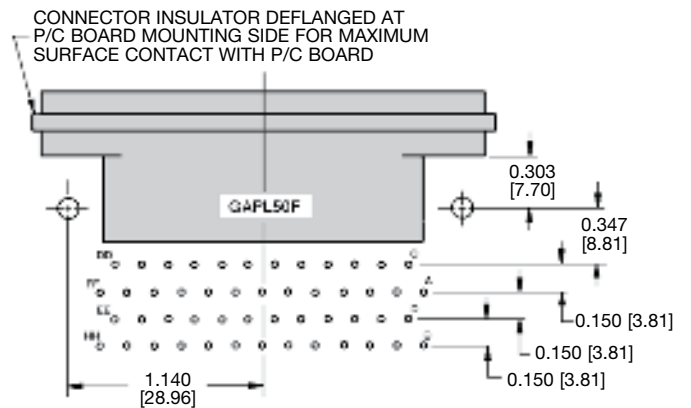
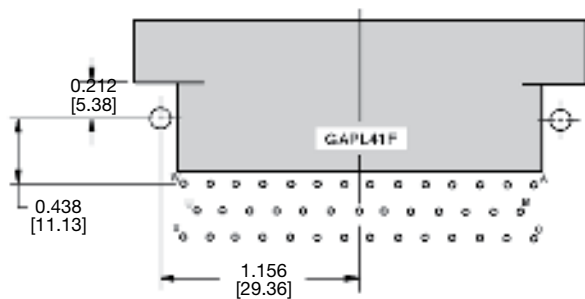
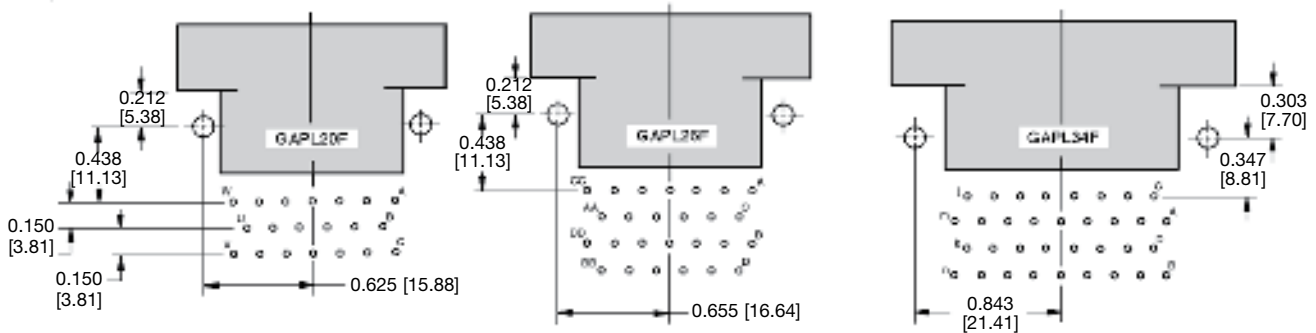
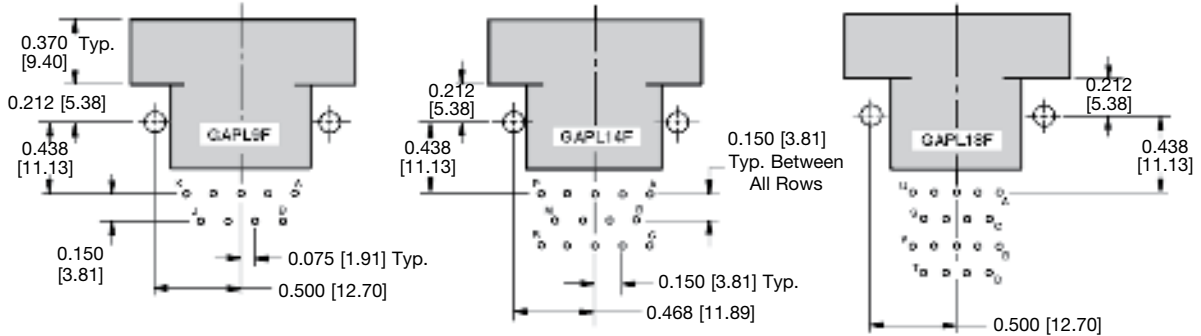
ADD 0.030 [0.76] TO THE MOUNTING HOLE POSITION WHEN MOUNTING BRACKET (LB) AND VIBRATION LOCK TAB (V) ARE USED IN COMBINATION ON CONNECTOR



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## FEMALE RIGHT ANGLE PRINTED BOARD HOLE PATTERN



SUGGEST 0.109 [2.77] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR VARIANTS 9, 14, 18, 20, 26 AND 41

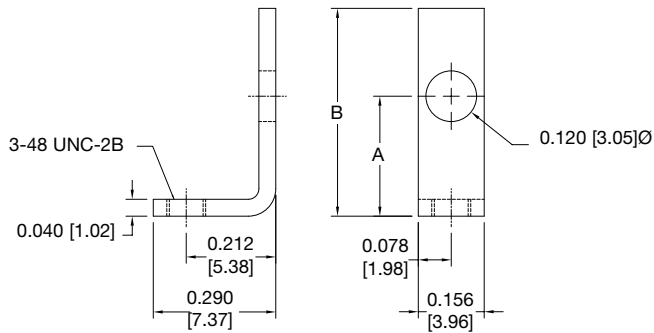
SUGGEST 0.125 [3.18] Ø HOLES IN PRINTED BOARD FOR CONNECTOR MOUNTING HOLES FOR VARIANTS 34 AND 50

SUGGEST 0.052 [1.32] Ø HOLES IN PRINTED BOARD FOR CONTACT TERMINATIONS

ADD 0.030 [0.76] TO THE MOUNTING HOLE POSITION WHEN MOUNTING BRACKET (LB) AND VIBRATION LOCK TAB (V) ARE USED IN COMBINATION ON CONNECTOR



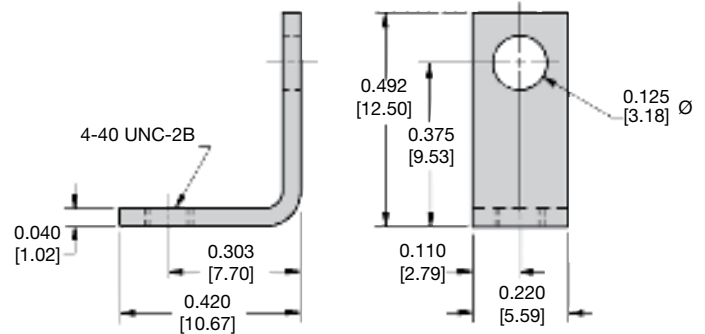
## MOUNTING BRACKET (LB)



SIZE	A	B
9	0.188 [4.78]	0.299 [7.59]
14	0.219 [5.56]	0.330 [8.38]
18	0.284 [7.21]	0.395 [10.03]
20	0.219 [5.56]	0.330 [8.38]
26	0.284 [7.21]	0.395 [10.03]
41	0.219 [5.556]	0.330 [8.38]

USE ON CONNECTOR VARIANTS  
9, 14, 18, 20, 26 AND 41

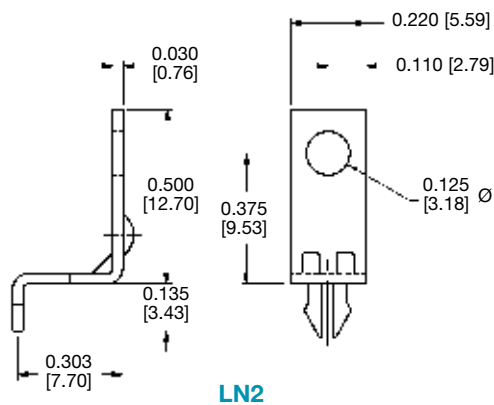
MATERIAL: COPPER ALLOY  
FINISH: ZINC PLATE WITH CHROMATE SEAL



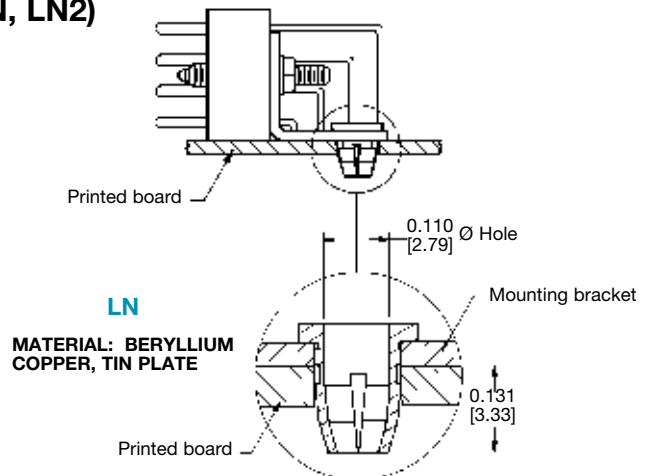
USE ON CONNECTOR VARIANTS  
34 AND 50

MATERIAL: COPPER ALLOY  
FINISH: ZINC PLATE WITH CHROMATE SEAL

## PUSH-ON FASTENER FOR RIVETED ON RIGHT ANGLE MOUNTING BRACKETS (LN, LN2)



MATERIAL: COPPER ALLOY, TIN PLATE  
SUGGEST 0.123 ±0.003 [3.12] Ø HOLE FOR MOUNTING  
CONNECTOR WITH PUSH-ON FASTENER



MATERIAL: BERYLLIUM  
COPPER, TIN PLATE

SAMPLE #	PRINTED BRD. HOLE Ø	INSERTION FORCE (lbs.)	RETENTION FORCE (lbs.)
1	0.120 [3.05]	7 1/4	5 3/4
2	0.123 [3.12]	5 3/4	5 1/2
3	0.125 [3.18]	2 3/4	2 1/2
4	0.128 [3.25]	1 3/4	2 1/4
5	0.126 [3.20] PLATED	1 3/4	2 1/4



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## ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	GAPL	14	M	0	N	V	LB	/AA	-14

### STEP 1 - BASIC SERIES

GAPL Series.

### STEP 2 - CONNECTOR VARIANTS

9, 14, 18, 20, 26, 34, 41, 50

### STEP 3 - CONNECTOR GENDER

M - Male Insulator  
F - Female Insulator

### STEP 4 - CONTACT TERMINATION TYPE

0 - Standard termination.

### \*STEP 5 - POLARIZING GUIDES AND JACKSCREW SYSTEM

G - Polarizing grounding guides.  
N - Polarizing guides.  
NSS - Stainless steel polarizing guides.  
T - Fixed jackscrews.  
0 - If no polarizing guides or jackscrews are required.

### STEP 9 - SPECIAL OPTIONS

-14 - Contacts plated 0.000030 [0.76µ] gold over nickel.  
-50 - Contacts plated 0.000050 [1.27µ] gold over copper.

**CONTACT TECHNICAL SALES  
FOR SPECIAL OPTIONS**

### STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)



**NOTE:** If compliance to environmental legislation is not required, this step will not be used. Example: GAPL14M0NVLB

### \*STEP 7 - MOUNTING BRACKET

LB - Mounting bracket.  
LN - Mounting bracket with push-on fastener, offered on size 34 and 50 only.  
LN2 - Mounting bracket with push-on fastener, offered on size 34 and 50 only.  
0 - If no mounting bracket is required.

### \*STEP 6 - LOCKING DEVICES

V - Lock tab.  
VL - Lock lever.  
0 - If no locking devices are required.

**\*NOTE:** FOR DETAILS OF ITEMS LISTED IN STEPS 5 THROUGH 7, SEE HEAVY-DUTY RECTANGULAR CONNECTOR ACCESSORIES SECTION ON PAGES 44-59.